Adult tonsillectomy and day care surgery

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Abstract

Objective To evaluate the safety of adult tonsillectomy as a day care surgery

Methods Records of 664 patients above the age of 12 years, who underwent tonsillectomy were analysed. These patients were operated in our department within January 1999 and September 2002. Only 13 patients (1.95%) had post operative bleeding and were readmitted after discharge. The data of these patients were collected from medical records as well from the morbidity meeting proceedings and was reviewed retrospectively. Statistical analysis was done by using 'one sample t-test'.

Results Overall incidence of post operative bleeding was 1.95%. None of our patients bled within 12 hours of surgery, 0.3 % had bleeding between 12 to 24 hours after tonsillectomy and 1.65% encountered bleeding between 24 hours to the 6th post operative day. Bleeding was not major in majority of patients as only 0.45% of the patients required second anesthesia to control the bleeding and only 0.35% of patients required blood transfusion to replace the lost blood volume. In addition, higher incidence of bleeding was seen in males, in the older age group of 31–40 years, patients with obstructive sleep apnea and in patients where tonsillectomy was done by electrocautery dissection.

Conclusion Based on these observations, we conclude that Adult tonsillectomy can be safely performed in our setup.

Keyword Post operative bleedings · One sample t-test · Blood transfusion · Tonsillectomy

Introduction

Tonsillectomy as a day care procedure has continuously been encouraged in the recent literature [1–7, 9–21, 27]. But its safety has always been doubted, as incidence of primary hemorrhage ranged from 0.14 to 8.5% in various reports [4–8, 10, 11, 13–14, 16, 22–26]. There are very few reports on the safety of this procedure in adult patients [13, 15, 20–21] but in children many centers prefer to do tonsillectomy as a day care procedure. Their decision is based on the fact that the time of bleeding in majority of the cases was either within 6 hours [4–7, 11, 14, 18, 23–24, 26–29] or after 12 hours after surgery [1–2, 4, 7, 11, 27]. In addition, day care tonsillectomy is convenient to the family; it's cost effective and being used increasingly to improve healthcare efficiency [1, 8, 24, 27]. It is well accepted by the patients, surgeons and other health care providers [20]. In Oman, we have the practice of admitting the patient overnight after tonsillectomy. The present study was conducted to evaluate the safety of doing tonsillectomy in adult patients above the age of 12 years by defining the incidence and timing of post operative hemorrhage in our setup. We analyzed 664 adult inpatients, who underwent tonsillectomy from Jan 1999 till September 2002. Various parameters like age, sex, indication of tonsillectomy, surgical technique, and time of post operative hemorrhage, use of antibiotics, need of second anesthesia and requirement of blood transfusion were investigated. Overall incidence of post operative bleeding was 1.95%. None of our patients bled within 12 hours of surgery, 0.3% had bleeding between 12 to 24 hours after tonsillectomy and 1.65% encountered bleeding between 24 hours to the 6th

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post operative day. Bleeding was not major in majority of patients as only 0.45% required second anesthesia to control the bleeding and only 0.35% of patients required blood transfusion to replace the lost blood volume. Based on these observations, we conclude that Adult tonsillectomy can be safely preformed in our setup. In addition, higher incidence of bleeding was seen in males, older age group (31–40 yrs), patients with obstructive sleep apnea and in patients where tonsillectomy was done by electrocautery dissection.

Material and methods

Records of 664 patients above the age of 12 years, who underwent tonsillectomy were analysed. These patients were operated in the department of Otolaryngology Head Neck surgery and communication disorders Al Nahdha hospital, Muscat, Sultanate of Oman between Jan 1999 till September 2002. Only 13 patients (1.95%) had post operative bleeding and were readmitted after discharge. The data of these patients was collected from the medical records as well from the morbidity meeting proceedings and was reviewed retrospectively. Statistical analysis was done by using “one sample t test”. We observed the following (Table 1)

Incidence and onset of post tonsillectomy bleeding

Overall incidence of post tonsillectomy bleeding was 1.95% (13/664 patients). None of the patients had bleeding within 12 hours after surgery. 2/664 patients (0.3%) had bleeding between 12 to 24 hours and 11 patients (1.6%) bled between 24 hours to the 6th post operative day. Among 13 patients who had bleeding in the post operative period 84.62% (11/13) had bleeding after 24 hours and 15.38% (2/13) within 12 to 24 hours.

There was increase of incidence of bleeding in 4th decade i.e. 2.4% as compared to 1.6% and 2.1% in the second and the third decades.

There was slight increase of incidence (0.31%) of bleeding female than males. 7/338 patients (1.83%) were male and 6/281 patients (2.41%) were female.

Indications for tonsillectomy

There was no significant statistical relationship between the post tonsillectomy bleeding and indications for surgery. In 94.58% of patients (628/664), the indication for tonsillectomy was recurrent acute tonsillitis and only 36 patients (5.42%) were operated for obstructive sleep apnea. Of 628 patients of recurrent tonsillitis, 12 had bleeding in the post operative period i.e. 1.91% and 1/36 patients (2.77%) had bleeding in the other group.

Surgical techniques

There was significant increase in incidence of bleeding in patients operated by electro-cautery as compared to

patients operated with dissection method. 458/664 patients (68.98%) were operated by dissection method and in 206 patients (31.02%) electro-cautery dissection of tonsils were done. Of 458 patients with dissection method 6 had bleeding in the post operative period i.e. 1.3% and 7/206 patients (3.4%) with cautery dissection had bleeding.

Use of post-operative antibiotics

No significant relationship was found between post tonsillectomy bleeding and post operative antibiotics. 266/664 patients (40%) received antibiotic and 398 patients (60%) did not receive any antibiotics after surgery. 6 of 266 patients (2.25%) with antibiotics had bleeding and 7 patients (1.76%) in the no antibiotic group bled. All these patients had pre operative prophylactic antibiotics in the form of intravenous injection of 1.2 grams of Augmentine at the time of induction of anesthesia. In 266 patients same oral antibiotic was continued for 5 days in the post operative period.

Management of post tonsillectomy bleeding

10 of 13 patients (77%) were treated conservatively without any surgical procedure and were discharged successfully between 3rd to 5th day of readmission. Whereas in 3 patients surgical intervention under general anesthesia was required to control the bleeding. Methods used to control the bleeding were coagulation with bipolar cautery in 2 patients and 1 patient required suturing of anterior and posterior tonsillar pillars. All these patients were put on I/V Augmentine along with analgesics and local antiseptic gargles and were discharged after 3 days. One patient who had pillar suturing had second episode of bleeding and was readmitted on the next day after discharge. He was re-operated and bleeding was controlled with ligation of the bleeding points and bipolar cautery coagulation at various points in the tonsillar fossa. He also required 2 units of whole blood transfusion. He was successfully discharged after 4 days.

Requirement of blood transfusion

The bleeding was severe only in 2 patients (0.3%) requiring blood transfusion. Both these patients required surgery to control the post tonsillectomy hemorrhage.

Discussion

Tonsillectomy as a day care procedure has continuously been encouraged in the recent literature [1–7, 9–21, 27]. But its safety has always been doubted, as incidence of primary hemorrhage ranged from 0.14 to 8.5% in various reports [4–8, 10, 11, 13–14, 16, 22–26]. There are very few reports on the safety of this procedure in adult patients [13, 15, 21, 31] but in children many centers prefer to do tonsillectomy as a day care procedure. Their decision is based on the fact that the time of bleeding in majority of the cases

Table 1 Summary of post tonsillectomy bleeding in adult patients

Age in Yrs.	Number (% age of post tonsillectomy bleeding patients)	Total number of patients 664
12–20	5 (1.6%)	301
21–30	6(2.1%)	280
31–40	2(2.4%)	83
		P= 0.0001
Sex		
Male	7(2.24%)	383
Female	6 (1.7%)	281
		P=0.0005
Indication of tonsillectomy		
Recurrent tonsillitis	12 (1.91)	628
Obstructive sleep aponea	1 (2.77%)	36
		P=0.0053
Surgical technique used		
Dissection method	6(1.3%)	458
Electrocautry dissection	7 (3.4%)	206
		P=0.0005
Incidence of bleeding	13 (1.95%)	664
Onset_of bleeding		
0–12 hours	0	
12–24 hours	2 (0.3%)	664
24hours -6th day	11(1.6%)	664
		P= 0.0044
Post_operative_antibiotics		
Yes	6(2.25%)	266
No	7(1.76%)	398
		P.0005
Second anesthesia required	. 3 (0.45%)	664
Post operative blood transfusion	2 (0.3%)	664

was either within 6 hours [4–7, 11, 14, 18, 29] or after 12 hours after surgery [1–2, 4, 7, 11, 27]. If the bleeding occurs in the period while patient is still in the hospital it can be managed efficiently and patient can be kept overnight for observation. Moralee et al in a prospective study of 2157 adult tonsillectomies, observed serious primary hemorrhage in 0.8 % of patients. The 95% reference range of time of bleeding was within 0 to 6.8 hours of surgery and the confident interval of its upper limit in 95% cases was 5.2 to 8.4 hours. Their results were comparable with UK inpatient and USA adult day case literature. They suggested that discharging the patient after 8.4 hours of surgery would be safe. On a prospective study on adult tonsillectomies, Fenton et al found no post operative bleeding within 24 hours of surgery and qualified the procedure as a day care [15]. In another clinical audit of 4386 patients at Bradford Royal Infirmary

hospital, overall incidence of reactionary hemorrhage after tonsillectomy was 0.57 %. All these patients underwent surgery in the morning session had hemorrhage and returned to the operating room before the end of afternoon session. They suggested that with careful monitoring, day case tonsillectomy may be a safe procedure [16]. Colclasure et al reviewed 3340 tonsil and adenoid cases and found that overall incidence of major complications including the primary or delayed hemorrhage was 1.4%. Only 0.15% of the patients were identified who would require admission in the hospital at the time of complication. They commented that the risk of complications was low enough within the acceptable limits for outpatient operations on the contrary, there are reports in the literature which does not qualify tonsillectomy as a day case procedure both in adults as well in children because of high risk of reactionary hemorrhage,

emesis, and pain in the immediate post operative period [8, 22–26, 28, 30, 33–34]. In our series overall incidence of bleeding was 1.95%, which is well within the range of the other reports. None of our patients had bleeding within 12 hours after surgery, 0.3% had bleeding between 12 to 24 hours and 1.65% bled between 24 hours to 6th post operative day. We normally keep our patient overnight and discharge them in the next morning. As incidence of hemorrhage was 0% within 12 hours so we feel that adult tonsillectomy can be performed as a day case in our set up.

We encountered higher incidence of bleeding in 4th decade as compared to the 2nd and 4th decade. These findings were significant. In a report of Wei et al, 4662 cases of tonsillectomy in all ages were reviewed and found the high incidence of bleeding in adults between the age of 21 to 30 yrs [5]. Carmody et al reviewed 3756 post tonsillectomy patients and found high incidence of bleeding in the age group of 10 to 19 yrs [35]. Windfuhr et al conducted a retrospective study of 4848 to evaluate the age specific incidence of post tonsillectomy bleeding. They compared 2567 patients younger than 15 years with 2281 patients aged 15 years and above. Higher incidence of bleeding was also found in adults as compared to the children in their report [36]. Higher incidence of bleeding was found in males as compared to females in our series. Similar findings have been reported by Ranjit et al [7] in 1999. On the contrary there are reports of higher incidence of bleeding in female patients and no relation of post tonsillectomy bleeding to the gender of patients [38]. Indication of tonsillectomy was one of the criteria in our study. We found the higher incidence of bleeding in a group of patients who underwent tonsillectomy for other indication (obstructive sleep apnea) than chronic tonsillitis. None of the reports have such observations in the literature [37–39]. Electro cautery dissection method of tonsillectomy had higher incidence of bleeding as compared to the cold dissection in our study. In the recent studies it has been observed that the reactionary and secondary hemorrhage rates were unaffected by the surgical methods used [40–43]. The overall rate of transfer the patient to operating room under general anesthesia for control of post tonsillectomy bleeding varied from 0.93 to 2.9% in the literature [44–45] and incidence of such patients was 57.1% (20/35 bleeding patients) in one of the reports [38]. In our series 3 of 13 patients (23%) who had post tonsillectomy bleeding required second anesthesia to control the hemorrhage and overall incidence was 0.45% (3/664 patients). This incidence is much less than the explored literature. Majority of times the hemorrhage is minor and can be controlled by conservative measures and only few patients need second anesthesia to control the bleeding. In addition, the incidence of blood transfusion to replace the blood loss is also very low. Bhattacharya et al reviewed 685 cases of adult tonsillectomy and they found that none of their post tonsillectomy patients required blood transfusion [38]. In another study of 430 patients only 2 patients i.e. 0.46 % were transfused [46]. The highest incidence blood transfusion was 0.93% [45] in

the reviewed literature. In our study the blood transfusion rate was 0.3 % (2/664 patients), which is within the range of already reported incidence. We did not find any relationship between the post operative bleeding and use of antibiotics in the post operative period. Similar observations have also been reported in the literature [7]. In addition, there have many advantages of day care tonsillectomy been described in the literature. Like it is convenient to the family, cost effective and being used increasingly to improve healthcare efficiency [1, 8, 24, 27]. It is also well accepted by the patients, surgeons and other health care providers [20].

Conclusions

Overall incidence of post operative bleeding in our series was 1.95%. None of our patients bled within 12 hours of surgery. Bleeding was not major in majority of patients as only 0.45% required second anesthesia to control the bleeding and only 0.35% of patients required blood transfusion to replace the lost blood volume. Based on these observations, we conclude that adult tonsillectomy can be safely performed in our setup.

References

1. Kanerva M, Tarkkila P, Pitkaranta A. (2003) Day-case tonsillectomy in children: parental attitudes and consultation Rates. *Int J Pediatr Otorhinolaryngol* 67(7):777–784
2. Stewart PC, Barnes DB, Dalton C. (2002) Paediatric day stay tonsillectomy service: development and audit. *Anaesth Intensive Care* 30(5):641–646
3. MacCallum PL, MacRae DL, Sukerman S, MacRae E. (2001) Ambulatory adenotonsillectomy in children less than 5 years of age. *J Otolaryngol* 30(2):75–78
4. Theilgaard SA, Nielsen HU, Sum C. (2001) Risk of hemorrhage after outpatient versus inpatient tonsillectomy. *Ugeskr Laeger* 163(37):5022–5025
5. Wei JL, Beatty CW, Gustafson RO. (2000) Evaluation of posttonsillectomy hemorrhage and risk factors. *Otolaryngol Head Neck Surg* 123(3):229–235
6. Hellier WP, Knight J, Hem J, Waddell T. (1999) Day case paediatric tonsillectomy: a review of three years experience in a dedicated day case unit. *Clin Otolaryngol* 24(3): 208–212
7. Ranjit S, Brett RH, Lu PK, Aw CY. (1999) The incidence and management of post-tonsillectomy haemorrhage: a Singaporean experience. *Singapore Med J* 40(10):622–626
8. Kristensen S. (1998) Ambulatory tonsillectomy. Is postoperative hemorrhage a risk factor? *Tidsskr Nor Lægeforen* 118(7):1033–1035
9. Rakover Y, Almog R, Rosen G. (1997) The risk of postoperative haemorrhage in tonsillectomy as an outpatient procedure in children. *Int J Pediatr Otorhinolaryngol* 41(1):29–36
10. Pringle MB, Cosford E, Beasley P, Brightwell AP. (1996) Day-case tonsillectomy – is it appropriate? *Clin Otolaryngol* 21(6):504–511
11. Chee NW, Chan KO. (1996) Clinical audit on tonsils and adenoid surgery. Is day surgery a reasonable option? *Ann Acad Med Singapore* 25(2): 245–50

12. Gabalski EC, Mattucci KF, Setzen M, Moleski P. (1996) Ambulatory tonsillectomy and adenoidectomy. *Laryngoscope* 106(1 Pt 1):77–80
13. Moralee SJ, Murray JA. (1995) Would day-case adult tonsillectomy be safe? *J Laryngol Otol* 109(12):1166–167
14. Nicklaus PJ, Herzon FS, Steinle EW 4th. (1995) Short-stay outpatient tonsillectomy. *Arch Otolaryngol Head Neck Surg* 121(5):521–524
15. Fenton JE, O'Dwyer TP. (1994) Adult day case tonsillectomy: a safe and viable option. *Clin Otolaryngol* 19(6):470–472
16. Lannigan FJ, Martin-Flirsch DP, Basey E. (1993) Clinical audit: is day-case adenotonsillectomy safe? *Br J Clin Pract* 47(5):254–255
17. Tewary AK, Curry AR. (1993) Same-day tonsillectomy. *J Laryngol Otol* 107(8):706–708
18. Tewary AK. (1993) Day-case tonsillectomy: a review of the literature. *J Laryngol Otol* 107(8):703–705
19. Colciasure JB, Graham SS. (1990) Complications of outpatient tonsillectomy and adenoidectomy: a review of 3,340 cases. *Ear Nose Throat J* 69(3):155–160
20. Soreide AK, Olofsson J. (1999) Tonsillectomy--day surgery or hospitalization? *Tidsskr Nor Laegeforen* 119(10):1423–1427
21. Moralee SJ, MacDougall G, Molony N, Murray JA, Moloney N. (1997) Day case tonsillectomy in adults: how many are suitable? *J R Coll Surg Edinb* 42(1):63
22. Windfuhr JP, Sesterhenn K. (2001) Hemorrhage after tonsillectomy. Analysis of 229 cases. *HNO* 49(9):706–712
23. Shah C, Shahab R, Robb P, Roy D. Role of a home care team in paediatric day-case tonsillectomy. *J Laryngol Otol* 115(1):39–43
24. Kristensen S, Bonding P. (1998) postoperative hemorrhage a risk in ambulatory tonsillectomy? *Ugeskr Laeger* 159(4):425–459
25. Maniglia AJ, Kushner H, Cozzi L. Adenotonsillectomy. A safe outpatient procedure. *Arch Otolaryngol Head Neck Surg* 115(1):92–94
26. Yardley MP. (1992) Tonsillectomy, adenoidectomy and adenotonsillectomy: are they safe day case procedures? *J Laryngol Otol* 106(4):299–300
27. Truy E, Merad F, Robin P, Fantino B, Morgon A. (1994) Failures in outpatient tonsillectomy policy in children: a retrospective study in 311 children. *Int J Pediatr Otorhinolaryngol* 29(1):33–42
28. Peeters A, Van Rompaey D, Schmelzer B, Vidts G, Katz S. (1999) Tonsillectomy and adenotomy as a one day procedure? *Acta Otorhinolaryngol Belg* 53(2):91–97
29. Lowe D, van der Meulen J. (2004) Tonsillectomy technique as a risk factor for postoperative haemorrhage. *National Prospective Tonsillectomy Audit. Lancet* 364(9435):697–702
29. Lowe D, van der Meulen J. (2004) Tonsillectomy technique as a risk factor for postoperative haemorrhage. *National Prospective Tonsillectomy Audit. Lancet* 364(9435):697–702
30. Guida RA, Mattucci KF. (1990) Tonsillectomy and adenoidectomy: an inpatient or outpatient procedure? *Laryngoscope* 100(5):491–493
31. Wagner GA. (1991) Ambulatory adult tonsillectomy. *J Otolaryngol* 20(1):33–34
32. Moralee SJ. (1998) Adult tonsillectomy: what proportion would accept same day discharge? *J R Coll Surg Edinb* 43(2):99–100
33. Kothari P, Patel S, Brown P, Obara L, O'Malley S. (2002) A prospective double-blind randomized controlled trial comparing the suitability of KTP laser tonsillectomy with conventional dissection tonsillectomy for day case surgery. *Clin Otolaryngol* 27(5):369–373
34. Fredelius L, Olin AO, Grenroth C, Axeisson G, Heinlin C. (1999) Pediatric tonsillectomy can be performed as day surgery. *Lakartidningen* 96(3):194–196
35. Carmody D, Vamadevan T, Cooper SM. (1982) Post tonsillectomy haemorrhage. *J Laryngol Otol* 96(7):635–638
36. Windfuhr JP, Chen YS. (2002) Incidence of post-tonsillectomy hemorrhage in children and adults: a study of 4,848 patients. *Ear Nose Throat J* 81(9):626–628
37. Reiner SA, Sawyer WP, Clark KF, Wood MW. (1990) Safety of outpatient tonsillectomy and adenoidectomy.. *Otolaryngol Head Neck Surg* 102(2):161–168
38. Bhattacharyya N. (2001) Evaluation of post-tonsillectomy bleeding in the adult population. *Ear Nose Throat J* 80(8):544–549
39. Myssiorek D, Alvi A. (1996) Post-tonsillectomy hemorrhage: an assessment of risk factors. *Int J Pediatr Otorhinolaryngol* 37(1):35–43
40. Silveira H, Soares JS3 Lima HA. (2003) Tonsillectomy: cold dissection versus bipolar electrodissection. *Int J Pediatr Otorhinolaryngol* 67(4):345–351
41. Raut VV, Bhat N, Sinnathuray AR, Kinsella JB, Stevenson M, Toner JG. (2002) Bipolar scissors versus cold dissection for pediatric tonsillectomy—a prospective, randomized pilot study. *Int J Pediatr Otorhinolaryngol* 64(1):9–15
42. Ahmed M, Khan AA, Siddiqi T, Ikram M, Mian MY. (2000) A comparison of dissection-method and diathermy tonsillectomies. *J Pak Med Assoc* 50(7):215–216
43. Raut V, Bhat N, Kinsella J, Toner JG, Sinnathuray AR, Stevenson M. (2001) Bipolar scissors versus cold dissection tonsillectomy: a prospective, randomized, multi-unit study. *Laryngoscope* 111(12):2178–2182
44. Windfuhr JP, Ulbrich T. (2001) Post-tonsillectomy hemorrhage: results of a 3- month follow-up. *Ear Nose Throat J* 80(11):790, 795–798
45. Schroeder WA Jr. (1995) Post tonsillectomy hemorrhage: a ten-year retrospective study. *Mo Med* 92(9):592–595
46. Collison PJ, Mettler B. (2000) Factors associated with post-tonsillectomy hemorrhage. *Ear Nose Throat J* 79(8):640–642, 644