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History of ENT journals goes back to late 19th century. Literature search reveals that three journals were started before 1900. European Archives of Otorhinolaryngology was first published in 1864, Journal of Laryngology and Otology in 1887 and Laryngoscope in 1896. The History of metamorphosis of European Archives of Otorhinolaryngology is interesting. At its beginning till 1914 it was published as Archiv fur Ohrenheilkunde, the editors being A. von Troltsch, Adam Politzer and H. Schwartze (fig.1&2).

It is a combine publication of Organ of the European Federation of Oto-rhino-laryngological Societies and European laryngological Society. From 1915-1965 the name was changed to Archiv fur OharonNasen und Kehkopfheilkundu. Between 1965-1973 the name was again changed to Archiv fur Kinische und experimetelle ohrek-nasen und kknkopfheilkunde. The journal was first published in English literature in 1974 and till 1989 was published as Archives of Otorhinolaryngology. From 1990 onwards it came to the present name of European Archives of Otorhinolaryngology.

The first journal in ENT in English language was the Journal of Laryngology and Otology. It was first published in 1887 in the UK, the editors being Sir Morell Mckenzie and R Norris Wolfenden(Fig. 3 and 4).

The then journal was first named “Journal of Laryngology and Rhinology”. Otology was added in 1892. However, rhinology was removed from the title in 1921 and the journal came to the present shape of “Journal of Laryngology and Otology”.

Many journals on ENT have come into existence since then. Almost every ENT societies in the developed countries and few developing countries have their own journals. Many of them have journals on subspecialties in ENT Head and Neck field, too. These journals are usually in the native languages and few of them are in English. Table on next page shows the list of the most popular international journals in English.

During the past one and half decade there has been tremendous increment in the establishment of medical colleges and production of medical graduates and postgraduates in Nepal. The number of ENT specialists in the country have doubled from 30 to 60 in one and half decade.

Hence, a regular publication which could embrace the overall happenings in the field of ENT Head and Neck surgery in the country, was deeply felt. Nepalese Journal of ENT Head and Neck Surgery is in your hand aiming to fulfill the above objectives.
Table 1: Common International Journals in ENT

<table>
<thead>
<tr>
<th>Journals</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>JARO: journal of the Association for Research in Otolaryngology</td>
<td>Rhinology</td>
</tr>
<tr>
<td>Ear and Hearing</td>
<td>Journal of Vestibular Research, Equilibrium and Orientation</td>
</tr>
<tr>
<td>Head and Neck: Journal for the sciences and specialities of the head and neck</td>
<td>International Journal of Audiology</td>
</tr>
<tr>
<td>Audiology and Neuro-otology</td>
<td>Journal of Voice</td>
</tr>
<tr>
<td>Hearing research</td>
<td>Otolaryngologic Clinics of North America</td>
</tr>
<tr>
<td>Laryngoscope</td>
<td>European Archives of Oto-Rhino-Laryngology</td>
</tr>
<tr>
<td>Archives of Otolaryngology and head and neck surgery</td>
<td>International Journal of Pediatric Otorhinolaryngology</td>
</tr>
<tr>
<td>Otolaryngology: Head and neck surgery</td>
<td>ORL: Journal for Oto-Rhino-Laryngology</td>
</tr>
<tr>
<td>American Journal of Rhinology</td>
<td>Journal of Laryngology and Otology</td>
</tr>
<tr>
<td>Annals of Otology, Rhinology and Laryngology</td>
<td>American Journal of Otolaryngology</td>
</tr>
<tr>
<td>Dysphagia</td>
<td>HNO</td>
</tr>
<tr>
<td>Acta Oto-Laryngologica</td>
<td>Laryngologie Rhinologie Otologie</td>
</tr>
<tr>
<td>Clinical Otolaryngology</td>
<td>Journal of Otolaryngology</td>
</tr>
<tr>
<td></td>
<td>Skull Base</td>
</tr>
</tbody>
</table>

**REFERENCES:**

1. www.jlo.uk/introduction/history
Management of Refractory Posterior Epistaxis by Sphenopalatine Artery (SPA) Cauterization

**Introduction:**
Epistaxis is a common ENT emergency often requiring hospital admission. Conventional management options in the form of chemical cauterization, anterior nasal packing (ANP) and posterior nasal packing (PNP), anterior ethmoidal and external carotid artery ligation are not entirely satisfactory because of their morbidity, high failure rate and complications.

**Objective:**
To assess the effectiveness of SPA cauterization in posterior nose bleed.

**Materials & Methods:**
The experience of endoscopic sphenopalatine artery cauterization under general anesthesia in 7 patients has been described. All patients had anterior nasal packing, use of invotec for posterior nasal bleed and some patients had classical posterior nasal packing but all of them had failed to control bleeding.

**Results:**
Epistaxis was controlled in all 7 patients after sphenopalatine artery cauterization.

**Discussion:**
The technique of sphenopalatine artery cauterization is described. The technique is simple, effective without any morbidity and complications, and is applied in patients where ANP and PNP failed to control the bleeding. We should apply this technique in patients with posterior bleed before taking up the patient for classical posterior nasal packing.

**Conclusion:**
Though it is a preliminary result, endoscopic cauterization of sphenopalatine artery seems to be safe, simple and effective procedure for the management of refractory posterior epistaxis.

**Key Words:** Epistaxis, Sphenopalatine artery, endoscopic surgery

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**INTRODUCTION:**
Intractable epistaxis remains a challenge for ENT surgeons. Sometimes it can be life threatening because of aspiration, hypotension, anemia and associated co-morbidities. Most cases of epistaxis are managed conservatively with chemical cauterization. When this procedure fails, artery ligation is considered. Previously ligation of internal maxillary artery through transantral approach was commonly used. However, this technique was often associated with complications like facial swelling, facial numbness, otopalatal fistula and also failure rate of 10-15%. More recently clipping or cauterization of sphenopalatine artery (SPA) has been adopted, which is associated with few or no complications and short hospital stay. Endoscopic sphenopalatine artery cauterization is now recognized and frequently used for control of intractable posterior epistaxis. However, locating the sphenopalatine foramen in bleeding patient can be very difficult, thus the good knowledge of the local anatomy is essential. For effective decrease in arterial pressure, ligation is best undertaken as close to the bleeding site as possible. To this end, endoscopic ligation of the SPA which is at point distal to all retrograde and anastomotic connections, is an effective and logical site to direct treatment.

**MATERIALS & METHODS:**
The author has recently treated seven patients with intractable epistaxis by endoscopic sphenopalatine artery cauterization. All the patients were initially treated by conventional anterior nasal packing (ANP) with BIPP, and when it failed either invotec balloon catheter or classical posterior nasal packing was done. Patients still bleeding with above measures were subjected to SPA cauterization under general anesthesia. Four of our patients were hypertensive. No patient had an identifiable systemic coagulation defect (Table 1).

**Table 1:** Details of patients who underwent SPA cauterization

<table>
<thead>
<tr>
<th>Age/Sex</th>
<th>Presentation</th>
<th>Side</th>
<th>Associated disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>36/M</td>
<td>Recurrent Epistaxis requiring ANP twice and invotec insertion</td>
<td>Right</td>
<td>——</td>
</tr>
<tr>
<td>58/M</td>
<td>Recurrent Epistaxis requiring ANP and PNP</td>
<td>Right</td>
<td>HTN</td>
</tr>
<tr>
<td>58/M</td>
<td>Recurrent Epistaxis requiring ANP twice PNP</td>
<td>Right</td>
<td>HTN and vestibular stenosis</td>
</tr>
<tr>
<td>22/M</td>
<td>Recurrent Epistaxis requiring ANP involuc insertion</td>
<td>Left</td>
<td>——</td>
</tr>
<tr>
<td>48/F</td>
<td>Recurrent Epistaxis requiring ANP involuc insertion</td>
<td>Right</td>
<td>HTN with anemia</td>
</tr>
<tr>
<td>48/M</td>
<td>Recurrent Epistaxis with repeated ANP</td>
<td>Left</td>
<td>HTN</td>
</tr>
<tr>
<td>49/F</td>
<td>Recurrent Epistaxis with ANP and PNP</td>
<td>Left</td>
<td>——</td>
</tr>
</tbody>
</table>

HTN = hypertension

**SURGICAL PROCEDURE:**
The procedure was done under general anesthesia. At first, 1ml of 2% xylocaine with adrenaline 1:200,000 was injected by an insulin syringe into the greater palatine foramen. This was intended to reach the terminal tributaries of the internal maxillary artery in the pterygopalatine fossa and to cause vasoconstriction. In addition, a high volume of saline (3ml) was also injected at the same site to pressure tamponade the vessel (fig.1). The greater palatine foramen is located between the 2nd and 3rd molar teeth 1cm medial to this area. 2% Xylocaine with adrenaline was also injected in the lateral wall of the nasal cavity. Middle turbinate was gently medialized...
and 1.5cm mucosal incision was made posterior inferior to the bulla ethmoidalis by otology round knife (fig. 2 A & B). A mucoperiostial flap was elevated in the posterior fontenelle of the medial maxillary and palatine bones. The flap was raised further posterosuperiorly until the sphenopalatine foramen was encountered. We looked for the crista ethmoidalis bony ridge at the sphenopalatine foramen. The artery was seen passing medially and in the mucosal fold (fig.3). The artery at the main trunk or after the bifurcation was diathermised with special long bladed bipolar cautery. Ideally metal clips should be placed in the artery but since it is not available in Nepal, we used bipolar cautery. Another advantage of bipolar cautery that we could diathermize in multiple sites. The flap was replaced back and gentle unilateral BIPP pack was done and kept for 24 hours.

RESULTS:
The procedure took around 45 minutes. No patients had any complications due to this procedure. All patients had successful control of epistaxis. One patient who had vestibular narrowing due to repeated PNP had mild nasal bleed 3 months after surgery, which was controlled by ANP. On nasal endoscopy of this patient, there was crusting inside the nose and also vestibulitis. So neosporin ointment was prescribed for it. No other patients had any other complications. All seven patients were discharged on 3rd post operative day, they were asked to take oral ciprofloxacin 500mg BID for one week, nasal douching with normal saline and were asked to use neosporin ointment inside the nose to prevent crusting and re-bleeding.

DISCUSSION:
Management of epistaxis can be very difficult at times especially where there is posterior bleeding. Treatment options for epistaxis includes chemical cauterization, anterior nasal packing, posterior nasal packing, septoplasty with bilateral flap elevation, internal maxillary artery ligation, external carotid artery or anterior ethmoidal artery ligation. All these measures have high failure rate ranging from 26-52%. Posterior nasal packing is associated with discomfort, mucosal trauma and morbidity due to hypoxia. External carotid artery ligation has high failure rate due to extensive anastomosis distal to the site of ligation. Recent management of epistaxis includes angiography and embolization of the bleeding vessels and endoscopic clipping and cauterization of sphenopalatine artery. Angiography and embolization of maxillary artery requires an experience interventional radiologists, which facility is not available in many centres. Moreover this procedure may be associated with serious neurological complications. The microscopic surgical approach to the sphenopalatine foramen was first described by Prades. An approach for vidian neurectomy, after the advancement in technique of nasal endoscopy, endoscopic SPA ligation for the management of posterior epistaxis was tried, later it became popular for refractory epistaxis. Multiple studies have reported a success rate of over 90% with no significant complications. All our seven patients had good control of epistaxis with this procedure without any complications. Thereby, avoiding the morbidity associated with prolong nasal packing and other external surgical approaches.

CONCLUSION:
Though it is a preliminary result, endoscopic cauterization of sphenopalatine artery seems to be safe, simple and effective procedure for the management of refractory posterior epistaxis.
Because of its minimal morbidity, high effectiveness we plan to practice this procedure in patients where anterior nasal packing does not control the bleeding. Posterior nasal pack is very painful for the patient, also it may cause hypoxia and also there is extensive laceration of nasal mucosa after packing causing difficult to raise the mucoperiostial flap for SPA cauterization.

REFERENCES:
Intraoperative Blood Loss & operating time in Tonsillectomy: Is Electrodissection Better?

**Objective:**
To compare bipolar electrodissection with cold dissection paediatric tonsillectomy in terms of operative time and intra-operative blood loss.

**Methods:**
This is a prospective randomized study performed in 30 children age less or equal to 13 years undergoing tonsillectomy in Department of ENT and Head and Neck Surgery, TU Teaching Hospital, Kathmandu, between October 2007 and December 2008. In both techniques, duration of surgery and amount of blood loss were recorded and compared. Statistical analysis was done using student t-test.

**Results:**
Out of 30 children (60 tonsils), 30 tonsils underwent tonsillectomy by bipolar electrodissection and 30 tonsils by cold dissection. Mean duration of surgery and mean blood loss in bipolar electrodissection were 14.88 minutes and 7.38 ml respectively while in cold dissection group, they were 23.03 minutes and 11.73 ml respectively. (p-value less than 0.001 highly significant).

**Conclusion:**
Bipolar electrodissection is a safe technique which reduces the duration of surgery and blood loss as compared with cold dissection group.

**INTRODUCTION:**
Tonsillectomies are one of the most common operations performed by otorhinolaryngologists in paediatric population in order to resolve upper airway obstruction and recurrent or chronic throat infections.\(^1\) There is no consensus on the optimum method of performing tonsillectomy. Various methods have been described and these are frequently compared in the otorhinolaryngology literature.\(^2\) The first tonsillectomy was performed by Celsus using his finger nails 200 years ago.\(^3\) Several techniques of tonsillectomy has been advocated since then. However the difficulties encountered by surgeons especially in controlling the peri-operative bleeding were a major drawback. The concept of electrodissection was first described by Goycoolea 4 in 1982 using monopolar diathermy and 10 years later Pang5 reported the first electrodissection tonsillectomy using the bipolar forceps. To date, there is no conclusive evidence in the literature as to which surgical technique is best for performing paediatric tonsillectomy.\(^6\) The ideal tonsillectomy has been defined as fast, bloodless and associated with rapid and uncomplicated recovery. The aim of this study is to compare bipolar electrodissection with cold dissection tonsillectomy in terms of operative time and intra-operative blood loss.

**MATERIALS AND METHODS:**
This is a prospective randomized study done in 30 children (60 tonsils) age less or equal to 13 years undergoing tonsillectomy in the Department of ENT and Head and Neck Surgery, TU Teaching Hospital, Kathmandu, between October 2007 and December 2008. Informed consent was taken for the study. In both techniques, duration of surgery and amount of blood loss were recorded and compared.

The surgery was conducted under general anesthesia with orotracheal intubation. In children less than or equal to 5 years of age, only one method of tonsillectomy was used (either bipolar electrodissection or cold dissection), while in children of more than 5 years to 12 years of age, two different techniques were used in two different sides of tonsil. In cold dissection, the method used was classical method using scissors and tonsillar dissector. No electrocautery was used to control the bleeding. If required, ligation of the bleeding vessel was done not controlled by tonsillar packs of standard size. In bipolar electrodissection, haemostasis was achieved by the same bipolar forceps. Operating time was measured from the anterior pillar incision or beginning of dissection until complete haemostasis of tonsillar fossa was achieved. Operative blood loss was measured by the use of standard gauge piece of size 19cm x 14 cm. The blood loss was 4ml if the gauge piece was fully soaked and it was 2.5 ml if the gauge piece was partially soaked. The time of adenoidectomy was excluded in cases where it was performed in same setting. All children were prescribed a standard regimen of amoxycillin 50mg/kg body weight and suspension of paracetamol and ibuprofen at the interval of 8 hours. Patients were discharged on the seventh postoperative day. Statistical analysis was done using student t-test.

**RESULTS:**
Out of 30 children (60 tonsils), 30 tonsils underwent tonsillectomy by bipolar electrodissection and 30 tonsils by cold dissection. Mean duration of surgery and mean blood loss in bipolar electrodissection group were 14.88 minutes and 7.38 ml respectively while in cold dissection group, they were 23.03 minutes and 11.73 ml respectively. (p-value less than 0.001).
A long period of waiting list is a problem in our hospital too, so as to decrease it, tonsillectomy by bipolar dissection is one of the good options. Sood and Strachan raised concerned about the safety of the bipolar scissors for tonsillectomies. However, our study did not show any complication or accidental injury to the other structure which could be due to thermal burn, so that it could be used safely in tonsillectomy.

**CONCLUSION:**
Bipolar electrodissection tonsillectomy is a relatively safe technique. It significantly reduces the operating time and intraoperative blood loss. So this technique can be an alternative to classical cold dissection tonsillectomy in children. Reduction in these parameters can increase the number of operation cases in the theatre which eventually lead to a decrease in the waiting list of surgical cases in paediatric otorhinolaryngology unit.

**REFERENCES:**
Pleomorphic Adenoma of Salivary Glands: an Experience at TUTH

Objective:
To evaluate the frequency of distribution and surgical management of pleomorphic adenoma (PA) of salivary glands at Tribhuvan University Teaching Hospital (TUTH).

Methods:
It is a retrospective study. The medical records of patients diagnosed as PA and who underwent surgery in TUTH between September 2004 to January 2009 were analyzed.

Results:
Thirty two patients, 15 males and 17 females with age ranging from 15 to 85 years were analyzed. PA affected the parotid gland in 25 patients, the submandibular gland in 4 patients, the soft palate in 2 patients and upper lip in 1 patient. Amongst the PA of the parotid gland, the tumor was found to arise from the superficial lobe in 20 patients, deep lobe in 4 and both superficial and deep lobe in 1 patient. Eighteen patients underwent superficial parotidectomy, 4 underwent wide excision while 3 underwent total conservative parotidectomy. In the immediate post-operative period, 6 patients had facial palsy, 15 had marginal mandibular nerve paresis, 3 had flap discoloration and 1 patient complained of numbness of the ear lobe. All 4 patients with PA of the submandibular gland underwent excision of the gland. Amongst them, 3 developed marginal mandibular nerve paresis while 1 developed hematoma. The 2 patients with PA of soft palate underwent wide excision of the tumor. One patient developed palatal fistula. There was only one patient with PA of the upper lip which was excised in toto with no post-operative complication.

Conclusion:
PA commonly involved the parotid gland, the tumor arising mostly from the superficial lobe. Most patients were treated with superficial parotidectomy while few patients underwent total conservative parotidectomy and wide excision, PA of the submandibular gland required excision of the gland with the tumour and PA of minor salivary glands required wide excision.

Keywords: pleomorphic adenoma, parotid, submandibular gland, parotidectomy, wide excision

INTRODUCTION:
Pleomorphic adenoma is the most common benign salivary gland neoplasm. It is usually found in the parotid gland but may occur in the submandibular, sublingual and minor salivary glands.1 It has highest incidence between 30 to 60 years of age with female predominance.1 It presents as a painless slow growing mass with variable duration of symptoms.1-4 A sudden increase in size, pain, involvement of nerve or overlying skin indicates malignant transformation.1,5
Approximately 3% to 4% of pleomorphic adenoma can turn into carcinoma ex-pleomorphic adenoma.1,3 Histologically, pleomorphic adenoma is an epithelial tumour of complex morphology, comprising of epithelial and myxoid elements arranged in a variety of patterns and surrounded by a mucopolysaccharide stroma.2,6 Surgical resection is the treatment of choice.7,8 The extent of resection varies from enucleation to total parotidectomy in parotid pleomorphic adenoma.7,8,9 While in submandibular pleomorphic adenoma, it requires excision of gland along with the tumour. Similarly, pleomorphic adenoma from other salivary glands requires wide excision.2 The objectives of this study are to evaluate the frequency of distribution of pleomorphic adenoma in salivary glands in TUTH and to evaluate their surgical management.

MATERIALS AND METHODS:
This is a retrospective study. The medical records of cases diagnosed as pleomorphic adenoma who had undergone surgery from September 2004 to January 2009 were analyzed. A total of forty three patients had undergone surgery with the preoperative diagnosis of pleomorphic adenoma. The medical records of 4 cases were missing. Seven cases were excluded as their post operative histopathology reports were reported to be other than pleomorphic adenoma. Amongst those excluded, there was one case each of low grade mucoepidermoid carcinoma, myoepithelial tumour, hemangioma, Warthin’s tumour, Non-Hodgkins lymphoma, lymphoepithelial cyst and epidermoid cyst. The remaining 32 patients were included in the study. There were 15 males and 17 females with the male:female ratio being 1:1.1. The age of the patient ranged from 15 to 85 years and the mean age was 37 years. The maximum number of patients were in the 4th decade (Table 1). Pleomorphic adenoma presented as painless, slow growing, firm swelling in all patients. Pleomorphic adenoma affected the parotid gland in 25 patients, the submandibular gland in 4 patients, the soft palate in 2 patients and upper lip in 1 patient (Table 2). Amongst pleomorphic adenoma of parotid gland, the swelling was noted in the infraoral region in 18 patients and preaural region in 7 patients with the size varying from 1x1cm to 10x5 cm. The size of the submandibular pleomorphic adenoma varied from 3x2cm to 14x12cm, both pleomorphic adenoma of soft palate measured 4x4cm while pleomorphic adenoma of upper lip measured 3x3 cm. The duration of the symptom varied from 3 months to 20 years and the mean duration was 2.68 years. Table 1. Age distribution of patients with pleomorphic adenoma (n=32).

<table>
<thead>
<tr>
<th>Age of the patient (years)</th>
<th>No. of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-20</td>
<td>4</td>
</tr>
<tr>
<td>21-30</td>
<td>9</td>
</tr>
<tr>
<td>31-40</td>
<td>10</td>
</tr>
<tr>
<td>41-50</td>
<td>5</td>
</tr>
<tr>
<td>51-60</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 2. Distribution of pleomorphic adenoma according to the site of involvement (n=32).

<table>
<thead>
<tr>
<th>Salivary gland involved</th>
<th>No of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parotid gland</td>
<td>25</td>
</tr>
<tr>
<td>Submandibular gland</td>
<td>4</td>
</tr>
<tr>
<td>Soft palate</td>
<td>2</td>
</tr>
<tr>
<td>Upper lip</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 3. Distribution of pleomorphic adenoma of parotid gland according to the site of involvement (n= 25).

<table>
<thead>
<tr>
<th>Site of involvement</th>
<th>No of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superficial lobe</td>
<td>20</td>
</tr>
<tr>
<td>Deep lobe</td>
<td>4</td>
</tr>
<tr>
<td>Both superficial and deep lobes</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4. Type of surgery for pleomorphic adenoma parotid gland (n=25).

<table>
<thead>
<tr>
<th>Type of surgery</th>
<th>No of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superficial parotidectomy</td>
<td>18</td>
</tr>
<tr>
<td>Wide excision</td>
<td>4</td>
</tr>
<tr>
<td>Total conservative parotidectomy</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 5. Complications following parotid surgery.

<table>
<thead>
<tr>
<th>Complications</th>
<th>No of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facial palsy</td>
<td>24</td>
</tr>
<tr>
<td>Grade</td>
<td>31</td>
</tr>
<tr>
<td>Grade</td>
<td>41</td>
</tr>
<tr>
<td>Marginal mandibular nerve paresis</td>
<td>15</td>
</tr>
<tr>
<td>Flap discoloration</td>
<td>3</td>
</tr>
<tr>
<td>Numbness of ear lobe</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 6. Complications following submandibular gland excision for pleomorphic adenoma (n=4).

<table>
<thead>
<tr>
<th>Complications</th>
<th>No of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marginal mandibular nerve paresis</td>
<td>3</td>
</tr>
<tr>
<td>Hematoma</td>
<td>1</td>
</tr>
</tbody>
</table>

Amongst the pleomorphic adenoma of the parotid gland, only one case was of recurrent pleomorphic adenoma that had been operated on in other centre. The tumour was found to arise from the superficial lobe in 20 patients, deep lobe in 4 and both superficial and deep lobe in 1 patient (Table 3). Eighteen patients underwent superficial parotidectomy, 4 underwent wide excision while 3 underwent total conservative parotidectomy (Table 4). Amongst the 18 patients who had undergone superficial parotidectomy, all patients had the tumour arising from the superficial lobe. Wide excision was carried out in 2 patients with tumour from the deep lobe and one patient with superficial lobe tumour. Total conservative parotidectomy was done in 3 patients with the tumour arising from the deep lobe, superficial lobe (recurrent tumour) and both lobes. Intra operatively, in 2 cases, the marginal mandibular nerve was sacrificed while in 1 case the capsule was ruptured. These patients had the tumour arising from the superficial lobe and all of them underwent superficial parotidectomy. Post-operatively, 6 patients had facial palsy, 15 had marginal mandibular nerve paresis, 3 had flap necrosis and 1 had numbness of the ear lobe (Table 5).

Three patients had more than one complication. Marginal mandibular paresis with flap discoloration in one and with ear lobe numbness in one patient. One patient had grade 2 facial palsy with flap discoloration. Three patients did not develop any complications. All of the 4 patients with pleomorphic adenoma of the submandibular gland underwent excision of the gland. Amongst them, 3 developed marginal mandibular nerve paresis while 1 developed hematoma (Table 6). The patient who had developed hematoma had a submandibular swelling of 14x20 cm in size. Post-operatively, the drain had been removed accidentally by the patient, following which she developed hematoma. It was drained and pressure bandage was applied following which it resolved. Two patients with pleomorphic adenoma of soft palate underwent wide excision of the tumor. However one patient developed palatal fistula. There was only one patient with pleomorphic adenoma of the upper lip which was excised in toto with no post-operative complication.

**DISCUSSION:**

Pleomorphic adenomas are the most common benign salivary gland neoplasm. It accounts for 60 to 70% of all parotid neoplasias, 40 to 60% of all submandibular neoplasias and 40 to 70% of minor salivary gland neoplasias. Eveson and Cawson evaluated 2410 tumors of salivary glands of which 1408 were pleomorphic adenoma. Amongst them, parotid gland was involved in 63.3% cases, minor salivary glands in 42.9% cases, submandibular glands in 59.5% cases. Chidzonga et al also found comparatively higher prevalence of parotid gland pleomorphic adenoma (39.8%) as compared to the prevalence in minor salivary glands (37.9%) and submandibular gland (22.3%) amongst 206 cases of pleomorphic adenoma. In our study, the parotid gland pleomorphic adenoma was higher in number (25) as compared to the submandibular gland (4) and minor salivary gland pleomorphic adenoma (3). None of the patient had involvement of the sublingual gland or the parapharyngeal space. In case of pleomorphic adenoma of the parotid gland, 80% of the tumor arises from superficial lobe and 20% from deep lobe of parotid. Laskawi et al found the tumor arising from the superficial lobe in 77% patients, from deep lobe in 14% and 8% from both superficial and deep lobe amongst 475 patients who underwent surgery for parotid pleomorphic adenoma. In our study also, the tumor was found to be arising frequently from the superficial lobe (20) rather than from the deep lobe (4) or from both superficial and deep lobe simultaneously (1). It frequently occurs between the ages of 30 to 60 years of age. The mean age of presentation is 36.3 yrs. In our case, the mean age was 37 yrs. On further division the mean age of parotid pleomorphic adenoma is 46 yrs while that of submandibular gland is 6th decade. In our study, pleomorphic adenoma in parotid gland was seen in mean age of 34.5 yrs and in submandibular gland in 50.5 yrs.
Pleomorphic adenoma is commonly found in females than in males\textsuperscript{1,3,4} with the male female ratio varying from 1:1.4 to 1:1.7.\textsuperscript{1,3} In our study, the male female ratio was 1:1.1. Painless slow growing mass is the frequent presentation of pleomorphic adenoma. The firmness of the pleomorphic adenoma varies with the nature and the amount of the stromal component. So, it ranges from soft in the case of the more mucinous tumors to hard in tumors with extensive chondroid or collagenous component.\textsuperscript{3} All patients in our study presented with painless, slow growing swelling which was firm in consistency. The duration of symptoms may vary ranging from 1 month to 34 years with the mean duration of 5 yrs.\textsuperscript{1} In our study, the duration of the symptom varied from 3 months to 20 years and the mean duration was 2.68 years.

The treatment of choice for pleomorphic adenoma is surgical excision.\textsuperscript{7,8} The surgical techniques vary from enucleation to total parotidectomy in parotid pleomorphic adenoma.\textsuperscript{7,8,9} Enucleation involves shelling out of the tumor. Superficial parotidectomy or lateral parotidectomy 12 removes parotid tissue lateral to facial nerve. Partial superficial parotidectomy dissects the tumor along with 2 cm margin of surrounding parotid tissue without sacrificing normal parotid tissue except when the tumor abuts the facial nerve. Extracapsular dissection involves meticulous hemostasis and dissection of a small cuff of normal parotid parenchyma just outside the capsule of the parotid tumour. Total parotidectomy removes all parotid tissue lateral and medial to facial nerve.\textsuperscript{8} The tumour has to be excised in its entirety with an adequate margin to avoid recurrences.\textsuperscript{7,12} It is so because the pleomorphic adenomas are enclosed by a layer of fibrous tissue usually termed as capsule. This capsule might be very thin and the tumour buds may extend through it.\textsuperscript{12} The recurrence rate declined from 20% to 45% in the period of enucleation to 2% to 5% with the introduction of lateral parotidectomy.\textsuperscript{14} Following enucleation, it is\textsuperscript{9} times more likely to produce recurrence as compared to superficial parotidectomy due to subtotal excision.\textsuperscript{8} Superficial parotidectomy has been advised by many authors for the treatment of pleomorphic adenoma of the superficial lobe of parotid.\textsuperscript{7,9,12} This procedure has been considered so efficient by some authors that long term follow up following superficial parotidectomy is regarded as unnecessary provided adequate excision with intact capsule has been done.\textsuperscript{9} O'Brien preferred limited superficial parotidectomy over complete superficial parotidectomy for previously untreated localized parotid tumors lying superficial to the plane of the facial nerve.\textsuperscript{5} He emphasized on exposing the main trunk of the nerve in every case but close dissection of only the branches immediately adjacent to the tumor. He reviewed 363 parotidectomies performed for benign parotid tumors over a period of 14 years. His result showed that limited superficial parotidectomy was associated with low morbidity (2.5% permanent facial palsy) and low recurrences (0.8%). Piekarski et al reported 10 year local control rate of 58% in 98 patients with parotid pleomorphic adenoma treated with extracapsular dissection. The authors do not recommend this procedure for pleomorphic adenoma owing to high recurrence rate.\textsuperscript{9} For the tumor arising from the deep lobe of the parotid, near total conservative parotidectomy is preferred but it is associated with higher chances of temporary facial nerve weakness.\textsuperscript{5} Laskawi et al\textsuperscript{7} carried out a retrospective study on the three methods of surgical management namely superficial parotidectomy, total parotidectomy and enucleation for pleomorphic adenoma of the parotid gland. Records of 475 patients were evaluated of which 223 patients were followed up for a mean period of 63 months. Comparing the three types of surgery, one recurrence (0.7%) was found after superficial parotidectomy (n=139), none after total parotidectomy (n=60) and one (7.2%) after enucleation (n=14). Persistent dysfunction of the facial nerve occurred in 1.4% after superficial parotidectomy and 3.3% after total parotidectomy. Frey’s syndrome developed in 14% after superficial parotidectomy and 17% after total parotidectomy. A persistent parotid duct fistula was noted in 4% cases. The authors agreed on the low rates of multicentricity of the tumor and disregarded total parotidectomy as the only method to treat pleomorphic adenoma irrespective of its location within the gland. Low rates of complications and recurrence following superficial parotidectomy favors this procedure over total parotidectomy. Submandibular pleomorphic adenoma requires total submandibular gland excision along with the tumor to avoid recurrences.\textsuperscript{4,12} Some surgeons prefer suprathyroid node dissection and soft tissue clearance in case of diagnostic uncertainty.\textsuperscript{12} The exact cause of recurrence in pleomorphic adenoma is controversial. Intra-operative tumor spillage is believed to be the main cause of local recurrence but several studies have suggested incomplete initial resection to be the principle cause.\textsuperscript{5} Natvig and Soberg found recurrence rate of 8% after capsule rupture and 2% in those without capsule rupture in a study which included 238 patients with an average observation time of 18 years.\textsuperscript{14} The difference was not significant so this study doubted whether tumor spillage had a role in the recurrence. Webb and Eveson have put forward a proposal that single recurrence derives from a residual isolated bud whereas multiple field recurrence results from tumour rupture.\textsuperscript{12} Tumor rupture during surgery should be avoided as much as possible. Along with the risk of tumor recurrence, it can complicate surgery. Though it is an unwanted event, many surgeons report tumour rupture and minor capsular damage in the range of 9% to 50%. In case the tumour ruptures, thorough irrigation with normal saline with repeated 20ml syringe washouts is recommended. Other agents used are 0.15% Cetrimide, sterile distilled water alternating with saline.\textsuperscript{12} In our study, among patients with parotid pleomorphic adenoma, 18 underwent superficial parotidectomy, 4 underwent wide excision and 3 underwent total conservative parotidectomy. Intra operatively, in 2 cases, the marginal
mandibular nerve was sacrificed while in 1 case the capsule was ruptured. These patients had the tumour arising from the superficial lobe and all of them had undergone superficial parotidectomy. All patients with submandibular gland pleomorphic adenoma underwent excision of gland along with the tumor while palatal and lip pleomorphic adenoma underwent wide excision. Complications like marginal mandibular nerve paresis, facial palsy of grade 2 to 4, flap necrosis and numbness of ear lobules were noted following some form of parotidectomy, marginal mandibular nerve paresis following submandibular gland excision and palatal fistula following excision of pleomorphic adenoma soft palate. The recovery of these complications and detection of any other new complications could not be assessed due to poor patient follow up. It is assumed that these complications could have recovered with time as patients here usually do not visit the hospital unless they have a problem. Salivary gland surgeons require precise capsular dissection especially where facial nerve is apposed to avoid capsular rupture and neural injury. Parotidectomies of whatever form should ensure at least some adequate tissue margin around the tumor.  

CONCLUSION:

Pleomorphic adenoma, the most common benign salivary gland tumor frequently involved the parotid gland. Superficial parotidectomy sufficed in most cases since the tumor arose from the superficial lobe most often. However, total parotidectomy was necessary if tumor involved the deep lobe. Submandibular gland pleomorphic adenoma, which occurred less frequently, was treated with removal of the whole gland along with the tumor. Pleomorphic adenoma of other minor salivary glands which was also less frequently encountered was treated with wide excision. Since this study is a retrospective study, the complications following parotidectomies could not be assessed properly. A prospective, longitudinal study with proper documentation of all the findings during hospital stay and long term follow up of all the patients will make such study better study.

REFERENCES

Is Antral Wash Out Really Indicated In Acute Bacterial Rhino sinusitis?

Introduction:
Acute bacterial rhinosinusitis (ABRS) is one of the most prevalent infections of the upper respiratory system. Antral wash out still remains the first choice amongst many otorhinolaryngologists in treating a case of ABRS. With the advent of modern antibiotics and better systemic anti-allergens and decongestants, the indications for antral washouts in treating such cases have been shrunked.

Objective:
We sought to establish its role following a rational conservative treatment with antibiotics and other supportive medicines.

Materials & Methods:
Of the 52 cases of ABRS, that were treated conservatively for varied duration, only 3 cases underwent antral wash out while 7 cases required functional endoscopic sinus surgery to cure the disease.

Result:
The outcome of the conservative treatment was statistically significant (P<.05).

Conclusion:
The study reiterates that indications for antral wash outs are limited for ABRS and it should be restricted for limited indications.

Key Words: Sinusitis, antral wash out, conservative treatment

Introduction:
Acute rhino sinusitis (ARS) is probably the commonest disease that is being treated by an otorhinolaryngologist every day. Rhinosinusitis has accounted for 12 to 17 million annual visits to physicians and for 12% of antibiotics prescribed to adults in the US, making it one of the 10 most common conditions to be treated in ambulatory practice. ARS describes a sudden onset of two or more symptoms of nasal discharge, nasal blockage or congestion, facial pain or pressure and reduction or loss of smell which are less than twelve weeks of duration. If the symptoms are of lesser duration (ten days), it is often considered to be of viral etiology. However; symptoms may persist beyond 10 days when secondary bacterial infection prevails. Antibiotics are reserved for moderate or severe cases or when there is development of complications of acute rhino sinusitis. Acute bacterial rhino sinusitis is mainly caused by gram positive bacteria namely Streptococcus pneumoniae, Hemophilus influenzae and Moraxella catarrhalis. H. influenzae has been reported to produce toxins that interfere with ciliary functions and damage mucosal cells.Considering the above group of pathogens of ABRS, the use of amoxicillin/clavulanate is generally recommended for the initial treatments. If the penicillin groups of antibiotics are to be avoided the other alternatives are cephalosporin groups like cefpodoxime proxetil, cefuroxime axetil and ceferidine. The fluoroquinolones are also being favored as a second line antimicrobials. Surgical interventions are justified when a medical treatment fails or adulate development of acute complications. This study is focused on the efficacy of conservative treatment in the well selected cases of ABRS and thereby to minimize early surgical intervention like antral wash out.

Materials and Methods:
This is a prospective study carried out in 52 patients suffering from ABRS. This study was carried out for four years from August 2005 to July 2009. It included equal number of sexes ranging from 13 to 60 years. The diagnosis of sinusitis was based on at least two symptoms of acute sinusitis and supported by a x-ray of paranasal sinuses either taken on the first or in second visit in continuation of the medical treatment. Patients who were symptomatic for 10 days to 3 weeks were taken up for the study so as to exclude acute viral and chronic rhinosinusitis respectively. None of the patient had a history suggestive of sinusitis for the last one year. Patients with clinical feature of ABRS but with additional clinical features like gross DNS, polyps, concha bullosa and neoplasia were excluded from the study. The cases which did not follow the treatment were also excluded from the study. Of the 52 cases only 5 cases had received cefpodoxime proxetil, because of intolerance or allergic history to the penicillin, while rest of the patients were treated with moxicillin/clavulanate for 10 days to 3 weeks depending upon their receding symptoms and with a x-ray PNS. A check x-ray of PNS was done in all the cases at the end of treatment. Absence of the previous symptoms with a negative finding in the check x-ray at the end of the treatment was considered as cured. Co-prescription of NSAID, antihistamines and systemic decongestants were also prescribed in all the patients till deemed necessary. Duration and efficacy of the treatment was judged by the symptoms and with a check x-ray of PNS. Ten patients who did not show any improvement underwent surgical interventions.

Results:
Of the 52 cases, there was equal number of sexes ranging from 13 to 60 years with a mean age 30 years. The patients had received 10 days to 3 weeks of either amoxicillin/clavulanic acid or cefpodoxime proxetil. The second antibiotic group of patient included was only five who had a history of penicillin allergy or gastric intolerance. Because of the very small number of the
epoxide group, no comparison was made with amoxicillin/clavulanate group. The required dose/duration of the
treatment was assessed with recording or absence of symptoms
compared with a x-ray of the paranasal sinuses. Ten cases who
did not respond well underwent surgical interventions
(Table 1). The statistical tool used was SPSS 16 for windows.
The conservative treatment outcome was 80.8% with significance
(P<.05), with freedom of difference six. (Table 2).
Table 1: Conservative Treatment Outcome

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure Cases</td>
<td>10</td>
<td>19.2</td>
<td>19.2</td>
</tr>
<tr>
<td>Conservative Success</td>
<td>42</td>
<td>80.8</td>
<td>80.8</td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 2: Chi-Square Tests

<table>
<thead>
<tr>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>52.000</td>
<td>6</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>50.913</td>
<td>6</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>52</td>
<td></td>
</tr>
</tbody>
</table>

Three cases which not show any signs of improvement following 3 to 7 days of treatment but with hazy bilateral maxillary sinusitis
on a x-ray of PNS underwent bilateral antral washouts. The remaining 7 cases had to undergo functional endoscopic sinus
surgery (FESS). And two of these FESS cases were suffering from
non invasive fungal sinusitis.

**DISCUSSIONS:**

Acute rhinosinusitis (ARS) is highly prevalent condition. The
disease is associated with a high degree of disability, impairment
of quality of life and school and work place absenteeism. ARS is
most often precipitated by a viral infection. Although definitive
clinical criteria that differentiate between ABRS and viral
rhinosinusitis are lacking, careful evaluation of the duration and
severity of the symptoms provides a rational basis for diagnosis.5
Typical sign symptoms include nasal congestion, purulent nasal
discharge, headache, facial pain or tenderness. Since most of
the ARS cases are viral it only the cases with 10 days to three
weeks of symptoms were included in the study to avoid viral
infections. In ABRS the commonest organisms are gram positive
bacteria. Amoxillin and clavulanic acid is therefore a popular
choice.7 In addition, most cephalosporins recommended by
recent guidelines e.g., cefpodoxime, cefuroxime, and cefdinir
are considered effective alternatives to amoxillin in adults who
are allergic to penicillin.8 In the present study also same antibiotic
rationale was used. In the study only ten cases did require
surgical intervention with 80.8% success rate and only 3 underwent
antral wash out due to conservative failure.Antral washout has
been used in the management of sinusitis for at least a century.9
In the pre antibiotic days, the need for sinus washout was more
common than today.10 Even in radiologically positive maxillary
sinusitis which the antral washout clears may not be the clinically
affected area in sinusitis. This procedure should be limited to
stubborn cases when conservative treatment is not effective
with persistent fluid level in the maxillary antrum.11 In most
cases, infection spread from the anterior ethmoid area and
middle meatal region to secondarily affect the maxillary and
frontal sinuses.12 Antral washout does not address the critical
area of the anterior ethmoid cells and middle meatus. This may
explain why there is no significant advantage of antral washouts
and medical treatment over medical treatment alone.7
Furthermore, antral lavage does not always indicate the
microbiological flora of the maxillary antrum. Rather, a culture
of endoscopically-guided swabs from the middle meatus may
be indicative of the causative organisms within the sinuses but
needs to be evaluated against culture of species obtained via
proof puncture.7 Standard radiological examination cannot alone
offer sufficient guidance as to whether an antral puncture should
be done or not, since an abnormal finding does not mean that
fluid is present and a radiologically normal sinus may contain
fluid.13 With the advent of broader and better antibiotics, the
older surgical intervention like antral wash outs should not be
a initial form of treatment rather a rational use of antibiotics
with supportive medicines are advocated for the treatment of
ABRS. It should be limited to conservative treatment failure
cases only with a frank maxillary fluid level or even better
diagnostic tool like CT scan of the paranasal sinuses should be
considered instead, for further treatment.

**REFERENCES:**

1. Schied DC, Hamm RM. Acute bacterial rhinosinusitis in adults:
2. Massod A, Moumoudulis I, Panesar J. Acute rhinosinusitis in
   adults: An update on current management. Postgraduate
   medical journal. 2007;83:402-408.
3. Anon JB, Jacobs MR, Poole MD et al., Antimicrobial treatment
guidelines for acute bacterial rhinosinusitis. Otolaryngol
4. Hoban D, Felmingham D. The PROTEKT surveillance study;
antimicrobial susceptibility of Hemophilus influenzae and
   Moraxella catarrhalis from community acquired respiratory
   tract infections. J Antimicrob Chemotherapy 2002; 50:49-
   59.
5. Garau J, Dagan R. Accurate diagnosis and appropriate
treatment of acute bacterial rhinosinusitis: minimizing
6. Desrosiers M. Diagnosis and management of ARS. Postgraduate
7. Pang Y.T, Willat D.J, Do antral washouts have a place in the
   current management of Chronic sinusitis? J of Laryngol and
9. McBride, P. In Diseases of the Throat, Nose and Ear. 1908, 3rd
10. Stevenson, R. S., Guthrie,D.(1949) In A History of
   Otolaryngology. S. Livingstone LTD, Edinburgh, pp88.
11. Ramadan HH, Owens RM, Tiu C et al., Role of antral puncture
   in the treatment of sinusitis in the intensive care unit.
12. Messerklinger, W. On the drainage of normal frontal sinus of
13. watt-Boolsen S, Karle A. The clinical use of radiological
   examination of the maxillary sinuses. Clin Otolaryngol Allied
   Sci. 1977; 2(1):41-43
Voice Rehabilitation after Total Laryngectomy in TUTH

Introduction:
Esophageal voice is one of the convenient methods of voice rehabilitation after total Laryngectomy. It is cost effective, hands-free and natural sounding as compared with electrolarynx.

Aims & objectives:
The objectives of this study were to assess the success rate and to evaluate the quality of esophageal voice in patients with total laryngectomy in Tribhuvan University Teaching Hospital (TUTH).

Materials & Methods:
A retrospective study was conducted in patients who underwent total laryngectomy for carcinoma of larynx in TUTH between April 2005 to October 2008. Majority were males (47), youngest age of 38 year & oldest 85 year. Total Laryngectomy only was done in majority of patients (44) & additional neck dissection in others. 36 cases joined the esophageal voice training & all acquired satisfactory speech in the duration of weeks to months.

Results:
Total Laryngectomy was done in 54 patients for carcinoma of larynx in TUTH in the duration of April 2005 to October 2008. Majority were males (47), youngest age of 38 year & oldest 85 year. Total Laryngectomy only was done in majority of patients (44) & additional neck dissection in others. 36 cases joined the esophageal voice training & all acquired satisfactory speech in the duration of weeks to months.

Conclusion:
Esophageal voice is simple & safe though time consuming. Post Laryngectomy morbidity has been reduced by it. It has been most common method of voice rehabilitation in our parts due to lack of other methods of rehabilitation.

Key words: Esophageal voice, Total Laryngectomy, Rehabilitation

INTRODUCTION:
Total Laryngectomy is the surgical procedure in which larynx along with some segment of pharynx is removed resulting in alteration of respiration and voice mechanism. It is mostly done for malignancy of larynx and hypopharynx. Laryngectomye succumb to fear, depression, helpless, disgust due to loss of voice. After the operation, the patient faces the demand of active rehabilitation against a social gradient. There are various options to acquire the new voice by a laryngectomy but esophageal voice is the convenient one due to autonomous production.1 It is one of the oldest methods of acquisition of voice after laryngectomy, which is produced by compressing air in to the esophagus and then releasing the air, causing the pharyngo-esophageal segment to vibrate for speech. Tracheoesophageal prosthesis (TEP) and electro larynx are the newer alternative and are popular also. These newer modalities are costly, difficult to maintain and not always applicable.2, 3, 4

4 Esophageal voice is hands-free, more natural than electro larynx. Success rate of acquisition of speech varies between 40 %to 100%. Some of the most significant aspects needing study in the acquisition of speech after laryngectomy are the variables like personality, motivation, and aspiration on levels of the individual subject. These are of more value than physiological and morphological variables.5 However esophageal voice training is time consuming and results not always rewarding for usual conversation.6 It takes training sessions of weeks to months and drop out rate is equally high. So it is complex and rehabilitation-intensive procedure.7 But esophageal voice rehabilitation is more important in our part of world where other methods are not commonly used. Our aim of the study is to assess the results of acquisition of esophageal voice and to evaluate the quality of it.

MATERIALS AND METHODS:
This is the retrospective study conducted in Ganesh Man Singh Memorial Academy of ENT-Head and Neck Studies, Institute of Medicine Kathmandu, Nepal. Study sample was taken from the total laryngectomy performed in the department from April 2005 to October 2008. Preoperative counseling for restoration of voice was done within a week before surgery by the member of laryngectomy club. The latter was established by the group of Laryngectomye who actively participate to teach the new laryngectomye aimed to restore the voice. It is the only center in Nepal for such purpose located in Ganesh Man Singh building, ENT center. Total Laryngectomy and or neck dissection was carried out as per the indication. Post operative radiotherapy (RT) was advised according to the need. Patients were enrolled in the training session of voice restoration of 2-3 hour per day, 4-5 times in a week lasting for weeks to month, conducted by experienced laryngectomye. It was started with vowels, then consonant of Nepalese language. Training continued till satisfactory outcome occurred in the perspective of the patient. Various variables supposed to affect the satisfactory outcome were taken in to consideration. Quality of voice was graded on the basis of adaptation of Wepman’s Rating Scale (table1). SPSS software was used for analysis.

Table 1: Adaptation of Wepman’s rating scale

<table>
<thead>
<tr>
<th>Level</th>
<th>Esophageal sound production</th>
<th>Speech proficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>None</td>
<td>No speech</td>
</tr>
<tr>
<td>6</td>
<td>Involuntary only</td>
<td>No speech</td>
</tr>
<tr>
<td>5</td>
<td>Voluntary part of the time</td>
<td>No speech</td>
</tr>
<tr>
<td>4</td>
<td>Voluntary most of the time</td>
<td>Vowel sounds</td>
</tr>
<tr>
<td></td>
<td></td>
<td>differentiated;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>monosyllabic</td>
</tr>
<tr>
<td>3</td>
<td>At will</td>
<td>Single word speech</td>
</tr>
<tr>
<td>2</td>
<td>At will with continuity</td>
<td>Word grouping speech</td>
</tr>
<tr>
<td>1</td>
<td>Automatic</td>
<td>Esophageal speech</td>
</tr>
</tbody>
</table>

RESULTS:
Total Laryngectomy was done in 54 patient and 36 (66.7%) were enrolled in the session. Minimum age was 38 years and maximum
age was 85 years with mean age 59.6 year. There were 32(89%) males and 4(11%) females. Most common age group was 61-70 year (16), followed by 51-60 years (8), 41-50 years (8).

Fig 1: Age distribution

The understandable speech was between 2 and 3 month with average 2.3 months (table2).

<table>
<thead>
<tr>
<th></th>
<th>Minimum (month)</th>
<th>Maximum (month)</th>
<th>Mean (month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gap between surgery &amp; speech joining training</td>
<td>2</td>
<td>14</td>
<td>5.7</td>
</tr>
<tr>
<td>Duration to acquire speech</td>
<td>2</td>
<td>3</td>
<td>2.3</td>
</tr>
</tbody>
</table>

All Laryngectomee who had taken the session acquired some sort of speech and level 2 outnumber by 63.9 %, followed by level 3. Most of the cases had not received the formal education. Mean age of level 2 cases was 61.7% (table 3).

Table 3:

<table>
<thead>
<tr>
<th>Quality</th>
<th>Number (n=36)</th>
<th>Gender</th>
<th>Mean age (yr)</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 3</td>
<td>8(22.3%)</td>
<td>M=6F=2</td>
<td>56</td>
<td>Not Formal Education (NFE) =6(75%) Educated: 2(25%)</td>
</tr>
<tr>
<td>Level 2</td>
<td>23(63.9%)</td>
<td>M=21F=2</td>
<td>61.7</td>
<td>NFE=18 (78.2%) Educated=5(21.8%)</td>
</tr>
<tr>
<td>Level 1</td>
<td>5(13.8%)</td>
<td>M=5</td>
<td>55.8</td>
<td>NFE=3(60%) Educated=2(40%)</td>
</tr>
</tbody>
</table>

None of the laryngectomee had psychiatry disease in pre and post operative period.

**DISCUSSION:**

Esophageal voice is the most common method of voice rehabilitation in our part but enrollment is only 66.7%. This may be due to lack of awareness, helplessness, and lack of services outside the valley. No previous reports from the same centre are available but this is high rate as compared to other center’s study where other new modalities are popular. Speech proficiency, even single word speech that is sufficient to communicate is defined success here. So success rate is 100% which may be due to only available option here. A result of esophageal speech from other centre is 8.5-41.5 %.

Minako et al reported 27(41.5%) acquired practical esophageal speech and 59(90.8%) acquired either esophageal or electrolarynx speech. Six (9.2%) could not acquire any laryngeal speech. Drop rate from session is also very high in other study because of long time required for acquisition and other methods are also available. Average duration to attend the rehabilitation is 5.7 months which is late. Lack of interest, financial constrains might play the role. Most of the laryngectomee (63.9%) acquired level 2 speech. Shames et al reported age, removal of strap muscle, pre-surgical knowledge of resulting voice problem, number of speech session are the significant variables. Age, educational & psychologic variable are not important. Most of the patients (75%) had not received the formal education in our study. Voice rehabilitation in the past has primarily been with the electrolarynx or esophageal speech. Tracheoesophageal puncture (TEP) is a technique that has replaced the other two methods as the rehabilitative procedure of choice in most total laryngectomy patients. It is of primary and secondary type depending upon...
the puncture made during laryngectomy or after surgery respectively. Manual dexterity, costly for the maintenance, chances of fungal growth are the drawbacks of this kind of rehabilitation. Electrolarynx is also costly and poor quality of speech. Age has no association with outcome of rehabilitation. Educated laryngectomee seems to have an inferior outcome which is due to less number of subjects.

**CONCLUSION**
Esophageal voice is the safe, cost effective, convenient method of voice rehabilitation after Total Laryngectomy. Though time consuming, success rate is 100%. Most laryngectomee acquired satisfactory speech (Level 2). Retrospective and small sample size is the limitation of this study. Prospective with larger sample size, multicentric study is recommended.

**REFERENCES**
Case Report

Tuberculous Otitis Media with Facial Palsy: A Case Report

A case of tuberculous otitis media with facial palsy in a 4 ½ years old girl from a remote area of Nepal is presented. She was seen in the Department of ENT and Head and Neck Surgery, T.U. Teaching Hospital, Kathmandu, Nepal. She underwent emergency mastoid exploration under general anesthesia. Per operatively a cheesy material over many parts of middle ear cleft and bony sequestrum were found and they were removed. Likewise one of the cervical lymph node presented in the ipsilateral preauricular region was also excised and sent for histopathological examination, which revealed tuberculosis in all the specimens. The child was managed with antitubercular therapy (category-1). A brief review of literature is also included.

**INTRODUCTION:**

Tuberculosis is one the major infectious diseases with predominant involvement of lung and lymph nodes.1 It is one of the commonest infectious diseases of developing countries including Nepal. It rarely affects the middle ear. True incidence is difficult to assess as the large reported series is from hospitalized subgroups with established tuberculosis. Early diagnosis and prompt treatment may prevent ear damage and other local and systemic complications.

![Fig. 1: Showing grade IV facial palsy](image1)

![Fig. 2: Histopathological slide of the child showing caseous necrosis (40xHPF)](image2)

**CASE REPORT:**

A 4 ½ years old girl from a remote area of Nepal presented to Department of ORL and Head and Neck Surgery, T.U. Teaching Hospital, Kathmandu, Nepal with history of left ear discharge of 5 months duration and facial palsy of 3 months duration. There was no earache, pre or post auricular swelling or fever. There was no history of tuberculosis in the past. Neither there was similar history in the family or any contact with tuberculosis. On examination, the child was well nourished and was afebrile. Otoscopic examination revealed cheesy material in posterior superior quadrant and attic region of tympanic membrane which was quite confusing with cholesteatoma. There was grade four infranuclear lower motor neuron type of facial palsy on left side along with cervical multiple matted lymph nodes (Fig.1). Her systemic examination as well as x-ray chest and preoperative investigations were normal. She underwent emergency mastoid

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1. Prakash Adhikari, Ganesh Man Singh Memorial Academy of ENT and Head and Neck Studies, TU Teaching Hospital, Kathmandu, Nepal. Email: prakash.ooz@hotmail.com.
exploration under general anesthesia. Per operatively a cheesy material over many parts of middle ear cleft and a bony sequestrum pressing the second genu of the facial nerve was seen. Lymph node biopsy of ipsilateral preauricular region also revealed cheesy material. Initial provisional diagnosis of congenital cholesteatoma was changed peroperatively as tuberculous otitis media. Histopathological examination of cheesy material, sequestrum and lymph node were reported as tuberculosis (Fig.2). The child was managed with antitubercular therapy (category-1) which included 4 drug regimen in first two months (Isoniazid, Rifampicin, Pyrizinamide and Ethambutol) followed by 2 drug regimen in later 4 months (Isoniazid and Rifampicin). Postoperative period was uneventful and was discharged on 10th postoperative day. Follow up after 2 months revealed a dry and healthy mastoid cavity and facial nerve recovered to grade II.

**DISCUSSION:**
Primary tuberculosis of the ear has rarely been reported, and the disease is usually secondary to infection in lungs, larynx, pharynx and nose. In preantibiotic era, 2-8% of all the cases of chronic supplicative otitis media were tuberculosis in nature and infants less than 1 year of age comprised 50% of these. Tuberculosis involving tympanic membrane is usually secondary to pulmonary tuberculosis, spreading through the Eustachian tube, most often by the forceful expulsion of haemoptysis and infected blood into the tympanum. The condition usually begins as an apparent serous otitis media. Infection can also reach the middle ear via external auditory canal or by haematogenous spread. The latter results in the direct involvement of the mastoid bone producing necrosis, sequestrum and it may progress to involve middle ear tuberculosis of middle ear is usually seen in association with or secondary to pulmonary tuberculosis. It is characterized by painless otorrhoea, multiple tympanic membrane perforations, abundant granulation tissue and bone necrosis. There may be multiple perforations in the early stages, but they coalesce into a total tympanic membrane perforation accompanied by a pale granulation tissue. The hearing loss tends to be greater than expected. In our case, there was a large central perforation along with cheesy material in posterior superior quadrant and attic region which was quite confusing with cholesteatoma. The large central perforation might be due to coalescence of multiple perforations as the presentation of this patient was quite late. The diagnosis of tuberculous otitis media is based on demonstration of acid fast bacilli within granuloma in biopsy materials, with or without the culture of mycobacterium tuberculosis from the biopsy, aural discharge or aspirate of the middle ear. Diagnosis is made from direct smear examination and culture of discharge, histopathological examination and polymerase chain reaction of discharge from middle ear. In our case, there were cheesy materials covering the most parts of middle ear cleft. There was sequestrum of 1x1cm pressing the second genu. Histopathological examination of cheesy material, sequestrum along with cervical lymph nodes were done separately and all three samples revealed tuberculosis. Surgery may be required in some cases of tuberculous otitis media to remove sequestra and improve drainage. We explored the mastoid under general anesthesia to prevent further complication, to release facial nerve compression and to confirm the diagnosis. When surgery is combined with appropriate chemotherapy, there is a good chance of healing with a dry ear with a good prognosis.

**REFERENCES:**
Fibroma of Epiglottis

Fibroma is a benign tumor showing fibroblasts and collagen fibres. Fibroma in the larynx is a rare entity. We report a case of 38 years male with fibroma of epiglottis. The patient presented with change in voice and difficulty in breathing. On indirect laryngoscopy examination, there was smooth, pinkish, globular shaped mass arising from laryngeal surface of the epiglottis. The mass was excised perorally.

Key words: fibroma, epiglottis, larynx, excision.

INTRODUCTION:
Fibroma is a benign tumour arising from mesenchymal tissue and is composed of fibrous or connective tissues. True laryngeal fibroma is a rare condition though the site of origin within the larynx can differ.

CASE REPORT:
A 38 years old male, presented to the ENT OPD with complaints of change in voice for 8 months and difficulty in breathing for 12 days. These symptoms increased in last 3 days before presentation. Indirect laryngoscopy revealed a smooth, globular shaped, pinkish mass arising from the laryngeal surface of epiglottis. The view of laryngeal inlet was obstructed by the mass and vocal cords status could not be appreciated. X-ray soft tissue neck, lateral view showed a soft tissue shadow at the level of hyoid (fig. 1). A clinical diagnosis of laryngeal cyst was made. Since the patient presented with stridor, the patient underwent emergency tracheostomy under local anesthesia. He later underwent excision of the mass perorally under general anaesthesia. The mass was found to be arising from the laryngeal surface of epiglottis and was covering the laryngeal inlet. It was removed in toto and the base was cauterized. There was not much bleeding. The mass was 4x3cms in size, firm and well encapsulated and on cut section was fleshy and homogenous. The specimen was sent for histopathological examination (Fig. 2, 3).

Fig.1: X-ray soft tissue neck, lateral view showing soft tissue shadow at the level of hyoid.

Fig.2: Specimen showing the mass

Microscopic examination showed spindle shaped cells with indistinct cytoplasm. Nuclei were relatively uniform, spindle to oval shaped and showed normochromasia. Some cells had wavy cytoplasm and nucleus. Mitosis and necrosis were absent. The final histopathological diagnosis was fibroma (Fig.4, 5).
**DISCUSSION:**

Fibroma of the larynx is a rare benign neoplasm. Stewart reported 9 cases of laryngeal fibroma over the period of 12 years, while Shaw reported 8 cases in 9 years duration. It commonly presents in the age group of 30-50 years. Our case also falls within this age range. There has been report of laryngeal fibroma in 15 years old male also. Symptoms include hoarseness, breathy voice, dyspnea, aspiration, dysphagia, pain, referred otalgia and hemoptysis. Diagnosis is based on direct or indirect visualization of the larynx, supplemented by X-ray, CT Scan, but the single most important diagnostic tool is a biopsy for histologic study of tumor tissue. Removal of the lesion restores voice, functional integrity of the laryngeal sphincter, and the airway. Depending upon the density of fibrous tissue and collagen content, laryngeal fibroma may be hard or soft. Hard fibroma (fibroma durum) consists of many fibres and few cells. Soft fibroma (fibroma molle) consists of many loosely connected cells and less fibroid tissue. Beside this there are other types of fibroma (angiofibroma, cystic fibroma, mixofibroma, cemento-ossifying fibroma, etc). Myxomatous degeneration occurring in fibroma makes the prognosis bad since it is always suggestive of malignant change so such case must be kept for close follow up. According to Ellis, small tumours can be removed endoscopically but larger ones require an external approach, fibroma extending beyond the laryngeal framework often require pharyngotomy or laryngofissure. Pertaining to this case, excision was done per orally using Boyle’s Davis mouth gag since the tumour was small enough to not needing external approach. A year after the intraoral excision of the laryngeal fibroma, there has been no recurrence.

**REFERENCES:**

Sphenchoanal Polyp

Sphenchoanal polyp is a rare form of nasal polyp. There are three different types of choanal polyp: Antrochoanal polyp, Sphenchoanal polyp and Ethmoidchoanal polyp reported in literature. Among them Antrochoanal polyp is the commonest while Ethmoidchoanal being the rarest one. In this article we are presenting a case of sphenchoanal polyp.

Keyword: Sphenchoanal, Choanal polyp, Antrochoanal

INTRODUCTION:
Isolated polyp arising from any of the sinus and extending to the nasopharynx is called a choanal polyp. When the polyp arises from the sphenoid sinus and extends to the choana it is known as sphenchoanal polyp.1 Antrochoanal polyp is common than a sphenchoanal polyp. Sphenchoanal polyp has three different parts i.e. intrasinusoidal, ostial and extrasinusual.2 The aetiology of sphenchoanal polyp is still unclear. As the symptom of antrochoanal polyp and the sphenchoanal polyp are similar, diagnosis may be very confusing. Correct diagnosis of these kind of polyp avoid unnecessary surgical intervention. Adequate preoperative evaluation by proper clinical examination, nasal endoscopy and computerized tomography is mandatory to ascertain correct diagnosis and to facilitate planning of appropriate surgical procedure. This article highlights the salient features of sphenchoanal polyp and its management.

CASE REPORT:
Miss M C, 17 years old female from Dang came in ENT out patient department with complain of bilateral nasal obstruction since last 5 months. Obstruction was more on right nasal cavity. She was having continuous and progressive nasal obstruction without any aggravating and relieving factor. The nasal obstruction was associated with occasional mucopurulent nasal discharge. On anterior rhinoscopy a polyoidal tissue was found in right nasal cavity. It was insensitive, did not bleed on touch and was not shrinkable, seemed to be arising more posteriorly with free middle meatus on the right side of nasal cavity. Left nasal cavity was normal on examination. Rigid nasal endoscope showed a polyp occupying both choana with stalk arising from the sphenoid sinus (Fig. 1). Computerized tomography (CT) scan of the nose and paranasal sinuses showed homogenous opacity in left sphenoidal sinus and the choana with normal maxillary antrum in that side (Fig. 2). She was admitted with a diagnosis of right sphenchoanal polyp and was planned for endoscopic sinus surgery. She was investigated for fitness of general anesthesia. On endoscopic sinus surgery under general anesthesia the polyp was removed after enlarging the sphenoid sinus opening (Fig. 3). Procedure was followed by the nasal instillation of the oxymetazoline and was discharged on next day with antibiotics, analgesics along with alkaline nasal douching for a week. She was advised for regular follow up for once a week for 3 weeks in outpatient department for nasal endoscopy guided suctioning. At the end of the 6 weeks, the nasal endoscopy showed nasal cavity free of polyp and enlarged left sphenoid sinus opening (Fig. 4). Her postoperative histopathology report was also followed up which came to be inflammatory polyp without any evidence of malignancy.

Fig. 1: Sphenchoanal polyp along with its stalk arising from sphenoid sinus
polyp formation is unrelated to allergy. Choanal polyps are also suggested developing from the intramural cyst present in the maxillary antrum or the sphenoid sinus. Thrombosis of the lymphatic vessel following sinus inflammation result in the formation of the intramural cysts. These intramural cysts gradually enlarge and exit through the ostium to develop choanal polyp. Berg had fluid aspirated from the choanal polyp and intramural cysts in the sinuses and has found similar concentration of the protein. As an ENT surgeon we have to differentiate sphenoid polyp from the choanal polyp for appropriate management. Many of the times, young ENT surgeon get confused while diagnosing sphenoid polyp. We have tried to highlight salient features of sphenoid polyp in this article. First of all, computed tomography of nose and paranasal sinuses which is performed routinely in the cases of nasal polyps, if showed opaque sphenoid sinus and choana with free maxillary sinus is the likely indicator of a sphenoid polyp. Similar presentation was in our case too. If both maxillary and ethmoidal sinuses are opaque then it is important to study relationship of polyp with middle turbinate using nasal endoscope. Sphenoid polyp passes medial to middle turbinates leaving middle meatus free while antrochoanal polyp passes lateral to middle turbinate with visible stalk arising from the middle meatus area. We can also check the ostium of sinuses: whether ostia are widened or not as the stalk compress the ostium. If sphenoid ostium is widened and sphenoid sinus is opaque, choanal polyp is most likely to be sphenoid polyp. The best way to manage the sphenoidal polyp is by using endoscopic guided microdebrider. It will allow the surgeon to remove bulk of the extrasinusoidal polyp and to follow the pedicle upto the intrasinusoidal compartment. As microdebriders are not available in many of the institute in our country we have to use endoscope, forceps and ball probe to dissect the intrasinusoidal portion of polyp.
CONCLUSION:
As sphenonchoanal polyp is uncommon than antrochoanal polyp, vigilant clinical examination using rigid endoscope and careful radiological study is mandatory to diagnosis sphenonchoanal polyp. This will avoid unnecessary exploration of maxillary sinus and inadequate surgery for a sphenonchoanal polyp.

REFERENCES:
An unusual Presentation of Fronto-Ethmoidal Mucocele

INTRODUCTION:
A mucocele is an epithelial lined, mucous containing sac completely filling the sinus and capable of expansion.1 This is in contradistinction to a blocked sinus cavity which simply contains mucus.2 Fronto-ethmoidal mucocele is by far the most common, maxillary being the least common type. Fronto-ethmoidal area is more susceptible to mucocele formation due to complexity of its drainage as compared to other sinuses.1 Fronto-ethmoidal mucocele usually present with outward and downward displacement of orbital globe and are often associated with palpable mass in supero-nasal and medial canthal region. The main objective of this case report is to report the rare presentation of fronto-ethmoidal mucocele.

CASE REPORT:
A 65 years old male presented with complains of swelling over left supraorbital region, forward protrusion of left eye ball for 6 months and loss of vision left eye for 4 months. He gave history of trauma over left supraorbital region 2 years back. Since 6 months he noticed swelling over medial aspect of left supraorbital region which was insidious, gradually progressive and painless. He gave history of decreased vision in left eye since 2 years which was gradual and progressive and complete loss of vision since 4 months. On examination there was 6 x 5cm single, smooth, globular swelling extending superiorly 1cm above supraorbital rim, inferiorly 2cm below infraorbital rim, medially 0.5 cm lateral to medial canthus (Fig.1). Swelling was nottender, firm to hard, nonpulsatile, fixed to underlying structure but overlying skin was free. Swelling was pushing the eyeball downward, forward and outward. On ophthalmic examination there was non axial proptosis, protruding 2 mm anteriorly with 2cm downward and 2cm outward displacement. Movements of extraocular muscles were restricted in all gaze, conjunctiva was congested and corneal examination showed feature of exposure keratitis. Anterior chamber was quiet, pupil was sluggishly reacting, lens were cataractous (Left=Right). However, fundus couldn’t be visualized. Sensation over cheek was intact but infraorbital rim was blunted. Anterior rhinoscopy was normal. Left nasal endoscopy showed 0.5 x 0.5 cm small round mass lateral to medial turbinate and accessory maxillary ostium was present. Fine needle aspiration cytology from swelling showed few scattered foamy macrophages and few inflammatory cells with thick mucinous material in background compatible with mucocele. Computed tomography scan showed well defined homogenous soft tissue density in left orbit (Fig. 2). Superiorly the frontal sinus was not visualized and superior wall of sinus lifted up and thinned out on its medial aspect. Laterally, lateral wall of ethmoid was not eroded but the mass extended into

Fig.1: Showing swelling & proptosis

Key words: Fronto-ethmoidal mucocele, Endoscopic, Marsupialization
nasal cavity. Inferiorly floor was pushed downward and was thinned out. The globe was pushed inferiorly and outward along extra ocular muscles. The optic nerve sheath was displaced inferiorly by the mass. After Intravenous contrast there was peripheral (wall) enhancement. Orbital apex and optic foramen were normal. Based on clinical findings and investigation, the most likely diagnosis was frontal mucocele with left cataract. The diagnosis of frontal mucocele was confirmed at surgery. Endoscopic wide marsupialization of mucocele with left frontoethmoidectomy was performed under general anaesthesia. Peroperatively about 100 ml of thick tenacious green-yellowish fluid was obtained after puncturing the bulla. Anterior table and part of posterior table of left frontal sinus was eroded. Dura could be seen through defect in posterior wall of frontal sinus but was found to be intact. Post operatively there was rapid resolution of swelling with improvement of proptosis and eye movement (Fig.3). Culture of aspirated fluid revealed no growth after 72 hours of incubation. Mucosa was studied histologically, the finding of which were consistent with the diagnosis of mucocele (Fig. 4). The patient made an uneventful post operative recovery. Nasal endoscopy four months after surgery showed widely open sinus cavity with healthy epithelization with no sign of recurrence. He was planned for cataract surgery on later date.

**DISCUSSION:**
The common presenting feature of fronto-ethmoidal mucocele are orbital displacement, frontoethmoidal swelling, visual impairment, headache, fistula in same region if spontaneous bursting spontaneously or any attempts is made to drain it. In a case series of 120 patients with fronto-ethmoidal mucocele 95% had some degree of proptosis, 55% had lateral displacement, and 59% had inferior displacement. Ocular mobility was limited.
in 55% in upgaze by mass which was often palpable in upper medial quadrant of orbit. Similarly Tseng et al. found proptosis as most common presentation in patient with fronto-ethmoidal mucocele. Nasal endoscopy may reveal the expanded mass presenting in ethmoidal region. However our patient didn’t give the history of headache or nasal obstruction. He gave history of swelling over supraorbital region instead over frontal or orbital region which is rare in itself as presenting feature of fronto-ethmoidal mucocele. Two third of mucocele are secondary to obvious predisposing factors and one third are idiopathic. Mucoceles are unilateral in 95% and bilateral in 5% of cases. Time lag between clinical presentations and initiating factor of mucocele varies. In case of surgery or trauma this is in an average of 23 years, whereas following an acute infective episode the mean time for presentation is 22 months. Five our patient had history of trauma two years back. There are various theories in pathogenesis of mucocele like pressure erosion, cystic degeneration of glandular tissue and active bone resorption and regeneration. Active bone resorption and regeneration theories are supported by greater number of evidence. A number of bone-resorbing factors have been found in mucocele mucosa like PGE2, leukotrienes, HETES and a range of cytokines. Also increased level of IL-a, IL1B and TNF-a, vascular adhesion molecules, e-selectin and I-CAM are found in mucocele lining in comparison with normal controls. In normal situation, new bone formation is balanced by osteolysis. In mucocele, the balanced is just tipped in favor of osteolysis facilitating expansion of lesion. Computed tomography scan is optimum method of demonstrating a mucocele. Several treatment options are available and choice depends on the degree of extension and may range from functional endoscopic sinus surgery to external approach, craniotomy and craniofacial exposure with or without obliteration of the sinus. The current tendency is to conduct functional, minimal invasive and low morbidity procedure with nasosinusual endoscopic surgery with marsupialization and abundant drainage of the lesion, preserving the epithelium. Frontoethmoidal mucocele are commonest among the mucocele occurring in various paranasal sinuses and may present in various way. Though rare but supraorbital subcutaneous soft tissue mass may be presenting complaint. So careful examination and investigation may suggest the diagnosis of sinus related disease.

REFERENCES:
INTRODUCTION: Quality control in medical education in Nepal is one of the hot topics nowadays, mainly because of mushrooming up of medical colleges in the private sector. This matter is also relevant because of Nepalese students being graduating abroad and practicing medicine in Nepal afterwards. During the last decade there has been tremendous increase in the opening up of new medical colleges and also the Nepalese students going abroad for training in medicine. There are at present four universities in Nepal. Tribhuvan University and Nepal Sanskrit Universities are the older one while Kathmandu University and the Purbanchal University are the newer ones. However, only two of them – Tribhuvan and Kathmandu universities affiliate for medical training to six medical colleges each. Besides these, there are three autonomous institution in the country which provide medical education – BPKIHS in eastern Nepal and NAMS Bir Hospital (only postgraduate training) and Patan University of Health Sciences in the Kathmandu very. Every year increasing number of medical graduates are registered in the Nepal Medical Council, who were trained other than above mentioned universities or institutes. This number is even expected to increase in years to come. Looking at the diversity of training institutes, the quality of training in ENT Head and Neck Surgery like in other specialities is a matter of concern. This article compares the training among different institutes of Nepal and also to that of India which is supposed to be gold standard in this region.

MATERIALS AND METHODS A descriptive cross-sectional study was conducted in the form of rolling audit in Ganesh Man Singh Memorial Academy of ENT Head and Neck Studies. MBBS training in ENT Head and Neck Surgery was studied in detail regarding theory and the practical classes, duration, subdivision of the group, exposure to OPD, OT, bedside teaching, audiology, speech therapy and lecture topics and examination system. New syllabus recommended by ENT/HNS department of IOM was also studied.1 Similarly, the syllabus of Kathmandu University (2006)2 and BPKIHS, Dharan ,Nepal (1996)3 in MBBS ENT training were studied. Current schedules of undergraduate training at AIIMS (2005)4 and other medical colleges of India under MCI (1997) were obtained from their web sites and was compared to the training in Nepal.

The following aspects were compared:
1) Aims and Objectives of undergraduate program in ENT and Head and Neck Surgery
2) Duration of Course
3) Knowledge
   a. Theory classes(lectures)-topics covered
   b. Seminars by students themselves
   c. Tutorials and problem based learning
4) Skills
   a. Ward Clinical Teaching(history taking/clinical examination)
   b. OT exposure(instruments/procedures)
   c. Emergency management
5) Teachers: Students Ratio/ Bed : Students ratio
6) Evaluation
   a. Logbook
   b. Examination System

RESULTS: The first objective of all institutions studied was to learn basic principles and practice of ENT followed by curative and management of patients and then Preventive aspects. AIIMS also focused on performing minor surgical procedures. New syllabus of IOM aims an appropriate and timely referral to experts. Durations allocated for theory and practical classes are given in table1 which shows less theory classes in T.U., and BPKIHS. Regarding time for clinical teaching it is highest in T.U. with
least in BPKIHS. Current syllabus of T.U. lacks theory lectures on Head and Neck lesions grossly, but this will be fulfilled in upcoming syllabus. Besides that, principles of Functional Endoscopic Sinus Surgery (FESS) will be included. Head and Neck malignancies are still not given importance in curriculum of K.U. and BPKIHS. AIIMS has focused on principles of common surgeries like myringoplasty, septoplasty, tympanoplasty in its curriculum. Seminar by MBBS has only been mentioned in BPKIHS curriculum and not even in curriculum of Indian medical colleges. This part will be covered in upcoming syllabus of T.U. Problem based learning (PBL) though being implemented in basic science of K.U. Medical School (KUMS); it has not been started in ENT/HNS. Clinical teaching focuses on history taking and methods of examination. Commonly used ENT instruments and procedures are taught along with X rays, models and specimens. This part is basically similar in different universities but in upcoming syllabus of T.U. operative procedures, endoscopy and ENT emergencies will also covered. As per Nepal Medical Council (NMC) guideline there should be 7 beds per student of a batch and 25/700 beds should be for ENT. This is fulfilled by IOM and BPKIHS only. Similarly 6 teachers for 100 students per batch should be there which is fulfilled by IOM, BPKIHS, and some medical colleges of K.U. Evaluation of students has been mentioned to be done by log book in curriculum of T.U. and MCI. Interval Examinations is being taken by K.U. and AIIMS but was left to individual medical colleges of India by MCI. As per table 2 Examination system in T.U., K.U., and medical colleges under MCI have maximum marks for final exams. AIIMS emphasized more in formative or internal exams. In BPKIHS curriculum there is no separate ENT paper but it is a part of General Surgery and allied science. It is not necessary to pass ENT section seperately where even though you fail individually in ENT but you have done good in other subjects of Surgery there is chance to pass. Internship is elective in K.U., AIIMS, BPKIHS where student can choose other posting instead of ENT. But in T.U. and other medical colleges of India under MCI it is compulsory for 2 weeks. In T.U. at least 2 night duties should be done in 2 weeks. The procedures to be done in internship are given in table 3.

### Table 1: Time allocated in curriculum

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<thead>
<tr>
<th>Institution</th>
<th>Duration(hours)</th>
<th>Theory</th>
<th>Practical</th>
<th>Total</th>
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<td>T.U.</td>
<td>45</td>
<td>162(6weeks)</td>
<td>207</td>
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<tr>
<td>K.U.</td>
<td>30</td>
<td>120(4weeks)</td>
<td>200</td>
<td></td>
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<tr>
<td>BPKIHS</td>
<td>56</td>
<td>84(4weeks)</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>Indian Medical Colleges (under MCI)</td>
<td>70</td>
<td>144(8weeks)</td>
<td>214</td>
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</tbody>
</table>

### Table 3: Skills to be developed in Internship

<table>
<thead>
<tr>
<th>PROCEDURES</th>
<th>T.U.</th>
<th>K.U.</th>
<th>BPKIHS</th>
<th>Colleges Under MCI</th>
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<tr>
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### DISCUSSION

Although the complexities of medical care are increasing, the methods of teaching medicine have changed little. Even in developed countries curriculum regarding ENT is not as per need for medical graduate. ENT has been removed from the curriculum of nine of the 29 medical schools in the United Kingdom, as it was not deemed relevant to general medical practice. But in a survey done by Sharma et al in 2006 showed, 90 per cent felt their undergraduate ENT teaching was directly beneficial to working in Accidents & Emergency department, 75 per cent felt they had not received enough undergraduate ENT teaching. Nepal has seen a dramatic increase in the number of medical schools/colleges in the last decade. It is important to explore the current advances and practices in medical education to meet the needs of the health services of the country. Teaching learning activities in most of medical colleges of Nepal is by traditional approach. Dhungel et al in their survey over medical students found that only 5.0% use to surf the internet regularly for their study matter and 79.0% students had never consulted any medical journals. Though strong need to standardize the entrance selection procedure of MBBS is being felt, but curriculum standardization is immediate requirement. Regular evaluation of curriculum and syllabus of ENT-HNS during MBBS is must as it is fast growing field and a large proportion of population is being affected by ENT diseases. Most of Nepal Medical Council registered doctors are being trained in Nepal itself, so improving the standard of syllabus, improves quality of health care delivery system. Training Programme in ENT HNS in almost all institution has prime aim of providing basic principles and practice of ENT followed by curative and then preventive aspect. But in AIIMS curriculum of performing surgical procedures has also been targeted. Current syllabus of T.U. has less time allocated for theory lectures almost half of what K.U. has. But topics covered as almost same. Practical classes are given more time in T.U. and least in K.U. Weeks allocated for ward posting is almost half of Indian Institution. But overall time allocated is almost same in different institution. In theory lectures T.U. curriculum involves base of skull and Orbit which is not so much important during undergraduate training period but it lacks Head and Neck malignancies in their curriculum, which is nowadays rapidly growing up. Curriculum in AIIMS in addition has focused on principles of common surgeries which are again not much related to undergraduate as the surgeries like myringoplasty, septoplasty, tympanoplasty need not to be dealt at periphery and can be referred at appropriate centers. Undergraduate training should help a doctor to differentiate...
emergency from non emergency cases, and timely referral and appropriate management of common and immediate attention requiring conditions. Seminars by students is being mentioned in curriculum of BPKIHS only. PBL though being done in basics sciences of KUMS curriculum is not been started in clinical subjects as ENT-HNS. Time allocated for ward postings in T.U. though seems to be highest but is not practically feasible and according to medical college it differs slightly. NMC guidelines of bed per student though may be fulfilled by college in totality but in practice for ENT it is not being followed in some medical colleges. Similar is the scenario of teacher per student. Log book during posting is mentioned In IOM Curriculum and not in other medical colleges and not even in that of India. Internal examination being taken in AIIMS is not being incorporated in T.U., BPKIHS. But K.U. curriculum has end semester exams for evaluation of students. During examination AIIMS more focuses in internal assessment, while BPKIHS takes exams under surgery paper and separately passing in ENT/HNS is not required. In that Perspective T.U., K.U. curriculum is better. Internship is optional in K.U., AIIMS, and BPKIHS. It is not needed to do in ENT if one has done internship in other specialty like Psychiatry. But ENT disease burden in community is so much that a graduate must have idea of managing the common problem under supervision which can be done during internship. This part if only is changed and is done as of other medical colleges of India and T.U. then confidence of medical officer to manage ENT condition is quite good.

**CONCLUSION AND RECOMMENDATION:**
Time allocated for theory lectures in T.U. and ward posting in K.U. is less compared to other universities and need of focusing on head and neck lesion is must. Regular examinations and making internship a compulsory posting should be done. Timely and frequent re-evaluation of curriculum to make it time appropriate is recommended.

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Diagnosis and Treatment of Sinonasal Inverted Papilloma

Sinonasal inverted papilloma is a rare locally aggressive benign tumour having high propensity for recurrence and association with synchronous and metachronous malignancies. Literatures were reviewed. CTscan and or MRI are mandatory for extent and diagnosis of tumour. Endoscopic medial maxillectomy have been found to have better results (less recurrence rate), however, total excision with normal tissue is necessary to prevent recurrence.

INTRODUCTION:
According to the World Health Organization, inverted papilloma (IP) is defined as a benign epithelial tumor composed of well-differentiated columnar or ciliated respiratory epithelium having variable squamous differentiation. Embryologically, the ectodermally derived epithelium of IP originating from the Schneiderian mucosa of the nasal cavity is distinct from the endodermally derived mucosa of the upper respiratory tract. It has many synonyms such as villiform cancer, Schneiderian papilloma, transitional cell papilloma, cylindrical cell papilloma, papillary sinusitis, epithelial papilloma, squamous papillary epithelioma, papillomatosis, endophytic papilloma etc. It has a long history dating over 150 years. In 1854, it was first described by Ward and named Schneiderian papillomas in honor of C. Victor Schneider, who in the 1600s identified nasal mucosa origin from ectoderm. In 1938, Ringertz coined the term “inverted papilloma,” based on its histological findings of inversion of the epithelium into underlying stroma. Inverted papillomas are relatively uncommon tumors of the nasal cavity comprising approximately 0.5% to 4% of all primary nasal tumors. Its incidence ranges from 0.75 to 1.5 cases per 100,000 per year. They occur approximately 15th as often as inflammatory polyps. There is a male predominance 3:1, and it affects primarily Caucasians. Most patients are usually diagnosed in the 5th to 7th decade with average age of 53 years. However, it has been reported in children and adolescent, and elderly group also. It is a benign but locally aggressive tumour having high chance of recurrence and high risk of association with synchronous as well as metachronous malignancies. Aetiology Its exact aetiology is still uncertain. Studies using in-situ hybridization and polymerase chain reaction (PCR) have detected human papillomavirus (HPV) in upto 86% of inverted papillomas. Mostly HPV 6, 11, 16 and 18 have been found. The presence of HPV DNA in inverted papilloma have been found to be associated with higher chance of recurrence and malignant transformation. Some studies also reported association of Epstein Barr virus with inverted papillomas but others have not been proved yet.

SITE OF ORIGIN:
The commonest site of origin of this tumour is lateral wall of nasal cavity, then medial wall of maxillary sinus. Less commonly it arises from ethmoid, sphenoid and frontal sinuses. Isolated involvement of sphenoid sinus have been reported by many authors. Besides nose and paranasal sinuses inverted papilloma arising from lacrimal sac and temporal bone have also been reported.

CLINICAL FEATURES:
The clinical presentation of sinonasal inverted papilloma depends upon the sites of involvement. However, the commonest symptom of sinonasal inverted papilloma is progressive unilateral nasal obstruction. Other symptoms include blood mixed nasal discharge, headache, facial pain, frequent clearing of throat, decreased or loss of smell, epiphora or symptoms suggestive of sinusitis. Inverted papilloma generally occurs unilaterally, but the bilateral involvement of the sinonasal tract has been reported in less than 1 to 9% patients. A recent study by Visvanathan et al reported 10 cases of inverted papilloma with intracranial extension. On examination, a pinkish polyposid smooth or lobulated mass with papillary surface located lateral to the middle turbinate in the nasal cavity is a suggestive diagnosis of inverted papilloma (Fig.1).

Fig. 1: Typical Endoscopic picture of inverted papilloma
Septum may be pushed to opposite side. However, sometimes clinically there may be difficulty to differentiate inverted papilloma from other nasal masses. In our previous study on nasal masses 1 case was diagnosed clinically as simple nasal polyp but histopathological report came out to be inverted papilloma. Similarly clinically diagnosed three cases of inverted papilloma were histopathologically reported as inflammatory polyps in two and angiofibroma in one. Depending upon the extent of tumour other signs such as proptosis and facial swelling may be present.

**INVESTIGATIONS:**
Computed tomography and magnetic resonance imaging (MRI) are the techniques of choice for pretreatment staging of neoplasms of the sinonasal tract. The CT-based determination of the locations of the areas of focal hyperostosis corresponded to the actual tumor origin in 89.1% cases of inverted papilloma. Especially in cases with focal hyperostosis within the frontal, maxillary, sphenoid, and posterior ethmoid sinuses, areas of focal hyperostosis corresponded to the origin of tumor without exception (Fig. 2). CT scans can be used to differentiate focal hyperostosis from diffuse bone thickening, which is usually associated with chronic paranasal sinusitis. Other changes in bone that have been detected using CT scanning in patients with inverted papilloma include intratumoral calcification, thinning, bowing, and erosion. A unilateral mass within the nasal cavity or paranasal sinuses with a surface configuration that appears lobulated on CT is a new sign that strongly suggests inverted papilloma as a primary diagnosis and also suggests inverted papilloma in patients with tumor recurrence (Fig. 3). Sometimes CT Scan may not be sufficient to differentiate inverted papilloma from other soft tissue lesions. In such cases RI is needed. A columnar pattern is a reliable MRI indicator of IP and reflects its histological architecture (positive predictive value of 95.8%). The combination of this finding with the absence of extended bone erosion allows for the confident discrimination of IPs from Malignant tumours. A sinonasal mass with a convoluted cerebriform pattern (CCP) on T2- or enhanced T1-weighted images suggests inverted papilloma as a histologic diagnosis (Fig. 4). Necrosis in a mass with such an appearance strongly suggests coexistent carcinoma. Jeon et al found CCP as a reliable MR imaging feature of sinonasal IPs to differentiate them from various malignant sinonasal tumors with the overall accuracy of 89%. However, even the presence of a diffuse CCP throughout the tumor on MR imaging does not always guarantee the diagnosis of benign IPs, because it also can be seen in IPs concomitant with SCC or other malignant tumors. A focal loss of a CCP might be a clue to a preoperative prediction of IPs concomitant with malignancy. A biopsy is mandatory to obtain a definitive diagnosis. In microscopic examination the proliferated epithelium is found to be invaginated towards stroma (Fig 5).
TREATMENT:
Wide excision of the tumour with normal surrounding tissue is necessary to prevent recurrences of inverted papilloma. Lateral rhinotomy or midfacial degloving approach with medial maxillectomy was the surgical treatment for this tumour. However, since 1980s endonasal endoscopic or microendoscopic techniques have been largely applied to resect this tumour. Lateral rhinotomy approach gives adequate exposure to resect tumour from nasal cavity and sinuses and bone but the disadvantages are postoperative scar, epiphora, CSF leak. The scar problem can be avoided by midfacial degloving approach. Its disadvantages include insufficient access to more distant areas, such as frontal, superior ethmoid, sphenoid sinuses, orbital and complications include vestibular stenosis, oculoartenal fistula and epistaxis. This approach can be combined with endoscopic approach to prevent scar as well as to clear disease from frontal and sphenoid sinuses. Midfacial degloving is particularly useful for inverted papillomas that are bilateral nasal in origin. Endonasal endoscopic approach reduces complications of external approaches but if the tumour is extensive it may not be adequate to clear all the tumour. However, many literatures have shown less recurrence rate in endoscopic approach ranging from 3-17% in comparison to the external approach with recurrence rate of 18-24%.37,41 Although traditionally endoscopic surgery is used more for small lesions recently, however, a new technique has been described for treatment of massive tumors with attachments within the maxillary sinus. It is called SSES (Sequential Segmental Endoscopic sinus Surgery). This involves sequential excision of larger tumors into segments, four segments usually. First, the nasal cavity; second, the middle meatus, including portions of the ostiomeatal complex; third, the maxillary sinus ostium and antrum along with the maxillary sinus medial wall if an endoscopic medial maxillectomy is performed; and then the frontal or sphenoid sinus.42 The contraindications to a purely endoscopic resection of inverted papillomas include the concomitant presence of squamous cell carcinoma, massive skull base erosion, intradural or intraorbital extension, and extensive involvement of the frontal sinus. Frozen sections should be obtained in all types of surgeries to confirm negative margins and bone should be removed from underlying sites of attachment. Radiation therapy has been used as an alternative treatment; however, its use should be reserved for inverted papilloma associated with squamous cell carcinoma.43,44 Definitive radiotherapy may also be used to successfully treat patients with incompletely resectable inverted papilloma.44-46 It has been suggested that as an adjunct to surgical excision in aggressive HPV-related disease, adjunctive treatments, usually in the form of immunomodulation, interferon can be used.47 Its mechanism of action is by producing P56 which inhibits HPV DNA replication through direct interaction with the origin-binding protein E1 of several strains of HPV.48 For recurrent respiratory papillomatosis, interferon and topical cidofovir are recommended to lower recurrence rate.49 The tetravalent HPV vaccine Gardasil has been recently developed and found to be effective against HPV types 6, 11, 16 and 18.18 There are no studies in the literature describing the use of these treatments for sinonasal inverted papilloma.

CONCLUSION:
Besides routine nasal endoscopy, CT Scan and or MRI are necessary for diagnostic clues and extent of inverted papilloma. Surgery whether external approach or endoscopic wide excision is necessary to prevent recurrence of the tumour. Other modalities of treatment should be reserved for extensive and recurrent tumour and studies should be done in future to detect efficacy of antiviral agents in the treatment of inverted papillomas.

REFERENCES:
**INTRODUCTION:**
Thyroglossal cyst/fistula represents the most common congenital anomaly of the neck.¹ It accounts 2-4% of all neck masses.² But they may be formed as many as 7% of the population.³ It arises from a persistent epithelial tract, the thyroglossal duct, formed with the descent of the thyroid gland from the foramen caecum to its final position, in front of the neck. The duct so formed can give rise to cyst (commonest), sinuses and fistulae (rare). Thyroglossal cysts occur in six different variants: infraphyoid, suprathyroid, juxtahyoid, intralingual, suprasternal and intralaryngeal cysts (extremely rare). Most commonly it is present in first decade of life. However they are seen in adult also.³ Symptoms can arise from the swelling itself or from complications, the most significant of which is infection. Most of the time cyst will be infected leading to abscess formation after which it will convert into fistula either due to spontaneous rupture or incision and drainage of the infected cyst. Diagnosis is made on the basis of clinical examination, USG and cytopathological investigation. Treatment of choice of this pathology is the Sistrunk operation. The recurrence rate for thyroglossal duct cysts after a Sistrunk operation is 5%, compared with 20% if the body of the hyoid is not removed.⁴ The complete Sistrunk procedure solves the problem in the majority of patients, but in cases with infraphyoid extension, tracing of the extension is required and failure of this may result recurrence of the disease even after Sistrunk operation.³ Therefore, author has designed modified Sistrunk operation, specially focusing the recurrence after Sistrunk operation due to infraphyoid extension or second duct towards hypopharynx or dissemination and implantation of remnant cells into the surrounding tissues during either spontaneous rupture or manipulation of abscess during incision and drainage.

**MATERIALS AND METHODS:**
All clinically suspected cases of thyroglossal cysts, attending to OPD of ENT-Head and Neck Surgery of TU Teaching Hospital, Kathmandu, Nepal from January, 2005 to July, 2009 were advised for USG neck and FNAC to confirm the diagnosis, where as fistulas were advised for fistulogram. Reports were analyzed and after confirming diagnosis by a faculty member, these patients were posted for surgery. Altogether 47 patients underwent Sistrunk operation by different faculty members of the department. Among them 13 patients were operated by the author with modified Sistrunk operation technique. So data were analyzed only of these 13 patients and special focus was made on the recurrence of the disease during the entire follow up period. In this modified Sistrunk operation technique, after infiltration of 5ml injection of lignocaine and adrenaline (1: 200,000), a horizontal skin incision along the skin crease, (fig.1) preferably on top of the swelling is made for the cyst. But for the fistulas and disease with ugly scar, an elliptical incision, (fig.2)enclosing the fistulous tract and ugly scar preferably along the skin crease, was given and sub-platysmal flaps were raised superiorly just above the body of the hyoid bone and inferiorly up to the thyroid notch. Superior boarder of hyoid

**Objective:**
To find out the outcomes of Modified Sistrunk’s Operation for thyroglossal cyst/fistula at the Department of ENT-Head & Neck Surgery, Tribhuvan University Teaching Hospital (TUTH), Kathmandu, Nepal.

**Methods:**
It was a hospital based, prospective, cross-sectional, case series, conducted among the patients, suffering from thyroglossal cyst/fistula, from Jan 2005 to July 2009. Altogether 47 patients underwent classical Sistrunk operation. Among them 13 patients were operated with “Modified Sistrunk Operation” by the author which is specially designed for this pathology. No recurrence was noted during the entire follow up period. The data were analyzed by using simple mathematical tools like percentage and frequency.

**Results:**
Out of thirteen patients treated with modified Sistrunk operation no recurrence was noted till the follow up of minimum 6 months and maximum four and half years.

**Conclusion:**
The results of this study so far indicate that modified Sistrunk operation is one of the most effective treatment methods for thyroglossal cyst/fistula without any recurrence.

**Key words:** thyroglossal cyst/ fistula, Sistrunk’s operation, modified Sistrunk operation, body of hyoid.

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**Fig. 1:** Incision for TG cyst.  
**Fig. 2:** Incision for TG fistula.
bone was exposed. Likewise inferior dissection is carried out along the midline enclosing midline tissues of the neck up to the thyroid notch and thyrohyoid membrane medially. Once superior borderer of body of hyoid bone was identified an inverted “V” shaped incision was made pointing towards the foramen caecum now from the thyroid notch, superficial to the thyrohyoid membrane, dissection was carried out superiority and body of the hyoid was made free from the medial side. Once muscles attached to the body of hyoid was made free, the entire cysts/fistula/scar tissue along with body of hyoid bone, elliptical midline tissue of infrasound region and inverted V shaped muscle tissue of suprhyoid region pointing towards foramen caecum was removed in toto in a single block (Fig.3 & 4).

Proper haemostasis was achieved by electric diathermy and wound was closed in layers with or without draining. Stitches were removed on 6th post operative day and follow up was instructed to each patients.

RESULTS:
A cohort of 13 patients, age ranged from 3.6 yrs to 31 yrs, consisting of 9 male and four females presented mainly either with neck swelling (cyst), or discharging fistula or ugly scar with repeated infection were taken for the study. All patients underwent modified Sistrunk operation under GA. None of these patients had recurrence after surgery by this technique till the maximum follow up period of four and half years and minimum of six months.

DISCUSSION:
As thyroglossal duct remnant is the congenital pathology, possibility of recurrence will be there even after Sistrunk operation and its different modifications. Nir et al reported that even after Sistrunk operation, the recurrence rate was 1.9%. Even higher recurrence rate was found by Turkyilmans et al in their study which was 3.7%. Sattar et al reported a case of two years child who was referred to them for recurrent thyroglossal duct cyst even after complete and adequate resection and was successfully treated without further recurrence by core excision of the foramen caecum. In most of the recurrence cases it was observed that recurrence was either due to incomplete removal of remnant near foramen caecum or infrathyroid extension or rarely double tract of the pathology. Likewise, recurrence could be due to infection of the cyst and spontaneous rupture of the cyst which may lead to dissemination and or implantation of epithelial cells of the tract in to the surrounding tissues which could be missed during the surgical procedure and latter on appeared as a recurrence of the disease. Therefore targeting all these possibilities, author has designing this modified Sistrunk operation which covers up and incorporates all these possibilities of remnant cells, which could be left behind during surgical procedure, resulting no recurrence of the disease. By this procedure author did not find any recurrence during entire follow up. More or less similar result was observed by Merlin et al without any recurrence done in twenty nine patients with follow up period of one year. Similarly, Patel et al reported result of six patients, extending the Sistrunk operation with an anterior wide local excision remaining within normal tissues enables removal of the entire thyroglossal tract remnant that lead to no recurrence.

CONCLUSION:
The results of this observation indicate that modified Sistrunk operation is one of the best surgical procedures for the treatment of thyroglossal duct pathology specially to prevent the recurrence. With this surgical technique no recurrence was observed even after treatment of recurrent cases.

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REFERENCES:
This is a concise textbook on ENT Head and Neck Surgery for undergraduate medical students. The author is an eminent professor who has been in the teaching profession for more than 26 years. Professor Shrivastav has conveyed his experiences and expertise on the subject through this book. The book itself has 202 pages and is slightly smaller in size than A4 size paper. It is divided into five sections - the ear, the nose, the throat, Head, and Neck and the related topic and lastly the index. All the 59 chapters are well written, have good illustrations with highlighted key points at the end of each chapter. The knowledge imparted through topics seems to be adequate for the undergraduates. There are hardly any grammatical mistakes as this book comes from “Mr Perfection”, and the printing is superb. Overall the book is a good buy for money. However, there are few shortcomings which can be improved in the next edition. Practice of medicine should be evidence based as far as possible. The controversial matter should be mentioned e.g. the etiology of nasal polyp, treatment of idiopathic sensorineural hearing loss. A reference for further reading at the end of a chapter will be very useful.