

Secondary Tonsillar Haemorrhage: A One Year Retrospective Study in a District General Hospital

M TARIQ

Department of Otolaryngology, King Edward Medical College / Mayo Hospital, Lahore, Pa
Correspondence to Dr. Muhammad Tariq, Assistant Professor

Tonsillectomy is one of the most commonly performed surgical procedures. Haemorrhage is its most significant complication. The literature indicates that most concern centres on reactionary rather than secondary haemorrhage. The aims of this study have been to determine the incidence of secondary tonsillar haemorrhage, the influence of patient age and operator experience and the predictive value of a history of infection, bleeding disorders and coagulation studies. A 4% incidence of secondary tonsillar haemorrhage was found, almost half of these having such severe bleeding as to warrant surgical intervention. The following findings also emerged:

- a) More adults than children suffered secondary haemorrhage
- b) Incidence of secondary haemorrhage is independent of operator experience.
- c) There was a negative history of infection and bleeding disorders.
- d) Coagulation studies were normal in all cases.

Despite improvements in standards and socio-economic and medical advances, secondary tonsillar haemorrhage continues to be a significant risk.

Key words: Tonsillectomy, Secondary haemorrhage

Tonsillectomy is one of the commonest operations performed world-wide¹ and accounts for 20% of all operations carried out by otolaryngologists². Postoperative haemorrhage continues to be the most significant complication¹. It is unusual for secondary tonsillar³ haemorrhage to be severe enough to require blood transfusion, and/or a second anaesthetic and operative intervention⁴.

In order to evaluate the validity of this view a retrospective analysis of all tonsillectomies carried out over a one-year period in a district general hospital was undertaken.

Methods and materials:

The total number of tonsillectomies undertaken over a one-year period (between September 1995 and August 1996) was determined. This included all those tonsillectomies performed as part of an adeno-tonsillectomy but not those done as part of other procedures i.e. as combined with uvulopalatoplasty or as a biopsy. The case notes of all patients (both adults and children) re-admitted with secondary tonsillar haemorrhage (bleeding occurring after the first 24 hours) were reviewed and the following information extracted:

1. Age
2. History of upper respiratory tract infection in the fortnight preceding surgery.
3. Personal and family history of bleeding disorders.
4. Results of full blood count and coagulation screen.
5. Grade of surgeon performing the original procedure.
6. Severity of secondary bleed and its management.

Chi-square testing was used to determine whether

- a) The risk of secondary haemorrhage was significantly different for adults compared to children.
- b) There was any correlation with the grade of surgeon performing the original procedure (for this purpose two categories were used- consultants and junior staff).

Results:

Over the one-year period (September 1995 to August 1996) a total of 496 patients underwent tonsillectomy. Of these, 151 (30.4%) were adults (≥ 16 years) and 345 (69.6%) were children (< 16 years). Six surgeons (3 consultants and 3 junior staff) performed the procedures.

Table I shows the numbers performed by each grade of operator. Table II shows the grade of surgeon in the cases of secondary haemorrhage; for the purposes of analysis the grade of surgeon was divided into consultant and junior staff (registrar and senior house officers). Chi-square analysis, testing the null hypothesis that there is no relationship between the grade of surgeon and the likelihood of secondary haemorrhage (using Yeats' continuity correction because there is one degree of freedom) showed that $\chi^2_{\text{calc}} = 0.1 (< \chi^2_{5\%})$. This supports the null hypothesis: there is no relationship between the grade surgeon and risk of secondary haemorrhage.

Haemostasis was achieved in the initial operation of all 496 patients by ligation, diathermy or, in the majority of cases, a combination of both methods. In the 20 (4%) patients who experienced secondary tonsillar haemorrhage, haemostasis in the original operation was achieved in 19 cases with a combination of diathermy and ligation and in one with diathermy alone.

Table III shows the number of adults and children experiencing secondary tonsillar haemorrhage and those

needing surgical intervention. Of the total of 20 cases 9 patients required surgery. In 7 of these cases (all the adults) a combination of diathermy and suturing together of the pillars was required to control the bleeding. The 2 children simply needed diathermy of the bleeding points. Of these 9 patients, 6 suffered haemorrhage severe enough to require transfusion, 5 of these (including the two children) needed 2 units whilst one required 6 units of blood. Chi-squared testing was used to determine whether there was any relationship between being an adult or child and the risk of secondary tonsillar haemorrhage. With one degree of freedom and therefore using Yates' continuity correction, $\chi^2_{\text{calc}} = 10.1 (> \chi^2_{1\%})$. This suggests that there is a relationship between being an adult or a child and the risk of secondary haemorrhage and that adults are more likely to have a secondary bleed than children.

None of the 20 gave a history of either upper respiratory tract infection or tonsillitis in the fortnight preceding the original surgery. A clotting screen (platelet count, partial thromboplastin time and the prothrombin time) was done in all 20 patients when they presented with secondary bleeding. These clotting screens were all within normal limits. All 20 patients were admitted and all were given intravenous antibiotics and fluids regardless of whether they required surgical intervention or not. All made an uneventful recovery.

Table I. Number of operations performed by each grade of surgeon.

Consultant	149
Registrar	230
Senior House Officer	117
Total	496

Table II Grade of surgeon in cases of haemorrhage

	Adults	Children	Total
Consultant	4	1	5(25%)
Junior staff	9	6	15(75%)
Total	13	7	20(100%)

Table III : Proportion of Adults and Children with Secondary Haemorrhage

	Number with Secondary Haemorrhage	Number needing operation
Adults	13	7
Children	7	2
Total	20	9

Discussion

Tonsillectomy is considered to be a safe surgical procedure. However, haemorrhage continues to be its most persistent and worrying complication⁵. Various studies

have looked at the incidence of primary, reactionary and secondary tonsillar haemorrhage and their management^{6,7,8,9,10}. Most attention and concern has focussed on reactionary haemorrhage as this accounts for the majority of post-tonsillectomy fatalities¹¹. There is thus a heightened level of awareness about blood loss in the first 24 hours after surgery amongst both medical and nursing staff. The perception appears different with regard to secondary haemorrhage, where in the majority of patients there is usually only minor or moderate blood loss and prompt resolution of the problem on treatment with antibiotics and bed rest.

Secondary tonsillar haemorrhage is defined as bleeding occurring after the first 24 hours⁴. It is typically seen at about 5-10 days postoperatively. However, two cases of secondary bleeding occurring much later, in one case one month and in the other two months postoperatively have been reported^{12,13}. Both of these cases required blood transfusion and ligation of the external carotid artery. In the present study the mean time of onset of secondary haemorrhage was 6 days postoperatively. This concurs with similar findings in previous studies^{6,8,9,10}. The incidence of secondary haemorrhage in the literature ranges from 1-1.8%^{7,8,11} through to 3-5%^{6,9,14}. The incidence of 4% found in this study therefore corresponds to experience elsewhere.

Nine of the twenty patients with secondary tonsillar haemorrhage (1.8%) required a second general anaesthetic and surgical intervention. The incidence of secondary haemorrhage in studies quoted in the literature range from all cases being treated conservatively⁶ to 1.03%⁷ and 2%⁸ being taken to theatre. However, these studies focussed on paediatric cases. In the present study 2 of 345 children (0.6%) were taken to theatre. The incidence of adults requiring operative intervention in this study was 4.6% (7 out of a total of 151). The overall incidence of secondary haemorrhage is lower in children than in adults¹¹ as also found in this study.

An important factor, which will affect the proportion of patients taken to theatre, is the point at which conservative management is abandoned in favour of surgical intervention. This will vary from unit to unit. Generally secondary tonsillar bleeding is managed by admission, bed-rest, establishing intravenous access, taking blood for group and save or cross matching and antibiotics⁴. The specific management of the bleeding site may vary widely between different units. The bleeding may be controlled by the removal of clots, the application of topical vasoconstrictors to the tonsillar fossa and also by silver nitrate cauterisation of the tonsillar bed^{4,8,15}. If the bleeding continues, despite these measures or because of age or lack of co-operation they cannot be carried out then the patient may need to go to theatre, after appropriate resuscitation. In theatre the haemorrhage can be controlled with electrocautery and ligation^{16,4,15}. Where there is generalised oozing from the fossae then the anterior and

posterior tonsillar pillars may be sutured together¹⁷. Operative intervention would be more likely if there is fresh bleeding at the time of presentation and if the haemoglobin level was less than 100g/l¹⁵.

The experience of the operating surgeon does not influence the incidence of secondary haemorrhage^{11,3}. This finding is supported by the results of this study where it has been shown that the grade of the operating surgeon has no bearing on the subsequent risk of secondary haemorrhage.

There was no personal or family history of any known bleeding abnormality amongst the twenty patients in this study. Further, clotting screens carried out on these patients at the time of secondary bleeding were all normal. These results again confirm the findings of other studies that have shown no coagulation abnormalities in those with tonsillar haemorrhage^{10,18}.

There was a negative history of upper respiratory tract infection in all twenty patients in this study in the two weeks preceding the original operation. This is perhaps a reflection of the effective screening out of those with a positive history in the pre-operative assessment. In conclusion, the findings of previous studies on secondary tonsillar haemorrhage have been confirmed. The incidence in this study, carried out in 1995/1996 corresponds closely with that found in other studies, some done as far back as 1952¹⁴. Despite great advances in medicine and changing trends in patient selection, the risk from secondary tonsillar haemorrhage has remained constant and ever significant. In 1965 Alexander¹⁹ wrote: "the single most common factor leading to tonsillectomy deaths is the indecisiveness of the surgeon to adequately treat post tonsillectomy haemorrhage". Whilst this statement is carefully heeded in the context of reactionary haemorrhage, it must be realised that secondary tonsillar haemorrhage poses a similar threat and deserves as much awareness and vigilance. Surgical intervention must always be available for those patients whose bleeding does not settle on conservative treatment.

References

1. Schroeder, W. A. (1995) Post tonsillectomy haemorrhage: a ten-year retrospective study. *Missouri Medicine* 92 (9): 592-5.
2. Blair, R. L., McKerrow, W. S., Carter, N. W., Fenton, A. (1996) The Scottish tonsillectomy audit. The Audit Sub-Committee of the Scottish Otolaryngological Society. *Journal of Laryngology and Otology Supplement* 20: 1-25.
3. Roberts, C., Jayaramachandran, S. and Raine, C.H. (1992) A prospective study of factors which may predispose to post-operative tonsillar fossa haemorrhage. *Clinical Otolaryngology* 17: 13-17.
4. Cowan DL Hibbert, J. (1997) Acute and chronic infections of the pharynx and tonsils. In Scott-Brown's *Otolaryngology*. 6th Edition (Kerr, A.G., ed.), Butterworth Heinemann, Vol. 5, Chap. 4, p 21.
5. Franco, K.L., Wallace, R.B. (1987) Management of postoperative bleeding after tonsillectomy. *Otolaryngologic Clinics of North America* 20(2): 391-7.
6. Siodlak, M.Z., Gleeson, M.J., and Wengraf, C.L. (1985) Post-tonsillectomy secondary haemorrhage. *Annals of the Royal College of Surgeons of England* 67: 167-168.
7. Handler, S.D., Miller, L., Richmond, K.H. and Baranak, C.C. (1986) Post-tonsillectomy haemorrhage: incidence, prevention and management. *Laryngoscope* 96 (11): 1243-7.
8. Choudhury K. Tefwik T.L. Cooper S.M. Post tonsillectomy haemorrhage. *The Journal of Otolaryngology* 17(1): 46-49.
9. Richmond, K.H., Wetmore, R.F. and Baranak, C.C. (1987) Postoperative complications following tonsillectomy and adenoidectomy- who is at risk? *International Journal of Paediatric Otolaryngology* 13(2): 117-124.
10. Mutz, I. and Simon, H. (1993) Haemorrhagic complications after tonsillectomy and adenoidectomy. *Wiener Klinische Wochenschrift* 105(18): 520-2.
11. Carmody, D., Varnadenan, T., Cooper, S.M. (1982) Post tonsillectomy haemorrhage. *Journal of Laryngology and Otology* 96: 635-8.
12. Dey, F.L. (1968) Late haemorrhage following tonsillectomy. *Archives of Otolaryngology* 87: 558-559.
13. Swoboda, H., Welleschik, B. (1988) Eine schwere tonsillenspatblutung zwei monate postoperativ. *Laryngologie, Rhinologie, Otologie* 67(8): 431-3.
14. Fox, S.L. (1952) Bleeding following tonsillectomy. *Laryngoscope* 62: 414-425.
15. Irani, D.B., Berkowitz, R.G. (1997) Management of secondary haemorrhage following paediatric adenotonsillectomy. *International Journal of Paediatric Otorhinolaryngology* 40(2-3): 115-24
16. Zalzal, G.H., Cotton, R.T. (1993) Pharyngitis and adenotonsillar disease. In *Otolaryngology-Head and Neck Surgery*. 2nd Edition. (Cummings, C.W. et al. eds.) Mosby Year Book, pp1180-1198.
17. Emerson, E.B. (1952) Closed fossa tonsillectomy: a method of reducing post-operative bleeding. *Journal of the American Medical Association* 149: 348.
18. Close, H.L., Kryzer, T.C., Nowlin, J.H., Alving, B.M. (1994) Haemostatic assesement of patients before tonsillectomy: a prospective study. *Otolaryngology-Head and Neck Surgery* 111(6): 733-8.
19. Alexander, D.W. (1965) Factors in tonsillectomy mortality. *Archives of Otolaryngology* 1965:82: 409-411.

