

Prevalence of Tonsillectomy and Adenoidectomy Complication at Phramongkutklao Hospital

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Tonsillectomy and adenoidectomy, one of the major procedures among otolaryngologist, may have risk in post operative complications which can be either non severe complications (dysphagia, wound pain, dehydration) or serious complications (Bleeding, partial airway obstruction). Meticulous attention to surgical techniques and technical advance in anesthesiology have significantly reduced the number of complications. In Thailand, there are few reports about the adenotonsillectomy complications so the objectives of the present study were to determine the prevalence and related risk factors in patients visiting the department of Otolaryngology, Phramongkutklao Hospital.

Objective: To determine the prevalence of complications and related risk factors in patients who underwent adenotonsillectomy in Phramongkutklao Hospital.

Material and Method: The patients who had undergone adenotonsillectomy from January 2003 to December 2006 in the department of Otolaryngology, Phramongkutklao Hospital was retrospectively and prospectively reviewed. Information extracted included age, tonsillar size, indication for surgery, the post operative complications (anesthetic complication, primary bleeding, secondary bleeding, airway obstruction, dysphagia, wound pain, dehydration, length of stay in hospital and re-admission).

Results: Four hundred and eighty-one patients were enrolled, of which 36.8% were younger than 12 years-old and 63.2% were over 12 years-old; 39.3% male and 60.7% female. Indication for surgery provided by chronic hypertrophic tonsillitis 73%, obstructive sleep apnea 23.5%, peritonsillar abscess and others 3.5%. The prevalence of complications was anesthetic complication 1.6%, primary bleeding 4.1%, secondary bleeding 3.9%, dysphagia 29.0%, dehydration 4.6%, wound pain 48.1%. The average length of hospital stay was 3.6 days and re-admission 3.7%.

Conclusion: The prevalence of post operative complication after tonsillectomy and adenoidectomy was low but higher than other previous studies included the primary bleeding and secondary bleeding.

Keywords: Tonsillectomy, Adenoidectomy, Complication

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Tonsillectomy and adenoidectomy are one of the major procedures of otolaryngologist nowadays. Chronic infection was the primary surgical indication in the past, airway obstruction and obstructive sleep apnea have now become the most common indications instead⁽¹⁾. Many surgical techniques have been described for removal of tonsils and adenoids such as adenoid curettes, cold dissection, electrocautery, CO₂ or KTP laser, Microdebrider, ionized field ablation and ultrasound harmonic scalpel⁽²⁾. The choice of technique is made by the individual surgeon.

A survey of Otolaryngologist shows monopolar cautery to be the most common method of tonsillectomy (33%), Coblation (16%) was the second and Cold dissection combined with electrocautery (10%) was the third. Hemostasis were obtained with electrocautery and suture ligation technique. And adenoidectomy was most performed with adenoid curettes⁽²⁾.

All surgeons, however, are aware of complications which can be either non severe postoperative complications (dysphagia, wound pain, dehydration) or serious complications, especially post operative bleeding which has been reported in 2-4% of patients⁽³⁾. These may lead to the cardiovascular collapse, airway obstruction and even death. The mortality rate is approximately 1:16,000 patients⁽⁴⁾.

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Anesthetic complication and postoperative haemorrhage are still the major cause of death from adenotonsillectomy⁽⁵⁾. Long term complications may occur but rarely include nasopharyngeal stenosis and velopharyngeal insufficiency.

Meticulous attention to surgical techniques and technical advance in modern anesthesiology have significantly reduced the number of complications related to adenotonsillectomy. In Thailand, there are few reports about the adenotonsillectomy complications so the objectives of the present study were to determine the prevalence and related risk factors in patients visiting in the department of Otolaryngology, Phramongkutklao Hospital in order to prevent and decrease the risk of postoperative complications that may occur in the future.

Material and Method

A list of the patients who had undergone adenotonsillectomy from January 2003 to December 2006 in the department of Otolaryngology, Phramongkutklao Hospital was retrospectively and prospectively reviewed. The preoperative history and physical examination of each patient were reviewed. Information extracted included age, underlying illness, tonsillar size (Brodsky assessment grading scale) and indication for surgery which were categorized into recurrent tonsillitis, upper airway obstruction secondary to adenotonsillar hypertrophy, peritonsillar abscess and other.

The post operative complications were classified as non severe and serious complications which will be reviewed during in hospital and follow-up period included anesthetic complication, primary bleeding (bleeding within the first 24 hours), secondary bleeding (delayed postoperative bleeding after 24 hours which were most common between the fifth and seventh post operative days), airway obstruction, dysphagia, wound pain, dehydration. And also reviewed about the length of stay in hospital and re-admission after

discharge home.

Data were analyzed according to the complication and its relationship. Statistical analysis was descriptive and all values were expressed as frequency and percentages.

Results

A total of 481 adenotonsillectomy patients were reviewed. 379 (78.7%) patients underwent tonsillectomy, 95 (19.8%) patients underwent tonsillectomy and adenoidectomy and only 7 (1.5%) patients underwent adenoidectomy as shown in Table 1. There were 177 (36.8%) patients aged 3-12 years old and 304 (63.2%) patients aged more than 12 years old ; 189 (39.3%) males and 292 (60.7%) females.

The indications for adenotonsillectomy were chronic hypertrophic tonsillitis (CHT) in 351 (73%) patients, upper airway obstruction and obstructive sleep apnea (OSA) in 113 (23.5%) patients, peritonsillar abscess and others in 17 (3.5%) patients as shown in Table 2. According to Brodsky assessment scale for tonsillar hypertrophy, the tonsillar size correlated to tonsillectomy were found size 2+ in 186 (38.7%) patients, size 3+ in 221 (45.9%) patients and size 4+ in 52 (10.8%) patients. Type of anesthesia were general anesthesia 95.4% and local anesthesia 4.6%. The tonsillectomy and adenoidectomy were performed by otolaryngology residents (70.1%) and ENT staff (29.9%). The average length of hospital stay was 3.6 days.

The operative complications were included anesthetic complication (partial airway obstruction which needed airway intervention) in 8 (1.6%) patients, Primary bleeding in 20 (4.1%) patients, Secondary bleeding in 19 (3.9%) patients, Dysphagia in 140 (29.0%) patients, Dehydration in 22 (4.6%) patients and Surgical wound pain that needed analgesic for relief in 231 (48.1%) patients as shown in Table 3.

18 (3.7%) patients required re-admission caused by secondary bleeding, pain and dehydration. The prevalence of surgical complication correlated with

Table 1. Type of surgery for tonsillectomy and adenoidectomy in Phramongkutklao Hospital from 2003-2006

Operation	Year				Total
	2003	2004	2005	2006	
Tonsillectomy	59 (80.8%)	123 (80.4%)	94 (75.2%)	103 (79.2%)	379 (78.7%)
Adenoidectomy	3 (4.1%)	2 (1.3%)	1 (0.8%)	1 (0.8%)	7 (1.5%)
Tonsillectomy and Adenoidectomy	11 (15.2%)	28 (18.3%)	30 (24.0%)	26 (20.0%)	95 (19.8%)
Number	73	153	125	130	481

Table 2. Indication of tonsillectomy and adenoidectomy in Phramongkutklao Hospital from 2003-2006

Indication	Year				Total
	2003	2004	2005	2006	
CHT	52 (71.2%)	117 (76.5%)	93 (74.4%)	89 (68.5%)	351 (73.0%)
Upper airway obstruction and OSA	19 (26.0%)	31 (20.3%)	28 (22.4%)	35 (26.9%)	113 (23.5%)
Peritonsillar abscess	2 (2.7%)	5 (3.3%)	4 (3.2%)	6 (4.6%)	17 (3.5%)
Number	73	153	125	130	481

CHT = Chronic hypertrophic tonsillitis, OSA = Obstructive sleep apnea

age, gender, indication for surgery, type of surgery was shown in Table 3.

Discussion

From 481 reviewed charts, the authors found the average adenoidectomy and tonsillectomy was 100 cases per year. These procedures were still the top 5 operations in the department Otolaryngology, Phramongkutklao Hospital; 379 (78.7%) patients underwent tonsillectomy only and 95 (19.8%) patients underwent tonsillectomy and adenoidectomy which was performed most in pediatric patients. In Western countries, obstructive sleep apnea as an indication for tonsillectomy was increasing and chronic hypertrophic tonsillitis was decreasing due to the development of antimicrobial agents and introduction of vaccination for preventing URTI^(2,6,7). Compared to the present study, chronic hypertrophic tonsillitis was still the most operative indication for tonsillectomy (73%) while upper airway obstruction and obstructive sleep apnea accounted for only 23.5%.

Recent literature reviewed showed that adenotonsillectomy complication was due to serious complication from anesthesia 1.5% and mortality rate 0.002% that occurred in the first 24 hours after surgery⁽⁸⁾. The anesthetic complications may be the cause of respiratory distress and airway obstruction, particularly in children. In the present study, the authors found only 8 cases (1.6%) of anesthetic complication in the recovery room with mild degree of airway obstruction but no mortality case.

Primary postoperative bleeding occurred within the first 24 hours of tonsillectomy was thought to be related to surgical technique, skill of the surgeon and the patient itself. If active bleeding is present in tonsillar bed, the patient should return to the operating room to stop the bleeding point immediately. Secondary bleeding may occur within 2 weeks of tonsillectomy and often without identical cause^(1,9,10). Crydale and

Russel reported the overall of post-operative bleeding was 2.15% of which 0.06% needed to stop bleeding in the operative room and 0.04% received blood transfusion⁽²⁾. Collison⁽¹¹⁾, the National Prospective Audit⁽¹²⁾, Bhattacharyya⁽¹³⁾ showed primary bleeding 0.23%, 0.5%, 0.7% and secondary bleeding 3.7%, 2.9%, 4.3% respectively. The present study revealed primary bleeding 4.1% and secondary bleeding 3.9% that had a higher incidence than others. These may be from lack of surgical skill, poor surgical techniques due to the operations were performed mostly by residents (70.1%) and cold dissection was the most operative techniques. In the present study, non serious complications found dysphagia 29.0%, dehydration 4.6% and post-operative pain 48.1% greater than Afman, Kaan, Samarkandi⁽¹⁴⁻¹⁶⁾. McKean⁽¹⁷⁾ suggested 10 mg of dexamethasone intraoperatively could decrease nausea, vomiting and post-operative pain significantly. Nikanne, Sheeran⁽¹⁹⁾, Joshi⁽¹⁸⁻²⁰⁾ suggested selective COX II inhibitor to relieve post-operative pain without increased evidence of bleeding. In the authors' department, the authors routinely gave intravenous fluid for 24 hours postoperatively and paracetamol syrup to reduce the postoperative pain, dehydration and dysphagia which may explain the difference from others.

For patients' safety, all of the patients had over night admission in hospital for observing any complication that might happen. The authors found re-admission rate (2.9%) the same rate as the reports from Klug, Theilgaar (2.8%, 3.1%)^(21,22).

Prevalence of surgical complication compared with age, gender, indication for surgery, type of surgery are shown in Table 3. The authors found, there was a high incidence of operative pain in patients aged > 12 years old, peritonsillar abscess as an indication and type of surgery (tonsillectomy with adenoidectomy). And also a high incidence of dysphagia, dehydration in peritonsillar abscess as an indication and type of

Table 3. The prevalence of surgical complication compared with age, gender, indication of surgery, type of surgery

	Operative complications									
	Anesthetic	Primary Bleeding	Secondary Bleeding	Dysphagia	Dehydration	Pain	Readmission			
Age < 12 years	177 (36.8%)	4 (0.9%)	7 (1.5%)	10 (2.1%)	43 (8.9%)	6 (1.3%)	81 (16.8%)	3 (0.7%)		
Age > 12 years	304 (63.2%)	4 (0.9%)	13 (2.6%)	9 (1.8%)	97 (20.1%)	16 (3.3%)	150 (31.3%)	15 (3.0%)		
Male	189 (39.3%)	5 (1.0%)	17 (3.5%)	17 (3.5%)	56 (11.6%)	12 (2.5%)	105 (21.9%)	11 (2.4%)		
Female	292 (60.7%)	3 (0.6%)	3 (0.6%)	2 (0.4%)	84 (17.4%)	10 (2.1%)	126 (26.2%)	7 (1.3%)		
Indication										
CHT	351 (73.0%)	8 (1.6%)	16 (3.4%)	11 (2.3%)	68 (14.1%)	11 (2.3%)	133 (27.7%)	16 (3.3%)		
Upper airway obstruction and OSA	113 (23.5%)	-	4 (0.9%)	8 (1.6%)	57 (11.8%)	5 (1.0%)	81 (16.9%)	2 (0.4%)		
Peritonsillar abscess	17 (3.5%)	-	-	-	15 (3.1%)	6 (1.3%)	17 (3.5%)	-		
Operation										
Tonsillectomy	379 (78.7%)	3 (0.6%)	15 (3.1%)	19 (3.9%)	80 (16.6%)	12 (2.5%)	162 (33.8%)	18 (3.7%)		
Adenoidectomy	7 (1.5%)	-	-	-	-	-	-	-		
Tonsillectomy & Adenoidectomy	95 (19.8%)	5 (1.0%)	5 (1.0%)	-	60 (12.4%)	10 (2.1%)	69 (14.3%)	-		
n = 481		8 (1.6%)	20 (4.1%)	19 (3.9%)	140 (29.0%)	22 (4.6%)	231 (48.1%)	18 (3.7%)		

CHT = Chronic hypertrophic tonsillitis, OSA = Obstructive sleep apnea

surgery (tonsillectomy with adenoidectomy).

But there was no associated incidence of post operative bleeding among age, gender, indication for surgery, type of surgery. These contrast with the present study of Klug⁽²¹⁾ which revealed the higher post-operative bleeding in older aged and Windfuhr⁽²³⁾ revealed the risk of post-operative bleeding had common in older aged, male and chronic hypertrophic tonsillitis as an indication.

Post-operative complications of adenoidectomy and tonsillectomy may be serious and fatal, especially postoperative tonsillar bleeding and anesthetic complication. Surgeons should concern about these complications and take the best care of adenotonsillectomy patients in order to prevent these serious complications.

Conclusion

From the present study, the incidence of operative complications from adenotonsillectomy in Phramongkutklao Hospital was the higher than the other studies on both non serious complications (postoperative pain, dysphagia and dehydration) and serious postoperative complication (primary bleeding 4.1% and secondary bleeding 3.9%). Related factors for operative complication were age, type and indication of operation. This information may help to prevent and decrease the risk of postoperative complications that may occur in the future.

Potential conflicts of interest

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อุบัติการณ์ของภาวะแทรกซ้อนในผู้ป่วยที่เข้ารับการรักษากำตัดต่อมทอนซิลและต่อมแอดีนอยด์ ในโรงพยาบาลพระมงกุฎเกล้า

ธฤต มุนินทร์พมาศ, กัญญารัตน์ คำเพราะ, กริธา ม่วงทอง

การผ่าตัดต่อมทอนซิลและต่อมแอดีนอยด์ เป็นการผ่าตัดที่มีอัตราสูง 1 ใน 5 อันดับแรกของการผ่าตัดในแผนก หู คอ จมูก และมีโอกาสเกิดภาวะแทรกซ้อนที่พบได้บ่อยแต่ไม่รุนแรง ได้แก่ อาการปวดแผลผ่าตัด กลืนลำบาก จนเกิดการขาดน้ำ แต่บางอย่างมีรุนแรงและอาจมีอันตรายถึงชีวิต เช่น ภาวะเลือดออกหลังการผ่าตัด, ภาวะแทรกซ้อนจากการดมยาสลบ และภาวะอุดกั้นระบบทางเดินหายใจ

วัตถุประสงค์: เพื่อการศึกษาอุบัติการณ์ของภาวะแทรกซ้อนต่างๆ ในผู้ป่วยที่เข้ารับการผ่าตัดต่อมทอนซิล และต่อมแอดีนอยด์ในโรงพยาบาลพระมงกุฎเกล้า และเปรียบเทียบการเกิดภาวะแทรกซ้อนในแต่ละกลุ่มอายุ, เพศ, ชนิดของวิธีการผ่าตัด, ข้อบ่งชี้ในการผ่าตัด รวมถึงหาแนวทางการป้องกันการเกิดภาวะแทรกซ้อนดังกล่าว

วัสดุและวิธีการ: เป็นการศึกษาแบบ *Descriptive retrospective and prospective study* ในผู้ป่วยที่เข้ารับการผ่าตัดต่อมทอนซิลและต่อมแอดีนอยด์ ตั้งแต่เดือน มกราคม พ.ศ. 2545 ถึง ธันวาคม พ.ศ. 2549 ในกองโสต ศอ นาสิกกรรม โรงพยาบาลพระมงกุฎเกล้า โดยเก็บข้อมูลเกี่ยวกับ อายุ เพศ โรคประจำตัว ขนาดต่อมทอนซิลและต่อมแอดีนอยด์ ข้อบ่งชี้ของการผ่าตัด ภาวะแทรกซ้อนที่พบ เช่น ภาวะเลือดออก อาการปวดแผล การติดเชื้อ ระยะเวลาการนอนในโรงพยาบาล อัตราการนอนโรงพยาบาลซ้ำและนำข้อมูลมาวิเคราะห์

ผลการศึกษา: จำนวนผู้ป่วยที่เข้ารับการผ่าตัดทั้งหมด 481 ราย พบผู้ป่วยอายุ < 12 ปี ร้อยละ 36.8, อายุ > 12 ปี ร้อยละ 63.2 เป็นเพศชาย ร้อยละ 39.3 เพศหญิง ร้อยละ 60.7 ข้อบ่งชี้ในการผ่าตัดเป็น *Chronic hypertrophic tonsillitis (CHT)* ร้อยละ 73, *Obstructive sleep apnea (OSA)* ร้อยละ 23.5 และ *Peritonsillar abscess and others* ร้อยละ 3.5 พบภาวะแทรกซ้อนจากการดมยาสลบ ร้อยละ 1.6 ภาวะเลือดออกใน 24 ชม.แรก ร้อยละ 4.1 ภาวะเลือดออกใน 7-10 วัน ร้อยละ 3.9 กลืนลำบาก ร้อยละ 29.0 อาการปวดแผล ร้อยละ 48.1 ระยะเวลาการนอนโรงพยาบาลเฉลี่ย 3.6 วัน อัตราการนอนโรงพยาบาลซ้ำ ร้อยละ 3.7

สรุป: จากการศึกษาพบภาวะแทรกซ้อนจากการผ่าตัดต่อมทอนซิลและต่อมแอดีนอยด์ มีอัตราต่ำแต่สูงกว่าอัตราการเกิดภาวะแทรกซ้อนจากการรายงานในต่างประเทศ รวมทั้งภาวะแทรกซ้อนที่มีอันตรายคือ ภาวะเลือดออกหลังการผ่าตัดภายใน 24 ชั่วโมง และภาวะเลือดออกหลังการผ่าตัดภายหลัง 24 ชั่วโมง พบร้อยละ 4.1 และ 3.9 ตามลำดับ โดยรายงานในต่างประเทศพบร้อยละ 0.23 และ 3.7 ตามลำดับ