

## **Post-Tonsillectomy Hemorrhage and Other Complications**

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**Background:** Post-tonsillectomy hemorrhage is a serious complication; if not managed properly, it could be life threatening.

**Objective:** To evaluate the incidence of post-tonsillectomy bleeding.

**Design:** A Retrospective Study.

**Setting:** ENT Department, King Hamad University Hospital, Bahrain.

**Method:** Seven hundred twenty-nine patients operated for tonsillectomy from February 2012 to February 2014 were included in the study. Patients who had tonsillectomy in other hospitals were excluded from the study.

Some surgeons used hot technique, others used cold technique. Some patients had been operated for adenoidectomy and turbinate reduction by laser. Data documented were age, gender, type of tonsillectomy technique used, type of hemorrhage (primary or secondary), type of management postoperatively and other postoperative complications.

**Result:** Seven hundred twenty-nine patients were operated for tonsillectomy from February 2012 to February 2014. Twenty-eight (3.8%) patients had post-tonsillectomy bleeding, 9 (1.2%) were children and 19 (2.6%) were adults. Two (0.2%) were primary and 26 (3.6%) were secondary bleeding. Twelve (1.6%) patients underwent tonsillectomy by hot technique and 16 (2.2%) by cold technique. Twenty (2.7%) patients were managed by admission and observation. Eight (1.1%) were managed by cautery or ligation in the operation theater. The female to male ratio was 11:17. Other complications encountered were broken tooth, neck pain, nasal bleeding, and fever.

**Conclusion:** In this study, the incidence of post-tonsillectomy bleeding was 3.8% and no mortality was recorded during the period of the study. Further multicentric study with a larger sample is recommended.

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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<sup>1,2,4</sup>.

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 convulsions<sup>1-4,6,7</sup>.

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<sup>1-4,6,7</sup>.

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<sup>2,3,5</sup>.

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<sup>1-4,7</sup>.

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<sup>2,4,5,7</sup>.

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<sup>1,2,7</sup>.

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.

The aim of this study is to evaluate the incidence of post-tonsillectomy bleeding from February 2012 to February 2014.

## **METHOD**

A retrospective review of all patients operated for tonsillectomy from February 2012 to February 2014.

Seven hundred twenty-nine patients operated for tonsillectomy from February 2012 to February 2014 were included in the study. Patients who had tonsillectomy in other hospitals

were excluded from the study. Surgeons operating included SHO, registrars, senior registrars and consultants.

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.

Data was collected using electronic system I-SEHA and the operation theatre logbook.

## RESULT

Seven hundred twenty-nine patients were operated for tonsillectomy from February 2012 to February 2014. Twenty-eight (3.8%) patients had post-tonsillectomy bleeding, 9 (1.2%) were children and 19 (2.6%) were adults. Two (0.2%) were primary (<24 hours post-tonsillectomy) and 26 (3.6%) were secondary bleeding (>24 hours post-tonsillectomy). Twelve (1.6%) patients underwent tonsillectomy by hot technique and 16 (2.2%) by cold technique. Twenty (2.7%) patients were managed by admission and observation. Eight (1.1%) were managed by cautery or ligation in the operating theater. The female to male ration was 11:17. In addition to post-tonsillectomy bleeding, other complications encountered were broken tooth, neck pain, nasal bleeding, and fever, see tables 1, 2 and 3.

**Table 1: Incidence of Post-tonsillectomy Bleeding and Management**

<b>Total Number of Tonsillectomies= 729</b>	
Post-Tonsillectomy Hemorrhage	28 (3.8%)
Bleeding Managed by Observation	20 (2.7%)
Bleeding Managed in Operating Theatre by Cautery or Ligation	8 (1.1%)
<b>Total</b>	<b>56</b>

**Table 2: Post-Tonsillectomy and Other Complications**

<b>Complications</b>	<b>Cases</b>
<b>Fever</b>	5
<b>Severe Pain Requiring Admission</b>	30
<b>Neck Pain</b>	1
<b>Broken Tooth</b>	1
<b>Nasal Bleeding</b>	5

**Table 3: Characteristics of Post-Tonsillectomy Bleeders (28)**

<b>Children= 9</b>		
	<b>Operation Technique</b>	
<b>Managed in the operating theatre (ligation or cautery)</b>	Hot Technique	3 (10.7%)
	Cold Technique	2 (7.1%)
	<b>Total</b>	<b>5 (17.8%)</b>
<b>Managed by Observation</b>	Hot Technique	3 (10.7%)
	Cold Technique	1 (3.6%)
	<b>Total</b>	<b>4 (14.3%)</b>
<b>Timing of Bleeding</b>	Primary (<24 hours)	1 (3.6%)
	Secondary (>24 hours)	8 (28.5%)
	<b>Total</b>	<b>9 (32.1%)</b>
<b>Adults= 19</b>		
<b>Managed in the operating theatre (ligation or cautery)</b>	Hot Technique	2 (7.1%)
	Cold Technique	1 (3.6%)
	<b>Total</b>	<b>3 (10.7%)</b>
<b>Managed by Observation</b>	Hot Technique	4 (14.3%)
	Cold Technique	12 (48.8%)
	<b>Total</b>	<b>16 (57.1%)</b>
<b>Timing of Bleeding</b>	Primary (<24 hours)	1 (3.6%)
	Secondary (>24 hours)	18 (64.2%)
	<b>Total</b>	<b>19 (67.8%)</b>

## DISCUSSION

Tonsillectomy is one of the most common operations performed in the ENT department. Hemorrhage is the most common complication. An estimated 2%-3% of patients have hemorrhage and 1 in 40,000 patients die from bleeding<sup>7,8</sup>.

In this study, many of the patients underwent tonsillectomy in addition to adenoidectomy, turbinate reduction by laser or radiofrequency.

In our study, post-tonsillectomy bleeding incidence was 3.8%. Praveen et al reported 9.3% readmission with secondary hemorrhage<sup>10</sup>. Clark et al reported a rate of 1.5% after Coblation method, all patients were managed conservatively<sup>11</sup>. On the other hand, Divi et al reported a rate of 5.4% post-tonsillectomy hemorrhage using Coblation method<sup>12</sup>.

In our study, all patients except 2 had secondary bleeding. We defined secondary bleeding as bleeding which occurred after 24 hours following the procedure.

Infection of the wound increases the risk of secondary bleeding. It is precipitated by decrease oral intake, mainly due to pain following the procedure. Hence, controlling the pain could limit the risk of bleeding. Magdalena et al reported that patients who undergo cold steel method generally have lower pain scores compared to hot methods<sup>13</sup>. In their study, they compared the use of a combination of tramadol and NSAIDs with the use of prednisone and NSAIDs postoperatively. Both protocols were similar in terms of pain control except on day seven, where patients under steroids and NSAIDs reported higher pain scores. In addition, the protocol containing prednisone revealed fewer secondary effects. In our study, all patients were prescribed paracetamol and ibuprofen or diclofenac postoperatively.

Praveen et al reported 6.3% return to theatre for Coblation method and overall secondary hemorrhage for Coblation was 12.9%<sup>10</sup>. In our study, only 1.09% of patients return to theatre

was recorded. In our study, return to operating theater is small because the total sample of post tonsillectomy bleeding is only 28; therefore, it is difficult to calculate the significance of the association between post-tonsillectomy bleeding and the technique performed.

Dhiwakar et al found no significant reduction in post-tonsillectomy bleeding after the use of prophylactic antibiotic<sup>14</sup>.

Faramarzi et al, in a review of the literature, reported that the rate of primary post-tonsillectomy hemorrhage was low; hence, tonsillectomy alone is not a factor to have patient admitted overnight for close observation for possible primary bleeding<sup>15</sup>. Patients could undergo tonsillectomies as a day case. In our study, all tonsillectomies were done as day cases and discharged after full evaluation, should be fully awake from anesthesia and tolerating oral intake.

National Institute for Health and Care Excellence (NICE) guidelines recommends that surgeons should limit the excessive use of diathermy during tonsillectomy and that Coblation method could result in higher rates of hemorrhage than other techniques<sup>16</sup>. Therefore, surgeons using that technique should be specifically trained.

Retrospective method we used has inherent difficulties, which include loss of data, unavailability of patients and poor documentation. In addition, the electronic documentation in the hospital (I-SEHA) proved to be difficult to handle for retrospective study; therefore, on many occasions manual retrieval has to be resorted to.

Though post tonsillectomy hemorrhage was studied in many countries, our study would add and enrich the scientific data collected in Bahrain and GCC region.

## CONCLUSION

**In this study, the incidence of post-tonsillectomy bleeding was 3.8% and no mortality was recorded during the period of the study. Further multicentric study with a larger sample is recommended.**

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