
Indication of Adult Tonsillectomy & Postoperative Complication According to Indications

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Abstract:

Background: Tonsillectomy remains the most common surgical procedure in field of otolaryngology, and it has a wide range of techniques, indications and complications.

Aim of the study: To determine the indications of adult tonsillectomy and the postoperative complications in relation to each indication.

Patients and methods: A prospective study of 180 adult patients aged 18-70 years underwent tonsillectomy kept under close observation for analysis.

Results: In the study, the most common indication of surgery was acute recurrent tonsillitis (74%), upper airway obstruction (11.1%), suspected neoplasm (8.8) and post-quinsey (5.5%) respectively. The incidence of complications varies according to the indication, patients underwent tonsillectomy for acute recurrent tonsillitis had increased incidence of postoperative bleeding and uvular edema, while patients underwent tonsillectomy for upper airway obstruction had increased incidence of prolonged hospitalization and dyspnea.

Key words: Tonsillectomy, tonsillitis, adult tonsillectomy

Introduction:

Indication of tonsillectomy is so wide. Some of these indications are more in childhood age below 18 years and other indications are more in adulthood and the incidence of complications is different in the two age group as reported by many literatures^{1,2}. In this study Adulthood age group is concerned.

Aims:

To determine the indication of adult tonsillectomy and to determine the post-operative complications according to indications in this age group of population.

Patient and Methods:

This is a prospective study that has been done from the 30th of October 2008 to the 25th of December 2009 in the department of otolaryngology at Al-Yarmouk Teaching Hospital, Baghdad. The study involved 180 adult patients who underwent tonsillectomy. Patients below 18 years old were excluded from the study. All patients were evaluated using history full ENT examination and investigations.

Criteria for the inclusion of patient in the study:

- 1-Their age above 18 years old
- 2-They do tonsillectomy during the time of study
- 3-They don't have bleeding tendency condition.

1. History:

This was taken with a questioner which included a detailed history related to the disease such as the patient complain and it is duration, frequency of sore throat, the symptoms that associated with each attack of sore throat (fever, odynophagia, loss of appetite, generalized weakness and duration of each attack), snoring, postnasal discharge, nasal

obstruction, sleep disturbance, halitosis, lump sensation in the throat and weight loss.

The patients also asked about symptoms and signs of bleeding tendency like epistaxis, excessive bleeding after trauma, wound, tooth extraction, or circumcision in male, or spontaneous bruises or echemosis, family history of bleeding disorders and drug history which may affect the coagulability state of the patient. Also the patients were asked about past medical and surgical history.

2. Examination:

Full ENT examination was done especially for the nose, oropharynx, examination of the post nasal space with endoscope or post-nasal mirror, examination of the neck with cervical lymphadenopathy and examination of the tonsil size and asymmetry.

3. Investigations:

All patient send for blood group, hemoglobin assessment, bleeding time, clotting time, prothrombin time, partial thromboplastin time, ECG and chest X ray. Some patient send for additional investigation as indicated by the condition of patient as preparation for general anesthesia.

4. Intra-operative

Tonsillectomies were done under general anesthesia with cuff endotracheal intubation. Tonsils were excised by dissection method. Hemostasis secured by ligation with silk or electrocautery.

5. Post-operative assessment and follow up

Postoperatively the patient was assessed regarding the presence of any complication such as bleeding, airway obstruction, excessive pain, dehydration, uvular swelling and other complication.

Hospital stay of patients is usually less than 24 hours and the patients were followed for one month.

All patients received postoperative antibiotics consisting of amoxicillin and if patients were allergic to penicillin we gave him erythromycin or clindamycin also all patients receive postoperative analgesia.

6. Data collection

Data collected included patient variable such as age, gender, medical history and indication for surgery. Post operative variable studied include duration of hospital stay, hemorrhage, and other complication during recovery from anesthesia.

Results:

A total of 180 adult patients underwent tonsillectomy during the time period under study.

There were 78 male (43.3%) and 102(56.6%) female with mean age of 29 years and range in age from 18 to 70 years old. The most common indication for surgery was recurrent acute tonsillitis (74.4%), followed by upper airway obstruction secondary to tonsillar hypertrophy (11.1%), suspected neoplasm (8.8%) and post Quinsy (5.5%). Age, sex, and complications differed significantly between groups based on indications for surgery.

Patients who underwent surgery for recurrent acute tonsillitis were significantly younger and more often female than patients with upper airway obstruction or suspected neoplasm. Postoperative complications occurred in 33(18.3%) cases with hemorrhage in 9 (5%) patients.

Hemorrhage was analyzed as reactionary if it occurred within the first 24 postoperative hours and secondary when bleeding occurred after 24 hours. 1 case of postoperative hemorrhage occurred before 24 hours and 8 cases occurred after 24 hours.

The mean time for postoperative bleeding was on day 6 after tonsillectomy (range, 1 to 12 days). Two patients were brought to the operating room for controlling the bleeding one of them was the reactionary case and seven patients respond to conservative management.

Prolonged hospitalization, defined as hospitalization beyond 24 hours, occurred in 8 (4.4%) patients, the causes for prolong hospitalization were dehydration, nausea, vomiting, excessive pain, bleeding and dyspnea.

Other complications include, air way obstruction occur in 5(2.7%) patients and uvular edema occurred in 11(6.1%).

The incidence of complications varied significantly according to indication for surgery, with a higher incidence of complications in patients who underwent surgery for upper airway obstruction compared with chronic infection or suspected tumor. Patients who underwent tonsillectomy for upper airway obstruction had an increased incidence of prolonged hospitalization (25% for patients with upper air way obstruction and 0.73%for patients

with recurrent tonsillitis), whereas patients who underwent tonsillectomy for infection had an increased incidence of postoperative bleeding (5.9% for patient with recurrent tonsillitis and zero for patients with upper air way obstruction or for biopsy).

Postoperative dyspnea were more common in patients who underwent tonsillectomy for obstruction (15%) compared with chronic infection (0.73%)

Table 1: Number and percentage of patients regarding the indication of Tonsillectomy

Indications	Male		Female		Total	
	No.	%	No.	%	No.	%
Recurrent infection	52	38.8	82	61.1	134	74.4
Upper air way obstruction	13	65	7	35	20	11.1
For biopsy	9	56.2	7	43.7	16	8.8
Post Quinsy	5	50	5	50	10	5.5

Table 2: Mean age distribution by indication of surgery

Indications	No.	Range (year)	Mean age	SD
Recurrent infection	134	18-49	25	5.247
Upper air way obstruction	20	18-51	39	8.169
For biopsy	16	22-70	50	15.283
Post Quinsy	10	18-42	26	8.806

Table 3: Number and percentage of post tonsillectomy complication

Complication	No.	%
Bleeding	9	5
Air way obstruction	5	2.7
Prolong hospitalization	8	4.4
Uvular edema	11	6.1
Over all complication rate	33	18.3

Table 4: post tonsillectomy bleeding by indication of Surgery

Indications	No.	%
Recurrent infection	8	5.9
Upper air way obstruction	0	0
For biopsy	0	0
Post Quinsy	1	10

Table 5: Prolong hospitalization by indication of surgery

Indications	No	%
Recurrent infection	1	0.73
Upper air way obstruction	5	25
For biopsy	1	7.9
Post Quinsy	1	10

Table 6: Air way obstruction by indication of surgery

Indications	No	%
Recurrent infection	1	0.73
Upper air way obstruction	3	15
For biopsy	1	7.9
Post Quinsy	0	0

Table 7: Edema of uvula by indication of surgery

Indications	No.	%
Recurrent infection	8	5.8
Upper air way obstruction	1	5
For biopsy	1	4
Post Quinsy	1	10

Discussion:

The results of our study demonstrate that in the adult population, recurrent acute tonsillitis remains the most common indication for tonsillectomy.

Post Tonsillectomy Bleeding:

In our study post tonsillectomy bleeding occurs in 9(5%) patients. 1 case was reactionary bleeding which is controlled surgically under general anesthesia 8 cases were secondary bleeding 7 case controlled by conservative measure and 1 case controlled surgically under general anesthesia.

In a study done by Michael et al (2004)³ shows that reactionary hemorrhage occurs in 1 patient (0.3%) and 31patient (9.2%) develop secondary hemorrhage the hemorrhage rate using cold dissection (n = 8) and bipolar diathermy (n = 24) were 5.5% and 12.5% respectively.

In a study done by Yun –Su Yang, et. al⁴ shows that incidence of post tonsillectomy hemorrhage was 2.7% of which the primary and secondary types account for 7% and 93% respectively the incidence was more common in male and operation in lower grade of resident, the incidence increased with age peaking at 26 – 30 year in both male and female with statistically significant difference between the two sex. The majority of bleeding presented between 4 – 9 day after operation (67%) and the majority of bleeding were controlled with conservative treatment (62%).

In a study done by Dong Weak Kim et. al⁵ show that delayed post tonsillectomy bleeding rate was 3.1% , 2.5% and 10.8% in younger children (age ≤11year) older children (12 ≤ age ≤ 15year) and adult (age > 15) respectively and in adult group spontaneous cessation of bleeding occurred in

(60.9%) patient and Hemostasis under local or general anesthesia was performed in 39.1% patients.

In a study done by S. Kristensen K. Tvetaras⁶ shows that of 1150 tonsillectomies patient the number of post – tonsillectomy bleeding requiring surgery was 32 patients (2.8%) and it was more common In men with history and Quinsy.

David A. Randall MD and Michael E. Hoffer M'D (1998)⁷ prevalence of hemorrhage with adenotonsillar surgery is reported as occurring from 0.1 to 8.1 patients older than age 20 year bleed more often after tonsillectomy.

In study done by Elizabeth K. Hoddeson and Christine G. Gourin⁸ shows post tonsillectomy bleeding occur in 19 (5%) patient of 361 adult tonsillectomy all of them occurs after 24 hours and the mean time for bleeding was on day 8 after tonsillectomy 8 of patients were brought to the operating room for control of bleeding.

Secondary hemorrhage can occur at any time until the tonsil bed has been healed which may take as long as two weeks it is attributed -no spare evidence- to infection in the granulating tonsil bed often with streptococcal organism⁹.

Carmody et al (1982)¹⁰ found that post tonsillectomy bleeding was more common in adult than in children and suggest that chronicity of tonsillar infection might be important.

Edema of Uvula

The uvula is occasionally amputated in inadvertently during tonsillectomy; Dissection too close to the uvular base may disrupt lymphatic and venous drainage producing edema. Uvular swelling is common and occasionally partial uvulectomy is required for treatment of the dysphagia or globus sensation that may result⁵. Systemic steroid may be given for about a week to reduce excessive edema⁷. Neils Rasmussen stated that there were difficulties to assess the consequences of the lesion to the tonsillar pillars, soft palate and uvula¹¹. In our study the incidence of uvular odema was (6.1%).

Prolong Hospitalization

Which is hospitalization beyond 24 hours occurred in (%4.4) in our study. In study done by Elizabeth K. Hoddeson MD and Christine G Gourin MD⁸ it occur in (%5) .There are many causes that lead to prolong hospitalization the most important is dehydration and there are several factor which might aggravate dehydration; general anesthesia and swallowed blood may induce nausea and vomiting and impair oral rehydration, odynophagia reduces the ability to maintain oral liquid intake and fever also increase insensible fluid losses⁷.

R Guida and k Mattucci¹⁰ shows that emesis and dehydration prevent same – day discharge or required readmission in only 0.1% to 0.7% of patients.

Another causes of prolong hospitalization is excessive pain (the severity of post operative pain

increases with age¹³), post operative dyspnea and bleeding. In our study it is found that the patients in whom the indication of tonsillectomy were upper air way obstruction have higher incidence of prolong hospitalization (25%) in comparison with patient in whom the indication of tonsillectomy were recurrent tonsillitis (0.73%) and this result goes with the Elizabeth and Christine (2008)⁸ study which shows prolong hospitalization more common in patient in whom the indication of surgery was upper air way abstraction in comparison with patient in whom the indication of tonsillectomy were recurrent tonsillitis (19% vs 6% p = 0.01).

Post Operative Air Way Obstruction

Air way obstruction from enlarged tonsils increase resistance to air flow and acute relief of obstruction by tonsillectomy has been reported to result in pulmonary edema in children⁸

Pulmonary edema was first reported in 1977 and may occur during surgery or several hours postoperatively⁷.

It is theorized that excessive adeno-tonsillar tissue obstructs the airway, increasing resistance to inspiration and expiration. This results in maintenance of increased positive end-expiratory pressure (PEEP), with increased intrathoracic venous and hydrostatic pressure. Sudden relief of the excess PEEP by intubation or tonsillectomy and adenoidectomy results in transudation of fluid into the interstitial and alveolar spaces.

Oxygen saturation and breath sounds will decrease, fluid suctioned from the endotracheal tube will increase, and the chest radiograph will demonstrate findings consistent with pulmonary edema. Treatment consists of reestablishing PEEP with intubation, although mild cases may be treated with diuretics and morphine alone¹². None of the patient in our series has documented postoperative pulmonary edema by chest radiographs which suggest that pharyngeal swelling and / or over sedation are more likely the causes⁸ also blood and secretion in the hypo pharynx place the patient at risk for laryngospasm and aspiration.

G Har-El and M Nash (1991)¹⁴ states that patient with significant obstruction may have pulmonary hypertension, right heart failure, or cor pulmonale. Similarly, these patients have a higher risk of obstruction and are more sensitive to sedation and narcotics¹⁴.

In Elizabeth K. Hoddeson MD and Christine G. Gourin study(2008)⁸ shows post operation oxygen desaturation occur in 3% patient of 361 adult tonsillectomy this was more common (7%) for whom the indication of tonsillectomy were for upper air way abstraction. In our study post operative air way obstruction occur in 2.7% patient and it was more common in patient in whom the indication of surgery was upper air way abstraction.

Tonsillectomy for Suspected Neoplasm

In a study done by Sunkaraneni VS; Jones SE; Prasai A; Fish BM (2006)¹⁵ which was retrospective case-note review looks at all the tonsillectomies performed for histological examination at their institution over a five year period, shows that 1475 tonsillectomies, of which 181 performed were sent for histological analysis Excluding cases in which there were no pre-operative out-patient notes, those patients where the specimens had been sent from other hospitals, those patients who had malignancy already diagnosed, and those cases where tonsillectomy had been performed by other surgical specialties (e.g. maxillofacial, plastics) they were left with 53 patients.

In a study done by Cinar F(2004)¹⁶ which was prospective controlled trial carried out in two institutions, Beyoglu Research and Training Hospital and Karaelmas University Hospital, during a 6-year period. Of patients selected for tonsillectomy, patients with unilateral tonsillar enlargement were identified and were included in this study. Patients who had risk factors that were significant for malignancy were excluded. Of the 792 patients undergoing tonsillectomy, 53 patients (6.69%) with asymmetry of tonsils and who had no other risk factors for malignancy underwent tonsillectomy.

In a study done by Elizabeth K. Hoddeson MD and Christine G. Gourin MD (2008)⁸ shows that a total of 361 adult patients underwent tonsillectomy there were 56 (16%) patients the indication of surgery were suspected neoplasm and the pathologic findings revealed benign lymphoid tissue in 28 (50%) patients, B-cell lymphoma in 5 (9%) patients, and squamous cell carcinoma in 23 (41%) patients.

In our study the patients in whom the indication of surgery were suspected neoplasm 16 (8.8%) patients.

Conclusions:

Recurrent acute tonsillitis remains the most common indication for adult tonsillectomy and Complication rates vary according to the indication for surgery. There was higher incidence of complications in patients who underwent surgery for upper airway obstruction compared with chronic infection or suspected tumor. Patients who underwent tonsillectomy for upper airway obstruction had an increased incidence of prolonged hospitalization whereas patients who underwent tonsillectomy for infection had an increased incidence of postoperative bleeding. Postoperative dyspnea was more common in patients who underwent tonsillectomy for obstruction.

References:

1. Hoddeson EK, Gourin CG, Adult tonsillectomy: current indications and outcomes: *Otolaryngol Head Neck Surg.* 2009; 140(1):19-22.
2. Windfuhr JP; Chen YS, Incidence of post-tonsillectomy hemorrhage in children and adults: a study of 4,848 patients: *Ear Nose Throat J.* 2002; 81(9):626-8, 630, 632.

3. Michael S.W. Lee^a, FRCS, Mary-Louise Montague MRCS^a and S.S. Musheer Hussain, Post-tonsillectomy hemorrhage: Cold versus hot dissection, *Otolaryngology - Head and Neck Surgery*, 2004; 131(6):833-6.
 4. Yun-Su Yang MD, (presenter), Ki-Hwan Hong MD, Jeong-Ki Oh MD and Hwa-Uk Lee MDA Clinical Study of the Post-Tonsillectomy Hemorrhage, *Otolaryngology-Head and Neck Surgery*, 2007; 137(8):25.
 5. Dong Wook Kim, Ja-Won Koo, Soon-Hyun Ahn, Chul Hee Lee and Jeong-Whun Kim, Difference of delayed post-tonsillectomy bleeding between children and adults, *Auris Nasus Larynx*, 2010; 37(4):456-60.
 6. Kristensen K. Tveteras Post-tonsillectomy haemorrhage. A retrospective study of 1150 operations, *Clinical Otolaryngology & Allied Sciences* Volume 9 Issue 6, Pages 347 – 350.
 7. David A. Randall MD and Michael E. Hoffer MD, Complications of tonsillectomy and adenoidectomy *Otolaryngology - Head and Neck Surgery*, 1998; 118(1):61-8.
 8. Elizabeth K. Hoddeson MD^a and Christine G. Gourin MD, Adult tonsillectomy: Current indications and outcomes *American Academy of Otolaryngology-Head and Neck Surgery*, 2009; 140(1):19-22.
 9. Michael Gleeson, Scott-Browns *Otolaryngology, head and neck surgery*. 7th volume1 chapter 96, William S, McKerrow and Ray Clarke p1229-1242.
 10. Carmody, Vamadevan: post tonsillectomy heamorrhage, *J. Laryncology, Otol* 1982; 96(6):635-8.
 11. N. Rasmussen, Complications of tonsillectomy and adenoidectomy, *Otolaryngol Clin North Am* 1987; 20:383–90.
 12. R Guida and K Mattucci, Tonsillectomy and adenoidectomy: an inpatient or outpatient procedure?, *Laryngoscope* (1990; 100:491–493.
 13. William J. P. POPT. H, durham. Prevention of Primary Tonsillectomy bleeding: *Archeive Otolaryngology*. 1973; 98:360 -309.
 14. Har El and M. Nash, Tonsillectomy and adenoidectomy, in: Y Krespi and R Ossoff, Editors, *Complications in head and neck surgery*, Saunders, Philadelphia, 1991; 2:75-98.
 15. Sunkaraneni VS; Jones SE; Prasai A; Fish BM: Is unilateral tonsilar enlargement alone an indication for tonsillectomy? *J Laryngol Otol*. 2006; 120(7):21.
 16. Cinar F: Significance of asymptomatic tonsil asymmetry *Otolaryngol Head Neck Surg*. 2004; 131(1):101-3.
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