

# TONSILLECTOMY, ADENOIDECTOMY AND ADENOTONSILLECTOMY – POSTOPERATIVE COMPLICATIONS. A META-ANALYSIS

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## ABSTRACT

**INTRODUCTION:** Tonsillectomy and adenoidectomy is a relatively safe procedure and is one of the most common operations performed by otolaryngologists, but it is nevertheless associated with certain complications.

**AIM:** The aim of the present study was to summarize the data about complications after tonsillectomy with or without adenoidectomy.

**MATERIAL AND METHODS:** A meta-analysis was performed, comprising publications on tonsillectomy and adenoidectomy retrieved from the Medline bibliographic database. We show our results and compare with published articles.

**RESULTS:** The average rate of postoperative complications in the reviewed publications is 7.48% with range from 1,37% to 14,96%.

**DISCUSSION:** The postoperative period is with a low risk of complications. The results from published articles and our clinic showed that the larger share occupy major complications – 1854/93.63% in the Medline bibliographic database and 23/52.27% - our result. The complications after tonsillectomy with/without adenoidectomy are rare, but for the most part - major, which necessitates caution in the postoperative period.

**CONCLUSION:** In conclusion we can say that tonsillectomy is one of the most commonly practiced operations with rare rate of complications, which anyway requires knowledge for recognizing.

**Key words:** *tonsillectomy, adenoidectomy, complication*

## INTRODUCTION

Tonsils are lymphoid organs strategically placed at the entrance of digestive and respiratory systems. The surgical removal of tonsils has been performed as long as three thousand years, as mentioned in Hindu

literature. The anatomical idioms used in this study are originated from Latin *tonsa*, which means “oar” and from Greek *amygdala*, which means “almond” (1).

Tonsillectomy and adenoidectomy is a relatively safe procedure and is one of the most common operations performed by otolaryngologists, but it is nevertheless associated with certain complications. Some of these include throat pain, otalgia, dehydration, hemorrhage, nasopharyngeal stenosis, velopharyngeal insufficiency, burns, soft-tissue injury, dentomandibular trauma, atlantoaxial subluxation, and respiratory compromise (2,3).

Tonsillectomy is a classic procedure in otorhinolaryngology and the most frequent performed in some industrialized countries. In the US more than 390,000

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procedures were performed per year. The indications for tonsillectomy and the advisability of outpatient's surgery are often debated in the current literature (4).

The aim of the present study was to summarize the data about complications after tonsillectomy with or without adenoidectomy.

## MATERIAL AND METHODS

A meta-analysis was performed, comprising publications on tonsillectomy and adenoidectomy retrieved from the Medline bibliographic database. Among the publications with the keywords "Postoperative complications after tonsillectomy with/without adenoidectomy" 12 articles were found pertinent. A total of 35784 patients operated, performed in 12 centers through the years 1986 to 2010 were included in the meta-analysis. The authors and the patients' number are shown in the next table.

In our clinic for a period of three years we had 988 cases of tonsillectomy with or without adenoidectomy.

*Table 2. Information about our clinic data basis*

ENT clinic in "St. Marina" Hospital	Period of operations	Number of patients
Nedev Pl and team (14)	2008 - 2010	988

## RESULTS

Complications requiring only office care are classified as minor. Complications requiring revision surgery, blood transfusion, parenteral antibiotics or hospitalization are major. Postoperative complications were identified. Major complications reported included hemorrhage, dehydration, oxygen desaturations, fever (temperature higher than 38.5°C), and unusual complication, cases requiring revision, blood transfusion and death. Throat pain, malaise was considered minor complications.

The total rate of postoperative complications after tonsillectomy with/without adenoidectomy reported was 5.53% / 1980. The meta-analysis result

*Table 1. Authors' list and their publication*

Authors	Reference	Year of publication	Number of patients
Randall DA	Ear Nose Throat J. 2010 Sep; 89(9):E15-8 (2)	2010	-
Gallagher TQ	Otolaryngol Head Neck Surg. 2010 Jun;142(6):886-92 (5)	2010	4776
Hoddeson EK	Otolaryngol Head Neck Surg. 2009 Jan; 140(1):19-22 (6)	2009	361
Shi ZP	Eur Arch Otorhinolaryngol. 2006 Nov; 263(11):1041-3. Epub 2006 Jul 1 (3)	2006	-
Windfuhr JP	Int J Pediatr Otorhinolaryngol. 2001 May 11; 58(3):197-204 (7)	2001	2330
Colclasure JB	Ear Nose Throat J. 1990 Mar; 69(3):155-60. (8)	1990	3340
Rivas Lacarte M	Acta Otorrinolaringol Esp. 2000 Apr; 51(3):221-7. (4)	2000	496
Bidlingmaier C	Hamostaseologie. 2010 Nov; 30 Suppl 1:S108-11. (9)	2010	-
Ye J	J Otolaryngol Head Neck Surg.2009 Feb;38(1):49-58 (10)	2009	475
Yeon Soo Kim	Clinical and Experimental Otorhinolaryngology Vol. 3, No. 1: 56-58, March 2010 (11)	2010	-
W.S. Crysdale	CMAJ, VOL. 135, NOVEMBER 15, 1986 1139 (12)	1986	9409
Windfuhr, Jochen P	The Annals of Otology, Rhinology & Laryngology112.1 (Jan 2003): 63-70. (13)	2003	14597
<b>Total number of tonsillectomy with/without adenoidectomy/patients included in the metaanalysis</b>			35784

shows 93.63% / 1854 major and 6.36% / 126 minor complications out of 1980 patients.

The largest share of the major complications is hemorrhage - more than half – 77.02% / 1525. The second-largest share is the fever (temperature higher than 38.5° C) – 12.37% / 245.

This suggests that in the studies with larger numbers of operations, the complications are significantly less.

Although the tonsillectomy with/without adenoidectomy is one of the most frequent operation with a low rate of complications, sometimes it become a cause for death – in 0.20% of the cases

*Table 3.1. Complication' list from the Medline bibliographic database/*

Complication	Hemorrhage	dehydration	Oxygen desaturations	Fever (temperature higher than 38.5°C)
1980	1525	16	45	245
5.53%	77.02%	0.80%	2.27%	12.37%

*Table 3.2. Complication' list from the Medline bibliographic database*

unusual complication	revision	dead	blood transfusion	Minor	Major
2	5	4	12	126	1854
0.10%	0.25%	0.20%	0.60%	6.36%	93.63%

The average rate of postoperative complications in the reviewed publications is 7.48% with range from 1, 37% to 14, 96 %.

The results are shown on the next tables.

in some authors. Opportunity to get to death and the difference in the percentage of complications indicates that the operation is not harmless and should be performed by well trained professionals in

*Table 4.1. Complication' list from our clinic*

Number of patients	Complication	Hemorrhage	dehydration	oxygen desaturations	Fever(temperature higher than 38.5°C)
988	44 / 4.45%	12\27=27%	2 / 4.45%	1 / 2.27%	6 / 13.63%

*Table 4.1. Complication' list from our clinic*

Unusual complication	revision	dead	blood transfusion	Minor	Major
1 / 2.27%	1 / 2.27%	0	0	21 / 47.72%	23 / 52.27%

## DISCUSSION

Except in a study by Crysdale et al. in 1986, it is noteworthy that authors with more than 1000 operations have complications less than 2% in comparison with those with less than 1000 operations, where complications' rate is close to 8%.

large, well-equipped ENT centers.

Hemorrhage is the most common complication with an incidence of 1.1% to 7% of tonsillectomies (15). Our meta-analysis receive 4.26% cases (against 2.76% in our clinic) with hemorrhage after tonsillectomy with/without adenoidectomy. The identification of hemorrhages as the most common complica-

tion after tonsillectomy outlines the future development of operational techniques and methods to minimize postoperative bleeding.

We practice haemostatic suturing for surgical bleeding rather than with bipolar electro-coagulation in our clinic. So for tree year, we have 988 operated with only 12 cases of hemorrhage (1.21%) and 27.27% of all 44 cases of complications. So that we achieve about 2.5 times fewer cases of hemorrhage (27.27% against 77.02%).

The postoperative period is with a low risk of complications. The results from published articles and our clinic showed that the larger share occupy major complications – 1854/93.63% in the Medline bibliographic database and 23/52.27% - our result. The complications after tonsillectomy with/without adenoidectomy are rare, but for the most part - major, which necessitates caution in the postoperative period.

There is another potentially lethal complication following the pediatric tonsillectomy, post-surgical hyponatremia. Acute hyponatremia can lead to catastrophic neurological sequel. Although this complication is not related to the surgical technique, it is potentially life-threatening. The most important factor for hospital acquired hyponatremia is the administration of excessive amounts of hypotonic fluid in situations in which anti-diuretic hormone (ADH) is secreted for non osmotic reasons (16).

The systolic hypertension and anemia may be significant risk factors for post-tonsillectomy hemorrhage (PTH) in adults and require prior diagnosis and preparation before surgery (16).

Adenotonsillectomy in children may be performed safely on an outpatient basis in the majority of cases without an increase in complication rates. However, very young children comprise a unique patient subpopulation with regard to adenotonsillar surgery. Surgical indications in older children tend to be dominated by chronic recurrent infections, whereas younger children usually require surgery for chronic upper airway obstruction related to adenotonsillar hypertrophy (17).

## CONCLUSION

In conclusion we can say that tonsillectomy is one of the most commonly practiced operations with

rare rate of complications, which anyway requires knowledge for recognizing. Complication rates vary according to the indication for surgery. (6).

Informing the parents about how to reach the ENT specialists on call and the emergency medical services is an important component of the organizational measures to be taken just in case a rare, but serious complication should arise. Furthermore, all care providers within the hospital should be aware of the procedure to be followed in case of an emergency of this type, so that delays can be prevented (18).

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