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Editorial

Allergic Rhinitis and the Otolaryngologists

Nearly all ENT specialists consider allergic Rhinitis (AR) as a common condition which is about 30% of their patients in private practices. The conventional method of treatment is practiced by all of them. They like to prescribe steroid spray locally, anti-allergic, H₂ receptors blocker, even calcium containing drugs.

The aim of this article is to prepare practitioners to face that patient with AR, not its treatment.

Diagnosis of AR is very easy, take care of AR or to advise the patient is not costly but to follow the advises of doctor fully is hardly possible for patients.

Not too long ago, much of the medical community and a large segment of the common people considered allergy a questionable condition at best. The opinion “It’s all in their head” was often expressed when the diagnosis of allergy was suggested.

Foods that a patient dislikes are often represented as foods to which the patient is allergic. Unpleasant working conditions may be reported as places harboring substances to which the worker is allergic. Allergy is also blamed for poor academic performance in schools. Whereas formerly clinicians were often reluctant to make a diagnosis of nasal allergy, they may now frequently find it necessary to modify a patient’s conviction that some form of allergy is at the root of all problems.

A conscientious physician, aware of the prevalence of allergy, must become at least reasonably knowledgeable as to the true extent of the problem and proper approaches to diagnosis and care.

To address properly the need for becoming involved in treating allergy, the physician must ask certain critical questions: How important is allergy for a practicing clinician? Is it truly widespread and debilitating enough to affect the practice?

Although generally not life-threatening, from an economic point of view allergy is not a minor problem. Based on figures reported in 1980, in USA allergic rhinitis alone had an expenditure of $224 million annually in physicians’ services, and an additional $297 million for relief of symptoms. The same condition produced 2 million days of absence from schools annually, and 3.5 million people lost work days, accounting for $154 million annually in lost wages.

Current estimates are that allergy in one form or another affects some 30% or more of the general population. Otolaryngologists may expect about 50% of the patients with symptoms of allergy as a major or at least a contributing factor of the illness.

To make the diagnosis, the clinician must be alert for allergy. The manifestations are multiple but frequently not obvious unless specifically sought. Allergy has been called “the great masquerader” because of its ability to mimic an immense variety of other conditions.

If the problem starts before the age of 1 year, in roughly 80% of cases the child will be found to be allergic. (In most cases, when this appears in infancy, the culprit is food. It can be distressing to find that simple dietary control might have saved repeated myringotomies with tubes, and the attendant risks.) The adult who complains of repeated
respiratory infections every month or so, especially without fever, requires an allergic evaluation. Many cases of migraine-type headache are actually allergic in origin. A wide variety of gastrointestinal complaints may actually be food hypersensitivities. In short, almost any medical condition may be imitated by allergy.

It is not necessary to understand fully all the underlying mechanisms by which allergy affects the body. (This is fortunate, as science does not as yet fully understand all these mechanisms.) Nor is it necessary to keep at one’s fingertips all the principles of each test devised for the diagnosis of allergy. What is necessary is a basic, general knowledge of the immunologic mechanisms governing allergy as far as they are understood at present, and of how these mechanisms apply to allergy testing and treatment. Details, as presented here, should be gone over and understood, but they may then be relegated to the realm of “know where to find when needed.”

The ears, nose, and throat are the portals of entry for all allergens, and because four of the five senses are based predominantly in the ear, nose, and throat area, a major relationship would be expected and does in fact exist. Conditions that offend the senses drive the patient to the physician, often more rapidly than more dangerous conditions. This probably contributes to the frequency of ENT visits for conditions caused by allergy.

Symptoms are embarrassing, suppression of the symptoms temporarily is not difficult but reappearance is cumbersome. However days are not an away when immunotherapy and some newer methods of treatment will beat AR.

Despite the advances in allergy care during the past several decades, there are still only three basic accepted approaches to allergy care:

a. Avoidance (not to go in contact or geographic move)

b. Pharmacotherapy

c. Immunotherapy. Today’s patient must opt for one or more of the established approaches presently available to reduce or alleviate sneezing, itching rhinorrhea or congestion. Pharmacotherapy with corticosteroid may give dramatic result for time being but must be aware of the side effects. Allergic rhinitis may precipitate asthma and at the same time literature reported tonsillectomy in case of allergic rhinitis may invite asthma. Minor surgery with the aim to change the nasal mucosal pattern may be practiced with close follow up.

Prof. Dr. Pran Gopal Datta
Professor of Otolaryngology- Head and Neck Surgery,
Former Vice Chancellor, BSMMU, Dhaka, Bangladesh
Rhinoplasty: Experience in Combined Military Hospital, Dhaka

Md. Bashir Ahmed¹, Rehena Akter², Salahuddin Ahmed³

Abstract:

Background: Rhinoplasty, perhaps is the most complex and challenging cosmetic surgical procedure performed today. Hence, a thorough preoperative evaluation and the surgical skill in performing the operation is most important for final desired outcome. Establishing an accurate diagnosis through a comprehensive nasal analysis is obligatory.

Objective: To assess post-operative functional and aesthetic outcome and patient’s satisfaction of all rhinoplasty operations.

Methods: Retrospective study carried out in combined military hospital, Dhaka. 50 patients with external nasal deformity who were operated for functional, aesthetic or for both reason were included. Patients’ satisfaction levels from the procedures were routinely documented in the post op visits as completely satisfied, partially satisfied and not satisfied at all.

Results: A total of 50 cases underwent rhinoplasty and septorhinoplasty operations. The most common reason of disfigurement was traumatic injury during games (40%). Different surgical procedures were done without any major complications. Except few most of the patients were fully satisfied.

Conclusion: For better satisfaction of patients, adequate preoperative counseling and realistic expectations are warranted. Skillful surgical techniques reduce the chances of complications.²

Keywords: Septoplasty, Rhinoplasty, Septorhinoplasty, External nasal deformity

Introduction:

Nose is the central and most prominent feature of the face. It is also the most vital part of facial contour and beauty. The term rhinoplasty has derived from Greek word “Rhinos” which means Nose and “Plassein” means to shape. Commonly known as Nose job, Rhinoplasty or Nose plastic surgery which enhances facial appearance by correcting nasal deformities and improving aesthetic appearances of the nose. It was described in ancient Egypt in 2500-3000 BC. In ancient India it was first described by the ayurvedic physician Sushruta in his book “Sushrutasamhita (c.500 BC)”. Sushruta is considered as the father of rhinoplasty surgery in the world.¹ The first documented evidence of the available records regarding rhinoplasty comes from Edwin smith papyrus.² In 1887- John Orlando Roe first performed “Intra nasal Rhinoplasty”. In India Rhinoplasty started to reconstruct nose for
those whose nose was destroyed by rhinectomy. Such a mutilation was inflicted as a criminal, religious, political, and military punishment in that time.

Rhinoplasty is the 2nd most common surgeries performed by facial plastic surgeons worldwide. Patient satisfaction is the principal outcome measure of success in facial cosmetic surgeries. Patient’s satisfaction may be influenced by social environment, education, life experience and level of expectations, which may or may not be realistic. Complete photographic documentation is fundamental to both physician and patients for surgical planning and assessment of post-operative results. Photograph including right and left lateral and oblique views along with anterior, inferior (basal) and superior views for analyzing the target, outcomes and for discussing the surgical and aesthetic issues with the patient should be taken. After detailed anatomical and anthropometric analysis individualized surgical planning including precise need and amount of cartilage resection, suturing, osteotomies and dynamics of nasal airway should be considered.

Open rhinoplasty has certain advantages such as detailed and wide exposure of nasal shape defining structures, easy suturing and avoidance of distortion of anatomy for planning the reconstruction. There are certain definite disadvantages like trans-columellar scar, increased chances of post op edema in the tip and dorsum and need of fixation for graft placement which could be done without fixation in the closed technique.

Methods:
Retrospective study carried out in Dhaka combined military hospital, from 1st March 2017 to 31st Dec 2018. 50 patients with external nasal deformity who were operated for functional, aesthetic or for both reason were included. We evaluated the high resolution CT images of the nose and PNS with 3D reconstruction of face in posttraumatic cases along with analysis of photographs of all the patients in all 6 views were made.

All such patients underwent detailed facial photography in frontal or anterior profile view, basal or inferior view, superior view, right and left oblique view and right and left lateral views as per protocol. All patients had undergone detailed facial analysis including objective measurement of facial angles, target oriented realistic psychological assessment and counseling prior to pre anesthetic checkup and surgical planning. Type of deformity, etiology, surgical procedures performed, grafts and splints used were analyzed and studied. Patients’ satisfaction levels from the procedures were routinely documented in the post op visits as completely satisfied, partially satisfied and not satisfied at all.

Follow up was done initially at 2 weeks then 1 month, 3 months, 6 months, 12 months and 18 months period.

Limitations of the study
A. This study may not reflect the real situation in our country as the study was carried out in military population who are more active in physical activities than general population.

B. Duration of follow up is short. Not yet completed the time for 02 years for follow up.

Results:
Total 50 cases were operated in CMH Dhaka from 1st March 2017 to 31st Dec 2018. There were 38 males and 12 females; among the patients with a male to female ratio of 3.16:1 (Chart 1).

Number of male patients were higher than female because of injury during boxing, playing football, volleyball, hokey etc, as these are regular activities of military service. The age range was between 21 and 50 years among those who presented to us for rhinoplasty (Chart 2).
History and cause for which they underwent rhinoplasties were noted in patients. The most common reasons for which our patients attended the ENT OPD for rhinoplasty were results of sports injury 14 out of 50 (28%) and 13 out of 50 (26%) developmental deformity. Rest 9/50(18%) cases had post septoplasty and 6/50(12%) cases) had history of road traffic accident (Table 1).

### Table I:

<table>
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<tr>
<th>Causes of deformity from history</th>
<th>No. of patients</th>
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<tr>
<td>Road traffic accidents</td>
<td>6</td>
<td>12%</td>
</tr>
<tr>
<td>Sports injury</td>
<td>14</td>
<td>28%</td>
</tr>
<tr>
<td>Post septal abscess</td>
<td>8</td>
<td>16%</td>
</tr>
<tr>
<td>Post septoplasty</td>
<td>9</td>
<td>18%</td>
</tr>
<tr>
<td>Developmental</td>
<td>13</td>
<td>26%</td>
</tr>
<tr>
<td>Total patients</td>
<td>50</td>
<td>100%</td>
</tr>
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</table>

Out of 50 cases, 18 persons (36%) had presented with saddle nose deformity and requested for the correction. Saddle nose deformity most commonly due to post submucosal resection. 10 patients had hump deformity and 15 patients had crooked nose with multiple deformities which made them to visit our outpatient department. Two patient who had a history of boxing injury had an open roof deformity (Table 2).

### Table II:

<table>
<thead>
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<th>Types of deformity</th>
<th>No. of patients</th>
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<tr>
<td>Crooked nose</td>
<td>15</td>
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<tr>
<td>Saddle nose deformity</td>
<td>18</td>
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<tr>
<td>Hump deformity</td>
<td>10</td>
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<tr>
<td>Associated deviated nasal septum</td>
<td>32</td>
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<tr>
<td>Deformities of tip</td>
<td>15</td>
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<tr>
<td>Open roof deformity</td>
<td>2</td>
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Associated septal deviations necessitating corrections in 35 out of 50 patients along with other procedures and rest required other different nasal corrections. 38 patients required spreader graft, 37 required osteotomy, 23 required augmentation and 15 required tip plasty techniques during the surgery for adequate corrections to be achieved (Table III).

11 patients under went closed rhinoplasty surgeries using marginal and Intercartilaginous incisions and open rhinoplasty had to be performed in 39 cases. Septal, choncal and costal cartilage were used as graft in different procedures. Mean hospital stay was 07 days. Splints were used in all patients after surgery. Commercial external nasal splints were used in 37 patients and POP cast splints in 13 patients. There were no difference in the post-operative outcome between the patients in terms of types of splints were used, however patients’ satisfaction concerned with splints and immediate post-operative aesthetic appearance as per patients comfort were poor with POP cast splints. There were some intraoperative and post-operative complications noticed among our cases that includes haemorrhage, Periorbitalechymosis and oedema. However, short term anesthesia over nose was seen in 3 patients which resolved by 3–4 weeks in the post-operative period.

2 patients did present to us with persistent swelling and edema over nasal dorsum which persisted more than 12 weeks and took longer to resolve. All these patients got resolution of their persistent edema in due course of time. Patients’ satisfaction levels from the procedures were routinely documented in the post op visits as completely satisfied, partially satisfied and not satisfied at all. 42 patients were satisfied with the results, 6 patients being partially satisfied and 2 were not satisfied at all. Patients who had shown no satisfaction with the results were advised for revision surgeries however none of those patients had consented for a revision surgery. Donor site morbidity was not reported among the cases.

Comparative study before and after rhinoplasty shows significant improvement and patients satisfaction in both external deformity with deviated nasal septum and external nasal deformity without deviated nasal septum.

### Table III:

**Surgical procedures**

<table>
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<th>Procedure</th>
<th>No. of patients</th>
<th>Procedure</th>
<th>No. of patients</th>
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<tr>
<td>Septoturbinoplasty</td>
<td>35</td>
<td>Dorsal augmentation</td>
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<td>Humpectomy</td>
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<td>Nasal base reduction</td>
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<td>Tip plasty</td>
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<td>Spreader graft</td>
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<td>Supra tip plasty</td>
<td>12</td>
<td>Osteotomy</td>
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<td>Collumlar strut</td>
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<td>Alar rim graft</td>
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Rhinoplasty: Experience in Combined Military Hospital, Dhaka

Md. Bashir Ahmed et al
Discussion:
Trauma accounted for most causes of nasal deformity, with other causes being congenital, developmental, prior nasal surgery, infective etc. In our series the majority was traumatic patients including road traffic accident and sports injury (12%+28%= 40%). Due to military service pattern sports injury is more common than road traffic accident. Crooked nose and saddle nose deformity being found the commonest deformity. Crooked nose deformity was associated with developmental and sports injury also. Besides the obvious cosmetic defect, patients with crooked nose frequently have troublesome nasal obstruction due to the narrowed airway

Open rhinoplasty gives the possibility to assess anatomical deformities, asymmetries and structural alterations by direct inspection of the nasal framework. The structures of the nose can be manipulated in a more precise manner and sutures and grafts can be placed and fixed adequately.

Open surgical technique does produce increased supra tip edema than closed rhinoplasty but use of both hands for leads make the work easy and provides better results in the surgical process. The scar of the skin incision is invisible in the majority of cases if the precise technique is performed. In the view of this we followed open rhinoplasty rather than closed one in 78% cases without any major post-operative complications. Medial osteotomy combined with lateral osteotomy facilitates medialization of the lateral nasal wall, thus achieving open roof closure, as well as effective narrowing of the wide nasal base, even in the absence of a hump.

To improve and maintain the nasal airway we used spreader graft in all open technique because it helps to prevent narrowing of internal nasal valve, preserve the dorsal aesthetic lines, and stabilize the septum.

Foda documented his complication rates as follows: septal flap tear 2.8%, alar cartilage injury 1.8%, post-operative nasal trauma 1%, epistaxis 2%, infection 2.4%, prolonged edema 17%, nasal obstruction 0.8%, and unsightly transcolumnellar scar 0.8%. We had Epistaxis 4(8%), periorbital oedema 10(20%), ecchymoses of eye 5(10%), Crusting 1(2%) and Synechiae 3(6%). No major life threatening complication was seen.

Foda documented patient's satisfaction 95.6% and in our series 84% were completely satisfied and 12% were partially satisfied which similar to Foda. Satisfaction is variable from person to person and depends on primary deformity, primary or revision surgery, mental state and realistic expectation. Next photographs shows few of our pre-operative and post-operative outcome.

Conclusion:
Rhinoplasty being a cosmetic surgery is of utmost importance, it has become an attractive and fascinating surgery for the otolaryngologists and plastic surgeons. It's a highly individualised problem specific operation that combines augmentation with reduction. The proportion of the so called ideal nasal shape and the operation to achieve this have been the subject of extensive training and surgical skill. Results differ with the each individual with their configuration, their healing properties and, psychological uptake. Preoperative counselling with the patient and close relatives or friends is most important to overcome the unrealistic expectations.
References:


Abstract:

Objective: To observe Post-operative complications of Total Laryngectomy in advanced Laryngeal Carcinoma Patients.

Methods: This prospective observational study was conducted in National Institute of ENT, Tejgaon, Dhaka. Study duration 3 years, from January 2015 to December 2017. 17 patients were selected who underwent total laryngectomy for histologically proven advanced carcinoma larynx. Patients were followed up monthly for 3 months & then after 6 months for life long.

Results: The age of the patients ranged from 39 to 66 years. The mean age was 47 years. Most of the cases are supraglottic carcinoma 12 (70.59%), Glottic carcinoma in 5 (29.41%) & no subglottic carcinoma. In this study, out of 12 supraglottic cases, 4 patients were presented in stage III & 8 in stage IV. Among the glottic cases 1 patient presented in stage I, 2 in stage III & 2 patients presented in stage IV. Patients were followed up monthly for 3 months & then after 6 months for life long. 2 patients (11.76%) developed pharyngocutaneous fistula within 7th to 15th post-operative day & these patients were managed conservatively which involved adequate drainage, frequent dressing & fresh blood transfusion. With these conservative management fistula healed completely within 3 to 4 weeks. 3 patients (17.65%) developed wound infection. Wound swab was sent for culture & sensitivity and antibiotics changed accordingly. Wound healed within 2-3 weeks with conservative treatment & adequate aseptic dressing. 1 patient (5.88%) developed postoperative hematoma which was drained immediately. This patient developed wound infection later on & was managed conservatively. 2 patients (11.76%) developed stomal recurrence 4 months after surgery, which was confirmed by biopsy. The cases were inoperable & were sent for radiotherapy. 2 patients (11.76%) developed dysphagia due to pharyngeal stenosis 4 months after surgery.

Conclusion: The most frequent troublesome immediate complication is pharyngocutaneous fistula all of which have been treated conservatively with satisfactory result. Preoperative radiotherapy is an important risk factor for the development of pharyngocutaneous fistula in total laryngectomy.

Keywords: Laryngeal Carcinoma, Total Laryngectomy, Radiotherapy, pharyngocutaneous fistula.
Introduction:
Although history credits Patrick Watson for performing the first total laryngectomy (TL) in 1866, there are reports that this was a postmortem laryngectomy on a patient that died from a syphilitic larynx.\textsuperscript{1} The first reported TL for a malignancy was performed by Bilroth in 1873 and was reported at the third congress of surgeons by his assistant Gussenbauer.\textsuperscript{1-3}

The early laryngectomies were fraught with complications like pneumonia, aspiration, sepsis and fistula formation that resulted in extremely poor outcomes with reported operative or early postoperative mortality of near 50%. Towards the end of the 19\textsuperscript{th} century suturing the trachea to the skin was introduced by Solis-Cohen, and the principle of tracheal diversion with the primary reconstruction of pharynx was added by Gluck and Soerensen.\textsuperscript{4,5} The increasing attention to functional outcomes of laryngectomy, such as swallowing and speech resulted in continuous modification of the surgical procedure over time and the subsequent introduction of tracheo oesophageal puncture (TEP) in 1980 by Singer and Blom.\textsuperscript{6}

Laryngeal cancer is the most common head and neck cancer and the eleventh most common cancer in men worldwide but is relatively uncommon in women.\textsuperscript{7} Laryngeal cancer accounts for approximately 1.2\% all new cancers diagnosed in the United States. In Pakistan an incidence of laryngeal cancer ranges from 6.3\% to 8\%.\textsuperscript{7} In Bangladesh, it is the most common malignancy in men.\textsuperscript{8} Over 95\% of laryngeal carcinoma is treatable.\textsuperscript{9}

Total laryngectomy is a radical procedure which involves removal of whole larynx. This procedure is useful in the treatment of advanced laryngeal carcinoma and as a salvage procedure when previous partial laryngeal surgery or radiotherapy has failed.\textsuperscript{10}

Complications of total laryngectomies such as pharyngocutaneous fistula, wound infection, chyleleak, swallowing and airway problems have a significant impact on morbidity causing prolonged hospitalization and inevitably increased health care costs. Many factors have been implicated in the development of complications including previous radiotherapy, preoperative tracheostomy, radical neck dissection, and extensive surgery and flap reconstruction.\textsuperscript{11}

Similarly late complications like pharyngeal stenosis can result in swallowing difficulty,\textsuperscript{12} while stomal recurrence may render the tumor incurable thus adversely affecting prognosis.\textsuperscript{13} It is therefore important to diagnose these complications early so that timely intervention can be done.

This study was conducted on seventeen patients who had undergone total laryngectomy to find out various complications after total laryngectomy with respect to their presentation, diagnosis and management.

Aims and Objectives:

Methods:
This prospective observational study was conducted in National Institute of ENT, Tejgaon, Dhaka, from January 2015 to December 2017.

Inclusion criteria:
• All patients who underwent total laryngectomy for histologically proven advanced carcinoma larynx.
• Post CT/RT failed carcinoma larynx.

Exclusion criteria:
• Patients with advanced carcinoma larynx not willing to do surgery.
• Patients with advanced carcinoma larynx medically unfit for surgery.
A detailed history was taken and every patient was examined thoroughly specifically focusing on laryngeal examination. Besides base line investigations, CT scan of the neck was carried out and MRI was performed in some cases where CT scan was not informative.

The patients were assessed for metastasis of the disease. Endoscopy was done in all cases and direct laryngoscopy assessment and biopsy was taken to get histological diagnosis. The disease was staged according to the TNM (Tumor, Node and Metastasis) staging system. All patients and relatives were counseled regarding nature of the disease, treatment options, expenses of the surgery and voice rehabilitation. A well informed consent was taken from patients and relatives explaining the total laryngectomy, its risks, benefits and associated complications. All patients were observed for any postoperative complications during their stay in the hospital and after discharge from hospital a regular follow up visit record was maintained. The patients were examined at regular intervals monthly for three monthly and every six months for life long. During each follow up visit a thorough clinical examination was done in all patients and appropriate investigations were carried out where indicated. A complete record of complications, their diagnosis and treatment was maintained during that period and the study was approved by the hospital ethical committee. Total laryngectomy with unilateral selective neck dissection, total laryngectomy with bilateral neck selective dissection, total laryngectomy with unilateral modified radical neck dissection and total laryngectomy with bilateral modified radical neck dissection with PMMC flap reconstruction were performed in some patients.

Surgical technique:

The patient was placed supine with neck extended. Neck was cleaned thoroughly with antiseptic from chin down to the chest at nipple level. Neck was infiltrated at the site of incision with Xylocaine Adrenaline preparation (2%, 1:100000). A transverse incision or Gluck-Sorenson incision was given and deepened to subplatysmal layer. Neck was opened in between strap muscles and sternocleidomastoid muscle.

Having exposed the larynx, the aim of surgical removal was to resect the tumor while maintaining the maximum amount of residual mucosa. Larynx was disconnected from its blood supply, the pharynx, the tongue base and the trachea. In the majority patients hemithyroidectomy was done in affected side with preservation of contralateral lobe on its inferior vascular pedicle.

The larynx was delivered from above to below. The hypopharynx was entered on the side opposite to the site of tumor after the muscles attached to the hyoid bone were divided. The epiglottis was grasped with tissue forceps after entry into the hypopharynx. There after the whole specimen was removed. A permanent tracheostomy stoma was created through a transvers stab skin wound on the lower skin flap, about 2-4 cm long. The trachea was pulled out through the stab wound and stitched to the skin after the endotracheal tube has been secured in the new tracheostomy. The pharynx was repaired in three layers. First layer was given interrupted with 3/0 vicryl & second layer was continuous with 3/0 vicryl. Third layer was given interrupted with 3/0 vicryl. In all cases, where PMMC flap were not given, new pharynx were covered with sternocleidomastoid muscle flap. Wound was closed in layers with drain.
Intravenous broad spectrum antibiotics were prescribed covering both aerobic and anaerobic organisms. Intravenous fluids were given along with routine analgesics for pain management. NG tube feeding was commenced 24 hours after surgery. NG tube feeding was continued for 3 weeks. After 3 weeks oral feeding was attempted with milk or water to see any leakage from the neck or wound site and gradually semisolid foods were given.

All patients were observed for any postoperative complications during their stay in the hospital and after discharge from hospital a regular follow up visit record was maintained. Patients were followed up monthly for 3 months and then after 6 monthly for life long. During each follow up visit a thorough clinical examination was done in all patients and appropriate investigations were carried out where indicated. A complete record of complications, their diagnosis and treatment was maintained during this period.

**Results:**

In this series 17 male patients were studied. Out of them 4 patients received preoperative full dose curative radiotherapy.

The age of the patients ranged from 39 to 66 years. The mean age was 47 years. Most of the cases are supraglottic carcinoma 12 (70.59%), Glottic carcinoma in 5 (29.41%) & no subglottic carcinoma. In this study, out of 12 supraglottic cases, 4 patients were presented in stage III & 8 in stage IV. Among the glottic cases 1 patient presented in stage I, 2 patients in stage III & 2 patients presented in stage IV.

Histologically 16 (94.12%) were squamous cell carcinoma & 1 was adenoid cystic carcinoma. In 12 (70.59%) cases resection margin was > 1cm away from tumor & in 5 (29.41%) cases resection margin was < 1cm but not involved by tumor. Patients were followed up monthly for 3 months & then after 6 months for life long. 2 cases (11.76%) developed pharyngocutaneous fistula within 7th to 15th postoperative day & these patients were managed conservatively which involved adequate drainage, frequent dressing & fresh blood transfusion. With these conservative management fistula healed completely within 3 to 4 weeks. 3 patients (17.65%) developed wound infection. Wound swab was sent for culture & sensitivity and antibiotics changed accordingly. Wound healed within 2-3 weeks with conservative treatment & adequate aseptic dressing. 1 patient (5.88%) developed postoperative hematoma which was drained immediately. This patient developed wound infection later on & was managed conservatively.

2 cases (11.76%) developed stomal recurrence 4 months after surgery, which was confirmed by biopsy. The cases were inoperable & were sent for radiotherapy. 2 cases (11.76%) developed dysphagia due to pharyngeal stenosis 4 months after surgery. Voice prosthesis was used in 4 cases (23.53%).

<p>| Table I : Age distribution of Carcinoma larynx patients |</p>
<table>
<thead>
<tr>
<th>Age (Years)</th>
<th>Number of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;40</td>
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<td>5.88</td>
</tr>
<tr>
<td>41-50</td>
<td>3</td>
<td>17.65</td>
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<tr>
<td>51-60</td>
<td>10</td>
<td>58.82</td>
</tr>
<tr>
<td>&gt;60</td>
<td>3</td>
<td>17.65</td>
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</table>

<p>| Table II : Site of involvement |</p>
<table>
<thead>
<tr>
<th>Site</th>
<th>Number of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supraglottic</td>
<td>12</td>
<td>70.59</td>
</tr>
<tr>
<td>Glottic</td>
<td>5</td>
<td>29.41</td>
</tr>
<tr>
<td>Subglottic</td>
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### Table III:  
*Staging of Carcinoma larynx patients*

<table>
<thead>
<tr>
<th>Site</th>
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<tr>
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<td>Stage I</td>
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<td>T1N0M0</td>
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<tr>
<td>T2N0M0</td>
<td></td>
</tr>
<tr>
<td>T3N0M0</td>
<td></td>
</tr>
<tr>
<td>T3N1M0</td>
<td></td>
</tr>
<tr>
<td>Any T N2,3 M0</td>
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<tr>
<td>Any T Any N M1</td>
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<table>
<thead>
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<th>0</th>
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<th>8</th>
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<tbody>
<tr>
<td>Supraglottic</td>
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<td></td>
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<tr>
<td>Glottic</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Subglottic</td>
<td>0</td>
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### Table IV:  
*Surgical procedure*

<table>
<thead>
<tr>
<th>Type of surgery</th>
<th>Number</th>
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<tbody>
<tr>
<td>Total Laryngectomy + Unilateral SND</td>
<td>3</td>
<td>17.65</td>
</tr>
<tr>
<td>Total Laryngectomy + Bilateral SND</td>
<td>4</td>
<td>23.53</td>
</tr>
<tr>
<td>Total Laryngectomy + Unilateral MRND</td>
<td>2</td>
<td>11.76</td>
</tr>
<tr>
<td>Total Laryngectomy + Bilateral MRND+</td>
<td>4</td>
<td>23.53</td>
</tr>
<tr>
<td>PMMC flap reconstruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salvage Laryngectomy</td>
<td>4</td>
<td>23.53</td>
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### Table V:  
*Use of voice prosthesis*

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<thead>
<tr>
<th>Prosthesis used</th>
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<td>Yes</td>
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<tr>
<td>No</td>
<td>13</td>
<td>76.47</td>
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### Table VI:  
*Postoperative histopathological diagnosis*

<table>
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<tr>
<th>Diagnosis</th>
<th>No. of patients</th>
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<tr>
<td>Squamous cell carcinoma</td>
<td>16</td>
<td>94.12</td>
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<tr>
<td>Adenoid cystic carcinoma</td>
<td>1</td>
<td>5.88</td>
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### Table VII:  
*Status of resection margin*

<table>
<thead>
<tr>
<th>Margin</th>
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</tr>
</thead>
<tbody>
<tr>
<td>&gt;1cm away from tumor</td>
<td>12</td>
<td>70.59</td>
</tr>
<tr>
<td>&lt;1cm away from tumor but free from tumor</td>
<td>5</td>
<td>29.41</td>
</tr>
<tr>
<td>Margin involved by tumor</td>
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<td>0</td>
</tr>
</tbody>
</table>

### Table VIII:  
*Immediate complications after total laryngectomy*

<table>
<thead>
<tr>
<th>Complications</th>
<th>No. of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharyngocutaneous fistula</td>
<td>2</td>
<td>11.76</td>
</tr>
<tr>
<td>Wound infection</td>
<td>3</td>
<td>17.65</td>
</tr>
<tr>
<td>Haematoma</td>
<td>1</td>
<td>5.88</td>
</tr>
<tr>
<td>Flap necrosis</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>2</td>
<td>11.76</td>
</tr>
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</table>
### Table IX:

**Delayed complications after total laryngectomy**

<table>
<thead>
<tr>
<th>Complications</th>
<th>No. of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stomal recurrence</td>
<td>2</td>
<td>11.76</td>
</tr>
<tr>
<td>Stomal stenosis</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dysphagia</td>
<td>2</td>
<td>11.76</td>
</tr>
</tbody>
</table>

**Discussion:**

Carcinoma of larynx accounts for 40% of all head & neck malignancies. Its incidence varies worldwide. In our study, the mean age of patients was around 47 years with the male preponderance. The main forms of treatment for head & neck cancer include surgery & radiotherapy. Initially, these are used aiming for cure. However, in some circumstances, they serve as a palliative treatment, depending on the type of tumor, extension, clinical condition and patient preferences. The correct diagnosis and staging are essential in the decision making process. Other factors, which should be considered, are age & general condition of patient, hospital facilities available & experience of surgical team.

The most complication after total laryngectomy is Pharyngo Cutaneous Fistula (PCF). Bilotro was the first person to report PCF as a complication. PCF after laryngectomy occurs when there is a failure in the pharyngeal repair resulting in a salivary leak. This is a demoralizing complication not only for the surgeons involved but also for the patient & his family. Its occurrence leads to increased morbidity, delay in adjuvant treatment, prolonged hospitalization & increased treatment costs.

In our study pharyngocutaneous fistula was second most common complication. The reason for this was small sample size of 17 patients. Incidence of PCF has been reported in the literature between 4% to 15.9%. In our study 2 patients (11.76%) developed PCF. This rate is consistent with the work of Parikh SR et al., who in large series of 125 patients of laryngectomy reported 22% incidence of fistula. The highest incidence of PCF was reported as 66% by Bresson K et al. The lowest incidence of PCF 2%

Preoperative radiotherapy was reported as a significant risk factor in the development of PCF. In our study preoperative radiotherapy was important risk factor because patients who developed postoperative PCF had received preoperative radiotherapy. Positive surgical margins, extended hypopharyngeal mucosal excision & low hemoglobin level have also been reported as risk factors for the development of PCF. None of our patients had positive surgical margins or extended hypopharyngeal mucosal excision. Spontaneous closure of fistula with conservative measures has been reported in 70% of cases, which is lower than our study. This recent study revealed that 83.3% fistula closed spontaneously without any surgical intervention.

Postoperative wound infections are major source of infectious morbidity in total laryngectomy patients. The overall incidence of postoperative wound infection after major head & neck surgery is 23% & this becomes higher in those patients who have received preoperative radiotherapy. The most important aetiological factor is Methicillin Resistant Staphylococcus aureus (MRSA). Administration of prophylactic antibiotics reduces the risk of postoperative infection. In total laryngectomy patient, we gave 1gm Ceftriaxone with 500 mg of Metronidazole for surgical prophylaxis. Despite these measures, 3 patients (17.65%) developed postoperative wound infection. Out of these
3 patients, 2 also developed PCF & have received preoperative radiotherapy. Postoperative Cephalosporins & Metronidazole were given to all patients. This rate is in accordance with the findings of Aslam MJ et al. The factors probably responsible are absence of well trained & well oriented nursing staff, inability to maintain absolute sterilization in the postoperative period especially during repeated suction & also because of the contamination from visitors.

The reported incidence of dysphagia varies from 16% to 42% in our study 2 patients (11.76%) developed this complication. On endoscopic examination pharyngeal stricture was seen which was treated with repeated dilatation after ruling out recurrence. However, incidence is 12% in the series of Aslam MJ et al. Here, 2 patients (11.76%) developed tracheostomal stenosis. Subsequently they developed stomal recurrence. A lower rate of 5% was evident in the series of Mantravadi R et al. In our study, no patient developed nodal metastasis. Aslam MJ et al opines that postoperative radiotherapy to the neck reduces the risk of nodal metastasis after total laryngectomy.

**Conclusion:**
Complications following total laryngectomy are infrequent but when they occur patient’s morbidity is considerably increased. To comment on postoperative complications of total laryngectomy, it demands further elaborate and extensive study to come to a decisive opinion. The present study reflects that complications are higher in radiation failure cases. Complications are almost equal to most comparable published series. The most frequent troublesome immediate complication is pharyngocutaneous fistula all of which have been treated conservatively with satisfactory result. Preoperative radiotherapy is an important risk factor for the development of pharyngocutaneous fistula in total laryngectomy.

**References:**

10. Thakar A, Bahadur S, Mohanty BK, Nivsarkar S. Clinically staged T3N0M0


Original Article

Hypocalcaemia after Total Thyroidectomy

Mohammad Zahirul Islam¹, AF Mohiuddin Khan² Shaikh Nurul Fattah³, Dipankar Lodh⁴, Mohammad Nazrul Islam⁵, Uzzal Chandra Ghosh⁶

Abstract

Objective: To determine whether postoperative hypocalcemia after total thyroidectomy is more frequent in malignant disease than benign disease.

Methods: This is a Cross sectional study. The sample size is 126. All the patients were selected according to the eligibility criteria by purposive sampling. Patients were analyzed for age, gender, thyroid pathology, preoperative serum calcium, postoperative serum calcium.

Results: Postoperative hypocalcemia was found in 37 (29.37%) patients. Most patients were female (Male: Female= 1: 4.2). Patients having low preoperative serum calcium had developed more postoperative hypocalcemia (p<0.03). Postoperative hypocalcemia was associated with thyroid pathology (p<0.009) and age (p<0.006), not associated with sex (p=0.907). In multivariate analysis very little association between malignant disease and postoperative hypocalcemia was found (p<0.07).

Conclusion: The incidence of postoperative hypocalcemia following total thyroidectomy is 29.4% that is higher than the anticipated but is comparable to other published series. For total thyroidectomy surgeons should be aware of postoperative hypocalcemia but prophylactic calcium and vitamin D supplement is not mandatory in all cases.

Keywords: Total thyroidectomy, hypocalcemia, postoperative hypocalcemia.

Introduction: Complications of thyroid surgery can be classified into different ways like- early, intermediate and late; local and general; those specific to the operation. Early complications include haemorrhage, voice change, airway obstruction and temporary hypoparathyroidism. The intermediate ones include seroma formation, infection and temporary palsy of the recurrent laryngeal nerve and the external branch of the superior laryngeal nerve. Late complications include subclinical hypothyroidism, permanent hypoparathyroidism, permanent injury to the recurrent laryngeal nerve, the external branch of the superior laryngeal nerve, the cutaneous nerves C2 and C3 and the accessory nerve and a poor scar.¹

Hypocalcemia after thyroid surgery occurs due to hypofunction of parathyroid gland. Parathyroid gland dysfunction occurs due to
inadvertent excision of the gland or impaired vascularity of the gland. The postoperative stress causing hemodilution and antidiuretic hormone secretion also lowers total serum calcium levels. Hungry bone syndrome may occasionally contribute to the immediate post-operative hypocalcemia. Sometimes calcitonin release is thought to be a cause of hypocalcemia.

Vascular impairment of parathyroid gland may occur during the dissection especially while securing upper pole veins. Sometimes the parathyroid glands may be impossible to identify as they may lie beneath the thyroid capsule or completely within the thyroid gland.

The normal range for total calcium, about 8.6-10.2 mg/dl (2.15-2.54 mmol/l). Normal values and reference ranges may vary among laboratories as much as 0.5 mg/dl. About 50% of total serum calcium is in ionized form, 40% is albumin-bound and 10% is complexed to phosphate or citrate. The physiologically and clinically important fraction of the serum total calcium is the ionized calcium. But it is costly and facility is not available everywhere. Almost all laboratories, only total calcium is routinely measured, and ionized calcium concentration is calculated based on calcium, protein or albumin concentrations for many plasma samples.

Adjusted calcium = calcium - albumin + 4.0, where calcium is in mg/100 ml and albumin in g/100 ml. Another formula also used corrected calcium (mg/dl) = total calcium (mg/dl) + 0.8 × [4 – serum albumin (g/dl)].

Hypocalcemia is a clinical situation where there is an electrolyte imbalance is noted with a low serum calcium level which may or may not produce clinical symptoms. There are different studies that use different cut off values for low serum calcium level for defining hypocalcemia. So incidence of hypocalcemia differs from study to study.

When calcium level falls below the normal range it does not produces clinical symptoms. Only one third of the biochemical hypocalcemia produces symptoms. Most common symptoms of hypocalcemia are paresthesia, muscle spasms, cramps, tetany, circumoral numbness, and seizures. Hypocalcemia can also present with laryngospasm, neuromuscular irritability, cognitive impairment, personality disturbances, prolonged QT intervals, electrocardiographic changes that mimic myocardial infarction, or heart failure.

Now-a-days paradigm of surgical practice is being shifted to day care and outpatient procedures. Total thyroidectomy is also being performed as a short-stay or even an outpatient procedure. Evidence based parameters are need to define which patients are eligible to undergo outpatient total thyroidectomy safely. For this, preoperative prediction of complications of total thyroidectomy can help to define this criteria.

Early detection of hypocalcemia is crucial for its management. So early prediction hypocalcemia can make the thyroid surgeons more confident in management of these patients.

This study has evaluated the frequency of hypocalcemia after total thyroidectomy. Associated risk factors for the development of hypocalcemia was also tried to be found out.

The main objective of this study was to evaluate post-thyroidectomy hypocalcemia in relation to thyroid gland pathology.

Methods:
Operational definition: Hypocalcemia was defined as serum calcium level less than 8.4 mg/dl equivalent to less than 2.1 mol/L.
Study procedure: This is a Cross sectional study and was conducted in the department of Otorhinolaryngology-head & neck surgery of Dhaka Medical College hospital from January 2017 to December 2017. All the patients who underwent total thyroidectomy at the department had been considered as the study population. We excluded the patients underwent total thyroidectomy with preoperative hypocalcemia, with neck dissection, due to parathyroid gland pathology, unwilling to comply with study protocol. Following inclusion and exclusion criteria sample was enrolled by consecutive purposive random sampling.

Thyroid gland has been assessed by palpation in all the patients. Detailed history and clinical examination was done to determine any obvious clinical features of malignancy and any feature of thyroid dysfunction are recorded.

FNAC and Ultrasonography of thyroid gland were performed outside the department. Serum calcium, albumin, FT4, TSH concentration has been measured preoperatively. Operation procedure and findings were noted. No oral calcium with/ without calcitrol or intravenous calcium gluconate were given unless patients had symptoms. In first postoperative day serum calcium and serum albumin were also measured. Here serum Free T4 was calculated in picomol/liter. (Conversion rate 1pmol/l = 0.0777 ng/dl. 1ng/dl = 12.872 pmol/l.) and TSH was measured in mili IU/L or micro IU/ml. Serum calcium was measured in mg/dl. Payny’s formula was used to calculate corrected calcium.

Ethical issues: Ethical clearance for the study was taken from the institutional review board and concern authority of Dhaka Medical College.

Statistical analysis: Statistical package for social science (SPSS) 16.0 for windows (SPSS Inc., IL, USA) was used for statistical analysis. Mean values were calculated for continuous variables. The quantitative observations were indicted by frequencies and percentages. A P value less than 0.05 (P<0.05) was considered to be statistically significant.

Results:
In this study the mean age 42.47 + 14.16 years and the range is from 7 to 80 years. (Figure-1) The study has female predominance. 104(82.5%) patients were female and 22(17.5%) patients were male. Male : Female ratio was 1: 4.7

![Fig. 1: Bar diagram showing the age distribution of the patients (n=126)](image)

Most of the patient 63 (50%) had multinodular goiter, 37 (29.37%) patients had papillary thyroid carcinoma, 10(7.94%) had follicular thyroid carcinoma and 7(5.56%) had Hashimoto thyroiditis. And 72 (57.1%) had benign thyroid disease and 54 (42.9%) had malignant disease (Table-I).

<table>
<thead>
<tr>
<th>Table I : Number of benign and malignant diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
</tr>
<tr>
<td>Benign</td>
</tr>
<tr>
<td>Malignant</td>
</tr>
<tr>
<td>Total</td>
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</table>

Hypocalcaemia after Total Thyroidectomy Mohammad Zahirul Islam et al
Table II:

Preoperative and postoperative mean serum calcium level

<table>
<thead>
<tr>
<th>Different thyroid disease</th>
<th>Mean preoperative serum calcium (mg/dl)</th>
<th>Mean postoperative serum calcium (mg/dl)</th>
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</thead>
<tbody>
<tr>
<td>Follicular thyroid carcinoma</td>
<td>9.3</td>
<td>8.7</td>
</tr>
<tr>
<td>Graves disease</td>
<td>9.5</td>
<td>6.5</td>
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<tr>
<td>Hashimoto thyroiditis</td>
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<tr>
<td>Multinodular goiter</td>
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<td>8.7</td>
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<td>Papillary thyroid carcinoma</td>
<td>9.3</td>
<td>8.3</td>
</tr>
</tbody>
</table>

Mean preoperative calcium level was 9.3 mg/dl (+0.360) and the range is from 8.5 mg/dl to 10.2 mg/dl (Figure -2). And mean postoperative calcium level was 8.4 mg/dl (+0.86) and the range is from 6.5 mg/dl to 9.6 mg/dl.

Fig. 2: Histogram showing preoperative serum calcium level

Fig. 3: Bar diagram showing the age distribution of the postoperative hypocalcemic patients (n=37)

Fig. 4: Bar diagram showing sex distribution of postoperative hypocalcemic patient.

Fig. 5: Pie chart showing different diseases of postoperative hypocalcemia
### Table III:

**Comparison of age group in relation with normocalcemia and hypocalcemia.**

<table>
<thead>
<tr>
<th>Age group</th>
<th>Normocalcemia</th>
<th>Hypocalcemia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percentage</td>
</tr>
<tr>
<td>Under 20</td>
<td>5</td>
<td>84</td>
</tr>
<tr>
<td>21-30</td>
<td>19</td>
<td>74</td>
</tr>
<tr>
<td>31-40</td>
<td>28</td>
<td>83</td>
</tr>
<tr>
<td>41-50</td>
<td>19</td>
<td>66</td>
</tr>
<tr>
<td>51-60</td>
<td>13</td>
<td>62</td>
</tr>
<tr>
<td>above 60</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>89</td>
<td>37</td>
</tr>
</tbody>
</table>

### Table IV:

**Comparison of demographic characteristics and pathological diagnosis of thyroid disease between patients with and without post-operative hypocalcaemia.**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Postoperative hypocalcaemia</th>
<th>Normocalcemia</th>
<th>Hypocalcemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years) mean (min-max)</td>
<td></td>
<td>43 (7-75)</td>
<td>41 (16-80)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female N (%)</td>
<td></td>
<td>74 (59.5)</td>
<td>30 (23.0)</td>
</tr>
<tr>
<td>Male N (%)</td>
<td></td>
<td>15 (11.9)</td>
<td>7 (5.6)</td>
</tr>
<tr>
<td>Histopathological diagnosis*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benign (%)</td>
<td></td>
<td>56 (44.4)</td>
<td>16 (12.7)</td>
</tr>
<tr>
<td>Malignant (%)</td>
<td></td>
<td>33 (26.2)</td>
<td>21 (16.7)</td>
</tr>
</tbody>
</table>

*Statistically significant at two sided P-value < 0.05.

### Table V:

**Association between pathological diagnosis of thyroid disease and postoperative hypocalcaemia.**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Postoperative hypocalcaemia</th>
<th>P-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histopathological diagnosis</td>
<td></td>
<td>95%CI</td>
</tr>
<tr>
<td>Benign (%)</td>
<td></td>
<td>Reference</td>
</tr>
<tr>
<td>Malignant (%)</td>
<td>2.10 (0.94-4.70)</td>
<td>0.072</td>
</tr>
</tbody>
</table>

*Statistically significant at two sided P-value < 0.05.

*Association between pathological diagnosis of thyroid disease and post-operative hypocalcaemia adjusted for age and sex (n=126).
Discussion:

Among the complications of thyroid surgery postoperative hypocalcemia is one of the most common complications that is considered for outcome audit. If this hypocalcemia persists it significantly reduces the quality of life and is associated with various deleterious effects on general health.

Hypocalcemia can be classified in different ways like transient and permanent, biochemical and clinical. In our study we included all the transient and biochemical hypocalcemia cases. Permanent or persistent hypocalcemia is defined if hypocalcemia persists even after six months of thyroid surgery. The symptoms of hypocalcemia usually manifest 24 to 48 hours after surgery. Symptoms are muscle cramps, perioral and peripheral paresthesias, carpopedal spasm or tetany and confusion. Signs of hypocalcemia are the Chvostek’s sign and the Trousseau’s sign. Only one-third of patients who developed biochemical hypocalcemia required treatment.

To do work with postoperative hypocalcemia first it difficult to define hypocalcemia. Normal range of any biochemical in human body usually includes mean and two standard deviations above and two standard deviation below. Usually its range for calcium is 8.6-10.2 mg/dl.

In different study cut off level for hypocalcemia was defined differently. Shaha and Jaffe in their study used hypocalcemia for the patient having serum calcium less than 2.1 mmol/L during their first week follow-up after thyroidectomy. Adjusted Serum Ca less than 2.0 mmol/l was calculated for hypocalcemia by Rix TE, Sinha P. in their study of Inadvertent parathyroid excision during thyroid surgery. Ku CF et al. defined Hypocalcemia when S Ca < 1.7 mmol/L or symptoms develop calculated for total and sub-total thyroidectomies.

In our study we defined hypocalcemia if the postoperative serum calcium was less than 8.4 mg/dl or 2.1 mmol/L and that is recommended by The British association of endocrine and thyroid surgeons, fifth national audit report.

Factors that affect hypocalcemia can be classified into different groups- biochemical, surgical, patient and disease related. Biochemical factors are measured preoperatively and they are- serum calcium, parathyroid hormone, vitamin D, Magnesium, alkaline phosphatase. Surgery related factors are peroperative findings and they are- parathyroid identification, in situ preservation of parathyroid glands, parathyroid auto-transplantation, central neck dissection, inadvertent parathyroidectomy, surgical volume and duration, re-operative surgery. Patient factors are- age at surgery, gender, Disease related factors i.e- Graves’ disease, weight of excised specimen, retrosternal extension. In our study we only searched for the disease related factors that may affect the postoperative hypocalcemia.

Pradeep et al. identified low preoperative serum calcium is a predictive factor for
postoperative hypocalcemia after total thyroidectomy.\textsuperscript{34} In our study it is also found the same result. But in that study Pradeep et al. found age was not significant in postoperative hypocalcemia. In our study older age group developed more hypocalcemia (p<0.006). Which is similar to the finding of Sousa et al.\textsuperscript{35} No significant difference was noted in their study and it is same in our study.

The literature shows conflicting data regarding postoperative hypocalcemia after total thyroidectomy and gender. Lombardi et al.\textsuperscript{36} and Scurry et al.\textsuperscript{37} demonstrated no interference of gender postoperative hypocalcemia. In contrast, other authors\textsuperscript{38,39} showed women had higher incidence of postoperative hypocalcemia. We found no relation between gender and postoperative hypocalcemia (p<0.907).

In our study we found that hypocalcemia is more frequent in the malignant disease than the benign (p<0.009), which is similar to the findings of Sousa et al.\textsuperscript{39} But in multivariate analysis relationship with thyroid pathology and postoperative hypocalcemia is very close to significance (p<0.072). We could overcome this if the study would conducted with larger sample size. In our finding malignant pathology causes more postoperative hypocalcemia which might be due to some surgery related factors.

**Conclusion:**

The incidence of postoperative hypocalcemia following total thyroidectomy is 29.4% that is higher than the anticipated but is comparable to other published series. For total thyroidectomy surgeons should be aware of postoperative hypocalcemia but prophylactic calcium and vitamin D supplement is not mandatory in all cases. We can recommend routine postoperative calcium supplementation in elderly and malignant cases and the patient with low preoperative serum calcium and in these cases serum calcium should be done postoperatively.

**References:**


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Effect of Intravenous Dexamethasone on Propofol Injection Pain: A Randomized Placebo Controlled Study


Abstract:
Background and aim of study: Pain on propofol injection (POPI) is a common problem. None of the commonly used methods completely attenuate the pain. Inflammatory response to propofol contributes to the pain. This study was conducted to compare the efficacy of dexamethasone in attenuation of pain following intravenous injection of propofol.

Materials and methods: A total of 80 adult patients were scheduled in this study with either sex, ASA (American Society of Anesthesiologists) grade I and II, for routine elective surgical procedure under general anesthesia. The patients enrolled were divided randomly into two groups of 40 patients each. Group I received 0.15 mg/kg of intravenous dexamethasone in 5 ml normal saline and Group II (placebo group) received 5 ml of 0.9% intravenous normal saline, following exsanguination and occlusion of the vein of the arm. This was followed by 0.5 mg/kg of propofol intravenously. The patients were asked to report their pain during injection of propofol according to the McCririck and Hunter scale.

Results: The incidence of pain experienced in dexamethasone group was 45% patients and in saline group was 70% patients (p<0.05). The severity of POPI was also lower in dexamethasone group than the saline group (p<0.05). The incidence of mild and moderate pain in dexamethasone groups versus saline group was 30% versus 45% and 15% versus 25% respectively p<0.05. There was no severe pain recorded in any groups.

Conclusion: Pretreatment with intravenous dexamethasone (0.15 mg/kg) before injection of propofol is effective and safe in reducing the incidence and severity of pain on propofol injection (POPI).

Key words: Dexamethasone, propofol, general anesthesia, pain on propofol injection (POPI).

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Introduction:
Propofol is a popular intravenous general anesthetic agent because of its rapidity and reliability in causing loss of consciousness associated with quick and smooth recovery. However, pain on propofol injection (POPI), which has been reported to occur in 40-86%.\(^1\) The need to treat propofol-induced nociception is essential not only because it is unpleasant, but also because it can lead to serious sequelae such as myocardial ischemia when hemodynamic changes occur in response to the pain associated with injection.\(^2\)

The mechanism of pain from vascular tissues following propofol injection are multifactorial in origin. Propofol has been demonstrated in vitro to stimulate nitric oxide (NO) release.\(^3\) Nociceptive nerve endings have been found in the endothelium of veins in humans, a well-known source of NO, suggesting a role of NO in nociception.\(^4,5\) In addition, NO from the vascular endothelium binds to guanylylclase which catalyzes the conversion of guanosine triphosphate to guanosine monophosphate, which facilitates PGE2-induced hyperalgesia.\(^6\) It has been found that pain following intravenous injection of bradykinin and hyperosmolar solutions can be blocked by pretreatment with NO synthase (NOS) inhibitor, suggesting that an intact NOS pathway is needed to elicit vascular nociception.\(^7\)

Several methods for prevention of pain have been tried with varying degrees of success like addition of lignocaine,\(^8-10\) cooling\(^11,12\) or warming\(^13\) of the drug, diluting propofol solution,\(^14\) pretreatment with ondansetron,\(^15\) metoclopramide,\(^16\) opioids,\(^17\) thioptene,\(^18\) paracetamol,\(^19\) dexamethasone\(^20\) and dexmedetomidine.\(^21\)

Recent studies have shown that dexamethasone reduces postoperative pain, nausea and vomiting.\(^22,23\) It is known that propofol releases nitric oxide (NO) from the vessels animal and human models and causes pain in vein.\(^24,25\) The effect of corticosteroids such as dexamethasone has been shown to reduce the production of NO, thereby reducing pain on propofol injection (POPI).\(^26,27\)

The present study was conducted to determine the efficacy of intravenous dexamethasone 0.15mg/kg, in comparison with placebo (normal saline) on incidence and severity of pain on propofol injection (POPI).

Materials and methods:
The present prospective, randomized study was conducted in National Institute of ENT Dhaka, during the period of September to November 2018. After obtaining written informed consent, a total of 80 patients, ASA grade I and II were taken up in the study with the age group of 20 to 50 years of either sex scheduled for routine elective surgical procedure under general anesthesia with endotracheal intubation. Patients excluded were those who had history of adverse effects to study drugs, presence of hepatic or renal dysfunction, patients with seizure disorder, history of drug abuse and uncontrolled hypertension. Pre-anesthetic check-up was done a day before surgery including a detailed history, a thorough physical and systemic examination. Routine investigations included CBC, routine urine test, electrocardiogram, serum urea, serum creatinine, blood sugar and chest radiograph. The patients were fasted for 8 hours preoperatively.

In the operating room, monitors including non-invasive arterial pressure, electrocardiography and pulse oximetry were applied. The patients enrolled were divided randomly into two groups of 40 patients each.
Group I was selected for pretreatment with 0.15 mg/kg of intravenous dexamethasone in 5 ml normal saline and group II was selected for pretreatment with 5 ml of intravenous normal saline. A 20 G intravenous cannula was placed in a vein on the dorsum of the non-dominant hand and Ringer's Lactate solution was started 100 ml/hour. The mid arm of the side on which cannula was placed on the dorsum of hand was occluded by a BP cuff. The study drug was then injected and maintained in the vein for 1 minute. After 1 minute, the occlusion was released and one fourth of total calculated dose (0.5 mg/kg) of propofol was injected over 5 seconds. Then the patients were asked by a blinded investigator to any sensation of pain during injection of propofol as per the McCririck and Huntescale. 12

After the assessment of pain, induction of anesthesia was completed with the remaining dose of propofol, and tracheal intubation was facilitated with the injection of succinylcholine. Anesthesia was maintained with injection of fentanyl, vecuronium, oxygen, nitrous oxide (66%) and halothane. When surgery was completed general anesthesia was reversed as usual.

Grading of pain: As per McCririck and Hunter scale. 12

0= No pain
1=Mild pain (pain reported only in response to questioning without any behavioral signs)
2= Moderate pain (pain reported in response to questioning and accompanied by a behavioral sign or pain reported spontaneously without questioning)
3= Severe pain (strong vocal response or response accompanied by facial grimacing, arm withdrawal or tears).

Statistical analysis: For comparison of quantitative variables between the two groups, the unpaired t-test and for qualitative variables the Chi-squared test was used. The statistically significant level was P<0.05.

Results:
There was no significant demographic difference between the groups (Table I).

Basal mean arterial pressure (MAP) and heart rate (HR) were comparable in both groups. There were no significant differences of MAP and HR between dexamethasone and saline groups during pre-intubation or three minutes post-intubation period (p>0.05) (Table II).

The incidence of pain experienced in dexamethasone group (group I) was 45% patients and in group II (saline group) was 70% patients, which was statistically significant p<0.05 (Table III). The severity of POPI was also lower in dexamethasone group than the saline group (p<0.05) (Table III). The incidence of mild and moderate pain in groups I versus group II were 30% versus 45% and 15 % versus 25% respectively p<0.05. There was no severe pain recorded in any groups.

| Table I : Comparison of demographic data between the two groups |
|------------------------|------------------------|------------------------|------------------------|
| Parameters             | Group I (Dexamethasone group) | Group II (Saline group) | p value                |
| Age in years (mean±SD) | 34.92±5.42              | 35.83±4.17              | p>0.05                 |
| Weight in kg (mean±SD) | 64.36±6.34              | 65.72±5.58              | p>0.05                 |
| Sex (male/female)      | 25/15                   | 26/14                   | p>0.05                 |
| ASA Physical status I/II| 37/3                    | 38/2                    | p>0.05                 |
Discussion

The most important finding of this study was the reduction in the number of subjects that reported pain following propofol injection when pretreated with dexamethasone compared to saline. Systemic dexamethasone has been commonly used perioperatively to minimize postoperative nausea and vomiting and to improve overall quality of recovery. In addition, dexamethasone has been shown to decrease nitric oxide production which has been shown to mediate propofol-induced vascular pain. The present study suggests that the preoperative administration of dexamethasone also diminishes pain on propofol injection.

In present study, the overall incidence of pain on propofol injection experienced in dexamethasone group (group I) was 45% patients and in group II (saline group) was 70% patients, which was statistically significant p<0.05. The severity of POPI was also lower in dexamethasone group than the saline group (p<0.05). The incidence of mild and moderate pain in groups I versus group II were 30% versus 45% and 15% versus 25% respectively p<0.05.

Adinehmehr et al.28 had a study to evaluate the effect of pretreatment on reducing the pain by the injection of propofol. The first group received 1 mg granisetron in 5 ml, the second group received 0.15mg/kg dexamethasone in 5 ml normal saline. The incidence of pain following the injection of propofol was significantly decreased with both granisetron and dexamethasone (50.7% and 49.4%).

Ahmad et al.29 compared the effect of dexamethasone and intravenous lignocaine on intravenous propofol pain along with saline. The results of that study indicated the

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Table II:

<table>
<thead>
<tr>
<th>Hemodynamic parameter</th>
<th>Basal Group I / Group II</th>
<th>Pre intubation Group I / Group II</th>
<th>Post intubation after 3 minutes Group I / Group II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean arterial pressure (MAP) mm Hg</td>
<td>92/94</td>
<td>84/82</td>
<td>102/105</td>
</tr>
<tr>
<td>Heart rate per minute</td>
<td>78/80</td>
<td>72/70</td>
<td>88/90</td>
</tr>
</tbody>
</table>

Table III:

<table>
<thead>
<tr>
<th>Characteristics of pain</th>
<th>Group I (Dexamethasone group)</th>
<th>Group II (Saline group)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pain</td>
<td>22 (55%)</td>
<td>12 (30%)</td>
<td>p &lt;0.05</td>
</tr>
<tr>
<td>Pain</td>
<td>18 (45%)</td>
<td>28 (70%)</td>
<td>p &lt;0.05</td>
</tr>
<tr>
<td>Mild pain</td>
<td>12 (30%)</td>
<td>18 (45%)</td>
<td>p &lt;0.05</td>
</tr>
<tr>
<td>Moderate pain</td>
<td>6 (15%)</td>
<td>10 (25%)</td>
<td>p &lt;0.05</td>
</tr>
<tr>
<td>Severe pain</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
effect of dexamethasone on reducing the pain by intravenous injection of propofol. The incidence of pain after the injection of propofol was 60% in the saline group, 26% in the lignocaine group, and 41% in the dexamethasone group. They used dexamethasone in a dose of 0.25 mg/kg.

Present study showed that 45% patient experienced pain following propofol injection which is nearly similar to the above studies.

Conclusion
It can be concluded that, venous priming with a dose of 0.15mg/kg dexamethasone administered with mid-arm tourniquet applied for one minute before propofol administration can reduce the incidence and severity of pain on propofol injection without significant adverse effects.

References


Original Article

Outcome of Surgery and Radiotherapy as Treatment of Early Laryngeal Cancer

Md. Mostafizur Rahman¹, Ahmmad Taous², Sheikh Mohammad Rafiquil Hossain³

Abstract:
Background: Carcinoma of the larynx is the most common cancer affecting the head and neck region. Among the different stages of this disease, early cancer (T1T2N0M0) has greater possibility of cure. Its modalities of treatment are surgery and radiotherapy.

Methods: The study was done to compare between outcome of surgery and radiotherapy in early carcinoma larynx T1N0 category only. 60 cases of early carcinoma larynx were selected purposive sampling technique from all the patients of carcinoma larynx admitted into Otolaryngology and Head-Neck Surgery Department of Bangabandhu Sheikh Mujib Medical University, Dhaka; Dhaka Medical College Hospital, Dhaka; Shaheed Suhrawardy Medical College Hospital, Dhaka; Taqwah Specialized Hospital, Dhaka from January 2010 to June 2011.

Results. Study showed 16.67% of the radiotherapy group had a primary site recurrence compared with 20.0% in the surgery group at 12th months (p = 0.59) and 6.67% of those who were treated with irradiation had a recurrence in the neck. 16.67% of patients in the surgery group had a recurrence in the neck (p < 0.05). There was no significant difference in primary site recurrence rates for the two treatment modalities, but regional recurrence was higher in the surgery group. Regarding speech and voice quality, radiotherapy was far superior to surgery. All patients in the radiotherapy group but only 3 of 10 in the surgery group had good or normal voice (p = .0017).

Conclusions: Both surgery and irradiation are equally effective in treating early laryngeal carcinoma but Speech and voice quality were significantly better in patients treated by radiotherapy than those treated by surgery.

Keywords: Partial laryngectomy; conservative laryngectomy; speech and voice quality; head and neck cancer; squamous cell carcinoma

Introduction:
Cancer of the larynx is the most common cancer of the head and neck, excluding the skin.¹ In TNM staging, T1 is that tumour which is confined in one subsite of larynx i.e. supraglottis, glottis, subglottis with no lymphatic or distant metastases. It would seem that early laryngeal cancer could be treated with equal success by either radiotherapy or by conservative surgery.²⁻⁴ The preferred treatment modality at present is highly dependent on geography, with

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radiotherapy tending to be the treatment of choice in northern Europe, whereas patients are more likely to be treated with surgery in the United States and southern Europe. Organ preservation strategy favoring primary radical radiotherapy followed, if necessary, by salvage surgery. This strategy evolved over the years is based on the premise that treatment goals should include cure with acceptable side effects, minimal complications, and laryngeal preservation. Radiation failure can usually be salvaged by total or partial laryngectomy.

During the last two decades, radiotherapy gradually superseded surgery as the treatment of choice, and thus we are able to compare the results of surgery with radiotherapy for the treatment of early laryngeal cancer. The aim of this article is therefore to compare the results of the two treatment modalities in terms of recurrence at the site of the primary tumor, in the neck. Associations between variables were also studied. A small, intercalated study investigates speech and voice quality in patients from each treatment modality.

For early-stage laryngeal cancer, both surgery and radiotherapy are effective treatment modalities, offering a high rate of local control and cure for a selective group of patients. The probability of obtaining local control for early glottic cancer is similar when comparing the results of radiation therapy, cordectomy, and hemilaryngectomy. Radiation therapy has been the treatment of choice for all previously untreated T1 and T2 vocal cord cancers at our institution. We currently treat most patients with irradiation and consider transoral laser excision for the small subset of patients with well-defined T1 tumors that are limited to the mid-third of the cord. In this area, excision will not significantly diminish voice quality. Stage I and stage II supraglottic cancers may be treated with either radiation therapy alone or with a supraglottic laryngectomy with bilateral selective neck dissections (levels II-IV). In experienced hands, transoral laser excision also is an acceptable alternative for selected lesions. Overall, approximately 80% of patients at many institutions are treated initially by irradiation.

Objectives:
To compare the outcome of surgery and radiotherapy in the treatment of early (T1N0M0) carcinoma of the larynx

Methods:
Type of Study: Cross sectional study
Place of Study: Department of Otolaryngology and Head-Neck Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Shaheed Suhrawardy Medical College & Hospital, Dhaka, Dhaka Medical College Hospital, Dhaka, Taqwh Specialized Hospital, Dhaka.
Period of Study: January’ 2010 to June’ 2011.

Methods of sampling: All consecutive cases of early stage carcinoma (T1N0) admitted in the above hospitals during the study period.

Technique of treatment: Two groups of patients were dealt separately.
1. Surgery using LASER and 2. radiotherapy.

Post operative follow up: All the patients were followed up after 2 weeks, 1 month and then three monthly for one year

Operational definition:
Major morbidity- which significantly hampered the patients quality of life like haematoma, seroma, flapnecrosis, stomal
recurrence, stenosis of the tracheostomy, recurrent chest infections, distal metastasis, pharyngeal stenosis in partial laryngectomy patients. Severe radiation reaction necrosis of skin, respiratory distress following radiation and perichondritis of the larynx in radiotherapy.

**Minor morbidity** - Unavoidable minor complications like wound infection, nausea, vomiting, skin rashes, alopecia, mucositis or painful erythematous reaction in larynx and pharynx, dryness of mouth and throat, loss of taste, subcutaneous fibrosis in radiotherapy.

**Study on Voice Quality:**

We compare the voice quality of patients from the two treatment groups. Randomly 10 patients from each treatment group were selected. The patients in the radiotherapy group were older (mean age, 56 years) than those in the surgery group (mean age, 52 years). There were no other significant differences between the two groups. Voice and speech quality was assessed by a simple scoring system Voice Handicap Index (VHI score) validated in standard questionnaires* The scoring method was a simple 4-point score.

1. Normal voice and speech (score 0-10).
2. Good voice and speech (score 11-30).
3. Moderate voice and speech (score 31-50).
4. Poor voice and speech (score >50).

**Results:**

Table shows The age of the patient ranged from 30 to 79 year. The mean ± SD age was (54±10.94) most of the patients were above 40 years of age. The mean age of the radiotherapy group was 56 years, and the mean age for the surgical group was 52 years.

The table shows that supraglottic carcinoma was found in 60% of radiotherapy group and 66.67% in surgery group, glottic carcinoma was 40% & 33%, respectively in radiotherapy and surgery group. No case found with subglottic carcinoma. There was no significant difference in these two groups regarding site of carcinoma.

**Table I**

*Site of carcinoma on the basis of fiber optic laryngoscopy and direct laryngoscopic findings (n=60).*

<table>
<thead>
<tr>
<th>Site of carcinoma larynx</th>
<th>Radiotherapy (n=30) No. (%)</th>
<th>Surgery (n=30) No. (%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supraglottic</td>
<td>18(60.0%)</td>
<td>20(66.67%)</td>
<td>0.787</td>
</tr>
<tr>
<td>Glottic</td>
<td>12(40.0%)</td>
<td>10(33.33%)</td>
<td></td>
</tr>
<tr>
<td>Subglottic</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Table II :**

*Histopathological grading of carcinoma larynx (n= 60)*

<table>
<thead>
<tr>
<th>Degree of differentiation</th>
<th>Radiotherapy (n=30) No. (%)</th>
<th>Surgery (n=30) No. (%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well differentiated (grade-I)</td>
<td>7 (23.33%)</td>
<td>6 (20.0%)</td>
<td>0.411</td>
</tr>
<tr>
<td>Moderately differentiated (grade-II)</td>
<td>18(60.0%)</td>
<td>18(60.0%)</td>
<td></td>
</tr>
<tr>
<td>Poorly differentiated (grade-III)</td>
<td>5 (16.67%)</td>
<td>6 (20.0%)</td>
<td></td>
</tr>
<tr>
<td>Undifferentiated(grade-IV)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
Table shows that histopathological examination: Well differentiated was found 23.33% in radiotherapy group and 20% were in surgery group and moderately differentiated carcinoma was 60% & 16.67%, poorly differentiated carcinoma was 6(20.0%) & 2(6.67%). There was no significant difference in these two groups.

Majority of the subject belong to grade-II.

Table shows in surgery group 2 patients had haematoma, 2 patients had pharyngeal stenosis and 1 patient had tracheal crusting. In radiotherapy group 3 patients had major complications and 27 patients had minor complications most of them were dryness of mouth and throat.

Table IV:
Morbidity due to surgery and radiotherapy (n=60).

<table>
<thead>
<tr>
<th>Morbidities</th>
<th>Radiotherapy</th>
<th>Surgery</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major morbidities</td>
<td>3</td>
<td>6</td>
<td>0.471</td>
</tr>
<tr>
<td>Minor morbidities</td>
<td>27</td>
<td>1</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Table shows that major morbidities and minor morbidities for surgery were 6 and 1 respectively and major morbidities & minor morbidities for radiotherapy were 3 and 27 respectively.

Table V:
Distribution of Voice Handicap Index (VHI) scores of patients treated early carcinoma larynx as related to treatment modality

<table>
<thead>
<tr>
<th>VHI score</th>
<th>Radiotherapy</th>
<th>Surgery</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal voice (0-10)</td>
<td>8</td>
<td>0</td>
<td>0.001</td>
</tr>
<tr>
<td>Good voice (11-30)</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Moderate voice (31-50)</td>
<td>0</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Poor voice (&gt;50)</td>
<td>0</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Table shows that ten patients from each treatment group were recruited randomly. In the radiotherapy group, eight were scored as normal and two as good. For the surgery group, three patients had good voice and speech, four had moderate voice and speech, and three had poor voice and speech. This difference was statistically significant (p=.001).
Table VI:
Proportion of patients developing a primary site recurrence for the two treatment modalities

<table>
<thead>
<tr>
<th>Time of recurrence (months)</th>
<th>Radiotherapy</th>
<th>Surgery</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th months</td>
<td>2(6.67%)</td>
<td>3(10.0%)</td>
<td>0.59</td>
</tr>
<tr>
<td>9th months</td>
<td>3(10.0%)</td>
<td>4(13.33%)</td>
<td></td>
</tr>
<tr>
<td>12th months</td>
<td>5(16.67%)</td>
<td>6(20.0%)</td>
<td></td>
</tr>
</tbody>
</table>

Figure shows that no significant difference was found when recurrence at the primary site for those patients treated by surgery or by irradiation was studied. 16.67% of the irradiation group had a primary site recurrence compared with 20.0% in the surgery group at 12th months (p = 0.59).

Table VII:
Proportion of patients developing a node in the neck for the two treatment modalities

<table>
<thead>
<tr>
<th>Time of recurrence (months)</th>
<th>Surgery</th>
<th>Radiotherapy</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th months</td>
<td>1(3.33%)</td>
<td>0</td>
<td>0.05</td>
</tr>
<tr>
<td>9th months</td>
<td>3(10.0%)</td>
<td>1(3.33%)</td>
<td>12th</td>
</tr>
<tr>
<td>12th months</td>
<td>5(16.67%)</td>
<td>2(6.67%)</td>
<td></td>
</tr>
</tbody>
</table>

Table shows that there was a significant difference in the pattern of recurrence in the neck between the two treatment groups. Only 6.67% of those who were treated with irradiation had a recurrence in the neck. 16.67% of patients in the surgery group had a recurrence in the neck; this difference was statistically significant (p < 0.05).

Discussion:
The mean age of the radiotherapy group was 63 years, and the mean age for the surgical group was 61 years. There was no significant difference in male–female ratio for the two groups.

Among the aetiological factors, smoking, chewing betel nuts and betel leaves and alcohol are the most important factors contributing to the carcinoma larynx. Out of 30 cases 96.67% were smokers in radiotherapy group and 93.33% were in surgery group, 93.33% cases were habituated with chewing betel nut and tobacco and only 50.0% and 43.33% cases were both chewing and smoker in Radiotherapy and Surgery groups respectively.

The findings of direct laryngoscopy showed supraglottic carcinoma was found 60% in radiotherapy group and 66.67% were in surgery group and glottic carcinoma was (40% & 33%) only. No case was found with subglottic carcinoma. The nature of lesion was exophytic in (66.67% & 63.33%) and ulcerative (33.33% & 36.67%). There was no significant difference between the two. Regarding histopathological examination 95% were squamous variety, similarity was seen by another study16. There was no significant difference in these two groups-Majority of the subject.15-16

In this study, out of 30 cases in surgery group, 6 patients had major complications and most of them were pharyngeal stenosis 2(6.67%) and 1 patient had minor complications. In radiotherapy group 3 patients had major complications and 27 patients hand minor complications most of them were dryness of mouth and throat.

In surgery group, wound infection was 30% Haematoma 6.67%, seroma 3.33% Pharyngeal stenosis 6.67% were consistent the study of Burstein FD, Calcaterra TC where Haematoma was 8.82%, seroma 3%, Pharyngeal stenosis 5%.17
Among the 30 cases of radiotherapy patient developed several side effect of radiotherapy, dryness of mouth and throat, loss of taste, pigmentation of skin and subcutaneous fibrosis during study period. Another study reveals the same type of morbidity of acute radiation like difficulty in tasting food 76.3%, dryness of mouth 92% and changes in taste and dryness of mouth.\textsuperscript{18}

Post radiotherapy 10.0% patients develop mucositis in larynx and pharynx, 3.33% developed severe reaction necrosis of skin, 3.33% developed respiratory distress following radiotherapy, 50% patients developed dryness of mouth and throat, and loss of taste, 6.67%, patients developed subcutaneous fibrosis.

Sheen TS et al (1998) also got similar types of morbidity due to radiation.\textsuperscript{19} They reported pain and soreness of mouth in 86.8%, pain and itching of the skin in 86.8%, difficulty in chewing in 55.3% cases.

This study showed that regarding speech and voice 10 patients from each treatment group were recruited randomly by using computer. In the radiotherapy group, 8 were scored as normal and 2 as good. For the surgery group, three patients had good voice and speech, 4 had moderate voice and speech, and 3 had poor voice and speech. This result consistent with work of Thomas JV et al.\textsuperscript{20}

In this study, no significant difference was found when recurrence at the primary site for those patients treated by surgery or by irradiation was studied. 16.67% of the irradiation group had a primary site recurrence compared with 20.0% in the surgery group at 12th months ($p = 0.59$). This result coincides by another study\textsuperscript{20}, primary site recurrence were 20% in radiotherapy group and 22% in surgery group. This study shows that there was a significant difference in the pattern of recurrence in the neck between the two treatment groups. Only 6.67% of those who were treated with irradiation had a recurrence in the neck. 16.67% of patients in the surgery group had a recurrence in the neck. This result coincide by another study 9.0% of radiotherapy group at primary site recurrence and 25.0% in surgery group.\textsuperscript{20}

\textbf{Conclusion:}
Both surgery and irradiation are equally effective at treating early laryngeal carcinoma but Speech and voice quality were significantly better in patients treated by irradiation than those treated by surgery.

\textbf{References:}


Comparative Study of Hearing Status after Modified Radical Mastoidectomy with and Without Reconstruction

Syed Sanaul Islam¹, Belayat Hossain Siddiquee², A.B.M. Luthful Kabir³, Muhammad Rafiqul Islam⁴, Md. Abdur Razzak⁵

Abstract:

Objective: To compare the hearing status after modified radical mastoidectomy with and without reconstruction.

Materials and Methods: This was a cross sectional observational study which was carried out in the departments of Otolaryngology and Head-Neck surgery of Bangabondhu Sheikh Mujib Medical University Dhaka Medical College during the period of April’2012 to September ’2012. A Total 30 patients of CSOM (Atico-antral variety) underwent modified radical mastoidectomy (MRM) with or without reconstruction were included in this study. Patients were divided into two groups according to operative procedure. Patient underwent MRM without reconstruction belonged to group I (n=15) and with reconstruction was considered as group II(n=15). Patients were examined thoroughly and preoperative hearing level was assessed by pure tone audiometry one week before operation. Both groups of patients were operated by general anesthesia under microscope with post auricular approach. In group II, temporalis fascia and cartilage were taken as graft materials after doing modified radical mastoidectomy. Post operative patients were followed up at regular intervals. Pure tone audiogram (PTA) was done after 8 weeks and hearing assessment was compared by closure of air bone gap.

Results: In this study majority of patients were within 11-20 years and most of patients were male. Closure of air-bone gap was higher in patients underwent MRM with reconstruction.

Conclusion: Reconstruction following MRM causes better hearing gain and also improves the quality of life.

Key words: Hearing Status, Modified Radical Mastoidectomy, Reconstruction

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⁵. Resident surgeon, Shaheed Suhrawardy Medical College Hospital, Dhaka.

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Introduction:
Chronic suppurative otitis media (CSOM) is a common middle ear disease.\(^1\) Higher incidence of CSOM with cholesteatoma has been attributed in developing countries due to poor living condition, overcrowding, poor personal hygiene, lack of breast feeding, passive smoking, poor general health, poor resistance to infection, lack of health awareness, paucity of accessible health care, illiteracy & ignorance.

The atticoantral variety of chronic suppurative otitis media usually associated with cholesteatoma. The choice of treatment of cholesteatoma is surgery for which the goal is total clearance of disease, to obtain a safe dry ear, restoration or maintaining functional capacity if possible.\(^2,3\) There are different surgical modalities of treatment according to the extent of cholesteatoma and amount of destruction such as intact canal wall procedures (cortical mastoidectomy, combined approach tympanoplasty) and canal wall down procedures (atticotomy, atticoantrostomy, modified radical mastoidectomy and radical mastoidectomy).\(^4\)

At the close of 20th century the surgical procedure used to treat chronic middle ear disease was treated by either simple or radical mastoidectomy, with no attempt to preserve the pre-operative hearing level. The concepts of modern reconstructive middle ear surgery came into the field when Moritz, Zollner, Wullstein in Germany introduced tympanoplasty operation.\(^4\) Modified radical mastoidectomy may be done with or without reconstruction such as tympanic membrane, ossicular chain or posterior canal wall reconstruction, to preserve & improvement of hearing, prevent discharge and recurrence. Now a day's modified radical mastoidectomy (canal wall down) with reconstruction under magnification is a modern advancement in otology.\(^4,5\)

In modified radical mastoidectomy hearing results depends on the status of the ossicular chain and on the re-establishment of the transmission of sound through a tympano-ossicular system.\(^6\) In most of the patients of chronic suppurative otitis media, PTA shows the hearing loss ranges from mild to severe depending on extent of disease.\(^7\) In modified radical mastoidectomy (canal wall down) there is destruction of ossicles and or tympanic membrane for complete Clearance of disease. If per operative reconstruction was not done in that case post operative audiometric evaluation may remain unchanged or further hearing loss (±10dB).\(^8\)

On the other hand MRM with reconstruction improved post operative hearing status in more proportion of patient than without reconstruction.\(^8\) MRM with tympanoplasty mean hearing improvement 8dB.\(^9\) In MRM with ossiculoplasty, ABG 0-10dB is achieved in only 50% of patients while 80% have ABG of 0-20 dB.\(^8\)

In my study, I measured the preoperative hearing status in both the group undergoing MRM with reconstruction and without reconstruction. Then further audiological assessment following surgery will be done. Hearing status will be measured in every patient of each group and the result of the two groups will be compared.

Aims and Objectives:
General Objectives:
To compare the hearing status after modified radical mastoidectomy with and without reconstruction.

Specific Objectives:
1. To determine the preoperative hearing status of CSOM due to cholesteatoma.
2. To find out the appropriate surgical procedure to restore anatomical and functional status for cholesteatoma.
Methods:

Study Design: Cross-sectional Observational study

Place of Study: Department of Otolaryngology & Head-Neck Surgery, BSMMU & Dhaka Medical College Hospital.

Duration of Study: 6 months (From April’ 2012 to September’ 2012)

Study Population: Patients of CSOM (Atticoantral variety) admitted for modified radical mastoidectomy (MRM) in BSMMU and DMCH.

Sample Size (n): Group I : 15 patients of MRM without reconstruction.
Group II : 15 patients of MRM with reconstruction.
Total number of patients was 30.

Inclusion Criteria:
1. All Cases of CSOM with cholesteatoma underwent surgery.

Exclusion Criteria:
1. Patients with any intracranial complication due to cholesteatoma.
2. Patients with bilateral CSOM with cholesteatoma.

Sampling technique: Purposive sampling technique was adopted. All the available subjects during the data collection period who fulfilled the study selection criteria were included in the study.

Method of Study: A total number of 30 patients (Group I -15 and Group II-15), who underwent MRM without and with reconstruction were collected. After taking history the patients were examined thoroughly by otoscope and under microscope. Tuning fork test, test for facial nerve integrity and fistula test were performed in every case. Hearing level was assessed by PTA with masking. X-ray mastoid and in some cases CT scan of petro-mastoid area were done. Both groups of patients were operated by general anesthesia under microscope with post auricular approach. In group II, temporalis fascia and cartilage were taken as graft materials after doing modified radical mastoidectomy. PTA was done after 8 weeks postoperatively and compared.

Data Analysis: After collection all the data were checked and edited. Then all data were statistically analysed by SPSS method.

Observation and Results:

Table I:

<table>
<thead>
<tr>
<th>Age Groups (Years)</th>
<th>No of Patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-20</td>
<td>14</td>
<td>46.67</td>
</tr>
<tr>
<td>21-30</td>
<td>09</td>
<td>30</td>
</tr>
<tr>
<td>31-40</td>
<td>04</td>
<td>13.33</td>
</tr>
<tr>
<td>41-50</td>
<td>03</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

Most of patients were in 11-20 years age group (46.6%).

Table II:

<table>
<thead>
<tr>
<th>Sex</th>
<th>No of Patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>18</td>
<td>60</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

The ratio of male and female patient is 1.5:1

Table III:

<table>
<thead>
<tr>
<th>Type of perforation</th>
<th>No. of patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attic</td>
<td>24</td>
<td>80</td>
</tr>
<tr>
<td>Postero Superior</td>
<td>06</td>
<td>20</td>
</tr>
<tr>
<td>marginal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

Most of the patients were with attic perforation 80%
Table IV:

*Condition of the mastoid cavity (8 weeks post operatively) (n=30)*

<table>
<thead>
<tr>
<th>Cavity wetness</th>
<th>Type of Surgery</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group I (n=15)</td>
<td>Group II (n=15)</td>
</tr>
<tr>
<td>Dry</td>
<td>09 (60%)</td>
<td>12 (80%)</td>
</tr>
<tr>
<td>Wet</td>
<td>06 (40%)</td>
<td>03 (20%)</td>
</tr>
<tr>
<td>Total</td>
<td>15 (50%)</td>
<td>15 (50%)</td>
</tr>
</tbody>
</table>

Dry cavity in MRM with Reconstruction group (80%) was higher than MRM without Reconstruction group (60%).

Table V:

*Post operative hearing status (after 8 weeks) in MRM with Reconstruction (n=15)*

<table>
<thead>
<tr>
<th>Hearing Status</th>
<th>No. of Patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved</td>
<td>12</td>
<td>80%</td>
</tr>
<tr>
<td>(10-19 dB)</td>
<td>08</td>
<td>53.33%</td>
</tr>
<tr>
<td>(20-29 dB)</td>
<td>02</td>
<td>13.33%</td>
</tr>
<tr>
<td>(&gt;29 dB)</td>
<td>02</td>
<td>13.33%</td>
</tr>
<tr>
<td>Unchanged</td>
<td>02</td>
<td>13.33%</td>
</tr>
<tr>
<td>Deteriorate</td>
<td>01</td>
<td>6.67%</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100%</td>
</tr>
</tbody>
</table>

Hearing status improved in 80% cases in MRM with reconstruction.

Table VI:

*Post operative hearing status (after 8 weeks) in MRM without Reconstruction (n=15)*

<table>
<thead>
<tr>
<th>Hearing Status</th>
<th>No. of Patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Unchanged</td>
<td>03</td>
<td>20%</td>
</tr>
<tr>
<td>Deteriorated</td>
<td>12</td>
<td>80%</td>
</tr>
<tr>
<td>(10-19 dB)</td>
<td>08</td>
<td>53.33%</td>
</tr>
<tr>
<td>(20-29 dB)</td>
<td>03</td>
<td>20.00%</td>
</tr>
<tr>
<td>(&gt;29 dB)</td>
<td>01</td>
<td>06.67%</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100%</td>
</tr>
</tbody>
</table>

Hearing deterioration occurred in most of the cases (80%) after MRM without reconstruction. (Here < 10 dB variation of hearing is considered as unchanged.)
Discussion:
This cross sectional study was carried out with an aim to compare the hearing status after modified radical mastoidectomy with and without reconstruction. The study findings were discussed and compared with previously published relevant studies.

In the present study the age range were from 11 years to 50 years. The average age was being 21 years. The highest number of patients (46.67%) was in 11-20 years age group. The younger age groups suffer more as because of cellular mastoid, horizontal position of Eustachian tube and enlarged adenoids and re-currents URTI which is supported by other studies.

In this series male (60%) were more affected than female (40%) with a male and female ratio of 1.5:1 which also showed in different studies. Female was less in number because they are less cared in society, they hardly attended the hospital and there are few bed allocation for the female as compared to male.

In the present study, 80% had attic perforation and 20% had posterosuperior marginal perforation. This findings are more or less similar to other series where attic perforation were more than the posterosuperior marginal perforation.

The study showed that after 8 weeks achievement of dry ear with MRM with reconstruction was 80% where MRM without reconstruction was 60% which was also similar to other studies. In the present series of MRM without reconstruction, hearing threshold was unchanged in 20% cases, hearing loss by 10-19 dB in 53.33% cases, 20-29 dB in 20% cases & more than 29 dB in 6.67% cases. This study shows hearing threshold remain unchanged or deterioration of hearing after surgery and there was no hearing improvement. In the other group of MRM with reconstruction hearing threshold remained unchanged in 13.33% cases, and hearing was improved by (10-19 dB) in 53.33% cases, 20-29 dB in 13.33% cases & more than 29 dB in 13.33% cases. Thus hearing threshold was improved in 80% cases and hearing deterioration occurred in 6.67% cases. This result is more or less similar to others.

In group-I, the preoperative mean AB gap was 35.65 dB while post operative mean AB gap was 38.15 dB. AB gap increased post operatively and there was no hearing improvement in group –I which was also noted in another article. In group –II preoperative mean AB gap was 37.55 dB, while post operative mean AB gap was 24.17 dB. So the mean hearing gain was 13.38 dB. This result was more or less similar to other study.

In both groups, during MRM partially diseased ossicle and incus were removed resulting in discontinuity of ossicular chain was bridged by cholesteatoma and thus hearing was maintained. But after removal of diseases, continuity of ossicular chain was lost and resulting in deterioration of hearing. In addition, in case of MRM with
tympanoplasty, sometimes medialization of graft occurs for which middle ear cavity was not maintain and possibly Eustachian tube function was not established properly. As a result, deterioration of hearing occurred.

Conclusion:
Early detection and management of chronic suppurative otitis media with cholesteatoma should be our goal to prevent complication and post operative care and follow up are imperative to prevent recurrence and promotion of life. The functional results of this study support the importance of reconstruction in conjunction with MRM. In fact reconstruction following MRM not only improved the hearing gain but also causing dryness of ear and prevention of complication and thus improves the quality of life.

References:
15. Lesinkas E, Vainutieni V. Closed tympanoplasty in middle ear cholesteatoma surgery Medicina (Kaunas) 2004; 40:856-859.
Association Between Enlarged Adenoid and Otitis Media with Effusion in Children

Abdul Karim¹, AHM Zahurul Huq², Kazi Shameemus Salam³, ABM Luthful Kabir⁴, Md. Shafiul Akram⁵, Zubaidul Haque⁶

Abstract:

Objectives: To assess the association between enlarged adenoid and otitis media with effusion in children.

Methods: This cross sectional comparative study was carried out in the Department of Otolaryngology-Head & Neck Surgery in Bangabandhu Sheikh Mujib Medical University, from July 2013 to June 2015. Thirty children with enlarged adenoids (case) and 30 children without enlarged adenoids (control) were included in this study. All patients subjected for history, local physical examination and evaluation of adenoid size by lateral X-ray of post nasal space. Tympanometry and pure tone audiometry are also done. Information’s recorded on a specially designed data sheet.

Result: Among 30 case and 30 control, 12 (40.0%) and 2 (6.7%) patient had OME in case and control group respectively, mean age was 9.5 (2.76%) years and 9.96 (2.95%) in case and control group respectively. Male were predominant (70%) than female (30.0%) in cases. Among cases, grade-I was 20.0%, grade II- was 33.3% and grade-III was 46.7%. Hearing loss was found in 14 (46.7%) children. According to tympanometry, type A curve was in 17 (56.7%) children, type B in 9 (30.0%) and type C in 4 (13.3%) cases.

Conclusion: Enlarged adenoids can be relevant in the pathogenesis of otitis media with effusion.

Key words: Otitis media with effusion, Enlarged adenoids.

Introduction:
The adenoid (pharyngeal tonsil) is a triangular mass of lymphoid tissue located on the posterior aspect of the nasopharynx. Together with the lingual tonsils anteriorly, the palatine tonsils laterally, all together form a ring of lymphoid tissue known as Waldeyer’s tonsillar ring.¹ The adenoid appears to be at largest in size at 7 years of age. However, clinical symptoms are more common in the younger age group, due to the relative small volume of the nasopharynx and the increased frequency of the upper respiratory tract infections.² Nasal obstruction, rhinorrhoea,
and hyponasal voice are the usual presenting symptoms of adenoid hypertrophy. The adenoid may be implicated in the upper respiratory disease due to partial or complete obstruction of the nasal choanae or as a result of sepsis. Pathological manifestations include rhinitis, rhinosinusitis, otitis media with effusion.

Otitis media with effusion is characterized by an accumulation of fluid in the middle ear cleft behind an intact tympanic membrane, in the absence of signs and symptoms of acute infection. Due to the anatomical difference in the Eustachian tube, children are more sufferer of OME. In children Eustachian tube are more horizontal and shorter.

Adenoid hypertrophy can contribute to the incidence of OME through direct obstruction of Eustachian tube, secondary to chronic infection in the adenoidal tissue and, allergic reaction in the mucosa of adenoid and nasopharynx. OME is very common in children, especially between the ages of 1 and 3 years, with a prevalence of 10% to 30% and a cumulative incidence of 80% at the 4 years old. Its incidence decreases with age, so it is uncommon in teenagers (1% at 11 years). It is also more common in cold weather and in boys more than girls, children with cleft palate, Down syndrome, and allergic rhinitis.

OME is the most common cause of hearing loss in children. It causes to a conductive hearing loss (HL) of variable severity. Hearing impairment usually discovered at routine screening or noticed by the parents and teachers. Over 80% of OME results in conductive HL, averaging 30 dB HL, ranging from 5 to 50 dB HL. HL is significant, especially in bilateral cases. It lasts longer than 3 months, with speech delay and learning difficulties in 20%. Most cases of OME present between 1 to 6 years of age. Enlarged adenoids is the most common cause of OME in children which subsequently causes hearing loss, delayed speech and language acquisition, altered behavior & negatively impact quality of life. Enlarged adenoids associated with OME are one of the important aspects of otolaryngological practice. Children may be missed from diagnosis because they may not complain about it. This study will help to aware otolaryngologist about enlarged adenoids & OME and to realize the importance of tympanometric evaluation along with PTA in early detection of OME.

Objectives:
General Objectives
Observation of the association between enlarged adenoids and otitis media with effusion in children.

Specific Objectives
• To find out the frequency of OME in enlarged adenoids and non enlarged adenoids group.
• To find out degree of hearing loss in children with enlarged adenoids.
• To determine the association between grade of enlarged adenoids and hearing loss due to OME.

Methods:
Study design: Cross Sectional Comparative study
Study period: The total period of study was 2 years (from July 2013 to June 2015).
Study place: The study was carried out in the Department of Otolaryngology-Head & Neck Surgery of Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka.
Study population: Children with or without enlarged adenoid attended in the (Indoor and out patient department) Department of Otolaryngology-Head & Neck Surgery, Bangabandhu Sheikh Mujib Medical University.

Group I: 30 patients with enlarged adenoid forming case.

Group II: 30 patients without enlarged adenoid forming control.

Sample size: 60 patients.

Sampling technique: The sampling technique was purposive non-randomized sampling method. This purposive sampling was performed as per inclusions and exclusion criteria.

Data collection technique: Data were collected recorded in preformed data collection sheet. The relevant socio-demographic data of these patients were collected and recorded.

Statistical Analysis: All data were recorded systematically in preformed data collection form (questionnaire) and quantitative data were expressed as mean and standard deviation and qualitative data were expressed as frequency distribution and percentage. Statistical analysis was performed by using window based computer software devised with Statistical Packages for Social Sciences (SPSS-20). 95% confidence limit was taken. Chi-square test was done to see the association between categorical data and unpaired t test was done to see the association between numerical data. All statistical tests were considered significant at a level of p < 0.05. The summarized data was interpreted accordingly and was then presented in the form of tables.

Result and observations:

Table I: Distribution of patients according to age groups

<table>
<thead>
<tr>
<th>Age</th>
<th>Group I n (%)</th>
<th>Group II n (%)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 - 5</td>
<td>4 (13.3)</td>
<td>3 (10.0)</td>
<td></td>
</tr>
<tr>
<td>6 - 10</td>
<td>17 (56.7)</td>
<td>16 (53.3)</td>
<td></td>
</tr>
<tr>
<td>11 - 14</td>
<td>9 (30.0)</td>
<td>11 (36.7)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30 (100.0)</td>
<td>30 (100.0)</td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>8.96±2.73</td>
<td>9.56±3.00</td>
<td>0.422</td>
</tr>
</tbody>
</table>

Majority of children in both groups was in the age range of 6-10 years.

Table II: Gender distribution of patients in groups

<table>
<thead>
<tr>
<th>Gender</th>
<th>Group I n (%)</th>
<th>Group II n (%)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>21 (70.0)</td>
<td>19 (63.3)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>9 (30.0)</td>
<td>11 (36.7)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30 (100.0)</td>
<td>30 (100.0)</td>
<td>0.584</td>
</tr>
</tbody>
</table>

In our study boys was comparatively more than girls which was not statistically significant.

Table III: Association between grade of adenoids and hearing loss in children with enlarged adenoid

<table>
<thead>
<tr>
<th>Grade of enlarged adenoids</th>
<th>Hearing loss n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>6 (20.0)</td>
</tr>
<tr>
<td>II</td>
<td>10 (33.3)</td>
</tr>
<tr>
<td>III</td>
<td>14 (46.7)</td>
</tr>
</tbody>
</table>

Result shows proportion of hearing loss increase with the severity of nasopharyngeal obstruction by adenoid hypertrophy.
### Table IV:
**Distribution of the children according to hearing loss in groups**

<table>
<thead>
<tr>
<th>Hearing loss</th>
<th>Group I (%)</th>
<th>Group II (%)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
<td>14 (46.7)</td>
<td>4 (13.3)</td>
<td>0.005</td>
</tr>
<tr>
<td>Absent</td>
<td>16 (53.3)</td>
<td>26 (86.7)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30 (100.0)</td>
<td>30 (100.0)</td>
<td></td>
</tr>
</tbody>
</table>

Hearing loss was significantly more in group-I.

### Table V:
**Degree of hearing loss in children with enlarged adenoids (Pure tone audiometry)**

<table>
<thead>
<tr>
<th>Degree of hearing loss</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>4</td>
<td>13.3</td>
</tr>
<tr>
<td>Moderate</td>
<td>10</td>
<td>33.3</td>
</tr>
</tbody>
</table>

Rate of moderate hearing loss was more in group-I.

### Table VI:
**Type of the curve according to tympanometry in groups**

<table>
<thead>
<tr>
<th>Type of the curve</th>
<th>Group I (Case)</th>
<th>Group II (Control)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%) No of ear</td>
<td>n (%) No of ear</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>17 (56.7) 34</td>
<td>28 (93.3) 56</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>9 (30.0) 18</td>
<td>2 (6.7) 4</td>
<td>0.004</td>
</tr>
<tr>
<td>C</td>
<td>4 (13.3) 8</td>
<td>0 (0.0) 0</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30 (100.0) 60</td>
<td>30 (100.0) 60</td>
<td></td>
</tr>
</tbody>
</table>

Rate of B curve was very high in group I than group II.

### Table VII:
**Distribution of patients according to OME in groups**

<table>
<thead>
<tr>
<th>OME</th>
<th>Group I (Case) (%)</th>
<th>Group II (Control) (%)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>12 (40.0)</td>
<td>2 (6.7)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>18 (60.0)</td>
<td>28 (93.3)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30 (100.0)</td>
<td>30 (100.0)</td>
<td>0.002</td>
</tr>
</tbody>
</table>

OME was significantly higher in children of group I than that of group II.
Discussion:
This Study was performed upon 60 children divided into two groups (Group:I and Group:II) depending on presence or absence of enlargement of adenoids. In group: II 30 age matched children without enlarged adenoids were taken for better precision.

In our study, most of the children with enlarged adenoids (56.7%) were in the age group of 6 to 10 years. Enlarged adenoids was found among 60% patients in 5 to 6 years old group in a study which is not concordance with us. Another study reported that large adenoids were most frequently observed between the ages of 6-8 years, this result is partially consistent with this study.

In our study, male (70%) were predominant than female (30%). In one study it was found that 22 (64.7%) were males and 12 (35.3%) were females, which is similar to this. Male has more outdoor environmental exposure than female.

In our study according to size of adenoids, maximum children study group (46.7%) had grade-III followed by grade-II (33.3%) and grade I (20.0%). It was seen in a study that maximum children (54.2%) had grade-III followed by grade-II (16.7%), grade-IV (16.7%) and grade-I (12.5%).

Out of 6 grade-I adenoids cases only 1 (16.7%) case had hearing loss, out of 10 grade-II adenoids 3 (30.0%) cases had hearing loss and out of 14 grade-III adenoids cases 10 (71.4%) cases had hearing loss.

Regarding hearing loss of the children, 14 (46.7%) children in group I and 4 (13.3%) children in group II had hearing loss. There was statistically significant difference between these two groups (p=0.005). This figure supports the objectives, that OME was more frequently found in group I in relative to group: II In a study it was found that mild hearing loss was 62.5% cases and moderate hearing loss was 25.0% cases in right ear but mild hearing loss was 58.3% cases and moderate hearing loss was 33.3% cases in left ear according to pure tone audiometry.

Regarding degree of hearing loss, 10 (33.3%) children had moderate and 4 (13.3%) children had mild hearing loss. The hearing loss was slight in 36.8%, mild in 50.5% and moderate in 12.7% children in the study our result is not consistent with this result. Practically there is no screening program for hearing loss in our country. In this referral center many children came from rural area and guardian of those children are mostly illiterate. So they could not realize about their child’s hearing loss, besides these other important cause is that guardian are reluctant to take treatment.

In our study, majority of tympanometry curve were type A (56.7%) followed by type B (30.0%) and type C (13.3%) in enlarged adenoids children but in control group, maximum (93.3%) patients had type A curve and 6.7% patients had type B curve. There was statistically significant difference between these two groups (p<0.05). Our result is consistent with the result of another study.

In our study OME were found in 12 (40.0%) children with enlarged adenoids and 2 (6.7%) children with non-enlarged adenoids. The difference between these two groups was statistically significant (p<0.05). The incidence of OME was significantly higher in the children with enlarged adenoids (35.0%) than the normal control (7.0%) (p<0.001) and the risk of OME was more than 7.5 times as more among adenoidal group than among the non-adenoidal control, our result was concordance with this result. The causes of development of OME other than enlarged adenoids are excluded as much as possible. We tried to
match the control group with the study group in respect of age, socioeconomic condition and residence. So, the difference of the rate of OME between these two groups is due to enlargement of adenoids.

**Conclusion:**
Enlarged adenoid is associated with otitis media with effusion (OME) in children. Rate of OME was higher in children with enlarged adenoids and lower in control group. Increase severity of nasopharyngeal obstruction is directly associated with increased rate of OME. At least tympanometric evaluation should be done for early diagnosis of the OME and to reduce its long term effects.

**References:**


Hearing gain after myringoplasty in relation to the size of tympanic membrane perforation

Sutanu Kumar Mondal¹, Ashim Kumar Biswas², Md. Mahmudul Huq³, Md Hasan Ali⁴, Md. Kamruzzaman⁵, Md. Abul Hasnat Joarder⁶

Abstract:
Objectives: To assess hearing gain after successful myringoplasty in relation to the size of tympanic membrane perforation.

Methods: This cross-sectional study was done in the department of otolaryngology and head neck surgery, BSMMU, Sahbag, Dhaka during the period of January 2009 to December 2010. A total of 60 patients were underwent myringoplasty operation after taking detailed history, clinical examination and investigation. Preoperative and postoperative hearing assessment was done. Analysed data presented by various tables, graphics and figures.

Results: In case of small size perforation preoperative mean bone conduction threshold was 7.66 dB, mean air conduction threshold was 34.14 dB and mean air bone gap was 26.48 dB. In case of medium size perforation preoperative mean bone conduction threshold was 9.61 dB, mean air conduction threshold was 44.48 dB. Mean air bone gap was 34.87 dB. In case of large size perforation preoperative mean bone conduction threshold was 13.12 dB, mean air conduction threshold was 59 dB, and mean air bone gap was 45.88 dB.

Hearing loss increases with increasing size of perforation. Ahmed and Rahim (1979) showed in the study that hearing loss increases with increasing the size of the perforation which was relevant in the study. After myringoplasty post-operative mean air bone gap was 21.24 dB in small size, 21.74 dB in medium sized and 24 dB in large size.

From the record improvement of mean air bone gap or hearing gain was 5.24 dB in small size perforation respectively. The different of air bone gap closure between small and medium size perforation was statistically significant by unpaired test

Conclusion: Hearing gain after myringoplasty is better in large size perforation.

Key words: Myringoplasty, Hearing improvement.

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6. Professor, Department of Otolaryngology and Head Neck Surgery, BSMMU.

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Introduction:
Chronic suppurative otitis media is a worldwide health problem. The incidence of the diseases is very high in Bangladesh because of lower socioeconomic condition, overcrowding, poor nutrition and lack of health education. Among the two types of chronic suppurative otitis media, tubo tympanic variety is more common and always characterized by central perforation of tympanic membrane. The perforation is associated with discharge and hearing loss. This hearing loss is a matter of serious concern globally particularly in children and young adults because of its long-term effects on communication, language development, educational process and achievements. Hearing disability in adults is a burden to the individual, family and enter society. There is a significant quantitative correlation between the sizes of perforation with hearing loss. Myringoplasty operation is such a procedure by which patient improves hearing status. In my study I have proved that hearing gain is better in large size of perforation of tympanic membrane after successful myringoplasty.

Myringoplasty is the term used to describe the surgical repair of the perforated tympanic membrane. Attempts to close perforation of tympanic membrane started date back to the 16th century. The advent of operating microscope, higher antibiotics, advances in anaesthesia and use of graft materials have resulted in myringoplasty becomes today one of the more commonly perforated otolaryngologic ear procedures in adults and children.

The size of perforation was graded according to involved surface area of tympanic membrane. It was graded as small (less than 25%), medium (50%-75%) and large (more than 75%) perforation of pars tensa. One of the outcomes of successful myringoplasty is hearing improvement. The audiometric results following myringoplasty showed that closure of large perforation resulted in greater hearing gain than small perforation.

A significant reduction in air bone gap following myringoplasty and had improved hearing. In study Black Jh showed that post-operative air bone gap was less than 20 dB in 77.9% of patient. An audiological improvement was also seen in 70.6% of patient in another study.

Methods:
Total 60 patients who underwent myringoplasty were studied in the department of otolaryngology and head neck surgery, BSMMU. Shahbag, Dhaka with their descriptive history, clinical findings, pre and post-operative assessment during the period of January 2009 to December 2010.

The assessment of the patient was done on the basis of history, clinical examination (Tuning fork test), radiological test (X-ray mastoid Town’s view), laboratory investigation and hearing function test (pure tone audiometry and impedance).

Majority of the patients were operated under general anaesthesia, and rests were operated under local anaesthesia. Most of the myringoplasty were done by post auricular approach. Rest of the patients were operated by transcannal approach depends on the condition of the external auditory canal and position of perforation. In all of the patients Temporalis fascia was used as graft material. Under lay technique was used in every case. In patients with bilateral ear diseases operation was performed in one ear at a time. Operations were performed by different surgeons.

Patients were followed up post operatively up to 3 months, two follow up in this period. First follow up at the end of 1 month. 2nd follow up at the end of 3rd month. Pure tone audiometry was done during 2nd follow up. During follow up condition of the wound, external auditory canal and tympanic membrane was noted. Hearing gain after myringoplasty was assessed on the basis of pure tone audiometry by closure of air bone gap.
Results:

**Table I:**
*Distribution of patients by age (n=60)*

<table>
<thead>
<tr>
<th>Age group (years)</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-20</td>
<td>9</td>
<td>7</td>
<td>16</td>
<td>26.67</td>
</tr>
<tr>
<td>21-30</td>
<td>18</td>
<td>12</td>
<td>30</td>
<td>50.00</td>
</tr>
<tr>
<td>31-40</td>
<td>3</td>
<td>8</td>
<td>11</td>
<td>18.33</td>
</tr>
<tr>
<td>41-50</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>5.00</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>30</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table II:**
*Distribution of patients by sex (n=60)*

<table>
<thead>
<tr>
<th>Sex</th>
<th>No. of patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>30</td>
<td>50.00%</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>50.00%</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table III:**
*Distribution of patients by education (n=60)*

<table>
<thead>
<tr>
<th>Education status</th>
<th>No. of patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate</td>
<td>4</td>
<td>6.67</td>
</tr>
<tr>
<td>Primary</td>
<td>16</td>
<td>26.67</td>
</tr>
<tr>
<td>Secondary</td>
<td>22</td>
<td>36.67</td>
</tr>
<tr>
<td>Higher secondary</td>
<td>8</td>
<td>13.33</td>
</tr>
<tr>
<td>Graduate and above</td>
<td>10</td>
<td>16.66</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table IV:**
*Distribution of patients by habitat (n=60)*

<table>
<thead>
<tr>
<th>Habitat</th>
<th>No. of patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>22</td>
<td>36.67</td>
</tr>
<tr>
<td>Rural</td>
<td>38</td>
<td>63.33</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table V:**
*Distribution of patients by clinical feature (n=60)*

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>No. of patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermittent otorrhoea</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Impaired of hearing</td>
<td>58</td>
<td>96.67</td>
</tr>
<tr>
<td>Tinnitus</td>
<td>12</td>
<td>20</td>
</tr>
</tbody>
</table>

**Table VI:**
*Distribution of patients according to the types of anesthesia received (n=60)*

<table>
<thead>
<tr>
<th>Types of anesthesia</th>
<th>No. of patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>3</td>
<td>5.00</td>
</tr>
<tr>
<td>General</td>
<td>57</td>
<td>95.00</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100.00</td>
</tr>
</tbody>
</table>

**Table VII:**
*Distribution of patients on the basis of perforation size (n=60)*

<table>
<thead>
<tr>
<th>Size of perforation</th>
<th>No. of patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>29</td>
<td>48.33</td>
</tr>
<tr>
<td>Medium</td>
<td>23</td>
<td>38.33</td>
</tr>
<tr>
<td>Large</td>
<td>8</td>
<td>13.34</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>
### Table VIII:
Distribution of patients on the basis of surgical approach (n=60)

<table>
<thead>
<tr>
<th>Surgical approach</th>
<th>No. of patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post auricular</td>
<td>55</td>
<td>91.67</td>
</tr>
<tr>
<td>Trans canal</td>
<td>5</td>
<td>8.33</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

### Table IX:
Distribution of patients on the basis of involvement of ear (n=60)

<table>
<thead>
<tr>
<th>Ear involved</th>
<th>No. of patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unilateral</td>
<td>42</td>
<td>70</td>
</tr>
<tr>
<td>Right</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Left</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Bilateral</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

### Table X:
Distribution of preoperative hearing threshold in relation to the size of tympanic membrane perforation (n=60)

<table>
<thead>
<tr>
<th>Size of perforation</th>
<th>Bone conduction threshold Mean (dB)</th>
<th>Air conduction threshold Mean (dB)</th>
<th>Air bone gap Mean (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>7.66</td>
<td>34.14</td>
<td>26.48</td>
</tr>
<tr>
<td>Medium</td>
<td>9.61</td>
<td>44.48</td>
<td>34.87</td>
</tr>
<tr>
<td>Large</td>
<td>13.12</td>
<td>59.00</td>
<td>45.88</td>
</tr>
</tbody>
</table>

### Table XI:
Distribution of postoperative hearing threshold in relation to the size of tympanic membrane perforation (n=60)

<table>
<thead>
<tr>
<th>Size of perforation</th>
<th>Bone conduction threshold Mean (dB)</th>
<th>Air conduction threshold Mean (dB)</th>
<th>Air bone gap Mean (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>0.83</td>
<td>22.07</td>
<td>21.24</td>
</tr>
<tr>
<td>Medium</td>
<td>1.65</td>
<td>23.39</td>
<td>21.74</td>
</tr>
<tr>
<td>Large</td>
<td>3.25</td>
<td>27.25</td>
<td>24.00</td>
</tr>
</tbody>
</table>

### Table XII:
Distribution of improvement of hearing threshold after myringoplasty in relation to the size of the perforation (n=60)

<table>
<thead>
<tr>
<th>Size of perforation</th>
<th>Improvement of Bone conduction thresholds Mean (dB)</th>
<th>Improvement of Air conduction thresholds Mean (dB)</th>
<th>Improvement of Air bone gap Mean (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>6.83</td>
<td>12.07</td>
<td>5.24</td>
</tr>
<tr>
<td>Medium</td>
<td>7.96</td>
<td>21.09</td>
<td>13.13</td>
</tr>
<tr>
<td>Large</td>
<td>9.88</td>
<td>31.76</td>
<td>21.88</td>
</tr>
</tbody>
</table>
Discussion:

In the study, 60 patients those underwent myringoplasty in the department of otorhinolaryngology and head neck surgery, BSMMU, Dhaka were studied prospectively after taking relevant history, clinical examination, investigation and follow up. Hearing gain after myringoplasty was assessed on the basis of post-operative pure tone audiometry by closure of air bone gap.

Age of the patients in this study range from 10-50 years. Mean age of the patients was 26 years. The maximum successful myringoplasty was 50% in the age group of 21-30 years by 26.67%, 18.33% and 5% in the age group of 10-20 years, 31-40 years and 41-50 years respectively.

In this series, male and female were equal. Male and female ratio was 1:1. Majority of the patients came from middle class 48.33%, from lower class 41.67% and 10% from upper class. Level of educational status most of them were secondary 36.67% followed by primary 26.67% graduate 16.66% higher secondary 13.33% and illiterate 6.67%.

Majority of the patients 63.33% came from rural area. Majority of the patients bathed in tube well 45%. According to occupation 36.67% patients were student 33.33% house wife, 11.67% farmers, 11.67% service holder and 6.66% businessman. Farrior and Lee showed that CSOM was more prevalent in rural area which was relevant with this study.

Intermittent ototrhoea previously and hearing impairment were the major symptoms of this series 100% of the patients have history of intermittent ototrhoea and 96.67% have impairment of hearing and 20% patients have tinnitus. Forty two out of sixty patients had unilateral and eighteen had bilateral diseases but operation was performed in one ear at a time.

Most of the patients were operated under general anaesthesia (95%). Most of the patients underwent myringoplasty by post auricular approach (91.67%)

All of the patients underwent myringoplasty by underlay technique. Temporalis fascia used as graft in all patients. The significance of the size of perforation was recorded in this study, the perforation were categorized as small, medium and large size on the basis of surface area involved. In this study 48.35 were small, 38.33% medium and 13.45 large.

In case of small size perforation preoperative mean bone conduction threshold was 7.66 dB, mean air conduction threshold was 34.14 dB and mean air bone gap was 26.48 dB. In case of medium size perforation preoperative mean bone conduction threshold was 9.61 dB, mean air conduction threshold was 44.48 dB. Mean air bone gap was 34.87 dB. In case of large size perforation preoperative mean bone conduction threshold was 13.12 dB, mean air conduction threshold was 59 dB, and mean air bone gap was 45.88 dB.

From this record it is showed that hearing loss increases with increasing size of perforation. From the record it is showed that hearing loss increases with increasing size of perforation. Farrior and Lee showed in the study that hearing loss increases with increasing the size of the perforation which was relevant in the study. After myringoplasty post-operative mean air bone gap was 21.24 dB in small size, 21.74 dB in medium sized and 24 dB in large size.

From the record improvement of mean air bone gap or hearing gain was 5.24 dB in small size perforation respectively. The difference of air bone gap closure between small and medium size perforation was statistically significant by unpaired t test (p=0.001). The different of air bone gap closure between medium and large size
perforation was statistically significant by unpaired test (p=0.001). The difference of air bone gap closure between small and large size perforation was statistically significant by unpaired test (p=0.000). Closure of large perforation resulted in greater hearing gain post operatively. This is relevant with this Study.

**Conclusion:**
From this study, it can be concluded that size of tympanic membrane perforation affects the degree of hearing loss and improvement of hearing after myringoplasty. In relation to the size of perforation from the record, hearing gain was minimum in small size, medium in medium size and maximum in large size perforation. So, it was proved that hearing gain is better in large size of perforation after successful myringoplasty.

**References:**
Case Report

Papillary thyroid carcinoma with neck metastasis in a 6 year old child: A case report

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Abstract:
Thyroid cancers account for 0.5-3.0% of all childhood malignancy. But these cancers are extremely rare in paediatric age group before the age of 6 years. Although the disease is biologically more aggressive in children when compared with adults, the prognosis is better in several series. We report and discuss a case of 6 years old child with papillary thyroid carcinoma, which is the youngest reported case in Bangladesh.

Key words: Thyroid gland, nodule, papillary carcinoma

Introduction:
The incidence of thyroid cancer is 9/100,000 per year.1 It is more common (approximately twice common) in women than in men and increases with age.2 Thyroid nodules seem to be rare disorders in children and adolescents, although thyroid cancers are extremely rare in the pattern of thyroid pathologies, especially at ages younger than 5 years.3 Thyroid cancers occur in 0.5-3.0% of all paediatric malignancies.4 Regarding pathogenesis of goitre, TSH is the dominant hormonal regulator of thyroid gland growth and function, a variety of other growth factors and substances, most produced locally in the thyroid gland, also influence on those processes. These include insulin-like growth factor 1 (IGF-1), epidermal growth factor, transforming growth factor-β (TGF-β), endothelins, and different other cytokines.

Case Report:
We present a 6 year old female child brought to the hospital with swelling of the left anterior–lateral aspect of the neck for 6 months (Fig. 1). The swelling was painless and almost pea size initially but had rapidly increased in size in the past one month. The swelling was 2-3 cm in size in its greatest axis in left side of neck, mobile, firm in consistency, smooth surfaced and it moved with deglutition. There were also 2 palpable cervical nodes in level III and IV, each of which was about 1x1cm in size, mobile, firm.
in consistency. There was no family history of any cancers, nor a history of exposure to radiation. USG of thyroid showed a hypoechoic nodule arising from the left lobe of thyroid almost 1.0 x 0.5 cm in size. Rest of the thyroid gland was normal. There were 3 cervical nodes about 0.5 cm in size also noticed. USG guided FNAC from the thyroid nodule showed papillary carcinoma of thyroid gland. FNAC from the clinical palpable nodes also showed metastatic papillary carcinoma. The Serum TSH, T_4, T_3 were within normal limits. Chest X-Ray, haematological profile, were within normal limits. Child under went surgery and a total thyroidectomy with left sided selective neck dissection was done (Fig. 2). The post operative period was uneventful. The excised specimen measured 3.0x2.0x1.0 cm total thyroidectomy sample containing both lobes and isthmus and seven lymph nodes. The cut surface of the larger lobe showed a 1.0 x 0.5 cm grey white nodule. Section of the nodule showed a papillary carcinoma with few foci of psammomatous calcification (Fig. 3). Lymphovascular invasion is present. The tumour has reached very close to the thyroid capsule. But surgical margins were free of tumour. Sections of all seven lymph nodes showed metastatic papillary carcinoma (Fig. 4). The patient underwent radioiodine (¹³¹I) ablation. Presently the child is on thyroid hormone supplementation and is disease free at 4 months follow up.

Fig. 1

Fig. 2

Fig. 3

Fig. 4
Discussion:
Incidence of thyroid cancer in paediatric age group is 0.5-3.0%. The peak age of presentation is 7 to 12 years and about 2/3rd of cases are among girls. The occurrence of carcinoma thyroid after Chernobyl nuclear accident among 0-6 years children was 2-12/105 persons during the year 1986-2002. The possible causative factors for carcinoma of thyroid in paediatric age group is radiation (>150cGy), average latent period is 7 year). RET/PTC rearrangement is the most common genetic alteration associated with radiation related papillary thyroid cancer. Genetic factor (RAS proto-oncogene in 20% papillary carcinoma of thyroid), familial (in case of medullary carcinoma) or disorder of immune system, TSH receptor activating gene mutation are also considered as the causative factors. Familial factors are autosomal dominant and as no such family history are present in this case. 70% of cases of papillary carcinoma of thyroid in children occur below the age of 7 years. The most common presentation is cervical lymphadenopathy or firm palpable thyroid nodule with or without cervical lymphadenopathy. 6% of papillary carcinoma presents with metastasis to lung or upper mediastinal lymphadenopathy. But it almost never occurs in absence of cervical lymphadenopathy. There is more chance of recurrent laryngeal nerve injury and hypocalcaemia in total thyroidectomy. Whole body scan should be performed approximately 6 weeks after the initial thyroid resection, followed by therapeutic dose of radionuclide (131I) to ablate residual tissue and treat residual metastatic disease. Radioiodine ablation has been shown to decrease risk of local recurrence. A higher rate of recurrence has seen in children who didn’t receive initial post operative (131I) ablation than in those who did. After radio ablation most investigators recommend exogenous thyroid hormone to suppress TSH mediated stimulation of the gland. This child also received ablation followed by thyroid hormone supplementation. In follow up, thyroglobulin has been shown to be a useful marker for residual or metastatic thyroid cancer. Plasma level should be measured yearly and an elevated value should raise the suspicion of recurrence. The overall survival of papillary thyroid cancer in paediatric age group is 98%.

Conclusion:
Papillary thyroid cancer in children may have a very aggressive initial presentation like local lymph node metastases and relatively high rate of distant metastases in comparison to adult patients. Although there is high recurrence rate, the mortality rates are still low. Any child with clinically palpable thyroid swelling should be viewed with suspicion and worked up with possible malignancy. Long term follow up is needed to know the current knowledge and clinical behaviour of this malignancy.

References:


