

## ***Original Article***

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# **Comparison of postoperative complications of tonsillectomy, adenoidectomy and adenotonsillectomy**

**Md. Asgar Ali<sup>1</sup>, Md. Monjurul Alam<sup>2</sup>, Akhil Chadra Biswas<sup>3</sup>, Md. Zahidul Islam<sup>4</sup>,  
Md. Toyab Ali<sup>5</sup>**

### **Abstract**

*Tonsillectomy with or without adenoidectomy is a commonly performed ENT operation over the world, also in our country. Though the operation takes less time and postoperative complication is uncommon but its postoperative complication specially the reactionary haemorrhage as well as secondary haemorrhage is life threatening which heralds immediate appropriate and adequate intervention. So, not only the meticulous surgical procedure rather each and every surgeon should not leave any stone unturned regarding preoperative, peroperative and postoperative care to prevent postoperative complication. More and more study regarding postoperative complication(s) of tonsillectomy or adenoidectomy or adenotonsillectomy operation should be carried out to increase awareness and consciousness among the ENT surgeons.*

**Keywords:** *postoperative complications, Tonsillectomy, Adenoidectomy, Adeno-tonsillectomy*

### **Introduction**

Tonsillectomy, adenoidectomy and adenotonsillectomy are the commonly performed ENT operations in this country. In comparison to the frequency in which these operations are done in developed countries like U.K. and USA, it is much less frequently done in Bangladesh. The exact number of these operation done in this country is not

yet available. Some form of tonsil surgery was first attempted as early as 3000 B.C. (Ritter, 1967) Tonsillectomy is the most frequently performed operation in the United states, According to JAMA<sup>1</sup>, it comprises 10% of all operations in the USA. In 1985, these becomes the 4<sup>th</sup> most frequently performed procedure comprising only 2.5% of all operations<sup>2</sup>. Tonsillectomy remains one of the most common surgical procedures performed in the world. Besides the anaesthetic hazards, excessive haemorrhage due to recent infection, previous peritonsillar abscess and scarring fibrosis; trauma to the surrounding structure and edema of uvula, pulmonary and cardiac infection, postoperative scarring, tonsillar remnants, and increased chance for developing HL can occur in tonsillectomy operation and excessive haemorrhage due to trauma to the aberrant vessel, maybe even aberrant ICA, trauma to the eustachian tube, hypernasal voice and

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1. Senior Consultant (ENT). General Hospital, Dinajpur.
  2. Professor of Otolaryngology & Head-Neck Surgery, BSMMU, Dhaka.
  3. Associate Professor, Department of Otolaryngology & Head-Neck Surgery, Bangladesh Medical College, Dhaka.
  4. Junior Consultant (ENT), National Institute of ENT, Tejgaon, Dhaka.
  5. Asso. Prof. Dept. of ENT and HNS, Islami Bank Medical College Hospital, Rajshahi.

**Address of Correspondence:** Dr. Md. AsgarAli, Senior Consultant (ENT). General Hospital, Dinajpur.

persistance of symptom following surgery can occur in adenoidectomy operation as peroperative hazard(s) and postoperative complication(s).

One of the most significant complications is postoperative haemorrhage. A ten years retrospective study showed that seven of the 750 patients (.93%) required a second general anaesthesia to control haemorrhage<sup>3</sup>. Another retrospective study showed that the incidence of hemorrhage in nonselected patient requiring surgical treatment after adenoidectomy or tonsillectomy or tonsilloadenoidectomy, postoperative bleeding from tonsillar fossa (2.94%), received blood transfusion (0.07%), the latest bleeding occurred 6 days (adenoidectomy) and 18 days (tonsillectomy) after surgery. A prospective study of 1090 patients undergoing surgery was undertaken investigations whether the following factors influenced postoperative haemorrhages- age, sex, method, haemostasis, premedication, month of operation and experience of the surgeon<sup>4</sup>. A retrospective study of 4,848 patients to evaluate the age specific incidence of posttonsillectomy haemorrhage that required surgical treatment. Posttonsillectomy haemorrhage occurred significantly more often in the adult group (3.9% VS 1.6%  $P < 0.001$ ) than in the pediatric group. In the context of sex, posttonsillectomy haemorrhage was significantly more common in males<sup>3</sup>.

Hospital admission of adenotonsillectomy in Scotland still accounts for a sizable proportion of overall pediatric admissions below the age of 14 years<sup>5</sup>. Day case surgery is increasingly being advocated for many procedures and several series of day case adenotonsillectomy have been published<sup>6</sup>. Complication rates for day case tonsillectomy, adenoidectomy and adenotonsillectomy ranges from 0.28% to 4.4% for haemorrhage, 1.3% for fever<sup>7</sup>.

Tonsillectomy is reported usually to be a simple and uncomplicated operation<sup>8</sup>. Some complications are secondary to an anaesthesia which include myocardial instability, laryngeal trauma, aspiration of blood or mucous. Besides an anaesthetic cause, the most common factor responsible for death following tonsillectomy is haemorrhage either primary, reactionary or secondary, especially when it remains unrecognized and not treated timely<sup>9</sup>. Several investigators have analyzed that numerous factors are known to predispose to postoperative infection, for instance patient age, preoperative clinical condition and inappropriate surgical technique have been blamed<sup>10</sup>. In retrospective study of 4,848 patients, the posttonsillectomy haemorrhage was significantly more common in patients who had a history of chronic or recurrent throat infection. Several investigators have analysed posttonsillectomy haemorrhage to determine its cause and they have suggested following facts to reduce its occurrence, adequate preoperative screening for any bleeding disorder and proper attention to surgical techniques. In prospective study for an endpoint of bleeding with normal and abnormal coagulation test, there is no difference in the rate of post tonsillectomy bleeding in patient with abnormal coagulation studies as compared with patient with normal coagulation studies obtained preoperatively. If any and whatever may be the cause, reactionary haemorrhage and secondary haemorrhage in case of tonsillectomy and postoperative haemorrhage from adenoidal bed must be and should be managed in emergency basis.

Though tonsillectomy and adenotonsillectomy are the common operations performed in the department of otolaryngology and Head Neck surgery in our country but no elaborate study has yet been done to find out the selection criteria and a few study done on postoperative

complication The present study was a small effort in this respect taking 100 patient in all age groups randomly from Rangpur Medical College Hospital into account for evaluating various complication in the post operative period.

### Aims & Objectives

1. To find out the various postoperative complications in tonsillectomy, adenoidectomy and adenotonsillectomy.
2. To review the outcome of these operation in paediatric age group.

### Methods

#### A. Study period

Six months period from 16th July 2003 to 15th January 2004 was taken for collecting case histories and relevant post-operative data.

#### B. Place of Study

The department of otolaryngology and Head Neck surgery, Rangpur Medical College Hospital.

#### C. Sample size: 100 patients

#### D. Study design: cross-sectional prospective study

### Results

**Table-I**

*Age distribution of patients (n=100)*

	Age (Years)			Total
	0-9	10-19	20+	
Tonsillectomy	2	33	48	83
Adenotonsillectomy	9	6	0	15
Adenoidectomy	2	0	0	0
Total	13	39	48	100

Maximum age group (48%) were of 20+ years. Among the operations only tonsillectomy was done in 83% patients and adenotonsillectomy was done in 15% patients.

**Table-II**

*Sex distribution of operated patients (n=100)*

	Number of patients	Percentage
Male	54	54
Female	46	46
Total	100	100

**Table-III**

*Indications of operations (n=100).*

	No. of patients	Percent (%)
Recurrent tonsillitis	83	83
Enlarged adenoid & tonsils causing obstructive symptoms and infection	15	15
Persistence of CSOM, OME Where adenoid and/tonsil was thought to be the cause of disease	02	02
Total	100	100

Result: Among the indications of operation Recurrent tonsillitis was highest (83%).

**Table-IV**

*Presenting symptoms of the patients (n=100)*

Symptoms	No. of patients	Percent
1. Recurrent pain in throat	85	85
2. Fever	62	62
3. Difficulty in swallowing	46	46
4. Nasal blockage/mouth breathing	17	17
5. Pain in ear	18	18
6. Nasal discharge	13	13
7. Deafness	09	09
8. Difficulty of breathing at night	12	12

All the patient presented with more than one complains. Among the presenting symptoms maximum (85%) complains of recurrent pain in throat.

**Table-V**

*Other surgical intervention performed along with tonsillectomy, adenoidectomy, adenotonsillectomy.*

Name of operations	Number of patients	Percentage
1. Bilateral myringotomy	04	04
2. Bilateral myringotomy with of ventilation tube	01	01

**Table-VI**

*Duration of operation (including anaesthetic time) (n=100).*

Duration of operation in (minutes)	Number of patients	Percentage
20-29	17	17
30-39	40	40
40-49	31	31
50-59	08	08
60-69	03	03
70 and above	01	01

**Table-VII**

*Postoperative complications (n=100).*

Complications	Number of patients	Percentage
1. Haemorrhage:		
Reactionary haemorrhage	01	01
Secondary haemorrhage	02	02
2. Local infection in tonsillar bed	06	06
3. Trauma to lip, tongue, posterior pillar of tonsil	04	04

**Table-VIII**

*Comparative study of reactionary haemorrhage in different series*

Study	Year	Number of operations	Percentage
Kristensen S and Treteras K <sup>11</sup>	1984	1150	1.57
Tami TA et al. <sup>8</sup>	1987	775	2.70
Richmond KH et al. <sup>12</sup>	1987	784	1.0
Chowdhury K et al. <sup>13</sup>	1988	6842	1.0
Joarder AH <sup>14</sup>	1990	50	0.0
Mutz I et al. <sup>15</sup>	1993	7743	0.090
Rafiquzzaman Md <sup>16</sup>	1994	200	3.50
Kumar Pronoy <sup>17</sup>	1997	100	1.0
Present series	2004	100	1.0

**Table-IX***Comparative study of Secondary haemorrhage in different series.*

Study	Year	Number of operations	Percentage
Kristensen S and Treteras K <sup>11</sup>	1984	1150	1.20
Handler S Det.al. <sup>18</sup>	1986	1145	2.48
Richmond KH et al. <sup>12</sup>	1987	784	2.00
Chowdhury K et al. <sup>13</sup>	1988	6842	1.20
Joarder AH <sup>14</sup>	1990	50	2.00
Mutz I et al. <sup>15</sup>	1993	7743	1.16
Rafiquzzaman Md <sup>16</sup>	1994	200	4.50
Kumar Pronoy <sup>17</sup>	1997	100	2.00
Present series	2004	100	2.00

Secondary haemorrhage was recorded in 2 cases (2.00%).

**Table-X***Comparative study of post operative haemorrhage in different series.*

Study	Year	Number of operation	Percentage
Crysdale WS et al. <sup>19</sup>	1986	9409	2.15
Chowdhury K et al. <sup>13</sup>	1988	6842	2.50
Joarder AH <sup>14</sup> :	1990	50	2.00
Kendrick D et.al <sup>20</sup> .	1992	413	4.36
Mutz I et al. <sup>15</sup>	1993	7743	1.25
Rafiquzzaman Md <sup>16</sup>	1994	200	8.00
Lee WC et al. <sup>21</sup>	1996	291	8.90
Kumar Pronoy <sup>17</sup>	1997	100	3.00
Present Series	2004	100	3.00

Regarding postoperative haemorrhage occurred in 3.00% cases in this study.

**Table-XI***Comparative study of second time general anaesthesia in different series.*

Study	Year	Number of operation	Percentage
Kristensen S et al. <sup>11</sup>	1984	1150	2.80
Crysdale WS et al <sup>19</sup>	1986	9409	0.06
Richmond KH et al. <sup>12</sup>	1987	784	2.17
Chowdhury K et al <sup>13</sup>	1988	6842	0.39
Kendrick D et.al. <sup>20</sup>	1992	413	0.48
Schroeder WA <sup>3</sup>	1995	756	0.93
Kumar Pronoy <sup>17</sup>	1997	100	1.00
Present series	2004	100	1.00

1(1.00% ) of the 100 post operative patients required a second general anaesthesia to control haemorrhage.

## Discussion

This study was carried out to find out the complications of tonsillectomy, adenoidectomy and adenotonsillectomy. Among the 100 patients, 54 were male and 46 were female, the male female ratio was 1.17:1. In this series tonsillectomy was carried out in a bulk of patient (48%) aged 20 years and above though tonsillectomy is a common surgery in paediatric age group. The present findings of high rate of adult tonsillectomy indicates that this surgery is quite common in Rangpur area of the country. Regarding the indication of tonsillectomy operation, the commonest indication of tonsillectomy in this series was recurrent tonsillitis which is in accordance with the findings of Joarder AH<sup>14</sup>. In this series the duration of surgery was 33-39 minutes in 40% patients and in 31% required 40-49 minutes for completion of surgery. This has a similarity with authors.<sup>14, 17</sup> Bilateral myringotomy was performed along with the main operations in 04% cases and bilateral myringotomy with Grommet insertion in 1% case. Tonsillectomy was done in 83 cases. Adenotonsillectomy in 15 cases and adenoidectomy in 2 cases.

In this series, total incidence of postoperative bleeding was 3.0%. The incidence of reactionary haemorrhage was 1% and secondary haemorrhage was 2%. This mimics the findings occurred in Kumar Pronoy<sup>17</sup> who studied 100 tonsillectomy, adenoidectomy and adenotonsillectomy patients and found reactionary haemorrhage in 1% and secondary haemorrhage in 2%. This also mimics the findings of Richmond KH et al<sup>12</sup> who studied 784 tonsillectomy and adenotonsillectomy patients and found reactionary haemorrhage in 1.0% children and secondary haemorrhage in 2.0% children. This study also nearly mimics the finding of Chowdhury K et al<sup>13</sup> who studied 6842 postoperative patients and found total

incidence of postoperative haemorrhage was 2.5%. This study also nearly mimics the findings of Joarder AH<sup>14</sup> who studied 50 cases and found secondary haemorrhage in 2% and reactionary haemorrhage in 0% cases. The incidence of postoperative haemorrhage is slightly higher than the study of Crysdale WS et al<sup>19</sup> who showed 2.15% and slightly lower than the study of Kendrick D et al<sup>20</sup> study who showed 4.36%. The incidence of postoperative haemorrhage in this study is dissimilar to the series Lee WC et al<sup>21</sup> (8.9%) and Mutz I et al<sup>15</sup> (1.25%). In relation to sex & age in this study, out of 3 cases of postoperative haemorrhage 2 cases (66.66%) were male & 1 (33.33%) was female, this is in accordance with an author<sup>14</sup> and 2 cases (66.66%) were of 10-19 years and 1 (33.33%) case of less than 9 years age group. Required second general anaesthesia in this study was 1% which is more or-less similar to the findings of Kumar Pronoy<sup>17</sup> (1.00%) and very close to the study of Schroeder WA<sup>3</sup> (0.93%) and far from the study of Richmond KH et al<sup>12</sup> (2.17%) and Crysdale WS et al<sup>19</sup> (0.06%).

This study shows that 6 (6.0%) patients developed infection in the tonsillar bed postoperatively of which 2 manifested as secondary haemorrhage, which is very close to the study of Rafiquzzaman Md<sup>16</sup> and Kumar Pronoy<sup>17</sup> who showed 5% tonsillar bed infection, whereas Joarder AH<sup>14</sup> study showed that 2.0% patient developed local infection in tonsillar bed. Kendrick D et al<sup>20</sup> study showed that 1.5% children developed fever postoperatively. The present study also noted trauma to upper lip, injury to tongue and injury to the posterior pillar of tonsil in 4% cases, whereas Joarder AH<sup>14</sup> showed that various minor injuries occurred in 8.0% cases, Kumar Pronoy<sup>17</sup> showed in 3.0% cases and Rafiquzzaman Md<sup>16</sup> showed in 2.5% cases. All these injuries can be explained by the fact that a large number of operations were

carried out by junior or trainee surgeon and their less experience resulted the trauma.

Though this study is of short duration and study population are only 100 cases, still comparative study with other series is shown in Table IX for easy reference. Had it been a larger series possibly the result would have been different.

### Conclusion

Though these operations can be performed in day-care basis in different parts of the world, but in our country we still perform it as hospital case with proper counseling, preoperative preparation and postoperative follow up. In this study, the incidence of postoperative complications are nearer to the study of other developed countries but some dissimilarity also present which denotes the literary, financial and social constrains in our country.

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