International Journal of Psychosocial Rehabilitation, Vol. 26, Issue 02, 2022
ISSN:1475-7192

Management of post-operative complication of tonsillectomy

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Abstract:
Tonsillitis is the inflammation of the tonsils (two oval-shaped pads of tissue at the back of the throatone tonsil on each side) due to infection. It is mostly caused by viral or bacterial infection. When caused by a bacterium belonging to the Group AStreptococcus.
Tonsillectomy is performed under general anaesthesia and can commonly be performed as a day case procedure both in adults and children. Cold steel dissection is the most commonly performed surgical technique, where extracapsular dissection is performed to remove the tonsil from the underlying muscles. Any subsequent bleeding is controlled by ties and/or bipolar diathermy. Surgery leaves exposed pharyngeal muscle within the tonsillar fossa which is allowed to heal by secondary intention over a period of 5-10 days.
Key words: Tensile, patients, Management.

Introduction:

Tonsils are pads of lymphoid tissue located on the sides of the throat. These tissues enlarge and become inflamed when infected with viruses or bacteria. As we grow through childhood the tonsils usually shrink significantly.Tonsillitis is inflammation of the pharyngeal tonsils. The inflammation usually extends to the adenoid and the lingual tonsils; therefore, the term pharyngitis may also be used. Most cases of bacterial tonsillitis are caused by group A betahemolytic Streptococcus pyogenes (GABHS). In the first century AD, Celsus described tonsillectomy performed with sharp tools and followed by rinses with vinegar and other medicinals. Since that time, physicians have been documenting administration of tonsillitis. Tonsillitis gained further care as a medical concern in the late 19th century.
Tonsillectomy is one of the most common surgical operations done in ENT. Tonsils are lymphoid tissue, part of Waldeyer's Ring, located in the oropharynx between the anterior and posterior pillars that is thought to have an immunological role up to the age of seven; thereafter, the tonsils starts to involute and become fibrous tissue (1,2,4).
Tonsillectomy is indicated if a child or an adult suffering from chronic tonsillitis, airway obstruction and complications, such as obstructive sleep apnea or cor pulmonale, suspicion of malignancy, silent focus of infection, hemorrhagic tonsillitis or tonsillitis leading to febrile convulsions1(4,6,7) .
Tonsillectomy is relatively indicated for recurrent acute infections, tonsillitis not responding to treatment, difficulty of swallowing because of the hypertrophy, foul smell of the mouth due to tonsillolithiasis or peritonsillar abscess (1-4,6,7) .

There are two main techniques used for tonsillectomy: cold technique (Snare, Guillotine method, Harmonic scalpel, intracapsular debrider) which is thought to have a better postoperative outcome overall and hot technique (Coblation, Thermal welding, monopolar diathermy, Bipolar Diathermy) relaying on diathermy considered to have a better primary control of bleeding intraoperatively (2,3,5)

In tonsillectomy, pain is the most common and expected complication postoperatively, it could radiate to the ears, usually managed by analgesics; it could lead to reduction of oral intake leading to dehydration and weight loss which would predispose to infection and bleeding (1-4,7).

Bleeding is the most serious complication postoperatively. It is divided into primary bleeding which occurs in the first 24 hours postoperatively and secondary bleeding occurs after 24 hours. The bleeding which requires admission could be either managed conservatively if minimal or ligation/cautery under general anesthesia in the operating theatre (2,4,5,7) .

Upper airway obstruction and respiratory drive abnormalities could be problematic postoperatively and usually it is due to the anesthesia manipulation or traumatic edema after tonsillectomy. Edema of the uvula, tonsillar pillars, and tongue is common. Edema generally subsides within a day. Intermittent relaxation of the retractor and shorter retractor times might decrease the incidence of edema (1,2,7). There are no retrospective or prospective studies which have evaluated the incidence and the precipitating factors of post tonsillectomy hemorrhage performed in Bahrain; although, the operation has been performed in the government health services for more than fifty-five years.(8)

Tonsillectomy is one of the most frequent operations performed by otolaryngologists in world and one of the most common elective procedures in all surgical specialties.(9). Due to the shorter hospital stay and the trend towards no specialist appointments postoperatively, the general practitioner (GP) is increasingly becoming the first point of contact by patients for review of postoperative complaints. Furthermore, the average hospital stay post tonsillectomy has significantly decreased from an average of 3.1 days in 19852 to 1.5 days in 1995 and now less than 24 hours. (10) In 1995, Kuo et al found that there was a lack of awareness or understanding from patients about the usual postoperative course, despite written and verbal information given prior to hospital discharge. In 2000, Ghufor, Fosh, Sandhuet et al (11) also identified that GPs faced difficulties with diagnosing postoperative infection, compared with symptoms of usual postoperative recovery, and with how to manage common posttonsillectomy presentations.(11, 12).

Etiology:

Tonsillitis is generally the result of an infection, which may be viral or bacterial. Viral etiologies are the most common. The most common viral causes are usually those that cause the common cold, including rhinovirus, respiratory syncytial virus, adenovirus, and coronavirus. These typically have low virulence and rarely lead to complications. Other viral

causes such as Epstein-Barr (causing mononucleosis), cytomegalovirus, hepatitis A, rubella, and HIV may also cause tonsilitis.(13,14)

Bacterial infections are typically due to group A beta-hemolytic Streptococcus (GABHS), but *Staphylococcus aureus*, *Streptococcus pneumoniae*, and *Haemophilus influenza* have also been cultured.(15) Bacterial tonsillitis can result from both aerobic and anaerobic pathogens. In unvaccinated patients, Corynebacterium diphtheriae causing diphtheria should even merit consideration as an etiology. (16) In sexually active patients, HIV, syphilis, gonorrhea, and chlamydia are possible as additional causes.(17, 18) Tuberculosis has also been implicated in recurrent tonsilitis, and clinicians should assess patients' risks.(19).

Pathophysiology

The size of the tonsils in relation to the oropharynx changes with growth and development. At birth the tonsils are fairly small; between the ages of 4 and 8, the tonsils are at their largest (20). Bearing this in mind, large clearly visible tonsils are not always the result of infection (see below under clinical features).

It is important to note that a significant proportion of infections of the upper respiratory tract, including tonsillitis and pharyngitis, are viral in origin (21). Risk scores and indicative symptoms exist to help determine the difference between bacterial and viral causes (see below under clinical features).

Common viral causes are Adenovirus and Epstein Barr Virus, whilst Group A Streptococcus (*Strep. Pyogenes*) is the commonest bacterial organism, accounting for between 15 and 30% of cases depending on the study/age of child (22, 23).

Methods:

A retrospective review of all patients operated for tonsillectomy from April 2021 to February 2022. one hundred thirty-five patients operated for tonsillectomy from June 2021 to March 2022 were included in the study. Patients who had tonsillectomy in Al Hussain teaching hospital were excluded from the study. Surgeons operating included SHO, Pre-operatively, all patients had Complete Blood Count (CBC), and some had Coagulation profile. All patients booked for tonsillectomy had normal results. Patients were operated under general anesthesia. Some surgeons used hot technique, others used cold technique. Some patients had been operated for adenoidectomy and turbinate reduction by laser. Data documented in our review were age, gender, type of tonsillectomy technique used, type of hemorrhage (primary or secondary), type of management postoperatively and other postoperative complications. Postoperatively, the patients were prescribed analgesics and observed until fully awake from sedation; following that, sips of water and if tolerated, normal oral intake would begin. Most patients were discharged the same day after being evaluated by physicians. Patients were discharged on antibiotics and analgesics with a follow-up appointment within one to two weeks

Table : Post-Tonsillectomy and Other Complications

Complications	Cases
Fever	11
Severe Pain Requiring Admission	39
Neck Pain	2
Broken Tooth	3
Nasal Bleeding	4

Management:

Early management

1. The greatest risk of primary bleeding is within the first 6 hours; patients going home via day surgery should be observed for 6 hours prior to discharge.
2. Diet should be introduced as soon as possible, there are no restrictions on what children can eat however they may prefer a soft and cool diet.
3. Analgesia should be given strictly, including waking children overnight.
4. The greatest risk of primary bleeding is within the first 6 hours; patients going home via day surgery should be observed for 6 hours prior to discharge.
5. Diet should be introduced as soon as possible, there are no restrictions on what children can eat however they may prefer a soft and cool diet.
6. Analgesia should be given strictly, including waking children overnight. (Ongoing management:

1. All patients should be given the Tonsils and adenoids removed – discharge care Kids health info factsheet along with the Tramadol Pharmacy factsheet and the Celecoxib Kids health info factsheet. In depth discussion regarding analgesia, diet and oral intake, activity at home and risk of secondary bleeding should take place with the family prior to discharge from RCH

2. Discharge Criteria / Follow Up

3. Most children can be placed on a Criteria Led Discharge for the next morning post-operatively

4. Patient must be tolerating diet and fluids

5. Pain controlled

6. Tonsil bed inspection by competent nurses or ENT staff

7. Downloadable oximetry reviewed by ENT Registrar if applicable

8. Afebrile and other observations within age appropriate limits

9. Family state that they understand the care at home.

Complications

Historical complications

In the distant past complications following tonsillectomy were often the result of the surgical technique and problems protecting the airway under general anesthesia. Flammable inhalational anesthetics such as ether prevented good hemostasis that can be achieved today using either suction or bipolar cautery or other techniques that employ heat. Development of non-flammable anesthetic agents and protection of the airway during surgery by using endotracheal intubation has resulted in decreases in primary bleeding and pulmonary complications such as aspiration, pneumonia and lung abscess. (24)

Common complications

Primary and secondary hemorrhage

Hemorrhage following tonsil surgery is typically defined as primary, occurring during the first 24 h, or secondary, occurring after the first 24 postoperative hours. Primary hemorrhage is usually the result of bleeding that was not completely controlled during the surgical procedure or may be due to bleeding that was not initially evident at the time the surgical procedure was completed. Traditionally, packing and ties or suture ligatures were used to control bleeding prior to the development of electrocautery. Some practitioners still use chemical cautery with either silver nitrate or bismuth subgallate. Most centers today use either monopolar electrocautery or coblation cautery, another form of electrocautery. Almost all episodes of primary bleeding respond to a return to the operating room for surgical control.(25)

The etiology of secondary hemorrhage is less clear. Typically when the surgical eschar falls off, no bleeding occurs. In some cases a blood vessel, either arterial or venous, may be exposed and bleed. Secondary bleeding seems to occur following a prodrome of pain and poor oral hydration which suggests a role for hydration status in the development of bleeding. The incidence of secondary bleeding may be related to the technique used for tonsillectomy. Because the capsule of the tonsil is not exposed in intracapsular (microdebrider) procedures, there appears to be a lower incidence of secondary bleeding in intracapsular cases. In many studies, older children and adolescents have a somewhat higher incidence of secondary bleeding.[5]

In patients without a patient or family history suggestive of a bleeding disorder, coagulation studies are usually not obtained. Many centers obtain a preoperative CBC prior to surgery to

document a baseline hemoglobin. Use of aspirin or herbal medications affect coagulation and should be avoided several weeks prior to surgery.(26)

Airway obstruction/Respiratory compromise

Patients at risk for airway obstruction or respiratory compromise following tonsil surgery have the following characteristics. They are often children under the age of three. Many have severe apnea preoperatively with a high AHI or evidence of oxygen desaturation below 90%. Some patients have breath-holding spells that might be difficult to distinguish from pharyngeal obstruction due to postoperative swelling. Children with underlying neurological problems such as cerebral palsy or a seizure disorder are at greater risk as are children with congenital heart disease, prematurity and either Down or craniofacial syndromes.(27,28)

Supportive therapy in these patients begins with close observation in an ICU, respiratory ICU or step-down unit that has higher surveillance. Supplemental oxygen, frequent suctioning and re-positioning are essential to maintaining the airway. Additional dosages of steroids may reduce operative edema. Nebulized medications such as racemic epinephrine and albuterol may be indicated depending upon the site of obstruction. If these maneuvers are unsuccessful, insertion of an artificial airway may be indicated. Nasal or oral airways can be helpful, but in some cases, repeat endotracheal intubation is warranted. CPAP or BiPAP may obviate the need for an artificial airway. In some children ventilation may be necessary for a few hours to days until airway edema has decreased.(29)

Dehydration

Dehydration is the third major complication that occurs following tonsil surgery. Intravenous fluids may be necessary in many affected patients. Ice chips or icy drinks may help relieve the throat pain while chewing gum or gummy candies help to relax pharyngeal muscles that are in spasm secondary to surgery. Oral or intravenous steroids may also help to reduce edema, improving swallowing. Because the opiate pain medications often cause nausea and vomiting, one should consider switching to a non-opiate pain medication or trying a dose of ondansetron to reduce nausea.(30).

Uncommon complications

Uncommon or rare complications of tonsil surgery. Trauma to the teeth may result from improper placement of the mouth gag. Iatrogenic trauma to the uvula and/or soft palate can occur when dissecting the tonsil or with overzealous cautery. Likewise burns to the lip or other mucosal surfaces may result from exposure to the hot end of one of the electrocautery instruments. Injury to the Eustachian tube in the nasopharynx can occur when using either a curette or powered instrumentation. Mandibular dislocation may also result from opening the mouth gag too widely. Inadvertent injury to the nerves of the pharynx plexus may cause taste disturbances.(31, 32).

Conclusion

Tonsillectomy is a procedure with significant morbidity and mortality. Due to lack of evidence-based guidance for selection of appropriate patients for outpatient tonsillectomy, significant variation for postoperative outcomes and disposition exists. Arbitrary criteria for hospitalization after tonsillectomy include age younger than 3 years, presence of severe obstructive sleep apnea and/or associated co morbidities such as Down's syndrome, prematurity and morbid obesity.

References:

1- Jafek BW, Murrow BW. ENT Secrets. 3rd ed. Elsevier Mosby. 2005: 357-63.

2- Dhingra PL, Dhingra S. Diseases of Ear, Nose, Throat. 5th ed. Elsevier Mosby, 2010: 438-41.

3- Lee KJ, Toh EH. Otolaryngology: A Surgical Notebook. 1st ed. New York City: ThiemeMedical Publishers, Inc., 2007: 56-9.

4- Silva BSR, Garcia LB, Ortiz LR, et al. Hemorrhage in the Adenoidectomy and/or Tonsillectomy Immediate Postoperative. Int. Arch. Otorhinolaryngol. 2009; 13(2):155-160.

5- I Sayin and C Cingi. Recent Medical Devices for Tonsillectomy. Hippokratia 2012; 16(1):11–16.

6- Baugh RF, Archer SM, Mitchell RB, et al. Clinical Practice Guideline: Tonsillectomy in Children. Otolaryngol Head Neck Surg 2011; 144(1 Suppl):S1- 30.

7- Isaacson G. Tonsillectomy Care for the Pediatrician. Pediatrics 2012; 130,324.

8- Fatima N. Abulfateh, MD* Fahad Bedawi, BSc, MD*, Waleed Janahi. Post-Tonsillectomy Hemorrhage and Other Complications. Bahrain Medical Bulletin, Vol. 37, No. 1, March 2015.

9- Australian Institute of Health and Welfare. Australian hospital statistics 2013–14: Elective surgery waiting times. Health services series no. 56. Cat. no. HSE 151. Canberra: AIHW, 2014.

10- Kuo M, Hegarty D, Johnson A, Stevenson S. Early post-tonsillectomy morbidity following hospital discharge: Do patients and GPs know what to expect? Health Trends 1995;27(3):98–100.

11- Ghufoor K, Fosh A, Sandhu G, Hanif J. Posttonsillectomy patient care in the community.

Int J Clin Pract 2000;54(7):420–23.

12- Lauren Cooper. Post-tonsillectomy management: A framework. AFP VOL.45, NO.5, MAY 2016.

13. Georgalas CC, Tolley NS, Narula PA. Tonsillitis. BMJ Clin Evid. 2014 Jul 22;2014

14. Georgalas CC, Tolley NS, Narula A. Tonsillitis. BMJ Clin Evid. 2009 Oct 26;2009

15. Wang Q, Du J, Jie C, Ouyang H, Luo R, Li W. Bacteriology and antibiotic sensitivity of tonsillar diseases in Chinese children. Eur Arch Otorhinolaryngol. 2017 Aug;274(8):3153-3159.

16. Berger A, Meinel DM, Schaffer A, Ziegler R, Pitteroff J, Konrad R, Sing A. A case of pharyngeal diphtheria in Germany, June 2015. Infection. 2016 Oct;44(5):673-5.

17. Balmelli C, Günthard HF. Gonococcal tonsillar infection--a case report and literature review. Infection. 2003 Oct;31(5):362-5.

18. Ogawa H, Hashiguchi K, Kazuyama Y. [Tonsillitis associated with Chlamydia trachomatis and antimicrobial therapy with rokitamycin]. Kansenshogaku Zasshi. 1990 Dec;64(12):1535-41.

19. Jadia S, Chauhan AN, Hazari RS, Maurya AK, Biswas R. An unusual cause of recurrent tonsillitis. BMJ Case Rep. 2010 Apr 20;2010:2561.

20. M. Leaper, M. Mahadevan, D. Vokes, D. Sandow, B.J. Anderson, T. West. A prospective randomised single blinded study comparing harmonic scalpel tonsillectomy with bipolar tonsillectomy. *Int J Pediatr Otorhinolaryngol*. 2006; **70**: 1389– 1396.

21. D.L. Steward, J. Grisel, J. Meinzen-Derr. Steroids for improving recovery following tonsillectomy in children. *Cochrane Database Syst Rev*. 2011; **10**: CD603997.

22. J.A. Pfaff, K. Hsu, S.K. Chennupati. The use of ibuprofen in post tonsillectomy analgesia and its effect on post tonsillectomy hemorrhage rate. *Otolaryngol Head Neck*

Surg. 2016; **155**: 508– 513.

23. D.A. Randall, M.E. Hoffer. Complications of tonsillectomy and

adenotonsillectomy. *Otolaryngol Head Neck Surg*. 1998; **118**: 61– 68.

24. J.N. Perkins, C. Liang, D. Gao, L. Shultz, N.R. Friedman. Risk of post-tonsillectomy hemorrhage by clinical diagnosis. *Laryngoscope*. 2012; **122**: 2311– 2315.

25. D. Lowe, J.van der Meulen, D. Cromwell, et al. Key messages from the national prospective tonsillectomy audit. *Laryngoscope*. 2007; **117**: 717– 724.

26. M.S.Cohen, A.E.Getz, G.Isaacson, J.Gaughan, W.Szeremeta. Intracapsularvs. extracapsular tonsillectomy: a comparison of pain. *Laryngoscope*. 2007; **117**: 1855– 1858.

27. J.P. Noordzij, B.D. Afflect. Coblation versus unipolar electrocautery tonsillectomy: a prospective,randomized, single blind study in adult patients. *Laryngoscope*. 2006; **116**: 1303– 1309.

28. P.J. Koltai, C.A. Solares, E.J. Mascha, M. Xu. Intracapsular partial tonsillectomy for tonsillar hypertrophy in children. *Laryngoscope*. 2002; **112**(8 Pt 2, Suppl 100): 17– 19.

29. Powell J, O'Hara J, Carrie S, Wilson JA (2017) Is tonsillectomy recommended in adults with recurrent tonsillitis? BMJ 357: j1450.

30. Snow JB, Ballenger JJ (2009) Anatomy and Physiology of the Oral Cavity. In: Snow JB, Wackym PA (eds) Ballenger's Otorhinolaryngology: Head and Neck Surgery. 17th edition, PMPH-USA 769.

31. Gray H (2005) Pharynx. In: Standring S (eds) Gray's anatomy: The anatomical basis of clinical practice. 39th edition. Elsevier Churchill Livingstone, USA 619.

32. Pharyngitis and adenotonsillar disease (1998) In: Cummings CW (eds) Otolaryngology head and neck surgery. 3rd edition, Mosby, USA 188.