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The Philippine Journal of Otolaryngology Head & Neck Surgery

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A C K N O W L E D G E M E N T

The publisher and the editorial staff would like to give due recognition to KING-AID PHILIPPINES for its support and assistance, without which this journal would not have been possible.

Special mention is also extended to its President and Audiologist, Mrs. Nelly R. Ledesma, for pioneering the celebration of a Better Speech and Hearing month highlighted by an Audiology Symposium held at the Board Room, Century Park Sheraton, May 14, 1983.

THE PHILIPPINE JOURNAL OF OTOLARYNGOLOGY
HEAD & NECK SURGERY

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Editorial

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Progress and Perspectives

Perhaps, more than any group of specialists, the Otolaryngologists face the future more confident brought about by the hectic pace in the development of its subspecialities oriented towards the vast unknowns of human biology.

Sophisticated tools like the vastly improved ear/larynx microscope, flexible fiberoptic endoscopes, suspension laryngoscopes, CO_2 and argon lasers, kapnographs, cryoprobes, C-T scan, etc. expanded the diagnosticians acumen and in the process gain recognition for the Otolaryngologists. Beneficial as they maybe, the practice of the specialty has been shared by others resulting in a competitiveness which has driven us to excel.

Be that as it may, Otolaryngology -- Head & Neck Surgery knows no bounds as we choose to widen our sphere to include the head & neck, proud of what we have done and confident of what we can do. Major areas of advancement are listed below:

Otology

- *Cochlear implant – 40% - 50% speech discrimination possible with multichannel implants.*
- *PORP and TORP – near perfection in closing the A-B gap.*
- *Canal wall up and canal wall down mastoidectomies complementing homograft tympanoplasty.*
- *Translabyrinthine surgery – endolymphatic sac and acoustic tumor – becoming routine.*
- *Tympanostomy with insertion of ventilation or grommet tube or collar button in serous or secretory otitis media.*

Audiology

- *Brainstem evoked response audiometry (BERA) quantitating the size of acoustic neuromas.*

Head & Neck Oncology

- *Recognition and acceptance of the high rate (10% - 20%) of simultaneously occuring second primary in the upper aerodigestive tract.*

Laryngology

- *Tracheo-esophageal shunts with (Panje and Blom-Singer) or without (Amatsu) prosthesis.*
- *Neuromuscular (omophyoid) implant to replace lost motor function of posterior cricoarytenoid.*

Maxillofacial

- *Biphasic splints and compression plating in fractures of the mandible on edentulous individuals.*

– *Compound flap of clavicle and sternocleidomastoid muscle for mandibular reconstruction.*

Plastic and Reconstructive

– *SMAS (superficial muscular aponeurosis system) in face lifts.*
– *Myocutaneous flaps in reconstructuve surgery.*
– *Monoclonal antibodies in skin allograft survival.*
– *Increasing interest in open rhinoplastic procedure.*

Bronchoesophagology

– *Recognition and acceptance of the need for endoscopic evaluations of all new patients with head and neck cancers.*

Rhinopharyngology

– *Changing views as to need for tonsillectomy in pentonsillar abscess.*

Allergy

– *RAST (radio-allergosorbent test) in measuring specific IgE antibody.*

angel enriquez, m.d.

PRESIDENT'S PAGE

Our society is 28 years old today. It was conceived and born in 1956 when 9 young and pioneering Otolaryngologists – the heroic 9 = fought tooth and nail against all odds to form an independent E.N.T. society. It was their contention that only physicians with qualified training in E.N.T. can truly give the public competent otolaryngologic care. Our society, therefore, came into existence solely with the noble purpose of uplifting the standard of E.N.T. practice in the Philippines

Since that fateful day, our society have grown from the original 9 to the present 70 members. In terms of accomplishments, our society can be proud of so many things. To mention but a few, in the past few years, we have seen successful scientific sessions and workshops. In these meetings we have had the opportunity to hear and learn from both local and international experts. This exchange of knowledge updates us in the latest trend in medical science, which also enhances our continuing medical education.

During these times also, we witnessed the founding of the Philippine Board of Otolaryngology, which although independent of our society, will contribute much to the excellence of graduates joining our specialty. For this, we have to congratulate Dr. Napoleon Ejercito and the other members of the Board.

Another milestone in the short history of our society is the birth only recently of the Philippine Journal of Otolaryngology – Head and Neck Surgery, and judging by its maiden issues, our journal is comparable if not even better than its foreign counterparts. Our hats off to Dr. Angel Enriquez and his Board of Editors.

Of equally significant is the founding of the Asean Congress of Otolaryngology which incidentally our society will be hosting a year from now. The Asean Congress will serve as a fertile ground for the interchange of ideas and expertise in our specialty especially among member nations. For this, we have to thank Dr. Mariano Caparas, one of the founding members, who is also chairman of our scientific committee.

With all these accomplishments, I feel like the poor musician, who laments the fact that it is impossible for him to create beautiful compositions anymore because all the possible masterpieces have been written by somebody else ahead of him. However, as they say, the show must go on.

Being president, I fully realize the responsibility and the challenge of my position. I know its not going to be that easy, but God willing, you and I, together, we can still make beautiful music.

So for the coming year, I have few plans and announcements to make.

1. *In line with our continuing medical education, we shall continue to hold 4 scientific meetings a year. The United Laboratories, Inc. has graciously consented to sponsor all our scientific meetings for this year.*
2. *We shall continue to hold 2 annual National Research contests.*
   a) *P.S.O.-H.N.S. – Boehringer Ingelheim Resident Research Contest. The prizes for this year's contest have been increased as follows:*
      1st prize – ₱3,000.00 and plaque
      2nd prize – ₱2,000.00 and plaque
      3rd prize – ₱1,000.00 and plaque
   b) *P.S.O.-H.N.S. – United Laboratories, Inc. Research contest. This is open to all residents and practising otolaryngologists. Prizes shall be as follows:*
      1st prize – ₱3,000.00 and plaque
      2nd prize – ₱2,000.00 and plaque
      3rd prize – ₱1,000.00 and plaque
3. *We shall continue to invite local and international medical experts to give us lectures or probably to hold joint scientific sessions with us.*

4. *Steps will be taken to encourage a wider participation in both our scientific meetings and research contests. In the past, although we have the successful presentations of excellent papers, most of these came from Medical centers within Metro Manila. This year, letters will be sent out to Medical centers outside Metro Manila to invite them to join us. And if initially, for some reasons, our provincial colleagues cannot participate, we can at least invite them to attend our meetings as our guests. This I think will stimulate them to join us in the near future. Going one step further, it is my hope that someday, we will be able to hold our midyear scientific sessions in a city outside Metro Manila like Cebu, Davao, Baguio or the Bicol region.*

5. *Lastly, in the field of public service and information, although our society have done its share, I feel this is one department where we can do more. For instance, we can give out public information on how to detect early signs and symptoms of head and neck cancers. Another thing is we can teach the public on how to deal with some common E.N.T. emergencies, like foreign bodies of the air and food passages, which oftentimes can lead to fatal consequences if immediate relief is not administered. The public can also be told of the possible hazards of air and noise pollutions. But most important of all, I think primary care physicians like the family doctors who see the patient first, should be made aware of all these things and their possible complications. This way, we will be consulted at the best possible time when optimum medical and surgical care can be rendered.*

The task ahead is going to be formidable. However, there's a wise Chinese saying, which goes as follows, "A journey of a thousand miles is always initiated by the 1st step." We have taken that 1st step. Shall we reach our destination? Only the future will tell.

JESUS CO, M.D.

Inaugural address delivered at the Manila Hilton on February 26, 1983.

The Phil. Jour of Oto. Head & Neck Surgery

AMATSU TRACHEO-ESOPHAGEAL SHUNT AFTER TOTAL LARYNGECTOMY*

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Introduction:

Laryngeal cancer is one of those dreaded diseases that is highly amenable to the various mode of therapy available now. However, especially in cases of laryngeal tumors, the surgery itself that these conditions warrant prove to be quite a big debilitating and crippling blow for the laryngectomee. Sometimes, the patient ends up depressed and frustrated as a result of the loss of speech.

Speech is quite important in a person's psychological, social and emotional make-up. Speech is one of the features that distinguishes man from his fellow primates. Yet, it is this very same ability to convey one's thoughts and ideas, to express one's emotions that oftentimes, has to be sacrificed or compromised in the treatment of carcinoma of the larynx.

Esophageal speech is one way of rehabilitation for these patients. sHowever, only 40% of the laryngectomees[1] can be expected to become proficient in acquiring this form of speech.

During the past 15 years or so, several authors[2-11] had published reports towards alleviating or improving this situation. Although such rehabilitative procedures date back from the time of the first reported case of tota laryngectomy,[12] only in recent years has this special field of study really developed. This is evidenced by the abundance of articles that literally swamp present day medical journals. With these new innovations available to laryngologist, it is something short of a crime to consign a laryngectomee to a life without speech. The speech obtained through these various procedures may not necessarily be similar to the patient's premorbid voice but then, a voice can be achieved.

To facilitate this study, six patients in the Department of Otorhinolaryngology, UP-PGH Medical Center with laryngeal cancer underwent the Amatsu operation. Table I shows the general data about the patients included in this study.

Table I

Patient	Sex	Tumor site	TNM	Age at operation
1) A.E.	M	glottic	$T_3N_0M_0$	47
2) G.D.	F	glottic	$T_3N_0M_0$	42
3) J.D.	M	glottic	$T_3N_1M_0$	55
4) P.D.	M	glottic	$T_3N_0M_0$	45
5) E.C.	M	glottic	$T_3N_0M_0$	52
6) C.E.	F	glottic	$T_3N_0M_0$	47

All these patients underwent total laryngectomy with Amatsu shunt operation. However, patient number 3 underwent radical neck dissection as well because of a palpable neck node.

Amatsu Surgical Technique:

If possible tracheotomy should be done at the time of the laryngectomy. If ever tracheotomy is to be done before the laryngectomy, it should be a planned tracheotomy. The tracheotomy is usually done at the level of the third to fifth tracheal rings.

A U-shaped apron skin incision is preferred as an approach to total laryngectomy with the tracheotomy site as the lower and central portion of the U-shaped skin incision. Then, the surgeon proceeds with the classical total laryngectomy operation.

The larynx is usually transected at the level of the first tracheal ring. However, this can be lowered to the second or third tracheal ring in cases of subglottic extension of the tumor, thus providing adequate margins for the lesion.

*First Prize-3rd PSO-HNS – Boehringer Ingelheim Residents' Research Contest held on Dec. 1, 1982 at the PICC

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Steps in the Amatsu shunt operation.

1. Creation of the tracheal flap. This is created from the membranous part of the trachea measuring 2 cm. in width and 3 to 4 cm. in length is used as an inferiorly based flap. If the membranous portion is insufficient, the mucosa is dissected from the tracheal cartilage, thus recruiting additional tissue. This can be accomplished by splitting the tracheal rings above the tracheostome.

2. Completion of the lower half of the tracheostome. The lower border of the tracheostome is sutured to the lower skin incision with an overlap.

3. Creation of the tracheo-esophageal fistula. A midline vertical incision measuring 9 to 10 mm. in length is made starting just below the superior margin of the tracheal flap. This is a layer by layer incision using a surgical blade 15 or 11 until the esophageal lumen is reached. The esophageal mucosa is then everted and sutured to the tracheal mucosa using dexon 4-0 suture.

4. Insertion of the rubber catheter to keep the shunt patent. French 12 or 14 catheter can be used for this purpose. This is removed 14 days post-operatively.

5. Formation of the blind pouch or tunnel. This is achieved by single layer suturing of the margins of the tracheal flap using dexon 4-0.

6. Closure of the hypopharynx as is usually done in conventional laryngectomy.

7. Formation of the upper half of the tracheostome. This is done using the same technique as in the formation of the lower half of the tracheostome.

8. Layer suturing of the skin flap after suction drain has been placed.

Discussion:

Since the time of the first laryngectomy, it has been established that creation of a connection between the trachea and the esophagus and in the process, diverting pulmonary air to the esophagus can produce phonation following total laryngectomy. The Amatsu shunt operation also avails of this generally accepted belief.

The technique was found easy to perform, applicalbe to all forms of laryngeal cancers since it does not sacrifice safe margin for excision of the lesion. It is a one staged procedure done at the time of laryngectomy.

In the 6 patients operated on, all were able to produce sounds after the removal of the rubber catheter. However, formation of crusts and mucus plug along the shunt was consistently present in all the patients. Thus, this site needs extra care initially and should be removed if present before the patient is asked to phonate.

Only 4 of these patients had post-operative check ups and 2 were lost for follow-up. Of these 4, using Liepzig criteria for speech intelligibility as seen in Table II, 2 were found to have excellent speech while one communicates primarily with voice or with the newly acquired speech. The other patient, although capable of producing sounds, did not have the same opportunity to practice her newly acquired speech. This is due to poor family support since most of the time the patient did not have anybody to talk to at home except to her dog and cat.

Table II. Evaluation of Subjective Speech by Leipzig

Grade	1 –	Excellent subjective speech
	2 –	Communicates with voice primarily
	3 –	Occasional word or syllable produced
	4 –	Requires lip reading to understand sounds

As regards aspiration, all the patients manifested minimal aspiration confined to fluids. This problem is solved or controlled by digital pressure over the shunt site. Thus, all were rated Grade 2 based on Table III by Leipzig.

Table III. Complications of Aspirations by Leipzig

Grade	1 –	Bubble on neoglottic fistula
	2 –	Occasional cough, no significant problem
	3 –	Constant cough, worse with eating (i.e. potentially dangerous)
	4 –	Pneumonia

All the 4 patients followed up were observed to be capable of having a socially adequate speech without the use of any ap-

pliances or prosthesis for speech production. Detailed evaluation of speech of these shunt speakers is the subject of another research study.

Therefore, in conclusion we say that the Amatsu shunt technique can be done without sacrificing the margins of resection of the tumor and still give the patient speech without the use of speech appliance. The laryngectomized patient cannot be condemned to life without speech and this surgical technique offers a quality of life that is socially acceptable and alleviating to the laryngeal cancer patient.

SUMMARY:

A group of six patients with laryngeal cancer underwent total laryngectomy with Amatsu T-E shunt operation for speech rehabilitation at UP-PGH Medical Center, Department of Otorhinolaryngology. The surgical technique was discussed with special emphasis on the highlights of the technique. The technique was fairly easy to perform, can be done at the time of laryngectomy and does not use any prosthetic appliance to develop speech.

Complications worthwhile of attention were not encountered in this surgical technique.

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EARLY DETECTION OF ORAL MALIGNANCY WITH TOLUIDINE BLUE*

Dr. Benito Uy**

While oral cavity structures are accessible for inspection both to the clinician and the patient, still numerous malignant tumors in this area are left undetected early in their asymptomatic stages.[2, 7, 28] What probably defeats the clinician in the early detection of oral malignancy is the negligence to give any consideration to the possibility that a lesion which appears benign could be malignant, as such, an attempt to manage the condition believed to be a benign problem with topical medications, antibiotics, cauteries, dental extraction and dentures adjustment is made, only to find out too late that it is a malignant tumor.

Prognosis of oral malignancy in its advanced stage is universally very poor; terminal phase of life of the incurables is protracted and distressing.[21] Therefore, the need for a good screening procedure for the early detection of oral malignancy cannot be overemphasized.[14] As we all know, early detection and recognition of oral malignancy means early diagnosis, simple and less radical operations, improved survival rate and prevent metastasis.

At the present time, a number of techniques have been employed to achieve early detection of oral malignancy,[10] among which are radiography,[4] nuclear scan,[26] thermography,[3, 32] cytology[2, 8, 13] and computed axial tomography.[9] Even with these latest tools in today's advanced medicine, the challenge still remains as to the best method that can be utilized with regard to simplicity, practicality, accuracy and availability.

Objectives of this study are:

(1) To evaluate the clinical value of Toluidine Blue in the early detection of oral malignancy.
(2) To emphasize the usefulness of Toluidine Blue as a guide in the selection of a good biopsy site.

MATERIALS AND METHODS:

This investigation was undertaken from February 1982 to September 1982. There were 40 subjects in this study, 26 of whom were females and 14 were males. Their ages ranged from 27 to 75 years with the majority comprising the 50 year age group. (Table I).

A thorough examination of the oral soft tissues was conducted for patients with complaints in the oral cavity. Patients with mucosal alterations, suspicious mass lesions, pain within the oral cavity were prepared for staining with toluidine blue solution. Each lesion was photographed before and after the direct application of the dye. The technique for application is shown in Table II.

Toluidine blue solution was concocted by mixing 1 gram of Toluidine blue 0 powder, 10 cc. acetic acid, 4 cc. absolute alcohol and 86 cc. of distilled water.[16]

RESULTS:

Forty patients with oral lesions were included in this study. These lesions were evaluated, recorded, photographed, stained and biopsied. (Fig. 1 - 3).

Lesions that stained dark royal blue were recorded as positive for malignancy,[11, 23, 27, 28] while those that did not stain were considered to be benign. A biopsy of the stained areas was done. If a lesion did not stain, a biopsy of the most suspicious area was done. The clinical impression and staining results were compared with the histopathological diagnosis.

In Table III, comparison of the clinical impression and pathologic diagnosis are shown. Of the 32 carcinomas, 18 were diagnosed as clinically malignant while 14 were clinically misdiagnosed as non-malignant. Five out of the

*Second Prize – 3rd PSO-HNS – Boehringer Ingelheim Research Contest held on Dec. 1, 1982, at the PICC

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8 benign lesions were clinically diagnosed as suspicious for malignancy.

In Table IV, an assessment of the diagnostic accuracy of toluidine blue staining was made. All 32 cases of carcinoma stained positive. Likewise, all of the 8 non-malignant lesions were negative for toluidine blue staining.

STATISTICAL COMPUTATIONS:

We determined the specificity and sensitivity of toluidine blue staining and clinical impression alone, utilizing the four-cell diagnostic decision matrix, and obtained the following results:

Toluidine Blue	Specificity	Clinical Impression Alone
$\frac{32}{32+0} \times 100$	$\frac{TP}{TP+FP}$	$\frac{18}{18+14} \times 100$
$\frac{32}{32} \times 100 = 100\%$		$\frac{18}{32} \times 100 = 56.25\%$
	Sensitivity	
$\frac{8}{8+0} \times 100$	$\frac{TN}{TN+FN}$	$\frac{3}{5+3} \times 100$
$\frac{8}{8} \times 100 = 100\%$		$\frac{3}{8} \times 100 = 37.5\%$

From data obtained with Toluidine Blue staining, we analyzed the results to test for significant difference between what was reported to be a malignant lesion and a non-malignant lesion against a histopathological diagnosis. Utilizing the chi-square, a non-parametric or distribution-free statistics, we obtained a value $x^2 = 40$. With df = 1, at a p value 0.001, we reject the null hypothesis of no difference, fairly confident that an impression, supported with findings from toluidine blue staining, as verified by a histopathological report, yields results that are different or over and above those produced by chance alone.

We subjected the results obtained based on a clinical impression alone to the same analysis. We obtained a value $x^2 = 0.102$. With df = 1, at an accepted p value 0.05, we accept the null hypothesis of no difference, and deduce that any differences in diagnosis, with an impression based on clinical grounds alone, can well be accounted for by chance.

To further substantiate our claims, we then determined and tested for any significant difference in the means to establish the diagnosis of a lesion, between clinical impression alone and findings on staining with toluidine blue.

First, we compared the report of an impression, positive for malignancy, based on clinical grounds alone and findings on staining with toluidine blue. We obtained a $x^2 = 7.652$. With df = 1, at a p value $\ll 0.01$, we reject the null hypothesis of no difference.

We likewise compared the report of an impression, negative for malignancy, following the same means for establishing a diagnosis as indicated. We obtained a $x^2 = 14.973$. With df = 1, at a p value < 0.001, we reject the null hypothesis of no difference.

Thus, we have shown that an impression supported by findings obtained on staining with toluidine blue, allows for a greater degree of confidence. That toluidien blue staining has a higher predictive value over an impression based on clinical grounds alone, in establishing a diagnosis of oral malignancy, a greater degree of correlation with histopathological examination and accruately reflects the clinical condition on both sides of a dilemma. In other words, one can on the basis of staining characteristics, state, with a high degree of confidence, whether the nature of a lesion one wants to establish is malignant or not.

Furthermore, the significant differences noted between the results based on toluidine blue staining andclinical impression alone, both in ruling in or ruling out the presence of a malignant lesion, correlated with findings on biopsy leads us to conclude that with toluidine blue staining, one would rarely miss the diagnosis of a malignant process; that it avoids unnecessary delay, dealing with the lesion at an earlier stage than at a stage necessitating a more extensive therapeutic or palliative measure; and a lesser instances of making an error in the diagnosis, obviating uncalled for apprehension among our patients.

DISCUSSION:

Oral malignant diseases are common in the Philippines, Southeast Asia, India and Papua New Guinea.[21] Eighty percent occurs among population in the 5th decade of life. Majority of oral malignancies are situated in the tongue and floor of the mouth.[11, 21] In the early stage of its development, malignant lesions maybe inconspicuous and overlooked on routine

oral examination, since it may not be palpable and color changes may not be very evident.[17, 23, 27, 28] Unless a malignancy is suspected and the symptomatic area examined well, patient may be treated as a benign case even when definite evidence of malignant lesion is already apparent in the oral cavity.

Clinical studies abroad using Toluidine Blue for the early detection of oral malignancies are quite extensive but local publication are wanting.

Richard,[20] considered the pioneer in the use of this dye, reported in 1963, that toluidine blue staining showed more accurate results than the Schiller's test in the detection and localization of cervical neoplastic diseases.

Other workers like Shedd,[22, 23, 24] Myers,[17] and Niebel[18] who have worked on oral neoplasms with this staining method have found it to be very useful giving no false negative results.

Interestingly, investigators like Yamakawa et al[33] demonstrated positive staining in induced gastric cancer in rats and concluded that oral administration of this dye may proved helpful in the endoscopic or surgical diagnosis of gastric malignancy. Giler et al[5, 6] in 1978 reported that per oral staining with toluidine blue in patients with suspected gastric malignancy proved to be of value in the detection of even minute malignant gastric ulcers as supported by histopathological diagnosis.

In this series of 40 patients, toluidine blue staining has proven to be of clinical value in the detection of oral malignancy over clinical impression. It is very unfortunate that 32 of the 40 subjects who were previously managed clinically as inflammatory problems stained deep royal blue. Biopsy of the stained areas revealed malignancy. This clearly demonstrated the failures in the detection of oral malignancy based on clinical impression alone. Furthermore, this strongly supported that toluidine blue staining which does not need as much subjective determination can be used by any clinicians as a simple and accurate screening procedure for oral lesions. It offers an immediate feasible diagnostic control over the subjective impressions of the clinicians. It can re-inforce the clinical impression, correct the clinical false negative result, avoid the delays in the correct diagnosis, institute the proper management, eventually decrease the morbidity and mortality rate.

Sixteen out of the 32 carcinomas had a previous benign histological diagnosis. However, with the direct application of the dye within two weeks time, biopsies of the guided stained areas showed malignant results. With this, it can be said that toluidine blue has a clinical value in the determination of appropriate site for biopsy to achieve a positive result.

In order that the mechanism of action of toluidine blue can be clearly understood, it is important that its pharmacology is underscored.

Toluidine blue is a member of the thiazide group of metachromatic dye. It is soluble both in water and alcohol. It is considered as a nuclear stain[12, 15, 26, 27] therefore, both the DNA of the cell nuclei and RNA of the cell cytoplasm can fix the dye. Although, the exact mechanism of epithelial staining is not fully understood, several theories are forwarded to explain it. It is demonstrated by electron microscopy that the intercellular canaliculi in tumor cells are much larger than in normal cells, therefore, postulating that malignant tissues allow more intensive penetration for the dye.[15, 29] Being a nuclear stain, toluidine blue has special affinity for nuclei acids. Anaplastic cells contain quantitatively more nucleic acids than normal cells.[15] This further explains the rationale for the in vivo epithelial staining method.

Toluidine blue spares normal tissues from taking the stain except for the debris coated areas in the oral cavity.[27, 28] Mucin, food particles and purulent exudates may also pick up the stain. To ameliorate this problem, Bahn[16] recommends the use of toluidine blue solution containing acetic acid and alcohol rather than the aqueous solution. This method rather than the aqueous solution. This method was utilized by the author.

To date, the exact etiopathogenesis of oral malignancy continues to puzzle the mind of the medical researchers. Certain predisposing factors were noted to be closely associated with its occurence. These include smoking, poor oral hygiene, improper use of dentures, trauma, chewing of potentially carcinogenic materials such as betel nut and tobacco.[7, 21]

Significantly, history of the subjects included in this study revealed that 26 out of 32 carcinomas practiced reverse smoking for a long period of time. Four patients had been chewing betel nut for about 40 years; while 2 cancer patients gave a history of tooth extraction on the involved site. Of the 8 benign cases, history

was non-contributory. Whether these factors have indeed played a significant role in the causation of oral malignancy, further investigation of more subjects is warranted.

SUMMARY

This is a prospective study of 40 patients with oral complaints ranging from pain to mass lesions and who were subjected to 1% toluidine blue staining. Lesions that stained dark royal blue were recorded as positive for malignancy; while those that did not stain were recorded as non-malignant. Biopsy of the stained areas as well as the suspicious sites in the non-stained cases were taken. Diagnostic accuracy rate of clinical impressions and staining results were correlated with histological diagnosis.

Five of the 8 benign cases were clinically overdiagnosed as malignant, which on histopathological diagnosis turned out to be non-malignant.

All lesions which stained positively to toluidine blue have malignant histological diagnosis. Lesions that did not stain royal blue have benign histological results.

From these observations, it is very evident that the technical modality of toluidine blue staining, which does not need much subjective determination, can be very useful not only for the Otolaryngologists but most especially for the other clinicians who have limited experience with early malignancy. It becomes apparent that in order to help the inexperienced clinicians to keep a low clinical false negative diagnostic rate and to make an early detection of oral maligancy for a better survival rate of cancer malignancy for a better survival rate of cancer patients, toluidine blue must become a part of the diagnositc armamentarium for the routine examination of the oral cavity. However, it must be stressed that toluidine blue staining is not aimed to replace biopsy. Although a lesion may stain with this dye and/or meet the visual criteria for early cancer, biopsy is still necessary.

CONCLUSION

(1) The importance of early detection of oral malignancy by the simple toluidine blue staining method is emphasized.

(2) Accurate results from most appropriate biopsy sites are achieved with the use of toluidine blue.

(3) Toluidine blue staining is a simple, easy, safe, inexpensive and readily available in the diagnosis of early oral malignancy.

Table I. Subjects included in this study.

NAME	AGE	SEX	COMPLAINT
M.S.	75	F	mass, hard palate
Y.A.	27	F	mass, buccal mucosa
C.O.	61	F	mass, gingiva
R.E.	43	F	ulcerations, tongue
H.A.	54	M	pain, hard palate
M.M.	58	F	mass, floor of mouth
C.S.	56	F	mass, buccal mucosa
R.A.	32	F	mass, tongue
F.O.	39	M	bleeding/pain, palate
I.A.	55	F	mass, floor of mouth
E.C.	62	F	mass, tongue
M G.	53	F	mass, tongue
P.C.	50	F	mass, tongue
D.C.	52	M	mass, hard palate
F.G.	58	M	mass, tongue
L.C.	68	F	mass, tongue
C.T.	45	F	ulcerations, tongue
J.K.	42	M	pain, hard palate
E.L.	38	F	mass buccal mucosa
C.O.	50	M	mass, floor of mouth
M.N.	55	M	bleeding, gingival area
J.E.	58	F	mass, tongue
C.L.	62	F	mass, palate
B.C.	54	M	pain, hard palate
E.L.	58	M	bleeding, tongue
J.T.	70	M	mass, tongue
E.J.	63	F	mass, floor of mouth
M.J.	50	F	bleeding, gingival area
V.P.	48	F	mass, tongue
C.N.	55	F	mass, hard palate
D.L.	55	F	ulcerations, hard palate
M.P.	52	F	pain, tongue
L.G.	50	F	mass, floor of mouth
R.A.	48	F	mass, palate
W.L.	32	F	mass, buccal mucosa
J.P.	45	M	pain, buccal mucosa
R.A.	58	M	mass, tongue
S.A.	40	M	mass, base of tongue
T.M.	56	M	ulcerations, gingival area
E.C.	57	F	mass, tongue

Rinse mouth with water

↓ twice

Rinse mouth with ordinary vinegar

↓ twice

Dry area gently with a clean gauze

↓

Apply 1% Toluidine blue stain over suspected area

↓ 30 seconds

Rinse mouth with vinegar

↓ once

Rinse mouth with water

↓ once

BIOPSY

Table 2. Toluidine Blue Staining Method

PATHOLOGICAL DIAGNOSIS	CLINICAL IMPRESSION POSITIVE	NEGATIVE	TOTAL
Malignant	18	14	32
Non-malignant	5	3	8
TOTAL	23	17	40

Table 3. Relationship Between Clinical Impression and Pathological Diagnosis

PATHOLOGICAL	TEST FINDING POSITIVE	NEGATIVE	TOTAL
Malignant	32	0	32
Non-malignant	0	8	8
TOTAL	32	8	40

Table 4. Relationship Between Toluidine Blue Staining And Pathological Diagnosis

Fig. 1A. Ulcerating mass, floor of the mouth.

Fig. 1B. Lesion stains positive in speckled manner.

Fig. 1C Biopsy of lesion revealed squamous cell carcinoma.

Fig. 2A Fungating, erythroblastic mass, floor of the mouth

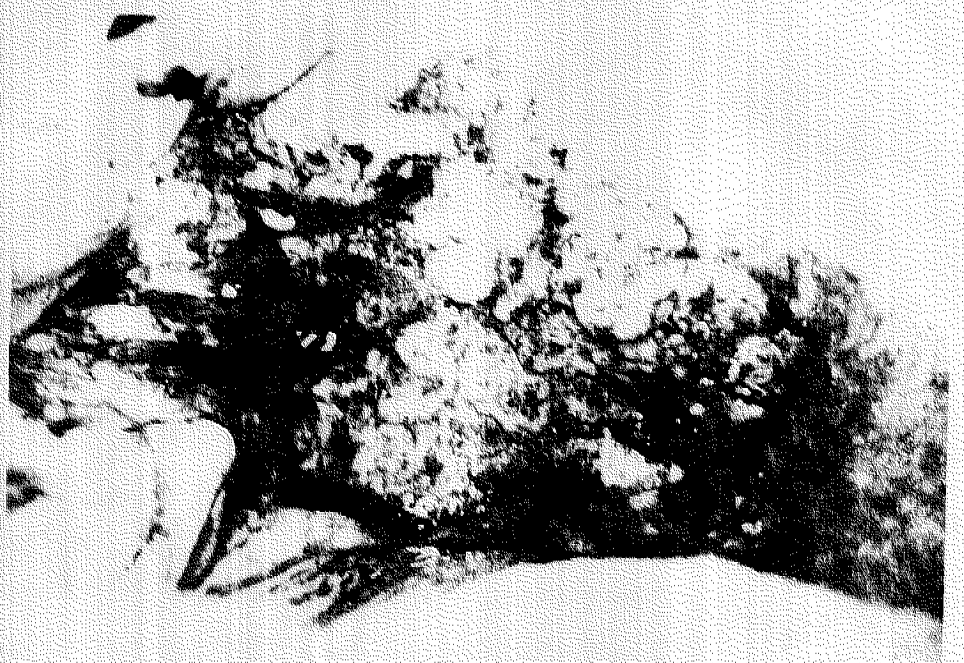

Fig. 2B. Erythroblastic area stains dark blue.

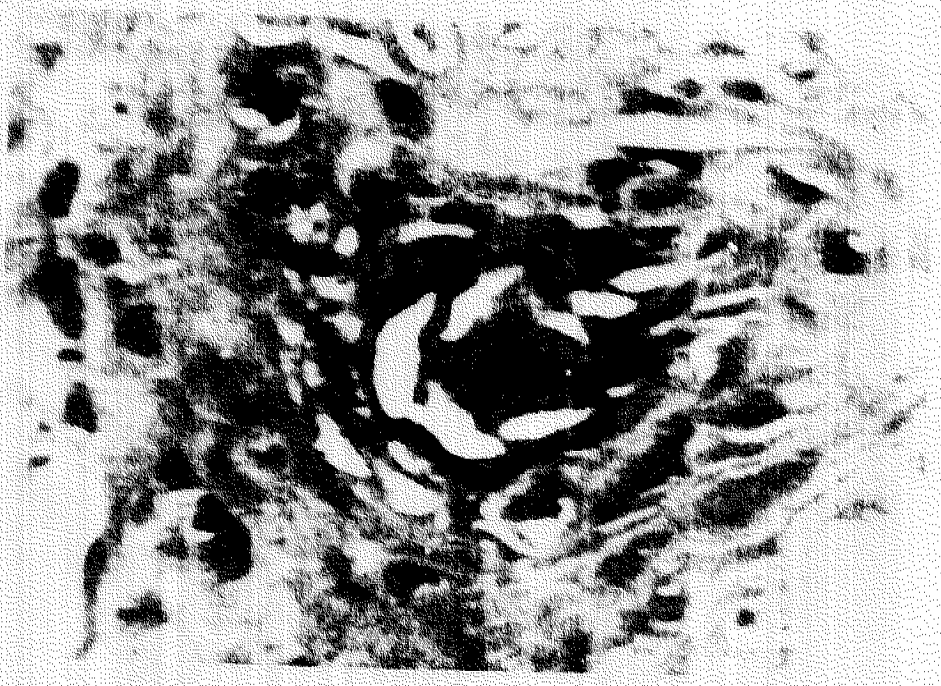

Fig. 2C. Biopsy of lesion revealed squamous cell carcinoma.

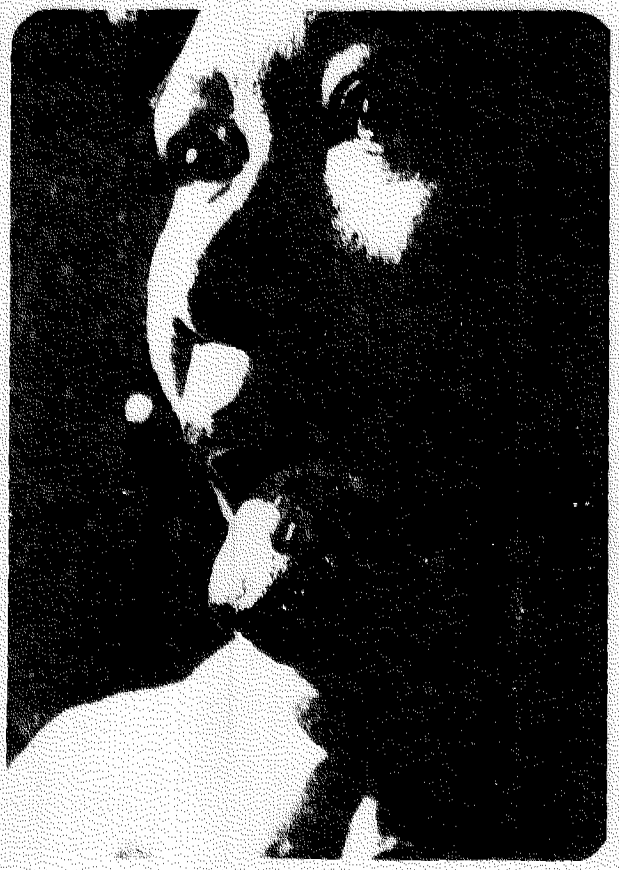

Fig. 3A. Fungating mass, lateral aspect of the tongue.

Fig. 3B. Lesion does not fix the dye. Note the film of dye on dorsum of tongue is due to stained saliva which is normal.

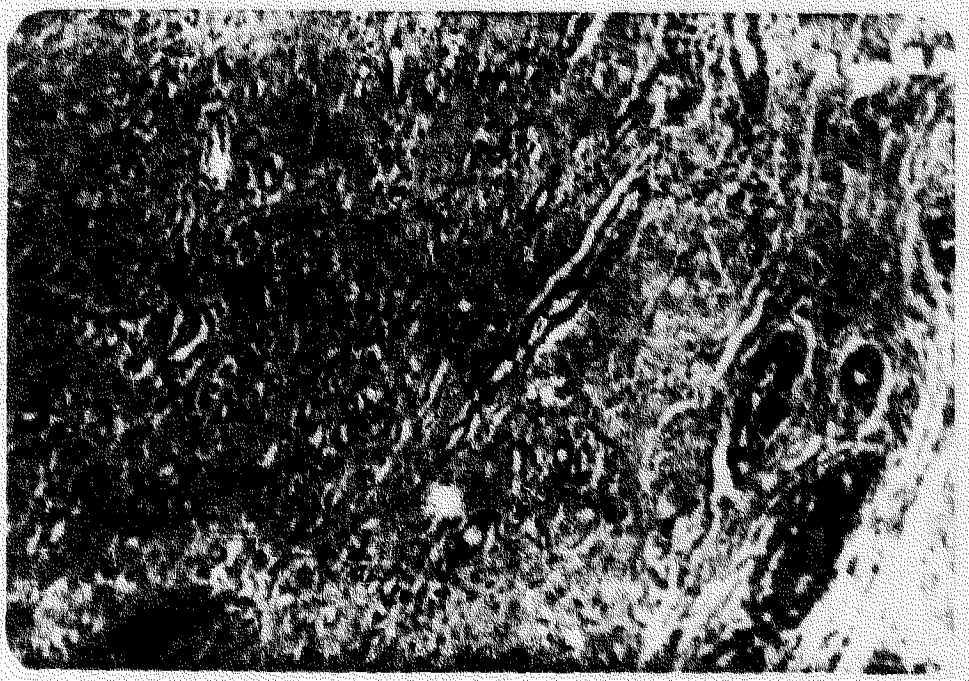

Fig. 3C. Biopsy of lesion revealed sclerosing hemangioma.

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PPD AND CHEST X-RAY IN CERVICAL LYMPHADENOPATHY: A HISTOPATHOLOGIC CORRELATION*

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The presentation of a neck mass especially when noticeably enlarging and apparently not associated with any other signs and symptoms is often a perplexing problem for which the patient seeks medical consultation. Many of our practicing physicians make a diagnosis of tuberculous adenitis and treat it as such on the sole basis of the presence of a neck mass when considered as cervical lympadenopathy. For the otolaryngologist if the result of complete ear, nose and throat examination and metastatic work-up are within normal limits then the possibility of tuberculous lympadenopathy is also highly entertained considering the common prevalence in our locality.

However, before treatment is initiated the otolaryngologist usually goes one step further by requesting for tuberculin test with PPD and chest x-ray. If the patient is a positive PPD reactor and has pulmonary tuberculosis, then the physician is a little bit more confident to surmise that most likely the cervical lymphadenopathy is also tuberculous, hence, anti-Kocks therapy is started and further observation of the neck mass or node is pursued should biopsy not be resorted to at the moment. However, if the PPD skin test is positive and the chest x-ray is negative then the physician is laden with the question of whether to do biopsy of the cervical lymphadenopathy or proceed to a trial anti-tuberculous therapy right away considering the knowledge that in children with tuberculin test (PPD) 95-99% of tuberculous infection are detected whereas with the use of chest x-ray alone the corresponding figure is only 10% (Vera Cruz, et al.).

On the other hand, it should be noted that positive PPD reaction indicates the presence of infection, be it recent or remote, active or inactive. Furthermore, most patients would prefer just medical treatment and many would not accord to surgery or biopsy. Others, especially in the rural areas, may not plainly afford the surgical procedure. Hence, for those patients where biopsy could not be done for one reason or another, the physician would still be in a quandary as regards giving trial anti-tuberculosis therapy. The question of what is the probability that the cervical lymphadenopathy is really tuberculous lingers in the mind of the physician as he waits and hopes for a definite response should he decide to give the anti-Koch's drugs.

Moreover, the use of the PPD tuberculin test and chest x-ray in patients with lateral neck masses without any known primary is very useful as regards the precaution on biopsy to preserve the integrity of the cervical fascial compartment so as not to prejudice a radical neck dissection operation in case the neck mass is a metastatic node. Hence, if the results of the above tests are negative then the search for the possible primary is intensified.

The objective of this study is to determine the incidence of positive chest x-ray (Pulmonary Tuberculosis) and Tuberculous Cervical Lymphadenopathy in adult Filipinos who are positive PPD reactors and have cervical lymphadenopathy.

Materials and Methods:

The criteria for the subjects of this study were the following:

1. Adult Filipinos 16 years old and above with cervical lymphadenopathy.
2. The complete ear, nose and throat examination should be essentially normal.
3. The patient should have a positive PPD reaction.

The patients who were seen at the OPD-ENT, UP-PGH were given purified protein derivative (PPD) in 2 tuberculin units (TU)

*3rd Prize – 3rd PSO-HNS - Boehringer Ingelheim Residents' Research Contest held on Dec. 1, 1982 at the PICC.
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test dose. The amount of PPD (0.1 ml.) was injected using gauge No. 26 needle, intradermally on the ventral aspect of the right forearm to form a wehal of 5 mm. The induration was measured after 72 hours. An induration of 10 mm or more was considered as a positive reaction (Cruz et al, 1978). Hence, routine chest x-ray and excision biopsy of the cervical lymphadenopathy were done on the patients who were positive PPD reactors.

Result and Discussion:

There were 31 patients included in this study, the data and results are as follows:

A. Age Group Distribution:

Age (Years)	No. of Patients
16 – 20	9
21 – 25	12
26 – 30	4
31 – 35	4
36 – 40	0
41 – 45	2
	31

B. Sex

Sex	No. of Patients
Male	7
Female	24
	31

C. Size of PPD Reaction

Size in mm.	No. of Patients
10 – 20	23
21 – 30	8
	31

D. Chest X-ray Result

	No. of Patients
Positive Pulmonary Tuberculosis	3
Normal Chest X-ray	28
	31

E. Biopsy Result

	No. of Patients
Tuberculous Adenitis	27
Chronic Inflammation	4
	31

The ages of the 31 patients range from 16 to 42 years and the majority belong to the groups of 16-25 years old (67.7%). Females made up 77.4% of the subjects. Seventy-four percent of the positive PPD reactors measured from 10-20 mm induration while the rest were 21-30 mm with one patient reacted with tissue necrosis on the area. In the study by Ord et al 1974, 86% of his patients with cervical tuberculous adenitis had completely normal chest x-ray film. In this series only 3 had positive chest x-ray findings all of which were minimal pulmonary tuberculosis while the rest or 90.3% of the subjects had normal chest findings. One of those patients who had PTB had a very severe PPD reaction (25 mm with vesiculation and necrosis) while the other two had mild to moderate reactions like the rest of the subjects who had normal chest x-ray findings. As regards the biopsy results 87.1% were either Tuberculous Adenitis or Chronic Granulomatous Inflammation suggestive of Tuberculosis while the remaining 12.9% were plain Chronic Inflammation.

The cervical lymphadenopathy or lymph nodes were mostly located on the posterior, submandibular and supraclavicular areas (81%), 65% of which were unilateral and the majority or 74% were multiple. The size of the nodes ranges from 1 cm to 5 cm in its greatest dimension. Few were apparently tender while the others were not and many had been present for the past months or years.

Tuberculous infection in man imply lymphatic involvement. Over 90% of the primary infection heal to leave a positive tuberculin reaction and perhaps a little pulmonary calcification as the only residual (Cantrell et al, 1975). There are however, regional nodes in areas draining the primary focus. In the study by Vera Cruz et al, 33% of the positive tuberculin reactors had concomitant cervical lymphadenopathy. The group of patients studied 87.1% of the cervical lymphadenopathy turned out to be TB Adenitis. In patients with extrapulmonary tuberculous lymphadenitis the cervical area is involved by 68.7% (Cantrel et al, 1975). In the study of Ord et al 1974, the nodes were less frequently found in the parotid and anterior cervical areas. In children, de Tavera in 1972 observed that the anterior group of lymph nodes are the most common sites of tuberculosis. In this group of adult patients the nodes were almost equally distributed anteriorly and posterior to the sternocleidomastoid muscle with the bulk of those in the anterior group being concentrated on the submandibular and infra-auricular areas.

As regards the pathological picture in the lymph node it initially enlarges due to a non-specific reactive hyperplasia then replaced by a chronic granulomatous process interspersed with fosi of caseation and necrosis. The nodes may become adherent or matted together or

orm a draining sinus. In many cases the disease ecomes dormant however, once the tubercle acilli have entered the human body and estabished lesions no further exposure is needed for he development of a destructive lesion either vithin a short time or after a considerable eriod of dormancy.

ummary and Conclusions:

1. In 31 adult Filipinos having cervical ymphadenopathy and positive PPD reactions, 7% had TB Adenitis on histopathology xamination and 9.7% postive chest x-ray findngs. for Tuberculosis.

2. In patients with 10-20 mm PPD eactions. 87% had Tuberculous Lymphadenitis nd 8.7% positive chest x-ray findings.

3. In those with more severe PPD reactions, ll had cervical tuberculous lymphadenitis alhough on chest x-ray only 12.5% had Pulmonary uberculosis.

4. A severe PPD reaction (> 20 mm etc.) eems definitely indicative of Tuberculous ymphadenitis. Hence, an excision biopsy can e done without fear of seeding as far as the ossibility of a metastatic node is concerned.

5. A positive PPD reaction seems to be a etter gauge of Tuberculous lymphadenitis han chest x-ray.

6. Finally, of patients with cervical lymphdenopathy and positive PPD reaction, especially hose with severe ones, it seems justified to give nti-tuberculous drug regimen even without the benefit of biopsy as 90% of the cases would show Tuberculous Lymphadenitis histopathologic examination or biopsy.

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ESOPHAGEAL FOREIGN BODIES OF DENTAL ORIGIN* – A THREE YEAR RETROSPECTIVE STUDY

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Introduction:

There has been a great increase in the number of foreign bodies in the esophagus of dental origin reported during the last 30 years paralleling the increase in the number of people wearing dentures.[1] As the population continues to age, and to a lesser extent, as an increasing number of children develop tooth loss due to dental caries and periodontal disease, the problem is expected to get worse. As such it should interest the Filipino otolaryngologist to study the different aspects in the prevention, diagnosis and treatment of this problem.

Objectives and Methods:

The objectives of this study are three-fold:

1. To determine the incidence, patient profile and problem etiology as factors to consider in the prevention of esophageal foreign body of dental origin;
2. To determine symptomatology and radiographic findings as aids in diagnosis; and
3. To determine the safety and efficacy of endoscopy as treatment.

During the past three years (November 15, 1979 – November 15, 1982), the Department of Otorhinolaryngology of the University of the Philippines College of Medicine – Philippine General Hospital Medical Center dealt with 88 cases of esophageal foreign bodies, 20 of which were of dental origin. The clinical data of these patients formed the material analyzed in this study.

Results

INCIDENCE. Table I shows the relative frequency of the different types of esophageal foreign bodies. Note that dentures constitute 23% of the cases and is the second most common foreign bodies.

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

TYPE	NUMBER	PERCENTAGE
Coins	42	46%
Dentures	20	23
Meat	9	10
Balut	6	8
Bones (including fish spines)	6	8
Pins, needles	5	5
TOTAL	88	100%

PATIENT PROFILE. Almost all of the cases seen (19 patients or 95%) were males. The patients were relatively young with an average age of 21 years. The only female patient was the youngest at 13 years old. The oldest patient was 32 years of age.

ETIOLOGY. Table II shows the circumstances prior to the foreign body ingestion. Sleeping was the most common (45%) while hasty eating and drinking combined accounted for the other 45%. The history of ill-fitting dentures was noted in 80% of the cases.

Table II. Etilogy frequency

TYPE	NUMBER	PERCENTAGE
Ill-fitting dentures	16	80%
Sleeping	9	45
Eating	5	25
Drinking	4	20
Alcoholic intoxication	1	5
Trauma	1	5

*Consolation Prize 3rd PSO-HNS - Boehringer Ingelheim Residents' Research Contest held on Dec. 1, 1982 at the PICC.

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DENTURES. Broken dentures accounted for 3 cases (15%). The other 17 cases (85%) were unbroken partial dentures.

SYMPTOMATOLOGY. The presenting symptoms seen were as follows:

- dysphagia and/or foreign body sensation in the throat during swallowing noted in all the patients;
- chest pain in 15%; and
- dyspnea in 10%.

PHYSICAL EXAMINATION FINDINGS. All the patients showed unremarkable physical examination findings.

RADIOLOGY. All the dentures ingested contained radio-opaque material incorporated (either metallic hooks or support wires) in the prostheses. In 18 cases (90%), the foreign body was located at the upper third of the esophagus. In two cases (10%), the foreign body was seen at the level of the middle third of the esophagus.

RETENTION TIME. Table III shows the duration of time between ingestion of the foreign body and extraction. Most of the dentures were removed in a day or less (53%). The longest duration of delay was 22 days.

Table III. Frequency of retention time

TIME	NUMBER	PERCENTAGE
One day or less	10	53%
Two days	4	21
Three days	2	11
Four days	1	5
Seven days	1	5
Twenty-two da days	1	5
TOTAL	19	100%

*In one patient the foreign body was pushed down into the stomach.

RESULTS OF ENDOSCOPY. All the patients underwent endoscopy. In 19 cases (95%), the foreign body were removed successfully. In 17 cases (85%), the denture was removed during the first attempt. In the other two cases (10%), a second endoscopy was done in order to extract the foreign body.

The only case of failure occured when the foreign body was accidentally pushed down into the stomach. The patient subsequently underwent another endoscopy in order to confirm that the foreign body was no longer in the esophagus. The denture, uneventfully passed out through natural passages.

ANESTHESIA. Endoscopy under general anesthesia during the first attempt was done in 17 cases (85%) which was successful in 16 cases (80%). The other remaining case underwent another endoscopy and successful extraction under general anesthesia.

Local anesthesia was used in three cases. It was successful in only one case. One patient had to undergo another endoscopy and extraction under general anesthesia. The other patient was the case wherein the denture was inadvertently pushed down into the stomach.

COMPLICATIONS. There was no mortality in this series. The complications noted were abrasions in the mucosa in 6 cases (30%), nonperforating lacerations in 3 cases (15%) and the one case (5%) where the foreign body was pushed down into the stomach.

POSTOPERATIVE HOSPITAL DAYS. Fourteen patients (70%) were hospitalized for two or three days, while two patients (10%) and four patients (20%) stayed for five and seven postoperative days, respectively.

Discussion

Foreign bodies of dental origin in the esophagus are not uncommon. In this series, they constitute the second most common esophageal foreign body. However, since coins are seen almost always in children, then dentures are the most common foreign body in adults. Comparative survey of statistics from other studies[2,3,4] shows that bones and coins are the two most common esophageal foreign bodies. This difference in statistics could be due to differences in diet and/or higher incidence of people wearing dentures in this country.

The causes of foreign body of dental origin noted in this study are similar to those seen in other studies[1,5] and they could be classified as follows: ill-fitting dentures (80%); altered states of consciousness, such as alcoholic intoxication, sleep, unconsciousness or epileptic seizure wherein there is diminution of perception and reflex action (50%); carelessness in eating or drinking (45%); faulty fabrication of dental appliance suggested by the 15% with broken dentures; and trauma (5%). These causes of foreign body accidents are to a large extent preventable by proper education of patients.

Patients should be told that dentures should be used, but they should be kept in good repair. Changes in denture supporting tissues requires periodic dental consultation to insure proper fitting. Loose or cracked dentures are potential foreign bodies resulting especially from blows, falls or careless eating and drinking. Pain from abscessed teeth of inflammed gums from ill-fitting dentures causes faulty chewing and hasty swallowing. Dentures should always be removed in all cases of unconsciousness prior to surgery. They should seldom be worn during sleep especially by people with partial dentures.[6]

The young male predominance seen in this study has not been reported earlier in the literature. Factors responsible for this phenomenon remains to be elucidated.

The proper management of esophageal foreign bodies depends on correct diagnosis and treatment.

The diagnosis of foreign body is made based on the history and radiographic aids. Dysphagia is the single most important symptom, being noted in all cases. Chest pain (especially sub-sternal pain) seen in 15% could be explained by associated muscle spasm. However, chest pain could signify impending perforation.[5] Dyspnea seen in 10% could be explained by pressure exerted on the trachea by the foreign body denture.

Radiologic studies help not only in confirming the diagnosis but also in localizing the level of impaction. The lateral soft tissue film is one of the single most important film.[7] In our series, all cases of foreign body dentures had metallic fragments included which facilitated diagnosis. However, it must be remembered that there had been several reports of radiolucent foreign bodies of dental origin which were not visualized by x-ray studies, some of which had fatal consequences for the patient.[8,9,10,11,12] In these instances, contrast studies using lipiodol could be used. Diagnostic esophagoscopy is indicated if the history strongly suggests foreign body in the esophagus inspite of negative x-ray findings.

Esophageal foreign body, in general, should only be regarded as true emergencies when the airway is embarrassed or there is imminent danger of perforation or if it is felt that the foreign body may migrate to a more dangerous position. Under ordinary circumstances, removal should be delayed until adequate preparation of the patient (adequate hydration, empty stomach, etc.) and of the surgical team (re-operative studies, proper instruments, etc.) have made. In this series, although most foreign bodies were extracted within 24 hours, a delay of 22 days in one case has not affected the postoperative course. However, it should be remembered that foreign bodies in the esophagus, if unremoved, ultimately proved fatal. Although the occassional patient has survived impaction of foreign bodies in the gullet for up to 15 years, few patients survive more than 12 months.[9] Death may occur suddenly from ventral migration producing tracheal compression and asphyxia or from lateral migration producing vascular erosion and torrential hemorrhage. Death may be preceded by considerable morbidity such as periesophageal abscess, tracheo-esophageal fistula, recurrent aspiration pneumonitis. An impacted esophageal foreign body must, therefore, be removed at the earliest opportunity.

The results of endoscopic extraction of esophageal foriegn body dentures seen in this study show that it is relatively safe and successful. The 95% success rate was associated with minimal morbidity and no mortality. It must be emphasized, however, that safety and efficacy hinges on both proper preoperative evaluation and correct endoscopic techniques. Complications are invariably due to mistakes in either or both factors.

Failure during the first attempt at extraction does not mean that repeated endoscopy is contraindicated. Repeat endoscopy could be attempted after several days in order to allow for mucosal edema to subside. In two cases in this series, the second procedure was successful in safely removing the foreign body.

Most of the endoscopic procedures were done under general anesthesia. Only three cases were done under local anestheisa. The procedure was successful in only one case of local anesthesia. The other case had to undergo another endoscopy under general anesthesia before the denture foreign body could be extracted. In the other case, the foreign body denture was inadvertently pushed down into the stomach and passed through the natural passages. On no account must this incident mean that foreign bodies should be pushed down not only because it is dangerous but also because practically all esophageal foreign bodies can be removed through the mouth.[5]

The limited number of cases who underwent endoscopy under local anesthesia inhibits us from defining its role.

Complications of endoscopy may be due to inexperience in the introduction of the esophagoscope or traction on the presenting part of the foreign body without first determining the possible results of such traction. Problems in extraction could be minimized by proper preoperative study. The endoscopist should have an idea of the characteristic size, shape, and location of sharp edges and projections of the foreign body. The patient must be asked to reconstruct the ingested foreign body. If it is a broken denture, the remaining prosthesis must be examined. Using the radiographs as guide, the probable presentation could be made. Since shifting may change the presentation, the other possible presentations should be studied. For each of these presentations, a method of disimpaction, disengagement, or version and seizure is worked out. It is best if testing on a duplicate could be done.

The postoperative care of outpatients consisted of careful observation for one or two days if the procedure was associated with no trauma or minimal abrasions and for three to five days if there is nonperforating trauma. Prophylactic anti-biotics are given to patients with nonperforating lacerations. If the postoperative course is uneventful, the patient is started on oral feedings and discharged after a day or two. In this study, 70% of the patients were sent home on the second or third postoperative day. Only 20% of the cases were hospitalized for seven postoperative days, the longest duration seen.

Perforations of the esophagus are, fortunately, uncommon. Incidence report varies from 0.2 to 2%. In majority of these cases, they occur secondary to attempts at extraction by esophagoscopy. Clinically, the presence of a perforation is suggested by fever, chest pain, dyspnea, emphysema and browny, tender swelling in the neck. Radiologically, it is confirmed by the presence of a widened tissue shadow or presence of air (symptom of Minnigerode) between the trachea and the spine in lateral x-ray film of the neck.[3] Treatment consists of antibiotic theraphy and if no immediate satisfactory response is noted, then cervical mediastinostomy is indicated.

Foreign bodies, if inadvertently pushed into the gastro-intestinal tract should be watched daily. The foreign body should be removed by laparotomy if they lodged in one location for four to five days. If allowed to remain longer, they are likely to perforate by ulceration.[5]

Conclusions:

A series of 20 patients with esophageal foreign bodies of dental origin seen during the last three years were analyzed. They constitute the second most common esophageal foreign body among all ages but are most frequent among adults. They usually affect the young males. The causes of this problem are largely preventable to a large extent by proper patient education. The diagnosis is based on history and symptoms, especially dysphagia. Radiologic aids are important not only in confirming the diagnosis but also in localizing the level of impaction. Endoscopic removal is a safe and efficacious method of treatment, provided proper preoperative studies are done and proper endoscopic techniques are used. General anesthesia was used in most cases, although the role of local anesthesia has yet to be defined.

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X-ray showing foreign body of dental origin in the esophagus.

The Phil. Jour of Oto. Head & Neck Surgery

HUMAN SCALP HAIR AS SUTURE MATERIAL IN OTOLARYNGOLOGIC SURGERY*

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Suture materials, aside from the surgical instruments, comprise the backbone of the physician-surgeon's operating room armamentarium.

Prices of operating room commodities as well as medical professional fees, on the other hand, can break the patient's backbone.

It is in this light, therefore, that the long-abandoned human scalp hair was reexamined so as to determine (1) its breaking strength and weight, and (2) its suitability and reliability as suture material for approximation of various head and neck incised wounds.

As stated by Dr. Cabral in 1971, use of human scalp hair as a suture material has not quite interested workers here in the Philippines as well as those from other countries.[1]

It has been mentioned long before that the ideal suture material should be: inexpensive and convenient to use; dependable as to sterility; reliable as to tensile strength; of the smallest diameter consistent with satisfactory function; pliable, easy to handle and ties with a knot that is secure and stable; and well tolerated by the host tissue.[2]

Can human scalp hair satisfy all these when it comes to otolaryngologic surgery?

Materials and Methods:

More than 1,800 5-cm. strands of scalp hair were collected from 9 adults, or 200 strands per head, and these were brought to the Philippine Textile Research Institute for the breaking strength and weight determinations.

Breaking strength was analyzed using the Instron apparatus. Specimens were divided into three test groups; unsterile, autoclaved and glutaraldehyde-treated. Each test necessitated 50 strands per individual. A total of 1,350 strands were therefore used for this determination.

Weight was studied using the Vibroscope machine. This also needed 50 strands per individual.

For the second phase of this study, 28 patients who underwent various elective otolaryngologic operations from April 4, 1982 to October 12, 1982 comprise the subjects of this paper. Different surgeons operated on these cases and with the consent secured from either the patient himself or his parents, skin wound approximation was done using human scalp hair.

Autologous hair was used whenever the patient's own hair was 8 cm. or longer. This length was necessary for the ease and convenience of the surgeon. Homologous hair was used for patients whose hair length was shorter than this.

Preparation of the hair strands was done by the authors and was started initially by cleaning with ordinary soap and water. These were then soaked in a Glutaraldehyde solution for, as recommended more than 10 minutes. And after rinsing them thoroughly under aseptic techniques with sterile water, the hair strands were ready for use.

Daily follow-ups were done too by the authors until all the hair sutures were removed. Weekly visits followed thereafter for so long as patient compliance was favorable. Other matters pertaining to postoperative care were otherwise undertaken by the respective surgeons.

Results:

Studies on the breaking strength and weight of human scalp hair done at the Philippine Textile Research Institute revealed the following:

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*First Prize – First PSO-HNS – United Laboratories Research Contest held on Dec. 4, 1982 at the Silahis International Hotel.

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BREAKING STRENGTH

	Mean, grams	Coefficient of Variation, per cent
Unsterile	113.08	22.52
Autoclaved	99.28	23.77
Glutaraldehyde-treated	116.60	20.85

This study was done using the Instron apparatus. The gage length was 5 cm.

WEIGHT

	Mean, denier	Coefficient of Variation, per cent
Human scalp hair	65.44	6.60

This study was done using the Vibroscope machine. A denier is equal to .05 gram per 450 meters.

The operating room experience gave us the following data:

Number	Age	Sex	Disease
1	25	F	Chronic Tympanomastoiditis with Cholesteatoma and Labyrinthitis
2	17	F	Parotid Mass (Chronic Tuberculous Sialoadenitis)
3	61	F	Adamantinoma, Mandible
4	45	F	Nodular Non-Toxic Goiter (Colloid Cyst)
5	42	M	Sebaceous Cysts, Submandibular and Submental Areas
6	43	M	Papilloma, Nasal Ala
7	38	F	Parotid Mass (Pleomorphic Adenoma)
8	39	F	Hemangioma, Neck
9	43	F	Submandibular Mass (Papillary Carcinoma, Thyroid)
10	14	M	Hemangioma, Nose
11	18	M	Frontal Sinus Fracture
12	14	F	Granuloma Pyogenicum, Pinna
13	13	M	Chronic Tympanomastoiditis with Cholesteatoma
14	39	F	Submandibular Mass (Pleomorphic Adenoma)
15	20	F	Fibroma, Pinna
16	11	F	Chronic Tympanomastoiditis Cholesteatoma
17	43	M	Superior Sulcus Tumor
18	27	F	Pigmented Nevus, Upper Lip (Compound Nevus)
19	37	M	Cementifying Fibroma, Mandibule
20	52	F	Submandibular Mass (Carcinoma, Unclassified)
21	28	M	Multiple Neck Masses (Tuberculous Lymphadenopathies)
22	28	M	Sebaceous Cyst, Cheek
23	62	F	Infratemporal Mass (Lymphocytic Lymphoma)
24	18	F	Sebaceous Cyst, Preauricular Area
25	20	F	Lateral Neck Mass (Branchial Cleft Cyst)
26	18	M	Chronic Tympanomastoiditis with Cholesteatoma
27	41	M	Multiple Facial Fractures
28	62	M	Multiple Neck Masses (Metastatic Carcinoma, Primary Unknown)

Operation/Incision	Source of Hair	Number of Stitches	Type of Suturing Simple, Vertical Interrupted Mattress	
Radical Mastoid-ectomy/Endaural	autologous	3	3	
Superficial Paro-tidectomy/Invert-ed T	autologous	6	6	
Wide Resection: Hemi-mandibulectomy with Disarticulation and Reconstruction with Compound Sternomas-toid-Clavicular Grafting/ McFee	autologous	14	14	
Total Lobectomy and Isthmectomy/ Low Collar	autologous	15	15	
Excision	autologous	5	4	1
Excision	autologous	4	4	
Superficial Parotidec-tomy/Bailey	autologous	20	20	
Excision	homologous	3	3	
Total Lobectomy and Isthemectomy/Ex-tended Submandi-bular	homologous	12	12	
Excision	homologous	3	3	
Open Reduction and Interosseous Wiring/ Butterfly	homologous	18	18	
Excision	autologous	2	2	
Radical Mastoidectomy/ Post-auricular	homologous	8	7	1
Excision Biopsy	autologous	17	17	
Excision	homologous	7	7	
Radical Mastoidectomy/ Post-auricular	homologous	8	8	
Scalene Node Biopsy	homologous	3	3	
Excision Biopsy	autologous	2	2	
Excision and Mandibu-bular Reconstruction with Compound Sternomastoid-Clavicular Grafting/ McFee	homologous	38	38	
Excision Biopsy	homologous	12	8	4
Excision Biopsy	homologous	4	4	
Excision	homologous	3		3
Section Biopsy/ Pre-auricular	homologous	5	5	
Excision	homologus	3	3	
Excision Biopsy	homologous	14	12	2
Radical Mastoidectomy/ Post-auricular	homologous	7	7	
Suturing of Laceration	autologous	5	3	2
Neck Node Biopsy	autologous	4	4	
		245	230	15

A triple surgeon's knot was utilized for all the stitches. Topical antibiotic therapy was applied to all the approximated wounds in the form of an oxytetracycline-polymyxin B preparation. This was combined with systemic antibiotics in about half of the cases where the surgeon opted for such a coverage. Alternate stitches were generally removed from about the 4th to the 6th postoperative day; and all the stitches were out anytime from the 5th to the 7th day.

Drains were placed when and where such were necessary. These were anchored to the skin generally with braided silk 5-0 sutures.

All the 28 patients had generally acceptable closed wounds by the 7th day, however, 3 of them had problems.

COMPLICATIONS

Operation/Disease	Number of Stitches	Type of Complication
Wide Resection: Hemimandibulectomy with Disarticulation and Reconstruction with Compound Sternomastoid-Clavicular Grafting for Adamantinoma, Mandibule	14	2 stitches had their knots untied on 2nd postoperative day
Excision and Mandibular Reconstruction with Compound Sternomastoid-Clavicular Grafting for Cementifying Fibroma, Mandibular	38	Orocutaneous fistula formation on 10th postoperative day
Excision Biopsy for Tuberculous Lymphadenopathies	4	Fistula formation on 20th postoperative day

Discussion:

In 1971, studies on human scalp hair as an ophthalmic suture were done by Cabral. He used it in his closure of the corneo-scleral wound in cataract surgery.

His findings indicate that human scalp hair has an average diameter of 0.085 mm which approximates the 0.070 mm diameter of virgin silk 8-0 and is almost half the 0.148 mm diameter of braided silk 6-0. Three methods of sterilizing hair were satisfactory in that culture studies yielded no organisms. Boiling in a closed container for 30 minutes, soaking in a 1:750 solution of aqueous benzalkonium chloride for 30 minutes and autoclaving for 45 minutes at 20 lbs. pressure were effective.

We chose activated glutaraldehyde solution in our study for its short disinfection and terminal decontamination time. Complete immersion for a minimum of 10 minutes will destroy vegetative pathogens including Mycobacterium tuberculosis, Pseudomonas aeruginosa and the viruses: Poliovirus Type 1, 2, 3; Influenza Type A, A2 (Hong Kong), B; Vaccinia; Coxsackie virus B-1; Reovirus Type 3; Herpes simplex. More than 10 hours will destroy resistant pathogenic spores including Clostridium sporogenes and Clostridium tetani.

About 10 minutes will be just the optimal time for a minor surgical procedure done under local anesthesia such that one may operate and prepare the hair at the same time.

Using the Scott Tensile Strength Tester, Cabral found out that unsterile hair has a tensile strength average value of 130 grams which is twice the 70 grams of virgin silk 8-0 but half the 215 grams of braided silk 6-0. Our values with the Instron apparatus showed that braided silk 5-0 has a breaking strength of 438.20 grams while that of braided silk 6-0 was 258.90 grams and that of human scalp hair was 113.08 grams.

While it shows that human scalp hair has a value almost four times less than that of braided silk 6-0, the important matter when it comes to the suture material's being reliable as to tensile strength is when this physical characteristic meets the opposing biomechanical property of skin in wound approximation.

There is a study by Thacker[3] which analyzes the load extension properties of skin. This concerns the measurement in vivo of the amount of force necessary to stretch a prescribed area of skin an exactly measured distance using the uniaxial skin extensometer. The opposite phenomenon occurs, however, in the sutured, approximated wound.

The above study has a section which deals specifically with facial skin: A force of 100 grams was able to stretch the facial skin approximately 2 mm. Applying this to facial wound approximation, any suture material with a tensile or breaking strength of at least 100 grams can withstand wound edge displacement of up to about 2 mm. So that if one restricts or prevents mobilization of the facial skin about the wound which is what should really be done, then there is the explanation why human scalp hair was able to maintain wound apposition in our cases.

Another interesting study by Van Winkle[4] states that breaking strength of skin wounds rises from day 5, when at about this time collagen synthesis reaches its peak, and shows a fairly uniform rate of gain through day 120 at which time the strength of the wound is about 65% of the strength of the normal unwounded skin and collagen synthesis declines

to a rate that is only slightly above that of unwounded skin. No increase in rate of non-collagenous protein synthesis is observed at any time period after wounding.

Cabral also found out that among human hair, silk and catgut sutures, rabbit corneal tolerance was greatest with the human hair in that it elicited the least inflammatory reaction histologically.

Our weight studies using the Vibroscope indicate that human hair has an average value of 65.44 denier while that of braided silk 5-0 was 189.00 denier and that of braided silk 6-0 was 118.80 denier.

All these explain why human scalp hair as used in our experiment was able to approximate all the incised facial and neck wounds. All of them were closed as early as the 5th postoperative day – and these have remained close up to now.

It shows that human scalp hair meets the necessary requirements for a suture material. Its breaking strength of about 100 grams can withstand the force that tends to keep apart the wound edges during the early period of healing. Its small size and diameter; light weight and greater tolerance by the host tissue, notwithstanding the fact that the patient's own hair may be used; and its dependable sterility are qualities that add up to a suture material's desirability.

Our complication of orocutaneous fistula formation was not probably due to the use of scalp hair as suture material as this appeared on the 10th postoperative day. Conley[5] states that the incidence of fistula formation varies from approximately 10 to 30 per cent, depending upon so many factors; and in high-risk cases such as massive oral mucosal manipulations where there may be inadequate mucosal closure, the figures can be doubled.

Fistula formation too in tuberculous lymphadenopathy is not an uncommon occurrence. Hair as our suture material might not have been the cause of the fistula since it appeared on the 20th postoperative day.

Our technique of knot tying which is the triple surgeon's knot resulted in 2 cases of slippage out of a total of 245 stitches or a failure rate of 0.81%. We can not fully explain why these 2 knots were untied. It is interesting to note, however that while there were cases of knot slippage, there were just no breakage or rupture of the hair sutures.

Conclusion:

While human scalp hair may not be convenient to use, not pliable enough, not easy to handle for the beginner and the inexperienced; it is undoubtedly inexpensive, dependable as to sterility, reliable as to tensile strength, of the smallest diameter consistent with satisfactory function, ties with a knot that is secure and stable and well tolerated by the host tissue.

It has not only been very available always but also, and most importantly, it has closed all our wounds.

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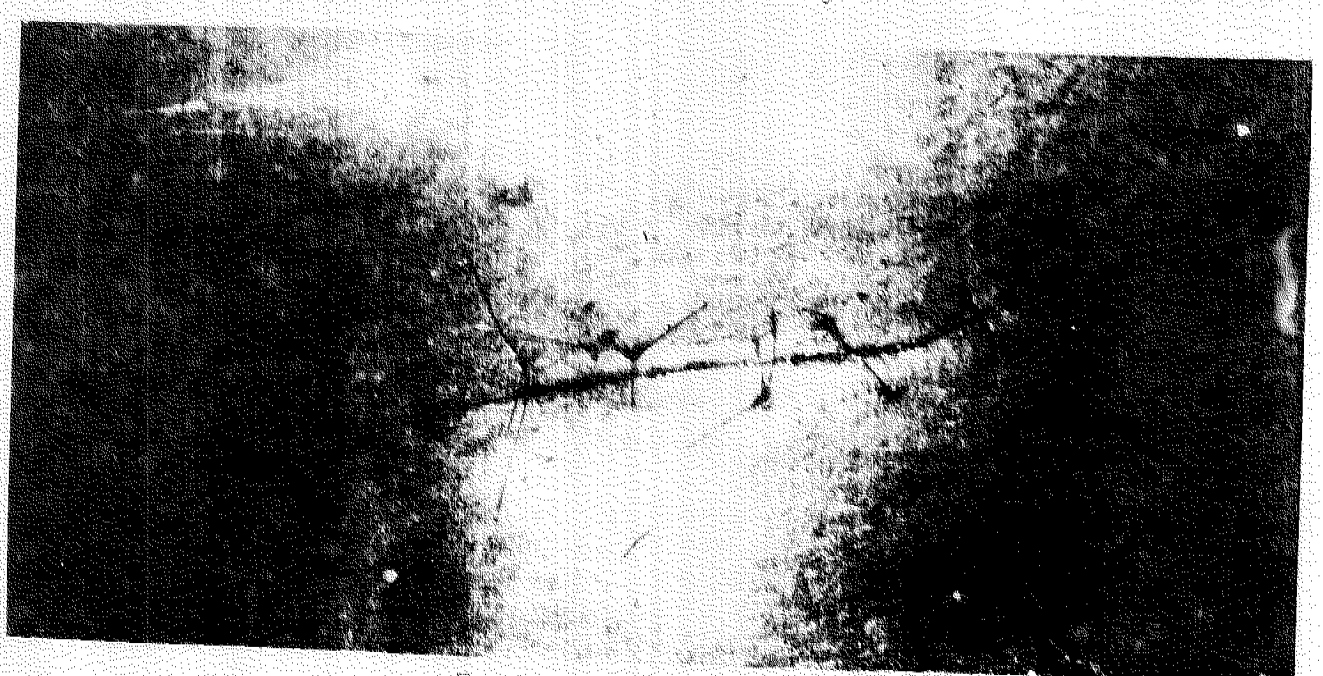
Superficial Parotidectomy



Excision, submandibular mass

The Phil.
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Surgery

GUNSHOT WOUNDS IN THE HEAD AND NECK*

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It is the purpose of this study to:

1) Acquire knowledge about bullets and their effects on tissues.
2) Analyze and evaluate 27 cases seen in the Department in a 5 year period.
3) Give indications and guidelines for explorations and surgical interventions.
4) Ilucidate on the surgical approaches.

In dealing with gunshot wounds in the head and neck, and for that matter other parts of the body, it is important to know some facts about the guns and the bullets, we, the Otolaryngologist commonly encounter in our setting. These are the .22 caliber revolvers and automatics, and .38 caliber revolvers and the venerables .45 caliber automatic. On the other side of the spectrum are the M-16 or Armalite 5.56 mm. and the .30 caliber Carbine and the 7.62 mm. Garand, FAL and AK-47.

Bullets velocity and the weight of the bullets are the major factors in the degree of destruction a missile causes to the tissues. Generally, high velocity bullets are those travelling more than the speed of sound (or 1,100 ft./sec.) while low velocity bullets have speed less than 1,100 ft./sec.

These would place the military rifles into the high velocity category.

High Velocity

	Weight in Grams	Muzzle Velocity
M-16 .223	55 gms.	3240 ft/sec
Carbine 30 cal.	110 gms	1490 ft/sec
Garand 7.62	150 gms	2910 ft/sec
FAL		
AK-47		

Low Velocity

	Weight in Grams	Muzzle Velocity
.22 cal.	40 gms.	1120 ft/sec
.83 cal.	158 gms.	730 ft/sec
.45 automatic	230 gms.	850 ft/sec

The kinetic energy of the bullets imparted to the tissues are proportional to the mass but increases by the square of the velocity. This means that doubling the mass doubles the kinetic energy while doubling the velocity quadruples the energy.

The design of bullets are of two main types:

1) Expanding – expanding or soft-nose bullets expand on impact producing a permanent type of cavity that is cone shaded with the exit wound much larger than the entrance wound.
2) Full-Jacketed – full jacketed bullets create a permanent cavity, cylindrical in shape that roughly conforms to the size of the missile. Moreover, these missiles also create a temporary cavity on passage through the body.

The kinetic energy is imparted to the surrounding tissue structures to create a pulsating momentary cavity that may do damage to these structure not directly in the bullets path. Vulnerables are the arteries and veins.

To get an idea how these wounds look like. Byers, and McRae shot these bullets on the ordinary sculptors modeling clay which stimulate animal tissue. They, then, made impressions of these bullet imprints. The impression of the bullets of the full jacketed type was cylindrical, long and slim while that of the expanding type was short and expanded.

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The specific gravity of the body tissues in the path of the missile determines in the large part the degree of destruction. Compact, capsulated organs such as the thyroid and parotid are particularly affected. Bone being of a relatively high specific gravity undergoes marked shattering and destruction on impact. Bone chips may be sent tearing through other tissue causing more damage. Also, these bullets which glance off bones are flattened to some degree and tumble as they tear up tissue, doing more internal damage than a bullet moving in a straight line.

The National Institute of Law Enforcement and Criminal Justice in the U.S.A., took into consideration human anatomy, barrel length, propellant charge, bullet design and construction, all of which were related to capability in incapacitating an assailant. This was made into a formula. The Relative Incapacitation Index which scored bullets highest that transferred the most energy to the target in the most vulnerable areas. Thus, lead hollowpoint slugs rate highest in incapacitation efficiency because these rounds tend to open up and tumble causing more damage and expend their energy in the subject.

For clinical purposes in the management of penetrating wounds, Jahrsdoerfer divided the Head and Neck into 3 zones:

Zone I – base of the neck which is below the clavicle

Zone II – angle of th mandibule to the sternal notch

Zone III – above the angle of the mandible (excluding the intracranial cavity)

Results:

From 1978 to mid-1982, we recovered 27 patient's charts with gunshot wounds in the head and the neck seen in our Department. The majority of patients were males (24/27) and were mostly young in the age group of 10-30 (20/27).

Categorizing the head and neck wound into zones of injury, we found 44% (12/27) were in zone II and 56% (15/27) were in zone III. These were no zone I injury seen in the Department. These were usually stab wounds which were managed by TCVS.

As expected, most of the injuries were from handguns with the .38 caliber accounting for the most (6/27), the .22 caliber and .45 caliber with (4/27). Surprisingly, the second most encountered injuries were from the .22 CO_2 pellets with 5/27 cases. The patients in the latter cases were mostly between the age of 9 to 14 years and were due to accidental discharge during play.

Only 2 cases were brought in with Armalite wounds. In the rest of the cases (10/27), the caliber of the bullet could not be ascertained by the patient nor the Otolaryngologist.

As far as the basic principles of emergency case was concerned, tracheostomy was done in 6/27 (22%). Only one underwent external carotid ligation (4%). Maintenance of the airway was necessary due to massive bleeding from the base of the tongue, soft and hard palate.

It was our observations that all cases had no exit wound except the two cases hit with the armalite. These cases with no exit were extracted except 3 cases where these lodge at the infratemporal fossa.

Among the associated injuries secondary to gunshot wounds, blindness and facial nerve paralysis were the most glaring. Two cases were seen with blindness as a result of direct trauma. These eventually had to undergo enucleation.

Six cases were noted to have facial nerve paralysis. Four of these six cases had paralysis secondary to temporal bone fracture. One case had an iatrogenic, intestinal, peripheral facial nerve cut during the course of the exploration. Unfortunately, this was not anastomosed during the closure. One case had transection at the stylomastoid foramen secondary to condylar fracture.

Management of the three of the 4 cases included mastoidectomy and decompression in 2 cases. mastoidectomy, decompression and nerve graft in one case. One patient refused surgery.

Zone III were explored via Caldwel-Luc in 3 cases, Lynch operation in one case, and Lateral Rhinotomy in 2 cases.

There was one mortality. This patient had a bullet injury through oral cavity, hitting the nasopharynx and the base of the skull. The bullet then recocheted to the base tounge. lacerating it and precipitating severe bleeding. A tracheostomy and exploration was done. Several hours post-op, the patient aspirated blood and died.

Discussion:

Early management of gunshot wounds in the head and neck embodies basic principles of emergency care regarding airway and control of bleeding. In our study, indications for tracheostomy (6/27) is not so much as direct trauma to the larynx but security of airway as a result of severe bleeding in the upper airway. The tongue and the soft and hard palate has been observed to be the most common source of bleeding.

Bleeding from zone 11 affecting the carotid artery and jugular vein has not been noted in the study. Bleeding in these areas can be controlled by applying pressure.

Exceptions to this control by pressure are:

a) when a missile damages a major vessel, enters the larynx or hypopharynx This entails immediate endotracheal intubation with a cuff or tracheostomy with cuffed tube to seal the airway and prevent aspiration of blood.

b) when the vertebral artery, is lacerated, anatomically, as the vertebral artery ascends in the neck, it runs through the intervertebral foramena from C_6 to C_1. Suspicion arises when x-ray show fracture of the transverse process of C_2 to C_6 accompanied by heavy bleeding. Management is immediate neck exploration with excision of one or more transverse processes and finally, proximal ligation of vessel.

In the emergency room, if the penetrating wound has pierced the platysma, we do not probe. This may dislodge a clot in a major blood vessel with catastrophic results.

As soon as bleeding is checked and airway is patent. radiography is indicated. This would help in localizing the bullet, give an insight into its path by the fractures its created and slug fragments that are retained. Skull AP and lateral including the neck, Water's view, as well as x-ray of the mastoids, if warranted maybe requested. During one exploration with trauma to oral cavity and lodgment into neck, there was difficulty because of distortion of the location of the bullet. We have used triangulation techniques which has been carried out by inserting probes, sunction tips, or spiral needles proximal to the bullet and getting a series of x-ray intra-operatively.

Radiography of the facial skeleton may fail to show a metallic foreign body despite an entrance wound and lack of exit wound.

This may arise in two ways:

1) when the bullet strike the vertebral column and racochet anteriorly to perforate into the nasopharynx or pharynx, then to be swallowed.

2) when the bullet enters a large blood vessel and be embolized to a distant location. In Vietnam, 22 out of 7,500 Americans and Vietnamese, vascular trauma cases were missile emboli.

TO EXPLORE OR NOT TO EXPLORE – That is the question.

May and Chadaratama in 1975 feel that based on 220 cases they have seen and managed not all with gunshot wound should be explored. In fact, they have concluded many did well without the exploration.

Their indications for exploration are:

1) persistent hemorrhage
2) large or expanding hematoma (these are signs of major vascular injury)
3) decreased or absent pulses – this indicates a partially severed artery.
4) progressive CNS deficit – this indicates trauma to large vessels with intraluminal arterial hematoma.
5) difficulty of breathing from tracheal compression
6) presence of air in the subcutaneous tissue
7) abrupt change in voice - this indicates submucosal hemorrhage in the larynx with subsequent assault to the airway.
8) cervical esophageal perforation

If this is not explored, saliva is forced through wound tract during swallowing into the paraesophageal space with subsequent abscess formation. This abscess dissects into the mediastinum and chest.

Relative indication for exploration is the possible infection at the site of the injury. It is widely accepted that a bullet is sterilized upon firing and that it remains sterile until it reaches its target. Spencer (1908), Ogilvie (1944), stated that bullets are usually sterile. Lagarde (1892) did not think so. He qualified that round nose, solid lead type were more aseptic because molten drops of lead had been noted

when the slug was heated to 110°C and above as it travels the gun barrel. Therefore, there was sterilization by heat. But not so with the jacketed bullet which did not melt when heated above 110°C. By 1914, it had been shown that a bullet is not sterilized by the act of firing or by passage through clothing and tissues and that it can carry organisms mechanically into a wound.

McLennan (1962) and Thoresby and Dunlow (1967) concluded that major source of contamination was due to direct complantation of bacteria via contaminated clothing.

At this point, there are two areas, namely, gunshot wounds in the infratemporal space and in the temporal bone where the otolaryngologist is uniquely capable of handling. Gunshot injuries to the Infratemporal space is very difficult to manage. Anatomically, its boundaries are superiorly, the infratemporal crest, posteriorly by the mandibular fossa, anteriorly by the infratemporal surface of the maxilla and laterally by the zygomatic arch and raumus of mandible. Its important soft tissue contents are the internal maxillary artery and CNS. Posterior to this space are the internal carotid. internal jugular and CN IX, X, XI. These structures are liable to damage in exploration for the removal of the slug. It is best to leave the bullet inplace as was seen in the 3 cases where extraction was futile.

However, if suspicion of hemorrhage from the internal carotid and jugular is established and control of hemorrhage by packing and or external carotid ligation is done. If still there is failure to control bleeding from the internal jugular vein, mastoidectomy and compression of the sigmoid portion of the lateral sinus by packing with gelfoam or surgery is done..

If there is failure to control and bleeding comes from the internal carotid artery, initial packing of the base of the skull is done. Babin and Konrad prefers the approach via post-incision with tympanotomy and elevation of the tympanic membrane off the handle of the malleus. The medial wall of the tube is unroofed exposing the internal carotid. Anastomous or ligation with hemaclips is, then, done.

Another approach is the pre-auricular with anterior traction of the parotid gland. The condyle of the mandibles is excised, the tympanic plate removed exposing the artery. It is approach, transecting the Ffacial nerve with subsequent end to end anatomosis is necessary.

I remember, we had one case of internal jugular bleeding wherein packing of the base of the skull with gauze soaked in Terramycin and leaving the pack for 7 days, resulted is hemostosis. This was after futile attempts to control bleeding through an extended parotid approach to the base of the skull.

Six cases in this study had temporal bone fracture. The temporal bone usually fractures from the impact velocity of the missiles. This may occur directly or from transmitted energy from a bullet stricking the condyle of the mandible. Fracture lines may involve the middle cranial fossa, facial nerve, and the cochlear and vestibular labyrinth.

Although dizziness and vertigo were not prominent symptoms, 6 cases were noted to have facial nerve paralysis. Four of the six had paralysis secondary to injury to the temporal bone. Another case had peripheral facial nerve paralysis due to communited fracture of the condyle and the angle of the mandible. The sixth case had an iatrogenic, intentional, peripheral facial nerve transection during the course of exploration for severe hemorrhage at the base of the skull. Unfortunately, the facial nerve was not anastomosed due to the gauze packing placed for hemostasis within the site of dissection.

Management of the six cases included mastoidectomy and decompression in 2 cases. One of these two was found to have a complete transection at the stylomastoid foramen for which anastomosis with silk-8 under microscopy was done. Mastoidectomy, decompression and nerve graft was done in one case. Here there was gap in the vertical portion of the facial nerve which was bridged by a graft from the greater auricular nerve.

Of the two cases with peripheral nerve injury, one underwent a muscle and fascial sling from the fascia lata. The other initially underwnet open reduction of fractured mandible with interosseous wring. He was advised rehab litation for six months after which he would be re-evaluated. One patient refused surgery.

In all instances, except for the case who underwent muscle fascial sling, follow-up was very poor.

It is observed that fragments of slum from the tympanic membrane and external auditory canal maybe driven deep into the mastoid and petrous portion of the temporal bone. These

could lead later on to cholesteatoma formation. One case underwent mastoidectomy specifically because the above reason.

Audiometry was not routinely done in these cases mainly because of the pain, inflammation, and blood clots in the ear. The value of audiometry would be to show hearing loss due to hemotympanium, ossicular discontinuity and cochlear concussion or fracture.

Long term complications expected are trismus secondary to pterygoid muscle spasm or tempormandibular joint dysfunction. Babin and Konrad reported 6 out of 12 patients (50%) with involvement of the infratemporal space developing trismus.

Conclusion:

In conclusion, we have discussed basic principles of bullets and bullet velocity and how it affects tissue. Zone of injury were in Zone 11 and Zone 111 with handguns as the main delivery. Increasing number of pellets wounds were seen. Airway maintenance and control of bleeding are the most important considerations. Not all cases of GSW in the head and neck are to be explored except when major vascular vessels are injured. Bullet slugs are better left in place if it is in the infratemporal fossa.

As a parting shot, "BETTER POINTED BULLETS THAN POINTED SPEECHES" (Otto VON Bismarch in a speech in 1850)

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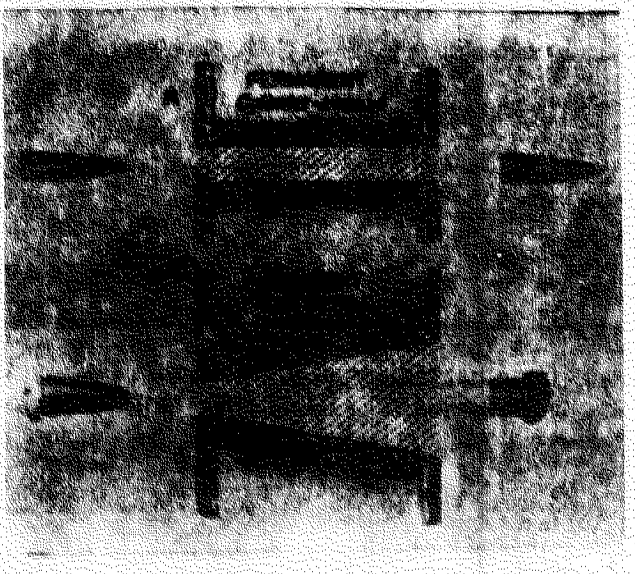

Fig. 1. Illustration to show type of cavity created depending on the type of bullet. Military ball bullet creates permanent cylindrical cavity. Hollow-point bullets create permanent cone-shaped cavity.

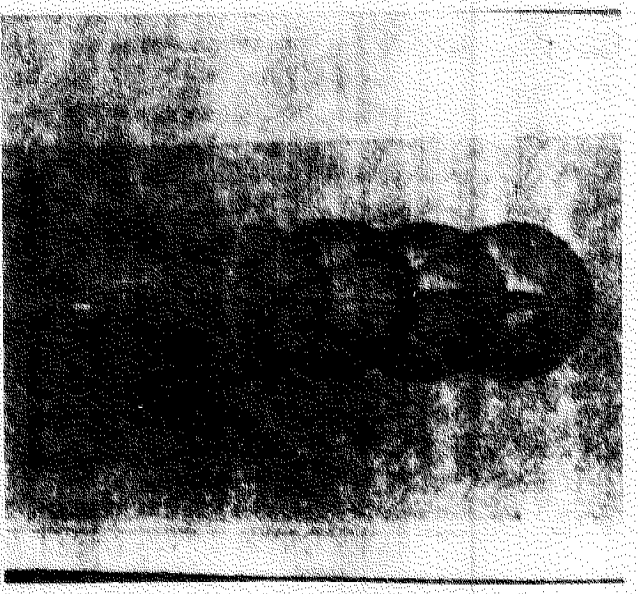

Fig. 2. Illutsration to show the temporary cavity created by a bullet as it goes through tissue.

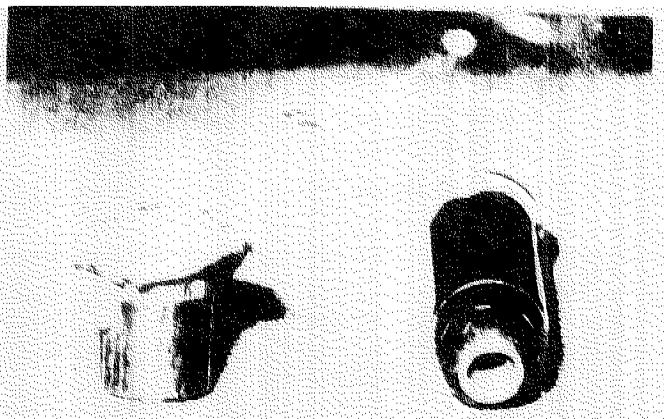

Fig. 3. Mushroom effect of hollow-point bullets.

Fig. 4. Fragmentation of bullet fragments with shatter effect on the R mandible.

Fig. 5. Bullet lodged on the R lateral neck after entering through the oral cavity ricocheting from the hard plate.

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COMPOUND FLAP OF CLAVICLE AND STERNOMASTOID MUSCLE IN MANDIBULAR RECONSTRUCTION

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Alexander A. Cukingnan, M.D.***

This is a case report on the new surgical technic of using compound flap of clavicle and sternomastoid muscle in mandibular reconstruction.

This is a 58-year old female, from Sorsogon, who was admitted to PGH for the first time on April 21, 1981, for a mass on her left hemimandible. Condition apparently started about 7 months PTA when she noted a 1 x 1 cm. mass on her left hemimandible. Medicines were given but to no avail. The said mass is hard, non-tender and progressively grew in size, until such time when she was referred to PGH where she was subsequently admitted.

Physical findings showed:

- F/D, F/N, conscious, coherent, not in distress
- vital signs: HR = 88/m. PR = 88/m. BP = 100/70 T = 37°C.
- P.E. centered on the face. There is a 4 x 3 x 3 cm. mass, hard non-tender, fixed on her left hemimandible. Edentulous gums.
- Rest of physical findings are essentially normal.

Laboratory findings are:

CBC – type A
Hgb – 12.5 gm.%
WBC – 6,100
Eo – 4
St – 1
Seg. – 81
Lymp – 14
FBS – 120 gm.%
BUN – 10
Cr – 1

Urinalysis – sp. gr. – 1.009
color – straw
trans – clear
albumin – (–)
sugar – (–)
red cells – (–)
pus cells – (–)
bacteria – (–)
crystals – uric acid

Chest x-ray – essentially normal

X-ray of the mandible showed expansile lytic lesion with trabeculation noted at the body of the left hemimandible. Rest of the findings are unremarkable.

Biopsy of the mass revealed Adamantinoma.

Surgical Technic

The patient underwent a modified Schobinger incision on her left side. The flaps were raised and we proceeded with the submandibular and mandibular dissection. There was a 4 x 3 cm. rounded mass occupying the body of the left hemimandible. We proceeded with the mandibular resection with a 1.5 cm. margin on each side. After measuring the defect, we then disarticulated the sternoclavicular joint Cutting the lateral end we used a Gigli saw.

For freeing the clavicle from the subclavius muscle and from the tendinous origin of the pectoralis major, as well as for cutting the strong costoclavicular ligaments, we used a heavy pair of scissor taking care not to puncture and enter the thoracic cavity. The insertion of the clavicular head of the sternomastoid muscle was respected and taking care not to injure the periosteum of the clavicle by leaving on it a thin layer of tendinous and muscular tissue.

Now that the clavicle is free and suspended on attached clavicular head of the sternomastoid muscle, we then dissected the muscle laterally and medially. Using the hypoglossal nerve as an anatomical landmark, we did not go superior to its level in order to retain the optimal vascularity of the muscle pedicle.

At the posterior border of the sternomastoid muscle, we preserved the accessory nerve.

The compound flap of clavicle and sternomastoid muscle was then swung to the mandi-

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bular area and filled the mandibular defect. Using the dental drill and burr, we trimmed the clavicle and attached it to the mandible by interosseous wiring. We put a drain, closed in layers and put a Barton's bandage for 2 weeks.

Post-operative Course

Post-op course of the patient was uneventful. There was no fistula formation.

Discussion:

Adamantinoma or Ameloblastoma is the most common of the epithelial odontogenic tumors, reportedly comprising about 1% of tumors and cysts arising in the jaws. It may arise from the epithelial lining of the dentigerous cysts, the remnants of dental lamina and enamel organ, or from the basal layer of the oral mucosa. Because of its invasive property and tendency to recur, it is usually considered as "histologically benign" but "clinically malignant" The primary cure then for adamantinoma is wide excision. Since this entials mandibular resection, the results are poor physiologic function and cosmetic defect. The section of Tumor and Plastic Reconstruction of the Dept. of ENT UP-PGH have a total commitment of not only resecting the tumor but also doing a mandibular reconstruction.

Mandibular replacement is not a simple surgical remedy for reconstruction of a cosmetic defect. Rather, it is an involved procedure which restores the functions of speaking, chewing and swallowing and the appearance of fullness and outline of the lower face.

1) Adaptability in the operating room to the specifics of the defect
2) complete stability in re-establishing the mandibular arch
3) absence of tissue reaction or rejection
4) rapid incorporation into the surround - ing tissue
5) unlimited lifespan

Having tried other methods of mandibular reconstruction ranging from simple wires to the use of iliac crest and ribs with indifferent results, we chose to try for the first time the use of compound flap of clavicle and sternomastoid muscle for mandibular reconstruction.

It was in 1973 when Medgysi, using India ink perfusion demonstrated a rich vascular system connecting muscle, periosteum, and compact bone in osteomuscular flap in goats. The components are of the same mesodermal origin which could make more intimate vascular connections probable. With the transfer of the osteomuscular flap, the bone is deprived of its main blood supply, that is the nutrient vessels, hence it must rely heavily on the periosteal blood supply provided by the muscular flap. This will help in tiding the bone graft until such time that re-vascularization has taken place.

The clavicle is the site of origin and insertion of a number of muscles (trapezius, deltoid, sternomastoid, pectoralis major, and subclavius). it transmits lifting force from the trapezius muscle to the scapula via the strong suspensory ligaments (coracoclavicular and acromioclavicular). it also serves as the only connection between the shoulder and the trunk.

The sternomastoid muscle on the other hand is one of the strap muscles of the neck. It functions in head turning and as an accessory muscle of respiration. The blood supply of the sternomastoid muscle are the following:

1) branches from the internal mammary artery
2) sternomastoid artery
3) branches from the occipital artery
4) branches from the postauricular artery

"From an anatomical point of view, the stenomastoid artery, the main blood supply of the muscle, is related constantly to the hypoglossal nerve. The artery is said to be "hooked" by the hypoglossal nerve right at its origin from the external carotid artery. Peripherally, the artery is accompanied by branches of the accessory nerve destined for the sternomastoid muscle (Gray et al)." Thus the hypoglossal nerve is used as the upper limit for dissection to ensure arterial and nerve supply to the sternomastoid muscle. According to Baldes et al" a fully innervated and functioning muscle has an arterial input at work 20 or more times the input at rest." This is important in arterial and venous drainage.

The accessory nerve is not severed, not only for the sternomastoid muscle, but also so as not to produce weakness or paralysis of the trapezius muscle on the ipsilateral side which will produce a drop shoulder. This drop shoulder will incapacitate the patient more after removing the stabilizing function of the clavicle.

Conclusion:

Tentatively, we can say that the use of compound flap of clavicle and sternomastoid muscle for mandibular reconstruction seems to have better results than the use of simple

wiring, iliac crest, rib and the like in terms of morbidity, physiologic functions and contour of the lower face. We hope to use this osteo-muscular flap again in other mandibular reconstruction.

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XTENDED CERVICAL ESOPHAGOMYOTOMY

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Dr. A. Cukingnan**
Dr. R. B. de la Cruz*

ntroduction:

The treatment of cricopharyngeal spasm anges from a variety of medical measures like liet changes, sedation, nasogastric tuoe insertion o surgical procedures such as esophagoscopy, astrostomy bouginage and cricopharyngeal nyotomy. The surgical appraoch is often esorted to if and when medical measures fail. Among the four surgical procedures in persistent cricopharyngeal spasm the most practical and definite form of treatment then, was cricopharyngeal myotomy. Lately new developments came about both in nomenclature and surgical approach. Today the term cricopharyngeal spasm has been supplanted by a more general term cricopharyngeal dysfunction, which is use to describe a wide spectrum of disorders of swallowing which involves the upper esophageal sphincter and occurs in association with abnormalities of the central and peripheral nervous system, metabolic and inflammatory myopathies and currently unidentified factors.

The new surgical approach came about because of the observation that spasm of the cricopharynx is usually associated with spasm of the upper esophagus as well. This may explain the high recurrence noted by several authors in patients with cricopharngeal spasm treated by cricopharyngeal myotomy alone. With this observation it is evident that a new extended surgical procedure to include the upper esophagus is necessary.

The authors therefore would like to present a case of cricopharyngeal dysfunction treated via an extended cervical esophagomyotomy. This operation is the first one done in the Department of Otolaryngology and perhaps in UP-P.G.H.

Case Report:

A.M. a 60-year old female was admitted to P.G.H. on May 5, 1982 for dysphagia.

Twelve hours prior to admission the patient claimed to have swallowed a chunk of meat and afterwards developed obstruction of the esophagus so much so that the patient chokes on additional intake of food.

Pertinent Past Medical History:

Patient had several episodes of dysphagia five to six times a year, spontaneously relieved by coughing out food chunks.

The patient has a history of hyperacidity, and patient denies any history of lye or acid ingestion.

Physical Examination:

Essentially unremarkable except for the indirect laryngoscopy findings which showed pooling of saliva at the pyriform sinus.

Laboratory Examination

Unremarkable except for the Barium swallow which showed pooling of contrast material at C-4.

Admitting Impression: Foreign Body Cricopharynx

On admission the patient was hydrated with Ringers lactate one liter and esophagoscopy was done using a 9 x 30 scope. The cricopharyngeal sphincter was visualized but this would not admit the scope, so a 4 x 35 esophagoscope was used in an attempt to enter the cricopharynx but it too cannot be inserted. The smallest metal and mercury bougie was tried but to no avail. A nasogastric tube was inserted for feeding but it also failed.

The patient was given sedatives in a futile attempt to relax the spasm. The patient was

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presented at the grand rounds and after some discussion, a diagnosis of cricopharyngeal spasm was made. A decision to operate was made for the following reasons: (1) To provide lasting relief to the patient (2) For nourishment since the patient has been on fluids since admission. (3) To explore and arrive at a definite diagnosis.

Indications:

This procedure is indicated in the presence of: (1) Diverticulum (2) Gastrointestinal reflux. (3) Neural or myopathic disorders of the esophagus. (4) Unexplained spasm of the upper esophageal sphincter, which may be due to a muscular band as reported by Sterlin in 1918 where he had two cases one a female 64 years of age who had difficulty in swallowing for 14 days and a male aged 36 who had trouble with dysphagia for six months. In both cases at autopsy a muscular band was found encircling the upper esophagus in spastic contraction causing the obstruction.

It is evident that the exact cause of spasm of the esophagus may be readily demonstrable in a number of cases whereas in many no organic local or remote lesion can be found.

Contraindications:

These procedures are contraindicated in the presence of extrinsic factors causing obstruction like an enlarged thyroid gland, cervical spur, cervical lymphadenopathy and intrinsic factors like the presence of a neoplasm, web, stricture or a foreign body. A relative contraindication is the presence of an unsphincter lest the patient develops aspiration due to uncontrolled gastrointestinal reflux.

Technique of Operation:

After induction with general anesthesia an esophagoscopy is first performed to exclude neoplasms, inflammatory diseases and to evacuate the contents of the diverticulum if there is any. No further attempt at esophagoscopy should be made if the cricopharyngeal sphincter is extremely tight.

The patient's neck is extended and head turned to the right side. Draping is done in such a way that you have access to the entire left side of the neck.

The cricoid is identified and the operation is begun with a five centimeter oblique incision centered on the cricoid cartilage anterior and parallel to the sternocleidomastoid muscle. In young women a transverse left cervical incision in a skin crease directly over the cricoid cartilage gives a better cosmetic result. The left side of the neck is the one approached because of the constant location of the recurrent nerve at this area. The right recurrent nerve being less predictable.

The plastysma is incised, the sternocleidomastoid muscle and carotid sheath are retracted laterally and the trachea medially. With blunt dissection protecting the recurrent nerve, the esophagus is exposed. We found that the upper esophageal sphincter was spastic, the muscle seemed to form a tight band around the esophagus and seemed to extend from the cricopharynx to about 3 cm. inferiorly.

Normally before incising at the posterolateral portion of the esophagus from the superior cornu of the thyroid cartilage to one to two centimeters behind the clavicle inferiorly, a scope has to be inserted to aid in defining this area. However in our case we could not insert even the smallest scope so that we first made an incision from the superior cornu of the thyroid cartilage to about 4 cm. below. The incision dissected free all the muscle leaving only esophageal mucosa. With this procedure we could now enter the cricopharynx using a 9 x 45 cm. scope we then continued incising the esophagus freeing all muscles for about 3 cm more until we could freely pass our scope in without resistance.

After the neck wound is irrigated and hemostasis done an NGT is inserted and air is insufflated into the esophagus to check for any damage and undissected muscle fibers. If no esophageal tear is present closure in layers is now done.

Post Operative Care:

The post operative course of the patient in the ward was uneventful. The NGT was removed in 24 hours and clear fluids started. Soft diet was begun on the third post-operative day.

A repeat barium swallow was done after one week and this showed good passage of contrast material.

Complications:

No complications were encountered in this patient though there are some complications that we must be aware of like: (1) Infection

(2) Vocal cord paralysis (3) Salivary fistula.

Salient Points of the Operations:

1. At least a 7-10 centimeter incision to ensure that all abnormal muscles are divided.
2. Meticulous and complete dissection of all cervical esophageal muscle so that all uncoordinated muscle fibers are removed.

Conclusion:

The extended cervical esophagomyotomy operation is relatively simple and could give proper relief in cases of cervical dysphagia with minimal complications.

It shows great promise in the treatment of cricopharyngeal dysfunction secondary to abnormalities of the central and peripheral nervous system, metabolic and inflammatory myopathies and unexplained spasm of the upper esophageal sphincter. It is our hope therefore that more of us could try this operation since this is relatively safe, simple and effective.

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CAPILLARY HEMANGIOMA OF THE LARYNX

Claudio Roxas, M.D.
Abelardo Perez, M.D.*

Introduction

In general, angiopathies are due to various causes. It may be congenital or related to other systemic diseases like syphilis, tuberculosis, collagen diseases, diabetis, liver and kidney diseases. It could be due to vitamin deficiency, various forms of purpura and Rendau Osler's diseases.

Angiomas of the larynx are relatively rare and when the presenting symptom initially is an apparent hemoptysis, in the Philippine setting, it makes it more confusing so as to be misdiagnosed.

Case Report

G. C., 10 years old, female admitted with complaint of spitting of blood and loud snoring.

Six months PTA the patient noted spitting of blood streak saliva – to frank bright red blood. The condition occured on and off. Upon consulting a physician who ordered chest x-ray and diagnosed it and treated it as PTB. The radiologist reported a calsified area in the right lower lung field probably residual PTB. After 2 months of having no improvement she consulted another physician who ordered another chest x-ray and the physician interpret the x-ray as clear chest but he advised to continue the medicine. Three months PTA she started to develop noisy breathing while sleeping. Fresh blood could be observed to be flowing from the mouth while asleep. Her physician could not believe the description of the breathing so the mother recorded her breathing. She was informed that it was asthma. There was no improvement of the condition so they consulted another physician who diagnosed the condition as TB laryngitis. One month PTA, she developed easy fatigability and had dyspnea if she layed flat in bed. She consulted the clinic and was advised to be admitted.

Pertinent Findings:

Hyposthenic, markedly pale with a very soft stridor. On indirect laryngoscopy a 2.5 x 1.1 x 1 cm. movable bluish mass that undulated up and down on respiration was seen. Hemoglobin study revealed 6 mg.

Blood transfusion was given and tracheostomy was done. The child was put to sleep and a direct laryngoscopy was done. The mass was found to be pedunculated with a narrow base attached to the right aarytenoid area. The mass was removed with the use of a cupped forcep and the base cauterized with a hyprecator.

The bleeding was minimal and she had an uneventful recovery. She was extubated and discharged after two days. The biopsy report was: Microscopic section revealed a cellular capillary hemangioma. The squamos epithelium is intact. The congeries of small capillaries are seen with the subepithelial layer.

Discussion:

It must be remembered that not all fresh bleeding orally is due to tuberculous lesion. O'Neil et. al., reported in 1976 of a case of profuse bleeding in the mouth found to have cavernous hemangioma at the left aryepiglottic fold extending to the laryngeal surface.

Hemangioma is of mesodermal origin, encountered in all ages. Generally capillary hemangioma is hard to distinguish from lymphangiomas. Capillary hemangioma is well delineated and easier to remove compared to cavernous hemangioma which most likely have sinusoids into the surrounding tissue.

Hoarseness is usually the symptom, although if the growth is extensive it causes obstruction. Hemoptysis may occur; and Moore, in his review of 70 cases states that the occurence of hemoptysis is not uncommon but rare in children and infants.

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In the review of literature, Woodward in 1936 reported 2 cases of cavernous hemangioma and collected 52 other cases from the literature. New and Erich, of the Mayo Clinic, in 1938 reported that in the past 30 years in the clinic they had 26 angiomas, 3 cavernous angiomas and 21 simple hemangioma out of 722 cases of benigh tumors of the larynx. They were not specific whether the angiomas classified included capillary or lymphangioma, or the simple hemangioma means capillary hemangioma. Samuel Salinger reported in 1956 that at Michael Reese Hospital, in 3 years with 232 consecutive biopsies of the larynx they found 10 hemangioma cases. J. S. Campbell et. al., reported in 1958, 5 cases of congenital subglottic of the larynx and reviewed 14 other reports of the same disease. I. F. Vestn of Russia reported in 1959 a case of cavernous hemangioma seen as lobulated tumor with a wide pedicle in the surface of the left aryepiglottic fold, and was occluding the glottis. The patient was a 44 years old female with a complaint of hoarseness, difficulty of breathing and urinary incontenence. Stefanovich et. al., of Belgrade reported in 1960, 3 cases of subglottic hemangioma in infants of about 3 months old where the presenting symptom was dyspnea. He stressed its rarity. Fergusson et. al., in 1961 reported 17 subglottic hemangioma cases they had in the Children Hospital Medical Center in Boston with satisfactory results in 16. He reported another 24 case histories in literature with 50% mortality. He noted female predominate 2:1.

Diagnosis:

Literature shows that hemangioma of the larynx is rare and most often misdiagnosed. Even with direct or indirect laryngoscopy one could miss the lesion especially if the lesion is subglottic and sessile. Some cases are found only in post-mortem examination or through tracheal stoma endoscopy. X-ray of the larynx may help.

Management:

A very great percentage of this condition have laryngeal obstruction and tracheostomy should be done even if a definite diagnosis has not been established.

Definitive treatment varies depending on the extent and location of the lesion. It varies from endolaryngeal removal of the tumor if it is pedunculated followed by radiotherapy of 2000 rads; surgical excision; radium implantation; radiotherapy with or without tracheostomy; hemilaryngectomy if it is very extensive sessile growth and if it involves the pharynx, pharyngolaryngectomy could be done. With the new modalities cryosurgery is effective with cavernous hemangioma and carbon dioxide laser is effective for subglottic capillary hemangioma. However, it may need several treatment. It is not used for cavernous type lesions. Humidification is necessary post-operatively because of crust formation.

Summary and Conclusion:

A case of capillary hemangioma has been presented. Review of literature emphasizes its rarity and difficulty of diagnosis. The treatment will depend upon the size and site and the facilities you may have at the time.

	Year	Angioma C	Capillary	Cavernous	Unclassified	Cases Collected From Literature
Sweeter	1921			1		
Moroe, I	1921	70				
Woodward J. F.	1939			2		52
New and Erich	1938	26	21	3		
Samuel Salinger et., al.	1956				10	
J. S. Campbell et. al.	1958				5	14
I.F. Vestn	1959			1		
Stefanovitch et. al.	1960				3	
Fergusson et. al.	1961				17	24
Mournier et. al.	1961				1	
A Zakrzewski	1963		1			
G. Patrick Bridges et. al.	1970			1		
John V. O. Niell et. al.	1976			1		
Gerald B. Healy	1980		11			
TOTAL		96	33	9	36	90

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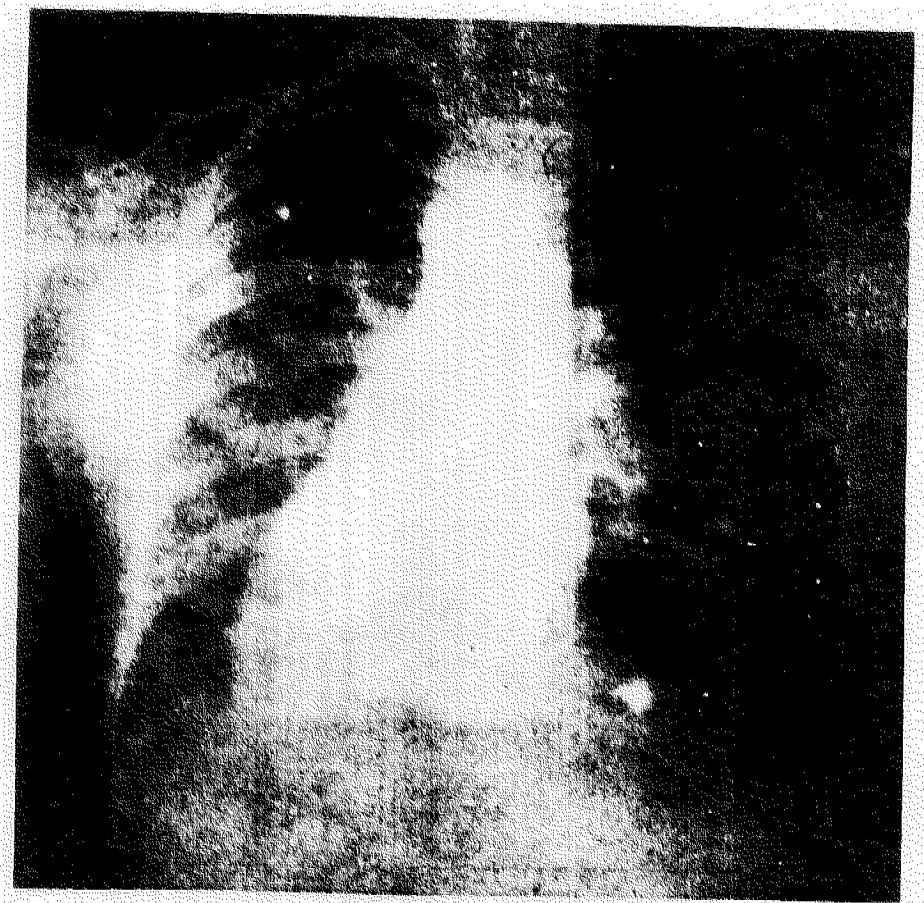
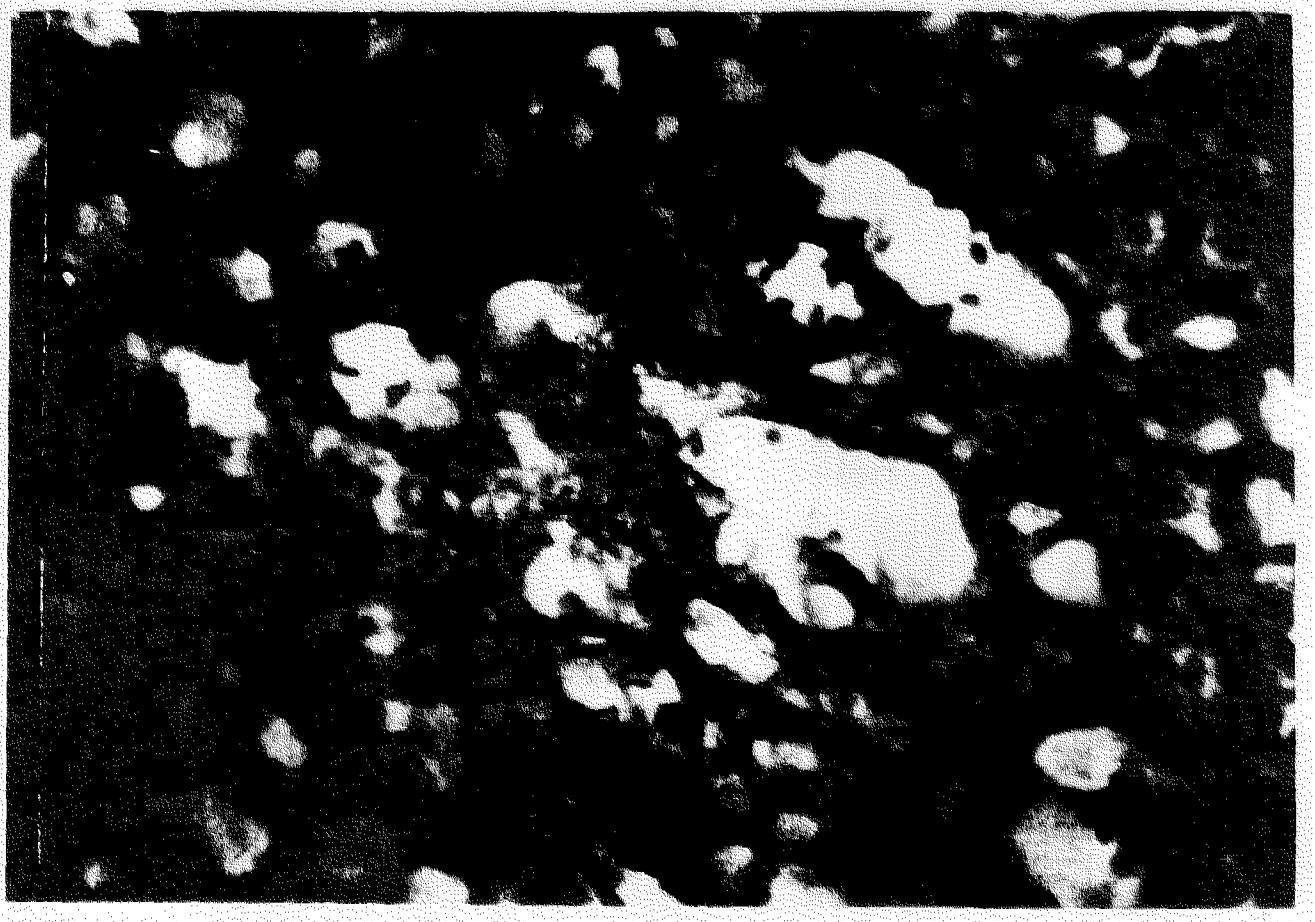


Chest X-ray normal

Section of removed
specimen - low power



High power of
same section

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RELAPSING POLYCHONDRITIS: AN ENIGMA
A Case Report And A Review Of Literature

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Relapsing Polychondritis was thought to be such a rare and esoteric disease that it did not merit any discussion in the standard textbook of Otolaryngology as recent as the 1960's. It was first reported by Jacksch Wartehorst in 1923 who suggested the name Polychondropathies.[1,16] Pearson et al changed it to Relapsing Polychondritis to emphasize its episodic nature.[1,8,9] Since McAdam reported 23 florid cases of Relapsing Polychondritis in 1976, more and more attentions has been paid to this disease entity.

Relapsing Polychondritis, a multi-systemic disorder with protean manifestations is characterized by intense inflammatory and degenerative process, involving the cartilaginous structures of the larynx and trachea.[13,8] Ocular involvement in the form of conjunctivitis, iritis, episcleritis and uveitis has been reported in the majority of patients with relapsing polychondritis.[8,13]

With such unique clinical manifestations, recognition is often times difficult. Although, it is a disease reported with a high mortality rate. it can however undergo spontaneous remissions with adequate medication. Many reported that complications associated with the disease entity can be prevented or controlled. This case is being presented to acquaint local physicians of the existence of such disease entity so as to be able to make an early diagnosis and to institute proper treatment.

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Case Report

R.D., 20-year old male, Filipino was referred to the Division of Ophthalmology and Otolaryngology because of eye problem and hoarseness in August 1980. Ocular examinations revealed conjunctival congestion with superficial limbal infiltrations. Direct laryngoscopy showed normal vocal cords.

His illness started with low grade fever, sore throat, productive cough and shoulder joint pain. No medications were taken. Two weeks later, he developed dyspnea and "red eye." He sought consultation but his symptoms failed to respond to Tetracyclines and other ophthalmic drugs. A week later, erythematous painful swelling of both ears developed in addition to the above problems. Again, he sought consultation with a private physician. However, there was no improvement noted after 5 days of treatment. Hence, he sought admission at a private hospital where he was intensely managed as a case of "Bronchial Asthma." But he was discharged unimproved on the 5th hospital day.

The development of progressive dyspnea prompted him to seek admission at the STUH-CD in August 1980. On admission, he was found to have inspiratory stridor and expiratory grunt with supraclavicular and intercostal retractions. Other pertinent findings included bilateral conjunctivitis, depression of the bridge of the nose, soft and floppy ears and pectus excavatum.

Hemogram revealed mild hypochromic anemia. There was leukocytosis with predominance of neutrophil. Sedimentation rate was elevated to 122 mm/hr. Urinalysis showed hematuria and pyuria. PA view of the chest x-ray showed the presence of non-homogenous densitis occupying both bases with minimal blunting of the left costophrenic angle. Lateral view showed the presistent presence of the densities in the region of the anterior segment probably of the right upper lobe associated with elevated fissure consistent with segmental collapse. Incidentally, there was an increase in the distance between the trachea and esophagus suggestive of narrowing of the distal portion of the trachea.

Pulmonary function text showed a combined obstructive and ventilatory defect with

markedly reduced vital capacity. No response was noted after inhalation of bronchodilator. Audiogram revealed moderate sensorineural hearing loss. Biopsy of the pinna was done and the result was mild hyperkeratosis with no cartilage noted. During his stay in the ward, he was on antibiotics and corticosteroids therapy at 60mg/day. He was discharged improved on the 42nd hospital day.

Discussion

Relapsing polychondritis has been noted in all ages.[8,16] But it is discovered most frequently in the 4th decade of life.[1] As far as sex is concerned, it occur with equal frequency in males and females.[16] There were no other suggestions of a hereditary or familial predisposition.[1]

The exact etiology is unknown, although, several theories have been offered such as excessive alcohol intake, trauma, infection and allergy.[8,12] But the most popular theory is that of an auto-immune mechanism coming within the collagen vascular group of diseases.[4,5,15,17] Besides the association of relapsing polychondritis with other auto-immune diseases such as Reiter's disease, polyarteritis nodosa tend to further support the theory of an immunologic mechanism.[5,16] While there are no specific diagnostic procedures done to explain the exact etiopathogenesis of this disease entity with our patient, the fever, arthralgia, elevated sedimentation rate which are non-specific findings may point to an immunologic background.

Arthropathy of relapsing polychondritis is the second most common presenting feature.[1,2] Classically, it is manifested as an episodic, asymmetric non-erosive and non-deforming arthritis. The arthritis which our patient had prior to admission resolved spontaneously leaving no deformity. While this is true, other cases may resolve only with anti-inflammatory measure.[2]

Our patient presented to us with dyspnea, a symptom which occurs only in about 14% of reported cases.[1] Probably because it involved a critical and potentially lethal organ system, attention was initially focused on this symptom. Dyspnea is not unexpected in a well established case of relapsing polychondritis, but when it is a main presenting manifestation, it is usually misdiagnosed. There have been reported cases of relapsing polychondritis treated as Status Asthmaticus because of the signs and symptoms of dyspnea, wheezes and cough.[1] Fortunately, our patient, aside from his respiratory problem, also presented with other clinical features which strongly pointed to a diagnosis of relapsing polychondritis.

Laryngo-tracheo-bronchial involvement is a poor prognostic indicator.[6] This may present as hoarseness, cough, dyspnea or rarely hemoptysis. In many cases, stenosis may result from glottic, laryngeal and subglottic edema and inflammation leading to airway obstruction which may necessitate tracheostomy.[8] However, if focal or diffuse airway obstruction occured as a result of the collapse of the tracheal and bronchial rings, tracheostomy maybe ineffectual in re-establishing adequate ventilation. Our case did not necessitate such surgical procedure, perhaps, because of the early institution of corticosteroids.

Undoubtedly, the Otorhinolaryngologists can help the physicians in the early detection of relapsing polychondritis, since the most common presenting manifestation is chondritis of the auricle.[1,2,16] In our patient, it occured suddenly and accompanied by pain with erythematous swelling of the external ear. At times, the inflammation may encroach upon the external auditory meatus and lead to narrowing sufficient to cause hearing impairment. Protracted or recurrent attacks may lead to permanent loss of cartilaginous support, resulting in a drooping appearance of the ears as shown in our patient.

Auditory and/or vestibular dysfunction, though infrequent at the onset, may occur later.[10,11] Hearing impairment may stem not only from meatal narrowing but also from middle ear inflammation, serous otitis media, eustachian tube obstruction secondary to chondritis of the nasopharyngeal segment or neurosensory abnormalities caused by vasculitis of the internal auditory artery or its branch.[16]

Nasal chondritis, just like chondritis of the auricle is usually sudden in onset and often produces nasal stuffiness, crusting, rhinorrhea and epistaxis. While we failed to elicit any history in our patient suggestive of nasal chondritis, the presence of saddle nose deformity is a strong evidence of previous repeated inflammatory process involving the nose.

As in any relatively uncommon disease of unknown etiology, the diagnosis of relapsing polychondritis remains a great challenge to the physicians. There is no specific diagnostic test in this disease. The only consistent findings are elevated erythrocyte sedimentation rate during

its active phase. leukocytosis and mild to moderate anemia.[1] All of the above were present in our patient.

Since the diagnosis of this disease is based entirely on its clinical picture, McAdam et. al. proposed the diagnostic criteria for relapsing polychondritis as shown in Table I.

In order to make a diagnosis of relapsing polychondritis, 3 or more of the diagnostic criteria must be fulfilled.

Inasmuch as our patient presented with all of the above manifestations, it is sufficient to say that the diagnosis of relapsing polychondritis is supported.

The clinical course of polychondritis maybe highly variable. It may assume an episodic flare of activitv, or of variable severity, or it can be fulminant with a rapid downhill course.

Treatment of this intriguing disease, as most major medical texts suggest. would consist of long term systemic corticosteroid.[16] It will result in the disappearance of the attacks of chondritis and decrease of the frequency and severity of recurrences. It is fortunate that our patient was treated similarly with steroids and his condition improved dramatically. In fact, he was discharged with no respiratory problems. Asides from steroids, Avlosulfon (Dapson) has been reported to be an excellent alternative in the management of relapsing polychondritis but experience with its clinical use has been limited.[14,6] If disease progression occurs despite such measures. a trial of immunosuppressive drug has been suggested.[1,7]

McAdam et. al. reported 30% mortality of all cases. It has been shown that fatality has primarily resulted from respiratory tract involvement. i.e. airway collapse and pneumonia, and to a lesser extent the cardiovascular system such as ruptured aneurysm. vasculitis and cardiac valvular disease. Deaths from unexplained malignancy have been reported.

To our knowledge, this is the only case reported locally. We hope that this illustrative case would serve as a reminder for other physicians to be aware of the existence of relapsing polychondritis and eventually decrease its morbidity and mortality with proper management.

1. Bilateral auricular chondritis
2. Nonerosive, seronegative inflammatory arhtirits
3. Nasal chondritis
4. Ocular inflammations (Keratitis, conjunctivitis, scleritis, episcleritis. uveitis)
5. Respiratory tract chondritis (laryngeal and/or tracheal cartilages)
6. Cochlear and/or vestibular dysfunction (neurosensory hearing loss, tinnitus and/or vertigo)

Table I. Diagnostic Criteria of Relapsing Polychondritis

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BOILING WATER AS AN ADJUNCT IN THE TREATMENT OF ANGIOFIBROMA: A CASE REPORT

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Introduction:

Angiofibroma is a histologically benign, but, clinically malignant tumor which occurs among young males. It arises from the nasopharynx and is notorious for extending invasively into surrounding adnexae. The histogenesis is still debatable and there is yet no consensus as to what is "proper and adequate" management of this often morbidly recurrent and life-threatening lesion. Intracranial spread may render surgery practically impossible.

The objectives of this presentation are threefold:

1. To present a case of recurrent angiofibroma as was managed in our department;
2. To report on the use of intralesional boiling water injections as an adjunct to surgery, the first in our department;
3. To review some literature on the treatment.

Case Report

K.S., male, presently 18 yeras old, from Camarines Norte, underwent 4 operations, irradiation, Stilbestrol therapy, and three serial injections of boiling water for recurrent angiofibroma with intracranial spread.

His illness apparently started at age 12 when he had recurring, brisk epistaxis with nasal obstruction, progressing to proptosis of the left orbit and left malar swelling despite previous operations. The procedures were as follows:

3/2/77	excision via transpalatal and (L) lateral rhinotomy approaches. Biopsy: Angiofibroma
6/25/78	excision via an extended transpalatal approach with exploration of the (L) pterygoid space
2/2/79	excision via Weber-Fergusson and transpalatal approaches with removal of the postero-lateral walls of the (L) maxillary antrum, and, coronoidectomy plus Stilbestrol
3/79	post operative Co^{60} radiotherapy 3,000 rads plus Testosterone
7/8/81	readmission for extensive extensions into the (L) maxilla and orbit, sphenoid, pterygoid, and middle cranial fossa as shown by CT scan. There was proptosis and (L) malar swelling. Vision OS:20/70 EOM OS limited in all directions. Excision via a Weber Fergusson approach plus orbital exenteration with maxillectomy was done. The first injections of boiling water were done on the cranial extensions. Twenty ccs. were injected through the orbital apex and fissures.
Oct. & Nov. 81	readmission for serial boiling water injections under general anesthesia. No untoward reactions were noted. No neurologic deficits were evident.

Technique:

Following the procedure as reported by Gupta[8] for angiomatous lesions elsewhere, water is kept boiling over a stove close to the operating table and surgical team. The assistant aspirated the boiling liquid into a 20 cc. glass syringe with a guage 23 spinal needle. The surgeon immediately injected 2-3 cc. into the

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lesion per site – orbital apex, sphenoid, pterygoids and fissures. A total of 30-40 ccs. were infiltrated at each procedure. The end point was blanching of the tissues. Six months later, the repeat scan showed no progression of the lesion. He has remained asymptomatic and has resumed schooling.

Discussion:

The effects of thermal injury were investigated by Order and Moncrief using experimental models.[12] Twenty percent of the body surfaces of 200-gm., white Sprague-Dawley rats were exposed to boiling water (99-100°C) for ten seconds.[12] The injured area was serially biopsied and arteriograms were done. They noted total avascularity followed by gradual, progressive revascularization.[12]

Immediately after, many arteries were occluded, no cellular infiltrates appeared, and tissue necrosis was not marked.[12] Two types of occlusion occurred:

A. there was fibrin and blood coagulum where heat was most intense;

B. and, those where red blood cell clumps stuck to the intima with fibrin in between.[12]

Twenty-four hours later, complete vascular occlusion, lacking in infiltrates with edema marked the devitalized state.[12]

Forty-eight hours after, occlusion persisted with increased necrosis and inflammation.[12]

Seven days later, granulations and neovascularization started and was complete in three weeks.[12]

We could extrapolate these findings to the case presented. Gupta noted the same necrosis and inflammation in the lesions he had infiltrated with hot water.[8] Fibrosis was evident after the sloughing. In our case we could probably say that the lesion was literally "boiled-off" and reparative fibrosis had occurred obliterating the lesion. We do not claim a cure, however, the lesion has remained stationary.

Obvious limitations of this procedure are:

1. Lack of accurate mapping of the extent of the iatrogenic burn which may injure normal, vital adnexae;
2. Clumped red blood cells in a vascular mass could precipitate a thromboembolic phenomenon. Theoretically, however, pre-injection embolization of feeder vessels may obviate this.
3. Injections of boiling water were facilitated in our case because of easy access through previous surgery, i.e. orbital exenteration. It would be difficult to infiltrate through normal, intact tissues for fear of damage.
4. The devitalized tissue could act as a sequestrum and cause infection. It would be prudent to use antibiotics.

This technique may be of value in controlling recalcitrant, unresectable, and residual lesions.

Treatment:

Angiofibroma, especially those with extensions, may very well be one of the most challenging tumors to be managed by the otolaryngologist because of a high recurrence rate, over 50%, profuse hemorrhage at surgery, and, the peculiar anatomy of the nasopharynx. Pressman and Jafek advise hypothermic and hypotensive anesthesia to decrease blood loss.[10][14]

Intracranial extension occurs in 20% of cases.[10] The optic nerve is commonly involved,[10] as in this case. Spread is usually towards the middle cranial fossa and sphenoid rather than the anterior cranial fossa. Spread to the maxillary antrum and infratemporal fossa does occur.[10]

In the Mayo Clinic series, 70% of the x-rays showed abnormalities ranging from opacification and bone displacement, to erosion, or both.[11] These antral signs are more or less pathognomonic.[1]

In Wilson's 16 cases, the tumor always spilled out of the nasopharynx. Larger masses extended in all directions involving more than space.[15] They have evolved the following criteria:

1. displacement of the internal maxillary artery; and
2. dense, contrast laden-staining of the mass in the capillary phase.[15]

The feeder vessels are usually the following:

1. ascending pharyngeal
2. ascending palatine
3. internal maxillary
4. dural brs., internal carotid
5. ophthalmic

6. vertebral
7. thyrocervical arteries.[15]

C.T. scans provide more information than the angiograms by showing extensions into the sinuses and fossa.[4] Harrison, of U.K., does not find angiography helpful.[18] While C.T. scans preclude "geographic miss," the angiogram would show feeders from the internal carotid.[7][15]

The treatment methods are:

1. radiation
2. surgery
3. cryotherapy
4. electrocoagulation
5. embolization
6. hormones (stilbestrol)
7. and conservative observation with repeated packing until spontaneous regression.

Conservatism has no place in the treatment of this disease.

Walicke and Mackay, demonstrated a decrease in the size and vascularity of the mass with maturation of the fibroblasts and vessels following Stilbestrol intake.[17] Biller doubts this, since the tumor architecture shows wide variation on serial sections in the same specimen and the blood loss does not significantly differ with or without Stilbestrol prior to the surgery.[3]

Embolization may be used before the operation to diminish hemorrhage. Cerebral ischemia may ensue.[16]

Fitzpatrick and Briant, et al claim good results with radiation. [4] [5] [7] Others have abandoned it in favor of surgery.[1] [3] [6] [11] Jafek suggests radiation for intracranial lesions and residuals despite surgery.[10]

Batzakis cites a proven case of angiofibroma with malignant transformation post-radiation.[2] We had a similar experience. After 9 operations and radiotherapy this patient finally succumbed post-craniotomy for intracranial extension, but not after developing aphasia and neurologic deficits. The final histopath., report was Angiofibroma with histologic malignancy with radiation.

In 1834, Chelius, as quoted by Neel, said "the danger of hemorrhage was less if the tumor could be extirpated by the roots."[11] But as Neel succinctly states, "the problem remains the same: How to get to the roots?"[11] The surgical approaches include the following, singly or in combination:[3] [6] [9] [11] [14]

1. natural orifice approach (Furstenberg, Boler)
2. transpalatal (Owens)
3. transmandibular
4. transzygomatic
5. transhyoid(Bocca)
6. Transantral (Caldwell-Luc, Denker)
7. craniotomy-rhinotomy (Krekoran, Kempe)
8. lateral rhinotomy
9. tripartite approach (intraoral transmaxillary and pteromaxillary incisions).

Surgery is invaluable. It removes the lesion thereby ameliorating the symptoms and removes the source of bleeding. In some, it may be curative.

Conclusion

We have presented a case of angiofibroma wherein surgery and other modalities had failed to control the lesion. Opting for a procedure which was unheard of for this tumor but used by Gupta elsewhere, we had been able to at least halt it's progress. We have no sophisticated gadgets like the vast majority of other hospitals in the archipelago. This method adds new dimension in the therapy of angiofibroma, here, and especially in the less fortunate places of our country. To realize it's true value, however, it has to be repeated and stand the crucible test of time. It's apparent success in this one case is very gladdening to us and the patients family who had agreed to let us try it. We urge you to do the same.

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BILATERAL ANKYLOSIS OF THE TEMPOROMANDIBULAR JOINT

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Introduction:

Of the many disorders of the temporomandibular joint, one that is less frequently seen and managed is ankylosis of the joint whether this be unilateral or bilateral, partial or total.

The unfortunate patient afflicted with this disorder has difficulty in moving his jaw and therefore cannot masticate, nor enunciate properly. He has perennial dental problems with rampant caries sometimes associated with periodontal disease and abscesses. Because of the difficulty or inability to open his mouth, he cannot maintain a normal oral hygiene.

The aim of this paper is to share with you a case we have encountered presenting with massive bilateral bony ankylosis of the temporomandibular joint and our surgical management of the case.

Case Report:

F.G. is a 20-year old female admitted to the Philippine General Hospital in May 1982 for inability to open her mouth since she was 6 years of age.

Her problem apparently started when she fell from a tree hitting her chin at the age of six. She developed swelling of the jaw and on both TMJ areas which subsided after a week. No medical consultation was sought inspite of the fact that ever since then she could not open her mouth. She was able to feed by inserting shredded pieces of meat and vegetable through the small space between her teeth. She has had dental problems which were not adequately resolved by the dentist because of her inability to open her mouth. She had always wished that someday she could open her mouth so that when financial assistance came her way, she fianlly sought consultation at the PGH where she was subsequently admitted.

Physical examination revealed:

- Fairly developed, fairly nourished female; speech was unaffected
- symmetrically underdeveloped lower jaw or micrognathia
- carious teeth and immobile jaw with the opening between her teeth of not more than 1.5 cm wide. There was total immobility of her mandible with no lateral or downward movement.
- other ENT findings are unremarkable.

X-ray of the TMJ (Open/Close): loss of joint space and no movement or displacement of the condyles on open and close views indicative of a possible ankylosis of the joints.

The admitting impression was bilateral bony ankylosis of the temporomandibular joints. The plan of management was to release the ankylosis via a preauricular approach.

Surgical Technique:

Because of the difficulty of intubation, we opted to do an elective tracheostomy.

We worked on the right TMJ first, approaching it via an "inverted hockey stick" incision which is essentially a preauricular incision with a curved extension into the temporal muscle and fascia and turned anteriorly to expose the operative field. Bleeders are ligated. The temporal fascia is divided parallel to the zygomatic arch down to the periosteum. Care was taken not to extend the incision to anteriorly so as not to cut the peripheral branches of the facial nerve. For better exposure, the temporomandibular fascia was cut about 1.5 cm. inferiorly at right angles to the zygomatic incision. The area of ankylosis

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was exposed by dissecting subperiosteally thus avoiding damage to the facial nerve and insuring a relatively bloodless field. Our findings on the right revealed total bony ankylosis involving the condyle, notch and coronoid. No joint space was appreciated. Ostectomy was then done just below the zygomatic arch to release the ankylosis using both chisel and a Kerrison forceps being careful to work subperiosteally as not to damage vital soft tissue structures. About 5mm width of bone was removed from edge to edge. No movement of the mandible was appreciated so we proceeded to the left TMJ using the same procedure. Our findings there revealed bony ankylosis involving the condyle and the mandibular notch. Upon release of this ankylosis, free movement of the mandible was achieved.

Gauze balls were packed on both sides between the upper and lower molars to achieve an open bite. Temporalis fascia and muscle were then insinuated between the two raw surfaces of the ostectomy to prevent their contact and thus reankylosis.

Tube drains were placed and the incisions closed.

The postoperative period was uneventful. The patient was maintained on antibiotics and oral hygiene was done with oral antiseptics. She was fed by NGT for about a week after which she started on soft diet. The tracheostomy tube and the gauze balls between her teeth were removed on the fourth day after which physiotherapy to prevent contractures and maintain joint mobility was started. The tube drains were removed after a day and the sutures removed on the sixth day. She was discharged after a week.

Unfortunately, the patient followed up with us for only two weeks after which she went back to the province. She has however communicated with us by mail a month postoperatively, apparently very satisfied with the results informing us that she still had no problems with her jaw and that she was religiously continuing her jaw exercises. There was no further communication afterwards.

Discussion:

The usual cause of ankylosis of the TMJ is due to some trauma incurred during the patient's childhood usually involving a blow to the chin resulting in damage to the condylar head and degeneration of the articular surface leading eventually to fibrosis and ankylosis as is seen in our patient.[2] Since the condylar region is the principal growth center of the mandible, this damage eventually led to distrubances in growth of the mandible. In our patient with bilateral in injury to the condyles, this led to micrognathia. Other less frequent etiologies[2] include (1) displacement of the condylar head out of the glenoid fossa, (2) childhood infections involving the mastoid, middle ear, tonsillar areas with subsequent involvement of the joint area which used to be a more frequent cause prior to the advent of antibiotics, (3) in the older age group, generalized arthritis may be a cause of ankylosis, (4) the congenital form of ankylosis due to intrauterine injury or prenatal maldevelopment are rare and are usually severe.

The treatment of ankylosis of the TMJ is surgical unless the disorder is partial or due to fibrosis wherein intensive stretching exercises are carried out first over a period of months before surgery is contemplated.[4] The aim of surgery is not only to achieve mobilization of the ankylosed joint but to strive to attain an end result as nearly physiologic as possible also. Through the years, modifications have been added to achieve this aim, although the basic operation remained the same.

Approaches to the TMJ were varied. A preauricular "hockey stick" incision was advocated by Blair in 1914. Preauricular incisions were described by Kazanjian (1938), and Parker (1948). A submandibular appraoch to the ramus of the mandible was described by Risdon (1934).

Humphrey (1856) treated ankylosis successfully by resecting the condyle. Esmarch (1860) resected the ramus of the mandible. Verneuil (1872) suggested interposition of muscle and fascia between the newly cut bone surfaces. Blair (1913, 1914) advocated an inverted hockey stick incision with removal of a wide segment of bone and the interpositioning of temporal muscle and fascia. Phemister and Miller (1918) suggested that adequate excision of obstructing tissues and early and active postoperative motion were important.[2]

The interpositioned material between the raw bony edges has varied from muscle fascia, autogenous cartilage, dermal grafts, tantalum plates, and more recently silastic rubber. This is to prevent reankylosis.[2] This is also used to maintain vertical height especially in widely resected mandibles which would otherwise lead to retrusive bites or malocclusions.

The principles stressed by Blair in 1914 on the surgical management of ankylosis however are still being followed as in our case: (1) Preauricular hockey stick incision, (2) Removal of a wide segment of bone, (3) Interposition of some material to prevent contact to residual raw bony surfaces, and (4) Early postoperative jaw exercises were an integral part of the procedure and that ineffectual physiotherapy can jeopardize an otherwise successful result.[1]

Complications attendant to this kind of surgery include infections which may later cause the reankylosis of the joint especially in children, and injury to the facial nerve branches. Due to the proximity of the mandibular nerve and maxillary artery to the medial aspect of the joint capsule. these may also be injured. Fortunately, we have not encountered these complications.

Summary:

In this paper, we have described the case of a young female who could not open her mouth for 14 years prior to our surgical intervention due to a bilateral bony ankylosis of the temporomandibular joints. We described our surgical technique and management of the case, and also discussed the etiology, principles of surgical management, complications and the need for postoperative physiotherapy in ankylosis of the TMJ.

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EXTERNAL ARYTENOIDECTOMY WITH ARYTENOIDOPEXY FOR BILATERAL ABDUCTOR PARALYSIS – A CASE REPORT

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No other experience is more frightening to a person than the experience of not being able to breathe fully whether it be due to a disease process, foreign body, iatrogenic or trauma.

Case Report

This is a 56-year old female who was admitted to PGH for the second time for bilateral abductor paralysis 2^{o} to total thyroidectomy.

History dates back 20 years PTA when the patient had diffuse enlargement of the thyroid gland. She underwent thyroidectomy in 1951, 1952 and 1957. Patient developed hoarseness after the second operation and she noted also that three months after the third operation, her voice began to return but with increasing difficulty of breathing.

Three years PTA, patient had a respiratory tract infection and dyspnea. She was brought to MCU where a diagnosis of pneumonia was given. An emergency tracheostomy was done which relieved the dyspnea. She was given antibiotics and was discharged without the tracheostomy tube. However, the patient became dyspneic again after two days and she went to PGH where an emergency tracheostomy was done. Admitting impression then was bilateral abductor paralysis 2^{o} to total thyroidectomy with upper respiratory tract infection.

Pertinent P.E. findings showed bilateral abductor paralysis (–) vocal cord edema, (–) mass in the larynx under direct laryngoscopy. T_4 was 94 nmoles/l. because she was being given Proloid gr. I – 1 tab. BID.

Patient was scheduled for transoral arytenoidectomy left side.

Post-op results howefvershowed the vocal cords still in midline and patient cannot breathe if the tracheostomy tube was closed. In other words, the transoral arytenoidectomy failed.

On September 14, 1982, patient was again readmitted for external arytenoidectomy with arytenoidopexy for the bilateral abductor paralysis.

Indications for Treatment

Snow stated the different etiologies of bilateral abductor paralysis. They are the following:

1) Traumatic which could be surgical as in thyroid surgery or non-surgical as external injury to the larynx or neck.
2) It may be secondary to a neurological disease.
3) It may be a sequela of intra-tracheal intubation.
4) The vocal cords may also be immobilized secondary to fixation of the crico-arytenoid joint as a result of trauma or arthritis.
5) Inflammatory joint fixation eq. Rheumatoid Arthritis Gout, Reiter's Disease and Collagen Disease.
6) Subsequent scarring of the nerves with resultant entrapment and paralysis after surgery.

According to Biller and Lawson, patients with bilateral vocal cord paralysis may tolerate the airway obstruction for years before presenting symptoms requiring operative intervention. This lag period, from the time of injury to the occurence of significant obstruction, is explained by one or more of the following:

a) Progressive atrophy and fibrosis of the vocal muscle with resultant shortening

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and further adduction.

b) Intolerance of the obstruction as the patient ages; possibly related to the long standing obstruction causing increased pulmonary compliance and resistance.

c) Superimposed respiratory infection or hypothyroidism causing laryngeal edema.

It is apparent that not all patients with bilateral vocal cord paralysis may require operative intervention but such individuals with vocal cord paralysis are always at risk for complete airway obstruction when an upper respiratory tract infection occurs. It is for this reason that most physician advocate surgical intervention.

Surgical Procedure

External arytenoidectomy with arytenoidopexy was started by King in 1945, later modified by Woodman in 1946 and Clerf in 1950. Kelly (1941) described making a window through the thyroid cartilage in order to reach the arytenoids and Orton (1944), meanwhile, prescribed removing the posterior half of the cartilage.

Before anything else, let me point out the highlights in external arytenoidectomy with arytenoidopexy as stated by Lore:

1) Evaluate correctly the level of cricoarytenoid articulation *
2) Mobilize completely the arytenoid cartilage
   a. by transecting the interarytenoid and the posterior cricoarytenoid muscles;
   b. by transecting the cricoarytenoid ligament (joint capsule).
3) Keep all mucosa intact during dissection and placement of arytenoid suture.
4) Handle arytenoid cartilage with very fine hooks to avoid fragmentation.
5) Mobilize arytenoid cartilage and fix hard against thyroid ala, slightly lower than its normal position.
6) Check position of vocal cords with direct laryngoscopy before closure. Space at posterior commissure should be at least 5 mm. at the end of operation (4mm. is the ideal final result after the healing has occurred).
7) Do a careful hemostasis.
8) Inform patient that as airway im-

An incision is made along the anterior border of the sternomastoid muscle at the level of the upper edge of the thyroid cartlage down to the level of the cricoid cartlage or a horizontalal incision in between the thyroid and and cricoid cartlage.

The sternocleidomastoid muscle is retracted, exposing the posterior edge of the lateral thyroid cartilage with the thyroid muscle anterior to its posterior edge and the inferior pharyngeal constrictor muscle attached to its posterior edge and to the inferior cornu. The attachment of the inferior cornu to the cricoid cartilage is a key landmark.

A vertical incision is made along the posterior edge of the lateral thyroid cartilage and the inferior cornu down to and through the perichondrium or incise thru the inferior pharyngeal constrictor taking care not to cut thru the esophagus.

The facet-like joint between the inferior cornu and the cricoid cartilage is then separated (to mkae the thyroid cartilage more mobile), and the incision is carried through the perichondium and continued vertically upward until the cricoarytenoid joint is encountered. Then a subperichondrial dissection of the arytenoid cartilage is accomplished. When the latter has been done, the joint is disarticulated and arytenoidectomy is done leaving only the vocal process of the arytenoid intact.

A curve needle with Nylone 4-0 is passed around the vocal process, core being taken to keep it in the submucosa and to pass it through and include some of the fibers of the vocalis and the thyroarytenoideus muscles. The cord is drawn laterally and sutured to the inferior cornu a of the thyroid cartilage.

The vocal cord is inspected via direct laryngoscopy while it is being drawn lateralward by an assistant.

The inferior constrictor muscle is brought back by suturing it. A Penrose drain is placed and removed after two days.

Since we already did a transoral arytenoidectomy on our patient, we chose to do the external arytenoidectomy with arytenoidopexy on the right side. We also placed a nasogastric tube in order to prevent aspiration after post-op.

Results

Our patient had bouts of aspiration upon drinking fluid but this only lasted for two days.

The tracheostomy tube was removed after three days and up to the present time, she has not shown or expressed difficulty in breathing, whereas in the past, she could not breathe fully without the tracheostomy tube. Her voice quality, however, changed from good to hoarse. The glottic opening was almost 4 to 5 mm. on indirect laryngoscopy. Our external arytenoidectomy with arytenoidopexy was a success.

Conclusion

External arytenoidectomy with arytenoidopexy is a relatively easy and safe in tackling the problem of bilateral abductor paralysis. It has opened a door of hope for those afflicted with it, and to quote our patient, "I would rather have a hoarse voice if I can breathe fully."

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PETROSPHENOIDAL SYNDROME
REPORT OF A CASE

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INTRODUCTION

The petrosphenoidal syndrome is an involvement of the cranial nerves specifically the II, III, IV, V, VI, as a result of invasion of the petrosphenoidal crossway by an aggressive malignant disease of the nasopharynx.

Human nasopharyngeal carcinoma is an aggressive malignant disease that is difficult to diagnose at an early stage when treatment is most successful. Local invasion of the carcinoma can lead to an early involvement of the cranial nerves but the inaccessability of the anatomic region impedes diagnosis. Quite often, it is only after the disease has metastasized to adjacent lymph nodes that nasopharyngeal carcinoma is diagnosed. Problems similar to those associated with early diagnosis of nasopharyngeal carcinoma also arise when persistent or recurrent disease is evaluated after treatment. Therefore, recurrent disease may be far advanced before it can be detected.

CASE REPORT

General Data: B. F., 35 years old, male, shoemaker from San Mateo, Rizal came for consult at the EENT-OPD, Hospital ng Bagong Lipunan, on January 15, 1982.

Cheif Complaint: Bulging right eyeball, of 7 months duration.

HPI: On June 1981, patient noticed a bulging right eyeball and diplopia accompanied by on and off nasal catarrh. He was not interested in having an opthalmological consult until a month later. He consulted a physician who prescribed B-complex preparation, decongestant-anti-histaminics and Locabiotal spray. Because of no apparent improvement in his condition he went back to the physician who advised that a nasopharyngeal biopsy be taken. Result was negative.

Patient continued to take in prescribed medication until December when he decided to see another eye doctor, because of a more severe bulging right eyeball, accompanied by right frontal headache, pain at the right lower half of the face, drooping right upper lid, inability to move right eyeball in the directions of gaze, hardness of hearing of right ear, tinnitus right ear and loss of weight of about 5 lbs. Another nasopharyngeal biopsy was done.

Patient however decided to have a second opinion hence, he sought consultation at HBL EENT-OPD on January 15, 1982. An ophthalmologist advised that a CT-S be done immediately.

Past History: History of traumatic injury to the right eye in 1971. Had cataract extraction of the right eye in 1971.

Family History: Negative for malignancies, Diabetes Mellitus and hypertension.

Physical Examination:

General Survey: Conscious, coherent, ambulatory not in distress, sthenic

Vital Signs: BP-110/70 PR-68/min. RR-17/min.

Eyes: Vision (uncorrected) OD: CF at 2 ft.
OS: 20/25
Vision (pinhole) OD: 20/80
OS:
Vision (correcetd) OD: 20/80 + 10.00DS
OS:

Adnexae:

OD: Ptotic upper lid; proptosed eyeball; no conjunctival or ciliary injection; cornea clear; anterior chamber deep; total iridectomy evident, patches of iris atrophy present; iridodonensis, remnants of posterior capsule seen behind the lower margin of pupil; aphakic, no corneal sensitivity.

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OS: Negative

Motility: Right eyeball without any movement in all directions of gaze

Exophthalmometry: OD-23mm OS-15mm

Fundus: OD-Traumatic maculopathy

Tonometry: OU - 10/7.5 gm. wt.

Tuning Fork Test: Weber - perceives sound better at right ear

Rinne's: (R) ear - (-) (L) ear - (+)

Ears: No external auditory canal abnormalities; tympanic membrane retracted (R) ear.

Anterior Rhinoscopy: Mucosa pale and boggy, inferior turbinates hypertrophied, no discharge noted; no deviation of septum.

Posterior Rhinoscopy: Small ulceration at the anterior margin of (R) torus, about 1 mm in diameter, situated just below the apex.

Throat: Pillars not congested; tonsils not enlarged; posterior pharynx negative; uvula not deviated.

Indirect Laryngoscopy: negative

Neck: No rigidity; no assymmetry; no lymphadenopathy

Heart and Lungs: Essentially normal

Extremities: No pedal edema

LABORATORY STUDIES:

Histopathological Report: Nasopharyngeal biopsy -- 12/12/82 Undifferentiated Carcinoma.

CT Scan – January 16, 1982

Plain and Contrast CT Scan shows a large enhancing mass lesion in the right pterygoid extracranial fossa destroying the ipsilateral sphenoid bone and into t e sphenoid sinus. There is also a mass lesion extending into the temporal lobe. The right posterior clinoid is destroyed. Extension of the mass lesion into the right optic foramen is noted. Mild proptosis of the eyeball.

Clinical Impression:

Undifferentiated Carcinoma, Nasopharynx

Petrosphenoid Syndrome

TNM Class -- $T_4 N_0 M_0$

Stage Grouping -- Stage IV

Patient underwent Cobalt therapy at the JRRMMC.

DISCUSSION

I. EPIDEMIOLOGY

The relative frequency of the naxopharyngeal carcinoma is low in Caucasian populations and high among certain groups of Chinese. It has been reported in 0.25 per cent and about 25 times that in geographic areas of all malignant tumors in any White population and about 25 times that in geographic areas such as South China, Hongkong and other countries where there is a large population of Chinese with origins nearby in South China or Kwantung Province. Rates of Nasopharyngeal Carcinoma for US born Chinese is consistently lower than native-born Chinese suggesting environmental factors may be responsible for the disease.

II. ETIOLOGY

The environment of poorly ventilated kitchen with exposure to possible potent carcinogens from the fire or from incense burning in the home of Chinese has been thought to exert an influence possibly by affecting viral genomes present in Southern Chinese and transmitted genetically from their predecessors. However, there are more males than females with nasopharyngeal carcinoma despite the great exposure of the latter than the males.

In 1960 and 1974, de The reported 585 cases of nasopharyngeal carcinoma, 14 of which involved a history of the disease in a close relative. In one family nasopharyngeal carcinoma was found in the fourth generation.

In 1960, Old reported the incidence of precipitating antibody to Epstein-Barr Virus antigen in patients with nasopharyngeal carcinoma. Similar studies of nasopharyngeal carcinoma was also reported by Oettgen.

To sum up some studies, EBV titer in patient with nasopharyngeal carcinoma showed the following:

1970-1971 group, 14 of 19 nasopharyngeal carcinoma patients (+)

1971-1972 group, 17 of 18 nasopharyngeal carcinoma patients (+)

The EBV indeed may play no more than an innocent passenger role in nasopharyngeal carcinoma. As the tumor mass enlarges the increased formation of viral antigen might provoke more antibody formation regardless of whether it had originally contributed to carcinogenesis. The strongest evidence against this suggestion, however, is the apparent specific association with EBV and 2 neoplastic disease, namely, nasopharyngeal carcinoma and Burkitt's lymphoma.

In recent studies of a series of American patients with all stages of active nasopharyngeal carcinoma, the incidence and levels of antibody titers to antigens associated with EBV – primarily, early antigen (EA) and Viral Capsid Antigen (VCA) were significantly greater in patients with nasopharyngeal carcinoma than control groups.

III. PATIENT DEMOGRAPHY

Nasopharyngeal Carcinoma occurs generally during the 5th decade of life. The disease can occur however in infants and children as well as the elderly. In the paper of Baker and Wolfe, patients in their series ranged in age 7-82 with a mean of 48. There were 72 (73%) males and 27 (27%) females.

IV. SIGNS AND SYMPTOMS (Clinical Evolution)

In the study of Baker and Wolfe, the duration of symptoms prior to diagnosis ranged widely from 1 to 36 months. The mean interval from onset of symptoms until initial patient evaluation was six months.

Initial presenting symptoms may be:

1. Hearing loss
2. Cervical mass
3. Nasal Obstruction
4. Otitis Media
5. Epistaxis
6. Pain
7. Headache
8. Cranial Nerve Involvement

Cranial nerve paralyses are not frequently the first symptoms of tumors of the nasopharynx except in children but they are not uncommon later in the development of these tumors. The cranial nerve paralyses appear in the form of 2 syndromes:

a. Petrosphenoidal syndrome of Jacod produced by direct extension of the neoplasm.

b. Syndrome of the retroparotidean space of Villaret due to the development of metastatic adenopathy.

The petrosphenoidal syndrome results from compressions of the 2nd, 3rd, 4th, 5th and 6th cranial nerve and is consequently characterized by unilateral neuralgia of the trigeminal type with total unilateral ophthalmoplegia and amaurosis. As a general rule the syndrome starts by sudden paralysis of the V nerve and by pain in the supraorbital and superior maxillary regions.

Unless treatment is administered at this time, the syndrome rapidly progresses with a palpebral ptosis, fixation of the eyes and finally, loss of sight. The sensory disturbances due to compression of the V nerve pass thru various stages. As a general rule, there is pain first and the hypesthesia of the cutaneous territory of the ophthalmic and superior maxillary nerves. The pain seems to center around the floor of the orbit. In the mouth there may be a painful anaesthesia of the side of the tongue, floor of the mouth and buccal mucosa. The motor difficulties resulting from compression of the mandibular branch result in paralysis of the temporal, internal pterygoid and masseter muscles. These muscles become atrophied after the paralysis has been present for some time. As a consequence there may be slight asymmetry of the face that could be taken for facial paresis. Lack of corneal reflex in cases of ophthalmoplegia suggests direct extension along the petrosphenoidal pathway.

The retroparotidean space syndrome results from compression of the 9th, 10th, 11th, and 12th CN and cervical sympathetic nerve. This is the consequence of the development of retropharyngeal and retroparotidean metastasis that compress the nerves as they emerge from the base of the skull.

V. DIFFERENTIAL DIAGNOSES

Presented with a case of unilateral exophthalmos, differential diagnoses would consist of the following:

1. Cellulitis
2. Sequelae of trauma
3. Grave's Disease
4. Pseudotumor
5. Lymphoma
6. Cavernous Hemangioma
7. Lacrimal Gland Tumor
8. Peripheral Nerve Tumor
9. Meningioma
10. Mucocoele

VI. CLINICAL EVALUATION

The logical evaluation of disease as else where in medicine begins with the patient's history. Helpful items include a past history of cancer with metastatic potential, as breat cancer in males.

A useful outline of a work-up for pathologic study should include:

A. Local and systemic history
B. Systemic P. E.
C. Complete Ocular Examination
   1. Refraction
   2. General inspection and orbital cover test
   3. Ocular motility with traction test
   4. Tonometry
   5. Ophthalmoscopy
   6. Exopthalmometry
   7. Orbital palpation in all positions of gaze
   8. Auscultation
   9. Old photographs for comparison
   10. Visual fields
   11. Orbitometry

D. Laboratory
   1. CBC
   2. Urinalysis
   3. Bone Marrow
   4. Thyroid studies
      a. PBI
      b. Serum T_3 T_4
      c. T_3 suppression test
      d. Urinary acid mucopolysaccharides
   5. A/G ratio
   6. Serum Electrophoresis
   7. Serology
   8. Stool for ova and parasites

E. Radiology
   1. Chest Films
   2. Plain films of the skull
   3. Orbital views and tomogram
   4. Paranasal sinuses;
   5. Optic foramina
   6. Stereo techniques
   7. CAT
      a. with contrast
      b. without contrast
   8. Arteriogram; Phlebogram

F. Radioisotope scanning
G. Ultrasonography
   a. A Scan
   b. B Scan
H. Thermography
I. Consultation – Neurosurgery; Internal Medicine; Endocrinology
J. Steroid Trial
K. Nasopharyngeal Biopsy

VII. PATHOLOGY

A. Gross Pathology

Grossly, nasopharyngeal tumors may develop into three distinct categories namely:

1. Ulcerated
2. Lobular
3. Exophytic

The ulcerated lesions are most frequently found in the posterior wall or deep in the Rosemuller fossa. Less frequently, they are situated on the lateral wall infront of the eustachian tube or on the roof of the nasopharynx. These ulcerative lesions are often well differentiated epidermoid carcinoma. The ulcerations are small and necrotic and progressively infiltrate the neighboring tissue. Those that develop at the lateral wall or on the roof of the nasopharynx are canalized by the pharyngeal fascia toward the petrosphenoidal region of the base of the skull. They tend to enlarge and destory the foramina and spread into the middle cerebral fossa. There, they remain subdural and invade the dura and the bones.

The lobulated form arises most commonly from the eustachian tube area which becomes rapidly obliterated. The tumor has a grapelike, polypoid appearance and may not show ulceration on the surface. More commonly, however a small ulceration in great disproportion to the tumor is visible. This form is usually observed in an undifferentiated epidermoid carcinoma. The tumor infiltrated around the eustachian tube and when it spreads forward, it may extend into the maxillopharyngeal space and compress the mandibular branch of the V CN. In spreading downward, it may interefere with the normal excursion of the soft palate on the side of the lesion. It easily spreads into the petrosphenoidal region of the base of the skull. It does not, however, grow rapidly enough to cause symptoms from compression of the nerve although the nerve may be surrounded by tumor. It is only later in the development long after tumor has spread into the middle cerebral fossa that it decalcifies the base of the skull. In advanced stages, tumor may invade the orbit through the inferior orbital fissure and may invade the maxillary sinus most commonly through the ethmoid.

The exophytic type is usually hemispheric, non-ulcerated, sometimes pedunculated, smooth tumor that may arise from the roof and rapidly from the nasopharyngeal cavity. It pushes the soft palate and spreads towards the choanae and nasal fossa. It rapidly reaches the maxillary sinus and orbit producing marked unilateral exophthalmos. The lymphosarcomas that develop from the eustachian tube area do not show

much tendency to grow toward the nasopharyngeal cavity but spread in the submucosa toward the base of the skull. They do not compress the cranial nerves, until they become quite bulky. Erosion of the base of the skull is also seldom observed in lymphosarcomas.

B. MICROSCOPIC PATHOLOGY

Because of the lack of uniformity in its pathological classification, statistics relating to the frequency and of types of neoplasm and survival are often non-transferrable from one institution to another. An acceptable classification of malignant nasopharyngeal neoplasm is therefore essential in efforts to determine prognosis and/or effectiveness of treatment. We, the authors have arrived at a concensus to have this classifcation, based on our reference.

I. Squamous Cell Carcinoma
   a. Keratinizing – kertain produced; glandular differentiation
   b. Non-keratinizing – no keratin; no glandular differentiation

II. Lymphoepitheliomas – undifferentiated squamous cell carcinoma with an accompanying lymphocytic component.
   a. Regaud type – non-keratinizing cells embedded in a lymphoid stroma.
   b. Sckminke type – isolated transitional cells scattered in lymphoid tissue.

III. Undifferentiated Carcinomas – no specific lymphoepithelium from which the neoplasms arise; lymphocytes present are only incidental and not neoplastic ingredients.

IV. Lymphosarcomas

V. Tumors of the mucous and salivary gland type may occur in the nasopharynx:
   a. adenoid cystic carcinoma
   b. plasmacytoma

VIII. NASOPHARYNGEAL CARCINOMA TNM CLASSIFICATION

Primary Tumor

T_{1s} Carcinoma in Situ

T_1 Tumor confined to one site in nasopharynx

T_2 Tumor involving two sites (both posterosuperior and lateral walls)

T_3 Extension of tumor into nasal cavity or oropharynx

T_4 Tumor invasion of skull or cranial nerve involvement.

Cervical Node (N)

N_1 Single homolateral node less than 3 cm.

N_{2a} Single homolateral node 3-6 cm.

N_{2b} Multiple homolateral node greater than 6 cm.

N_3 Massive homolateral node (s) bilateral nodes or contralateral node (s)

N_{3a} Homolateral node (s); greater than 6 cm.

N_{3b} Bilateral nodes

N_{3c} Contralateral nodes only

Distant Metastasis (M)

M_0 No (known) distant metastasis

M_1 Distant metastasis present

Stage Grouping

Stage I $T_1N_0M_0$

Stage II $T_2N_0M_0$

Stage III $T_3N_0M_0$

T_1 or T_2 or $T_3N_1M_0$

Stage IV T_4N_0 or N_1M_0

any T_1, T_2 or N_3, M_0

any T, any N_1M_1

IX. PROGNOSIS

In the paper by Baker and Wolf they listed patient demographic and tumo characteristics in relation to a five-year survial They are:

1. Age: This was significantly related t survival as measured by time from tumc diagnosis to death. Patient in the middle ag group of 41-60 demonstrated superior surviv to patients in age group 1-40 or in patient older than 60. The greatest survival was not for patient in age group 1-20 while the poores survival was in patient older than 60.

2. Gender: It was not significantly related to survival. Five year survival was hig er for women (30%) then men (17%).

3. Race: Five year survival rate fo Caucasian patients was 20% compared wit

57% for non-Caucasians.

4. Symptoms: Patient with longer time intervals between onset of symptoms and diagnosis of Nasopharynx Carcinoma tended to survive longer than those with a shorter symptom duration. Five year survival was 19% when symptoms were present for less than 3 months and 24% when symptoms were present for greater than 6 months before diagnosis.

5. Pain: It was found out that it was the presenting symptom most clearly related to survival. Patients with pain demonstrated a five-year survival of 7% compared to 25% patients without pain.

6. Extent of Local Disease: This was not significantly related to survival time. Survival was the same whether tumor involved either the lateral or the posterior walls or both, or whether it was confined to the right side or left side. Tumor involving both sides of the nasopharynx offered the poorest prognosis.

7. Contiguous structure involvement; Tumor extending to contiguous structure as paranasal sinuses, oropharynx middel ear was not related to survival. The number of subjects having these lesions however was small so as not to have had a good statistical analysis.

8. Cranial nerve involvement – cranial nerve deficit from involvement with neoplasm was not significantly related to survival. In the series of Baker and Wolfe survival of patients was similar to patients without any cranial nerve involvement.

9. Bone involvement: Neoplastic involvement of bony structures documented by definite radiographic changes on plain film x-ray of paranasal sinuses and skull bone appear to shorten survival.

10. Staging: This is basedson the nasopharynx TNM classification as has been previously mentioned.

Analysis of the study by Baker and Wolfe revealed no correlation between T classification and survival. Five year survival for T_1 tumors was similar to T_4 tumors.

The node (N) appeared to be related to the survival with the most advanced N class leading to a poorer prognosis.

11. Treatment duration: Duration may be relatde to survival. Longer treatment periods offered better five year survival

X. TREATMENT

In a paper reported by Wong, his current treatment regimen consist of:

1. External Beam Therapy – the primary lesion on the upper part of the neck are treated in continuity through opposed lateral portals for 1st 4,500 rads in 5 weeks. After this, primary site is treated separately by rotation technique with a reduced portal for 2,000 rads in 2 weeks, making a total of 6,500 rads. The upper neck nodes are given a total dose of approximately 6,000 rads and the lower neck nodes with 5,000 rads through supplementary anterior and posterior tangential portals.

2. Local application of Radium or Cesium – two to three weeks after external beam therapy, patient is admitted to the hospital by an intracavitary implant and cesium sources is directed to the nasopharynx to deliver an additional 7,000 rads at 0.5 cm below the mucosa.

XI. CONCLUSION

Patients with unilateral exopthalmos should make the otolaryngologist suspect of a nasopharyngeal tumor after a thorough eye examination and evaluation by an opthalmologist.

In dealing with the nasopharyngeal cancer problem we find a fascinating pathologic entity which acts in a varied fashion depending on the ethnic origin of the patient with a possible genetic basis for its etiology. The earlier the diagnosis is made in view of the present radiotherapeutic advances the greater the possibility of increasing the cure rate of the disease or lesion can be cured with a high degree of certainty.

If the disease is highly suspected by the Otolaryngologist, a thorough work-up should be made so that an early diagnosis will be clinched, after which the ultimate goal of therapy will follow.

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A PONTINE LESION SIMULATING A CEREBELLOPONTINE ANGLE TUMOR: REPORT OF A CASE

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Introduction.

Cerebellopontine angle tumors seldom are seen in everyday practice. They must be differentiated from other disease causing unilateral hearing loss and dizziness. Appearance of signs and symptoms referrable to the cerebellopontine angle should lead us to work-up the patient to confirm or exclude such pathology. Other entities such as vascular malformations, pontine gliomas and degenerative or demyelinating diseases should be considered.

It is the purpose of this communication to report a patient initially presenting as having a cerebellopontine angle tumor. As almost 80% of CP angle tumors are acoustic neuromas[1] this was the working impression.

Case:

A 43 years old male from Baguio had a history of sudden tinnitus and hearing loss which was progressive in character. Nine months PTA he suddenly experienced unsteadiness of gait and unbearable occipital headache. There was also an associated blurring of vision which lasted for several hours. Headaches became recurrent lasting about 5-10 minutes several times a day, preceded by photopsia and aggravated by smoking.

The condition progressed until 5 months PTA, while chopping wood, he noticed he couldn't chop the usual amount of wood with his left hand. He felt a tingling sensation of his fingertips on the left and a hyposthesia on the same side of the body. Two months PTA, he again experienced violent headache, dizziness and inability to stand up prompting admission to our hospital.

His past health history revealed an anterior neck mass excision at the age of ten. He used to smoke 12 cigarettes/day but is now down to one stick after meals. He used to drink basi heavily and gin regularly 2-3 times/week for about 20 years.

Pertinent PE revealed a fully developed, fairly nourished adult male, conscious, coherent, ambulatory but assisted. There is hypohydrosis of the right face and upper half of the body.

Examination of the eyes reveal a decreased blink reflex on the right with a coarse nystagmus on the right horizontal gaze. There is an absent corneal reflex, beginning lens opacification as macular degeneration. The left eye shows a fine nystagmus on the left lateral gaze, an absent corneal reflex, cortical lens opacities and macular degeneration.

Ear examination showed a decreased sensation on the anteroinferior portion of the external auditory canal. Otoscopy is unremarkable with a positive Toynbee's maneuver. The left ear likewise is unremarkable. Tuning Fork tests showed a sensorineural type of deafness on the right.

Anterior rhinoscopy showed a non-pathologic septal spur to the right. Posterior rhinoscopy as well as throat examination showed no significant findings of note.

Neurological examination showed an alert individual with an intact mental status.

Cranial Nerve I is unremarkable. Visual acuity is 20/20 on the right and 20/100 on the left. The III, IV and VI cranial nerves are within normal. Trigeminal nerve testing reveal absent corneal reflexes bilaterally and hypothesia on the left side of the face. The nasolabial fold on the right is slightly shallow. Taste was absent on the right anterior 2/3 of the tongue. Ice water calorics showed a normal response on the left but no response at all on the right. Gag reflex was decreased bilaterally.

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Muscle strength is 5/5 on all extremities. Associated motor testing showed a positive Rhomberg's to the right. On looking to the right, a coarse nystagmus is appreciated with the fast component to the left. Left lateral gaze elicited a fine nystagmus. There is past pointing on the left with difficulty of doing alternate pronation supination movements on the left. There is also difficulty of doing heel tapping on the left. Pain and temperature sense was decreased on the left. Deep tendon reflexes were hyperactive and a Babinski can be elicited on the left foot.

Discussion:

With a typical pattern of unilateral onset of tinnitus, followed by a slowly progressive hearing loss and symptoms of unsteadiness on dizziness, the patient was worked up along the line of a probable CP angle tumor.[2] An audiometric examination showed the following findings:

Pure tone audiometry showed a severe sensorineural deafness on the right. Speech reception threshold could not be tested as sound can be heard but not understood. There is a mild sensorineural deafness on the left with a drop at 4000 and 6000 Hz. Speech reception threshold conforms with pure tone average. Speech discrimination scores — 100%.

Tympanogram showed Type A indicating no middle ear pathology. There is marked tone decay in all frequencies on the right and negative decay on the left. Short Increment Sensitivity Index scores 0% bilaterally. Bekesy was Type IV on the right and Type I on the left. ABLB showed absence of recuritment at 500, 1,000 and 2,000 Hz. The 4,000 Hz could not be tested.

Radiologic examination of the internal auditory canal (Towne's, Stenver's and submento-occipital) showed negative results.

A CT Scan of the brain followed. Plain cranial CT Scan shows a moderately large hypodense lesion in the midline and right paramedian aspect of the posterior fossa overlying the midline cerebellum and brainstem. The fourth ventricle is obliterated.

Mild enlargement of the 3rd and lateral ventricles are noted. Contrast cranial CT Scan shows no abnormal enhancement. CT Impression: Moderately large hypodense lesion, midline and right paramedian pontocerebellar area. Consider a pontine glioma.

Mild obstructive hydrocephalus.

What is difficult to reconcile with an impression of a unilateral CP angle mass on the right are the cerebellar signs which are left sided and a corneal reflex that was absent bilaterally. Typically, a CP angle tumor, for example, an acoustic neuroma is expected to produce ipsilateral cerebellar and cranial nerve signs when brainstem compression has occurred[3] unless one is dealing with a bilateral acoustic neuroma. Moreover, a bilateral acoustic neuroma is a rare condition comprising 4% of all acoustic neuromas. Age onset is before 21 years of age. This entity is the hallmark of a central form of Von Recklinghausen's neurofibromatosis.[4]

There are other disturbing features — the long tract signs and the sympathetic involvement of the face which favors an intrinsic brainstem lesion.

As a rule, pontine gliomas begin in childhood with an average onset at 5-7 years and 80% appearing before the age of 21. They comprise only 6% of all tumors in the cerebellopontine angle. In 90% of cases the initial manifestation is one or more cranial nerve palsy, most often the 6th and 7th on one side.[5] Long tract signs follow later.

The age of our patient and the onset of signs and symptoms are not characteristic of pontine gliomas. It is the opinion of the Neurology and Neurosurgical service involved in the case that neoplastic condition is unlikely. A metrizamide cisternography which shows negative findings for mass effect strengthens this condition. The possible etiologies from vascular to demyelinating; from degenerative to granulomatous. Further studies like CSF; left carotid angiography and vertebral anteriography contributed no further information. A nasopharyngeal biopsy done twice yeilded negative results. Because of a CT picture of a hypodense lesion demyelinating or degenerative conditions were thought of.

Demyelinating conditions usually attack young adults; have a progressive course and are characterized by relapses and remissions. An autoimmune complex mechanism against myelin has been proposed. There also is usually a strong family history of the disease.

A degenerative pathology is usually insidious in onset with also a strong family history. Exposure to some infections viral or toxic agent has been indicated. The clinical course is usually progressive and uninfluenced by medical and surgical measures.

A granulomatous possibility has been entertained as the lesion is posterior fossa in location and the fact that TB is common among Filipinos even with normal Chest X-rays.

A vascular cause may be close enough to the correct diagnosis. It has a sudden onset progressive in character and the temporal profile becoming arrested and regressed. Our patient presented the same schema – sudden onset with progression of symptoms reaching a plateau with tendency to improvement.

To us otolaryngologist, the importance of the case lies in the fact that it presented like a cerebellopontine angle tumor, in part an acoustic neuroma. The patient came in with complaints referrable to the ear. The otolaryngologist being the primary physician to manage the case should be on the alert for subtle signs and symptoms that would lead to pure intraaxial pathology rather than one of an extraaxial nature. The case presented illustrates the need to a multi-disciplinary approach to such a problem.

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Book Review: CHOLESTEATOMA & MASTOID SURGERY

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Cholesteatoma seems to be a very limited subject to make a book indeed. In fact pathologists generally ignore this subject since the histopathological features of cholesteatoma is comparatively simple and straightforward. Fortunately this is not so for many otologists who finds it interesting and challenging.

Recently Dr. Jacob Sade edited a second book on cholesteatoma entitled: *Cholesteatoma and Mastoid Surgery* which was published by Kugler Publications (Amsterdam). This book contains the Proceedings of the Second International Conference on Cholesteatoma and Mastoid Surgery held in Tel Aviv on March 22-27, 1981. I would say that this book is another "Labor of Love" for Dr. Sade who has been deeply involved in the study of chronic otitis media and cholesteatoma during his entire medical career.

As we remember, Dr. Sade was one of the three main organizers of the First International Conference on Cholesteatoma held in Iowa City in 1976. Brian McCabe described Dr. Sade as the guiding light and the moving spirit of the conference. Even years before that in fact he has been planning such a meeting on cholesteatoma.

After the Iowa meeting and after beginning to understand the pathophysiology and treatment of cholesteatoma it appeared evident that there were more questions than were previously raised. And so Sade was most probably compelled to gather again workers and authorities on this field in a modest attempt to bring more answers to these unresolved questions. In his own words, he called forth not only protagonists but also devil's advocate as speakers for each major concept.

Sade's *Cholesteatoma and Mastoid Surgery* comes in a 600-page cloth bound book which is essentially divided into two parts. The first part deals with the basic concepts of cholesteatoma including its natural ciological history, etiology, pathogenesis and epidemiology. Further insight into the behavior of squamous epithelium in cholesteatoma pathogenesis is provided by Lim and microscopic evidences of contact guidance governing the migration of these cells were presented. Abramson pointed out the importance of sub-epithelial space in connection with the pathogenesis and destructive nature of cholesteatoma. The invasion and invagination theories are again strongly rationalized and discussed. Sade and others show histopathological examples of metaplasia. Examples of congenital cholesteatoma are presented by Nager. A new term called "tumor genesis" was introduced by Diamant. Additional epidemiological studies are included among those done in Eskimos, American Indians and Blacks. The effect of cholesteatoma in society and vice-versa is eloquently discussed by Ruben. Likewise the effects of environmental factors such as hygiene, diet, geographical location, economic, racial characteristics, etc. are stressed.

Studies on the role of the eustachian tube in cholesteatoma pathogenesis are presented by Bluestone, Andreasson and Holuquist. Austin gives a simple and understandable description of gas exchange between the environment and middle ear. Falk and Maguieson present new concepts on the causation of negative pressure in the middle ear induced by sniffing. Interesting anthropological studies affecting the eustachian tube and thus middle ear ventilation are given by Plester.

Regarding pathology interesting papers are presented on the granulation tissue pathology, pathology of cholesterol granuloma and pathological mechanisms of bone destruction. Paparella, corroborated by Harell, Ratnegar and

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others, emphasize that granulation tissue and/or cholesteatoma are part of chronic otitis media. Conflicting opinions on the effect of hemorrhage in the pathogenesis of cholesterol granuloma are discussed. Binderman describes the cellular events involved in bone destruction whereas Thomsen and Abramson reiterate the role of enzymes in cholesteatoma invasiveness.

The second part of the book deals with the clinical concepts or the application of the basic principles to the treatment of cholesteatoma. This includes panel discussions to resolve questions as to whether cholesteatoma should be regarded as dangerous and whether it is preventable or not. Differences as to what constitutes a safe ear and the planning of operation are presented. Bluestone and Tos agree that cholesteatoma is preventable and enumerates some preventive measures. The role of tympanostomy tube and antibiotics in the prevention of cholesteatoma are emphasized.

In comparison to the book which McCabe, Abramson and Sade published after the First International Conference on Cholesteatoma, Cholesteatoma and Mastoid Surgery includes more studies and discussions on the surgical aspects of cholesteatoma. In addition to further discussions on the advantages and disadvantages of canal-up and canal-down mastoidectomies more emphasis is given on surgery for the improvement of hearing such as experiences with the different types of ossiculoplasty and tympanic membrane grafts. Nevertheless the eradication of disease is considered as of prime importance, as should be expected. Different approaches to this end are presented by McCabe, Garcia-Ibañez, Jansen, Shechy, Feldman and Yanagihara. Gordon Smyth presents his experiences with canal down mastoidectomy with mastoid obliteration and compares this with his previous experiences with combined-approach tympanoplasty. Surgery for retraction pockets and attic cholesteatoma is discussed by Smyth, Buckingham, Plester, Portman and Goodhill. Methods of reporting success or failure are suggested by some. Various surgeons undoubtedly have different experiences regarding a particular surgical procedure regardless of the pathology and several of them are presented in this book.

Probably the most important benefit one can derive from reading Sade's book is to realize that there are much more that we do not know about cholesteatoma than we probably know. These include both the basic and the clinical concepts and concern both the researchers and the clinicians. What controlled and objective proofs do we have to support the different theories of cholesteatoma pathogenesis? Are there documented evidences that epithelial cells, differentiated or not can or might change into another epithelial cell type? Do embryology and genetics have any role in the pathogenesis of cholesteatoma? If so, what are they? Is it really true that poor people are inflicted with cholesteatoma to a greater extent than rich people? Can we really account surgical success to just a question of the surgical technique? Or are there important variables that we fail to consider? How should we standardize reporting of surgical success and failures? Is it necessary to totally remove the remnants of the drum and/or ossicles even if they are not grossly involved by the disease? Should one's choice of a surgical procedure be governed by the pathology or mastoid pneumatization? How can we prove that the eustachian tube is the culprit in our surgical failures? Can it not be due to a mucosal disease or other causes?

Admittedly Sade's book does not attempt to answer every question concerning cholesteatoma and mastoid surgery. But it gives a reasonable guideline emanating from various studies and experiences of the authorities in this field.

This book should certainly be included in every otolaryngologist's private library!

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HEARING AWARENESS PROGRAM

By

NELLY REYES-LEDESMA, M.A.

Having been a full-time Clinical Audiologist for the past nine (9) years, three (3) years of which was at the PNC Special Education Center as an Associate Professor in the Graduate School and Audiologist for the Teacher Training Institution one and one half (1 1/2) years as Clinical Audiologist at the Clinica Tamesis and five and one half (5 1/2) years as a Private Practitioner President and Audiologist of the Ledesma Audiological Center, Inc., King-Aid Philippines. I have encountered every possible type and degree of hearing loss known today. This is due to the large number of examinations our hearing aid branch offices in Escolta, Cubao, Cebu and Davao conduct annually (approximately 27 thousands including screening programs in schools, compensation cases referred by USVA outpatient clinic, Manila Regional Office, GSIS, and the SSS).

The most disturbing finding in the course of our operation as government employee and as a private company is the very high incidence of hearing loss in the 18-25 and 59-65 age group of patients tested. The statistics are phenomenal.

The incidence of unawareness by these individuals of their hearing losses are just staggering. When advised of the finding the most common response is shock and disbelief that they suffer from hearing loss. For example:

*An 18-year old patient with foul smelling discharge from the ears said to me, "My ears have always been like this: I thought it was normal."

*A 20-year old with bilateral, severe to profound sensori-neural loss and a noticeable deaf speech pattern denied ever being examined.

*A 24-year old who was unaware of any hearing problem, and whose parents were surprised by the fact that their son suffered a bilateral moderate conductive hearing loss and was diagnosed as having bilateral mixed sensori-neural type of hearing loss.

Examples such as these are countless and unfortunately quite prevalent up to the 1983's.

Awareness seems to be the missing element or link between health care professionals and the public. Awareness in terms of the existence of a team of professional hearing health care program in the community; awareness in terms of reasons that hearing loss exists or is acquired.

The high percentage of the "I am not aware of my hearing problems" response from the first time examinees is not surprising. What is surprising and shocking is the same response from individuals who have had several hearing tests and have simply been told by doctors, evidently not ENT specialists, that "Everything is fine," or there is nothing to worry about," when hearing impairment is manifested.

Not advising, or worse yet, not making an individual aware of the existence of a hearing impairment, however minimal, is inexcusable and unprofessional. Many in the hearing and medical field are cognizant of the number of people who suffer from hearing loss and who are unaware of this impairment, particularly in the absence of hearing testing. What purpose then, does an evaluation serve, whether screening or complete audiological, if the individual is not made aware of his or hearing status?

Perhaps the difference in training or philosophy among professionals is the reason for this. A questionaire to professionals asking what constitutes a hearing impairment might yield responses as varied as night and day. For example, an otherwise normal audiogram except for a 35 to 40 dB threshold at 4000 Hz for the left (L) ear is not a handicapping impairment. Most would agree, however that that is certainly an impairment. This identification whether in an industrial or clinical setting, without pursuing investigation for possible etiology and

proper counseling of the individual is unjustifiable.

SOME PRACTICAL KNOWLEDGE AND APPROACHES ABOUT HEARING IMPAIRMENT:

The many psychological blocks that a hearing impaired persons has is the biggest problem that confronts the audiologist and ENT specialists in working a successful auditory rehabilitation through:

1. Medical
2. Surgical
3. Audiological or technical means

This underlying atmosphere of apprehensions and objections needs to be broken down to insure the proper attitude in the mind of the H.I. (hearing impaired) persons to attain a successful auditory rehabilitation.

Some of these psychological blocks are non-acceptance of the hearing impairment, a negative attitude, a stigma attached to aging, chronic complaints, previous poor hearing aid fitting, vanity and cost.

The hearing impaired person must first accept the fact that a hearing loss exists. Then the person must realize that help through amplification, if he has permanent sensorineural loss, is available and will be willing to accept this help.

The next step depends on the hearing aid user as she/he goes out into the world of sound. This is the transition period where speech, sounds, noises and discrimination bring new experiences to the wearer using the aid for the first time. Many hearing aid users expect too much from a hearing aid. They need to realize that hearing does not take place in the ears but in the central auditory cortex in the brain. The ears are the only means of getting the signals to the hearing portion of the brain that interprets what is "heard."

In our Audiological Centers, we inform the hearing aid users that a hearing loss can only be "helped" not "corrected," or "cured" because only the residual hearing can be helped and that normal hearing cannot be brought back to nromal. Success in wearing hearing aids can only be attained if the user psychologically accepts and adjusts to amplified hearing.

The diagnostic team of hearing consultants of the Ledesma Audiological Center, Inc. is very cautious in explaining that how well or how poorly a person hears can change at any time. Hearing can be affected by a person's general health, blood pressure, circulation, tension, physical changes due to hot or cold weather, nerves or atmospheric pressure, these factors play a large part in a person's everyday hearing sensitivity.

We, as members of the hearing health care program must be aware that time must be taken with the individual to breakdown the blocks and barriers, misconception, misinformation, negative attitudes developed through previous experiences with other doctors and hearing specialists.

GUIDELINES FOR SUCCESSFUL HEARING AND FITTING:

1. Show a genuine interest in the person's particular problem;
2. Observe the person's mental attitude, physical problems, psychological blocks, involuntary reflexes, attentiveness, and listening habits-fit the "whole" person not just the ears;
3. Try to alleviate the person's fear by fully explaining all procedures;
4. Take into consideration age, environment, whether working or retired, physical handicap, telephone usage, etc.;
5. Thoroughly describe to the person his/her hearing problem and what can and cannot be done;
6. Explain the usage and handling of the aid/s, hygiene, maintenance, batteries, tubes, care of earmolds and cords, etc. – make sure all facts about the aid are clearly understood;
7. Schedule periodic visits, every two and one half (2 1/2) or three (3) months for the life time maintenance and service of the aid(s). Have the person write down questions regarding the use of the aids for the next visit;
8. Schedule a complete diagnostic hearing evaluation or retest once a year; and

9. Have infinite patience.

In addition to the above approaches, and applications of our hearing awareness program, we also distribute free brochures, pamphlets, lectures, audio visual aids and classroom instruction to disseminate information to the hearing impaired public.

As a professional audiologist, I am actively involved with several community projects with the rotary, Philippine Association of the deaf, community projects and agencies on behalf of heaving health care services. Through such involvements we try to make the public aware of this hidden affliction — hearing loss — and the need for early identification, medical and audiological assessment and management, conservation and rehabilitation.

In the United States, foundations support organizations like the American Speech and Hearing Association (ASHA) and other government agencies help in order to promote this hearing awareness program.

There is what they call the "SERTOMA" program in the United States. SER to MA is really an acronym for service to mankind.

They go to television programs and radio stations. They have also programs like "EARS NEVER SLEEP" because studies have shown that even at sleep we can still hear. There is a new awareness campaign which they have introduced in school canteens, supermarkets and fast food centers which they call danger signal lights and they use these colors to indicate:

Green	0–69dB noise level
Yellow	69–94dB " "
Red	94–110dB " "

They explained that the green light is supposed to calm you down, lower blood pressure in hypertension cases, and when the yellow lights are up, it means that the noise level in that particular place is getting higher so it is coded as a danger signal — which means that the noise level is getting higher specially when everybody is excited to talk with friends and members of the family in these places. All lights turn red at this level and will blink later to remind everybody that the sound level meter has gone up from 94dB to about 110dB which is already irritating/annoying to the ears. When everybody is aware, through a given code and when such signal is up, people must lower their voices so that the lights will automatically become green. This is what they call "Lights on for Better Hearing" which is now becoming popular aborad. Hearing Health Care Professionals do all sorts of promotions there in the United States such as the ones mentioned above. Whereas, in the Philippines, the Ledesma Audiological Center, Inc., does it as a private company and this writer believes that awareness is an issue and this is a part of our hearing conservation campaign in our country today.

In my study and actual practice of Clinical Audiology in our country, I have observed that there is a need for cooperation and a continuous partnership between the ENT Specialists, Audiologist and Hearing Aid Specialists nationwide or even worldwide in order to make our hearing awareness program succeed.

Each of us will agree that the need is real, and even though progress has been made in recent times there is still a great deal to be done to accomplish this goal. I urge each one of you in the hearing health care program in the community to share the load toward this big task and initiate actions by evaluating your current approaches toward this issue.

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AUDIOLOGY SYMPOSIUM

Danavox A/S and the Ledesma Audiological Center, Inc. sponsored an Audiology Symposium in celebration of "Better Speech and Hearing Month" at the boardroom, Penthouse of the Century Park Sheraton Hotel last May 14, 1983.

It was attended by invited ENT Specialists, Medical Consultants and Resident Physicians in Otology of the Ospital Ng Maynila, Makati Medical Center and Quirino Memorial Hospital.

Some of the topics discussed were: "Hearing Awareness Program;" "Differential Diagnosis of Auditory Disorders;" "Evoked Response Audiometry;" "The Man Behind the Audiogram" and "Auditory Rehabilitation of the Deaf and the Hard of Hearing." The discussants were: Carlos Reyes, M.D., Teodoro Llamanzares, M.D., Angel Enriquez, M.D. and Nelly R. Ledesma, M.A.

Some of the participants were: King-Aid Staff, Dr. Tomas Antonio, Dr. Virgilio Liao, Mrs. Sarah Sangalang, Dr. Carlos Reyes, Dr. Angel Enriquez, Dr. Teodoro Llamanzares, Dr. Zosimo Dulalia, Dr. Frank Villaluz, Atty. Rogelio Nogales, Dr. Rona Cirujano, Dr. Ester Pascua, Engr. Ed Ledesma, Dr. Wilfredo Arguelles, Dr. Reinerio Durano and Mr. Romeo Lachica.