



The Influence Of Various Factors That Can Cause Secondary Haemorrhage In Post Tonsillectomy Patients Described Through A Case Series

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Abstract

Aim - The current study through case series aims to bring out the numerous factors affecting secondary haemorrhage which is a rare phenomenon in children less than 12 years of age.

Background- Tonsillectomy is the most commonly performed for sleep- disordered breathing, chronic tonsillitis and peritonsillar abscess. Post- tonsillectomy hemorrhage (PTH) can be life threatening. Older age, chronic tonsillitis, excessive intra operative blood loss and high post operative mean arterial pressure are common risk factors for PTH. Dissection and snare tonsillectomy performed is the standard technique. Newer techniques like use of Harmonic scalpel, Coblation, Microdebrider, Lasers are safer and efficient. This study aims to bring out the various factors that can cause secondary haemorrhage.

Materials and methods -

Design - Retrospective study

Subjects - Four subjects - 10 year old female, 6 year old male, 9 year old male and 26 year old female

Methods - In this work, we analyzed different parameters like age, sex, influence of regular diet initiation, difference between and experienced and inexperienced surgical acumen, difference in efficacy with use of conventional suture ligation and bipolar diathermy for bleeding control post tonsillectomy and the need for usage of pre and post surgical antibiotics.

Results -

According to our analyzation from our case series, it was concluded that though secondary haemorrhage being a rare entity occurred in an even rarer age group of children less than 12 years with a male preponderance. The study also emphasized that there was no correlation between secondary haemorrhage and nature and day of diet and also the use of antibiotics inadvertently. We also tried to prove the equal efficacy of bipolar diathermy and suture ligation for control of mucosal bleeds post tonsillectomy.

Conclusion -

Secondary haemorrhage is a rare phenomenon and hence throwing light on various factors that influence it is a necessity which has been done through this case series. Further studies and research on each of these factors is needed to understand the condition better and for future treatment options.

Keywords: NIL

Introduction

Tonsillectomy is the the oldest and most commonly performed surgical procedure in Otolaryngological practice^(1,2). Indications for tonsillectomy include recurrent tonsillitis, chronic tonsillitis, peritonsillar abscess, streptococcal carrier, hemorrhagic tonsillitis, tonsillar cyst, suspicion of malignancy and tonsillar hypertrophy causing obstructive sleep disorders⁽¹⁾.

Post tonsillectomy hemorrhage is a serious complication that has high morbidity and the frequency of occurrence ranges from 2% to 4% ;whereas the mortality rate is between 0.001% and 0.006%⁽²⁾. Secondary post tonsillectomy haemorrhage is mainly due to sloughing with infection at operated site. It remains one of the most serious complications

of tonsillectomy because of the close proximity to major vessels⁽³⁾.

Case series

All four cases had surgeries performed between 2023 and 2024 as inpatients. The method used to perform tonsillectomy was Dissection and snare method. The common indication in all patients for surgery was found to be recurrent tonsillitis.

All patients had no familial history of bleeding disorders confirmed with blood investigations and had no physical examination findings suggestive of a possible bleeding disorder.

The secondary haemorrhage was controlled in all four patients using ligation of bleeding vessels under General anesthesia.

Case 1 -

A 10 year old female underwent tonsillectomy by Dissection and snare method along with adenoidectomy by curettage for complaints of recurrent tonsillitis and chronic adenoiditis respectively. Pre operative antibiotics given was Injection Amoxicillin with Clavulonic acid 600mg twice a day according to body weight on admission. Mucosal bleeds were cauterized using bipolar cautery in bilateral tonsillar fossa and hemostasis achieved. Immediate post operative period was uneventful and child was discharged on post operative day 2 with oral antibiotic Amoxicillin and Clavulonic acid 375mg twice a day along with analgesics, betadine gargles and soft bland diet for the next 5 days. First follow up after 1 week was uneventful with healthy slough in bilateral tonsillar fossa.

On Post operative day 8, patient had fried items like chips. The patient was brought to the emergency room on her post operative day 6 with 2 episodes of oral cavity bleed. Child was kept under observation and vitals monitored.

On examination, clots were present in bilateral tonsillar fossa, child was tachycardic but afebrile. Blood investigations like Complete blood count, coagulation profile and liver function tests were sent.

The child was shifted to the operation theatre and bleeding was controlled under general anesthesia by identification and ligation of bleeding vessels in bilateral lower poles and hemostasis achieved.

The patient was shifted to wards, vitals monitored and 3 units of Fresh Frozen Plasma was transfused as the coagulation profile was deranged (INR of 2).

Conservative management in the form of Intravenous antibiotics Injection Cefuroxime 750mg twice a day along with Intravenous analgesics and betadine gargles was started and the child improved clinically with no further episodes of oral bleed. She was discharged after 7 days of intravenous antibiotics.

Case 2 -

A 6 year old male underwent tonsillectomy by Dissection and snare method and adenoidectomy by curettage for complaints of recurrent tonsillitis and chronic adenoiditis respectively. Pre operative antibiotics given was Injection Ceftriaxone with Tazobactam 250mg twice a day according to body weight on admission. Mucosal bleeds were ligated using silk thread in bilateral tonsillar fossa and hemostasis achieved. Immediate post operative period was uneventful and child was discharged on post operative day 2 with oral antibiotic Amoxicillin and Clavulonic acid 375mg twice a day along with analgesics, betadine gargles and soft bland diet for the next 5 days. First follow up after 1 week was uneventful with healthy slough in bilateral tonsillar fossa.

On Post operative day 10, the patient presented to the Taluq hospital near her residence with 1 episode vomiting and bleeding from oral cavity. Child was kept under observation and vitals monitored; after which vitals was normal and fossae were found to be healthy and hence the child was sent back with reassuring the parents. After 4 hours of discharge, the patient had one episode of vomiting with blood stains. On examination in our hospital emergency room, clots were present in the bilateral tonsillar fossa.

The child was tachycardic but afebrile and monitored for further episodes. Blood investigations like Complete blood count, coagulation profile and liver function tests were sent.

The child was shifted to the operation theatre and bleeding was found to come from slippage of ligature in the right lower pole of fossa. It was controlled under general anesthesia by identification and ligation of bleeding vessel in right lower pole and hemostasis achieved.

The patient was shifted to wards, vitals monitored and all blood work up was found to be normal except Haemoglobin which had dropped from 12g/dl to 10g/dl and Packed Cell Volume dropped to 30 for which 1unit of PRBC was transfused. Conservative management in the form of Intravenous antibiotics Injection Cefuroxime 750mg twice a day along with Intravenous analgesics and betadine gargles was started and the child improved clinically with no further episodes of oral bleed. She was discharged after 7 days of intravenous antibiotics.

Case 3 -

A 9 year old male underwent tonsillectomy by Dissection and snare method and adenoidectomy by curettage for complaints of recurrent tonsillitis and chronic adenoiditis respectively. Pre operative antibiotics given was Injection Ceftriaxone 500mg twice a day according to body weight on admission. Mucosal bleeds were ligated using silk thread in right tonsillar fossa and hemostasis achieved. The entire case was done by a post graduate who found it difficult to find proper plane in the upper pole. Immediate post operative period was uneventful and child was discharged on post operative day 2 with oral antibiotic Amoxicillin and Clavulonic acid 375mg twice a day along with analgesics, betadine gargles and soft bland diet for the next 5 days. First follow up after 1 week was uneventful with healthy slough in bilateral tonsillar fossa. On post operative day 10 and 11, patient had omelettes from outside cart.

On Post operative day 13, the patient presented to the Emergency room with 1 episode of bleeding from oral cavity with fever. Child was kept under observation and vitals monitored. The child started to develop 3 fever spikes in a day. The child was tachycardic and was monitored for further episodes. Blood investigations like Complete blood count, coagulation profile and liver function tests were sent.

The child was shifted to the operation theatre on post operative day 14 and bleeding was found to come from upper pole of right tonsillar fossa. It was controlled under general anesthesia by identification and ligation of bleeding vessel in right upper pole and hemostasis achieved.

The patient was shifted to wards, vitals monitored and all blood work up was found to be normal . Conservative management in the form of Intravenous

antibiotics Injection Cefuroxime 750mg twice a day along with Intravenous analgesics and betadine gargles was started and the child improved clinically with no further episodes of oral bleed. She was discharged after 7 days of intravenous antibiotics.

Case 4 -

A 26 year old female underwent tonsillectomy by Dissection and snare method for complaints of recurrent tonsillitis. Pre operative antibiotics given was Injection Cefuroxime 1.5grams twice a day according to body weight on admission. Mucosal bleeds were cauterized using Bipolar cautery in bilateral tonsillar fossa and hemostasis achieved. Immediate post operative period was uneventful and the patient was discharged on post operative day 2 with oral antibiotic Amoxicillin with Clavulonic acid 625mg twice a day along with analgesics, betadine gargles and soft bland diet for the next 5 days. First follow up after 1 week was uneventful with healthy slough in bilateral tonsillar fossa. On post operative day 8, patient had spicy and oily curry from a restaurant.

On Post operative day 9, the patient presented to the Emergency room with 1 episode of bleeding from oral cavity with loose stools. The patient was kept under observation and vitals monitored. On examination, clots were present in bilateral tonsillar fossa with fresh mucosal bleed from tonsillar bed. Blood investigations like Complete blood count, coagulation profile and liver function tests were sent.

The patient was shifted to the operation theatre on post operative day 9 and diffuse mucosal bleeding was found in bilateral tonsillar fossa. It was controlled under general anesthesia by identification and ligation of bleeding vessel in both fossae and hemostasis achieved.

The patient was shifted to wards, vitals monitored and all blood work up was found to be normal . Conservative management in the form of Intravenous antibiotics Injection Amoxicillin 1.2grams thrice a day along with Injection Metronidazole 100ml thrice a day , Intravenous analgesics and betadine gargles was started and the child improved clinically with no further episodes of oral bleed. She was discharged after 7 days of intravenous antibiotics.

Discussion

In our case series of four patients of three children and one adult, all four required hospitalization along with re-exploration and ligation of bleeders though the method used for tonsillectomy was the same. Out of the three children, two of them required transfusion of blood products along with ligation and conservative management. Through this study, we tried to bring out the various factors that could have influenced the complication though the management was the same in all four post operatively.

Subha et al.,⁽³⁾ reported there is a significant association between age and post-tonsillectomy haemorrhage. Similar results were also reported by Gabriel et al.,⁽³⁾ that children above 12 years of age have higher chances of post tonsillectomy haemorrhage. From our study, all 3 children were below the age of 12 years which warranted us to investigate further for the cause of secondary haemorrhage.

According to the study conducted by Obalappa et al.,⁽⁴⁾ though the sample size was less, they showed that there was male gender preponderance with respect to haemorrhage noted as 3.34% for males compared to 0.91% in females.

Meybodan M et al.,⁽⁵⁾ through his study concluded that there was no correlation between number of days after surgery and starting of routine diet consumption. It was also noted that consumption of liquids and foods at room temperature did not lead to complications such as bleeding, nausea or vomiting. Though in our study, 3 out of 4 cases had food other than soft bland diet within two weeks of surgery, it is imperative to look at other causes that could have led to secondary haemorrhage like the most common cause being tonsillar fossa infection.

Tripathi et al.⁽⁶⁾, concluded that the inexperience of the residents could be one of the factors that determine the occurrence of secondary haemorrhage as inadvertent trauma to pillars and inadequacy of getting into the proper plane of dissection can in turn result in post surgical infection and secondary haemorrhage.

Anwar K et al.⁽⁷⁾ and Moonka P.K et al.⁽⁸⁾, through their respective studies showed that both suture ligation and bipolar diathermy for control of mucosal bleeds are equally effective. Moreover, the advantage of bipolar diathermy is less pain post operatively and less chances of pharyngitis, hypertrophied nodes.

Alkarzae M et al.⁽⁹⁾, Baloch M A et al.⁽¹⁰⁾ and Aljfout Q et al.⁽¹¹⁾, stated in each of their studies that routine use of pre and post operative antibiotics does not reduce the risk of secondary haemorrhage. In our present study, though all 4 patients were compliant with the antibiotic course, it did not prevent the complication. Hence, it is better to reserve antibiotic use for cases that show signs of infection like unhealthy slough in tonsillar fossa, fever.

Minor oral bleeds could be missed by certain patients post operatively but presentation of severe secondary haemorrhage could be life threatening causing airway obstruction or hypovolemic shock. American Association of Otolaryngology- Head and Neck surgery (AAO-HNS) also recommends routine performance of blood work up with coagulation profile studies and if there is a family history of bleeding disorder, then it is suggestive of a possible impending complication post tonsillectomy.

Conclusion

According to the present study, it can be concluded that various factors influence secondary haemorrhage in any age group. The unusual findings noted from our study included secondary haemorrhage

1. in children below 12 years
2. preponderance to male gender
3. no correlation between number of days after surgery and starting of routine diet consumption
4. accountability of inexperience of the surgeon
5. equal efficacy of suture ligation and bipolar diathermy for control of mucosal bleeds
6. no direct advantage for use of pre or post operative antibiotics in tonsillectomy

We conclude that advanced hematological investigations are needed to further evaluate the cause of bleeding in deranged profiles for prompt treatments.

References

1. Altamimi ZAR, Sheikh R, Omar H, Al Taweel H, Ganesan S. Recurrent post-tonsillectomy secondary hemorrhage in patients with factor XIII deficiency: a case series and review of literature. *Am J Case Rep.* 2016;17:850-4. doi:10.12659/AJCR.900391.

2. Negm H, Atef A, Lasheen H, Kamel AA, Azooz K, Elhoussainy O. Factors affecting secondary post-tonsillectomy hemorrhage: a case-control study. *Egypt J Otolaryngol.* 2017;33:50-5. doi:10.4103/1012-5574.199414.
3. El-magd EAA, El-Tahan ARA, Mohammed SAH, Khalifa ME. Risk factors for secondary post-tonsillectomy hemorrhage. *Int J Health Sci.* 2022;6(S4):10976-86. doi:10.53730/ijhs.v6nS4.11168.
4. Obalappa P, Awa A, Mahafza T, Alrawashdeh H. Incidence and predictors of post-tonsillectomy hemorrhage: a two-year retrospective analysis from a tertiary care center in Qatar. *Int J Otorhinolaryngol Head Neck Surg.* 2025;11(6):656-60. doi:10.18203/issn.2454-5929.ijohns20253749.
5. Meybodan M, Dadgarnia M, Baradaranfar M, Vaziribozorg S, Mansourimanesh M, Mandegari M, et al. Effect of cold diet and diet at room temperature on post-tonsillectomy pain in children. *Iran J Otorhinolaryngol.* 2019;31(2):81-86.
6. Tripathi P, Bajracharya R, Acharya K, Kharel B, Neupane Y, Dutta H, et al. Prevalence of post tonsillectomy haemorrhage at a tertiary care centre in Nepal. *J Nepal Med Assoc.* 2021;59(234):165-9. doi:10.31729/jnma.5831.
7. Anwar K, Ahmad R, Khan M. Control of bleeding by silk ligation and diathermy coagulation during tonsillectomy: a comparison of efficacy of the two techniques in the first 24 hours after surgery. *Pak J Med Sci.* 2015;31(4):961-4. doi:10.12669/pjms.314.7445
8. Moonka PK. Ligation vs. bipolar diathermy for haemostasis in tonsillectomy: a comparative study. *Indian J Otolaryngol Head Neck Surg.* 2002;54(1):36-38.
9. Alkarzae M, AlSanosi A, Alharbi M, Altamimi F, Alzendi N. Role of infection in post-tonsillectomy secondary hemorrhage: an experience at King Abdulaziz University Hospital, Riyadh, Saudi Arabia. *Glob J Otolaryngol.* 2017;6(2):555681. doi:10.19080/GJO.2017.06.555681.
10. Baloch MA, Akhtar S, Ikram M, Humayun HN. The rationality of prescribing antibiotics after tonsillectomy. *J Pak Med Assoc.* 2012;62(5):445-7.
11. Aljfout Q, Alississ A, Rashdan H, Maita A, Saraireh M. Antibiotics for post-tonsillectomy morbidity: comparative analysis of a single institutional experience. *J Clin Med Res.* 2016;8(5):385-8. doi:10.14740/jocmr2523w.