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ABSTRACTS

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ASPIRATION BIOPSY OF
CERVICAL METASTASES

The application of fine needle aspiration biopsy and cytological examination to diagnose cervical metastases is not a new concept. It seems, however, that the method is sparsely used in Asia but have been more widely accepted and practice in Europe and America.

The diagnostic procedure was recently introduced to our Department and has rapidly gained confidence with increased experience. The technique is easy to learn and the equipment is simple and non-expensive. The safety, convenience and economy aspects are superior to those of open biopsies.

In our Department, we have performed more than 500 aspiration biopsies in less than two years. Only one case of false positive result has been found. The number of false negative results have steadily declined and the accuracy has improved with experience. No side effect has so far been encountered.

Aspiration biopsy is a simple diagnostic method which to our experience is of great value in the management of patients with metastases of the neck. A prompt result should enhance the chances of early treatment and thus improve the prognosis. It also eliminates the possible dangerous consequences of open biopsy.

UCG Engzell, M.D., Ph.D.
SK Lau, M.B.B.S., F.R.C.S.

"SNORING AND SLEEP APNEA"
— OTOLARYNGOLOGISTS PERSPECTIVE —

The concept of sleep apnea is detailed, with special references to the clinical entity, diagnosis of the three types of sleep apnea and the investigative measures employed to diagnose the concept would be dealt with.

Various aspects of surgical procedures to correct the obstructive pathology would be discussed. Results of a series of patients would be presented.

The presentation would be amply supplemented with audiovisual aids.

R. Rayaratnam, M.D.

GLOTTIC OPENING SIZE ESTIMATE
IN FILIPINO CHILDREN

To estimate the normal size of the glottic opening in Filipino children, to correlate sex, weight, age and body surface area with the size of the glottic opening and to arrive at an estimate correlating the best predictive variable with the glottic opening, 147 infants and children aged 0 to 18 years who underwent endotracheal intubation via orotracheal route were studied. Age, weight, sex and body surface area were statistically correlated with the glottic opening size. Linear regression analysis performed showed that the goodness of fit was most consistent with age and glottic opening size with a value of 0.83 for males and 0.85 for females. A more accurate estimate of the glottic opening size can thus be obtained utilizing the linear regression formula in relation to age especially in emergency situations where the glottic opening size is an important diagnostic tool prior to definitive management and treatment like in foreign bodies in the trachea or esophagus.

Benito L. Uy, M.D.

ACUTE EPIGLOTTITIS IN ADULTS —
THE SINGAPORE EXPERIENCE

Acute Epiglottitis or more appropriately, Supraglottic Laryngitis is a potentially fatal, self-limiting disease.

A retrospective study on all adult patients with acute epiglottitis was carried out at the ENT Department, Singapore General Hospital, over a 4-year period from January 1, 1982 to December 31, 1985. A total of 42 adult patients was seen. Males outnumbered females by 7:1. Peak age incidence was in the sixth decade. Only three patients presented with stridor. The majority had severe sore throat and dysphagia but with disproportionate oropharyngeal signs of inflammation. A lateral soft tissue X-ray of the neck was the most important investigation if facilities for indirect laryngoscopy were not available. A classical thumb sign was seen in forty patients and predominant ary-epiglottic swelling in two.

Throat swabs were taken in 21 patients and all were sterile. Twelve patients had three blood cultures each. All were sterile except for two patients whose cultures were contaminated with Staphalococcus epidermidis. However, pus from an epiglottic abscess and Ludwig's Angina grew Klebsiella pneumoniae and Citrabacter diversus respectively, both not sensitive to ampicillin but sensitive to gentamycin and cephalothin.

Patients were nursed in a high dependency care ward with tracheostomy facilities readily available. Of the three patients with stridor, one was tracheostomized and an endotracheal intubation was performed in the other. The third patient improved dramatically with medical treatment. Empirical antibiotic treatment with ampicillin and steroids formed the mainstay of medical management in addition to care of the upper airway. Response was dramatic with a mean hospitalization of 5.8 days. With this regime, none developed stridor after admission but an epiglottic abscess and Ludwig's Angina occurred in two patients respectively due to resistant organisms (Klebsiella pneumoniae and Citrabacter diversus). Hence, a cephalosporin is recommended for those with delayed response to medical treatment or with impending extra-epiglottic infection.

One patient developed recurrent epiglottitis, the cause of which is unknown.

An awareness of this condition with special care to the upper airway has reduced mortality and morbidity significantly.

R.E. Stanley, M.D.
T.S. Liang, M.B.B.S.

TRIGEMINAL NEURALGIA: SURGICAL TREATMENT VIA TRANSANTRAL APPROACH

Seven patients with trigeminal neuralgia underwent treatment by transantral sphenopalatine ganglion electrocoagulation and avulsive peripheral neurectomy. All patients had symptomatic trigeminal neuralgia refractory to medical therapy. Overall, with proper execution of the procedure, all patients have remained free of pain seven to 42 months after surgery. Although majority of patients experienced immediate post-operative trigeminal sensory loss, there was gradual recovery over the follow-up period without recurrence of pain. Unlike other surgical procedures, no serious complications were encountered. Transantral sphenopalatine ganglion electrocoagulation and avulsive peripheral neurectomy is simple and safe in the hands of a qualified otolaryngologist and provides a valid alternative therapy for intractable trigeminal neuralgia, especially in patients anxious of undergoing an intracranial procedure or in patients whose age or general medical condition precludes craniotomy.

Natividad R. Almazan-Aguilar, M.D.
Ruzanne M. Caro, M.D.
Gil Vicente, M.D.
Mariano Caparas, M.D.

FACIAL NERVE FUNCTION IN 60 CONSECUTIVE PAROTIDECTOMIES

Parotid tumours constitute 3% of all tumours of which 76% are benign and 24% malignant. The risk of facial nerve paresis after parotidectomies is thought to be within acceptable limits although it is difficult to find published data regarding the magnitude of this risk.

The study reports on the post-operative facial nerve function in 60 consecutive parotidectomies performed by the author at the General Hospital, Johor Bahru and Johor Specialist Hospital, Johor Bahru, Malaysia over a period of seven years from November 1976 to November 1983.

Of the 60 cases, 48 were of benign parotid gland masses, 8 were malignant tumours and 4 were lymphomata that occur primarily in the parotid gland.

The types of surgery performed were Excision Biopsy superficial parotidectomy with facial nerve conservation and total parotidectomy.

Eleven cases were presented for DXRT following surgery of which seven were malignant tumours and four were lymphomata.

Forty-two cases did not have any post-operative facial nerve palsy. Eleven cases had partial functional facial nerve palsy. Six cases suffered from permanent, partial palsy affecting the marginal mandibular nerve of the facial nerve. One case of adenoidcystic carcinoma where the facial nerve had to be sacrificed suffered from total permanent facial palsy.

From the above data certain conclusions were drawn.

V.K. Ravindran, M.B.B.S.,
F.R.C.S., F.I.C.S., A.M.

OUTPATIENT MEDICAL PHOTO-DOCUMENTATION

Introduction

Many methods are used to document clinical findings. These include description using words, drawings and sketches and black and white and colour photography. Photography especially colour photography is important as well as practical because it gives a *permanent, objective, accurate and detailed* documentation (for teaching and comparative study of the results of treatment).

Endoscopic photography is widely applied in the various fields of medicine. Photographs are either taken through the Hopkins rigid lens system or through flexible fiberoptic instruments.

The flexible fiberglass bundles allows the transmission of a *clear and undistorted image* and allows the *miniaturization* of the endoscope. While the flexible fibreoptic instrument are versatile and have the great advantage of passing around corners, the visual and photographic image is not as good.

The rigid glass rod system in the Hopkins telescopes provide magnified clear photographs with excellent resolution and colour.

Equipment

1. Olympus OMI SLR camera
2. Olympus SR 2 adaptor
3. Storz Hopkins telescopes (0, 30, 70, 120 degrees)
4. Wolff right-angled telescope
5. Storz flexible light cables
6. Storz or Worlf light source (150-W Halogen lamp)

Photographs I am about to show, are taken as the patients are seen in my clinics the last 6/12. After an initial trial and error period, photography becomes quite easy and should not interrupt your clinic schedule.

Anaesthesia

Local anaesthesia is routinely employed. For the nose and nasopharynx, 10% topical cocaine is employed.

The nasal passages are first sprayed with cocaine and then cocaine impregnated ribbon gauze or cotton pledgets are inserted. After an interval of about 10 minutes, the patient is ready for photography.

For laryngeal photography, xylocaine spray is used. Again a short interval is needed for the anaesthetic to take effect.

An antifog cream is applied to the distal tip of the telescope to prevent fogging. An excess is removed by gently touching the telescope against a piece of gauze.

Blood and saliva is removed by gentle suction before photography.

John Tan, F.R.C.S.

CAUSES OF VERTIGO AMONG FILIPINOS — A STUDY OF 400 PATIENTS

Common causes of vertigo in the country include Vertebro-Basilar Insufficiency, Positional Vertigo, Vestibular Neuronitis, Viral Labyrinthitis, Meniere's Disease and Multiple Sclerosis. A systematic approach to the problem of vertigo diagnosis will be presented. Starting from a detailed analysis of the history and physical examination, routine and special laboratory tests, an etiologic diagnosis can be classified into central and periphe-   causes. Demographic information, as well as prevalence will be shown. This paper is part of an ongoing study and is not meant to be a final all-inclusive report.

Carlos P. Reyes, M.D.

LIPOSARCOMA OF THE MIDDLE EAR AND MASTOID — A CASE REPORT

Liposarcoma in the head and neck is seldom encountered, and in the middle ear and mastoid, it is extremely rare. The presenting symptom of this case is pain. The diagnosis and treatment are discussed.

Manuel G. Lim, M.D., M.Sc., F.P.C.S.

SERUM IgA-VCA AS A DIAGNOSTIC TOOL FOR NPC IN MALAYSIA

The titres of IgA against Epstein Barr Virus capsid antigen (VCA) in 75 patients with Nasopharyngeal Carcinoma (NPC) were analyzed with respect to pathological types and clinical staging.
It was intended to determine if IgA/VCA is
1) an effective tool as an aid to the diagnosis of the three WHO pathological types of NPC; and
2) correlated with the clinical stage of the disease.

C.K. Sam, M.D.
U. Prasad, M.D.
R. Pathmanathan, M.D.

ADVANCES IN THE DIAGNOSIS OF NASOPHARYNGEAL CARCINOMA

We live in a region where NPC is 20-30 times commoner than in many other parts of the world.

The otolaryngologist in Singapore and the S E Asian regions have to be on constant alert to detect this cancer early.

The etiology of this cancer has yet to be conclusively proven but exciting new evidence supports a possible viral origin and a genetic predisposition.

It is encouraging to note that advances have been made in early diagnosis of NPC both by immunological tests and by surgical means. My discussion will be limited to advances in the diagnosis of NPC by surgical methods.

The symptomatology of the disease is well known. Yet it is not uncommon for patients and doctors to ignore or miss early symptoms, even in Singapore where doctors are kept constantly informed of this cancer. Even when it gets to the ENT surgeon there can be a delay in the diagnosis.

The problems in the diagnosis of NPC are:
1. The postnasal space is first of all a difficult area to examine. The traditional posterior rhinoscopy with the postnasal mirror has its limitation. Firstly, it gives an indirect view. Secondly, in my experience, in at least 30% of patients, a satisfactory view of the postnasal space is not obtained. One has then to rely on other aids.
2. The second problem is that when a tumour develops in the area, subjective signs are few in the early stages and can be easily missed or ignored both by patient and doctor alike.
3. A third problem arises when the ENT surgeon is faced with patients with isolated signs like epistaxis, tinnitus, a fifth or sixth cranial nerve palsy or a cervical lump. He has then to decide whether to biopsy the postnasal space, even in the absence of an obvious tumour.
4. One can have a 'suspicious' area in the postnasal space but gets repeated negative biopsies.
5. Finally we have the problems of the postnasal biopsy itself. The practice among most surgeons in Singapore is, to examine the postnasal space with the mirror and to identify the tumour. Then after cocainization of the nasal cavities, a suitable forcep is introduced transnasally and a piece of the tumour removed and sent for histology.

In cases where there is difficulty or where a negative result is obtained a repeat biopsy can be performed, with the help of several methods.

These include:
1) Palatal retraction with catheters
2) Use of the Yankaur speculum
3) The use of General Anaesthesia

4) Postnasal space curettage

5) The Transpalatal approach

With the above methods, I found that for up to nearly 17% of patients with NPC, a second or third biopsy was necessary before the diagnosis was confirmed. In 12% of cases a postnasal space curettage under general anaesthesia was necessary. This increased morbidity, and sometimes resulted in complications. Hospitalization is always necessary.

For us who used these methods, we were always left in a state of uncertainty whenever we were faced with suspected cases of NPC.

Since the middle of 1982 I have begun to use the flexible fiberoptic nasopharyngoscope to examine the postnasal space in difficult cases and since that time all biopsies were done with the use of it. It had an obvious distinct superiority over all previous methods and the previous uncertainties were to a large extent quelled.

The advantages of the flexible fiberoptic nasopharyngoscope and the method of biopsy will be fully discussed. A retrospective study of all the cases biopsied in the manner was done. 98% of the cases were positive on first biopsy. Also the procedure is relatively painless, done under local anaesthesia and had few complications.

The few problems with its use will be also discussed.

The method is a significant advance in the diagnosis of NPC and is highly recommended to surgeons not presently using it.

K.A. Abraham, M.D.

CHEMOTHERAPY OF RECURRENT NASOPHARYNGEAL CARCINOMA USING DDP + BLEOMYCIN vs. DDP + VP-16

A prospective randomized trial was conducted at the University of the Philippines-Philippine General Hospital to compare the efficacy of the combination of DDP + Bleomycin (Treatment A) to that of DDP + VP-16 (Treatment B) in the induction and maintenance of remission in 50 patients with recurrent nasopharyngeal carcinoma post-radiotherapy. Complete response (CR) was orbserved in 11% treated with DDP + Bleomycin (A) and in 27% treated with DDP + VP-16 (B). This difference was not significant, however, the median progression of recurrence-free interval of seven-and-a-half weeks in the Treatment Group A compared to 15 weeks in Treatment Group B was found to be statistically significant (p   0.01). Important variables affecting survival in this study proved to be good nutritional status and early stage of the disease. Nausea, vomiting and anorexia were present in 76% of Group A and 86% in Group B. Leukopenia was noted in two patients of Group A. Combination chemotherapy with DDP + VP-16 (B) is not more effective in producing response rate compared to DDP + Bleomycin (A), however, the duration of response (recurrent-free interval) in Group B was longer compared to Group A in patients

with recurrent nasopharyngeal carcinoma post-radiotherapy compared when both regimens are compared in a randomized study.

Ma. Fita Pascual-Guzman, M.D.

Natividad Almazan-Aguilar, M.D.

Gloria Cristal-Luna, M.D.

Mariano B. Caparas, M.D.

Antonio Villalon, M.D.

ROLE OF LASER SURGERY IN THE MANAGEMENT OF RECURRENT MALIGNANCIES AT THE BASE SKULL

Laser has at present gained a foothold in the management of recurrent malignancies of the base of skull. Though this treatment modality is essentially palliative, it is gaining ground in many centres. In Singapore the use of Laser is being increasingly used in the palliative management of recurrent Nasopharyngeal Carcinoma where other modes of treatment have failed, namely radiotherapy and chemotherapy. The incidence of new cases of NPC is in the region of 200 per year in Singapore hence there is increasing availability of such cases here.

The primary management of NPC is by radiotherapy which experiences a high recurrence rate and poses therapeutic problems with poor prognosis. Additional radiation treatment may be mutilating and will only achieve limited objectives. Inspite of this, a second course of radiotherapy is often undertaken. The persistence of residual growth or recurrences following this are subsequently managed by palliative chemotherapy. On the other hand in some centers base of skull resections are advocated via extracranial infratemporal approach.

Recently a new surgical armamentarium has been added in the management of these cases, ie. application of the CO2 Laser at the skull base. It would appear that a more direct and less destructive technique is needed to eradicate these recurrences and the CO2 Laser appears to have several advantages. The laser produces minimal destruction to surrounding tissues at the base of the skull and produces less morbidity to the patient in the postoperative period. The use of the CO2 laser has allowed removal of recurrent tumour on the facial side of the skull base. It has provided, what seems at this time for many, a good palliative procedure.

The use of the laser for treatment of recurrent carcinoma should satisfy certain criteria. First these patients must be radiation failures. Radiotheraphy is the first line of treatment for recurrent carcinoma in this area. Second, high resolution computerized scanning must ascertain that there is no intracranial extension. Third, there must be biopsy proof of the recurrence. Fourth, there must be direct access to the tumour site for visualization, delivery of the laser and for postoperative follow up with possible repeat of laser. Exposure must be adequate to identify the extent of recurrence and avoid injury to vital structures.

The laser is used to remove all mucosa in the involv-

ed area for a wide field around the recurrence. In the area of the actual recurrence the bone is well beamed with laser so that no tumour is missed. Biopsy control is used during the procedure

Although the laser can be delivered to the nasopharynx through one of several approaches, we have adopted the transnasal, the transoral with retraction of palate and the transpalatal and occasionally we have used the Lateral Rhinotomy approaches. The two way approach of beaming laser via transnasal and transpalatal approach gives adequate clearance of the growth. The transpalatal approach has good direct access to the tumour site for visualization. The delivery of the laser is convenient with the surgical hand piece. The palatal fenestration makes the postoperative follow up easy with possible repeat of laser at regular intervals if necessary. A dental palate is fitted to cover the fenestrated site to aid swallowing.

During the last two years we have tried this modality of treatment on seventeen cases of this clinical problem of recurrent nasopharyngeal carcinoma following radiation therapy. This has greatly benefited the patient's quality of life and even their quality of death with minimum perioperative morbidity. Lives of patients of these terminal cases have been prolonged for periods ranging from six to eighteen months. In two cases lives were prolonged for two years.

N. Kunaratnam, M.D.

COMPARATIVE STUDY OF CERUMINOLYTICS A SEARCH FOR CHEAPER ALTERNATIVES

An *in-vitro* and *in-vivo* evaluation of coconut oil, baby oil, hydrogen peroxide, cooled boiled water and anti-pyrine benzocaine glycerine preparation was undertaken to determine their efficacy as ceruminolytics. Solubility test was done on specimens of hard wax placed in 20 test tubes with the solvents titrated at 0.2 ml., 0.5 ml., 1 ml. and 2 ml. After mixing for two minutes, the solution was evaluated on the basis of change in color of the solvent and dissolution of particles. A separate set of specimens of hard ear wax was placed in ten test tubes and each solvent was instilled in two test tubes for seven days. Appearance of the wax was observed on the third and seventh day and the specimens were subjected to tilt, probe and flush tests on the seventh day. The oil-based solvents partially dissolved the wax while hydrogen peroxide and cooled boiled water completely removed the wax. A total of 75 ears was used in a randomized, double-blind trial – each ear was assigned a solvent which was instilled at three drops three times a day for seven days and evaluated on the seventh day using visibility of tympanic membrane, presence of residual cerumen, subjective hearing improvement and presence of side effects as criteria. Coconut oil, baby oil, hydrogen peroxide and antipyrine benzocaine glycerine properation were effective ceruminolytics while cooled boiled water failed to clear the wax. In one ear, hydrogen peroxide was not effective. No unto-

ward reactions were noted. Possible explanations to explain the different results of *in-vitro* and *in-vivo* evaluation are presented.

R.M. Caro, M.D., et. al.

SENSORINEURAL HEARING LOSS AFTER RADICAL MASTOIDECTOMY

Surgery has always been considered the mainstay in the treatment of Chronic Otitis Media. The surgical procedure usually performed is either a classical radical mastoidectomy or a modified radical mastoidectomy with or without tympanoplasty. Preoperative and four-week post-operative audiograms of 53 patients with cholesteatomatous otitis media who underwent radical mastoidectomy were studied. Five patients developed sensorineural hearing loss after radical mastoidectomy. One patient had profound hearing loss while four developed high-frequency sensorineural hearing loss. The possible causes of this complication are discussed. Although uncommon, sensorineural hearing loss after radical mastoidectomy could be minimized and, if possible, avoided if meticulous care during surgery and judicious use of ototoxic drugs are done.

Romeo L. Villarta, Jr., M.D.
Josefino G. Hernandez, M.D.
Victoria C. Sarmiento, M.D.

THE USE OF DIPOTASSIUM CLORAZEPATE AS PREMEDICATION IN HEAD AND NECK OPERATIONS UNDER LOCAL ANESTHESIA

The anxiolytic action of dipotassium clorazepate combined with the analgesic effect of meperidine was employed in premedicating patients for head and neck surgery under local anesthesia. Twenty-two patients undergoing Caldwell-Luc operation or thyroidectomy under LA were randomly assigned to two groups. Group A received meperidine and promethazine IM as premedication while group B received meperidine and clorazepate. Vital signs, sensorium and level of anxiety were monitored at 0, 30min. and 60min. after administration of premedication by an independent observer. Fluctuations in vital signs were found to lie within normal physiologic limits throughout the period of observation in both groups of patients. A progressive depression of sensorium was noted in Group A; sensorial changes were more erratic in Group B. The level of anxiety was similar in both groups while Group B patients were noted to respond faster to verbal questions. No untoward side effects were noted in both groups.

Jose M. Acuin, M.D.
Victoria Sarmiento, M.D.

INDIAN FOOD HABITS & ADDICTIONS — PRE CANCEROUS AND CANCEROUS CAVITY

India is known for its special food habits and additions; excessive use of spices and condiments; chewing of betel-leaves; -nuts, tobacco and lime as well as sniffing and smoking tobacco. These chemical irritants may be responsible for the high rate of prevalance of different oral premalignant and malignant lesions in Indian population.

From 1975 to 1984, the author has a series of 90 patients with different types of such lesions. These included erythroplakia, melanoplakia, leukoplakia, papillomata, submucous fibrosis as well as verrucous and squamous cell carcinoma of oral cavity.

The areas of oral cavity bathed with saliva were mostly affected. The present study was directed towards clinical and pathological changes in oral mucosa and submucosal tissues and biochemical and immunological evaluation of saliva in control (non-addicted group); 50 cases, control (addicted group); 50 cases and the patients having oral submucous fibrosis (90 patients).

The findings were correlated and the entire disease process was staged into four stages on the basis of clinicopathological correlation:

	Stages	Cases	%
I.	Early stage	9	10.0
II.	Moderately advance stage	25	27.8
III.	Advanced stage	41	45.5
IV.	Complications & sequelae	15	16.7

It was observed that 16.7% showed premalignant and malignant lesions in this series. Exclusion of predisposing factors may provide effective cancer control of oral cancer. Early diagnosis and effective treatment may save morbidity and mortality.

B.M. Abral

IN VITRO CULTURE OF ORAL SQUAMOUS CELL CARCINOMA CELLS IN COCONUT WATER

Hoping that animal cell culture could provide the means for finding the solution to the problem of cancer, cancer cells were cultured in coconut water and was compared with the standard Eagle's Minimum Essential Medium. Quantitative and qualitative analysis of coconut water showed that it contains the optimal nutrients required in the culture of epidermoid cancer cells. This short term culture of human squamous cell carcinoma for a period of seven days without renewal of medium revealed that cell viability (i.e., Cell Count and Acridine Orange Test) of the cancer cells is the same in both the standard Eagle's medium and in coconut water. Cell morphology in vitro was also compared with in vivo. Results showed that the cell morphology was not altered.

The use of animal cell culture in coconut water lessens the cost compared to the standard Eagle's medium. Because coconut water is readily available in countries like the Philippines the search for the solution to the problem of cancer is not a monopoly of rich countries.

Robie V. Zantua, M.D.

SUBMUCOUS RESECTION OF THE INTERIOR TURBINATES

Nasal obstruction is one of the most common symptoms in the nose. There are many causes of course, but the most commonly blamed etiology is septal deviation. Many of these patients submitted to the septoplasty but the obstruction persisted. In many of these cases there is compensatory hypertrophy of the inferior turbinate. Without correcting the inferior turbinate with the septum, many of the patients are not relieved. For this reason, submucous resection of the inferior turbinate is developed, and the technique will be presented.

M.G. Lim, M.D.

THE DEVELOPMENT OF SPEECH AUDIOMETRIC MATERIALS IN FILIPINO

This study was designed to accumulate a corpus of selected three-syllable and two-syllable Filipino words and to experimentally determine their relative intelligibility with Filipino subjects.

Individuals with normal audiograms, two males and six females, ranging from 28 to 46 years of age were used as subjects.

Three-syllable word lists A-1 and A-2 were presented at four different sensation levels (-5, 0, $+5$, and $+10$ dB) and the two-syllable word lists B-1, B-2, B-3, and B-4 were presented at $+10$ dB, $+15$ dB, and $+20$ dB, and $+25$ dB SL.

Articulation curves were drawn for the intelligibility of the words that met the two criteria set for this study.

Three-syllable words for speech reception threshold testing in Filipino resulted in a total of sixty-six acceptable test words. The intelligibility of these final test words was 27.1% at -5 dB SL, 52.2% at 0 dB SL, 92.6% at $+5$ dB SL, and 100% at $+10$ dB SL. This articulation curve represents a 4.86% increase in word intelligibility per decibel of increase from -5 to $+10$ dB SL.

The two-syllable words produced a total of 123 Filipino words for final test use. In as much as equal lists of 25 words for clinical speech discrimination test purposes was considered desirable, 23 of the total test words which had the highest correct identification were arbitrarily deleted. Therefore, the final number of acceptable two-syllable words consists of 100 words.

The articulation function of the final two-syllable test words is as follows: 65.3% at 10dB SL, 89.8% at $+15$ dB SL, 96.8% at $+20$ dB SL, and 99.5% at $+25$ dB SL. This articulation curve represents a 2.28% increase

in word intelligibility per each decibel of increase from +10 to +25 dB SL.

N.R. Ledesma, M.A.

CONGENITAL EXTERNAL AUDITORY CANAL ATRESIA AND STENOSIS

Reconstructive surgery of congenital malformations of the ear is perhaps the most challenging area of middle ear surgery. This paper aims to present the author's experience in the surgical management of his series of such cases. The value of CT scanning in the preoperative assessment is also demonstrated.

K.K. Loh, M.B., B.S., A.M.

CHILDREN WHO REFUSE TO HEAR

Children who refuse to hear is a descriptive three-year process oriented therapeutic study. It was done from November, 1982 to November, 1985. It dealt with ten female children, refused for therapy. Audiological test results showed they were physiologically fit to hear.

The ten psychologically deaf children whose ages range from 11-13 underwent therapeutic process of initial observation, 3 family conferences, 10 individual sessions, 5 follow-up observation sessions at home and school. The core of the therapeutic process was the 10 individual sessions with the child therapist that used the kinetic family drawing and mutual storytelling technique to elicit the childs' problem and resolution.

In all 10 cases the most significant behavioral change was the childrens' choice to normally hear again. Other behavioral changes were active school activity participation, higher grades, peer friendship and self-assertion.

Carolina Vera-Llamanzares, Ms.N., Ph.D.

IS MUCOSAL EAR DISEASE SAFE

Classically there are two variants of active chronic Otitis Media: The first type is the so-called 'safe' type where the disease is confined to the tubotympanic mucosal lining; the second type is associated with a cholesteatoma which is 'unsafe' because of the high risks of complications.

A retrospective study of the author's 11 consecutive brain abscesses secondary to active chronic otitis media revealed that a cholesteatoma is present in 7 (64%) and mucosal disease in 4 (36%). Mucosal ear disease should no longer be considered safe.

H. Said, M.D.

ANATOMY OF THE MIDDLE EAR AMONG FILIPINOS

The present trend in middle ear surgery involves the use of prosthesis like the total ossicular chain prosthesis, partial ossicular chain prosthesis and the cochlear implant. These are precision instruments developed from Caucasean ear models. Because the Filipinos are generally smaller than the Caucasean, idiosyncracies in the anatomy or dimensions of the middle ear may affect the use of such prosthesis. To investigate this hypothesis, actual measurements and description of the anatomy of the middle ear were made in 20 temporal bones of adult Filipino cadavers. Radiographic correlations were also made using the Schuller's, Mayer's and Towne's views.

Abelardo Perez, D.A.B.O., F.P.C.S.
Robie V. Zantua, M.D., F.P.C.S.

ANEURYSMAL BONE CYST OF THE MANDIBLE

Aneurysmal bone cyst was first described in 1952 by Jaffe and Lichenstein. It occurs chiefly in shafts of long bones and in the vertebral column causing localized distention and destruction of the affected bone. This paper reports an unusual occurrence of the cysts; the mandible.

Carmencita Vera Cruz-Dizon, M.D.
Rolando E. Regalado, M.D.

TOTAL REHABILITATION OF CARCINOMA LARYNX IN INDIA

Cancer of larynx and laryngopharynx is common in India. Most of the cases 90% present late and need either radical surgery or palliative radiotheraphy and other measures.

From 1975-1984, the author has a series of 500 proved cases attending the Head and Neck Tumour Clinic. The food channels are more commonly affected than respiratory passages. This could be related to the food habits and addictions prevalent in India especially excessive intake of spices, condiments and chewing of betel nuts, lime and tobacco.

Conservation surgery and curative radio-therapy was provided in 10% of the patients only. However, total laryagetomy and laryngopharyngectomy with or without radical neck dissection could be offered to another 15% of the patients only. Unfortunately 75% of the patients could be given only palliative radio-therapy and/or chemotherapy, tracheostomy and/or gastrostomy and analgesics.

A large majority of our patients (90%) present late and can be classified under the extensive group only. They defy all international classifications for staging and grading of cancer. They present at such an advanced stage that it is difficult to precisely point to the site of

lesion or its tissue of origin. Mostly they survive for less than two years after the final diagnosis and palliative treatment.

We have organized the Laryngectomee Club of India which assists all these patients in their early diagnosis, preparation for surgery and post operative care, speech therapy as well as vocational and avovational rehabilitation.

B.M. Abral

VOICE RESTORATION AFTER LARYNGECTOMY IN CANTONESE SPEAKING PATIENTS

Although a laryngeal speakers have a low frequency voice ($\pm$ 65Hz) and a restricted pitch range, Cantonese speaking post-laryngectomy patients may still use the Blom-Singer Voice Prothesis successfully, in spite of the complicated and extensive tonal changes utilized in the Cantonese language.

C.A. Van Hasselt
K.S. Woo
C.L. Sham

AN ALTERNATIVE GLOTTIC RECONSTRUCTION FOLLOWING HEMILARYNGECTOMY

A modification of the laryngoplasty procedure advocated by Bailey in 1974 was used to treat a patient with T2NoMo laryngeal carcinoma. The initial sucess of this procedure is ascribed to its technical simplicity and functional efficiency without compromise on tumor extirpation and post-plastic laryngeal function. This procedure appears to have several advantages over that advocated by Bailey.

Jesse C. Baltonado, M.D.
Romulo E. Lapitan, M.D.

FOREIGN BODIES IN THE AIR AND FOOD PASSAGES: A POTENTIAL MISDIAGNOSIS

Esophageal foreign bodies, particularly the radiopaque variety presenting with respiratory distress has been well documented in the otolaryngologic literature. Most family practitioners, pediatricians, and radiologists are fully aware of the common presenting symptoms of esophageal foreign bodies. However, these same physicians are often unaware that some esophageal foreign bodies may present with stridor, wheezing, pneumonia simulating asthma, croup, bronchitis, and bronchopneumonia particularly under three years of age.

A case is reported of a child who presented with all the hallmarks of respiratory difficulty and diagnosed by X-ray to have a foreign body in the trachea. The foreign body was absent on bronchoscopy but was discovered in the esophagus on esophagoscopy.

Norberto V. Martinez, M.D.
Eusebio E. Llamas, M.D.

PERFORATION OF THE OESOPHAGUS BY SWALLOWED FOREIGN BODIES

Perforation of the Oesophagus in our experience is more often caused by ingested foreign body immediately on impaction or delayed later when perforation occurs by ulcerative erosion. Trauma to the Oesophagus in varying degrees also occur during foreign body removal either by the instruments or by the foreign body itself during extraction more especially so in the case of dentures or those with sharp points. The results of 626 Oesophagoscopies performed during the years 1983 and 1984 in the ENT Unit, Singapore General Hospital are analyzed and the findings reflect this.

N. Kunaratnam

CEPHALOMETRIC ANALYSIS OF FILIPINO ADULT SKULLS

Fifty lateral skull x-rays of adults were gathered at random from the files of the x-ray department of the Ospital ng Maynila. Each film was marked using the five basic cephalometric landmarks as follows: S for sella, N for nasion, A for subspinale, B for suprementale and Po for Pogonion. Using these five landmarks, two cephalometric angles were measured: SNA which shows the anteroposterior relation of the maxilla to the cranial base; used to determine the degree of maxillary prognathism or retrognathism, and the SNB which shows the anteroposterior relation of the mandible to the cranial base and used to determine the degree of mandibular prognathism or retrognathism. With this two angles, we were able to establish a guide which maybe useful in the diagnosis and planning of facial reconstruction.

Virgilio de Gracia, M.D.
Angel Enriquez, M.D.

A DOUBLE-BLIND CROSSOVER STUDY OF CLEMASTINE AND CHLORPHENIRAMINE IN PERENNIAL RHINITIS

A total of 64 patients suffering from perennial rhinitis were subjected to a double-blind crossover comparative trial between two H_1 antagonists. Clemastine fumarate 1 mg and Chlorpheniramine maleate 4 mg in bid dosage were given to each patient in a two-weeks crossover design with one week washout period. Symptom scores were recorded and statistically analysed. Both Clemastine and Chlorpheniramine had proved

effective in controlling itching, sneezing, rhinorrhea and nasal obstruction which are the major symptoms of perennial rhinitis. Few side effects were reported and all were mild. As a whole, Clemastine appears to offer greater benefit and fewer side effects than Chlorpheniramine.

Chaweewan Bunnag, M.D.
Boonchua Dhorranintra, M.D.
Perapun Jareoncharsri

LOCAL EXPERIENCE IN MANAGEMENT OF ANGIOFIBROMA AND A PROPOSED CLASSIFICATION

Twenty-two patients with juvenile nasopharyngeal angiofibroma were seen at the Department of Otorhinolaryngology UP-PGH Medical Center during a nine-year period (1978-1986). All underwent surgery and in each case, blood loss was recorded. Most cases were approached via the transpalatal incision but in later years modified to extend into the pterygoid area via a gingivobuccal incision. Boiling water was injected into the lesion preoperatively in 10 cases. With this technique, there was less blood loss noted compared to those where boiling water was not used. It is noted that the boiling water technique works because of resulting vascular occlusion and fibrosis. Based on the natural course of the disease, a staging is presented. In each stage, a recommended approach to the lesion is proposed.

Gil Vicente, M.D..

CAUSES OF DEAFNESS IN CHILDREN*

Abelardo B. Perez, M.D.**

Introduction

Deafness is defined as the complete or partial loss of the sense of hearing. Hearing is the capacity to perceive sounds. To a layman deafness includes all degrees and types of hearing impairment. The determination of its causes is necessary to advise the victims on the proper treatment whether with the use of surgery or electrical aids. This may create a feeling of despair to many because of the expenses to be incurred and the unavailability of help. However, for others who can avail of the treatment, this gives them some hope.

This study was made in order to make certain data available on the local causes of deafness among students to be able to help them through proper advice and treatment. The findings will make the teacher aware that it is not enough to know that a student in his class is deaf but more importantly to find out what could be done. The teacher needs a deeper understanding of the students difficulty in hearing which is part of his teaching responsibilities.

Methodology

There were 598 students randomly picked from two private colleges and four public schools. They were asked to answer a questionnaire (Appendix A) to give the researcher an idea as to their birth, social environment, childhood activities and probable illnesses.

The students were examined and a pure tone and speech audiometry was done in a controlled environment. The available literature related to the subject was reviewed.

The data used in the study were subject to the following limitations:

1. Not all of the students screened answered the

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questionnaire.

2. The answers given consisted mostly of what they know, remember or perceive.
3. Not all of the students answered the questionnaire completely.
4. No interview with the parents or guardians was undertaken to verify and augment the answers.
5. No home visitation was done.
6. No reexamination of the children was made.

Findings

The tabulation shows the number of students examined, the locale, and the deafness identified.

Number of students examined 598
Number of Localities 2
Number of Schools 6
Number of Students with
    Deafness in — Right Ear 134
                        — Left Ear 153

The students came from a rurban area which is cross-between a rural and an urban area. There were 79 students whose right ear and 50 students whose left ear had sensorineural or mixed deafness. There were 50 students whose right ear and 103 students whose left ear had conductive deafness.

The following tabulation shows the profession/ occupation of the parents of subjects:

Occupation	Father	Mother
LLB, M.D., Religious, CAP, Engineer, Dentist	4	1
Nurses, Midwife, Med. Tech, Para-Med.	4	8
Teacher	2	31
Manager, Supervisor	11	4
Employee	50	22
Businessman	48	39
Military & Para-Military	28	0
Vendor	26	47
Skilled Labor	96	46
Driver	63	0
Non-Skilled Labor	39	27
Fisherman	16	0
Farmer	66	0
Housekeeper	0	261
Retired	2	—
Jobless	74	—
Deceased	15	—

Analyzing the nature of the occupation/profession of the parents of students it will be noted that the group screened belong to the middle low and low income bracket. Some even belong to the low income group. At this point, it can be deduced that they belong to the low social structure of Philippine society.

As regards the question asked whether deafness is present among parents, grandparents, brothers, sisters,

aunts and uncles, the following data were obtained:

Present 80
Not Present 491
No Answer. 27

The possibility of hereditary factors was not analyzed exhaustively.

The students' past history of illness as identified are as follows:

Illnesses	No. of Students
Mumps	220
Measles	179
Fever of Unknown origin	96
Chicken pox	52
Typhoid	27
Whooping Cough	20
Flu	16
PTB	13
Diphtheria	10
Tonsillitis and pharyngitis	8
Frequent Headache	3
Asthma	2
Others	6
Operations	44

The list of the illness may be incomplete and the name of the medicine taken unreliable. However, judging from the illness the medicine could be projected. Some of the medicine that could have been used and the illness could cause impairment of hearing. There were 44 students who said they were not born normal but the kind of abnormality was not specified:

The listening activities were reported as follows:

Listening to Radio and Television

Radio		Television		Volume		
Yes	No	Yes	No	Softly	Moderate	Loud
532	48	555	22	173	364	40

Listening Time

	Min.	Hours/Day						Hours/Week		
	10-30	1	2	3	4	5	8	18	1	2
Radio	49	217	153	11	91		4	24		1
TV	9	148	186	23	134	6	4		23	28

At this time it could be assumed that everybody listens to radio and television. Surprisingly, there are 44 students who said they do not listen to the radio and 22 to television. As to volume, majority said they preferred soft to moderate but 40 wanted it loud. The majority said they were exposed at least four hours although 24 answered they listened up to 18 hours daily.

As regards to sources of noise and sound 184 students said their house was in a noisy place while 395 said theirs was not.

Among the common sources of sound, the following was indicated:

Sources of Sound	Number
Traffic of passing bus, cars, jeep and tricycles	94
Blaring of Horns	68
Machines	41
Airplanes	26
Generator	20
Market	3

There was a discrepancy in the figures between those who answered living in a noisy place and the total number for sources of sound. A number of students did not consider some of the sources of sound to cause disturbing noise.

Another question asked was on explosions. Among the explosives mentioned were:

Explosives	Number
Firecrackers	202
Gunfire	80
Grenade	3
Dynamite	2
Others	2

It was accepted that some of the firecrackers were louder than gunfire or as loud as a dynamite.

When asked about any history of injury 232 answered Yes while 347 said No.

As to causes of injury the following were cited:

Causes	Number
Vehicular accident	9
Fall on the Ground	100
Fall on the Cement	30
Blow to Head	
Stone	48
Wood	39
Iron or Steel	3
Others	5
Hit across the ear	
by someone's hand	89
Stone	12
Wood	12
Iron or Steel	3

Head injury is a very important consideration as it could cause fracture of the temporal bone, middle ear involvement and other otological condition.

The screened students who are deaf had an otoscopic examination.

The otoscopic findings are as follows:

Otoscopic Findings	Number
Impacted Cerumen	65
Evidence of previous Otitis Media	95
Perforated tympanic membrane	5
Perforated tympanic membrane with discharge	19
Previous Mastoidectomy	1
Congenital Atresia of Canal	1
No Otoscopic findings	51
	237

Discussion

Dr. Koizumi of Hokushin General Hospital, of Japan found out that 21 out of 29 unexplained hearing problems were an earphone addict playing the cassettes from 1-4 hours a day. Another specialist found a similar condition. Various reports have definitely established the relationship between deafness and noise. In this study it was found out that students liked to listen to their radio and television at a loud volume and their exposure of up to 4 hours is fequent. It was also mentioned by some that they could not study without loud music. The other tabulations presented earlier clearly indicated that exposure to some kind of noise was experienced except that the circumstances were not very definite. Proctor reported about hearing loss among military personnel especially the regular members. Borscheusky in his study of organ of corti of animals exposed to noise established definite changes in cochlear cells proportionate to the time of exposure or injury. The study of Hammer of the chemical changes in the ganglion cells after accoustic trauma showed that it was progressive.

In the list of diseases that the students remembered, a greater number was shown to be due to viral causes which could affect the cochlea. This was attributed not only to the organism but also the medicines used. There were other diseases that affected hearing. Some of them occured even before they were born or during birth.

On the otoscopic findings, it was shown that otitis media was the most common finding — 50.6% among

the screened deaf students. This is comparable to the findings of other previous researches and those of the United Nations.

The United Nations reported that Otitis was the most common cause of hearing loss in children which could be reversible if treated early and properly. It reported 17% of all children in India, 15% in Kenya and Uganda, 3.5-6% in United Kingdom, 3.5% in Denmark with hearing loss and otitis media is a major cause. The 51 or 21.51% which were unexplained otostopically should not be overlooked. These were the groups which would be due to the acoustic trauma, disease and medicine that were ototoxic.

In the tabulation showing that the students belonged to the low income group, it could be said that the present study confirmed the findings of the comparative study which reported an increase in the number of individuals with impairment of hearing coming from the developing countries or from poor communities.

Clifford et. al. in 1966 reported more incidence of impaired hearing in South Dakota Indian Schools than in Non-Indian South Dakota Schools indicating high incidence among disadvantaged children which was corroborated by Fay et. al in New York City.

Conclusion

Otitis Media is the most common cause of hearing impairment followed by impacted cerumen.

The social environment contributes to the cause of hearing impairment.

Recommendation

The faculty should be aware of the hearing impairment of students because with proper treatment and advise the effects on their learning and performance of other school activities could be reversible.

Otitis Media as a Cause of Hearing Loss

Author	Year	Location	Total Screened	% with Loss	% with Evidence of Otitis Media
Fowler et. al.	1960	NYC	5,000	83%	23%
Eagles	1963	Pittsburg	4,078	10.7%	.27%
Kapur	1965	Villore, India	875	17.4%	50%
Brody	1965	Alaskan Eskimos	327	38.8%	31%
Hatchuel	1965	S. African Priv. School	1,052	4.1%	1.91%
Hinchcliffe	1965	Jamaica	548	3.2%	0.4%
Farid	1966	Cairo	3,860	6.2%	75.28%
Anderson	1967	Buffalo	24,541	2.9%	None examined
Robinson	1967	Vancouver	6,035	3.9%	12%
Eldridge et. al.	1966	Guam	1,541	16.8%	58.6%
Emerick	1970	Miraj, India	518		10.4%

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RETROSPECTIVE ANALYSIS OF RESULTS OF AUDIOMETRIC TESTS IN FILIPINO CHILDREN

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Ruzanne Caro, M.D.***

INTRODUCTION

Hearing is a faculty of great importance particularly in children because it is the most expediant basis for normal speech and language development. In the light of this fact, the early detection of hearing defect becomes an essential public health concern.

The goal in measuring the hearing sensitivity of pre-school children is to obtain information which will permit the classification of the hearing impairment in terms of degree, type, and configuration. Clinical experience has shown that a high success rate can be obtained with infants, pre-schoolers and older children having developmental delays by utilizing behavioral-conditioning approaches.

A review of literature shows that the following are the possible etiological factors in the causation of hearing impairment among children. These factors include: genetic, abnormal pregnancy and delivery, maternal and childhood infections.

This study will investigate the possible correlation between these etiologic factors and the presence of hearing defects in children seen at the Philippine General Hospital, Department of Ear, Nose and Throat, section of audiology.

MATERIALS AND METHODS

The records of 496 children who underwent evaluation for suspected hearing loss conducted by the Audiology Section of the Department of ENT, UP-PGH from January 1981 to June 1986 were retrospectively reviewed. The parents of these children were interviewed by the audiologist prior to audiometry. A standard questionnaire was used for this purpose. The information elicited includes the name, age, sex, address and referral source,

chief complaint, birth rank, maternal history (gestation and delivery), age of gestation, birth weight and apgar score, perinatal and neonatal history, motor and speech development, childhood infections, head trauma, intake of ototoxic drugs, any professional speech or intellectual assessment made, and parental perception of child's hearing loss.

Two methods of evaluating hearing loss were used. The Ewing technique was adapted as a diagnostic procedure in testing children from 8-9 months to 3-4 years. The distraction test was performed on children who cannot be conditioned for pure tone audiometry. This method consists of observing the child's behavioral response to a variety of familiar sounds. The following test stimuli were used:

1. Vowel "oo" or word "ba" for low frequency sounds
2. G chime bar for mid frequency sounds
3. High frequency chime bar, high frequency rattle and rhythmic repetition of consonant "s" for high frequency sounds

These test stimuli were gradually presented from the minimal level at a distance of 3-4 feet or 6 inches until a response was elicited and immediately measured in a sound level meter (Rion). For a child's response to be rated as positive and decisive, it must involve rotation of both eyes and head to focus vision directly to the source of sound.

For children who are cooperative and can be easily conditioned, play pure tone audiometry was performed. Both air and bone conduction thresholds were obtained at 250Hz to 4000Hz. The results were recorded in an audiogram and interpreted by the audiologist.

RESULTS AND DISCUSSION

Age and sex of subjects — The mean age at which patients were brought to us for audiometric evaluation was 4.7 years. Fig. 1 shows that half of the children was 4 years old or less. Only 8% was less than 1 year old, the
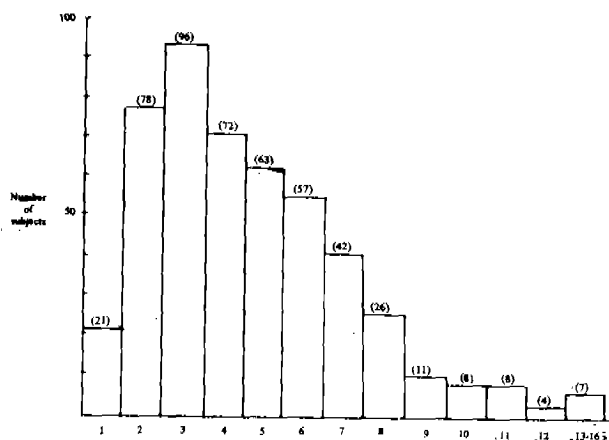

Fig. 1. Age distribution of subjects with suspected hearing loss (N = 496)

ideal time during which hearing loss should be detected. Three-year olds constitute the majority of subjects and this can be taken to indicate the usual time during which parents become bothered enough by their children's defect to seek medical consult. Fig. 2 shows the sex distribution to be approximately equal with a male:female ratio of 1.4:1.
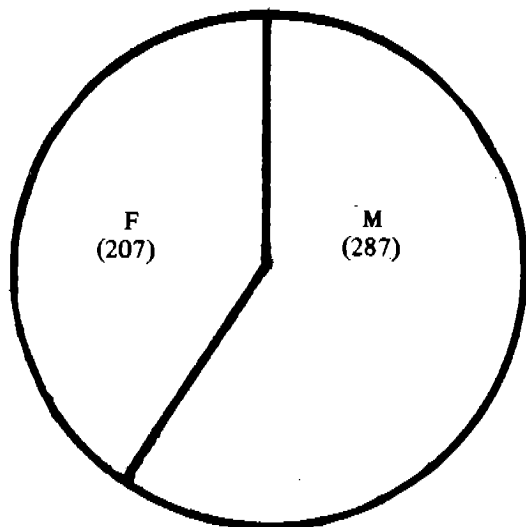
Fig. 2   Sex distribution of subjects with suspected hearing loss

Source of referral — 83% of referral came from otorhinolaryngologists based in Metro Manila and nearby provinces. Pediatricians were the next most frequent source (5%).

Chief Complaint — 85% of patients presented with difficulty of hearing (23%), delayed speech development (25%), or both (40%). About 6% had draining ears. The rest consulted for suspected hearing loss associated with psychomotor retardation, psychological problems or other congenital anomalies.

Pregnancy — One-third of pregnancies (N = 161) were marked by a history of viral infections, bleeding episodes, attempted or threatened abortions and other intercurrent medical problems (Table 1). The seventeen mothers who contracted rubella during their first and second semesters all gave birth to children with severe to profound bilateral sensorineural hearing loss. In addition, 11 out of the 13 cases of measles and the two cases of mumps during the first trimester all had children with severe to profound perceptive loss. Thus, 94% of mothers who developed rubella, measles or mumps during pregnancy gave birth to severely deaf children. The correlation was significant by chi-square test (p∠.01).

Abortifacients usually employed in the first trimester included oral contraceptives, aspirin, quinine and herbs. All eight mothers who took aspirin gave birth to severely deaf offsprings.

Chi-square tests showed no significant correlation between the history of abnormal pregnancy and the occurrence of hearing loss in offsprings.

Table 1.   Abnormalities during pregnancy possibly associated with hearing loss (161 cases)

1.   Maternal Infections — 53 cases
         Systemic viral infections — 21
         German measles — 17
         Measles — 13
         Mumps — 2

2.   Drug intake — 77 cases
         Abortifacients — 38
         Oral antibiotics — 12
         Oral contraceptives — 11
         Oral hypoglycemics,
             anticonvulsants, etc. — 10
         Unrecalled injections — 6

3.   Threatened or attempted abortions — 22 cases

4.   Intercurrent medical problems — 14 cases
         Preeclampsia-eclampsia — 6
         Trauma — 4
         Diabetes, hepatitis, goiter, hypertension — 4

Table 2.   Perinatal injuries possibly associated with hearing loss (153 cases)

1.   Birth asphyxia — 48
         Fetal distress — 28
         Cord coil — 10
         Cyanosis — 10

2.   Convulsions — 40 cases
         Anoxic — 22
         Infectious/metabolic — 18

3.   Hyperbilirubinemia — 30 cases

4.   Neonatal sepsis/meningitis — 14 cases

5.   Congenital anomalies — 14 cases

6.   Cerebral palsy — 7 cases

Delivery — Eighty percent (N = 396) of the subjects were spontaneously delivered per vagina. Thirty-one of them underwent induced or assisted deliveries. The remainder, 69 patients, were delivered by Cesarian section for various undetermined indications. A significant correlation was found between the history of non-spontaneous delivery and resultant hearing loss (p∠.01) but owing to the lack of complete knowledge of the indications for such, no further conclusions can be drawn.

Prematurity and birth weight — Only 3.5% of the subjects were premature; half of them were delivered at eight months AOG. The average birth weight of children with sensorineural deafness was 5.14 lb. This did not differ from that of normal children, 5.29 lb.

Perinatal history — One-third (N = 153) of the children tested had abnormal perinatal history. Table 2 shows that birth asphyxia from various causes was the most frequent perinatal insult with consequent neurological as the next most common. Jaundice occuring in the first week of life was usually due to prematurity, infections or Rh incompatibilities. Four patients born with the congenital rubella syndrome all had severe hearing loss. Aside from this, no other perinatal abnormality significantly correlated with the pesence of hearing loss.

Motor and speech development — The attainment of the milestones for development were delayed in 87% of the children with hearing loss of any type. Speech development was more frequently delayed (61% of cases) than motor development, indicating speech as a sensitive indicator of hearing.

Childhood infections — Table 3 shows that 78% (N =384) of the subjects had a positive history of childhood infections, with measles being the most frequent. Neither measles nor mumps correlated with the presence of hearing loss.

Head trauma — Only 29 children tested sustained any form of head trauma; 15 of them had sensorineural hearing loss, while the rest had normal hearing.

Family history — Out of 59 patients with positive family history of hearing loss, two-thirds (N — 39) had sensorineural deafness. One-third had normal or conductive hearing loss. No correlation between the two variables was noted.

Parental assessment of offspring's hearing loss — When asked whether their child was deaf or not, 317 parents of children with hearing loss correctly assessed their children. On the other hand, 58 parents of children with normal hearing correctly assessed their children. Eight parents thought their children were deaf while tests proved otherwise; 91 thought their children were normal while tests uncovered some degree of hearing loss. A high concordance rate between parental and audiologic assessment of hearing loss was thus obtained.

Clinical Findings — Table 4 shows the data from 122 children with abnormal clinical findings and hearing loss. The most common physical finding was chronic ear infection (55 out of 122 or 40%). Twenty-two patients had psychomotor retardation and an additional 13 had cerebral palsy or seizure disorders.

Table 3. Childhood infections possibly associated with hearing loss (384 cases)

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1. Measles — 300 cases

2. Mumps — 70 cases

3. Ear infections — 59 cases

4. Meningitis — 22 cases

5. Diptheria — 3 cases

Table 4. Abnormal clinical findings possibly associated with hearing loss

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1. Chronic otitis media with tympanic perforations — 15 cases

2. Otitis media with effusion — 40 cases

3. Psychomotor retardation — 22 cases

4. CHS disorders (e.g., seizures) — 13 cases

5. Congenital anomalies and syndromes — 13 cases

6. Possible psychological disorders — 10 cases

7. Congenital rubella syndrome — 3 cases

Audiologic assessment — Figure 3 shows that sensorineural hearing loss predominated and was bilaterally severe to profound (60% of all cases of hearing loss).

The following points deserve emphasis:

1. Our patients sought consultation late in childhood.
2. Sensorineural hearing loss, usually severe to profound and bilateral was the most common lesion.
3. Speech delay and hearing difficulty were the presenting complaints.
4. There was a significant association between rubella during pregnancy and hearing loss on offsprings; other viral illnesses contracted during pregnancy were also associated with hearing loss.
5. There was a significant correlation between history of abnormal delivery and hearing loss.
6. One-third of deaf children had a history of perinatal infections and metabolic derangements.
7. There was a high incidence of measles, mumps and meningitis in children consulting for hearing loss.
8. Delayed speech development was usually present in any type of hearing loss.
9. There was a high concordance between parental perception of offspring's hearing loss and audiologic assessment.
10. While most patients with hearing loss had normal ENT findings, chronic ear infection was the most common disease found in those with abnormal ENT examinations.
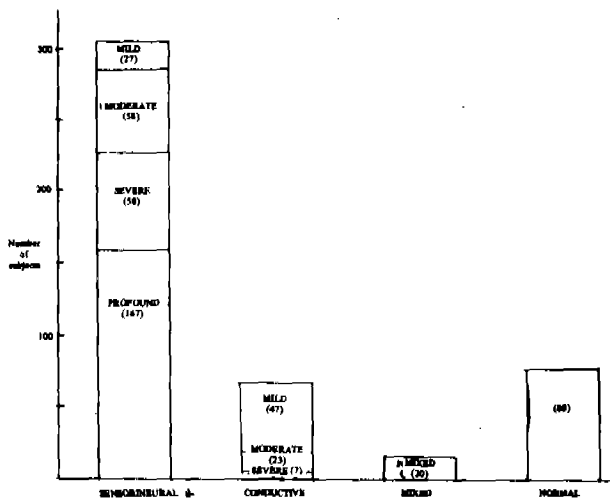
Fig. 3.   Audiometric Results of Subjects
with Suspected Hearing Loss
(N = 496)

SUMMARY

The audiometric results of 496 children with sus-
pected hearing loss were reviewed. Age and sex distribu-
tion were determined and the possible etiologic factors
operating during the mothers' pregnancy, delivery,
infancy and childhood were noted. Various abnormal
clinical findings associated with hearing loss were observ-
ed. The frequency and severity of sensorineural, conduc-
tive and mixed losses were determined. All possible
etiologic factors were tested for correlation. The history
of maternal rubella during pregnancy, abnormal delivery,
delayed speech and motor development and parental
perception of deafness significantly correlated with the
presence of hearing loss.

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CHILDREN WHO REFUSE TO HEAR*

Carolina Vera Llamanzares, MSN, Ph.D.**

Introduction

As the otolaryngologist in the Philippines become more skilled in looking at the-adolescent patient, he becomes more aware of a wholistic approach to him. Specifically the otolaryngologist in the Philippines has become more concerned with the survey of children who refuse to hear or have non organic hearing loss. In a survey done by the writer in 1983 Metro Manila otolaryngologists reported a total of 7 adolescent with non organic case; in 1984 — a total of 8 was reported; in 1985 — a total of 9 was reported and this year a total of 10 was reported. The increase of reported children is an indication of the adolescent (13 to 19 years) need to refuse to hear as an escape from their problems. This stands to be of interest to otolaryngologists.

The adolescent years are divided into three phases, however only the early adolescent period of 12, 13 to 15 years will be discussed. The adolescent development in general is the transition process from childhood dependence to adult autonomy. Longitudinal perspective show the adolescent as divided into the alienated, the vulnerable and the normal when reflecting their psychosocial issues. The alienated are those who get uninvolved and unaffected by the interpersonal world and appear to move in body rather than in spirit. This group drifts to become the antisocial groups. The vulnerable engage in tasks but with difficulty thus feel detached to the interpersonal world. The normal allow personal growth through support of the interpersonal group around them to have self esteem and self identity to enter adulthood.

The early years of adolescence focus on the onset of puberty and physical maturation within the milieu of the family.

Functional perspective call for the physical growth needing rest and nutrition. *Interpersonal growth is contingent on a sense of self and the ability to develop an acceptable social self.* This will evolve from a balanced experience of expectations of increasing autonomy and the opportunity to practice autonomous functioning on the other. Self concept will show the extent of growth that is supported and mastered. This is needed for an identity that is flexible enough to experience different social selves. Cognitive development increase the capacity to conceptualize and articulate experiences and perform intellectualtasks. There is increase sense of morality and spirituality. The emotional development is mostly in a confused, searching phase toward the ideal feeling of generalities such as love, freedom and equality.

Cross sectional perspective or adaptive perspective of the adolescent is seen as a complex interaction of society, behavior and self concept. Self concept is needed to master tasks. This affects the involvement of the adolescent in developmental tasks. The balance between social expectation and mastery will support positive self-esteem and growth. The end will be a young adult identity.

The onset is ten to eleven when early adolescence behavior is experienced through physiological changes.

Psychosomatic Illness in children brings about the wholistic look at the child. When there is stress and the stressful situation is perceived as threatening to the self, the child becomes anxious. The anxiety level becomes higher from mild to moderate to high anxiety level when the child becomes more confused, feelings of rejection, being unwanted, identity loss, failure become overwhelming. The overwhelmed feeling result in a panic situation that calls for immediate and coping with the critical feeling to the whole being of the adolescent. Thus, the choice is in refusing to hear.

There is the unconscious transfer or substitution of the early adolescent fears or emotional blocks to an acceptable sickness of the body. The specific instant the patient loses his ability to hear due to unconscious emotional conflict, he/she becomes relieved of the panicky feeling. This occurs when the adolescent perceives an emotionally loaded situation as so overwhelming and needed to be free of unconsciously forgotten situation. The process of loaded emotions becoming transformed to physical manifestation will occur in the adolescent. The overwhelmed adolescent becomes an individual whose life concerns are expressed in the form of the unconscious, involuntary, automatic part functioning on a vegetative level, symbolizing, overt the performances of the total person. The whole system participate in the dysfunction of the part. This time the emotional conflict is helped to be expressed by a body organ, in these cases through the sense of hearing. The flight to hearing loss becomes a symbolic body protest of the adolescent.

Statement of Problem

This paper deals with 10 female children who refused to hear. They were eleven to thirteen years of

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age. All belonged to the early phase of adolescent. All were referred by an otolaryngologist after the interpretation of audiometrical testing results indicating normal physiological hearing capacity. The psychological perspective becomes imperative to determine the needed care for the child to function wholistically.

Significance of the Study

This paper is the break through for the nurse psychologist because the Asean otolaryngologists have opened the congress as the venue to listen to the importance of the care of the child client holistically.
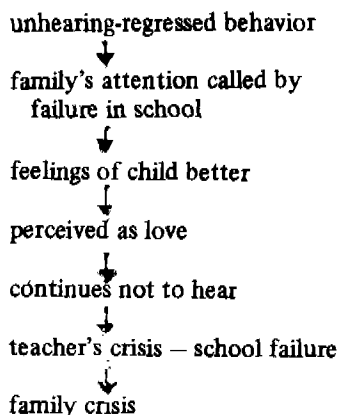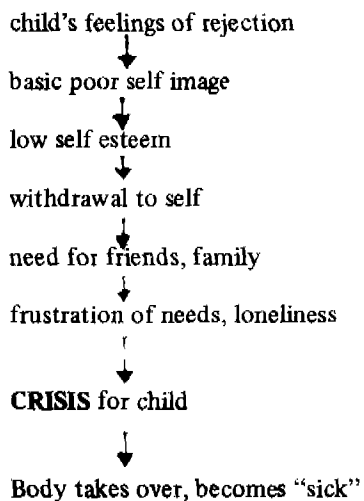
Review of Literature

In 1959, Dixon and Newby reported 39 out of 50 children who were able to converse despite claiming hearing losses. Bailey and Martin (1961) reported a case of a boy who was doing poorly in a normal hearing school and wished to study in a deaf school where his parents and sister taught. Luncio, Jauhiarnen and Gelhar (1969) reported 3 siblings of the same family with parental conflicts. When resolved the 3 sisters heard normally. In 1963, Barr reported 32 cases of poor school performers in scholastic tasks and whose family had intellectual growth as priority concern who elected unconsciously to have "pseudohypacusis." Katz 1978 claimed that the pseudohypacusis in children appears to occur with sufficient frequency to cause concern. Most of the children who experience pseudohypacusis are hostile. (Ventry, Juer and Charklin, 1965).

All the above experts give the reality of children who refuse to hear as a result of an emotional conflict perceived as an overwhelming situation needing drastic coping mehcanism.

Conceptual Framework:

A. Without Therapy

child's feelings of rejection
↓
basic poor self image
↓
low self esteem
↓
withdrawal to self
↓
need for friends, family
↓
frustration of needs, loneliness
↓
CRISIS for child
↓
Body takes over, becomes "sick"

unhearing-regressed behavior
↓
family's attention called by
failure in school
↓
feelings of child better
↓
perceived as love
↓
continues not to hear
↓
teacher's crisis — school failure
↓
family crisis

B. With Therapy

CRISIS
↙   ↘
unhearing   hearing
↘
therapy
↙   ↘
expresses   resistance
feelings
through   ↓
drawings,
mutual story   ↓
telling   unhearing
↓
CHOICE of hearing
↓
verbalizes feelings
↓
acceptance by parents, friends, teacher
↓
acceptance of self
↓
self-esteem increases
↓
performance

Method

Subjects:

The participants were 10 female, ages 11 to 13 years. They were from the middle to upper middle class families, schooling in all girls private schools. They were middle children. Their siblings were brighter or prettier than them. Their families' priority is intellectual performance.

Baseline during referral and assessment of each subject:

1. all were normally hearing before referral to otolaryngologist

2. school performance — all 10 have failed sub-
   jects (below 75%)
3. history shows all had confrontations with some-
   one in authority (grandparents, parents) pre-
   vious to non-hearing behavior.
4. feels irritable, sad, unimportant and useless
   (depressed)
5. withdraws from interpersonal interactions, do
   not go to peer parties, participated only in
   family get together.
6. all were referred due to interpretation of refer-
   ring otolaryngologist of audiometric tests
   results as having normal hearing capacity
   because of the reflex threshold at 80.90 deci-
   bels of the 10 children

Procedure

Therapeutic Process:

I. **Assessment Phase** to determine why child choose
   to not hear:
   A. Observation of Family Interaction during
      interview.
   B. Referrals were due to Poor School Performance
      that resulted in failures.
   C. "Draw a Person" is asked of the child for self-
      portrayal.
   D. Draw a Kinetic Family Drawing is asked of the
      child to express feelings about his family.
   E. Mutual Story Telling Technique is done to
      evolve primary difficulty and possible solu-
      tions to felt feelings through written stories.
   F. Behavioral Observations like definite refusal to
      hear selectively of people, places and situations.

II. **Care Planning Phase**
    A. Family Conference where family, therapist
       agree on:
       1. strengths and weaknesses of child
       2. emotional cry for help
       3. contract to help child
       4. parental role
       5. parental means to help child
       6. family methods to help child
    B. Visit to School included in the following:
       1. teacher's observations
       2. therapist's observation of child
          a. with teacher in classroom
          b. with friends/peers outside the classroom
    C. Contract with Child — as to time, place and
       objective of therapeutic one hour sessions.

III. **Therapeutic Phase** — crisis intervention for a period
     of 3 weeks for the child were divided into:
     A. 10 individual sessions with child
        1. drawings of self, family and friends.
        2. mutual story telling technique about

drawings and expressions of feelings and
possible solutions.
B. Three parental conferences were directed
   toward child's problems.
C. One school visit and observation to coordinate
   with teacher and friends.
D. GOAL of therapy were twofold namely:
   1. self awareness of child
   2. self acceptance of child

IV. Evaluation Phase based on a descriptive behavioral
    changes done on the fourth week of treatment were
    the following:
    A. Descriptive behavioral changes content when
       interacting with child during therapy.
       1. General Gross Body Posture
       2. Facial Expressions per
          a. hearing positive comments
          b. hearing negative comments
          c. hearing commands (chores, work, assign-
             ment)
       3. Level of Verbal Reactions to Communica-
          tion
          a. Denial — non hearing
          b. Selective Reaction, hears when he likes.
          c. Appropriate Reaction immediately hears
             when talked to.
          d. Expressions of self. confidence, self
             assertion, self-esteem.
    B. Teachers' Observations based on
       1. child's absences
       2. child's selective hearing outside classroom
       3. child's behavioral observations during en-
          counters with child
       4. child's participation in class activities such
          as recitation, group work.
       5. interaction with peers
    C. Peers Observations done by best friends were:
       1. Behavioral observations when interacting
          with child in school.
       2. Behaviors outside school, in parties
    D. Home Observations done by family in these
       situations:
       1. at meal times
       2. while viewing the television
       3. interactions with child and
          a. parents
          b. siblings
          c. helpers/driver/gardener

V. Follow up was done by therapist during the follow-
   ing months;
   A. Semestral — March and December
   B. Three Years
      2X = 1983   March and December
      2X = 1984   March and December
      2X = 1985   March and December

Total 6 follow-up
   C. Interview with child one hour sessions with
      child.
   D. Reports of Home and School Observations
      by parents as given to therapist.

Baseline		First Year Follow-up	Second Year	Third Year
1) 11 year old second of four ☐○○☐	failure in 2 subjects	average, passing all	average, passed	above average academics
private school middle class	withdrawn	friends, art lessons	friends, joined school art club	parties once a week interschool art
2) 11 year old second of three ○○☐	failure in one	average, passed all	average, passed all	above average academics
middle class private school	withdrawn	swimming, piano	recital, friends country club swimming	interschool parties interclub swimming
3) 11 year old fourth of six ○○○○○☐	failure 3 subjects	average, passed all subjects	above average	above average
private school above upper middle	withdrawn	family outings swimming, ballet	parties in school recital	officer in student council interschool parties toe shoes ballet
4) 12 year old second of the four ○○☐☐	failure 2 subjects	average, passed all	above average excel in Math	above average excel in Math and Science
private school upper middle class	withdrawan	swim, ballet art lessons	school ballet and art club	drama club with other schools
5) 12 year old second of three ○○☐	failure in one subject	average, passed all	above average	above average
private school upper middle class	withdrawn	tennis, white belt-karate	green belt-karate class C-tennis	sec. of student council jr. black belt-karate class C tennis

*   ○ Female
☐ Male

GROWTH

Baseline		First Year Follow-up	Second Year	Third Year
6) 12 year old 3rd of five ○○○☐☐	failure in one subject	passed all average	average academics	average academics
private school upper middle	uncontrolled irritable outbursts	piano lessons	piano recital	piano, art lessons interschool club
7) 12 year old 2nd of four ○○☐☐	failure in one subject	passed all superior	superior academics	superior academics
private school upper middle	withdrawn	painting lessons ballet lessons	school art club for painting	won 2nd places in interschool art competition
8) 13 year old 3rd of five ○☐○○○	failure in one subject	passed all above average	superior academics	superior academics
private school upper midle	aggressive	singing lessons	choir member interschool singing	singing champion 2nd place Manila Song Fest
9) 13 year old 3rd of four ○○○☐	failure in one subject	passed above average	superior academics	superior
private school upper middle	aggression	stage crew school plays	interschool plays	national crew
10) 13 year old 2nd of five ○○☐☐☐	failure in one subject	passed above average	superior	superior
private school middle class	aggression	choir school	soloist glee club in parish	interparish soloist

Results

After the three weeks crisis intervention, all 10 children went back to school, all did their school work, all passed their final examinations in March, 1982.

After a year, six were doing average work three did above average and one superior school performance. All of the 10 girls joined various individual activities as ballet, karate, singing, choir, drawing, painting lessons.

After two years, the growth continued toward positive self esteem and self identity like school activities as art club, choir and dramatic clubs.

On the third year, the ten children continued to grow into the second phase of adolescent with self worth, self esteem as shown in participation in inter-school activities, national singing contests, performance in dramatic plays outside Metro Manila and ballet recitals. Improved scholastic performance was indicated by the grade results where one was average level, five were above average level and four superior levels.

The bar graph will indicate their continued self confidence, self esteem and growth.

Discussion

The above results have indicated the children at risk at their early adolescent, where physiological need to be beautiful and accepted in the primary psychological need. The study has shown how the early adolescent's need becomes so intense that a psychosomatic solution becomes imperative. With these two guiding principles the otolaryngologist become more inclined to see the child/client as made of subsystems. The integrated system perspective of the child client will immensely provide a comprehensive care for the child. The preventive aspect of the integrated perspective of care for the child must be emphasized because it saves the child from hearing aids, failures in school, rejection of the family, unrepairable lack of self esteem and depression.

Conclusion

The study showed that:

1. Hearing Loss when caused by emotional conflicts is a response to an overwhelming situation and the body, specifically the ear is substituted to express the emotional conflict.

2. When a child is seen as an integrated person, the otolaryngologist becomes sensitive to the different subsystems of the whole system of the child.

3. Mutual Story Telling Technique becomes a therapeutic approach that speeds up therapeutic response of child toward mastery of the unexpressed emotional block.

4. Early Adolescent Phase of normal growth and development is a period where the child's preoccupation emotionally lies in the physical growth. This preoccupation makes the child vulnerable to depression and withdrawal reactions to situations perceived as overwhelming and helpless feelings.

Recommendation

The study if duplicated must have the following criteria for its subjects:
1. bigger population
2. different age groups
3. both male and female
4. different economic level
5. different intellectual levels
6. different phases of adolescence

The study needs also a more accurate statistical outcome baseline to explicitly show to non therapists the way to help the child and the awareness of psychological caring as an integral subsystems of the whole child.

The study could focus on the specific effects of adolescent's developmental tasks in order to isolate the factor and minimize/prevent the crisis shown in the study as experienced by the 10 female children.

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Name: _____ Age: _____ Sex: _____ Date: _____

Address: _____

Parent's Occupation: Father: _____ Mother: _____

School: _____

School Level: Please Check: Eementary: ____ High School: ____ Year/Grade_____

College: What Course? _____ Year: _____

School Location: _____

Please answer the following questions honestly. Put a check (√) on your answer.

1. Is there anyone in your family who is deaf?
   ____ Yes   ____ No
   If Yes, who?   Father   _____   Mother   _____
                  Brother   _____   Sister   _____
                  Grandfather _____   Grandmother   _____
                  Others, please specify relationship _____

2. Have you ever been sick with
   _____ a) P.T.B. — Pulmonary tuberculosis   _____ f) Whooping cough
   _____ b) Measles "Tuko"   "Tospirina"
   _____ c) Chicken pox "Bulutong tubig"   _____ g) Diptheria "dapulak"
   _____ d) Mumps "bayeke"   _____ h) Others, please specify
   _____ e) Typhoid fever "tipus"   _____
   What medicine did you take? _____ How many days? _____

3. Have you undergone operation? Yes _____ No _____
   If Yes, on what? _____

4. In relation to the sickness (Question No. 2) and/or operation you underwent,
   (Question No. 3) which of the following medicines did you take and how long?

Medicine	Length of Medication				
	1-2 Days	3 Days	7 Days	1 Month	Other No. of Days
____ a) Streptomycin	____	____	____	____	____
____ b) Dehydrostrectomycin	____	____	____	____	____
____ c) Garamycin	____	____	____	____	____
____ d) Chloromycetin	____	____	____	____	____
____ e) Kantrex	____	____	____	____	____
____ f) Polymixin B	____	____	____	____	____
____ g) Aspirin or cortal	____	____	____	____	____
____ h) Quinine	____	____	____	____	____
____ i) Viomycin	____	____	____	____	____
____ j) Pharmacetin	____	____	____	____	____
____ k) Vancomycin	____	____	____	____	____
____ l) Ristocetin	____	____	____	____	____
____ m) Any other or additional medicine taken. Identify _____					

5. To the best of your knowledge were you born normal?
   _____ Yes   _____ No

6. Do you listen to the radio? _____ Yes   _____ No

7. If so what is the average number of hours you spend listening? Please check.
   _____ a) One hour per day   _____ c) 4 hours per day
   _____ b) 2 hours per day   _____ d) Whole day up to midnight
                                    _____ e) Others, please specify
                                    _____

   Do you view television? Yes _____   No _____

   If Yes, for how long?
   _____ a) One hour everyday   _____ d) One hour per week
   _____ b) 2 hours per week   _____ e) 2 hours per week
   _____ c) 4 hours everyday   _____ f) Others, please specify
                                    _____

8. How do you tune in your radio or T.V.?
   _____ a) softly _____ b) moderately _____ c) loudly
9. Are you living or have you lived in an area near a factory, air/base/port, market, commercial center or any other noisy place?
   _____ Yes _____ No
   If Yes, what source of noise, please check:

   _____ Blaring of horns   _____ Generator
   _____ Traffic-passing busses   _____ Machine
            and jeeps   _____ Others, please specify
   _____ Airplane

10. Have you ever been near an explosion of:
    _____ Dynamite   _____ Firecrackers
    _____ Grenade   _____ Others, please specify

                           _____

11. Have you ever had a head injury?
    _____ Yes _____ No
    If Yes, what is the cause?
    _____ a) Vehicular accident
    _____ b) Fall on ground
    _____ c) Blow to the head by what?
             _____ Wood
             _____ Iron/Steel bar or lead pipe
             _____ Stone

         d) Hit across the ears by: Please check:
             _____ Someone's hand
             _____ Wood
             _____ Iron/Steel bar or lead pipe
             _____ Stone

CAUSES OF VERTIGO
IN THE PHILIPPINES, 1980-86**
(Part II)

Carlos P. Reyes, M.D.*

In another article published recently(**) covering the period 1983-85, 367 patients complaining of vertigo were studied and various etiological causes determined. In that series 53.95% were attributed to central causes, 40.87% due to peripheral diseases, 3.27% due to psychogenic causes, and 1.9% were undetermined. In that article the leading cause of vertigo was Vertebro-Basilar Insufficiency (31.9%). Since the time the data was analyzed, an additional 83 patients covering Jan. to Oct. 1986 were added, and one each from 1980 and 1982 were included because of good documentation. In the present review of 452 cases, the trend for the most common cause(s) was reversed and peripheral causes (54.2%) now constitute the majority, although Vertebro-Basilar disease was still the leading single cause of vertigo at 27.21%. Positional Vertigo (22.1%) has emerged as the most frequent peripheral disease and is the second most common cause of vertigo.

The same work-up and protocol employed for the 1st article were carried on with the present study. These are briefly summarized in table 1. The standard Dizziness Questionnaire was also utilized as were lab tests like Audiometery, Electronystagmography, Brainstem Evoke Potentials, routine X-ray studies and Polytomes, and CT-Scans as required. Because of fairly good long-term follow up of 1-2 years earlier patient histories could be reviewed, and diagnosis could be reclassified if patterns of disease were not typical, or if new data became available. This was true with suspected Multiple Sclerosis, wherein all cases were reviewed and diagnoses other than the original one established. Cases which did not meet the criteria were reclassified. New etiologies like

Labyrinthine Membrane Rupture and Vestibular Concussion were added making 22 etiological causes. In Trauma (Head), 2 different etiologies emerged: Head Trauma (Central Cause) and Vestibular Concussion (Peripheral), and will be explained in the text. All new data were appended on the existing data diskettes using Database-II program (Trade Mark of Ashton-Tate, Culver City, Calif.).

I. CENTRAL CAUSES OF VERTIGO

Still the-leading single entity causing vertigo in these two series, Vertebro-Basilar Insufficiency presents as lightheadedness, floating sensation over a period of months or years, and is practically not provoked by postural change. There can be gait disturbances or unsteadiness and transient, unprovoked fainting spells can be common. Since the peak age incidence is between 60-69 years, it is not uncommon to find various degrees of age-related hearing loss; incipient, mature and post-Cataract extraction states, and some have experienced dysarthria and dysphagia. Refractive errors aggravate the symptoms of imbalance. Laboratory findings at ENG (Electronystagmography) may show vertical and horizontal spontaneous nystagmus, no positional nystagmus and normal caloric tests; there could be enhanced caloric nystagmus with eyes opened than when closed (failure of nystagmus suppression or enhanced Visual Supression Test). Brainstem evoked potentials may show morphologic abnormalities not explainable by hearing changes. Prolongation of InterPeak latencies I-V, III-V, can be found bilaterally. CT-Scan of the head may show atrophic, ischemic and vascular changes.

I. CENTRAL CAUSES

	DIAGNOSIS	NUMBER		PERCENT	
a)	Vertebro-Basilar Insufficiency	123	(117)	27.21	(31.88)
b)	Multiple Sclerosis (definite)	27	(24)	5.97	(6.53)
c)	Multiple Sclerosis (probable)	8	(31)	1.77	(8.44)
d)	Retrobulbar Neuritis	12	(4)	2.65	(1.08)
e)	Head Trauma	2	(2)	0.44	(0.54)
f)	Hypothyroidism	2	(2)	0.44	(0.54)
g)	Postural Hypotension	2	(2)	0.44	(0.54)
h)	Brainstem Hemorrhage	1	(1)	0.22	(0.27)
i)	Brain Tumor, Metastatic	1	(1)	0.22	(0.27)
j)	Parkinson's	1	(1)	0.22	(0.27)
k)	Polycythemia Vera	1	(1)	0.22	(0.27)
l)	Stokes-Adams Syndrome	1	(1)	0.22	(0.27)
m)	Vertiginous Epilepsy	1	(1)	0.22	(0.27)
n)	Vascular Headache	1	(—)	0.22	(—)

TABLE I. Central Causes of Vertigo. Numbers in parenthesis refer to figures taken from the earlier study of 367 cases. Blank spaces inside parenthesis indicate no reported cases.

Multiple Sclerosis (definite, proven cases) comprise the second most common central cause. This affects younger adult males and females, whose initial manifestation would be visual disturbances unexplained by refractive errors. There were a few patients below 20 years of age. The visual problem can become manifest

by staring long enough on a wall, newspaper, and at night on neon lights, incoming headlights. It is typically paroxysmal, and may disappear during periods of remission. Other symptoms include paroxysmal muscle weaknesses or paralysis of the upper or lower extremities, severe headaches, nausec, vomiting and vertigo and nystagmus, dysarthria and dysphagia. All these patients have undergone recurrence and remissions. Useful laboratory confirmatory tests include Visual Evoked Response, for which we created our own Otomed Pattern Reversal Visual Evoked Response machine language program for fullfields, temporal and nasal hemifields. All proven MS cases were found to have bilateral VER abnormalities. All had "central patterns" at Electronystagmography (ENG), although only one had abnormal Brainstem Evoked Potentials. All had elevated CSF IgG levels. Of the probable MS cases in the previous series (31 cases), 3 were later proven definite MS; 8 others were included under Retrobular Neuritis, while the last 8 remained as still probable MS.

PERIPHERAL CAUSES 1986 & 1985

	DIAGNOSIS	NUMBER		PERCENT	
a)	Positional Vertigo	100	(38)	22.21	(10.62)
b)	Vestibular Neuronitis	43	(30)	9.51	(8.17)
c)	Labyrinthitis	33	(27)	7.30	(7.35)
d)	Meniere's Disease	29	(26)	6.41	(6.81)
e)	Ototoxicity	19	(15)	4.19	(4.08)
f)	Acoustic Neuroma	10	(8)	2.21	(2.17)
g)	Meningitis (Post)	3	(3)	0.66	(0.81)
h)	Vestibular Concussion	3	(—)	0.66	(—)
i)	Rupture, Labyrinthine Membrane	2	(—)	0.22	(—)
j)	Motion Sickness	1	(1)	0.22	(0.27)
k)	Otosclerotic Inner Ear Syndrome	1	(1)	0.22	(0.27)
l)	Ramsay-Hunt Syndrome	1	(1)	0.22	(0.27)

TABLE 2. Peripheral Causes of Vertigo, 1986. Figures in parenthesis refer to data taken from the earlier 1985 report.

Not all Retrobulbar Neuritis cases experience vertigo; some of those who presented with this symptom were included in this study. All had bilateral VER abnormalities; ENG findings were not consistent as most had central patterns, but others were normal. BERA were all normal. CSF IgG were not elevated and some had contact with Ethambutol and Myambutol. All had experienced visual losses for the first time.

Although the common denominator between Head Trauma and Vestibular Concussion was the same, those classified as Head Trauma had no radiologic evidence of fracture, and had central ENG patterns.

Primary or Metastatic Brain Tumors are among the less commonly encountered causes of vertigo. The only female in this series presented as chronic headache and continuous dizziness (lightheadedness). BERA revealed abnormalities on the right tracing: disappearance of the later waves VI, VII, indicating a lesion above the Brainstem at the right Parietal Lobe. When this finding is present the Middle Latency (P-35 wave) should be sought

by reconfiguring the computer time window. The P-35 response is the evoked potential originating from the Primary Auditory cortex in the Temporal lobe when sound passes to conscious awareness. Its absence or delay may indicate a lesion in the adjoining area of the Parietal lobe.

ALL CAUSES OF VERTIGO 1986 & 1985

	DIAGNOSIS	NUMBER		PERCENT	
1.	Vertebro-Basilar Insufficiency	123	(117)	27.21	(31.88)
2.	Positional Vertigo	100	(38)	21.12	(10.62)
3.	Vestibular Neuronitis	43	(30)	9.51	(8.17)
4.	Labyrinthitis	33	(27)	7.30	(7.37)
5.	Meniere's Disease	29	(25)	6.41	(6.81)
6.	Multiple Sclerosis (definite)	27	(24)	5.97	(6.53)
7.	Ototoxicity	19	(15)	4.20	(4.08)
8.	Retrobulbar Neuritis	12	(4)	2.65	(1.08)
9.	Acoustic Neuroma	10	(8)	2.21	(2.17)
10.	Vestibular Concussion	3	(—)	0.66	(—)
11.	Meningitis (Post)	—	(3)	—	(0.66)
12.	Head Trauma	—	(2)	—	(0.44)
13.	Postural Hypotension	—	(2)	—	(0.44)
14.	Rupture Labyrinthine Membrane	2	(—)	0.44	(—)
15.	Otosclerotic Inner Ear Syndrome	—	(1)	—	(0.22)
16.	Ramsay-Hunt Syndrome	—	(1)	—	(0.22)
18.	Polycythemia Vera	—	(1)	—	(0.22)
19.	Stokes-Adams Syndrome	—	(1)	—	(0.22)
20.	Vertigenous Epilepsy	—	(1)	—	(0.22)
21.	Vascular Headache	1	(—)	0.22	(—)
22.	Parkinson's Disease	—	(1)	—	(0.22)

TABLE 3. Causes of Vertigo in order of frequency, 1986. Figures in parenthesis refer to data taken from the earlier report. Blank spaces indicate no new cases added to the existing list.

II. Peripheral Causes of Vertigo:

Positional Vertigo is the most common Vestibular cause of Vertigo. There are two varieties: Positional Vertigo of Otolithic Origin (PVOO) which implicates either or both the Maculae of the Utricle (gravity and position sense), and that of the Saccule (angular acceleration and deceleration). Positional Vertigo of the Benign Paroxysmal type (PVBP) implicates the cupula of the semi-circular canal Ampullae ("Cupulolithiasis" of Schuknecht) is slightly less frequent than the former. Symptoms of PVOO differ from PVBP. Vertigo induced by sudden change in posture while ambulant, e.g., turning head from left to right, bending or stooping and returning head to neutral position, vertigo induced inside moving elevators or escalators, are typical of PVOO When a patient experiences vertigo while turning his head to the left, or to the right in the lying position, and feels no vertigo when ambulant; the likely cause is PVBP! There is normally no accompanying hearing loss in either; but if present, this may be due to other causes. These conditions affect males and females equally with peak age incidence at 30-39 years.

ENG easily reveals the differences: vertical upbeating nystagmus during positional tests (PVOO), while

AGE/SEX DISTRIBUTION

RANGE	NO.	MALE	FEMALE
00–09	0	0	0
10–19	0	0	0
20–29	5	2	3
30–39	17	7	10
40–49	16	8	8
50–59	24	11	13
60–69	35	17	18
70–79	21	7	14
80–89	5	2	3
TOTAL	123	54	69
—%—	100 %	43.9	56.1

TABLE 4. Age & Sex distribution of cases of Vertebro-Basilar Insufficiency.

POSITIONAL VERTIGO

RANGE	NO.	MALE	FEMALE
00–09	1	1	0
10–19	1	0	1
20–29	8	3	5
30–39	30	11	19
40–49	24	13	11
50–59	15	7	8
60–69	17	8	9
70–79	3	0	3
80–89	1	1	0
TOTAL	100	44	56

TABLE 5. Age & Sex distribution of all cases of Positional Vertigo.

VESTIBULAR NEURONITIS

RANGE	NO.	MALE	FEMALE
00–09	0	0	0
10–19	0	0	0
20–29	3	0	3
30–39	14	9	5
40–49	9	2	7
50–59	6	2	4
60–69	8	3	5
70–79	3	1	2
80–89	0	0	0
TOTAL	43	13	30

TABLE 6. Age & Sex distribution of Vestibular Neuronitis, the 3rd most common Cause of Vertigo, 1986.

horizontal nystagmus beating to the lowermost ear early during the test, which could be followed by a compensatory nystagmus beating to the opposite unaffected ear

is seen in PVBP. Caloric test is normal and symmetrical in both. BERA is normal in almost all cases; except among patients with varying degrees of hearing loss.

Vestibular Neuronitis typically follows a bout of common cold and Influenza. In this tropical setting of high relative humidity, heat and rain, the incidence of upper respiratory tract infection remains high. The risk of contracting this illness seems higher than in countries in the moderate temperature zones. With an incidence of 9.51%, VN is the third most common cause of vertigo. The history is typical: following an upper respiratory tract infection by several weeks, a sudden onset of severe vertigo, nausea and vomiting is experienced by the patient; followed by several less severe and milder attacks until remission occurs. Occasionally there is a chronic protracted course which does not entirely respond to conservative treatment. Since it involves Scarpa's Vestibular Ganglion inside the Internal Acoustic Canal, there is no hearing loss. ENG reveals a consistent reduction in Vestibular response unilaterally on the affected ear. BERA is usually normal except when there is hearing loss due to other causes.

LABYRINTHITIS

RANGE	NO.	MALE	FEMALE
00–09	0	0	0
10–19	3	3	0
20–29	9	2	7
30–39	8	4	4
40–49	5	2	3
50–59	4	1	3
60–69	4	3	1
70–79	0	0	0
80–89	0	0	0
TOTAL	33	15	18

TABLE 7. Age & Sex distribution of all cases of Labyrinthitis.

Labyrinthitis is the fourth most common cause of vertigo (7.30%). Only 3 out of 33 cases had Bacterial Labyrinthitis due to chronic middle ear disease. All others had viral etiology: sudden hearing loss, sudden severe vertigo with nausea and vomiting for many episodes, with gradual return of equilibrium. In most cases hearing remains depressed and those that recover after 12 months never achieve hearing levels before the onset of the disease. Both males and females are equally affected with peak age incidence at 20-39 years. Hearing test reveal severe to profound unilateral hearing loss, absent vestibular response to bithermal caloric irrigation on ENG, and abnormal tracings with unrecordable BERA potentials on the affected side. Plain X-rays of the Internal Auditory Canals reveal normal and symmetrical structures. During the acute phase nystagmus beats away from the affected ear but becomes localized to the same side of the lesion in the chronic stage. This disease should be differentiated from Vestibular Ototoxicity where the cochlear and Vestibular involvement

may be bilateral. Cerebello-Pontine Angle tumors may also have to be ruled out.

Meniere's Disease affects only about 6% of dizzy patients. Its classic manifestations are: fluctuant hearing loss, fullness, episodic vertigo, and tinnitus. Hearing improves to usual levels after each attack (fluctuant) and all other symptoms improve until the next attack. Two sub-varieties of Meniere's are recognized: Cochlear Hydrops wherein fullness, fluctuant hearing loss and tinnitus occurs, and Vestibular Hydrops, where fullness precedes vertigo, but no hearing loss is experienced. Although initially unilateral, 2 cases had bilateral involvement. There is a slight female predominance: 15 females and 12 males; age incidence was 50-59 with the youngest at 10 years and eldest being 72. For prognosis Watanabe's classification was adapted and cases classified according to Electrocochleography, audiometry and symptoms (see illustration). Stage I or early Meniere's cases are those who experience fluctuant hearing loss and episodic vertigo occasionally with good chances of having their symptoms reversed and treated. Since the disease is still localized to the apical turn of the Cochlea, where the Basement Membrane is more flexible and wider in area, ECogH appears normal because its

active electrode is placed near the round window at the basal turn. Audiometric study only shows low-tone SNHL and vestibular response could be reduced or even normal.

In Stage II the usual symptoms of fluctuant and established Menieres disease are often found. Fluctuant hearing loss and episodic vertigo are more common and the attacks are more regular or have increasing frequency. ECogh will now reveal an enhanced negative summating potential (SP) while the negative action potential remains sharp and well defined. The ratio between the SP and AP will be 50% or greater (normal range = 0.15% – 0.45%). The enhanced negative SP is an electrical representation of the distention of the Basement Membrane which occurs in Hydrops and coincides with fullness sensation in the affected ear. During the interval between attacks, the SP may regress to normal amplitudes, and represent a normal SP/AP ratio of 0.15% – 0.25%. In State 3, the disease is firmly established and hearing loss is no longer fluctuant. Vertigo may still be episodic or chronic non-positional event. Many will only experience fullness and tinnitus, which could be persistent. ECoGH will reveal a markedly enhanced SP and an AP of lower amplitude. SP/AP ratio will remain between 80% to 100%. By staging patients the progression of the illness can be studied and the most appropriate form of treatment given.

Acoustic Neuromas constitute about 2% of dizzy patients. Among our 10 patients, 9 were females while only 1 was male. Peak age incidence was 30-49 years; the youngest female was 25 and the eldest female was 79. Tumor size ranging between 5 cm – 6 cm, were found among 5 females; the only male had a 6 cm mass. Four females had small lesions below 1 cm. in diameter but one refused surgery, while another was lost to follow up. Whenever the presenting signs and symptoms are unsteadiness, unilateral hearing loss in a female patient, watch out for an Acoustic Tumor. When the lesion is small these may be the only manifestations. With larger tumors as those found in elderly females, there could be additional signs like headaches, ataxia, 5th and 7th nerve palsies, Brun's Nystagmus, severe deafness and tinnitus. ENG shows reduced caloric

MENIERE'S DISEASE

RANGE	NO.	MALE	FEMALE
00–09	0	0	0
10–19	1	0	1
20–29	6	1	5
30–39	12	5	7
40–49	2	1	1
50–59	6	3	3
60–69	1	0	1
70–79	1	1	0
80–89	0	0	0
TOTAL	29	11	18

TABLE 8. Age & Sex distribution of all cases of Meniere's Disease.

MULTIPLE SCLEROSIS

RANGE	NO.	MALE	FEMALE
00–09	0	0	0
10–19	5	4	1
20–29	8	4	4
30–39	9	6	3
40–49	3	1	3
50–59	2	1	1
60–69	0	0	0
70–79	0	0	0
80–89	0	0	0
TOTAL	27	16	11

TABLE 9. Age & Sex distribution of all proven cases of Multiple Sclerosis.

ACOUSTIC NEUROMA

RANGE	NO.	MALE	FEMALE
00–09	0	0	0
10–19	0	0	0
20–29	1	0	1
30–39	5	1	4
40–49	1	0	1
50–59	0	0	0
60–69	2	0	2
70–79	1	0	1
80–89	0	0	0
TOTAL	10	1	9

TABLE 10. Age & Sex distribution of all cases of Acoustic Neuromas.

response (early) or total absence of vestibular response (late), while BERA may reveal certain characteristics: abnormal morphology characterized by markedly prolonged waved V latency (greater than 6.8 mSecs.), prolongation of interpeak latencies I-III (most consistent early sign) and I-V. There may be total absence of evoked potentials as in large tumors, or an abnormality on the non-affected side which denotes brainstem compression and shift across the midline. In these cases one should also check out the Middle Latency Response for abnormalities in P-35 waveform and latency. CT-Scan can easily detect tumors of 2 cm. or greater size. Most intracanalicular tumors escape detection (less than 1 cm.) and one may have to resort to Cisternal Myelography or Polytome-Pantopaque procedure. Lesions of 1 cm. – 2 cm. may be demonstrated by gas-insufflation CT-Scan. The combination of ENG, BERA, and CT-Scan gives the physician the best chances of detecting this lesion at the earliest opportunity.

Vestibular Concussion differs from Head Trauma in the following points even if both have the same etiology. Vestibular Concussion is always associated with fractures of the skull, hearing loss, vertigo which may be positional, occasional VII nerve palsy. ENG always shows reduced vestibular response or patterns consistent with peripheral lesions.

Rupture of the Labyrinthine Membrane is frequently associated with changes in atmospheric or barometric pressure gradient, such as when flying in an aircraft, scuba diving or at the approach of a tropical storm (low barometric pressure). There is frequently reported a sensation of something piercing or cracking in the affected ear but usually no pain is felt. Following this sensation there is progressive vertigo and hearing loss which does not recover. Hearing test shows severe to profound hearing loss while ENG may be normal or reduced in the affected ear. If the fistula is allowed to follow its course, most patients develop permanent hearing loss and chronic vertigo. For this reason, as soon as this entity is recognized within a couple of weeks from the onset, an emergency tympanotomy opening is performed and fascia or cartilage placed at the Round Window Niche, or sometimes the Oval Window, if a fistula is identified.

III. Psychogenic Causes

All patients in this series complaining of vague vestibular symptoms, paroxysmal dizziness, headaches, intolerance to noise and crowds, insomnia, persistent tinnitus; whose lab tests were normal, were considered as due to Psychogenic factors. The most common underlying cause was Depression and not Anxiety as most doctors suspect initially. Symptoms improve and become more tolerable after a course of anti-depresants.

IV. Undetermined Causes

In the remaining patients initial consult revealed possible organic causes, but these group did not complete the appropriate tests needed to establish definite diagnosis. With improving patient acceptance of the basic "Site-Of Lesion" tests very few cases will be added to this group.

IV. Conclusions

The original report of 367 cases of vertigo was further appended increasing the number of cases to 452. Although Vertebro-Basilar Insufficiency is still the leading single cause of vertigo, there were only 7 new cases compared to Positional Vertigo which had an increase of 62 new cases. Because of this trend Positional Vertigo may catch up and overtake VBI in the long run. Vestibular Neuronitis is quite common in tropical countries than those in temperate zones, making it the third most common etiology. Meniere's Disease is practically as common as proven Multiple Sclerosis, since both have a 6% distribution. Acoustic Tumors constitute only 2% of all cases of vertigo. It is a very slow growing potentially life-threatening condition which requires an early detection and intervention. Inspite of the increase in the number of cases, vertigo affects more females than males. This may not attributed to gender difference but rather the fact that females are more likely to visit a physician for her symptoms than males who prefer to see doctors only when the disease has reached an advanced stage or when symptoms keep on recurring. Not surprisingly Anemia has not been found to be a cause of vertigo as many doctors tend to believe. In none of these patients did the Hemoglobin value fall below 13 gm%. The leading underlying cause of Psychogenic Vertigo is Depression. Neither has Hypertension been implicated as cause of vertigo. Both nor motensives and hypertensives will experience a rise in systolic and diastolic pressures during an episode of vertigo; but as soon as the symptoms subside the blood pressure will return to previous levels. The decision to classify vertigo into central or peripheral origin is dependent on ENG findings. BERA is a good non-invasive technique for detecting Acoustic tumors at its early stage, however, it should always be interpreted in the light of Audiometric findings, ENG and CT-Scan. Inspite of these high-tech methods, the history is still the dominant source of information before a definite diagnosis is established.

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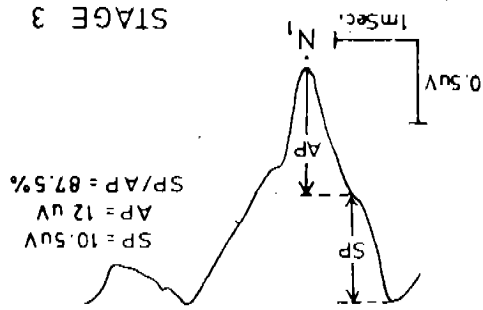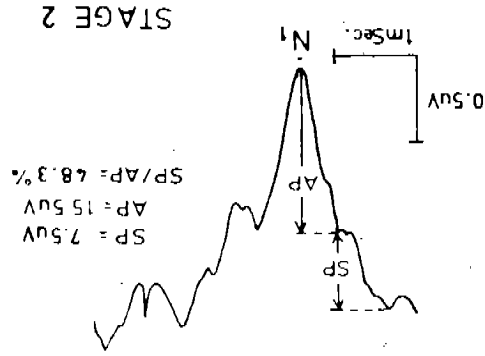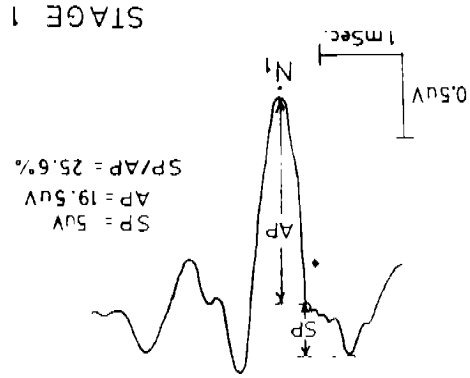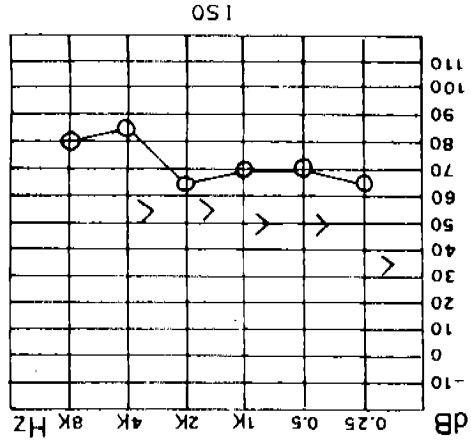
MENIERE'S CLASSIFICATION

(from WATANABE)

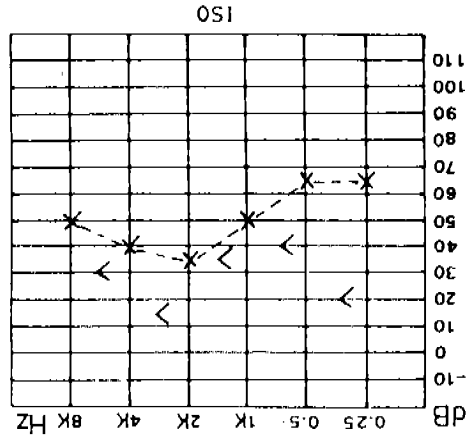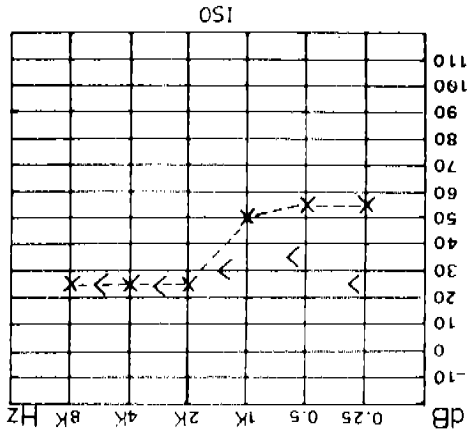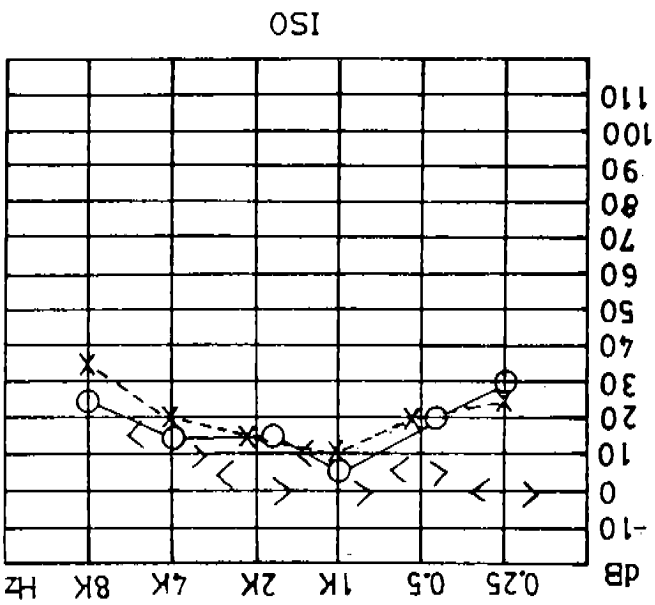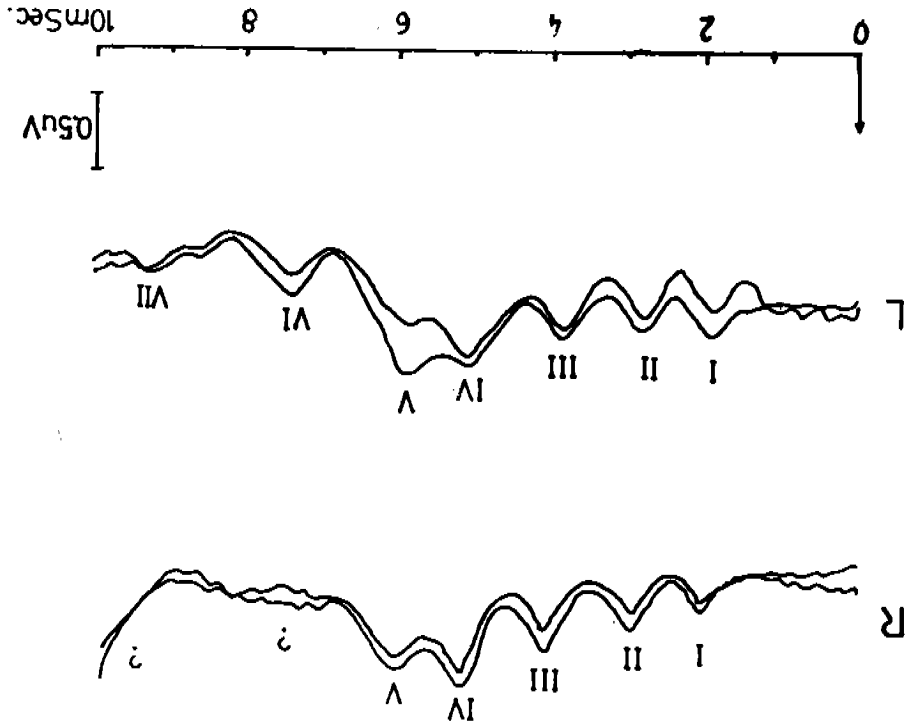FIG. 1. Classification of Meniere's Disease according to Watanabe. Electrocochleographic and Audiometric results taken from case studies. Stage 1: Early, Reversible. Electrocochleography of the compound Action Potential (AP) and Summating Potential (SP). SP/AP Ratio was 25.6% (normal range = 15% to 40%). Stage 2: Established, Fluctuant. The SP/AP ratio approaches or exceeds 50%. The Hydrops has extended from the apical turns to the basal turn of the Cochlea. Stage 3: Established, Non-Fluctuant. SP/AP Ratio remains elevated beyond 50%. This classification is useful for prognosis and in determining response to various medical and surgical therapies.

STAGE 1
SP = 5uV
AP = 19.5uV
SP/AP = 25.6%

STAGE 2
SP = 7.5uV
AP = 15.5uV
SP/AP = 48.3%

STAGE 3
SP = 10.5uV
AP = 12 uV
SP/AP = 87.5%

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LIPOSARCOMA OF THE MIDDLE EAR AND MASTOID: A CASE REPORT*

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Liposarcomas of the head and neck are very rare. In a review of the literature for the past 20 years, there has been no report of liposarcoma of the middle ear and mastoid. Of the reported cases, the majority occur in the neck, cheek, intraoral, orbital and pharyngeal regions. The worse prognosis belongs to intraoral, cheek and orbital liposarcomatous lesions. Liposarcomas are radio-resistant; wide local excisions remain the treatment of choice.

CASE REPORT

A.Y., a 30-year-old male Filipino was seen in my office on September 22, 1981. He complained of severe pain in the left ear associated with slight hearing loss of eight days' duration. There was no history of tinnitus, vertigo or discharging ear, and he had no upper respiratory infection prior to the onset of his illness. The pertinent physical findings were centered in the left ear. Otoscopy revealed an intact, slightly congested left eardrum with a bulging, reddish, shiny mass along the handle of the malleus and umbo radiating infero-posteriorly to near the margin and postero-superiorly. The mass was smooth and was found to be tender when manipulated with the suction tip. The left ear canal as well as other ENT findings were not remarkable. There was no evidence of facial paralysis.

Pure tone audiogram revealed slight conductive hearing loss in the left ear with an average of 23db, and

normal hearing in the right ear. Mastoid X-ray revealed well aerated mastoid processes on both sides without any evidence of bone destruction. Chest X-ray was negative.

Because of these findings, the suspicion of malignancy of the middle ear was strongly entertained. A transcanal biopsy under local anesthesia was performed under the operating microscope. The lesion was reddish, shiny and fleshy, and the procedure bloody. In spite of being given adequate local anesthesia, the patient still felt some pain whenever the lesion was touched. After the procedure, the left ear canal was packed to control the hemorrhage. The histo-pathological report from the biopsy was granulation tissue and chronic inflammation without any evidence of malignancy.

Two weeks after the biopsy was performed, the pain in the left ear became so unbearable as to cause the patient to hold his left ear constantly in agony. He requested an operation to relieve his misery. Because of the strong suspicion of malignancy, and in spite of the fact that he had no evidence of otitis media and mastoiditis, left radical mastoidectomy was recommended. He was admitted to Manila Medical Center on October 6, 1981. The general examination and the routing laboratory examinations were not remarkable. Left radical mastoidectomy through a post-auricular incision and another circumferential incision in the canal about 4 mm from the eardrum was performed on October 7, 1981. The second incision had the object of removing part of the canal skin together with the eardrum. The main findings of the operation were: the entire medial wall of the middle ear, particularly the promontory and the footplate region, was occupied by slightly shiny, reddish, very faintly yellowish heaps of nodular granulation-like tissues which crept up the stapes, going up the long process of the incus to surround the body of the incus and head of the malleus and the attic, and coming down the long process of the malleus to the umbo where the bulging of the mass was seen on the eardrum. From this mass the tissue spread serpiginously downward, near the rim of the eardrum and upward posteriorly. In the middle ear the granulation tissue mass had invaded the facial recess, sinus tympani and hypotympanum. These granulation-like tissues had extended out of the aditus to the antrum. Most of the granulation-like tissues were removed in piece-meal. Part of the canal skin and the eardrum were removed. The malleus and incus were removed together with the tissue mass in the attic. The tissue mass around the stapes, facial recess sinus tympani and hypotympanum was partially removed since the previous biopsy had revealed granulation tissue. All the tissues in the aditus and antrum were removed. However, the tegmen, the lateral sinus plate, and the facial canal remained intact. All the removed tissues were sent for histo-pathological examination. When the patient recovered from the anesthesia, he began to complain of pain in the operated ear. The histo-pathological report came on the 4th post-operative day, and the diagnosis was liposarcoma, adult type with osseous infiltration (see Fig. 1).

For the surgeon, these findings created the problem of convincing the patient to undergo another operation, since, as a general rule Filipinos are averse to the idea of second operation.

In the end, however, the father of the patient willingly consented to have a second radical operation performed on his son because the patients residual tumor mass had caused the patient a great deal of pain. The patient was informed about the consequences of the coming operation.

When the patient was brought back to the operating room on October 21, 1981, a left temporal bone resection was performed on him.

Because of his previous post-auricular mastoidectomy scar, an inverted Y-incision was performed with excision of the previous incision scar. This incision was based inferiorly including the pinna. Another triangular incision in the concha including the tragus was done. When the flap was developed, the pinna was pulled downwards; the incised concha and tragus and the external auditory canal remained as was. The incisions were brought down to the periosteum. The parotid gland was removed with sacrifice of the facial nerve; the zygoma was transected; the T-M joint was opened; the neck of the condyle was transected with the Stryker saw; the upper end of the sternocleidomastoid muscle and posterior belly of the digastric muscle were sectioned exposing the internal jugular vein and the internal carotid artery; the styloid process was transected, and the stylohyoid muscle was sectioned. From here the surgeon proceeded to perform temporal bone resection. A large temporal craniotomy opening above the temporal line was created with the use of a drill. Thirty cc of CSF was aspirated through a previously inserted spinal catheter. A large window extending from the transected zygoma to behind the mastoid process was made. The dura was elevated with the Freer's elevator. The squamous bone was removed with the drill and rongeur. Gradually the whole mastoid process including the tip was removed with caution so as not to injure the lateral sinus. The semi-circular canals were drilled and the petrous bone including the middle ear were removed with a chisel, leaving only a stump of the petrous bone. Care was taken so as not to injure the superior petrosal sinus, inferior petrosal sinus. the lateral sinus and the jugular vein and the internal carotid artery.

The temporal bone was completely excised except for a small stump with the internal auditory canal. There were no bleeding and no tears of the dura. The whole area was washed with saline, and the skin flap was returned and closed with 5-0 interrupted silk sutures. A piece of full thickness skin graft was taken from the thigh for the defect in the concha. The whole procedure was slightly bloody, and 2 liters of well cross-matched blood were used during the whole procedure. The patient tolerated the procedure well.

The post-operative course was uneventful. The patient fully recovered from the operation. He was severely dizzy for a period of one week. After one week, he was able to ambulate. He was discharged from the hospital on the 12th post-operative day; he was symptom free (except for the facial paralysis) and in fair

condition.

He returned to my office for examination once a month for 12 months and every 2 months for 2 years and every 6 months thereafter. He is still symptom free up to the present (December, 1986).

DISCUSSION

Liposarcoma is divided into four subgroups: (1) myxoid; (2) round cell type; (3) well differentiated or adult type; and (4) pleomorphic type. Liposarcoma is very rare in the head and neck; it is extremely rare in the middle ear and mastoid. In some countries the incidence of liposarcomas in the head and neck is four cases in a population of 8.5 million people during a period of eight years.

Liposarcoma arises from lipoblasts or totipotential mesenchyme within or adjacent to fascial and intramuscular areas; it does not arise from pre-existing lipomas and rarely from subcutaneous fibroadipose tissue.

The most outstanding symptoms of liposarcoma in the middle ear are pain and conductive hearing loss. The cause of the severe pain can probably be attributed to irritation of the tympanic plexus since the removal of the eardrum fails to stop the pain. The hearing loss is probably due to the involvement of the ossicles.

Liposarcomas are usually radioresistant. Radiation appears to be useful in palliation of the myxoid type of liposarcomas. Regional lymph node metastases are unusual. Distant metastases are common. The best treatment for head and neck liposarcomas is wide adequate surgical excision.

SUMMARY

A very rare case of liposarcoma, adult type, of the middle ear and mastoid is reported. The main clinical manifestations are: severe pain, slight conductive hearing loss and the presence of a reddish, slightly yellowish, shiny nodular mass which grows rapidly in the middle ear and around the ossicles. The patient underwent a temporal bone resection following an incomplete radical mastoidectomy on October 21, 1981. As of the present, December 1986, the patient is still alive and well.

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SUBMUCOUS RESECTION OF INFERIOR TURBINATE*

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Nasal Obstruction

Nasal obstruction whether it is bilateral, unilateral or alternating is one of the most uncomfortable symptoms in otolaryngology. This is especially so if the obstruction is complete, and the patient is forced to breathe through the mouth. With the complete nasal obstruction, there will be a series of other associated complaints: dryness of the throat, sore throat, cough, post-nasal drip, easy fatigability, restlessness, headache, increase of blood pressure, anorexia and many others.

Causes of Nasal Obstruction

Table I

Cause of Chronic Nasal Obstruction

I. Diffuse Mucosal Hyperplasia
   A. Allergy
   B. Vasomotor Rhinitis — caused by drugs, endocrine factors, cigar or cigarette smoking and others.
   C. Chronic Infection of the Nose and Sinuses
II. Anatomic Deformity
   A. Congenital — facial asymmetry; atresia and others.
   B. Acquired — deviated nasal septum with hypertrophied inferior turbinates; naso-septal ethmoidal fractures.

III. New Growths of the Nose and/or Sinuses
   A. Benign — nasal polyps, papillomas, adenomas, gliomas, chondromas and other benign tumors.
   B. Malignant — epidermoid carcinomas, adenocarcinomas, inverted papillomas, sarcomas and others.
IV. Foreign Bodies
V. Nasopharyngeal Pathology
   A. Adenoid Hypertrophy
   B. Tumors — benign and malignant tumors (mostly undifferentiated squamous cell carcinomas and lymphoepitheliomas).

There are many causes of chronic nasal obstruction. However, the scope of this paper is limited to chronic nasal obstruction secondary to septal deviation with hypertrophied inferior turbinates (see Fig. 1).

Fig. 1. Marked Septal Deviation with
Hypertrophied Inferior Turbinate

This condition, i.e., septal deviation with hypertrophied inferior turbinates, is frequently encountered in our clinical practice. Oftentimes, however, otolaryngologists will go ahead and perform a submucous resection of the nasal septum or septoplasty, without taking into account the hypertrophied inferior turbinates. Disappointingly, many of our patients, unrelieved of the nasal obstruction, return to the office for the same complaint. The question arises: why don't the patients feel relieved even after the septoplasty. And, with the query, an obvious answer. Aside from the deviated septum with spurs and crooked maxillary crests, many of these patients also have compensatory hypertrophied inferior turbinates. Without applying or effecting some kind of treatment for the hypertrophied inferior turbinates, complete relief may well be impossible. This fact I realized during my residency training both in Philippine General Hospital and in Montreal, Canada, as well as during the early years of my private practice.

Method to Reduce the Inferior Turbinates:

1. Inferior Turbinectomy — this procedure is condemned.

2. Electro-cautery of Inferior Turbinates — this method is ineffective.
3. Cryosurgery
4. Partial Turbinectomy by Laser Surgery
5. Submucous Resection of Inferior Turbinates — this procedure is quite effective and most economical for surgeons of the Asean countries.

Fig. 1. Liposarcoma, Adult Type

Anesthesia

In the early days of my practice, when cocaine was still available, I used to operate on the septum and the inferior turbinates under topical 10% cocaine anesthesia and local infiltration with procaine or xylocaine with adrenaline, 1:100,000 solution. The local infiltration has the purpose of cutting the bleeding during the procedure. This has proven to be a very effective combination. For the inferior turbinates, I usually inject 1 cc. of local anesthetic to the anterior tip of the inferior turbinates after completing the septoplasty. This reduces the bleeding from the inferior turbinates tremendously. There is actually very minimal amount of bleeding to obstruct your view during the dissection of the inferior turbinal bone.

Later in my practice, when cocaine became unavailable in the market because of "import control," I started to conduct this operation under general anesthesia together with local infiltration with the same local anesthetics. The bleeding that resulted from the use of this method is just as minimal as it used to be. Actually, patients preferred to be operated under general anesthesia as it turned out to be much more comfortable to them. The patient is first put to sleep with "IV" Penthotal Sodium, and the usual oro-tracheal intubation was done.

Position

As soon as the patient is put to sleep under general anesthesia, the operating table is manipulated to a semi-reclined position with the head and body in a semi-recumbent position, and the legs higher than the buttocks to prevent the patient from slipping down the operating table.

Inferior Turbinate

The inferior nasal concha is an independent, either slender or thick, scroll-like lamina of bone developed by ossification in the infolded caudal border of the lateral plate of the cartilaginous nasal capsule. It articulates by its attached border with the turbinate crest of the maxilla and with the lacrimal bone. Farther dorsad the attached border contributes to the closing of the hiatus of the maxillary sinus and articulates with the conchal crista of the palate behind. The caudal border is free and is usually thickened and laterally curled; the lateral surface is concave, and the medial surface is convex.

Clinically, the inferior turbinal bone varies in thickness. Some inferior turbinal bones are 5-7 mm. thick but some are 1-2 mm. thick or paper thin. The thicker ones are much easier to remove surgically, and the thin ones are much more difficult to dissect because they break easily and are more adherent to the periosteum.

Technique of Submucous Resection of Inferior Turbinate

The technique of submucous resection of the inferior turbinates is as follows:
1. Prepare 30cc. of 1% xylocaine solution with adrenalin, 1:100,000.
2. Aspirate 10cc. of this solution into a 10cc. syringe for later use.
3. Soak tiny nasal strips of gauze in the 1% xylocaine solution with adrenaline, 1:100,000.
4. Gently pack the nasal cavities with these soaked tiny nasal strips. The object here is to cut down the bleeding and to decongest the nose so that the surgeon can have a clear view during surgery.
5. While wating for the packings to take effect, inject locally the caudal end of the septumn to block or to cut down the bleeding from the Kisselbach's vascular plexus (from the anterior ethmodial, the facial, the greater palatine and the medial sphenopalatine vessels). I also infiltrate some solution to block the anterior ethmoidal arteries injecting between the upper and the lower lateral cartilages through the nasal vestibule. The packings are left for a period of 5-7 minutes and are removed with the bayonet forceps.
6. Usually, I start with the septoplasty or submucous resection of nasal septum before proceeding to submucous resection of the inferior turbinates. I am sure, all of you are masters in submucous resection of nasal septum, so this does not have to be discussed.
7. The next step after septoplasty is to infiltrate locally 1cc. of xylocaine-adrenaline solution to the anterior tips of both inferior turbinates.
8. Usually, I start with the left inferior turbinate. I incise the anterior tip of the inferior turbinate vertically about 3-4 mm. behind the
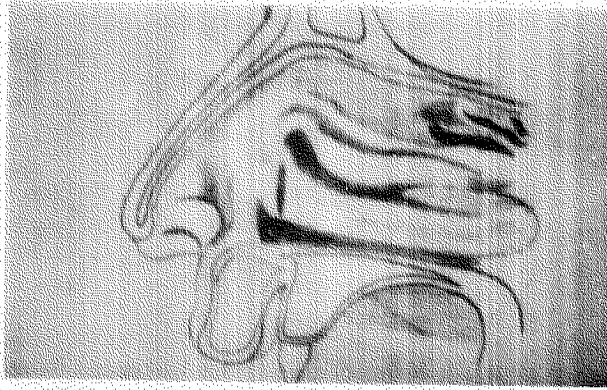
Fig. 2. Incision on the Anterior Tip
of the Inferior Turbinate.

Fig. 3. Incision on the Anterior Tip
of the Inferior Turbinate.

Fig. 4. Dissection of the Inferior Turbinal Bone
with the Freer's Elevator.
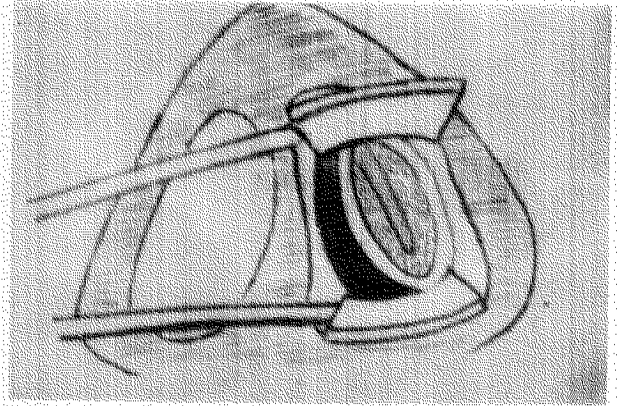
Fig. 5. Inferior Turbinal Bone Exposed.
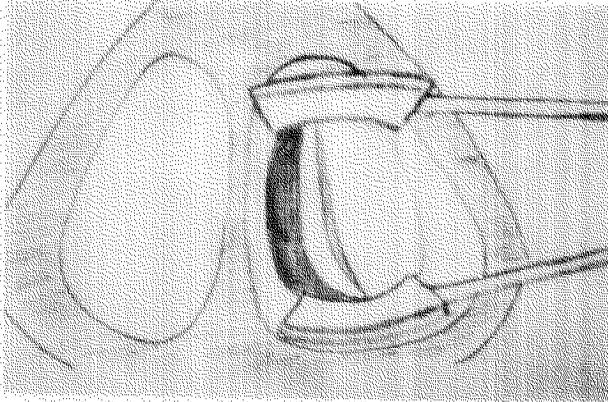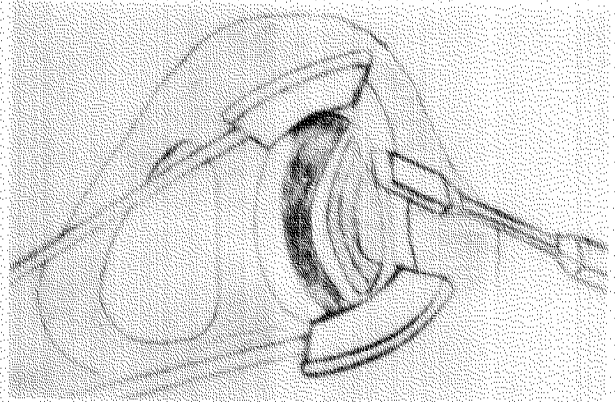
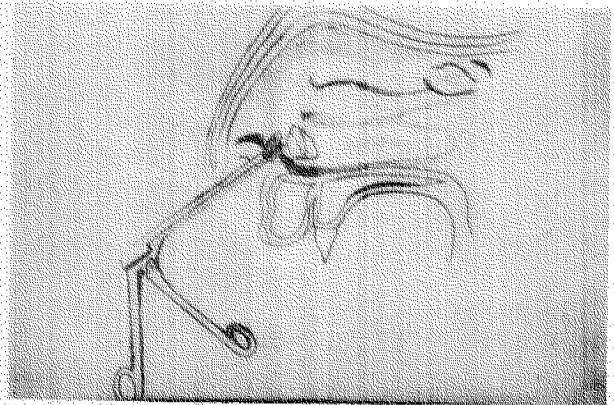Fig. 6. Inferior Turbinal Bone is Ready to be
Broken with the Chisel.

Fig. 7. The Broken Inferior Turbinal Bone is Grasped
and Removed with the Straight Blakesley's Forceps.

limen nasi (this seems to blend with the anterior end of the inferior turbinate). The incision is done with B-P No. 15 knife and is carried down to the inferior turbinal bone. Be sure the periosteum is incised (see Fg. 2 & 3).

9. This is followed by dissecting the inferior turbinate under the periosteum to expose the inferior turbinal bone by using the sharp Freer's elevator and the suction elevator (see Fg. 4).

10. When the turbinal bone is exposed, the anterior attachment is broken with the chisel. This should be done gently (see Fig. 5 & 6).

11. With the Vienna-Storz or Killian (2') nasal speculum to spread the incision and soft tissues, the inferior turbinal bone is dissected both the medial and lateral surfaces. This should be done carefully and gently to prevent laceration and actual turbinectomy. Once the anterior 1/3 of the inferior turbinal bone is exposed, the exposed inferior turbinal bone is grasped with the straight Blakesley's forceps and removed (see Fig. 7). The bleeding during the procedure is usually minimal. The posterior 2/3 of the inferior turbinal bone is thin, weak and very adherent. This does not need to be removed. Outfracture of the posterior 2/3 of inferior turbinal bone is done with the blunt Freer's elevator to give an adequate airway.

12. The incised wound does not have to be sutured. It falls together again, and a piece of soaked tiny nasal strip is placed between the septum and left inferior turbinate.

13. Similar procedure is done to the right inferior turbinate.

14. When the procedure is finished, the nasal cavities are packed with vaselinized strips of gauze. The packing is done with the help of the wider and longer Killian nasal speculum to prevent the incised wound or flap from opening again or displaced.

15. The nasal packings are left for 24 hours and are removed. The bleeding is usually very slight and can be controlled easily with cotton balls soaked with Neosynephrine 1/4% nasal solution. These soaked cotton balls are left between the septum and inferior turbinates for a few minutes. The bleeding usually stops, and the nasal cavities are cleaned with the nasal suction.

16. The patient is discharged from the hospital one day after the removal of the packing to be sure that there is no bleeding after the removal of the packings.

17. Complete healing usually takes about a week.

The partial improvement is attributed to the early years of operation without proper selection of cases. Patients with allergy and having septal deviation with hypertrophied inferior turbinates are poor candidates for this operation because the improvement is only short-lived unless the allergy is properly controlled.

Contraindications
1. Nasal allergy. This should be properly controlled first before the operation. This contraindication is only relative and not absolute.
2. Any medical condition which may be too risky for the patient to undergo anesthesia and operation.

Complications

So far, I have not encountered any post-operative bleeding from submucous resection of inferior turbinates. The nasal packings are removed 24 hours after operation, and no re-packing is ever done.

In this series, there are two cases of post-operative septal hematoma which develops 3-5 days after the operation. Both cases undergo incision and drainage with heavy antibiotic coverage to prevent abscess formation. Both patients recover speedily without any serious consequence.

Results

Table II

Year	Number of Operations
1964	52
1965	98
1966	112
1967	123
1968	140
1969	151
1970	126
1971	118
1972	128
1973	103
1974	97
1975	83
1976	76
1977	104
1978	72
1979	87
1980	64
1981	53
1982	49
1983	54
1984	63
1985	57

22 Years   Total No. of Operations = 2,047
Number of patients improved — 1,816 cases
Number of patients with partial improvement — 231 cases

Discussion

Submucous resection of inferior turbinates was conceived in 1964 because of so many failures in septoplasty. In the early years, the success rate as good but not excellent as expected. This was attributed to the

poor or inadequate selection of operated cases. Most of the failures had nasal allergy. The success rate is 88%, and partial improvement accounts for the rest of the 12%. These partially improved cases were found to have uncontrolled nasal allergy. The nasal allergy should first be controlled before subjecting the patient to this procedure. Complications from this surgical procedure is negligible.

Summary

A new technique of surgical operation for the relief of nasal obstruction secondary to septal deviation with hypertrophied inferior turbinates is presented. The technique of this surgical procedure, submucous resection of inferior turbinates is described in detail. The success rate of this operative procedure is pretty high.

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MIRROR WARMER*

Emmanuel S. Samson, M.D.**

INTRODUCTION:

Perhaps nothing can be more frustrating than exam-
ining a patient with a very strong gag refelx. More so if
the mirror fogs up before an indirect examination has
been completed.

A lot of methods are presently employed to prevent
misting of mirrors, each one with its own advantages
and disadvantages:

1. pHisohex — provides a very thin film of soap on
    the mirror's surface, thereby reducing its sur-
    face tension. This method, however, produces
    some distortions on an otherwise smooth
    mirror surface with resultant distortion of
    images. Another disadvantage is the soapy
    taste.
2. Warm water — has the advantage of warming
    the mirror immediately; but then, there has to
    be a ready supply of warm water always.
    Secondly, dipping the mirror in water would
    eventually erode the mercury coating, thus,
    damaging the mirror.
3. Drop light — very time-consuming, and poten-
    tially dangerous; a drop of water from an im-
    properly-dried mirror can cause the hot bulb to
    explode.
4. Alcohol lamp — a time-honored method. Aside
    from warming the mirror immediately, it is
    soot-free unlike ordinary kerosene lamps. But
    again, lighting up the alcohol lamp before every
    examination is a major setback.

In a nutshell, the ideal mirror-warmer/demister
should have the following attributes:

a. Fast-heating

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b. Not damaging to the mirror
c. Convenient
d. Economical

Unfortunately, all these four attributes are not
found in any one of the warmers/demisters currently in
use. This nagging fact has led the author to search for
other alternatives. This search has ended very recently
with the creation of the ultimate warmer; an automatic,
fast-heating, turbine-powered mirror-warmer.

THE INSTRUMENT:

The instrument consists of an old 220-volt,
500-watt hair dryer whose handle has been disassembled,
leaving the body intact with its turbine and fast-heating
coils, as shown in Fig. 1.

Fig. 1
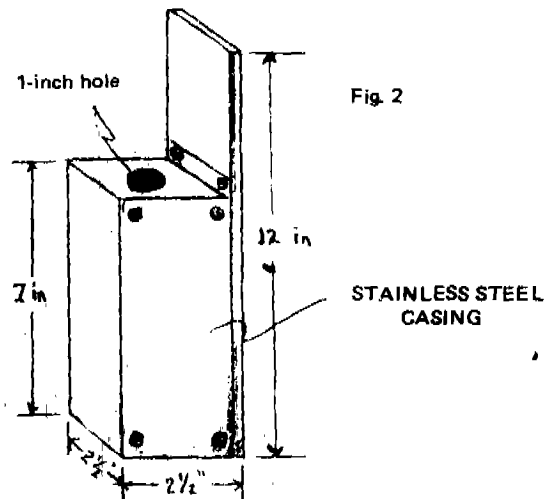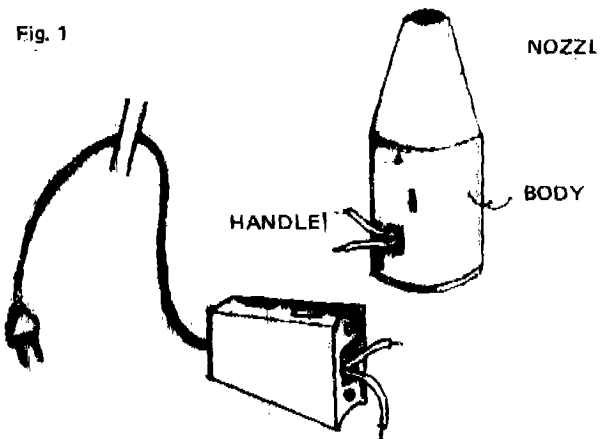
Fig. 2

The body is then fitted with a stainless steel casing
wherein holes are drilled on the top and bottom sides to
allow a free flow of heated air (Fig. 2).

In order that the gadget be automatically turned
on/off, the switch is constructed from an ordinary bell
switch to which was attached a wire lever and loop that
can be easily deflected by the mirror (Fig. 3).

This lever-switch is set up just above the nozzle of
the hair dryer in such a way that when the lever is
deflected by the mirror backwards, the mirror would

be directly above the hot airstream coming from the nozzle.

The completely-assembled instrument is shown below (Fig. 4).

Fig. 3

Fig. 4

DISCUSSION

Turbine power is not new to us. It is a major component of air-conditioners, engines, broilers, projectors, hair dryers, etc. Whatever instrument it is used in, it serves the same purpose: to dissipate heat fast.

In the instrument just presented, the same principle is utilized. The coils of the dryer provide the heat, while the turbine carries this heat to the mirror through the airstream that it produces; the nozzle, in addition, concentrates this hot airstream towards the center.
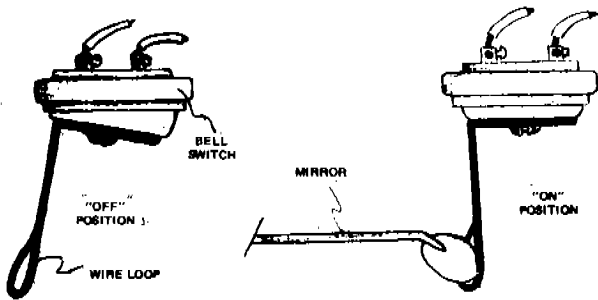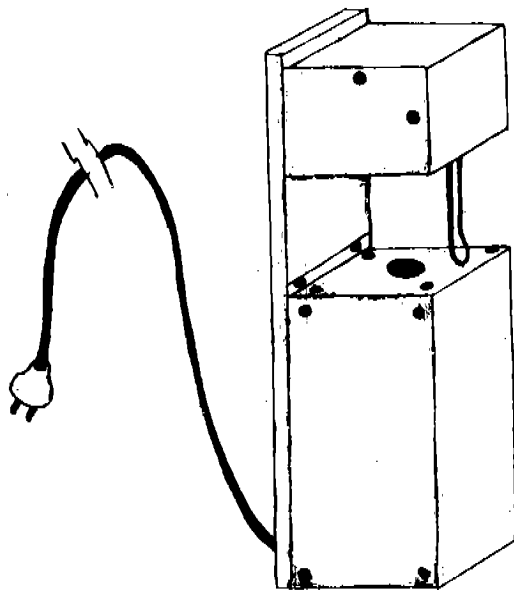
We put our instrument to test by comparing the time it took to heat up a laryngeal mirror adequately using (1) our warmer, and (2) a 75- watt drop light. The latter was chosen because it best approximates our instrument in terms of heat source and convenience.

The warmth of the mirror was roughly measured by breathing through it and observing any mist formation on its surface.

Our results showed that it took our warmer only five seconds to warm the mirror adequately: in contrast, the latter took fifteen seconds.

Aside from its heating properties, other advantages are noteworthy:

1. It can be hung anywhere behind the examining chair where it is most accessible to the examiner.
2. The automatic switch provides heat only when needed; hence, it is very economical.
3. It eliminates the tideous preparations (e.g., wiping pHisohex; lighting up the alcohol lamp; pouring hot water on glasses, etc.) which are inherent to the conventional methods.

Is it economical?

The expenses incurred are listed below:

1. Hair dryer with
    detachable handle . . . . . . ₱ 250.00 up
2. Scrap stainless steel plate 30.00
3. Electric cord (2 meters) 4.00
4. Male plug. 4.00
5. Screws. 5.00
6. Miscellaneous 10.00

Total . . . . ₱ 303.00

Is it durable?

Since the instrument would run for only a few seconds at a time, it is probably safe to say that it will last longer than the lifespan of an ordinary dryer.

CONCLUSION

In this era of fiberoptic scopes which are within reach of but a few of us, indirect examination is still second-best. It is difficult, and made more so by the tideous preparations prior to examination. It is hoped that this new instrument would facilitate the otolaryngologist in performing this most difficult of routine ENT examinations.

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HEAD & NECK SURGERY
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CONTENTS

BACKSTAGE WITH THE CERTIFYING BOARD
1971 – 1988

To enhance competent O.R.L. practice and protect the public from self-styled specialists, the Philippine Board of Otolaryngology (renamed the Philippine Board of Otolaryngology--Head & Neck Surgery in a resolution adopted in a regular meeting held on April 2, 1981 at the Swiss Inn) was conceived and incorporated in 1971 under the aegis but independent of the Philippine Society of Otolaryngology--Head & Neck Surgery, Inc.
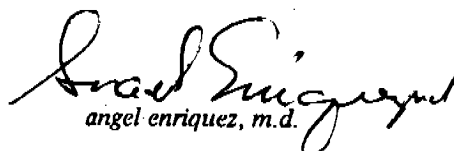
Membership in the board was drawn initially from Fellows of the Society, who are Diplomates of the American Board of Otolaryngology. Although authorized a maximum of nine (9) directors, the original five (5) were themselves the incorporators. Dr. Napoleon Ejercito has served as its President since its inception with Drs. Ariston Bautista, Manuel Lim, Armando Chiong and currently Dr. Mariano Caparas consecutively serving as its Secretary-Treasurer. The other Director of the Board are Drs. Siu Chuan Leh, Angel Enriquez, Abelardo Perez, Milagros Santos-Lopez and Vicente Santos.

On March 6, 1980 a board resolution was unanimously approved transferring its function of accrediting hospitals for residency training in Otolaryngology and evaluating hearing aid centers to the Philippine Society of Otolaryngology--Head & Neck Surgery, Inc. leaving the board with but one objective – "to establish standards of qualifications for otolaryngologists who desire and request board qualification; to determine which candidates fulfill these standards to examine such candidates and issue certificates upon satisfactory completion of requirements . . . "

Toward that goal, the certifying board conducts one examination every year consisting of two parts – Part I (written) and Part II (oral-didactic & clinical). Part I covers such basic subjects as Anatomy, Histology, Embryology, Physiology with special emphasis being given to Pathology. The Clinical subjects include Otology – Neuro-otology, Rhinopharyngology & Allergy, Laryngology, Bronchoesophagology, Head & Neck Surgery, Audiology, Reconstructive & Cosmetic Surgery and Maxillofacial Surgery. In order to meet the demands of an expanded specialty, guest examiners are invited. Cooperating hospitals – the Philippine General Hospital, PLM – Ospital ng Maynila, UST Hospital – furnish patients for the examinations.

Now on its 17th year, the Philippine Board of Otolaryngology – Head & Neck Surgery has issued an average of 5 certificates each year and ceaselessly continues to exert every effort to improve the validity of the certifying examinations. Only in its early years after incorporation did it adopt a policy of leniency to accommodate those who could not qualify under the "grandfather clause" but who have restricted their practice to Otolaryngology for many years. Presently, the examinations are stringent and reflect more than ever the broad content of the discipline and evaluate all candidates in a uniform and standard manner. Security of examination materials – a problem in earlier years – is now assured and maintained.

To qualify, one must obtain a grade equal to or above the general average minus 7.5%; the average being computed on the following basis – written examination – 50%, oral examination – 40%, and pathology – 10%. This scheme adopted in August 4, 1983, applies only if there are candidates garnering grades below 75%, otherwise the whole batch qualifies. Traditionally, Parts I and II are given a week apart during the later part of October or early part of November each year. Unsuccessful candidates are made to repeat both Parts I and II of the examination.

angel enriquez, m.d.

You have gathered here tonight to inaugurate me as the society's 16th president. I thank you for the honor you have bestowed upon me, and I hope I will be able to live up to the long and fruitful tradition of my predecessors.

More than a quarter of a century has passed since the conception of the society. From humble beginnings at the Manila Hotel, a brainchild of our very own "heroic nine," our society has blossomed into the standard upon which otolaryngologists all over the country aspire to emulate. We cannot now betray that trust and must pursue with even greater vigour, the objectives we have set for ourselves. We pick this time for introspection and ask ourselves whether we have really achieved those noble goals envisioned by the original members of our corporation.

One of the goals we have inadvertently neglected is probably one of the most important. If I may quote Dr. Enriquez, " . . . top among which is the complete separation of the specialty from its traditional combination with ophthalmology . . . " Regretable to say that some of the universities and training institutions still hold on to the old notion of a department of EENT. I appeal to them now and to those who in anyway are connected with these institutions to "liberate" themselves in order to further upgrade the standard of the specialty.

As we well know, Western countries such as the United States have practically shut their doors on our young otolaryngologists. In the past, perhaps regretably so, such countries were equated with the best if not THE training for the specialties. Now that they are gone, it does not have to mean that we cannot offer our young doctors a reasonable alternative of training in the Philippines. Too long has this "colonial mentality" clouded us from the fact that we as Filipinos should be proud of what we are, as shown by our very own President Corazon Aquino during the February Revolution. We should recognize that our country is rich in resources. It is in fact interesting to note that most diseases written about in books, and perhaps never met by most Western physicians in their daily practice, are commonplace to us. In other words, we are not at a disadvantage when it comes to clinical materials, and as I would like to believe, good mentors. All that is needed is for our battle-tested consultants to show more enthusiasm in sharing their experience and expertise with the younger generation. The time for the changing of the guards has come, and tomorrow belongs to our younger professionals. I appeal to you and to the different institutions, to set aside the petty veil of professional jealousy, bring down the walls of separation and cooperate or reciprocate with each other in order to work for a common goal of upgrading our specialty. My dream is the dream of all men, to see men of great dedication working side by side to find the cures to the maladies that plague human kind. These we must always remember, are special times, requiring special action, and it would only be fitting that we all share in a spirit of reconciliation, as that espoused by our Madame president.

I appeal too to our youth to show even more enthusiasm and energy than that they have in the past. Instead of moping on their failure to attain the "greener pastures," they should turn their energies to studying the works of the masters, listen to their mentors, and pursue to master their cases in the spirit of the great Sir William Osler. Attend all conferences that may come your way, and hunger for all the pearls of wisdom they may bring. Do not forget research, for Medicine is not a stagnant institution, but an ever-changing chameleon. I am proud that several of you did marvelously at the ASEAN conference. I hope to see even more original papers in the future.

And of course, I hope the Board of Otolaryngology will continue to upgrade or at least maintain the high standards we have set as a sign of excellence in our field. May we not prostitute ourselves and bend rules to increase our numbers or cater to the needs of a select few, but continue to demand only the best from all aspirants-to-be.

We have set quite a lot of work for ourselves in the coming year. But I am confident that the dedication of all our members will be more than adequate to meet the challenge. Remember: we are a rare breed of medical men in one of true specialties of the medical world. This we should always be proud of, and only by upholding the torch of its standard can we continue to be so. Thank you very much, and a pleasant night to you all . . .

SIU CHUAN LEH, M.D.

MANAGEMENT OF DIFFICULT CASES OF ESOPHAGEAL FOREIGN BODIES OF DENTAL ORIGIN*

Teresa Paz B. Grecia, M.D.**
Victoria Casimiro-Sarmiento, M.D.**
Ruzanne Magiba-Caro, M.D.**
Joselito Jamir, M.D.***

Coincident with the great number of people who wear dentures over the past three decades, there has been a proportionate increase in the incidence of ingested foreign body of dental origin. The problem is likely to get worse as the population gets older, and with a parallel increase in incidence of tooth loss due largely to dental caries despite the overwhelming commercialism on toothpastes. In the Philippine General Hospital alone, this is clearly depicted. As recently as 1978, there were only two cases of ingested dentures in a total of fourteen cases of esophageal foreign bodies (14.2%). This figure nearly tripled in 1985 with ingested dentures comprising 35.5% of the recorded cases of esophageal foreign bodies (21/59).

Dentures as foreign bodies in the food passages may pose a difficult problem regarding their management. There had been reports of morbidity and mortality with cases of hard-to-manage foreign body dentures. Hence, this paper is forwarded with the following objectives:

1) to define easy and difficult endoscopic extraction of esophageal foreign bodies of dental origin;

2) to set up guidelines on when one should assess a case of foreign body denture to be a complicated one; and

3) to advance an alternative management to rigid endoscopic extraction alone for difficult cases of ingested denture.

A review of cases of esophageal foreign bodies in a five-year period at the Philippine General Hospital reveals that dentures take up a significant 21.83% of the total number (57/261). Although coins were the most frequent offending agent in the pediatric age group, dentures were the most common in the entire adult series. In contrast, foreign authors have reported meat as the most common in the adult group (Giordano, 1981 and Haglund, et. al., 1971). In the local study, dentures comprised 50.9% of adult cases of esophageal foreign bodies (Tables 1 and 2).

Villarta, et. al. (1982), in his local study on esophageal foreign bodies (Philippine General Hospital), noted several causes of swallowed foreign bodies of dental origin which are similar to those seen in the studies of Jackson (1957) and Hollinger (1962). They are classified as follows:

1) ill-fitting dentures (80%);

2) altered states of consciousness, such as sleep, alcoholic intoxication, epileptic seizures, wherein there is a diminution of perception and reflex action (50%);

3) carelessness in eating and drinking (45%);

4) faulty fabrication of dental appliance suggested by 15% with broken dentures; and

5) trauma.

Table 1. Frequency of different types of esophageal foreign bodies.

Type	Number	Percentage
Coins	132	51.56%
Dentures	52	20.31%
Bone	17	6.64%
Meat	14	5.47%
Pins/Needles	14	5.47%
Balut	13	5.08%
Seed	3	1.17%
Metallic disks	3	1.17%
Button/plastic chips	3	1.17%
Nail/wire	2	0.78%
Chalk	1	0.39%
Crabshell	1	0.39%
Bottle cover	1	0.39%
Total	256	99.99%

Table 2. Frequency of different types of adult esophageal foreign bodies.

Type	Number	Percentage
Dentures	57	53.27%
Bone	16	14.95%
Meat	14	13.08%
Balut	12	11.21%
Pins/needles	3	2.80%
Seed	2	1.87%
Nail/wire	2	1.87%
Bottle cover	1	0.93%
Total	107	99.98%

In practice at the Philippine General Hospital, all patients with esophageal foreign bodies undergo rigid esophagoscopy. Giordano, et. al., in their seven-year review, have reported rigid esophagoscopy as the mainstay of treatment for esophageal foreign bodies. The results of endoscopic extraction of esophageal foreign body dentures show that it is relatively safe and successful. Villarta, et. al. (in a three-year period from 1979-1982) noted a 95% (19/20) success rate (the foreign body was removed despite difficulties and complications) with minimal morbidity and no mortality. Their complications included mucosal abrasions in six cases (30%) separate from non-perforating lacerations in three (15%). In two of these 20 cases, a second endoscopic extractions was necessary. The only case of failure occurred when the foreign body was accidentally pushed down to the stomach (it was located at the middle third of the esophagus).

Further investigation by this author of the above mentioned cases of morbidity shows that in those with non-perforating lacerations of the esophageal mucosae, the ingested dentures consisted of at least one hook and two teeth. Obviously, the size as inferred from the number of teeth and the presence of hooks are important in considering the degree of complications one may encounter. Table 3 shows a description of the ingested dentures which have caused complications.

However, from 1985 to 1986, the picture is not quite the same as in the Villarta study. Twenty-three charts were recovered and reviewed out of a total of 31 cases of esophageal foreign bodies of dental origin seen from January 1985 to October 1986. Except for five, all the foreign body dentures were found at the upper third (cervical) of the esophagus. Of the five mentioned, one was located at the distal third of the esophagus and was advanced into the stomach on rigid esophagoscopy;

Table 3. Description of ingested dentures in cases with morbidity (Villarta, 1982).

| | Erosion/Abrasion | | | Laceration | |
Case	# Hooks	# Teeth	Case	# Hooks	#Teeth
A	1	0	G	1	4
B	2	3	H	2	4
C	broken palatal plate		I	2	2
D	0	1			
F	0	2			

the other four were already in the stomach upon endoscopy. Eleven cases (47.80%) proved to be difficult resulting in various forms of morbidity and mortality. Many factors may be mentioned to explain the differences in the surveys of 1979-1982 and 1985-1986:

1) expertise of the endoscopist;
2) nature of ingested denture. No mention was done about the nature of the ingested dentures (whether with hooks or not, size) in the Villarta study.

Table 4 and 5 show the breakdown of the 23 recovered cases.

Table 4. Breakdown of cases according to the presence of hooks.

Without Hooks	12
With 1 Hook	7
With 2 Hooks	4
Total	23

Table 5. Final outcome of the 23 recovered cases.

Outcome	w/o Hooks	1 Hook	2 Hooks
Absconded before treatment	2		
Pushed into stomach	1		
Easy extraction	2	3	
Difficult extraction (with complications)	3	3	5
Already in stomach (not to included in the analysis)	4		
Total	12	6	5

Easy endoscopic extraction means the foreign body was removed during the first attempt and there were no complications. Of the five cases of easy extraction, two involved dentures without hooks, three with single hooks and none with double hooks. Furthermore, none of these dentures contained more than two teeth. Table 6 shows the breakdown of these five cases.

Table 6. Cases of Easy Extraction.

Case #	# Hooks	# Teeth	*LOS
1	1	0	1 day
2	0	2	1 day
3	1	1	1 day
4	0	2	2 days
5	1	2	1 day

*LOS: Length of post-operative stay in the hospital.

Postoperative course was uneventful that most of them had to stay in the hospital for only a day following extraction.

Difficult endoscopic extraction could either be:

1) a case marred with complications such as abrasions, lacerations or esophageal perforations with consequent mediastinitis; or

2) a case which necessitated a repeat endoscopic extraction or another operative procedure.

Of the eleven difficult cases, only three were without hooks. All contained at least two teeth. Table 7 elaborates on this.

In eight of the difficult cases, the foreign bodies were removed during the first endoscopy, but with several tries at extraction and all suffered esophageal lacerations and erosions necessitating the administration of intravenous antibiotics, insertion of NGT, delayed oral feeding and prolonged post-operative hospital day stay. Reviewing the tables, one would note that none of the easy cases had double hooks and none with more than two teeth. In contrast, those with lacerations, majority involved double-hooked dentures with at least two teeth. Thus, there is a greater chance of having complications with dentures with double hooks and more teeth (bigger size). In three cases, endoscopy was unsuccessful, resulting in perforating lacerations. They shall be discussed in the following.

Table 7. Breakdown of Difficult cases.

Case	# Hooks	# Teeth	LOS
1	2	4	2 days
2	2	2	2 days (went home with NGT)
3	1	2	2 days (went home with NGT)

Table 7-a. Non-perforating mucosal lacerations.

Complication	No Hooks	1 Hook	2 Hooks
Non-perforating laceration	0	1	2
Perforating laceration (needing a second procedure	1	0	2
Erosion/abrasion	2	2	1
Total	3	3	5

Table 7-b. Perforating mucosal lacerations.

Case	# Hooks	# Teeth	# endoscopies done	Another procedure done
1	2	4	2	cervical esophagotomy via lateral pharyngotomy; LOS = 11 days
2	0	3	1	– do – LOS = 7 days
3	2	3	1	– do – LOS = 4 months

Table 7-c. Cases with mucosal erosions/abrasions.

Case	# Hooks	# Teeth	LOS
1	1	3	2 days
2	2	5	2 days
3	0	4	2 days
4	1	3	2 days
5	0	3	2 days

In one case (the third case in Table 7-b), an 18-year old male was admitted to the PGH emergency room five days after swallowing his denture (with 3 teeth and 2 hooks), and with a previous history of direct laryngoscopic examination done in another hospital. The first endoscopy was done six days after ingestion. It was done at several attempts at disimpacting the foreign body with consequent deep mucosal laceration, but still unsuccessful. This dim picture was even more complicated with infection and sepsis. A second attempt to remove the foreign body via and external approach (cervical esophagotomy) was done several days after the second endoscopy. The cervical esophagus was found to be severely edematous and friable. Only part of the foreign body was removed. Unknowingly, a fragment had migrated to the mediastinum. Consequently, the patient was referred to the Thoracovascular section. Extraction of the remaining fragment via lateral thoracotomy, esophagostomy and tube gastrostomy were done. At that time, the esophagus, from the level of the cricoid to the hilum, was lacerated beyond repair. Their

were posterior and antero-superior mediastinal abscesses, and empyema at the right side. Despite all the surgical procedures done, total parenteral nutrition and bombardment with intravenous antibiotics, the patient died of septic shock after a prolonged hospitalization – a mortality due to an esophageal foreign body of dental origin.

At this point one is led to contemplate on the extent of use of endoscopic extraction procedure on cases of esophageal foreign body dentures, and the whole gamut of complications one should expect from *repeated unsuccessful endoscopic extraction* or from *forceful manipulation of the foreign body*. Sherman, et. al. reported a case of tracheoesophageal fistula secondary to a swallowed denture. Valle and Cloutier (1953) reported a similar case of ingested denture causing several esophageal perforations with middle-lobe syndrome and empyema. In this case, the denture was removed via a right thoracotomy approach after an unsuccessful endoscopy.

In a second case (Case 1 in Table 7-b), a 20-year old male was admitted to the PGH emergency room for swallowed denture with two hooks and four teeth at the level of T-4-T5. First endoscopic extraction done a day after ingestion was difficult and unsuccessful, leaving a mucosal laceration over the site of the hook. Repeat chest x-ray was done to rule out any perforation of the esophagus. After six days on intravenous steroids and antibiotics, and no oral feeding, the patient was subjected to another endoscopy under general anesthesia, but then under a double set-up with lateral pharyngotomy/cervical esophagotomy. Hoping that the denture has disimpacted with the recession of edema, the second endoscopic extraction was done but to no avail. Endoscopy was done up to the level of 26 cm. from the upper incisor and the foreign body was visualized, with the broken hook as the presenting part. Other findings included a) granulation tissue just above the foreign body, and b) a false passage was noted. The surgeons proceeded to do an extended lateral pharyngotomy incision with esophagotomy. Skin incision was done from the level of the hyoid bone to the mid-suprasternal area and carried down to the subplatysmal level (see Figure 1). The esophagus was exposed by blunt dissection. Esophagoscope was reinserted (by endoscopist) up to the level of the
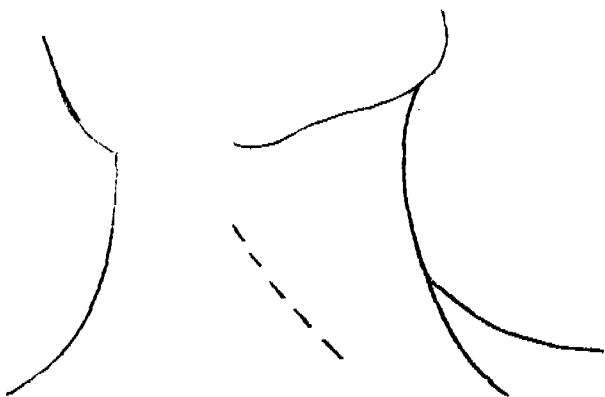
foreign body, to guide the surgeon on his incision on the esophagus. A 2.5 cm. vertical esophagotomy incision was done at the level of the foreign body. The foreign body was gently removed; it measured 6 x 2 cm. The endoscope was removed; the esophagus inspected, and NGT inserted. The esophageal incision was closed in two layers (submucosa and muscular layers) with interrupted chromic 3-0 sutures. Penrose drain was placed. Closure in layers was accomplished. Osterized feeding per NGT was initiated. He was started on clear liquids per orem on the 10th post-operative day. Being able to tolerate this, the NGT was removed and he was discharged on the 11th post-operative day.

The third case was another 20-year old male who accidentally swallowed his denture (3 teeth but no hooks) while drinking. The patient came in two days after ingestion of the foreign body. Expecting edema to have set in, a double set-up was prepared (esophagoscopy with possible lateral pharyngotomy/cervical esophagotomy). Upon esophagoscopy, the esophagus was found to be edematous and the teeth part of the denture had bored into the mucosa rendering the procedure difficult and unsuccessful. The surgeon right away proceeded to do a cervical esophagotomy via a right lateral pharyngotomy incision under general anesthesia, guided by esophagoscopy. The denture was removed and the procedure completed. The post-operative course was uneventful and the patient was discharged after one week on soft diet.

The three discussed cases were managed in the same manner, only differing in timing. The first case had a delay time of six days before the first procedure was done. Expecting that the mucosa would be severely edematous and friable for any manipulation, the specialist should have proceeded at once to an external approach. With proper timing, lateral pharyngotomy/cervical esophagotomy (as in the last two cases) may prove to be a comparatively safer alternative management for difficult cases of esophageal foreign body dentures, or suspected cases of difficult cases. When should one suspect a difficult case of ingested denture? The following aspects should be well considered in the assessment of a possible complicated case of foreign body denture in the esophagus:

1) The presence of metal hooks, especially double hooks;

2) The size of the ingested denture. In the 23 reviewed cases, the foreign body dentures which presented with difficult extraction varied from 2.6 x 2.2 cm. to the biggest 6 x 2 cm. Majority measured not less than 3 x 2.5 cm. Benedict (1963) considered the swallowing of the clamshell measuring 2.8 c 2.5 cm. x "rarity"; what more for a 6 x 2 cm. denture?

3) The number of teeth. The greater the number of teeth will, or course, increase the size of the denture. Furthermore, more teeth will increase the risk of impaction of the foreign body; thus, increase the risk for complications to occur. In

the reviewed cases, the presence of at least three teeth proved to be difficult to manage.

4) The orientation of the foreign body in relation to the lumen of the esophagus. Naturally, a foreign body with its greatest diameter lying across the lumen of the esophagus would cause much expected difficulties. Hence, the accuracy of pre-operative radiographic examination is essential (Haglund, 1971).

5) The retention or delay time — duration of time between ingestion of the foreign body and extraction procedure. The longer the retention time, the greater chances edema and infection may have set in, and the greater risk for foreign body migration as in the first case discussed above. Hooked dentures boring into the mucosa coupled with edema will definitely cause impaction of the foreign body. In the series of Villarta, et. al. (1982), most of the foreign bodies were extracted within 24 hours; a delay of 22 days in one case did not affect the operative course. However, it should be remembered that foreign bodies in the esophagus, if unremoved, ultimately proved fatal. Death may occur from ventral migration producing tracheal compression and asphyxia; or from lateral migration causing vascular erosion and torrential hemorrhage. Impaction with ulcerative esophagitis produces vomiting, intramural abscess or esophagorespiratory fistulae (Nwafo, 1980).

6) History of previous unsuccessful endoscopic manipulation.

The main attraction of endoscopic removal of foreign bodies is that it avoids open operation. Techniques to facilitate removal in difficult cases have been devised and include fragmentation before removal and screwing into the substance to obtain purchase on it before extraction (Flavell, 1970). Both are not commonly done at the Philippine General Hospital; and both are not without their serious complications.

The risks of perforations during endoscopic removal of dentures is particularly high in view of their rigidity, large size and ragged edges. Following impaction, varying degrees of penetration of the esophageal wall are common but not always evident to the endoscopist because of rebundant folds of mucosa. There are varying degrees of periesophagitis due to impaction. The esophagus at this level is edematous and friable. And the risk of perforation by traction on such an abnormal esophagus is distinctly high.

All foreign bodies should be extracted, and the procedure undertaken under general anesthesia and *planned to meet any possible technical difficulty*, in order to minimize the risk of iatrogenic perforation and its consequences. While endoscopic removal of esophageal foreign body of dental origin is often possible, *the method should only be rarely employed in dealing with impacted dentures;* or at least should be done under a doublet set-up together with lateral pharyngotomy/cervical esopha-

gotomy in suspected cases of difficult endoscopic extraction of ingested dentures (confined to the cervical esophagus).

The authors, therefore, forward guidelines on when to be prepared under a double set-up — a two-team approach of esophagoscopy and lateral pharyngotomy/cervical esophagotomy:

1) in any case of ingested denture with double hooks;

2) in cases of large dentures either due to greater teeth number (at least 3) or due to presence of a large palatal or gingival plate;

3) in any case wherein the greatest diameter of the ingested denture lies across the lumen of the esophagus, abutting against its walls;

4) in any case where there was history of previous endoscopic manipulation;

5) in any case wherein retention time had exceeded 48 hours; and

6) in a case of multiple foreign bodies.

TECHNIQUE

In dealing with esophageal foreign bodies of dental origin, clinical results are dependent on the completeness and relevance of clinical history; diagnostic accuracy of the pre-operative radiographic examination of the esophagus which will verify the presence of a foreign body and indicate its type, location and orientation; good surgical skills; and good surgical judgment with regards to possible complications and morbidity.

For swallowed dentures confined to the cervical esophagus which may present with difficult extraction, a two-team approach is recommended.

The first team shall be comprised of an endoscopist and two assistants (one to hold the head and other to suction and hand other instruments to the endoscopist). The team shall proceed with endoscopy and extraction of the foreign body. If unsuccessful, a second team will do an external approach via a lateral or extended lateral pharyngotomy incision and cervical esophagotomy.

The pharyngotomy incision shall be carried down to the subplatysmal level. With blunt dissection, the esophagus shall be located and exposed. When this has been done, the endoscopist (from the first team) shall reinsert the esophagoscope up to the level of the foreign body. This is to guide the surgeon on the location of the incision on the esophagus. Upon location of the foreign body, the surgeon will proceed with his vertical esophagotomy incision just right at the level of the foreign body, just long enough for the foreign body to be gently extracted out without lacerating the esophagus.

Upon extraction of the foreign body, the endoscope shall be withdrawn; the esophagus inspected, and a nasogastric tube inserted. The esophagus shall be closed in two layers (submucosa and muscular layers) with interrupted chromic 3-0 or dexon sutures. Penrose drain shall be placed. Skin shall be closed in layers.

SUMMARY

A review of data on esophageal foreign bodies of dental origin was presented. Emphasis was placed on morbidity and mortality secondary to difficult and complicated extraction of foreign body dentures. A safer alternative procedure for impacted foreign body dentures or suspected difficult cases was advanced — a two-team approach of esophagoscopy with a lateral pharyngotomy/cervical esophagotomy guided by esophagoscopy. The technique was described.

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TRACHEAL STENOSIS*

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DEFINITION

The word "Stenosis" means narrowing or tightening in relation to a lumen or a pipe (Ramali A. 1979).

Tracheal stenosis is a condition in which narrowing or tightening of the trachea occured, while some experts called it tracheal stricture.

Andrews and Pearson (1971) used the term "Symptomatic tracheal stenosis" for narrowing of the trachea with clear clinical symptoms, while those without complains or clinical signs, the term "a-symtomatic tracheal stenosis" is used, even though there is 25%-50% narrowing of the trachea.

Homerich and Flemming (1974) declare, that stenosis of the larynx and trachea is a narrowing of the lumen, which becomes at first less than 30% wide.

While Holinger (1976) stated that subglottic stenosis must be considered when a 3 mm. or 4.5 mm. bronchoscope could not pass the subglottic area.

INCIDENCE

Prolonged translaryngeal endotracheal intubation is now a well established technique for the maintenance of an artificial airway in both conscious and unconscious patients; however, despite its therapeutic value, approximately 4% of patients (Harrison and Tonkin 1971), developed some indication of laryngeal trauma.

Most of these complications are relatively mild, but some (0.5%-1%) are so severe that surgical inter-

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vention is necessary.

Abbot (1968) found 2 severe subglottic stenosis and 4 mild ones, on 23 children with prolonged endotracheal intubation.

Andrews and Pearson (1971) reported 17.5% stenosis of the trachea on 103 tracheostomised patients with respirator. Prolonged nasotracheal intubation seems predominantly to give rise to subglottic stenosis, especially in children. A survey was made by Lindholm (1969), and the frequency of stenosis in various series ranges from 0% to 8.8%. Lindholm also reported that frequency of tracheal stenosis which produces symptoms after tracheostomy ranged from 1% to 10%.

According to Webb (1974) up to 10% of the patients surviving treatment have been reported to develop stenosis and some prospective studies predict a 16%-20% incidence of stricture following prolonged cuffed tube ventilation.

In Surabaya, Soedjak, S. et al (1977) found only 5 tracheal stenosis cases within 5 years period. They stated that the amount will increase in intensive search for asymtomatic tracheal stenosis, because up to 50% narrowing of the trachea, the patients still remain without complaints.

Lulenski (1981) had the same opinion, that a slow growing stenosis up to 50% of the diameter won't give clear symptoms.

In Jakarta, within the past 3 years, we found 19 cases of stenosis, mostly are refered from the Intensive Care Unit. Of the 19 cases, 13 are adult, 10 of whom are due to prolonged intubation with the use of respirator in the ICU, 2 are caused by traffic accident, and 1 tentamina suicidum. Six children from the Child Health Department with difficulty in decanulation are due to prolonged canulation.

ETIOLOGY

Holinger et al (1976) mentioned that subglottic and tracheal stenosis might occur congenitally or acquired due to airway trauma. Mechanical reasons leading to stenosis formation, according to Rainer et al 1971) are:

1. High volume of the cuff
2. Impaired vascularisation of the tracheal mucose
3. Infected secretion around the cuff
4. Piston action due to respirator
5. Tracheal movement on coughing

Besides, the occurence of the stenosis is also influenced by the tolerance or reaction of the individual mucosa against foreign body (Chew, 1972; Large and Ziegler, 1975).

The predominant factors resulting in subglottic or tracheal stenosis are (Holinger et al, 1976; Kotton, 1979; Parkin et al, 1976):
— prolonged intubation
— repeated intubation
— trauma on intubation
— external suppression or trauma

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- configuration of the tube
- large size of the endotracheal tube
- material of tube
- piston action due to the respirators
- high tracheostomy
- bad humidification
- infection
- systemic disease (bad general condition, anemia, dehydration).

Prolonged canulation of tracheostomized patients (more than 10 days) can lead to stenosis formation Lately, the incision on the trachea is thought to be one of the predominant factors, and flap incision might decrease the incidence of the stenosis (Lulenski, 1981).

LOCATION AND TYPES OF TRACHEAL STENOSIS

Grillo (1972) classified the location of the stenosis connected to the etiology, as follows:

1. Stoma site, caused by granuloma or cicatrix on U-flap
2. Cuff site, caused by deep tubular erosion and cicatrix formation on healing process due to high volume of the cuff.
3. At the distal end of the canula or the tube, caused by erosion of the wall, followed by granuloma formation.
4. Collapse of the anterior wall of the trachea, between the stomach and the cuff caused by tracheomalacia, resulted in functional obstruction.

Bergstrom et al (1977) reported, from 20 tracheal patients using respirator, the stenotic area were on the cuff site.

Homerich and Flemming (1974) characterized the stenosis for therapy purposes, as follows:

1. Elastic tracheal stenosis. If the compression is lifted, the stenosis disappears.
2. Collapse of the anterior tracheal wall, caused by endotracheal tube or tracheostomy. In this case stent is necessary to support the area.
3. Imminent tracheal stenosis, the process is still going on at the damaged area. Usually caused by tumor surgery internal or external to the tracheal lumen, or infectious process in the tracheal wall.
4. Tracheal stenosis with circular destruction of the cartilage resulting in tubular stricture of the trachea. In case of circular stenosis, the purpose of therapy is to remove the affected area and approximate the healthy part as end-to-end anastomosis, as far as the stenotic area is not more than 4 cm. long.

Gates and Fernandez (1978) divided the subglottic stenosis in two groups:

1. Hard cicatrical stenosis due to circular cicatrix. The therapy should be surgical treatment. Almost 2/3 of soft stenotic cases will become hard cicatricial stenosis.

2. Soft stenosis, caused by granulation tissue. The stenosis is reversible, by removing the granulation tissue endoscopically.

Eliachar et al (1980) declare the location and types of tracheal stenosis as follows:

a. Annular stenosis, edema, granulation tissue and posterior displacement of the anterior tracheal wall at or above the level of the tracheostomy stoma are the most commonly encountered findings.
b. Tubular stenosis immediately below the level of the cricoid cartilage the result of blunt trauma, incorrectly performed tracheostomy, or prolonged periods of intubation.
c. Tubular stenosis below the stomal site or at the level of the thoracic inlet may be caused by a unduly inflated and mismanaged tracheal cuff.
d. Lateral Collapse of the tracheal lumen may be the result of severe infections, radiotherapy or excessive removal of the anterior tracheal wall during tracheostomy. These stenosis may be associated with tracheal malacia, edema, and growth of granulation tissue, all of which aggravate and complicate the condition.

Of the four condition cited, types c and d are potentially the most dangerous.

While Natvig and Olving (1981) explained the etiology and the location of the stenosis, as follows:

1. above the stoma, caused by compression at the anterior tracheal wall above the stoma backward, due to large trachea canula or hyperextension.
2. At the stomal site, removal of a portion of anterior tracheal rings, and because this lack of structural support the result of an obligatory narrowing of the trachea.
3. The cuff site, caused by ischaemia and necrosis due to compression at the mucosa, and infection as well.
4. Distal end of the canula, due to erosion or ulceration on the mucosa by the edge of the canula or suction catheter.

PATHOPHYSIOLOGY

A. Subglottic Stenosis

Endotracheal intubation might damage the laryngeal mucosa in the subglottic region. It is seen in the autopsy of the intubated and are mostly found at the cricoid area. This is because the area has contact with the endotracheal tube.

Initially the changes are edema and hyperemia of the mucosa and if this continues, there will be ulceration and with infection and granulation tissue is formed.

A too high tracheostomy will cause perichondritis on the cricoid cartilage, and this will damage the cartilage. The healing process will produce collagen, which will become fibrous tissue afterwards,

and the contraction of cicatrix leads to stricture (Holinger et al, 1976; Ogura, 1971).

B. Tracheal Stenosis at the Stomal Site

The size and shape of the stoma are of importance. In a too small stoma, the canula or the tube can cause compression of the wall, while a too large stoma may give rise to instability of the tracheal wall.

A too wide stoma, the healing process will be accompanied by cicatrical formation on the antero-lateral tracheal wall and granulation tissue as well.

Removal of a portion of anterior tracheal ring allows flaring of the lateral tracheal wall and a larger ostium. It always heals with granulation tissue, fibrosis and stenosis.

A too wide excision of a segment of the tracheal cartilage will result in obligatory narrowing of the trachea, because of lack of structural support.

Usage of a too large trachea canule and infection around the stoma will damage the anterior tracheal ring. The pressure is due to neck movement or the up-and-down canule movement because of respiration.

Bad humidification will render the infection, and involve the lamina propria and result in granulation on healing. Granuloma tissue on the upper edge of the stoma will form "granulation ball" that will block the tracheal lumen. Persistent infection and ulceration will involve the tracheal cartilage, and lead to chondritis and softening of the tracheal ring as a result.

C. Tracheal stenosis between the stoma and cuff site

High inflated cuff which lies a few centimeters beyond the stoma cause compression and occlusion of the surrounding blood vessels resulting in impaired vitality of the tracheal wall between the stoma and the cuff, especially the anterior part.

D. Tracheal stenosis at the cuff site

Among the agents responsible for injury are cuffs that are over inflated. The frequency and severity of tracheal mucosal injury is related to degree of pressure exerted at the site of the inflated cuff and the duration of time that this pressure is maintained.

There may also be a shearing force between the trachea and the cuff resulting from the piston-like movement of the tube inparted by the intermittent positive-pressure apparatus. In some instances infection and enzymatic action may play a substantial role.

The general condition of the patient such as cardiac and pulmonary insufficiency, anaemia, hypoproteinaemia and general debility as well as general treatment with steroids are probably also predisposing factors.

Superficial tracheitis with fibrin deposits may be followed by shallow ulceration over the anterior cartilaginous ring at the cuff level. Later, fragmentation of the tracheal cartilage may result in stenosis.

The cuff injury presumably resulted from ischemic pressure necrosis of the mucosa unyielding Cartilaginous Ring. Vertical submucosal arterioles which connect with transverse branches of the inferior thyroid artery are specially vulnerable to early occlusion by the inflated cuff. Eventually, the transverse arteries in the intercartilaginous membrane may also be compressed.

It is understandable that ischemia initially involves the antero-lateral two-thirds of the tracheal mucosa covering the rigid cartilage.

With excessive pressure, necrosis of all layers of the wall can ensue, althrough involvement of the posterior tracheal wall is less frequent.

After extubation, healing may produce cicatricial stenosis. In most cases presented, the minimal time of cuffed-tube inflation before stenosis resulted was hours.

Superficial changes in the mucosa may be seen after intubation for only three hours, deep ulceration after forty-eight hours, and severe cartilaginous destruction after seventy-two hours. (Andersen et al, 1977; Andrews and Pearson, 1971; Som and Nussbaum, 1974).

E. Tracheal stenosis at the distal end of the canula

Caused by erosion at the tracheal wall by the edge of the canula or suction catheter, followed by granuloma formation (Grillo, 1976).

DIAGNOSIS

Latent intervals between decanulation and the onset of the clinical sign ranges from a few days to a few months (Chew, 1972). Symptoms of respiratory tract obstruction may appear at any time following decanulation or extubation, but occur most commonly ten days to three months after removal of the tube or canula (Grillo, 1971).

While James (1970) stated that stridor occured if tracheal lumen beome 4 mm. or less.

Anamnesis reveals the history of prolonged intubation and/or tracheostomy with or without assisted ventilation apparatus, besides there might be history of neck trauma as well.

Clinical symptoms are short and heavy respiration on minimal activity accompanied by stridor.

The patient becomes dyspneic, sometimes hoarseness (dysphonia) and cough due to difficulty in expectorating the secretion (Grillo, 1976). The patient is evaluated by contrast laryngography, lateral soft tissue xeroradiography, tracheal tomography, to determine position and extent of stenotic segment.

Preliminary to the chosen treatment, direct laryngoscopy and tracheoscopy is performed to assess vocal cord mobility, the states of the endolarynx, and to confirm the location, degree, and type of stenosis.

Multiple stenosis are not in frequent, especially where tubes of varying lengths and tubes with double

cuffs have been employed. Coincidental stenosis at the site of the tracheostomy is not infrequent (Som and Nussbaum, 1974).

TREATMENT

The management of acute injuries and chronic stenosis of the larynx and trachea continues to be a difficult problem. The most important principle is prevention. Once the stenosis is established, the proper treatment must be determined. A number of therapeutic approaches have been recommended over the years.

The otolaryngological literature continues to contain on abundance of reports describing surgical techniques being advocated for the correction of acute and chronic endotracheal injuries. In many cases, the technique chosen is a function of the anatomical area which is damaged. Technique differ for a supraglottic, a glottic, a subglottic or a tracheal stenosis.

No one surgical procedure has received uniform acceptance to the total exclusion of other techniques.

The primary problem can be defined as the need to maintain adequate patency of a hollow organ that has been traumatized and, therefore, becomes vulnerable to progressive narrowing of the lumen as a result of the normal dynamics of healing, namely, wound contraction.

Andersen et al (1974) stated that in the treatment of tracheal stenosis various principles of treatment may be contemplated:

+ Trans-laryngeal dilatation
+ Permanent dilatation and tracheostomy.
+ Reconstruction of the trachea by means of prosthesis
+ Transverse resection
+ Persistent dilatation without concomitant tracheostomy

While Thawley and Ogura (1981) categorized the numerous treatment into 4 types:

- Dilatation with or without injection of steroids
- Dilatation and prolonged stenting
- Luminal augmentation
- Resection of the stenosis with primary re-anastomosis.

CASE REPORT

1. H.S. a 5 year old boy consulted at the Child Health Department suffering from Laryngitis Diphterica with airway obstruction stage II (Jackson).

   Tracheostomy was performed, and tracheal canula was inserted. One week later, after the Diphteria had been eliminated, decanulation was attempted, but failed due to reoccurence of the obstruction.

   Direct laryngoscopy and tracheoscopy by means of rigid bronchoscope was performed. It was apparent that the obstruction was due to collapse of the anterior tracheal wall and granulation tissue at the stomal site. It was determined to

remove the granulation tissue endoscopically and put the Nasotracheal tube or prolonged stent. After one week of prolonged Nasotracheal tube stenting, extubation was performed successfully.

2. S, a 20 year old male was admitted to the ICU because of traffic accident and had contusio cerebri and was unconscious for five days.

   An ETT was inserted and connected to the respirator. Two days after extubation, dyspnea, stridor and dysphonia were noted. Soft tissue X-ray of the neck showed subglottic mass, and tracheostomy was performed. Direct laryngoscopy showed subgloticc granulation tissue.

   The granulation tissue was removed and T-Silicone tube was inserted.

   After 6 months the T-tube was extubated, but unfortunately 6 days later the patient became dyspneic again. The T-tube was re-inserted.

3. U.M., 21 year old male was admitted to the ICU. Ventilation was assisted by means of ETT and respirator. Four days post extubation, stridor and dyspnea occured. Radiologic reveals soft tissue mass in the trachea as high as C7 tracheostomy was performed.

   Direct laryngoscopy and tracheoscopy showed the stenotic area was about 1 cm. above the stoma. The granulation tissue was removed endoscopically and the T-tube was re-inserted.

   End-to-end anastomosis was determined and surgery was performed by removing 2 Rings (wedge-incission) of the trachea. The T-tube was still in place as stent.

DISCUSSION

Prevention of stricture formation will continue to be the most important measure until a safe system using cuffed tubes and respirator are available.

Cuff overinflation is to be avoided at all cost. Early recognition of tracheal stricture will be of value in management and planning for the appropriate time to apply treatment.

The ultimate goal is to reconstruct an adequate airway for breathing without the need for permanent tracheostomy and also to maintain a voice quality adequate for communication.

It is not possible to speak in terms of only one technique which is suitable for correction because the problem differ according to what portion of the larynx or trachea is involved.

Even when the area of the injury has been defined, there are still some techniques that have been advocated for the successful correction of a particular problem.

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INCIDENCE OF HEARING LOSS AMONG STUDENTS*

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Introduction

Hearing is everybody's problem. In this era when machines are the order of the day, when the discos with their loud music and the portable record players with headphones abound, when loud modern music is constantly bombarding the ears, and when the diseases that cause deafness and the drugs that are ototoxic are rampant, one wonders if there could be anything left with the hearing of man. James MacMahon of the New York League of Hard of Hearing remarked that by the year 2000 we would not be able to hear one another without using a hearing aid if these trends continue.

This study was made primarily to determine the magnitude of hearing impairment among students and secondarily to encourage the government to include in the health program hearing tests and referrals to qualified otolaryngologist for proper advise and treatment.

Methodology

The hearing test was conducted in a locality which is a cross-between a rural and an urban area and which could be classified as rurban. The place does not have the sophistication of an urban area nor the tranquility of a rural area. The students tested came from both private and public schools. They were randomly picked without any preliminary examinations or interviews. Students comprising 1.35% of the population of a private college about 35 kilometers from Manila and another group comprising 3.28% of the population of a private college about 115 kilometers from Manila were included in this study. The first group consisted of post graduate students all of whom have been exposed to

urban life, the minimum of which was not less than four years. The second group consisted of elementary, high school and college students coming from rural and urban areas. The students taken from the public schools comprised 3.74% of the population of four public elementary schools in the same area.

The students were examined with a puretone and speech audiometer Beltone model 12D using the American standards. This was calibrated regularly and a sound proof room was used. The ascending and descending techniques of 3-5 db were employed. The speech treshold and discrimination were also done. No deaf-mute students were included in this study.

Findings

Table I

	Private	Public
Number of students examined	400	198
Male	136	95
Female	264	105
Number of Schools	2	4
Number of localities	2	1

There were 598 students examined, 231 male and 369 female. There would have been more but some students who were chosen did not report to the clinic, some were afraid of the sound proof room, some were afraid of the doctor, some were not allowed by the parents especially those in the elementary grades. The preponderance of female was due to the relatively greater number of female students.

Table II

Range of Age	Number	Private M	Private F	Public M	Public F
6— 8	1	0	0	0	1
9—11	137	0	15	52	70
12—14	157	50	33	41	33
15—17	126	39	86	1	0
18—20	92	7	85	0	0
21—23	27	11	16	0	0
24—26	54	29	25	0	0
27—29	4	0	4	0	0
TOTAL	598	136	264	95	105

Majority of the students belong to the lower age group, from 6 to 17 years old, and mostly elementary and high school.

Table III

Air Conduction Threshold — Right Ear (Public)

Range of DB	250 Hz		500 Hz		1000 Hz		1500 Hz		2000 Hz		3000 Hz		4000 Hz		8000 Hz	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
0– 10	0	0	3	0	15	23	35	49	46	48	44	54	48	62	8	20
11– 20	6	14	41	52	40	48	32	26	24	34	24	29	19	24	27	43
21– 30	40	52	23	32	19	15	7	17	7	10	8	10	7	9	22	25
31– 40	22	20	8	8	4	9	5	4	4	7	6	7	6	4	9	6
41– 50	8	10	6	4	3	3	7	5	5	1	2	0	6	2	6	3
51– 60	8	3	3	5	5	7	4	2	0	1	2	4	2	3	10	3
61– 70	3	4	4	3	1	1	1	3	1	3	3	0	1	0	5	3
71– 80	2	1	1	0	2	1	2	0	2	0	3	0	2	0	4	1
81– 90	3	—	1	—	2	—	2	—	3	—	0	—	3	—	1	—
91–100	0	—	1	—	0	1	1	—	0	—	1	—	0	1	0	1
101–110	0	—	1	—	1	—	—	—	—	—	1	—	—	—	—	—
NR	2	—	0	—	0	—	—	—	—	—	—	—	—	—	2	—
Total	94	104	94	104	94	104	94	104	94	104	94	104	94	104	94	104
Mean	35.93	30.88	28.69	24.63	24.97	19.92	20.82	16.08	18.69	15.31	19.76	14.15	19.22	12.90	31.37	21.17
SD	16.08	12.40	19.53	12.72	20.12	14.06	20.35	13.92	20.12	13.37	21.56	12.17	20.52	11.85	19.95	14.59

In the public schools, the average mean decebels of the male student is 24.93 and the female is 19.38. The Standard deviation is above 10. With level of hearing for speech frequency with the decebels greater than 21 db the male show 36.96% and female 32.64% with hearing impairment in the right ear.

Table IV

Air Conduction Threshold — Left Ear (Public)

Range of DB	250 Hz		500 Hz		1000 Hz		1500 Hz		2000 Hz		3000 Hz		4000 Hz		8000 Hz	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
0– 10	1	0	2	1	10	21	29	41	28	46	31	49	31	59	6	17
11– 20	5	10	29	53	44	52	32	41	33	39	28	35	33	28	23	40
21– 30	25	47	35	31	18	19	15	12	13	8	20	9	14	7	25	26
31– 40	39	27	12	10	10	3	6	2	5	4	5	3	5	2	17	8
41– 50	8	9	3	0	4	3	5	4	7	1	2	2	2	4	8	5
51– 60	6	3	8	5	5	2	3	1	4	3	2	5	3	1	7	3
61– 70	6	6	4	2	1	2	3	1	1	1	3	1	2	3	1	2
71– 80	2	2	1	2	2	1	1	1	2	2	1	0	1	3	3	2
81– 90	0	—	0	—	0	1	0	1	1	—	1	—	1	—	2	2
91–100	0	—	0	—	—	—	—	—	0	—	1	—	2	—	2	0
101–110	0	—	0	—	—	—	—	—	—	—	1	—	—	—	0	0
NR	2	—	0	—	—	—	—	—	—	—	—	—	—	—	2	1
Total	94	104	94	104	94	104	94	104	94	104	94	104	94	104	94	104
Mean	36.37	33.	28.69	24.35	23.69	19.73	20.39	16.37	21.46	15.69	20.71	15.21	20.82	13.87	30.72	22.68
SD	13.65	13.43	15.03	13.61	15.27	14.79	16.29	14.62	17.88	14.67	18.43	13.62	19.77	13.81	17.41	15.16

In the public schools, the average mean decebels is 22.98 db for male and 20.11 db of female. The standard deviation is above ten. With level of hearing for speech greater than 21 db at speech frequency range the male show 44.94% and female 27.40% with hearing impairment in the left ear.

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Table V

Air Conduction Threshold — Right Ear (Private)

Range of DB	250 Hz M	F	500 Hz M	F	1000 Hz M	F	1500 Hz M	F	2000 Hz M	F	3000 Hz M	F	4000 Hz M	F	8000 Hz M	F
0— 10	0	0	8	4	25	59	56	132	63	147	61	154	73	198	38	68
11— 20	19	31	64	177	82	187	64	115	59	101	57	97	49	54	54	119
21— 30	65	164	50	75	24	13	13	13	11	11	11	5	7	6	19	46
31— 40	49	66	13	2	3	2	1	1	1	2	4	4	2	3	13	21
41— 50	3	0	1	4	2	1	—	1	—	1	—	2	—	2	6	7
51— 60	—	2	—	—	—	—	2	—	—	—	1	—	4	—	1	1
61— 70	—	—	—	—	—	—	—	—	2	—	2	1	1	—	2	—
71— 80	—	—	—	—	—	1	—	—	—	2	—	1	—	1	1	1
81— 90	—	—	—	1	—	1	—	2	—	—	—	—	—	—	—	1
91—100	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
101—110	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
NR	—	1	—	—	—	—	—	—	—	—	—	—	—	—	2	—
Total	136	264	136	264	136	264	136	264	136	264	136	264	136	264	136	264
Mean	28.15	27.06	20.72	19.63	16.31	14.52	13.07	11.71	12.56	11.07	13.44	10.80	12.49	8.91	18.86	17.70
SD	7.20	6.43	7.76	8.63	7.58	8.06	8.45	9.09	9.24	8.60	10.44	8.61	11.00	7.67	13.66	11.50

In the private schools, the average mean for male is 16.94 and for the female is 15.17 with an average of 16.05 db. The standard deviation is below 10 which is less in variability. The female is better than the male. At the hearing level for speech the db is higher than 21 db. The male and female have 23.34% and 12.40% respectively with an average of 17.87% of the students with hearing impairment.

Table VI

Air Conduction Threshold — Left Ear (Private)

Range of DB	250 Hz M	F	500 Hz M	F	1000 Hz M	F	1500 Hz M	F	2000 Hz M	F	3000 Hz M	F	4000 Hz M	F	8000 Hz M	F
0— 10	2	6	4	29	27	86	40	126	57	160	53	152	66	203	32	102
11— 20	20	41	56	161	70	143	71	110	53	76	49	83	34	37	43	89
21— 30	74	151	60	57	31	27	18	20	16	19	20	18	16	13	31	40
31— 40	29	54	10	10	2	4	2	4	7	4	8	5	13	5	8	17
41— 50	7	7	2	4	4	1	3	—	1	2	4	5	2	4	7	7
51— 60	2	2	1	1	—	—	—	2	—	1	2	—	2	—	6	3
61— 70	2	2	3	—	—	2	2	1	—	—	—	—	3	—	4	4
71— 80	—	—	—	1	2	—	—	—	2	1	—	—	—	1	5	—
81— 90	—	—	—	—	—	—	—	—	—	1	—	1	—	—	—	—
91—100	—	—	—	1	—	1	—	1	—	—	—	—	—	1	—	—
101—110	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
NR	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Total	136	264	136	264	136	264	136	264	136	264	136	264	136	264	136	264
Mean	27.93	26.60	22.93	18.45	17.85	14.31	15.43	12.58	14.62	11.33	15.72	11.64	15.87	9.67	23.59	16.45
SD	9.66	8.58	10.07	9.83	11.06	9.70	10.04	9.93	11.53	10.08	11.28	9.63	13.80	10.34	18.09	12.64

In the private schools, the average mean for male is 19.24 db and for female 15.12 db with an average of 17.18 db. The female have a better mean than the male. In the hearing level for speech with the db higher than 21 db the male and female 30.51% and 15.62% respectively and average of 23.06% of students examined with hearing impairment.

Table VII

Air Conduction Threshold — Right Ear (Public & Private)

Range of DB	250 Hz M	F	500 Hz M	F	1000 Hz M	F	1500 Hz M	F	2000 Hz M	F	3000 Hz M	F	4000 Hz M	F	8000 Hz M	F
0— 10	0	0	11	4	40	82	91	181	109	195	105	208	121	260	46	88
11— 20	25	45	105	229	122	235	96	141	83	135	81	126	68	78	81	162
21— 30	105	216	73	107	43	28	20	30	18	21	19	15	14	15	41	71
31— 40	71	86	21	10	7	11	6	5	5	9	10	11	8	7	22	27
41— 50	11	10	7	8	5	4	7	6	5	2	2	2	6	4	12	10
51— 60	8	5	5	5	7	4	4	0	2	1	3	4	6	3	11	4
61— 70	3	4	4	3	1	1	1	3	3	3	5	1	2	0	7	3
71— 80	2	1	1	0	2	2	2	0	2	2	3	1	2	1	5	2
81— 90	3	—	1	1	2	1	2	2	3	—	0	—	3	—	1	1
91—100	—	—	1	1	—	—	1	—	—	—	1	—	—	—	—	—
101—110	—	—	1	—	1	—	—	—	—	—	1	—	—	—	—	—
NR	2	1	—	—	—	—	—	—	—	—	—	—	—	—	4	—
	230	368	230	368	230	368	230	368	230	368	230	368	230	368	230	368
Mean	31.29	28.14	23.98	20.85	19.85	16.04	16.24	12.95	15.07	12.27	16.02	11.75	15.24	10.04	23.95	18.68
SD	12.24	8.72	14.38	10.24	14.75	10.41	15.03	10.86	15.00	10.35	16.25	9.87	15.96	9.23	17.62	12.55

For both public and private schools the male have a mean decebels average of 20.93 db and female 17.27 db. Standard deviation is high and therefore very variable. The hearing level for speech shows 20.44% male and 14.78% female right ear impaired.

Table VIII

Air Conduction Threshold — Left Ear (Public & Private)

Range of DB	250 Hz M	F	500 Hz M	F	1000 Hz M	F	1500 Hz M	F	2000 Hz M	F	3000 Hz M	F	4000 Hz M	F	8000 Hz M	F
0— 10	3	6	6	30	37	107	69	167	85	206	84	201	77	262	38	119
11— 20	25	51	85	214	114	195	103	151	86	115	77	118	67	55	66	129
21— 30	99	198	95	88	49	46	33	32	29	27	40	27	30	20	56	66
31— 40	68	81	22	20	12	7	8	6	12	8	13	8	18	7	25	25
41— 50	15	16	5	4	8	4	8	4	8	3	6	7	4	8	15	12
51— 60	8	5	9	6	5	2	3	3	4	4	4	5	5	1	13	6
61— 70	8	8	7	2	1	4	5	2	1	1	3	1	5	3	7	6
71— 80	2	2	1	3	4	1	1	1	4	3	1	0	1	1	6	2
81— 90	—	—	—	0	—	1	—	1	1	1	1	1	1	0	2	0
91—100	—	—	—	1	—	1	—	1	—	—	1	—	2	1	—	—
101—110	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
NR	2	1	—	—	—	—	—	—	—	—	—	—	—	—	2	3
Total	230	368	230	368	230	368	230	368	230	368	230	368	230	368	230	368
Mean	31.33	28.42	25.28	20.12	20.24	15.88	17.54	13.65	17.41	12.57	17.76	12.65	17.89	10.85	26.46	18.21
SD	12.17	10.59	12.66	11.34	13.24	11.63	13.28	11.58	14.85	11.73	14.84	11.02	16.67	11.58	18.16	13.69

The public and private schools student's left ear have a mean decebels average of 21.11 db for male and 18.64 for female. The standard deviation variable. With the level of hearing for speech of the left ear of the student male show 37.72% for female 21.51%.

Table IX

Bone Conduction Threshold — Right Ear (Public)

Range of DB	500 Hz		1000 Hz		1500 Hz		2000 Hz		3000 Hz		4000 Hz	
	M	F	M	F	M	F	M	F	M	F	M	F
0— 10	34	36	56	75	63	73	72	88	64	80	72	84
11— 20	45	55	30	25	24	23	16	13	22	19	12	14
21— 30	11	12	4	3	4	5	4	2	4	2	8	3
31— 40	1	—	2	1	1	3	0	1	2	2	1	2
41— 50	0	1	1	—	0	—	0	—	0	1	0	1
51— 60	3	—	1	—	1	—	2	—	2	—	1	—
61— 70	—	—	—	—	1	—	—	—	—	—	—	—
NR	—	—	—	—	—	—	—	—	—	—	—	—
Total	94	104	94	104	94	104	94	104	94	104	94	104
Mean	14.54	13.40	11.14	8.77	10.39	9.54	9.12	7.42	10.39	8.67	9.33	8.38
SD	10.11	7.12	8.94	5.79	9.65	7.14	8.61	5.01	9.42	6.97	8.27	7.03

The average mean decebels of the male is 10.81 while the female is 9.36. The percentage of male students with bone conduction above 21 db is 9.51% while female is 6.73% with an average percentage of 8.15%. The standard deviation is not very variable.

Table X

Bone Conduction Threshold — Left Ear (Public)

Range of DB	500 Hz		1000 Hz		15000 Hz		2000 Hz		3000 Hz		4000 Hz	
	M	F	M	F	M	F	M	F	M	F	M	F
0—10	36	46	72	84	74	84	82	95	67	75	66	76
11—20	47	50	17	16	16	16	9	6	20	24	22	21
21—30	7	7	3	3	2	3	1	2	5	3	4	5
31—40	3	—	—	1	—	1	—	1	—	—	—	1
41—50	—	1	1	—	1	—	1	—	1	2	1	1
51—60	1	—	1	—	1	—	1	—	1	—	1	—
61—70	—	—	—	—	—	—	—	—	—	—	—	—
NR	—	—	—	—	—	—	—	—	—	—	—	—
Total	94	104	94	104	94	104	94	104	94	104	94	104
Mean	13.48	12.04	8.90	7.90	8.59	7.90	7.63	6.75	9.65	9.15	9.65	9.15
SD	8.45	6.90	7.93	5.46	7.72	5.46	7.27	4.53	8.30	7.21	8.17	7.08

The average mean decebel of the male is 9.65 while the female is 8.815. The percentage of male student with bone conduction above 21 db is 6.11% and female is 4.56% with an average of 5.33%. The standard deviation is not very variable.

Table XI

Bone Conduction Threshold — Right Ear (Private)

Range of DB	500 Hz M	500 Hz F	1000 Hz M	1000 Hz F	1500 Hz M	1500 Hz F	2000 Hz M	2000 Hz F	3000 Hz M	3000 Hz F	4000 Hz M	4000 Hz F
0–10	36	37	50	95	67	124	103	198	83	159	80	171
11–20	58	116	74	132	58	109	29	59	48	90	40	82
21–30	28	96	9	32	7	24	4	6	2	13	12	7
31–40	14	14	3	5	4	6	—	—	—	—	1	2
41–50	—	1	—	—	—	—	—	—	1	1	1	1
51–60	—	—	—	—	—	1	—	1	2	1	1	—
61–70	—	—	—	—	—	—	—	—	—	—	—	1
NR	—	—	—	—	—	—	—	—	—	—	1	—
Total	136	264	136	264	136	264	136	264	136	264	136	264
Mean	16.97	18.91	12.93	13.49	11.68	12.32	8.22	8.38	10.35	10.23	11.13	9.74
SD	9.28	7.96	6.75	7.19	7.18	7.82	5.07	5.71	8.13	6.85	8.40	7.08

The average mean decebels of male is 11.88 and the female is 12.17. The percentage of male student with bone conduction above 21 db is 12.68% and female 17.61% with an average of 15.14%. The standard deviation is not very variable.

Table XII

Bone Conduction Threshold — Left Ear (Private)

Range of DB	500 Hz M	500 Hz F	1000 Hz M	1000 Hz F	1500 Hz M	1500 Hz F	2000 Hz M	2000 Hz F	3000 Hz M	3000 Hz F	4000 Hz M	4000 Hz F
0–10	36	57	60	138	69	172	115	224	87	163	88	190
11–20	70	140	67	103	60	79	18	35	35	89	32	61
21–30	28	58	7	20	7	10	3	3	9	9	11	11
31–40	2	9	2	3	—	2	—	1	2	2	1	—
41–50	—	—	—	—	—	—	—	—	2	—	2	—
51–60	—	—	—	—	—	1	—	—	—	1	1	2
61–70	—	—	—	—	—	—	—	1	1	—	1	—
NR	—	—	—	—	—	—	—	—	—	—	—	—
Total	136	264	136	264	136	264	136	264	136	264	136	264
Mean	15.4	16.22	11.90	11.26	10.94	9.67	7.26	7.39	10.87	9.97	11.09	9.02
SD	7.27	7.53	6.49	6.81	5.92	6.63	4.35	5.59	9.31	6.61	9.98	6.81

The average mean decebels of male is 11.24 and the female is 10.58. The percentage of male student with bone conduction above 21 db is 9% and female is 10.22% with an average of 9.61%. The standard deviation is not very variable.

Table XIII

Bone Conduction Threshold – Right (Public & Private)

Range of DB	500 Hz M	F	1000 Hz M	F	1500 Hz M	F	2000 Hz M	F	3000 Hz M	F	4000 Hz M	F
0–10	70	73	106	170	130	197	175	286	147	239	152	255
11–20	103	171	104	157	82	132	45	72	70	109	52	96
21–30	39	108	13	35	11	29	8	8	6	15	20	10
31–40	15	14	5	6	5	9	0	1	2	2	2	4
41–50	0	2	1	—	0	0	0	0	1	2	1	2
51–60	3	—	1	—	1	1	2	1	4	1	2	0
61–70	—	—	—	—	1	—	—	—	—	—	0	1
NR	—	—	—	—	—	—	—	—	—	—	1	0
Total	230	368	230	368	230	368	230	368	230	368	230	368
Mean	15.98	17.38	12.20	12.16	11.15	11.53	8.59	8.11	10.37	9.79	10.39	9.36
SD	9.7	8.11	7.77	7.14	8.3	7.73	6.76	5.54	8.68	6.92	8.39	7.09

For both public and private schools, the average mean decebels of the male right ear is 11.44 while that of the female is 11.38. The percentage of male student with bone conduction above 21 db is 11.12% and that of the female is 12.17%. The standard deviation is not very variable.

Table XIV

Bone Conduction Threshold – Left (Public & Private)

Range of DB	500 Hz M	F	1000 Hz M	F	1500 Hz M	F	2000 Hz M	F	3000 Hz M	F	4000 Hz M	F
0–10	72	103	132	222	143	256	197	319	154	238	154	266
11–20	117	190	84	119	76	95	27	41	55	113	54	82
21–30	35	65	10	23	9	13	4	5	14	12	15	16
31–40	5	9	2	4	0	3	0	2	2	2	1	1
41–50	0	1	1	0	1	—	1	0	3	2	3	1
51–60	1	—	1	—	1	1	1	0	1	1	2	2
61–70	—	—	—	—	—	—	—	1	1	—	1	—
NR	—	—	—	—	—	—	—	—	—	—	—	—
Total	230	368	230	368	230	368	230	368	230	368	230	368
Mean	14.5	15.04	10.67	10.31	9.98	9.17	7.41	7.21	10.37	9.74	10.33	9.06
SD	7.82	7.59	7.27	6.63	6.82	6.37	5.73	5.32	8.93	6.79	8.63	6.88

For both public and private schools, the average mean decebels of the male left ear is 10.54 while that of the female is 11.38. The percentage of male student with bone conduction above 21 db is 7.55% while that of the female is 7.39. The standard deviation is not very variable.

Table XV

Speech Reception Threshold (Public)

Decebel	Female		Male	
	R	L	R	L
10	11	8	8	6
15	46	43	35	27
20	20	25	21	22
25	13	14	9	18
30	4	2	2	5
35	2	2	4	1
40	3	4	9	5
45	1	1	1	5
50	1	1	2	2
55	1	1	0	1
60	0	3	1	1
65	1	0	0	0
70	0	0	0	0
75	1	0	0	1
80	0	0	2	0
85	0	0	0	0
90	0	0	0	0
95	0	0	0	0
100	0	0	0	0
Total	104	104	94	94
Mean	20.43	21.11	23.14	23.99
SD	10.92	10.70	13.41	12.08

The male right ear mean decebels of SRT is 23.138 and female is 20.43 and standard deviation of 13.4 and 10.92 respectively. The percentage of male right ear whose SRT above 15 db is 54.26% while female is 45.19%.

The left ear mean decebels of SRT is 23.99 while female is 21.1. The standard deviation is 12.08 and 10.69 respectively. The percentage of male left ear whose SRT is above 15 db is 64.89% and the female is 50.96%.

Table XVI

Speech Reception Threshold (Private)

Decebel	Female		Male	
	R	L	R	L
10	9	13	8	5
15	128	132	51	54
20	94	72	42	37
25	20	28	18	22
30	7	9	5	10
35	2	4	8	1
40	1	2	1	2
45	1	0	3	3
50	0	2	0	1
55	0	0	0	0
60	0	0	0	0
65	0	0	0	1
70	0	0	0	0
75	0	1	0	0
80	2	0	0	0
85	0	0	0	0
90	0	0	0	0
95	0	1	0	0
100	0	0	0	0
Total	264	264	136	136
Mean	18.62	18.98	20.15	20.70
SD	7.14	8.27	7.22	8.21

The male right ear mean decebels of SRT is 20.147 and female is 18.62 with a standard deviation of 7.22 and 7.14 respectively. The percentage of male right ear whose SRT is above 15 db is 56.61% while the female is 47.34%. The percentage male left ear whose SRT is above 15 db is 56.61% and the female is 45.07%.

Table XVII

Speech Reception Threshold (Public & Private)

Decebel	Male		Female	
	R	L	R	L
10	16	11	20	21
15	86	81	174	175
20	63	59	114	97
25	27	40	33	42
30	7	15	11	11
35	12	2	4	6
40	10	7	4	6
45	4	8	2	1
50	2	3	1	3
55	0	1	1	1
60	1	1	0	3
65	0	1	1	0
70	0	0	0	0
75	0	1	1	1
80	2	0	2	0
85	0	0	0	0
90	0	0	0	0
95	0	0	0	1
100	0	0	0	0
Total	230	230	368	368
Mean	21.37	22.04	19.13	19.58
SD	10.32	10.11	8.42	9.08

The male right ear mean decebels of combine public and private schools is 21.37 and 18.13 for female with standard deviation of 10.32 and 8.42 respectively. The percentage of male right ear whose SRT is above 15 db is 55.65% while the left is 60%. The percentage female right ear SRT is above 15 db is 46.73 while the left is 46.73.

Table XVIII-A

PB (Discrimination) (Public)

Discrimination Score	Female		Male	
	R	L	R	L
100	46	43	38	35
96	17	20	16	20
92	24	21	17	16
88	5	7	10	8
84	3	6	4	4
80	5	1	2	6
76	2	4	4	3
72	0	1	2	1
68	0	0	0	0
64	1	1	0	0
60	1	0	1	1
54	0	0	0	0
Total	104	104	94	94
Mean	94.31	94.15	93.45	93.32
SD	7.58	7.23	8.02	7.88

Table XVIII-B

PB (Discrimination) (Private)

Discrimination Score	Female		Male	
	R	L	R	L
100	260	261	130	132
96	0	0	4	0
92	1	1	2	2
88	2	2	0	1
84	1	0	0	1
80	0	0	0	0
76	0	0	0	0
72	0	0	0	0
68	0	0	0	0
64	0	0	0	0
60	0	0	0	0
56	0	0	0	0
54	0	0	0	0
Total	264	264	136	136
Mean	99.82	99.88	99.77	99.68
SD	1.51	1.15	1.16	1.94

Table XVIII-C

PB (Discrimination) (Public & Private)

Discrimination Score	Male		Female	
	R	L	R	L
100	168	167	306	304
96	20	20	.17	20
92	19	18	25	22
88	10	9	7	9
84	4	5	4	6
80	2	6	5	1
76	4	3	2	4
72	2	1	0	1
68	0	0	0	0
64	0	0	1	1
60	1	1	1	0
56	0	0	0	0
54	0	0	0	0
Total	230	230	368	368
Mean	97.18	97.08	98.26	98.26
SD	5.75	6.11	4.90	4.73

The average mean discrimination score of male right and left ear is 97.13 with an average standard deviation of 5.93 and that of the female is 98.26 with average standard deviation of 4.81.

Discussion

Tables III and IV show that there are more male than female students with hearing impairment and that the left ear is greatly involved. In Tables V and VI for private school students, the trends are the same. In pure tone audiometry using the American standard of more than 21 db, there are more male than female students who are deaf and the left ear is more involved. It shows that there are many subjects who have hearing impairment in only one ear.

Table XIX

Percentage of Hearing Impairment in Air Conduction
(Above 21 db)

	Public				Private			
	Right		Left		Right		Left	
	No.	%	No.	%	No.	%	No.	%
Male	35	36.96	42	44.94	32	23.34	42	30.52
Female	34	32.64	28	27.40	33	12.40	41	15.62
Total	69	34.84	70	35.35	65	16.40	83	20.75

There are more students in the public schools who have hearing impairment which is 34.84% in the right ear and 35.35% in left. The private schools showed hearing impairment of 16.40% in the right and 20.75% in the left. In the total number screened there are 134 students whose right ear is impaired and 153 students whose left ear is impaired which 22.40% and 25.58% respectively.

Table XX

Bone Conduction Threshold above 21 db

	Public				Private			
	Right		Left		Right		Left	
	No.	%	No.	%	No.	%	No.	%
Male	9	9.57	6	6.11	17	12.68	12	9
Female	7	6.73	5	5.33	46	17.61	27	10.22
Total	16	8.08	11	5.55	63	15.87	39	9.75

In the private schools there are 15.87% in the right and 9.75% in the left; in the public schools there are 8.08% in the right and 5.55% in the left with mixed or sensorineural deafness. Overall there are 79 students or 13.21% with the right ear having mixed or sensorineural deafenss while the left shows 50 students or 8.36%.

In speech reception threshold it must be considered that a pure tone loss of more than 15 db is highly suspicious but if it only on one of the frequencies then it is usually compensated in other frequencies. The pure tone audiometric table, results of the screening showed that there are greater losses in the 500 Hz. The percentage of students screened in public schools whose SRT is above 15 db showed that the female is better than the male. Over all show that there are 300 students right ear or 50.16% and 310 students left ear or 51.83% whose SRT is above pure tone of 20 db.

Table XXI

Speech Reception Threshold (above 20 db)

	Public				Private			
	Right		Left		Right		Left	
	No.	%	No.	%	No.	%	No.	%
Male	51	54.25	61	64.89	77	56.61	77	56.61
Female	47	45.19	53	50.96	125	47.34	119	45.07
Total	98	49.49	114	57.57	202	50.5	196	49.00

The findings of SRT is not in conflict with the discrimination test and pure tone audiometric test. We must consider the point of detectability of sound and the threshold of faint speech which is the SRT. You usually add 40 db to the SRT and the speech range could be faint, average, and loud. Although in the screened students, there are definite hearing impairment, there are many who have unilateral hearing impairment and those with a severe deafness are still within social adequacy.

Table XXII

Comparative Study of Hearing Studies

Author	Year	Location	Age Range	Total Screened	Definition of Hearing Loss	% with Loss
Faramt	1960		6-10	741		9.3
Eagles	1963	Pittsburg	3-17	1,078	below 10 db	10.7
Melnick	1964	Pittsburg	5-14	860		15
Kapur	1965	Vellore India	5-15	857	<25 db at 500-600 cps.	17.4
Brody	1965	Alaskan Eskimos	under 20	327	<19 db at 500-600 cps.	38.8
Halchusl	1965	S. African Private School	School Children	1,052	over 2 response at <14 db at 500-600 db	4.1
Hinchcliffe	1965	Jamaica	35-64	548	<32 db at 2000 cps. <30 db at 4000 cpc.	3.2
Farid	1966	Cairo, Egypt	6-12	3,860	<19 db	6.2
Anderson	1967	Buffalo N.Y.	School Children	24,541	<19 db at 250-800 cps.	2.9
Robinson	1967	Vancouver Canada	Grade I-VI	6,035	Ave <14 db at 250-400 cps.	3.5
Eldridge et al	1966	Guam	8-19	1,541	<19 db at 5000-6000 cps.	16.8
Fay et. al	1970	NYC	6-14	336		19.8

In comparing this study with that of other studies in India, Alaska Eskimos and especially Guam (where almost one-half of thepopulation are of Filipino Ancestry) the findings show a higher percentage with hearing loss which findings are similar to those of the present study.

In the Philippines, Ledesma reported in 1974 that a test done with the Bureau of Elementary School showed that 15% of children tested suffered from a certain degree of conductive or sensorineural loss.

A nationwide survey in 1979-81 of the special education division of the Bureau of Elementary Education, MECS, reported 0.504% hearing impairment. They isolated 4,574 out of 907,094 students found to have the impairment. They had preliminary surveys using drum of 500 Hz, Bell 1000 Hz, whistle 2000 Hz expressed in the distance from which they hear the sound. The average was taken and interpreted as follows: 10 feet or more — normal; 6-10 feet — mild; 4-6 feet — moderate; 2-4 feet — severe; 0-2 feet — deaf/profound.

Table XXIII

Nationwide Survey of Exceptional School-Age Children

NAME	DRUM		BELL		WHISTLE		AVERAGE		REMARKS
	500 Hz		1000 Hz		2000 Hz				
	R Ear	L Ear	R Ear	L Ear	R Ear	L Ear	R Ear	L Ear	

Note: Score will be distance in feet
*Classification:
10 —	more	— normal
6 —	10 ft.	— mild
4 —	6 ft.	— mild
2 —	4 ft.	— severe
0 —	2 ft.	— deaf/profound

The 4,574 students with hearing impairment of some who were isolated were subjected to physical examination and hearing test with the use of pure tune audiometer. One hundred ninety-five or 4.263% are

deaf; 1,652 or 36.095% are hard of hearing and together the hearing impairment is 40.353%. Deafness is defined as a state where sense of hearing is severe to profound (60 db and above), hard of hearing is one whose sense of hearing is moderate (40 db) and functional with or without a hearing aid. They considered the running ears otitis media and ear deformity together with hearing impairment which is 2,728 or 59.642%.

Observable Characteristics and Symptoms

A. According to Behavior
   1. Titls head at an angle to get the sound
   2. Listlessness and inattention
   3. Failure to respond to question
   4. Peculiar voice qualities, often high pitched
   5. Avoids people
   6. Tends to run his words together
   7. Poor reading ability
   8. Defective in speech
   9. Poor general scholarship in relation to his IQ
   10. Usually talks low or louder than is necessary

B. According to Appearance
   1. Deformities of the outer ear
   2. Discharging ear
   3. Muscular tension when listening
   4. Watches face, especially mouth and lips of speaker
   5. Blank facial expression when spoken to
   6. Chronic catarrhal condition

C. According to Complaints Made By the Child
   1. Buzzling or ringing words in head
   2. Earache
   3. Nausea or Dizziness
   4. Inability to understand directions
   5. Headache in sinus area

The students were observed in accordance with their behavior, appearance and complaints. The results of the survey were limited by lack of information on the assessment techniques in most school systems. The differences in findings between those revealed in the study by MECS (1979-1981) and those of the present study could be attributed to the variables such as the testing rooms, the persons who conducted the testing, the quality of the answers, and the instruments used.

Summary of Findings

A total of 598 students randomly picked from two private colleges and four public elementary schools were examined otoscopically and their hearing was tested.

A pure tone and speech audiometer was used in a controlled environment.

There is more hearing impairment among students in the public schools than those in the private schools for both right and left ears.

	Right ear	Left ear
Public	34.84%	35.35%
Private	16.40%	20.75%

Of the students tested, 13.21% had sensorineural or mixed deafness in the right ear and 8.36% had the same kind of deafness in the left ear. The rest of those with impairment is conductive.

Conclusion

The mean decebels of both groups is within the normal threshold. The standard deviation is high which shows great variability of the group. This indicates that among the subjects tested there are those with severe ear defect. The female students showed more normal results.

The male group were relatively more affected than the famale and the left ear showed greater involvement than the right.

Due to the significance of unilateral deafness and social adequacy, the students could still perform school work.

Recommendation

Based on the findings of this research on the incidence of hearing loss among students, it is hoped that government authorities shall consider the inclusion of otolaryngologic examination of individuals and the proper treatment of hearing deficiencies in the education and health programs.

Formula

II. Standard Deviation

$$SD = I\sqrt{E f d^2/N - (Efd/N)^2}$$

where
  I — class or score interval
  E — sum
  f — frequency
  d — deviation from mean
  N — no. of subjects or cases

Formula

I. Mean $= \dfrac{Efx}{N}$

where
  E — sum
  f — frequency
  x — class or measure
  N — no. of subjects or cases

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NEAR TOTAL GLOSSECTOMY WITHOUT LARYNGECTOMY*

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ABSTRACT

A patient who underwent near total glossectomy for advanced carcinoma of the base of the tongue also underwent a partial laryngeal closure procedure rather than a laryngectomy. This closure procedure corrects loss of laryngeal sphincter function, and allows swallowing without aspiration while preserving phonatory function.

INTRODUCTION

Major ablative procedures on the base of the tongue was usually followed by repeated episodes of aspiration pneumonia. This is because the resulting loss of bulk at the base of the tongue interferes with the normal swallowing mechanism. The patient thus handicapped usually had repeated episodes of aspiration and its sequel of occlusion of bronchioles by proteinaceous fluid and necrotic cells. Chronic aspiration often then leads to atelectasis, consolidation of lung tissue and pulmonary abscesses. The resulting changes may be so grave as to be fatal.

Several procedures for correction of chronic aspiration have been devised:

1. pharyngostome

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2. cuffed tube tracheostomy
3. radiation to salivary glands to reduce their output
4. cricopharyngeal myotomy to increase the dimensions of the esophageal inlet
5. use of endogenous tissue to replace lost bulk of tongue base
6. laryngectomy.

These procedures have been met with diverse degrees of acceptance and success in the hands of surgeons. Total laryngectomy is highly successful, but removal of an organ only partially disabled is anathema to most laryngologists, whose thoughts and efforts are ever concerned with anatomic and functional preservation. Also, such a procedure most certainly increase risk of intra- and post-operative morbidity.

Tonight we are presenting our experience with a case of base of tongue carcinoma who was treated surgically but in whom an innovative partial laryngeal closure procedure was done instead of a laryngectomy as prophylaxis against aspiration.

CASE HISTORY AND PHYSICAL EXAMINATION FINDINGS

GENERAL DATA: M.A., 66, male, married, farmer from Masbate was admitted to the UP-PGH for the first time on March 31, 1986.

CHIEF COMPLAINT: ulcerated tongue mass

HISTORY OF PRESENT ILLNESS:

Five months prior to admission the patient noted a 0.5 x 0.5 cm. ulcerative lesion on the base of the tongue. There was associated dysphagia and odynophagia. The patient consulted a private physician who prescribed penicillin antibiotics without any relief.

Two months prior to admission the patient was referred to the PGH and punch biopsy of the tongue mass was done, revealing Squamous Cell Carcinoma, Well-Differentiated. By this time there was associated 30% weight loss.
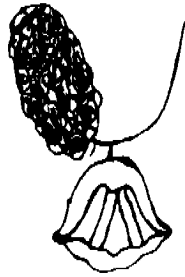
PERSONAL HISTORY:

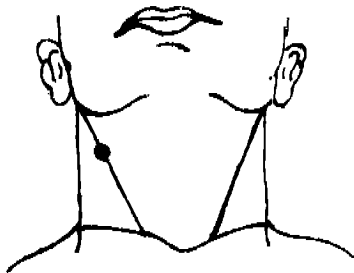Patient engaged in inverted tobacco-smoking for 20 pack years and drinks "tuba" occasionally.

PHYSICAL EXAMINATION:
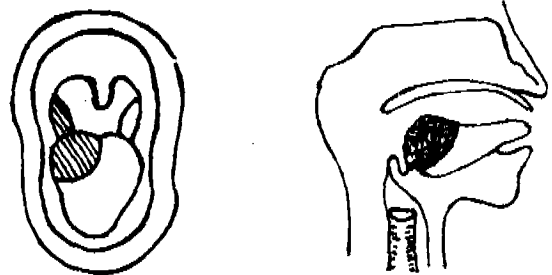
3.5 x 3.5 cm mass involving the base of the tongue, anterior and posterior tonsillar pillars (R), and vallecula (R)

> mass involved base of the tongue and vallecula (R)
> epiglottis free of tumor
> vocal cords, arytenoids mobile

2 x 2 x 2 cm. movable jugulodigastric node (R)

TECHNIQUE OF OPERATION

On May 2, 1986, the patient underwent operation. A tracheostomy was first done under local anesthesia and anesthetic gases and oxygen were then administered through a Portex cuffed tube inserted into the new opening in the trachea. COMMANDO with lip splitting was done, followed by wide excision of the primary lesion en bloc, to include the base and about 70% of the anterior 2/3 of the tongue, right anterior and posterior tonsillar pillars, right faucial tonsil and part of the soft palate.

After hemostasis, the epiglottis was grasped with a tenaculum and elevated cephalad and forward. The lateral edges of the epiglottis were freshened by snipping off the mucosal margins with Metzenbaum scissors. This was continued up to the lateral half of each superior margin of the epiglottis, leaving only the area near the tip untouched. Inferiorly the same procedure was performed on each aryepiglottic fold. The arytenoids were left intact. The epiglottis was then brought down and backward to form a "canopy" over the laryngeal inlet. The raw areas were then sutured using nylon 3-0 and 4-0. Thus each side of the freshened epiglottic margin was sutured to the ipsilateral edge of the aryepiglottic fold, leaving only a small opening posteriorly into the glottis over the arytenoid area. This site was chosen because we wanted the arytenoids to be unimpeded in movement to maintain laryngeal ability to produce speech and to close off during deglutition. It was also very much posterior, protected by the epiglottis which during swallowing channels food into the piriform sinuses. Our laryngoplasty procedure as can be seen is simple and requires neither special instruments nor new surgical skills.

The primary defect in the oral cavity and oropharynx was closed using the remaining tongue as a flap. A nasogastric tube was inserted. Suction drains were placed in the COMMANDO site and the skin closed in layers.
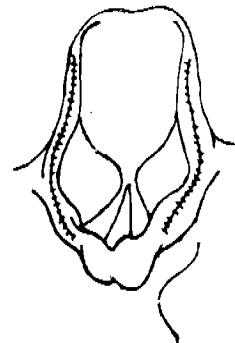

Fig. 2. Technique of laryngoplasty viewed from posterior. Dotted lines show areas freshened by removal of mucosa along margins of epiglottis and aryepiglottic folds.

front view   lateral view

Figure 1. Shaded areas show extent of wide excision on the primary site of carcinoma.
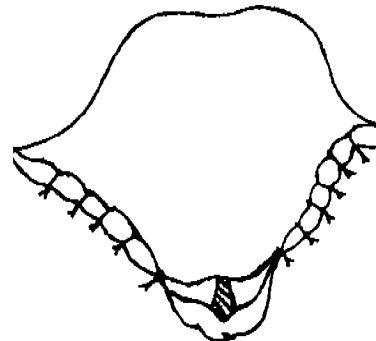

Fig. 3. Technique of laryngoplasty viewed from posterior. Epiglottis sutured to aryepiglottic folds. A small opening is left over the arytenoids.

A metal tracheostomy tube specially adapted for speech by drilling adequate holes near its curvature was substituted on his first post-operative day and feeding via NGT was started the next day. The tube drains were removed after four more days. Recovery was uneventful and clear liquids by mouth were allowed on the eighth post-operative day. He was discharged ten days after his operation, able to eat soft diet without aspiration. This patient has completed a course in post-operative radio-therapy.

DISCUSSION

Major surgery on the base of the tongue for malignant lesions interferes with the normal swallowing mechanism and predisposes to aspiration. Deglutition is a series of coordinated events that work synergistically to push and direct food and liquids safely into the correct orifice in the hypopharynx. It consists of a voluntary and an involuntary phase.

Phase I — voluntary

The tongue pushes the bolus of food backwards and downwards into the pharynx. The soft palate rises against the posterior pharyngeal wall to prevent escape of the bolus into the nasopharynx. By gravity and muscular action of the tongue, the bolus is propelled down to the hypopharynx and vallecula.
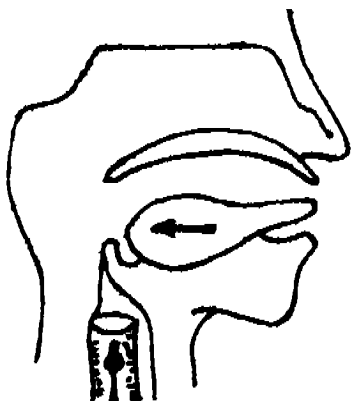
Fig. 4. Voluntary phase of deglutition.

Phase II — involuntary

During this phase the epiglottis is tipped backwards to act as a cover over the larynx, aided by the upward and forward movement of the hyoid bone. The larynx elevates and jams the epiglottis against the base of the tongue, further closing it over the laryngeal inlet. The arytenoids move forward and the aryepiglottic muscles contract and close the laryngeal opening, thus providing a second protective mechanism against entry of food into the laryngeal inlet. The pharyngeal constrictors initially relax but shortly develop a peristaltic wave which propels the food into the esophagus. The cricopharyngeus muscle guarding the esophageal introitus initially contracts mildly before this peristalsis begins. This short phase is followed by relaxation which admits the bolus

into the esophagus just as the larynx rises. After the bolus has passed, it again assumes the closed state.

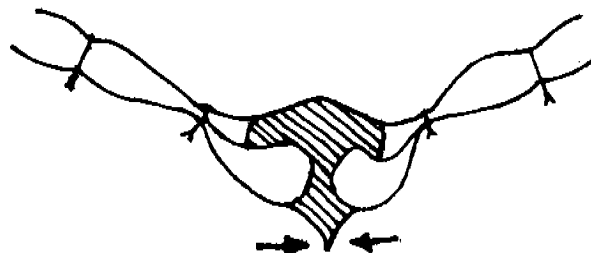Fig. 5. Involuntary phase of deglutition.

Fig. 6. Diagram of movement of arytenoids to start closure of the laryngeal sphincter.

In the absence of the bulk and muscular action of the base of the tongue following radical surgery, disruption of the normal sequence of events during swallowing encourages aspiration. Salivary output, normally prevented from dribbling into the hypopharynx by apposition of the posterior tongue to the soft palate, now forms a thin but steady stream backwards and downwards and is easily aspirated. Attempts at swallowing this liquid or food during eating are met with frustration because the lack of bulk and muscular action at the posterior tongue does not permit the epiglottis to be secured against the laryngeal opening. This is the reason why the use of noncontractile and relatively thin flaps from the Sternocleidomastoid and Deltopectoral areas for reconstruction is often not very effective against aspiration.

Total laryngectomy has been employed very successfully as alternative procedure, but its use increases operative time and introduces unnecessary risk of post-operative morbidity, not to mention the very distressing effects it has on the patient who necessarily loses his laryngeal voice after such an operation. A prophylactic laryngectomy may be necessary in elderly and debilitated patients in whom rehabilitation of swallowing is unlikely, and in persons with reduced pulmonary reserve and poor cough reflex who cannot tolerate repeated aspiration. But in the absence of these indications, and unless the larynx is directly involved by tumor, many physicians will not do total laryngectomy.

Recently, numerous procedures have been developed to prevent aspiration without laryngectomy by closure of the laryngeal inlet. Probably the earliest was done by Habal and Murray in 1969. After doing a tracheostomy, they entered the pharynx through a suprahyoid incision and completely closed off the laryngeal inlet by bringing down the epiglottis and suturing its edges to the arytenoids and aryepiglottic folds. Such a procedure prevented aspiration but removed phonatory function. By 1974 together with Vecchione they had reported having successfully reversed the procedure in the same patient above, with resulting good voice and no aspiration. They also tried the same closure technique in six other patients, with failure to prevent aspiration in two cases.
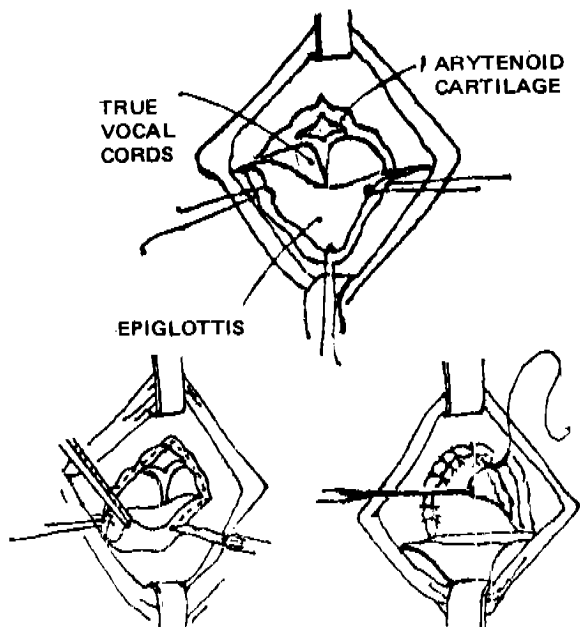
Fig. 7.   Illustration of Habal and Murray technique.

In 1975 Montgomery reported 100% success in preventing aspiration in twelve patients by total closure of the larynx by stripping off the mucosa circumferentially at the glottis and then suturing the true vocal cords together. Post-operatively, the patients could breathe through a tracheostomy but again had no voice.

In 1980, Sasaki improved Montgomery's technique by using a double closure (one at the false cords superiorly and one at the true vocal cords inferiorly) and using a sternohyoid muscle flap sutured at the interarytenoideus muscle posteriorly to reinforce the closure.

Lindeman et. al. in 1976 had a different approach: they transected the trachea at about the level of the fourth tracheal ring and connected the proximal segment to the esophagus, while the distal segment was converted into a permanent tracheostomy. Secretions aspirated into the larynx were thus channeled into the esophagus. In two out of their four cases a previously done high tracheostomy precluded anastomosis of the proximal segment so they simply closed it as a blind pouch

without any complications post-operatively. Although they reported reversal of the procedure later in two patients, their technique per se made phonation impossible.
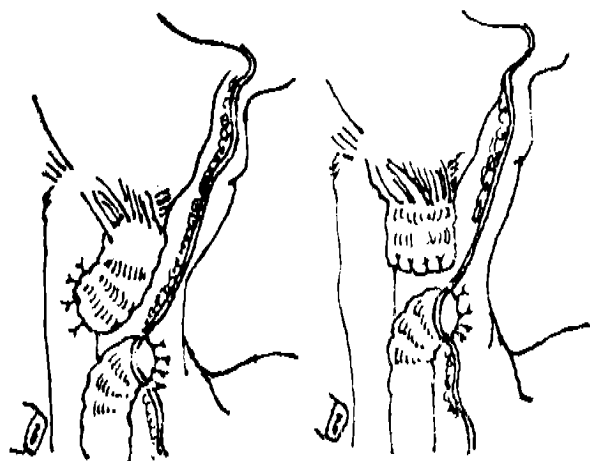

Fig. 8.   Illustration of the technique of Lindeman et. al.

In 1982, Biller reported his laryngoplasty operation. It consisted of incising along the lateral margins of the epiglottis, aryepiglottic folds, and arytenoids, and suturing the resulting right and left mucosal flaps to form a tubed supraglottis with a small opening anteriorly. Post-operatively all five patients he operated on had understandable speech and were able to swallow.
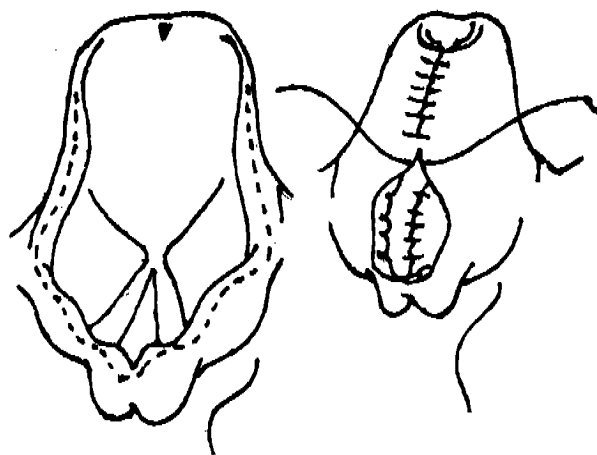

Fig. 9.   Illustration of Biller laryngoplasty technique.

And in 1986 Laurian et. al. published their version of laryngoplasty. Their operation was very similar to that of Habal and Murray except that they left a small opening laterally to permit phonation and that they used a two-layer closure. They reported that in four patients, one was successful and the other three had dehiscence of the flaps. Repair of dehiscence was successfully done in two, while the last one refused a second operation with resulting mild repeated aspiration.
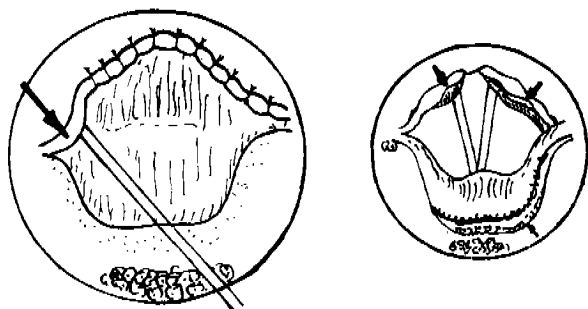
Fig. 10. Illustration of technique of Laurian et. al.

SUMMARY

In our operation, which is different from any of those we have discussed, we used an epiglottic flap to prevent entry of foreign material into the larynx but maintained an opening posteriorly for phonation.

Our procedure is probably more effective against aspiration than regional flaps used to reconstruct the tongue base. It:

1. is simple
2. requires neither special instruments nor new surgical skills
3. eliminates need for a laryngectomy
4. prevents aspiration
5. preserves intelligible speech, and
6. is functionally acceptable

We deemed the following as candidates for this type of laryngoplasty operation:

1. base of tongue malignancy without direct laryngeal involvement
2. elderly and debilitated individuals in whom rehabilitation of swallowing is unlikely
3. persons with reduced pulmonary reserve and a poor cough reflex who could not tolerate recurrent aspiration
4. limited supraglottic malignancy where 1/2 of the epiglottis can be spared.

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A VENTILATION TUBE INSERTER*

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Mariano Caparas, M.D.***

INTRODUCTION

Myringotomy with tube insertion is one of the more common procedures in otolaryngologic practice. There are various methods of introducing tubes depending on 1) origin of one's training; 2) availability of instrument; 3) type of grommet used. The method utilizes several types of instrument such as Hartmann alligator forceps, an ear pick, specialized Hartmann type tube inserter, or just a disposable VT inserter. Whichever it may be, familiarity with one's instrument is always vital. In this paper, I would like to present a unique, simple, low-cost tube inserter that has proven to be a practical instrument.

MATERIALS AND METHODS

The instrument was constructed from readily available materials.
- Spring loaded ballpen
- G-14 teflon tube stylet (Venflon or Abbocath)
- Dental ortho wire G-30
- mini fuse

These may be gathered as discarded items or may be purchased for less than fifty pesos.

Accessory tools such as pliers, soldering iron, lead, saw, fine file, epoxy bond were used.

BASIC PRINCIPLE

The spring loaded ballpen which exposes the tip on pressing the top button and retracts upon pressing the trigger button provided the basic mechanism. The upper part of the ballpen was retained and the lower part replaced with a G-14 stylet needle. The shaft of the needle was bent to improve visualization and stabilize handling.

CONSTRUCTION

1. Disassembly of the ballpen: the ink refill was discarded.
2. Plunger and stylet development: a mini fuse end or a piece of brass rod was soldered to the end of the ortho wire, which served as the plunger. The wire now becomes the stylet of the needle.
3. With the spring in the middle, the stylet was inserted into the G-14 needle and was cut at the tip.
4. The tip of the needle was blunted using the file.
5. The stylet was removed. The middle two third was flattened with the file, for greater flexibility.
6. The G-14 needle was bent to the desired angulation.
7. Assembly of the VT inserter done as shown.
8. Secure the head to the body with epoxy bond.
9. Test the instrument and make adjustment to the tip length just enough to accommodate the grommet.
10. Polish the tip using the file.

TECHNIQUE

The VT inserter and the grommet (also locally manufactured) were both sterilized by soaking in Cidex solution prior to use. The patient population were mainly adults diagnosed to have otitis media with effusion. Anesthesia was administered by local infiltration, iontophoresis or topical use of Pontocaine 2% and 0.1 Normal NaOH solution. The procedure was carried on an outpatient basis, with or without the use of an operating microscope. After the myringotomy and suctioning, the VT inserter is introduced with the grommet at the tip. One half of the inner flange is insinuated first followed by the other half as shown. Once the grommet is in place, the trigger button is gently pressed, thus retracting the stylet and releasing the grommet.

EVALUATION

A total of ten residents of the department had the opportunity to use the VT inserter. A survey questionnaire was done for them to share their experience, comments and suggestions. The questions were as follows:
1. How many VT insertions have you done? In how many of them were you able to use the instrument?

2. Were you successful in inserting the grommet using the inserter?
3. How did the instrument handle as compared to others you have used?
4. Do you have any comments?
5. Do you have any suggestions?

Their response were tabulated as follows:

Resident	VT done using VT inserter	success with VT inserter	ease of handling	Comments	Recommendations
I	4	2	YES	EASIER	Handle obstructs view	Divert handle from view
II	5	1	YES	SAME	Prefers Hartman	
III	3	2	YES	EASIER	Tail should be bent	
IV	7	7	YES	EASIER		
V	3	1	YES	EASIER	Better than Hartman	
VI	2	2	YES	EASIER		
VII	3	1	NO	HARDER	VT kept falling	VT should be fitted well at the tip
VIII	18	18	YES	EASIER		
IX	4	1	NO	HARDER	poor visualization VT fell	VT should fit snugly Bend shaft of inserter
X	5	3	YES	SAME		

Of the ten residents, two were unable to insert the grommet because it was loose and it kept falling on introduction. They used a Hartman alligator forceps instead to insert the ventilation tube.

Two residents commented that the handle of the VT inserter (referring to the first straight model) obstructed the view of the surgeon and suggested changes in the design. This subsequently led to our modification, which is a bend in our final product.

Majority (8 out of 10), were satisfied with it's use and found it easier and more convenient than the Hartman forceps or an ear pick.

DISCUSSION

Our instrument was used by several resident physicians other than the authors themselves. Initially, some had difficulties with the early model, where the needle was straight. However, after modifications were done as per their suggestions, they found it was simple and easy to use. The handling was comparatively easier than the other methods.

The difficulties encountered initially were:

1. poor visualization — this was resolved by bending the tail of the needle to move the ballpen body out of the surgeon's view.

2. ventilation tube slippage from tip — it was found out that they did not use the proper grommet size in these cases. After standardization using only G-18 teflon tube for our homemade grommet, no similar problem was encountered.

CONCLUSIONS

Our ventilation tube inserter offers several advantages that makes it a practical instrument.

1. It is cheap. The total cost ranges from nothing to less than fifty pesos or about 2.5 US dollars, while the commercially available tube inserter may cost about 100 US dollars.
2. It is simple that it can be constructed in less than an hour with simple tools at home.
3. It is easy to handle. It performs and operates like a ballpen so that handling is easy and comfortable.
4. Insertion of the grommet is fast and easy making it ideal for use in children and nervous individuals.
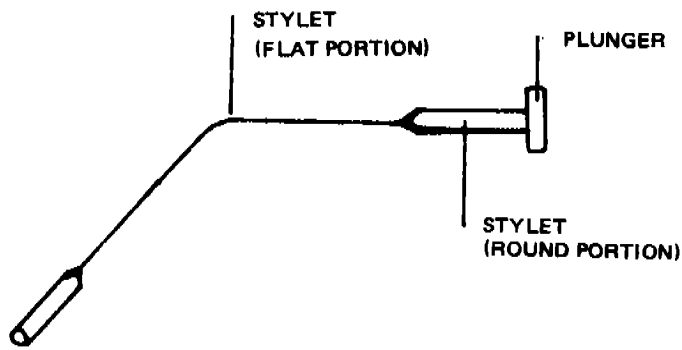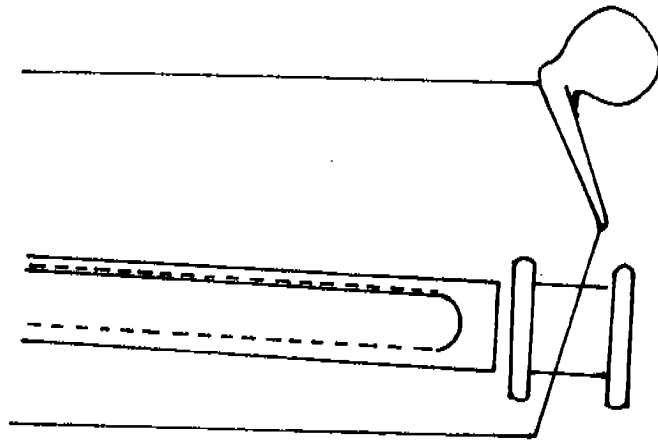
SUMMARY

In summary, we have designed an inexpensive, and simple instrument to make use of home-made grommet, for the ventilation of the middle ear.
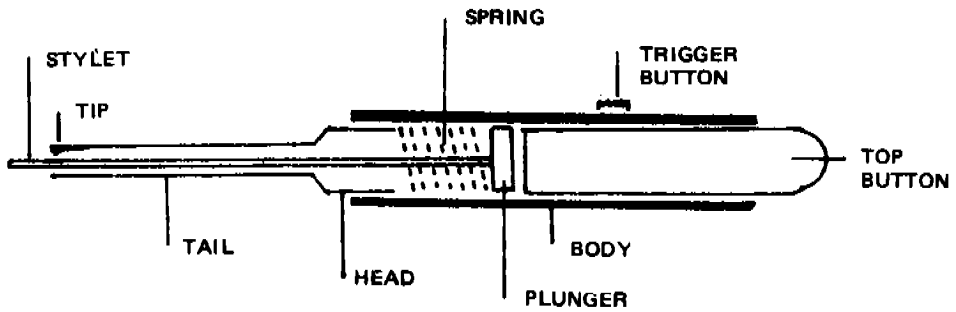
It has made myringotomy with tube insertion a very practical and easily affordable office procedure even for children.

ACKNOWLEDGMENTS

STYLET
(FLAT PORTION)

PLUNGER

STYLET
(ROUND PORTION)

**STYLET MODIFIED
FOR FLEXIBILITY**

SPRING

TRIGGER
BUTTON

STYLET

TIP

TOP
BUTTON

TAIL

BODY

HEAD

PLUNGER

**SCHEMATIC DIAGRAM OF
VENTILATION TUBE INSERTER**

FINE-NEEDLE ASPIRATION BIOPSY IN THE DIAGNOSIS OF HEAD AND NECK MASSES*

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INTRODUCTION

Early detection of malignant tumors is a primary objective in cancer management. A clinician who encounters a patient presenting with a mass in the head and neck region will want answers to the following questions. Are we dealing with a benign or malignant process? In case it is malignant, can a specific histologic diagnosis be obtained short of an open biopsy? FNAB is a most promising diagnostic procedure because it has the potential to detect malignant lesions and give a specific histology based on aspirates in most instances.

Credit for the development and eventual success of aspiration biopsy goes to the unique combination of clinician, hematologist, and pathologist at the Karolinska Institute in Stockholm, Sweden. The "Scandinavian curiosity" led to the resurgence of this technique in Europe, and recently in North America. The original publication of Franzen, Eneroth, and Zajicek and several others described the scope of thin needle aspiration diagnostic technique.

In the local setting, Flor, et. al (1981) reported the use of large bore Menghini type (G17) needle biopsy which was preceded by a stab incision. Cortez and Arcilla (1981) used gauge 21 needle biopsy for 34 thyroid cases claiming 97% accuracy, in differentiating benign from malignant lesions. Salgado, et. al. (1982) reported 83% sensitivity and 100% specificity in 37

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thyroid cases using gauge 19 needle. No local study on salivary glands and lymph nodes using FNAB has been done.

FNAB of head and neck masses was undertaken in the Department of ENT-HNS, UP-PGH with the following objectives:
1. To determine the diagnostic value of FNAB against the post-operative histodiagnosis in terms of ability to:
   a. differentiate between benign and malignant lesion
   b. give a specific histologic diagnosis based on aspirated sample
2. To assess the ability of FNAB to obtain enough tissue for cytologic assessment
3. To assess the safety of the procedure
4. To compare the cost of FNAB with excision biopsy
5. To compare the results with those of other studies.

METHODS AND MATERIALS

Subject

A total of 320 patients with head and neck masses had aspiration biopsy from Jan. 1986 to Oct. 1986. Of these number only 61 patients subsequently underwent surgery and were included in this report.

Materials

The following material were used:
— disposable gauge 22 needle
— 10 cc glass syringe
— alcohol or betadine antiseptic
— sterile cotton balls
— microscope glass slides
— 95% ethyl alcohol fixative

Technique

For thyroid aspirations, the patient is placed supine with neck hyperextended so the mass becomes prominent. For salivary gland and lymp node aspiration, patients are placed in the most comfortable position. Antisepsis is observed. The mass is held with one hand and a 10 cc syringe with a disposable needle g22 is positioned at the site and quickly inserted. No anesthesia is used. The needle is inserted into the mass and the plunger of the syringe is withdrrawn as far as possible to create a vacuum in the system. While maintaining negative pressure, the needle is moved back and forth in short strokes and in multiple directions until the transparent hub of the needle is positive for aspirate. The pressure is then allowed to equalize before withdrawing the needle to prevent the cells in the needle from being sucked into the syringe. The syringe is disconnected from the needle, filled with air and reconnected before carefully expressing out its contents into an end of a glass slide. For cystic masses, the aspirated

fluid is discarded and reaspiration of the collapsed mass is done. The smear is air-dried properly labelled, and placed in a 95% ethyl alcohol fixative for 30 min. The fixed specimen is sent to the pathologist for Papanicolaou staining and cytologic evaluation.

RESULTS

Sixty-one patients (11 male, 50 female) with an age range of 12-64, who underwent aspiration biopsy had formal surgery.

Aspiration smears were sufficient to make a cytologic evaluation in 55 patients (90%) of cases.

Table 1. Distribution of Satisfactory Rates by Organ

Organ	No. of cases with satisfactory aspirates
Thyroid	36
Salivary gland	10
Parotid	(7)
Submandibular gl.	(3)
Lymp Nodes	9
TOTAL	55

These are broken down as follows: 36 thyroid, 10 salivary gland (7 parotid, 3 submandibular gland), and 9 lymph nodes (see Table 1).

Table 2. Comparison of Aspiration Biopsy Cytology with Post-operative Histology of Head and Neck Masses

FNAB	Post-operative Histology Malignant	Benign	No. of Cases
Postive for malignancy	12	0	12
Negative for malignancy	2	37	39
Atypical cells	2	2	4
Total	16	39	55

Cytology based on aspiration were positive for malignant cells in 12 cases which was consistent with the post-operative histologic findings. No false positive were recorded in this series. There were no evidences of malignancy in 39 FN aspirates. Two of these proved to be malignant on final histopathology for two false negative results (5% false negative rate) (see Table 2).

One of these cases was from the thyroid gland interpreted as colloid goiter on aspiration turned out to be a mixed papillary carcinoma on final histopathology. The other was read as "suggestive of a pleomorphic adenoma" on aspiration of the parotid gland. The histopath on paraffin section was leiomyosarcoma.

The diagnostic value of FNAB in detecting malignancy for head and neck masses was statistically determined by computing its sensitivity, specificity, and predictive value. Sensitivity is defined as the proportion of cases with malignancy detected on operation who have positive FNAB, was 86% in this series. Specificity is defined as the proportion of cases negative for malignancy upon operation who were definitely benign on aspiration biopsy which was computed as 100%.

Table 3. Diagnostic value of FNAB in Detecting Malignancy for Head and Neck Masses

FNAB	Post-operative Histology Malignant	Benign
Malignant	12	0
Benign	2	37
Total	14	37
	Sensitivity	Specificity
	86%	100%

For the thyroid gland, our procedure had an 83% sensitivity and a 100% specificity in differentiating benign from malignant lesions of the thyroid gland.

We had 10 salivary gland lesions with one false negative diagnosis. There were 9 lymph nodes; two correctly diagnosed as benign and 7 correctly diagnosed as malignant. Four aspirates were read as "positive for atypical cells." Two turned out to be benign — 1 pleomorphic adenoma; and 1 multiple colloid adenomatous goiter; and two were malignant — follicular CA and large cell lymphoma. FNAB was able to give a correct diagnosis in 45/55 cases or 82%.

Table 4. Frequency of Correct Specific Diagnosis by FNAB among Head and Neck Masses

Organ	Diagnosis	No.
Thyroid	Adenomatous goiter	26
	Follicular adenoma	2
	Papillary ca	4
	Mixed papillary-follicular ca	1
	Total	33/36
Salivary Gland		
	Pleomorphic adenoma	6
	Mucoepidermoid ca	1
	Total	7/10
Lymph Node		
	Reactive hyperplasia	1
	Squamous cell ca, met.	2
	Undiff. ca., met.	1
	Sarcoma	1
	Total	5/9
	Total	45/55 = 82%

All the patients tolerated the procedure well. No untoward complications were noted except for one case who developed a small hematoma. There was only mild discomfort similar to an ordinary venipuncture as reported by most patients.

DISCUSSION

FNAB technique is a valuable diagnostic procedure in the diagnosis of head and neck masses. Results of our study are similar to the large series reported by Frable and Frable, and other foreign authors. Aspiration smears were satisfactory to make a cytologic evaluation in 90% of cases. This confirms the claim of the procedure's simplicity even for a beginner. The failed aspirates were due to hemodilution, inadequate specimen, and cellular distortion. As a diagnostic tool, FNAB has the ability to differentiate benign from malignant lesions. Our sensitivity and specificity rates are comparable with local and foreign figures, especially for thyroid masses. Foreign literature reports sensitivity rates ranging from 83% to 100%, while specificity ranges from 89% to 100%. Our false negative rate is within the 2% to 7% reported by foreign investigators. However, one local study reported a 23% false negative result.

The two false negative results may be explained by a geographic miss, meaning the malignant component of the lesion was not aspirated. This difficulty can be minimized by accurate localization of small nodules and sampling of at least two separate areas of the same nodule.

Accurate preoperative histodiagnosis is valuable in the systematic planning of surgical treatment. An example is in parotid tumors. The value of aspiration in pleomorphic adenoma of the parotid gland is that the surgeon is aware that a careful dissection is required to preserve the facial nerve. In contrast, if the tumor is clearly malignant on aspiration biopsy, a radical excision should be made without the the necessity to preserve the facial nerve or doing an open biopsy which violates the skin.

A case in point is a 20 year old female with a 2.5 cm slow growing, painless parotid mass with no facial paralysis. Prior to aspiration, impression was pleomorphic adenoma, however, aspiration showed mucoepidermoid carcinoma. The final histopathology confirmed this diagnosis.

A preoperative diagnosis of malignancy is significant and this can be obtained by aspiration biopsy most of the time.

In parotid tumors, pleomorphic adenoma in particular, which constitute 80-90% of the benign masses, and the different malignancies constituting 3-10%, are easily diagnosed by the pathologist. Only warthin's tumor constituting 6-10% are diagnosed with difficulty. The sensitivity for diagnosing this tumor using fine needle aspiration biopsy ranges from 50-70% according to various authors. However, management is the same.

The other difficulty of the pathologist is in diagnosing follicular carcinoma of the thyroid because it involves the morphologic picture of a capsular and blood vessel invasion. Fortunately, follicular carcinoma constitues only a small portion (20%) of thyroid malignancies, and thyroid malignancies accounts for only 10-15% of cold thyroid nodules.

Lymph node malignancies are easily diagnosed by FNAB since most of these are squamous cell CA (metastatic) and lymphoma which possess distinct cytologic appearances.

The chances of the pathologist commiting a false negative diagnosis is low. In case they encounter an aspirate without a clear cut picture of malignancy, they sign it out as positive for atypical cells, and they ask the clinician to correlate clinically.

Based on the above arguments, aspiration biopsy is a diagnostic breakthrough in head and neck oncology. The procedure has a high patient acceptability and morbidity is nil. The procedure is easily done as an outpatient procedure. No sedation or anesthesia is required, except for a careful explanation of the proposed procedure. Rapid staining of the slide may be done and preliminary diagnosis may be given within 30 minutes if needed. The specimen may even be mailed.

Another advantage of aspiration biopsy is the economy of the procedure. FNAB costs only 10 pesos including the laboratory fee, compared to a lymph node excision which costs approximately 140 pesos.

CONCLUSION

FNAB is a reliable diagnostic tool in head and neck masses. It is economical, simple, fast and safe. Thus it is a good screening procedure especially for developing countries with large population.

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INTRANASAL STEROID INJECTION USING METHYLPREDNISOLONE ACETATE*

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INTRODUCTION

One of the most common complaint rhinologists encounter from their patients is that of nasal stuffiness. It has been found that this is frequently caused by allergic and vasomotor rhinitis which lead to enlargement of the turbinates.[1,2,3] Competent ENT practitioners are well aware of the difficulty of treating this condition and its predisposition to sinusitis, ear and throat infection.[3]

Intranasal corticosteriod injection has been successfully used for over thirty years in an attempt to alleviate this distressing condition.[2,4] The mechanism of action appears to be a purely local anti-inflammatory response.[2,5] There is inhibition of edema, fibrin deposition and sinusoid engorgement, as well as fibroblast and capillary proliferation.[28] The inflammatory response is inhibited whether the inciting agent is mechanical, chemical or immunologic.[2,8]

The overall experience with intranasal steroid injection for the relief of nasal obstruction secondary to vasomotor and allergic rhinitis had been gratifying.[1,2] Previous authors have reported that this procedure have shown benefit in the following situations: 1. Post-rhinoplasty or intranasal surgery (reduces post-operative edema and symptoms of allergic and vasomotor rhinitis;[1,2,5] 2. Rhinitis medicamentosa (allows discontinuance of nasal drops or spray; antihistamine, or decongestant maybe given for PRN);[1,2,5] 3. Acutely enlarged nasal polyps (for temporary relief of airway obstruction; not recommended as substitute for polypectomy or sinus surgery);[6,12] 4. Differential diagnosis of nasal obstruction (in nasal surgery plus deviated septum, it reduces turbinate engorgement to allow evaluation of the role of the septum in subjective evaluation of nasal obstruction);[1,2,5] 5. Differential diagnosis of headache (may relieve headache secondary to pressure by septal spur or sinus congestion).[1,2,5]

The salient points of intranasal steroid injection seem to be the prolonged duration of action and negligible side effects.[2,5] Many hundreds of thousands of this procedure have been carried out without complications in the past. Mabry reported bleeding, facial flush, weakness, myalgia, headache, and nervousness as possible minor side effects.[1,5] These were however transitory and no therapy was needed. Other reports include Kabaker with an estimated 36,000 injections, Piesel and associates with over 1,000 injections with no untoward reaction.[2] The rarest but the most catastrophic complication reported following intranasal steroid injection was blindness.[1,2,5] Mabry found only ten such cases reported in his extensive review of literature. Permanent unilateral blindness occurred in two, unilateral partial loss of vision in three, and transient visual blurring in five.[1,5] The mechanism of visual complication has been postulated as a vasoconstriction or embolic phenomenon via the rich anastomosis between the ophthalmic and sphenopalatine arteries.[1,2,5] But this complication was also reported with similar frequency in procedures like steroid injection into the scalp for alopecia areata, as well as local anesthetics and nerve block injections in dental, oral, nasal and orbital procedures.[2,8] It is the general consensus that retinal artery embolization leading to blindness is directly related to particle size of the steroid suspension being used. The larger the size of the particle, the larger and more consequential the vessel it may block.[2] In an analysis of sample batches of steroid preparations, Selmanowitz and Orentreich[8] found that Hydrocortisone suspension contain particles from 50-200 micra and should therefore not be used for this procedure. Particle dimension of methylprednisolone acetate (Depo-Medrol), triamcinolone acetonide (Kenalog), and prednisolone terbutate (Hydeltra-TBA) were found to be less than 8.5 micra.[2,8] Of these drugs, only methylprednisolone acetate is locally available in the proper concentration strength and is affordably priced for charity patients.[7] For the proceeding clinical trial, methylprednisolone acetate was chosen for intranasal steroid injection with following objectives:

OBJECTIVES

1. To determine the efficacy of intranasal corticosteroid injection in the treatment of allergic and vasomotor rhinitis.

2. To establish the use of methylprednisolone acetate as an acceptable steroid compound for such a procedure;

3. To compare our results with other published studies.

Design: This is a case series study with a target number of at least 25 patients for intra-nasal steroid injection.

Patient Selection:
1. Patients between 15 and 35 years of age.
2. Patients with subjective complaints of nasal stuffiness, rhinorrhea and sneezing of at least two months duration.
3. Patients diagnosed to have allergic or vasomotor rhinitis based on symptomatology and skin testing.

Patient Exclusion:
1. Patients with gross evidence of nasal infections such as purulent or mucopurulent nasal discharge (infective rhinitis and/or sinusitis).
2. Patients with markedly deviated nasal septum.
3. Patients with nasal polyposis.
4. Patients with known history of pulmonary and other forms of tuberculosis.
5. Patients with known history of diabetes, heart disease, hypertension, glaucoma, kidney and liver diseases and psychiatric disorders.
6. Patients with concurrent medications (decongestants, anti-histamines, and any other steroid preparation).

MATERIALS

Methylprednisolone acetate (Depo-Medrol; 49mg/ml)
Disposable needle gauge 25
Tuberculin syringe
Nasal speculum and nasal dressing forcep
Head mirror and light source
Ephedrine sulfate 1% in NSS
Xylocaine 4% solution

METHODOLOGY

A. Technique of Intranasal Steroid Injection (from Baker, 1979):

Two sterile cotton strips moistened with 1:1 solution of xylocaine 4% and ephedrine sulfate 1% in NSS are placed along the antero-medial aspect of each inferior turbinate and remain in place for about 5 min. Using a tuberculin syringe and a 1-1/2", 25 gauge needle (the solution will not flow readily through a smaller gauge), 0.5 ml. of methylprednisolone acetate (Depo-Medrol) 40 mg/ml is injected intramucosally in the anterior tip of the inferior turbinate (Fig. 1). Only the bevel tip of the needle is inserted to be certain that the injection is given intramucosally. If necessary the needle tip may be moved submucosally during injection to more easily deposit the steroid without force. The injection is made slowly and the mucosa can be seen to swell and turn pale as it fills with the steroid suspension. Rapid injection or excessive pressure must be avoided. When the needle is withdrawn a dry cotton pledget is inserted into the nostril to apply slight pressure on the turbinate and minimize bleeding from the puncture site which usually stops within a few minutes.

B. Evaluation of patient's response to treatment:

Initially a complete history and physical examination is taken from the patient to rule out any condition which may contraindicate steroid therapy. A written consent is then obtained after a thorough explanation of the contemplated procedure.

A simple questionnaire is used by the examiner for record purposes.

The patient is asked to elaborate on his condition in terms of nasal stuffiness, rhinorrhea and sneezing. The severity of each symptom is graded from absent (0), mild (1) Moderate (2), severe (3), depending on the patient's subjective experience (see Table 1). Objective findings such as pale, boggy, congested turbinate, post-nasal discharge, and septal deviation were recorded when present. Treatment is then instituted as described in the technique for intranasal steroid injection.

C. Post Treatment Instructions:

Patients are instructed to note when any form of improvement is first perceived. They are asked to avoid the use of other drugs which influence their nasal symptoms. A schedule of return visit is then arranged with the patient being asked again for repeat grading of their nasal symptoms. The first follow-up is two days from initial treatment, followed by four consecutive weekly follow-ups. Monthly follow-ups are then recommended with instructions that they may report back anytime they experience any untoward effect or recurrence of nasal symptoms.

A.

C.
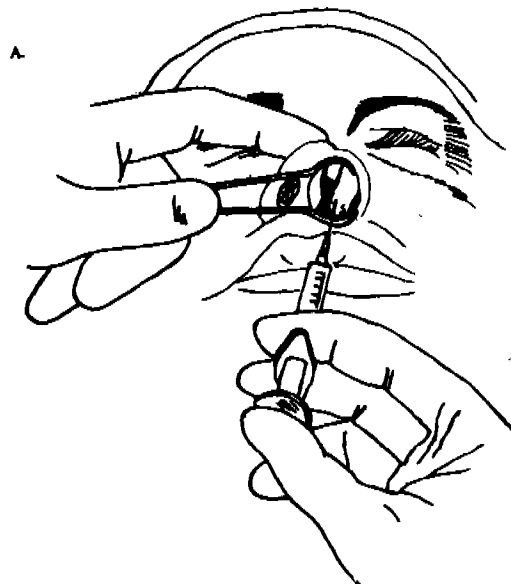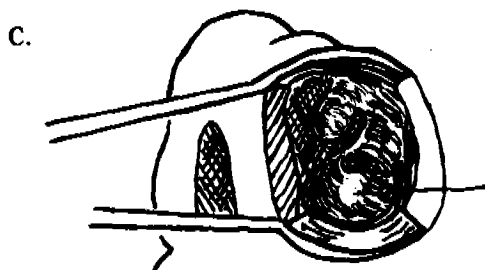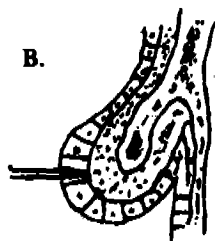
WHITISH BLEB

Fig. 1. The proper technique of injection of the inferior turbinate (adapted from Baker, 1979). A. A 1-1/2", 25 gauge needle is inserted intramucosally in the anterior tip of the inferior turbinate. B. Cross section demonstrating that only the bevel of the needle need be inserted. C. Approximately 0.5 cc of steroid suspension is injected slowly and without force to form a bleb (similar to a PPD test).

Table 1. Grading of nasal symptoms

A.	Sneezing	Frequency of sneezing per day	Score
	Absent	0–5	0
	Mild	6–10	1
	Moderate	11–20	2
	Severe	21 or more	3

B.	Nasal stuffiness	Description	Score
	Absent	Effortless bilateral/unilateral nasal breathing without episodes of mouth breathing	0
	Mild	Predominantly bilateral/unilateral nasal breathing with episodes of mouth breathing	1
	Moderate	Predominantly mouth breathing with episodes of unilateral/bilateral nasal breathing	2
	Severe	Persistent mouth breathing with episode of unilateral nasal breathing	3

C.	Rhinorrhea	Description	Score
	Absent	No nasal discharge	0
	Mild	Nasal discharge present, easily clears up on occasional nose clearing	1
	Severe	Profuse nasal discharge with/without post-nasal drip, despite frequent nose/throat clearing	3

RESULTS

A total of 30 out of 36 patients who underwent intranasal steroid injection are included in this study. Of these, 17 are females and 13 males. Based on symptomatology and skin testing, 24 are diagnosed to have allergic rhinitis while 6 suffer from vasomotor rhinitis (see Table 2). All 30 patients followed-up for one month, 24 for 2 months, 13 for 3 months and only 6 followed for 4 months (Table 3).

According to the onset of improvement of symptoms 26 (87%) patients reported improvement on the first follow-up; 20 (67%) of which claimed improvement within the first 24 hours. Four (13%) had little or no improvement at all (Table 4).

Tabulation and graphical representation of the data provides a general assessment of the patient response to treatment. The grading of symptoms by patients is shown in Table 5. This enables us to assess the trend of symptom-response to treatment (Fig. 2 and 3). At this point, the effective, rapid, and prolonged duration of action is already evident.

To test for statistical significance, the Friedman two-way analysis of variance test was applied (Table 6). The use of this test to include all 30 patients necessitates complete follow-up; thus only the data within the first month after treatment was analyzed. Results of this test reveal a statiscally significant difference between the pre-treatment and post-treatment average mean

Table No. 2. Sex Distribution According to type of Rhinitis

Type of Rhinitis	SEX		
	Female	Male	Total
Allergic	14	10	24
Vasomotor	3	3	6
Total	17	13	30

Table No. 3. Number of Subjects per Follow-up Visit

Follow-up Visit	Number of Patient
One month	30
Two months	24
Three months	13
Four months	6

Table No. 4. Number of Subjects According to Onset of Improvement of Symptoms

Onset of Improvement	Number of Patient
Within 24 hours	20 (67%)
Within 48 hours	26 (87%)
No improvement	4 (13%)

Table No. 5. Grading of Symptoms by Patients During Period of Assessment

Patient No.	Pre-Treatment N	R	S	After 2 Days N	R	S	After 1 Wk. N	R	S	After 2 Wks. N	R	S	After 3 Wks. N	R	S	After 4 Wks. N	R	S	After 8 Wks. N	R	S	After 12 Wks. N	R	S	After 16 Wks. N	R	S	COMMENT
1	3	3	3	1	1	2	1	1	2	1	0	0	1	1	2	2	2	2	2	2	2	3	3	2				
2	3	3	3	1	0	0	1	1	0	0	1	0	1	1	0	3	3	2										Referred to asthma clinic
3	3	3	2	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	2	2	2	2	2	2	3	3	2	
4	3	0	3	3	0	1	1	0	1	1	0	0	1	0	0	1	0	1	2	0	2							
5	2	2	3	2	1	2	2	0	0	1	0	0	0	0	0	0	0	1	0	0	1	3	2	2	2	2	3	
6	3	3	2	2	1	0	1	0	0	1	1	0	1	1	0	1	1	0	1	1	0							
7	2	2	2	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0							
8	3	2	2	2	2	0	1	1	0	1	1	0	1	0	0	1	0	0	2	2	2							
9	3	2	2	2	2	0	0	0	0	1	1	0	1	1	0	2	1	0	2	1	0							
10	2	3	1	1	2	1	1	1	1	1	1	0	1	1	0	1	1	0	1	0	0							
11	3	2	2	2	2	0	2	1	0	2	1	0	2	1	0	1	1	0										
12	3	2	2	0	1	1	0	1	1	0	0	1	0	0	1	0	1	1	0	0	0							
13	3	3	2	1	1	0	1	0	0	0	1	0	1	1	0	1	2	1	0	1	0	1	1	0	2	1	1	
14	2	2	2	0	0	1	1	0	1	1	2	0	1	2	0	1	1	2	1	1	2	1	1	2				
15	3	2	1	3	1	0	2	1	0	3	0	1	2	0	1	2	0	0	2	2	1	2	2	0	2	2	0	Turbinal surgery advised
16	3	3	2	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0										
17	0	2	2	0	0	0	0	1	0	0	0	0	1	0	0	1	0	1	1									
18	3	2	2	2	1	1	1	0	0	1	0	1	0	1	0	0	0	0	1	1	1	2	1	1				
19	3	2	1	2	1	0	3	1	1	2	0	0	3	1	1	3	1	1	2	0	0	3	2	1				SMR recommended
20	3	3	3	1	0	0	1	1	0	1	0	1	0	0	0	1	0	0										
21	2	3	3	1	1	1	1	1	0	0	1	0	0	0	0	0	0	1	0	1	1							
22	3	3	3	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	2	2	2	3	3	3				Referred to allergy clinic
23	2	3	3	1	2	1	1	1	0	1	1	1	0	1	0	0	1	0	0	1	1	1	1	1				
24	3	3	2	3	2	1	2	2	0	3	2	1	3	1	1	2	0	0	3	2	1							SMR recommended
25	2	3	2	1	2	1	1	1	0	0	0	0	1	0	1	0	0	1										
26	3	3	3	2	2	1	2	1	1	1	1	1	0	1	1	1	1	1	3	2	3							Referred to allergy clinic
27	1	2	3	1	2	1	1	1	0	0	1	0	1	1	0	0	0	0	1	0	0	1	1	1	1	1	2	
28	3	2	2	2	2	1	3	2	1	2	1	0	3	2	1	2	0	0	3	1	1							SMR recommended
29	3	3	3	1	2	1	1	0	0	1	0	0	1	1	2	1	1	2	3	2	3	3	2	2				
30	3	2	2	1	1	0	1	1	0	1	1	1	0	1	0	1	1	2	3	2	3	3	1	2	3	2	2	
Mean	2.6	2.4	2.3	1.4	1.2	0.6	1.2	0.7	0.3	0.9	0.6	0.3	0.9	0.6	0.4	1.0	0.6	0.6	1.5	1.0	1.2	2.3	0.9	1.5	2.3	2.0	1.7	

Legend: N = Nasal stuffiness
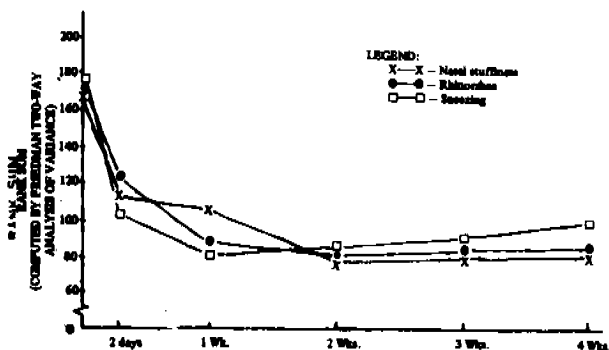R = Rhinorrhea
S = Sneezing

Fig. 2. Graphical representation of the response of symptoms for a period of 4 weeks after intranasal steroid injection.
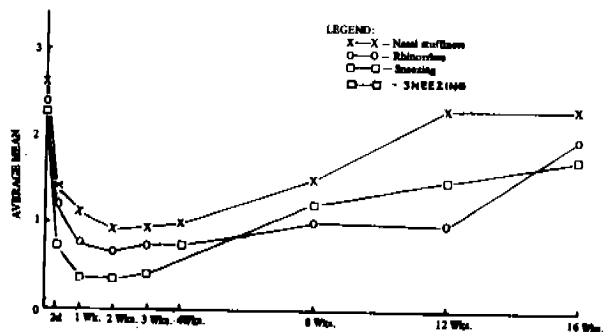

Fig. 3: Graphical representation showing the trend of symptom-response for a period of 16 weeks after intranasal steroid injection.

Table No. 6: Friedman two-way analysis of variance test results for each symptoms

A. Nasal Stuffiness

Period of Assessment	Mean	Standard Deviation	Rank Sum
Pre-Treatment	2.60	0.723974	169.5
After 2 days	1.40	0.855006	112.5
After 1 wk.	1.23	0.727932	104.5
After 2 wks.	0.90	0.844863	79.5
After 3 wks.	0.90	0.922889	82.5
After 4 wks.	0.97	0.889918	82.0

Friedman test statistic = 55.60 $p \leqslant 0.5$
Level of significance = 0.0
Assuming X^2 distribution with 5 degrees of freedom
Kendall coefficient of concordance = 0.3707
Multiple comparison: Critical region $\leqslant 42.46$

B. Rhinorrhea

Period of Assessment	Mean	Standard Deviation	Rank Sum
Pre-Treatment	2.43	0.678911	172.0
After 2 days	1.20	0.761124	120.5
After 1 wk.	0.73	0.583292	89.0
After 2 wks.	0.63	0.614948	80.0
After 3 wks.	0.70	0.595963	85.5
After 4 wks.	0.66	0.758098	83.0

Friedman test statistic = 61.66 $p \leqslant 0.5$
Level of significance = 0.0
Assuming X^2 distribution with 5 degrees of freedom
Kendall coefficient of concordance = 0.4111
Multiple comparison: Critical region $\leqslant 42.46$

C. Sneezing

Period of Assessment	Mean	Standard Deviation	Rank Sum
Pre-Treatment	2.26	0.639684	175.5
After 2 days	0.66	0.660895	103.0
After 1 wk.	0.33	0.546672	81.5
After 2 wks	0.33	0.479463	83.5
After 3 wks.	0.43	0.626062	87.5
After 4 wks.	0.66	0.758098	99.0

Friedman test statistic = 60.30 $p \leqslant 0.5$
Level of significance = 0.0
Assuming X^2 distribution of 5 degrees of freedom
Kendall coefficient of concordance = 0.4020
Multiple comparison: Critical region $\leqslant 42.46$

Table 7. Comparison of the Efficacy of Intranasal Steroid Injection as Reported by Different Authors.

Author	Steroid Used	Efficacy
Simmons (1960)	Triamcinolone diacetate	78%
Baker (1962)	Prednisolone terbutate	75%
Mabry (1978)	Triamcinolone acetonide	83%
This Study	Methylprednisolone acetate	86%

scores for each symptom. In other words, there was a significant improvement of each symptom after intranasal steroid injection up to a period of four weeks. This is clearly depicted in Figure 2.

Statistical analysis of the symptom-response beyond the first month period was not feasible as explained earlier. However available data indicate that treatment response is not permanent and gradually wears off in two to three months (Figure 3).

There were no major complications noted in this series. Minor side effects observed include minimal nose bleeding from the puncture site in one patient, and nausea accompanied with faintness in another.

DISCUSSION

The results of our study verify and emphasize the suggestions put forth by Mabry[1,5] and Baker[2] and other previous investigators that intranasal steroid injection has a significant role in the management of distressing symptoms (nasal, obstruction, rhinorrhea, and sneezing) common in allergic and vasomotor rhinitis. It provides local effects that are apparent within 24-hours or less and persists for at least 4-6 weeks in most patients.

Intranasal steroid injection offers certain advantages. Monitoring of dosage or tapering off is not necessary since the total amount of steroid is small and systemic absorption is not clinically significant.[1,2,5,10] A single dose of corticosteroid, even a large one, is virtually without harmful effects.[11] Thus this maybe safe to use in patients with medical disorders that usually precludes systemic steroid therapy.[5,10] Furthermore injection maybe repeated depending on the circumstances and indications, but usually not more than four times in one year and not before three to four weeks have elapsed.

The efficacy rate of 86% obtained from this study is comparable with other previous series (Table 7). Only four of our patients reported little or no improvement. In retrospect, intranasal examination of three of these patients revealed an unduly deviated septum which was initially noted but disregarded as the cause of nasal obstruction period. Surgical intervention was recommended. Anterior rhinoscopic examination of the other patient only revealed slight resorption of turbinate size at the puncture sight. Local application of ephedrine sulfate 1% for better evaluation resulted only in minimal reduction inturbinate size. Instrumentation of the turbinate consistency indicated a hypertrophic bony

structure explaining its refractoriness to steroid therapy. Turbinate surgery was advised in this patient.

Methylpredinisolone acetate (Depo-Medrol 40 mg/mg) is an acceptable corticosteroid preparation for intranasal injection in our setting. Its availability, low cost, and safety because of its small particle size support this contention. The minor complications following intranasal steroid injection are easily avoided and managed. Minimal bleeding from the puncture site can be controlled with further pressure using cotton ball soaked in a decogestant solution. Continuous reassurance is necessary to prevent an anxiety reaction that occasionally develops from the mere sight of a needle.

Finally, to prevent the steroid suspension from forming agglomeration of its particles during storage, thorough agitation prior to injection should be done as recommended by Selmanowitz and Orentreich.[8] This plus adherence to suggested technique will prevent the rare but catastrophic complication of blindness.

CONCLUSION

Results of this study confirm observations made by previous investigators that intranasal corticosteroid injection can effectively, rapidly, and for a prolonged period alleviate distressing symptoms in rhinologic practice. Its use however should not replace more definitive treatment for case wherein a permanent cure is possible. Rather, it may play an alternative role in the management of allergic-vasomotor rhinitis.

Our findings also indicate that methylprenisolone acetate is a safe and an effective steroid compound for this purpose. Strict adherence to proper technique and careful patient selection are of paramount importance in ensuring efficacy and safety.

Acknowledgement

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MILK FEEDING AND FEEDING POSITION IN RELATION TO ACUTE OTITIS MEDIA*

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INTRODUCTION

Otitis media is a common disease of infants and children. Its occurence in the studies of representative population indicate that the highest indicence are in the first two years of life. Howie has reported that all of his series of children who became "Otitis prone" had their first bout of otitis media before they were 18 months of age.[1] In a recent prospective study, the risk for defective verbal performance was highest in infants with onset of otitis media during the first six months of life.[6] It is therefore felt, that further understanding of the natural history of acute otitis media will afford insight into the etiology and pathogenesis and therefore facilitate the development of strategies for its prevention.

Schaefer documented a ten times higher incidence of severe otitis media in groups that have been bottlefed since the first month of life. He offered three possible reasons for the relationship — 1) loss of protective factors in the mother's milk, 2) premature introduction of provocative factors contained in cow's milk into the infant's gut, and 3) positional otitis media from bottle feeding in the horizontal position.[1] Duncan confirmed the third possibility by doing kinetophotographic studies that showed the up and down movement of formula in the eustachian tube of babies fed in this position.

A mother of an Otitis media afflicted baby once described the discharge as milk-like in consistency and smell. Although proper documentation has never been made, this has later stirred interest to study the possible role played by milk feeding position and the type of infant feeding in the causation of Acute Otitis Media.

OBJECTIVES

GENERAL OBJECTIVE:

To evaluate the relationship of Acute Otitis Media and the type of milk feeding as well as the feeding position.

SPECIFIC OBJECTIVES:

1. To determine the age at which Acute Otitis Media frequently occurs.

2. To determine the incidence of Acute Otitis Media among bottlefed, breastfed and mixfed babies.

3. To determine the incidence of Acute Otitis Media among babies fed in the supine and inclined positions.

4. To determine the frequency of feeding types and feeding positions in the general population and compare it to the group with Acute Otitis Media.

5. To evaluate the influence of upper respiratory tract infection in the causation of Acute Otitis Media.

MATERIALS AND METHOD

A. PATIENT SELECTION:

This is a prospective study of patients collected at the Ospital ng Maynila — ENT Outpatient Department from July 1985 to March 1986. All pediatric patients with Acute Otitis Media whose onset of illness was from birth to four years old were included in the Treatment group or Group I. There were a total of 150 patients. This population was selected in order to relate feeding position to the incidence of Acute Otitis Media. Infants with cleft palate and malnutrition were excluded from this study.

We have collected another set of 150 patients who were randomly picked to insure that each had an equal chance of being selected, they belonging to the same age group, regardless of the presenting complaint. We labeled this as the control group or Group II to compare the type of milk feeding and feeding position of the general population to that of the Treatment group.

B. METHODOLOGY:

The clinical history and findings on otoscopic examination of each patient were taken. Questions asked of the parents of Group I patients were:

1. What was the age of the patient at the onset of the illness?

2. What was the type of infant milk feeding given prior to the onset of illness up to the time of consultation?

3. Did the baby usually take the bottle while

lying down or was he supported in the inclined position?

4. Was there a history of an Upper respiratory tract infection during the onset of the illness or during the past week?

Questions asked of the parents of Group II patients were basically the same as the above as well as the history of a previous diagnosis of Acute otitis media in the patient.

For the purpose of this study, Acute Otitis Media in a child was defined as the presence of middle ear effusion with or without tympanic membrane perforation with one or more clinical signs of illness as fever, ear tugging, irritability, otalgia, etc.

Results were tabulated. Statistical analysis was done with the aid of percentage, the Chi-Square tests at .05 and .01 significance level and Degree of Correlation using Cramer's V.

RESULTS

There were a total of 150 patients collected for each group. Table I shows the age of onset of Acute otitis media in Group I. The first year of life corresponding to the time when milk constitutes the babies' major diet seems to have the highest incidence of Acute otitis media, with a gradual decrease in the incidence in the second, third and fourth years of life.

Table 1

Age of Onset for Group I

Age	No. of Patients	Percentage
Birth — 1 y/o	64	42.67
1 — 2 y/o	35	23.33
2 — 3 y/o	27	18.0
3 — 4 y/o	24	16.0
Total	150	100.0

Table II shows the type of infant milk feeding used by the general population as well as the group with Acute otitis media. For the later group, the type of infant feeding was noted prior to the onset of symptoms up to the time of consultation. In this group, bottlefed infants constitute the majority of patients comprising 83.33% of the population while breastfed and mixed bottle and breastfed infants constitute 8.67% and 8% respectively. For Group II patients, 51.33% were bottlefed, 30% were breastfed and 18.67% were fed alternately with formula and breast milk. Still, bottle feeding is the more common type. The computed Chi-square value equal to 39.90 is greater than $X^2(.01,2df) = 9.01$ which means that there is a very significant relationship between Acute otitis media and the type of infant feeding.

Table II

Type of Infant Feeding

Age	Group I			Group II		
	Bottle	Breast	Mixed	Bottle	Breast	Mixed
Birth — 1 y/o	45	10	9	39	34	21
1 — 2 y/o	29	3	3	18	11	7
2 — 3 y/o	27	0	0	18	0	0
3 — 4 y/o	24	0	0	2	0	0
Total	125	13	12	77	45	18
%	83.33	8.67	8	51.33	30	18.67

Chi-square value: $X^2 = 39.90$
X^2 (.01, 2 df) = 9.21   very significant

The feeding position of infants belonging to Groups I and II are shown in Tables III, III-A to C. Table III shows the frequency of feeding position regardless of the type of infant feeding. The supine position is more common with a frequency of 79.33% in Group I and 54% in Group II. The computed Chi-square value equal to 33.91 is greater than $X^2(.01,1df) = 6.63$. This means a very significant relationship between feeding position and Acute otitis media.

Table III.

Feeding Positions

Age	Group I		Group II	
	Supine	Inclined	Supine	Inclined
Birth — 1 y/o	46	18	48	46
1 — 2 y/o	29	6	19	17
2 — 3 y/o	23	4	13	5
3 — 4 y/o	21	3	1	1
Total	119	31	81	69
%	79.33	20.67	54	46

Chi-Square Value: $X^2 = 33.91$
$X^2(.01,1df) = 6.63$
— very significant

The feeding position of infants for each type of feeding are tabulated in Tables III-A to C. Table III-A shows that among bottlefed babies (125) of Group I, 84% (105) were fed in the supine position and 16%(20) in the inclined position. Among the bottlefed babies of Group II (77), 72.7% (56) took the supine position and 27.3%, the inclined position. So, the supine position is more common among bottlefed babies. The computed Chi-square value equal to 7.57 is greater than $X^2(.01,1df)$ = 663. which means that the relation between feeding position among bottlefed babies and Acute otitis media is very significant.

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Table III-A

Feeding Position of Bottlefed Babies

Age	Group I			Group II		
	Bottle	Supine	Inclined	Bottle	Supine	Inclined
Birth – 1 y/o	45	37	8	39	29	10
1 – 2 y/o	29	24	5	18	13	5
2 – 3 y/o	27	23	4	18	13	5
3 – 4 y/o	24	21	3	2	1	1
Total	125	105	20	77	56	21
%		84	16		72.7	27.3

Chi-Square Value $X^2 = 7.57$

$X^2(.01, 1df) = 6.63$ — very significant

The group who were breastfed is shown in Table III-B. Of the 13 patients in Group I, 38.46% (5) were fed in supine, 61.54% (8) were fed in the inclined position. Group II with 45 patients, 22.22% (10) took the supine position and 77.78% (35) took the inclined position. Breastfed babies were fed less in the supine position. However, the computed Chi-square value equal to 1.39 is less than $X^2(.05, 1df) = 3.84$ which means there is no significant relation between Acute otitis media and feeding position in breastfed babies.

Table III-B

Feeding Position of Breastfed Babies

Age	Group I			Group II		
	Breast	Supine	Inclined	Breast	Supine	Inclined
Birth – 1 y/o	10	3	7	34	7	27
1 – 2 y/o	3	2	1	11	3	8
2 – 3 y/o	0	0	0	0	0	0
3 – 4 y/o	0	0	0	0	0	0
Total	13	5	8	45	10	35
%		34.46	61.54		22.22	77.78

Chi-Square Value: $X^2 = 1.39$

$X^2(.05, 1df) = 3.84$ — not significant

Table III-C shows that among 12 patients given mixed feeding in Group I, 75% (9) were in supine while 25% (3) were in the inclined position. Of the 28 patients in Group II, 53.57% (15) were in supine and 46.43% (13) were in the inclined position. The computed Chi-square value equal to 5.02 is greater than $X^2(0.5, 1df) = 3.84$. There is a significant relation between feeding position and Acute otitis media in this type of infant feeding.

Table III-C

Feeding Position of Mixfed Babies

Age	Group I			Group II		
	Mixed	Supine	Inclined	Mixed	Supine	Inclined
Birth 1 – y/o	9	6	3	21	12	9
1 – 2 y/o	3	3	0	7	3	4
2 – 3 y/o	0	0	0	0	0	0
3 – 4 y/o	0	0	0	0	0	0
Total	12	9	3	28	15	13
%		75	25		53.57	46.43

Chi-Square Value: $X^2 = 5.02$

$X^2(.05, 1df) = 3.84$ — significant

Since Upper respiratory tract infection commonly accompany or preceeds the onset of Acute otitis media, the incidence of Upper respiratory tract infection in relation to Acute otitis media was also analyzed. Diagrams I-A and B reflects the occurence of Upper respiratory tract infection in Groups I and II respectively. In Group I, the incidence of Upper respiratory tract infection is significantly increased. However, in the general population (Group II), of the 93 patients with a positive history of Upper respiratory tract infection, only 3.22% (3) subsequently developed Acute otitis media. Among the 57 patients with no history of Upper respiratory tract infection, 19.3% (11) later developed Acute otitis media. The computed Chi-Square value equal to 18.94 is greater than $X^2(.0, 1df) = 6.63$. The relation of Upper respiratory tract infection and Acute otitis media is very significant.

DIAGRAM I-A   INCIDENCE OF URTI IN GROUP I

DIAGRAM I-B   INCIDENCE OF URTI IN RELATION TO AOM IN GROUP II
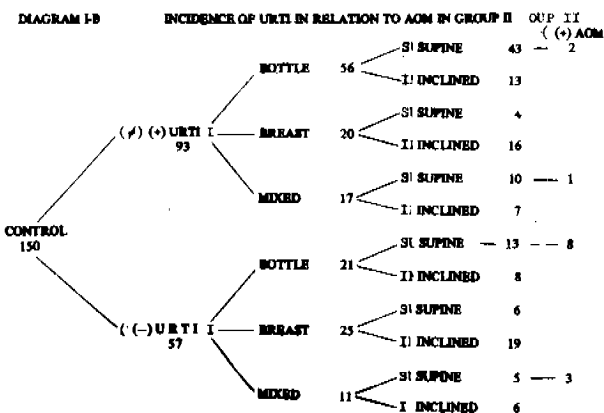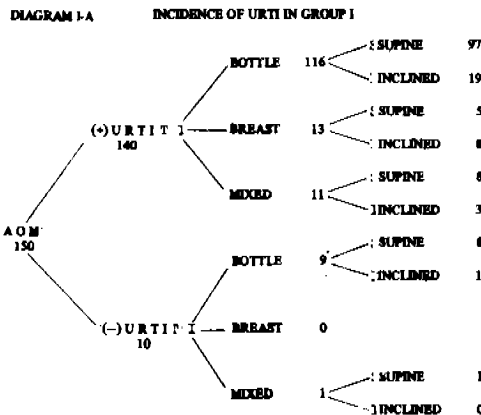
Chi-Square value:
$$X^2 = 18.94$$
$$X^2(.01, df) = 6.63 - \text{very significant}$$

We used Cramer's V method to find the degree of correlation, that is how close the relationship is, between the three variables — type of infant feeding, feeding position and upper respiratory tract infection, to the incidence of Acute otitis media. Our computation showed the following:

Type of feeding and Acute Otitis Media
    V = 0.34 substantial correlation
Feeding position and Acute Otitis Media
    V = 0.32 substantial correlation
Upper Respiratory Tract Infection and Acute Otitis Media
    V = 0.24 substantial correlation

All three variables showed a substantial degree of correlation with Acute otitis media. But the feeding type showed the closest correlation, followed by feeding position and finally Upper respiratory tract infection.

Based on the foregoing results, we can safely state the following:

1. The incidence of Acute otitis media is highest during the first year of life.
2. The type of infant feeding is statistically significant in the causation of Acute otitis media with the majority of patients fed with the bottle.
3. The feeding position is statistically significant in the development of Acute otitis media, particularly in bottlefed and mixed fed babies. These patients were almost always fed in the supine position.
4. A preceeding Upper respiratory tract infection is also statistically significant in the development of acute otitis media.
5. The three variables show a substantial degree of correlation with acute otitis media, with the type of feeding having the highest degree among the three and feeding position and Upper respiratory tract infection ranking second and third respectively.
6. In the general population, bottle feeding is the most common form of infant feeding, however, the feeding position will depend on the type of infant feeding — supine is more common in bottlefed babies, inclined in breastfed babies and both positions have the same frequency in mixed feeding.

DISCUSSION

Otitis media is a multifactorial disease entity. However, little mention is made in Otolaryngology textbooks and available literature of supine milk feeding as a possible factor contributing to otitis media. But as shown in this study, Acute otitis media is most prevalent among bottlefed infants in the supine position who had Upper respiratory tract infection. Probably one factor enhances the effect of the other. Bottlefed infants may be more susceptible to Acute otitis media and infection

in general because of the absence of protective antibodies present in breast milk. The recumbent position gravitationally favors the welling of milk in the nasopharynx which then might enter the eustachian tube during swallowing and possibly the middle ear. On the other hand, nasal congestion as in Upper respiratory tract infection favors an increase in positive pressure in the nasopharynx during swallowing, consequently this might insufflate infected secretions into the middle ear. However, it is interesting to note that one factor can cause Otitis Media without the other.

In this study, what interest us most is the finding of some infants with no known other predisposing factor except for milk feeding in the supine position. Thus, bottle feeding in the supine position is a definite risk as to cause Otitis Media and it is therefore best to avoid this practice particularly in the presence of URTI. Although milk feeding in the supine position is a very significant factor when it comes to bottle and mixed feeding, the contrary was shown in breastfed infants. More often than not, only a few mothers lie down when breast feeding their baby since it is more customary to do so while sitting. In this case, URTI probably played a bigger role although a few patients with Otitis Media were breastfed in the supine position. So, positioning can not be totally ignored.

Despite the frequency of bottle feeding in the supine position in the general population, only 8% developed Otitis Media. What then predispose some individuals to develop the illness and render the rest immune to it?

The eustachian tube connects the tympanic cavity with the nasopharynx. Knowledge of its function therefore seems to be important in the analysis of the factors responsible for middle ear diseases. First, it has a protective function from nasopharyngeal secretions. The cartilaginous portion of the tube is normally collapsed because of the elastic properties afforded by the cartilage and surrounding tissues.[8] However, such actions as swallowing, yawning, sneezing and shouting loudly will cause temporary opening of the closed pharyngeal orifice.[8] Second, it serves to drain secretions from the middle ear to the nasopharynx through ciliary motion, and third, for the purpose of middle ear ventilation. However, in this study, abnormalities of the protective function seem more important and directly related to the pathogenesis of Otitis Media.

Bylander compared the eustachian tube function between children and adults and he concluded that even in apparently otologically normal children, eustachian tube function is not as good as in adults.[4] This may therefore contribute to the higher incidence of middle ear disease in children as compared to adults. Also, the infant's tube is relatively wider, shorter and more horizontal in position affording easier access of infected secretions up the tubal lumen and into the middle ear. Although it is most likely that most infants will occasionally move fluid into the middle ear, healthier infants are probably able to evacuate the fluid and resist infection by the natural protective mechanism. The immediate exciting cause is the infection of the auditory tube,

that it does not occur more often is evidenced by the efficacy of the defensive mechanism of the cilia whose motion is directed towards the pharynx.[7]

CONCLUSION

To offset the risk of recurrent Otitis Media and its consequent morbidity ... hearing loss, proper identification of risk factors should be considered for disease prevention. This study proves that Acute Otitis Media is prevalent among bottlefed infants in the supine position with or without URTI. Therefore proper medical and educational treatment would provide much needed prevention. Careful feeding techniques with measures taken to prevent regurgitation would minimize the risk of entry of milk into the eustachian tube.

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A DISCOURSE ON A MAXILLARY MASS*

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INTRODUCTION

Myxomas are benign, locally aggressive tumors which occur more often in the soft tissues than in bones. Myxomas occuring in the maxilla are rare.

The objectives of this paper are:

1. to review some of the world literature on maxillary myxomas and the controversies on the histogenesis and the management of myxoma;
2. to remind us otolaryngologists to include rarer entities like myxoma in the differential diagnosis of maxillary masses;
3. to present the first reported case of maxillary myxoma at the UP-PGH Medical Center.

CASE REPORT

On December 24, 1985, a 20-year-old female consulted the UP-PGH Medical Center, Department of ENT for a progressively enlarging, painless left maxillary mass of one-and-a-half years duration. She did not experience nasal discharge, epistaxis, exophthalmos, fever, anorexia, and weight loss. She denied any history of trauma.

On examination, a firm, non-tender left maxillary mass was noted. Anterior rhinoscopy showed that the left lateral nasal wall was pushed medially. A bulging of the left upper gingivobuccal margin was observed. No teeth were noted in the area. Posterior rhinoscopy, indirect laryngoscopy and otoscopy revealed essentially normal findings.

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X-RAY RESULT

Radiograms of the paranasal sinuses revealed a soft tissue mass density in the left maxillary antrum with destruction of the medial and inferolateral walls. Nasal septum was deviated to the right.

Biopsy of the lesion later showed MYXOMA.

On January 14, 1986, our patient underwent excision via Caldwell-luc. Curettage of the remaining locules and smoothening of the maxillary walls were done. The anterior, medial and lateral maxillary walls showed areas deficient of bone. A firm, whitish, multiloculated, non-encapsulated mass occupied the antrum. To date, our patient has not shown any signs of recurrence.

DISCUSSION

Virchow in 1863 was probably the first to describe a non-encapsulated, benign mesenchymal tumor of "stellate" cells within a mucoid ground substance. Ever since, myxoma, myxofibroma or fibromyxoma has been the subject of controversy. Among various authors, there is continuing disagreement as to its particular histogenesis. It has been regarded as odontogenic, non-odontogenic, and even dysplastic bone lesion. WHO classifies myxomas as benign odontogenic neoplasms. The strong resemblance to dental papilla, the occasional presence of odontogenic rests in the tumor and cases with associated dental abnormalities including unerupted teeth stress the possibility that they arise from dental anlage. However, lesions have been described in non-tooth bearing areas such as the condyle and the maxillary antrum. Stout's belief that they arose from primitive mesenchyme and Harrison's observation that they are similar to primitive non-odontogenic mesenchymal rests may explain their occurrence in areas other than the jaws. Cohn suggested that this entity may be dysplastic because of the association between multiple soft tissue myxoma and fibrous dysplasia. Although its histopathogenesis is still uncertain, myxoma is an accepted and well-established clinicopathological entity.

In a review at the Mayo Clinic, only three cases of myxoma of bones were found among 11,000 bone tumors. Other studies attest to its rarity.

Myxomas are found primarily in young patients. Approximately 67% are found between the ages of 10 and 29 years. There is no sexual nor racial predilection.

In the maxilla, majority of the cases are unilateral without crossing the median palatal suture. The ipsilateral antrum is involved and the sinus may be completely occluded. Destruction of the antral wall often occur.

The signs and symptoms vary considerably and are frequently present one to three years before treatment is sought. The tumor is noted because of a slow and progressive swelling of the affected jaw with associated facial abnormality. The teeth in the affected region are often loosened because of destruction of the supporting bone. The overlying bulging mucosa appears normal or slightly hyperemic. Occasionally, there is complete ipsilateral nasal obstruction. Exophthalmos may even be manifested. Pain is inconstant and inconsistent. Lymphadenopathy is not a feature.

Myxomas are histologically benign but clinically aggressive neoplasms. They infiltrate locally, replacing osseous tissue. Thoma and Goldman observed that myxomas arising in bones away from tooth-bearing areas showed more aggressive behavior as compared to those associated with teeth. Theoretically, myxomas may cause death by extension to vital structures.

The radiographic features of myxomas are nonspecific. Majority of these neoplasms present as multilocular radiolucencies with a "soap-bubble" or "honeycomb" appearance resembling ameloblastoma. Occasional unilocular lesions surrounding unerupted teeth have been mistaken for dentigerous cysts. One lesion was described to have a "sunburst" appearance suggestive of malignant neoplasia. In the maxilla, the antrum as well as the alveolus is often invaded. Initially, the cortex is intact but thinned and expanded from its normal contour. As the tumor grows in size, it often perforates, destroying the cortices and invading soft tissue. Since there are no pathognomonic features to consistently differentiate myxomas from other odontogenic tumors, diagnosis must be made histologically.

Myxomas are frequently described as grey to white, multinodular masses with firm to gelatinous consistency. They often exhibit well-defined borders, giving the false impression of a well-developed capsule. The cut surface is covered with glistening mucous and small shiny filaments with occasional coarse gritty calcified regions.

Myxomas contain loosely arranged stellate and polyhedral cells which lie in a mucoid or myxoid ground substance. The cytologically benign nuclei are small, hyperchromatic, oval or spindle-shaped.

Ultrastructural studies revealed two basic types of tumor cells: secretory and non-secretory. The former predominate resulting in an excessive production of acid mucopolysaccharide ground substance, consisting of 80% hyaluronic acid and 20% chondroitin sulfate.

Myxomas are difficult to eradicate because its boundaries are not well-defined. Very often, small nests, pockets or loculations of myxoid tumors are hidden behind bony trabeculations. It can be seen to invade even the finest marrow spaces and extend beyond its apparent radiographic limits in most cases. This leads to a high recurrence rate. Therefore, myxomas should be treated adequately.

Adequate treatment of myxomas depend on the size, extent and location of the lesion. Small tumors are managed by curettage, enucleation or excision followed by chemical or electrical cautery. For extensive or recurrent lesions, wide bloc resection is advocated. Inadequate excision may lead to a large, recurrent tumor which may be difficult to resect. Whitman et. al. stated that to help avert the probability of recurrence, teeth in the region of the tumor mass should be extracted. In a review of literature, Barros et. al. approximated a 26% recurrence rate. These occur as early as three months and as late as 10 years after surgery.

Myxomas are not radiosensitive. Once irradiated, the potential hazard of malignant transformation exists.

According to Colby et. al., the lesions may prove fatal by possible extension to vital structures. In general, however, prognosis appears to be good. So far, no mortality related to myxoma has been uncovered.

CONCLUSION

A case report of a maxillary myxoma has been presented. This case serves to remind us that not all patients with maxillary masses turn out to be odontogenic cysts, fibrous dysplasias or ameloblastomas. It warns us that, as clinicians, we should not fail to detect the rarer but more interesting disease entities.

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PIERRE ROBIN ANOMALAD*

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INTRODUCTION

In 1923, a Parisian stomatologist named Pierre Robin described a clinical entity now bearing his name which consisted of the classic constellation of findings namely: micrognathia, cleft palate, and glossoptosis associated with respiratory obstruction.[1] Cleft palate alone is considered a fairly common occurrence but rare in combination with the two other malformations. A rare case may not necessarily mean that it is interesting but Pierre Robin Anomalad on the other hand, makes an exception in that it is not only considered as rare but interesting as well in the point of view of an otolaryngologist. He is confronted by respiratory obstruction and feeding problems caused by the anatomical defects; hence it is his primary role as an obstruction remover to institute resuscitative measures.[2]

CASE REPORT

E.T., a two-week-old female infant was admitted at Ospital ng Maynila because of dyspnea. She was born at the same hospital to a normal 39-year-old mother G5P4 (4-0-0-4) thru normal spontaneous delivery, fullterm, birth weight of 2.9 kgs. with retruded jaw, cleft palate, and backward falling of the tongue. Because of the above findings, she was referred to the Otolaryngology Department where an impression of Pierre Robin Anomalad was given with suggestions to keep her in a prone position, to feed her in an almost upright position, and to have her cleft palate repaired. She was discharged after six days but despite the above given measures, the infant developed dyspnea and associated episodes of cyanosis after each feeding prompting her readmission to the Pediatrics ward. A second referral

was made and the consensus this time was either to do a tracheostomy or a tongue to lip adhesion operation (glossopexy).

Further investigation of both parents revealed that another daughter has cleft palate. There was no prenatal checkup done by the mother but she claimed to have taken Paracetamol and Mefenamic acid during the fifth month of pregnancy.

PHYSICAL EXAMINATION

On physical examination, the patient was found to have retruded jaw, backward falling of the tongue, and cleft of the secondary palate. Otoscopic examination revealed retracted tympanic membranes. There was an associated respiratory distress as manifested by stridor, respiratory rate of 54/min., xyphoid, suprasternal, and intercostal retractions. Upon auscultation, cardiac rate was 160/min. but breath sounds were normal. No pertinent findings have been found in other organs/systems.

Radiologic studies showed a normal chest finding but lateral neck x-ray showed a small mandible with the tongue retracted upward and backward.

In the ward, the patient continued to have dyspnea which was only relieved when she was placed in a face down position. A feeding tube was inserted but despite this, there was still on and off recurrence of the symptom. Finally, on July 29, 1986 surgery was scheduled. Unfortunately, a few hours prior to surgery, both parents withdrew their consent and instead decided to bring the infant home despite our warning of possible fatal complications.

DISCUSSION

The exact cause of micrognathia is not known but since several anomalies have been associated with it, it seems likely that there is no single etiologic factor and that the structures involved are in no way related to each other except for their mechanical relationship where one defect can readily affect the other.

The possibility that it is inherited has been proposed; however, larger series of studies showed little evidence of any genetic influence.[3] Gorlin, Pindborg, and Cohen (1976), noted that the condition is not a genetic "syndrome" and used instead the term "anomalad" to describe a pattern of malformations that are derived from a single localized defect resulting in secondary cascades of defects in subsequent development.[4,5] The most frequent caustive factor is intrauterine pressure whereby a potentially normal sized mandible in the embryo is compressed between the head and the pericardial region and becomes either deformed in shape or prevented from normal embryonic development. This in turn will force the tongue to remain between the palatal shelves which are outgrowths from the maxillary swelling thereby interfering with normal palatal closure resulting in a cleft palate. The palatal shelves in males assume a horizontal position by the seventh week before they grow medially to fuse. In females, such position is only achieved at the middle of the eighth week emplying that the secondary palate in females is open longer; hence longer susceptible to any teratogenic influence.

This delay can explain the greater incidence of the secondary palatal cleft in females.

The glossoptosis that occurs results from the posterior displacement of the attachment of the genioglossus muscle preventing the tongue to advance out of the airway after birth. Under the influence of gravity the tongue assumes a retracted position obstructing the pharynx.

The contemplated resuscitative measure — had the parents agreed — would have consisted of anchoring the tongue to the lower lip. The tip of the tongue is split transversely and a corresponding area in the lower lip is slit for approximation to maintain the tongue in a forward position. As a form of reinforcement, a stay suture is passed through the base of the tongue with the ends being passed through its substance and anchored to the chin. This secures the airway but feeding will remain problematical until the palatal defect is closed. Of course, with the mobility of the tongue being limited dysphagia as well as difficulty in articulation can only be expected. However, the accrued advantages far outweighs a possible fatal outcome if left untreated as in this instant case.

Why not simply re-route the airway by means of a tracheostomy? Had the parents agreed, this was seriously considered inspite Dr. Moyson's admonition that this is a "solution of defeat." His allegation was premised on the possible complications attendant to such a procedure — the most serious of which is the possible stenosis of the trachea. It is the belief of this author that this can only result if the wrong sized tube is used. Otherwise, the obstruction is relieved without necessarily aggravating the patient's swallowing problem. Besides, with growth the mandible is able to catch-up and produce sufficient stability to prevent recurrent episodes of respiratory obstruction.

SUMMARY

An infant with a cleft palate, micrognathia, and glossoptosis is presented. All problems of such triad of anomaly is discussed and solutions offered.
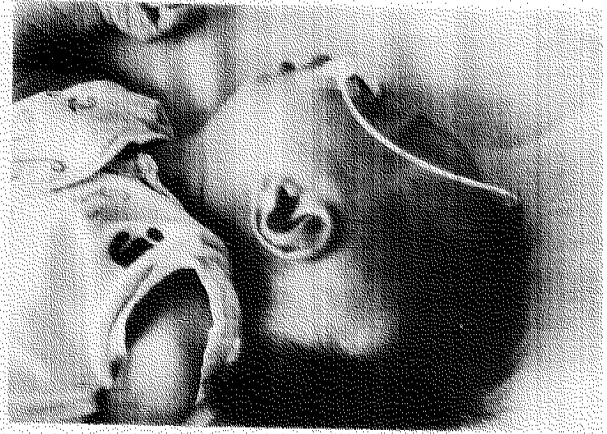
E.T. with micrognathia
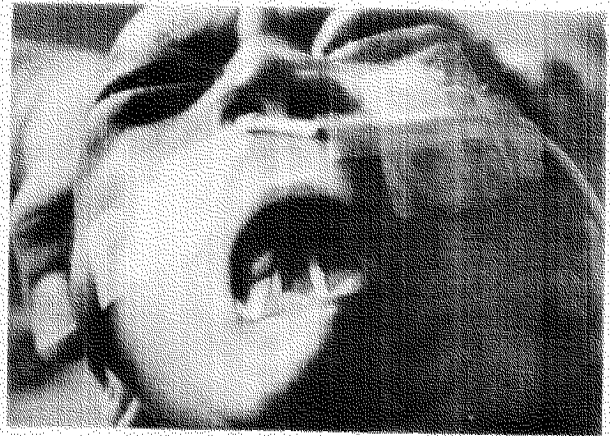
Cleft Palate

Lateral Neck X-ray

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CO-EXISTING MALIGNANT AND BENIGN TUMORS — SUBMANDIBULAR GLAND*

Simplicio Roxas, Jr., M.D.**
Angel Enriquez, M.D.***

INTRODUCTION

Neoplasms of the Submandibular Salivary Glands have increasingly attracted the attention of Head and Neck Surgeons and Pathologists over the past decade. While their incidence is relatively low (about 9% of all salivary gland tumors)[1], their importance should not be underestimated for only by a proper and accurate ·diagnose can comprehensive management be instituted.

Benign Pleomorphic Adenomas or Benign Mixed Tumors are by far, the most common tumors involving the major (60%) and minor (50%) salivary glands,[2,3] with the other types of tumors comprising the rest. What has not been reported in the literature is the presence of a malignancy on top of an apparently benign lesion occurring in a relatively tumor-free structure, in this case, the submandibular gland.

We are presenting a case of Adenocarcinoma on top of a benign Pleomorphic Adenoma of the submandibular salivary gland as a surgical and pathological curiosity and also to stress the importance of close correlation between the surgeon and pathologist in order to arrive at an unequivocal diagnosis.

CASE REPORT

This is the case of N.R., a 40-year-old female from MM who was admitted for the first time on March 15, 1986 at the OM, Department of Otorhinolaryngology because of a mass in the right submandibular area. The condition started about two years prior to admission when the patient noted a slowly growing, firm, non-

tender, palpable mass over the right submandibular area. There were no associated signs and symptoms at that time and no meds were taken nor were any consultations made until February 10, 1986 when she consulted at the UP-PGH. Sialography was done and she was diagnosed to have an intraglandular mass in the right submandibular gland. Meds which the patient could not recall were given but these afforded no relief. The size of the mass continued to increase unabated and the patient elected to consult at OM where she was admitted March 15, 1986.

Pertinent PE findings centered on the right submandibular gland which was noted to be 4x5 cm. at its widest diameter and was firm, movable and non-tender. There was no lymphadenopathy and no lesions were noted in the oral cavity. Other ENT examinations performed were unremarkable.

Laboratory work-up done which included Chest X-Ray, EKG, CBC, FBS, BUN, creat, electrolytes and urinalysis were all within normal limits.

The initial impression was Pleomorphic Adenoma, Right Submandibular Gland and excision/biopsy was done on the third HD under general endotracheal anesthesia. The patient tolerated the procedure well and recovery was uneventful. Meds given included sodium Metampicillin and Diclofenac sodium. She was discharged on the third post-op day, or on the eleventh HD (March 26, 1986) and close follow-up was adviced to detect any recurrences. Unfortunately, the patient has not followed-up the time of the writing of this paper.

HISTOPATH

Gross description:

The gross specimen consists of fragmented portions of friable, partially cystic, partially solid brown to red tissues.

Microscopic description:

Thin cuttings of the specimen discloses two different tumor entities. One is malignant, composed of cells that are large, anaplastic, with prominent nuclei and nucleoli and show a glandular pattern. The other is a benign one composed of uniform cells that are hyperchromatic with scanty cytoplasm.

Diagnosis:

Adenocarcinoma in Benign Pleomorphic Adenoma, Right Submandibular Gland.

DISCUSSION

The histopathologic report of our patient showed a malignant tumor superimposed on an apparently benign one, a diagnosis which we seldom, if ever, encounter in our institution. We have tried our best to verify the veracity of this report and our efforts have been rewarded by the documentation of this case.

According to Pierce's concept of the genesis of tumors in general, the genome of the normal cell contains all the information necessary for the expression of

the malignant as well as the normal phenotype. Malignancy is superimposed upon the process of cell renewal by stem cells or reserve cells. If the stem cells, capable of synthesizing DNA are the oncogenic targets, malignancy results and if well-differentiated cells still capable of one more division are the targets, a benign lesion results.[4] As everyone knows, the oncogenic insult may take myriad forms ranging from physical to chemical.

Over the years, Pathologists have exhibited a propensity for changing nomenclature even before the current ones have been universally accepted. It is also true that they have played it safe to label atypical slides as "suspicious" or "suggestive" of a malignancy. In either case, they cannot be branded wrong.

Lately, another one of those "safe to say" clause has come up, a definite malignancy within a benign lesion. The clinical implication is great. Had we obtained a piece that did not include a portion of the cancerous growth, then treatment, in this case surgery, would have been designed primarily for a benign tumor and would have at best, been inadequate. On the other hand, if the histopath report was positive for a malignancy, a conservative approach would have been fool-hardy.

Capsular extrusions termed as "pseudopenetrations" by Batsakis from salivary gland tumors, principally Pleomorphic Adenomas, is universally accepted. For this reason, excision must of necessity, include normal tissue all around. If this is followed, undiagnosed malignant tumors would be adequately removed provided these lesions remain localized. Simple enucleation of such tumors is unjustified. This is where the importance of accurate microscopic diagnosis comes in. For the surgical plan to succeed, a correct diagnosis is mandatory and an erroneous one, criminal.

SUMMARY

A case of a malignant tumor co-existing with a benign one occurring in the submandibular gland is presented. Arrival at this final diagnosis was achieved only through careful microscopic studies since intraoperatively, there was no reason to suspect the true nature of the lesion. The importance of accurate evaluation and team-work between the surgeon and pathologist cannot be understated.
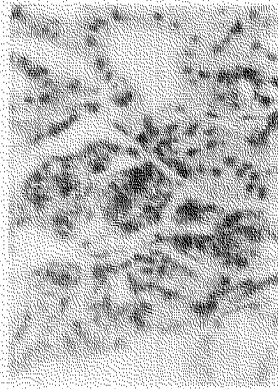
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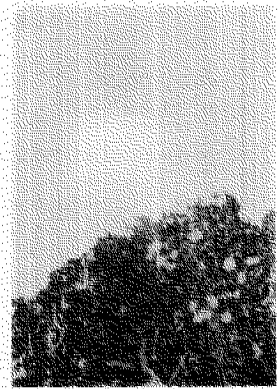
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HOSPITAL NG MAYNILA
DEPARTMENT OF PATHOLOGY
SURGICAL PATHOLOGY REPORT

DATE: April 3, 1986

NAME: Reyes Nilda   AGE: 40 STATUS: M SEX F
REQUESTING PHYSICIAN: Dr. Roxas SERVICE
CLINICAL DIAGNOSIS: Mixed Tumor R/O Kochis Lympadenitis
LOCATION OF LESION: Right Submandibular Gland
GROSS DESCRIPTION:
    Specimen Consists of Fragmented portions of Friable partially Cystic, partially solid brown to red tissues.

MICROSCOPIC DESCRIPTION:
    Thin Cutting disclose two different Tumor entities. One is Malignant Composed of cells that are large, Anaplastic with prominent nuclei and Nuclei. They tend to show a Glandular Pattern.
    The other Entity is a benign one composed of Cells That are Mucin producing and Cells of Uniform Sizes and Shapes That are Hyperchromatic with Scanty Cytoplasm.

DIAGNOSIS:

    ADENOCARCINOMA in a BENIGN PLEO-MORPHIC ADENOMA, Submandibular Gland, Right; Excision Biopsy.

Melquiades E. Francisco, M.D., F.C.A.P., F.P.S.P.

Buenaventura C. Erese, M.B.A., M.D., F.P.S.P.

Surg. Sp. No. S-0291-86

ABERRANT TOOTH — A CAUSE OF MAXILLARY SINUSITIS*

Manuel N. Barrera, M.D.**
Abelardo B. Perez, M.D.***

INTRODUCTION

Maxillary sinusitis is a relatively common condition that may be attributed to a wide variety of factors that may influence the mucosa of the paranasal sinuses. These factors may range from microbiologic and physical factors to anatomic and metabolic factors.

The case to be presented is about maxillary sinusitis that has been mistakenly diagnosed and treated as a dental case.

CASE REPORT

F. I., a 22-year-old, female, married and presently residing at Rosario, Batangas, was referred by a dentist because of a misplaced drain.

The condition started about three years ago as a swollen right cheek. A dentist was consulted and two right maxillary molars were extracted. No dental caries was noted on both teeth, however. Since then, the patient experienced on and off drainage of pus-like material from her mouth. About a year later, the patient again developed a swollen right cheek. She again consulted her dentist but was referred to another dentist who drained her gum.

The patient became well since then until about two weeks prior to admission when she experienced pain on the right cheek and eye accompanied with frontal headache and blurring of vision. She again consulted her dentist and another right maxillary molar was extracted. A drainage was made at the level of the second right maxillary molar at the gingivobuccal junction and about

three tablespoonful of pus-like material was collected. A drain was inserted and left behind. The following day, the dentist was again consulted as the patient could not find the drain. A gauze strip was inserted at the drainage site and as it was being pulled out, the drain went with it.

PERTINENT PHYSICAL FINDINGS

Asymmetrical maxillary area with swelling at the right side.

Normal looking nasal mucosa.

The oral cavity revealed carious teeth with missing three right maxillary molars and a missing left mandibular premolar and molar.

There is a fistula at the level of the second right maxillary molar at the gingivobuccal junction.

ADMITTING DIAGNOSIS

Maxillary abscess, right.

RADIOLOGIC FINDINGS

Radiologic study reveals haziness on both maxillary sinuses. The infero-lateral wall of the maxillary antrum is eroded and a dental tissue on the superior portion of the right maxillary antrum was noted. There is no septal deviation seen.

SURGICAL TECHNIQUE

A nasal packing with topical anesthetic was introduced into the right nostril. After right infraorbital nerve block and local infiltration, an incision was made at the gingivobuccal junction. The periosteum was elevated and freed from the anterior antral wall thereby exposing a hole on the wall which was about a centimeter in diameter. The hole was enlarged by a Kerrison back biting forcep, enough to facilitate access into the maxillary antrum. A thick mucosa was exposed and pus was aspirated. A mass located at the supero-antero-lateral portion of the antrum was noted. An attempt to remove the mass from its attachment by curettage was to no avail. It was with the use of elevator and scissor that the mass was finally removed. The antrum was carefully cleansed. An intranasal antrostomy was done and a vaselinized gauze strip was introduced into the antrum. The mucosal flap over the anterior antral wall was approximated with 4-0 silk and an intranasal packing was placed.

HISTOPATHOLOGICAL REPORT

Gross Examination:

The specimen consist of an irregularly shaped, pale gray-white, cystic soft tissue mass 3x2x1.5 cm., partially opened, disclosing a slightly brownish gray fibrillary inner wall 0.2 cm. thick with molar whitish tooth within. The wall is indurated and slightly firm.

Microscopic Examination:

Microsection disclosed a cystic wall composed of fibromuscular tissue lined with stratified squamous epithelium without keratinization with numerous chronic inflammatory cells, as well as, neutrophils with edema and congestion. The cystic structure is beside an unerupted tooth.

FINAL DIAGNOSIS

Maxillary abscess secondary to aberrant tooth with dentigerous cyst.

DISCUSSION

Dentigerous cysts are fairly common pathology associated with an unerupted tooth, usually at the mandibular third molar and maxillary cuspid area but may involve any tooth elsewhere. These cyst are derived from the epithelium involved in the formation of dental apparatus and are formed through the alteration of the reduced enamel epithelium.

Dachi and Houell in 1961 reported in a survey of 3,874 full-mouth radiography that 37 per cent of impacted mandibular third molar and 15 per cent of impacted maxillary third molar showed circumcoronal radiolucency, which was enough to be considered a dentigerous cyst in about 10 per cent of cases.

In a review of the approaches to the treatment of impacted maxillary cuspid by Anderson in 1971, it was reported that impacted teeth occur in the following order of frequency:
1. Mandibular third molar.
2. Maxillary third molar.
3. Maxillary cuspid.
4. Mandibular second premolar.
5. Maxillary second premolar.

When a tooth develops anywhere in the body, they may also be subjected to the same pathologic condition just like any normally located tooth. It may develop over the maxilla, it may grow on the hard palate, in the suture line of cleft palate, as a component of dermoid cyst, or within the maxillary antrum itself.

Most cases of dentigerous cyst in the maxillary antrum are cystic extension after it attained huge size. This is possible since various types of cyst are capable of causing absorption and necrosis of the surrounding bone.

If the case presented initially with a swollen cheek, it is sufficient enough to merit dental consideration. Shugar, et. al. in 1982, in an article maxillary sinusitis as a cause of cheek swelling, stressed that inflammatory swelling of the cheek is an extremely rare complication of sinusitis and considered the following in the differential diagnosis of patient with a swollen cheek:
1. Post surgical and post traumatic defect in the anterior antral wall.
2. Neoplastic disease of the maxillary sinus.
3. Dental infection.
4. Dacryocystitis.

The role on the anterior antral wall is due to the fact that the teeth and the maxillary antrum is separated by only a thin membrane of bone. It could be purposely made or inadvertently perforated during extraction especially in the presence of infection.

SUMMARY AND CONCLUSION

Dentigerous cyst that develops from an abberant tooth in the maxillary antrum is an extremely rare pathology and has never been reported in any reference book and journal available to the author.

It is the intention of this report to impart our knowledge about such condition and be able to do our share in the advancement of the field of otolaryngology.

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A STUDY ON THE RELATIONSHIP BETWEEN DEAFNESS AND MENTAL ABILITY OF CHILDREN*

Abelardo B. Perez, M.D.**

INTRODUCTION

A. Historical Perspective

Prior to the enlightenment in the present day attitudes toward the deaf, records collected show that there was a stigma attached to this unfortunate condition. In the distant past, this stigma was related to the apparent lack of mental development seen in groups of individuals who could neither understand nor be understood.

Before the 15th century, there were many laws discriminating against the deafened. They were barred from the rights of citizenship by the Justinian Code and as far back as the 2nd century B.C., the deafened were classified with fools and children. To add insult to injury, they were even furthermore considered incapable of the merits of heaven due to the doctrine of *fides ex auditus* (faith comes from hearing).

It was not until the middle of the 16th century that the beginning of present day enlightened attitude began to show itself. Girolamo Cordano of Padua, Italy, definitely showed that the deaf could be taught by associating written symbols and related objects and this principle is the basis of the teaching techniques used today. He was certainly the first to record the opinion that the deaf could be educated if a proper psychological approach were adopted.

In 1680, Dalgarno was credited with saying that the deaf were equal in apprehension and memory

not only to the blind but also to the normal, and that they were capable of receiving instruction.

Modern day experiences have continuously attested to the validity of these earlier concepts. These little bits of discoveries have helped much in shaping the present attitudes in handling deaf individuals. It should be to these historic figures that rehabilitated deaf individuals should direct their thanks for the status in life that they can enjoy now.

B. Objectives of the Study

The main objective of this study is to determine the relationship between deafness and mental ability among school children based on a retrospective study of literature, mental ability testing and audiometric study.

Secondarily, this study also aims to describe the effects of hearing loss on the intellectual development and on the overall personality of school children.

C. Significance of the Study

Unfortunately, there is still a dearth of researches available on the subject of deafness and its relation to mental ability both here and abroad. Hence, this study answers to a need for more research and detailed information along this line. Another significance of this study may be ascribed to the relatively high incidence of deafness or hearing impairment in our country. Not many of the Filipinos know about the disease and certainly many hate to learn about this.

Investigations of hearing using elementary school children conducted by Ledesma, and by the Bureau of Elementary Education in 1974 revealed that 15% of the children tested suffered from a certain degree of conductive or sensorineural (SN) type of hearing loss. In comparison the estimated prevalence in the U.S. is one in every 15 persons. "This is considered to be a serious problem because good hearing is crucial to learning. Some children have already been labelled mentally retarded and placed in a school for the retarded because the real problem, namely loss of hearing had not been diagnosed."

D. Limitations of the Study

This study is severely handicapped by the scarcity of researches available and the lack of detailed knowledge regarding the relationship between deafness and mental ability among school children. Hence, the discussions were limited by the inadequacy of available materials. There are still gaps in the presentation of data which have yet to be filled up by future studies.

The research is further limited to students who are not severely handicapped. No student belonging to the deaf-mute category is included.

METHODOLOGY

A group of high school and elementary school children whose Intelligence Quotient (IQ) was taken were picked as the subject. Their hearing was tested using pure tone audiometric Beltone Model 12A The group with hearing impairment was separated The IQ and class performance were compared. In this study, the private schools used the Philippine Self Administering Test of Mental Ability while the public schools used the Otis Quick Scoring Mental Ability Test. The grade equivalent for class performance is as follows:

	Public	Private
Very low	74-75	73-74
Low	76	75-76
Lower Average	77-78	77-78
Upper Average	79-80	79-82
High	82-84	83 85
Very High	85-87	86-87
Bright	88	

The norms of the Philippine Self Administering Test of Mental Abaility expressed in percentile rank are:

Very High	—	91-99
High	—	76-90
Upper Average	—	51-75
Lower Average	—	26-50
Low	—	11-25
Very Low	—	1-10

The Otis Quick Scoring Mental Ability Test was converted into percentile rank based on Matrexen Test of Mental Ability.

Lower Average	—	70-71
Upper Average	—	72-77
High	—	78-84
Very High	—	84-94
Bright	—	95

In the material relating to the education of the deaf, Sterrit, et al compared the abilities of school age children whose hearing loss led to "early auditory deprivation" with those of normal children whose age and sex have been matched by testing the abilities of the subjects to reproduce visual temporal patterns. They found out that the performance of deaf children was less than that of the normal on the noverbal test, even though they were not visually handicapped. Hence, they concluded that the effects of early hearing loss might not be confined to that sense alone.

FINDINGS AND DISCUSSIONS

Among the school children whose IQ was taken, the following who are identified to have some impairment of hearing were isolated from the rest who were considered normal.

Table I

Students with Deafness

Intensity	Both Ears	Only Right Ear	Only Left Ear	Total
Mild	10	6	11	27
Moderate	1		2	3
Severe	1	1	1	3
Total	12	7	14	33

Mild — 21-45 db average at speech hearing frequency

Moderate — 46-60 db average at speech hearing frequency

Severe — 61-90 db average at speech hearing frequency

The above classification is based on the American Standard of the threshold for speech at the speech hearing frequencies.

Table II

IQ of Students With Hearing Impairment

	Public	Private	Total
Very Low	0	5	5
Low	0	0	0
Lower Average	11	1	12
Upper Average	4	1	5
High	2	4	6
Very High	4	1	5
Total	21	12	33

The most number of students with deafness had an IQ of lower average and below.

Table III

Class Performance of Students with Deafness

	Public	Private	Total
Very Low	11	3	14
Low	0	3	3
Lower Average	4	3	7
Upper Average	2	3	5
High	2	0	2
Very High	2	0	2
Total	21	12	33

If the lower average will be taken as the cut-off point, it can be noted that deaf students show a poor performance in class.

Effects of Deafness on Intellectual Development

Deafness is a serious handicap of an individual. On a sensory level it isolates its victims from the total world of sound and sound experience. On an intellectual level, it deprives them of the primary modality in the vital process of developing inter-relationships with other persons upon which the social, occupational and emotional success depends.

The findings of a study elucidated that the effect of hearing impairment in children is defined largely in terms of communication because of the important role hearing plays in learning and understanding language and speech. Speech which is man's major mode of communication is likewise the most deficient mode in any individual with hearing handicap.

Survey on educational achievement indicate that the school age deaf children have a 3-4 year language lag and that the average deaf person reads at a level about the 5th grade or below. The discrepancy between language and hearing impairment of a child at the age of two might be minimal, relatively speaking, but it will continue to increase with age, no matter what parents do.

Going back in time, that is, before the school age (3-6 years) is reached, it was found out that three critical years are evident during which language is learned (i.e.. 1-3 years old). These are consequently the most important years in child's life for intellectual development. Thus, if a child is born cogenitally deaf, or becomes deaf within the first three years of life, it is to be expected that he will lag behind his normal counterpart intellectually.

There is a current deluge of interest in and attention to learning disabilities due to a reemphasis on the importance of hearing as a 1° sensory function in the development of language and intelligence. This however applies only to the highly developed countries where even mild hearing impairment (not necessarily total deafness) is considered a serious handicap, unlike in the local setting where it is not given much emphasis.

Myklebust in 1960 points out in his study of deafness and mental development that although the deaf seem to be inferior to children with normal hearing in some intellectual tasks, the former are equal or even superior to the latter in other tasks.

Stafford in 1962 found out that in most problem solving tests used in his study hearing children surpassed deaf children.

Olson and Furth in 1966 found out that with nonsense forms there was no difference between the deaf and the hearing group but with digits the deaf were inferior.

The hearing impaired child matures and acquires social independence more slowly than his unimpaired counterpart. It is difficult for the child with severe hearing impairment to live up to the potential of his intellectual capacity, although he may be qualitatively not inferior in intelligence.

According to Fe del Mundo, M.D., hearing impairment whether congenital or acquired, form handicaps of various degrees which have to be overcome for the person to attain or approach his optimum capabilities.

Hearing is important to the future of children not only in their emotional, mental, and social life, but also in their prospects for employment or self-improvement. The earlier hearing deficiencies are detected and diagnosed, the better is the prospect for rehabilitation or correction.

Effects of Hearing Loss On Personality

The psychological problems inherent in the deafened are not unique since they are also those found in normal individuals. However, these problems are intensified by the hearing loss. An inferiority complex becomes exaggerated and the individual usually feels socially and economically inadequate, or imagines that he is, and ultimately develops an attitude of defeatism.

On the other hand, graduates of Gallaudit College (the only Liberal Arts College in the world for the deaf) have demonstrated that deaf persons can hold semi-professional positions and meet with success. They are librarians, chemists. architects, computer specialists, medical technicians, psychologists, and government officials.

The greatest handicap of deafness lies in the fact that it leads to loneliness, introversion and unsociability by separating a deaf person form others with normal hearing and through lack of the optimal pathways of communication.

Deaf children react according to their individual dispositions. There are no particular personality traits attributable to deafness. In any random group of children, some are quiet, some temperamental some aggressive, some gentle some stupid, and some intelligent.

What might be mistaken for mental aberration or lack of intelligence is in reality rather often than the consequence of a hearing disorder. As soon as the cause is ascertained and education is focused on the underlying disability, such children are very often seen to flourish as if by magic.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The number of deaf students with I.Q. of upper average and above is 48.48% while that of class performance is 27.27%. The number with an IQ of lower average and below is 51.51% while that of class performance is 72.72%.

The intelligence or the IQ of school children can be affected by deafness. The relative lag in intelligence as

compared with normal ones is chiefly manifested in communicative disabilities. This result strongly confirms the important role of good hearing on learning and understanding language and speech.

The effects from hearing loss are very much varied, and the effects cannot be confined to that sense alone. There are no peculiar personality characteristics that can be ascribed to them, or that can distinguish them from other normal individuals.

There is relation between deafness and the intelligence of the person, so that a variety of teaching methods is highly recommended where children can learn and live productive lives. The intellectual development of deaf children tends to be slower due to their handicap which makes learning a little but tedious and slower, as compared to their normal counterpart. This explains why they seem to be intellectually deficient even though they may be not.

Furthermore, it is also recommended that the deafness be identified and corrected early enough to enable the handicapped children to accelerate their intellectual capacities and live normal lives.

Percentile formula

$$P_{10} = L + \frac{10 \times N - F}{f} \times I$$

where P_{10} = Percentile 10

N = No. of cases

F = accumulated frequency

f = frequency of class where P_{10} lies

I = class interval

L = lower limit of class where P_{10} lies

$$P_{25} = Q_1 = L + \frac{N/4 - F}{f} \times I$$

$$P_{50} = \text{Median} = L + \frac{N/4 - F}{f} \times I$$

$$P_{90} = L + \frac{.90 \times N - F}{f} \times I$$

$$P_{99} = L + \frac{.99 \times N - F}{f} \times I$$

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