

# More about

## Community ENT

### POST-TONSILLECTOMY BLEEDING – BEWARE (PART I)

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#### Anaesthetic management

If a child is returned to theatre for a post-tonsillectomy haemorrhage it is almost always an emergency situation. About 1% of children have significant postoperative bleeding. When a child is returned to theatre for a post-tonsillectomy haemorrhage the patient is compromised in three ways:

- loss of blood volume
- compromised airway
- full stomach and gastric reaction caused by swallowed blood.

#### Loss of blood volume

In this circumstance anaesthesia requires resuscitation with a colloid or Hartman's solution. An average of 5% of the blood volume is lost during surgery; hence intravenous (IV) fluids should be given routinely during a tonsillectomy. Blood loss can be much greater and about 1 in 20 children lose more than 10% of their blood volume.

Care must be taken with the type of IV fluid used to replace this degree of blood loss, as hyponatraemia is possible if glucose-saline fluids are used. Blood transfusion is needed in less than 0.1% of children. This low use of blood is not surprising because if normovolaemia is maintained with asanguinous fluid, nearly half of a child's blood volume can be lost before the

haemoglobin reaches 70 g/l. The dose of induction agents should take into account the possibility of unrecognised hypovolaemia.

#### Compromised airway

This situation requires immediate action from the anaesthesiologist as it is life threatening. The imminent danger of aspiration of the gastric contents contributes toward the compromised airway. The degree of obstruction and functional impairment must be assessed immediately. The general appearance of the child is an important sign since agitation, retractions, cyanosis, anxiety, weak or absent cry and stridor can all be indications of significant obstruction and possible aspiration. Symptoms and signs of hypovolaemic shock may be indicative of considerable blood loss. If there is time, a history from the parents or caregiver can provide valuable information about the timing and degree of respiratory distress and haemodynamic instability. Lastly, previous experiences with the airway such as prior anaesthetic can provide useful information.

#### Operative management

A wide variety of adjuncts and tricks are available for managing the compromised airway. Pre-oxygenation and insufflation of oxygen during the intubating process can significantly decrease the possibility of desaturation. Although blind techniques have some usefulness, the cornerstone of managing the airway under these circumstances has focused on direct visualisation and proper positioning (lateral position, head down). A suction device, good lighting and illumination and different tube sizes go

without saying. Other useful equipment includes a variety of oral and nasal airways, speciality blades, stylets and equipment for jet ventilation. Whenever a difficult intubation scenario is anticipated the presence of another skilled practitioner can be invaluable in providing intelligent and specific assistance.

A wide variety of anaesthetic techniques can be utilised. The traditional approach is an inhalation induction. This assumes that the patient does not need immediate establishment of the airway using an awake or rapid sequence technique. Sevoflurane has become increasingly popular for paediatric cases because of its greater speed of induction. This volatile agent can be supplemented with small doses of opioid or propofol to deepen the anaesthetic state at particularly stimulating sections of the intubation process. Muscle relaxants can be used once the vocal cords have been visualised or intubation has been performed successfully.

The specific anaesthetic technique will also be influenced by the haemodynamic status of the patient since all these agents have effects on the pulse rate, blood pressure, systemic vascular resistance and ultimately the cardiac output. Hypoxaemia is usually the result of hypoventilation, based on airway obstruction or blood aspiration. Hypercapnia with subsequent dysrhythmias are caused by the same conditions, but is often more of a problem than hypoxaemia because of the use of enriched oxygen mixtures.

## Conclusion

Despite the frequent use of anaesthesia for tonsillectomy in children, there is a relatively low incidence of postoperative complications.

There are few studies comparing different anaesthetic techniques or agents commonly used.

Anaesthesiologists should consider the techniques and agents available, auditing their own techniques and keeping an open mind about new drugs and methods. The potential for a possible disaster demands that the anaesthesiologist and ENT surgeon communicate easily and have a clear understanding of who will be responsible for restoring the airway should it become compromised.

### FURTHER READING

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## POST-TONSILLECTOMY BLEEDING — BEWARE (PART II)

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Postoperative haemorrhage remains the most serious complication of tonsillectomy and, when it occurs, the experience is frightening to both surgeon and patient,

with a fatal outcome a real possibility if incorrectly diagnosed or treated.

## Clinical features

The overall incidence is about 3.3%.<sup>1</sup> Primary haemorrhage (< 24 h postoperative) usually occurs within the first 4 - 8 hours and there is a positive association with inadequate primary haemostasis during surgery, traumatic surgical technique, older patients with longstanding, recurrent tonsillitis and a history of peritonsillar abscess.

Secondary haemorrhage (> 24 h postoperative) typically occurs 5 - 10 days after the operation due to the sloughing of the superficial eschar from the tonsillar fossa. Possible causes include excessive tissue damage caused by overuse of cautery or field cauterisation to achieve haemostasis and secondary infection. This leads to a more extensive zone of necrosis with exposure of the larger vessels when the eschar sloughs. Bleeding varies from slow and persistent to profuse. In primary haemorrhage a pale, listless patient who swallows continuously and vomits dark blood should alert the surgeon. Tachycardia, anaemia and obvious haemodynamic shock should raise the suspicion of major arterial bleeding from branches of the external carotid artery. Severe, profuse, fresh bleeding from the mouth or nose is an obvious sign of active arterial bleeding from either the tonsillar fossa or adenoid bed. Severe secondary haemorrhage can lead to rapid blood loss and haemodynamic shock due to erosion of major blood vessels such as the lingual and facial arteries.

## Treatment

The most important factor in managing postoperative tonsillectomy bleeding is prevention.<sup>2</sup> The patient

should be told not to take aspirin-containing products, and screened for any bleeding disorder. The actual method of removal of the tonsil is probably not as important as attention to the detail of staying in the proper plane between the tonsil capsule and its surrounding fossa. The operating surgeon must not terminate the procedure until s/he is absolutely confident of complete haemostasis. All postoperative haemorrhage should be viewed seriously and patients ought to be admitted to hospital for assessment of the degree of bleeding and haemodynamic stabilisation. In most cases of primary haemorrhage the patient has to return to theatre in order to achieve proper haemostasis of the bleeding point. Slight secondary bleeding due to sloughing of the superficial eschar is not uncommon, but any significant bleeding indicates possible erosion of a major blood vessel, which can quickly lead to massive haemorrhage and a fatal outcome if not handled properly. Watchful waiting is not an acceptable method of treating postoperative haemorrhage. If blood loss is excessive and signs of hypovolaemia or shock are present, fluid and/or blood replacement should be started before anaesthetic induction.

Skilled anaesthesia to prevent aspiration during induction and to maintain haemodynamic stability is required, as the stomach will be full of blood and the patient often in haemodynamic shock, depending on the amount of bleeding. Haemostasis is obtained by suctioning fresh clots from the tonsillar fossa. Identified bleeding sites are electrocoagulated or sutured. Securing the bleeding point can often be difficult if a major vessel, e.g. the facial artery, is involved owing to the friability of the tissues in the operated tonsil bed. Sometimes an early decision

to explore the neck to secure the main arterial supplies to the tonsil, e.g. the lingual and facial arteries, or even the external carotid artery, is a life-saving procedure.<sup>3</sup>

As adenoidectomy is often performed with tonsillectomy, haemorrhage from this area is sometimes overlooked, and mistaken for post-tonsillectomy haemorrhage.<sup>4</sup> The nasopharynx should be thoroughly examined with a mirror or an endoscope, and bleeding points cauterised with suction cautery under direct vision and, in some severe cases, by plugging of the postnasal space.

Post-tonsillectomy haemorrhage is a serious and potentially life-threatening complication requiring a high index of suspicion to diagnose.

Medical and surgical skills are required to stabilise the patient and arrest the haemorrhage.

Beware of post-tonsillectomy haemorrhage!

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### VENTILATION TUBES – YES OR NO?

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The presence of fluid in the middle ear is the commonest cause of

hearing disorders in children. When this fluid has been present for more than 3 months the condition is called otitis media with effusion (OME), also called glue ear or serous otitis media.

Otitis media with effusion is most common in children from 3 months to 6 years of age. It affects 10 - 20% of children in this age group, depending on the time of the year.<sup>1</sup> Otitis media affects 25% of all children at some stage before the age of 10.

OME is often caused by systemic problems ranging from allergies to anatomical defects like cleft palates. These conditions need to be addressed before treating OME.

The indication for ventilation tubes, or grommets, is failed medical treatment. The pros and cons of the procedure need to be discussed with apprehensive parents.<sup>2</sup>

## Pros of grommets

Chronic OME has a deleterious long-term effect on language development, both perceptive and expressive.<sup>3</sup> A study in the UK showed that children who suffer from long-term OME have more behavioural problems than a control group.

In a study done at the Radcliffe Infirmary in Oxford, it was found that the insertion of ventilation tubes improved hearing in 92%, reduced frequency of ear infections in 74%, reduced postoperative general practitioners' visits by 87%, and school absenteeism.<sup>4</sup>

## Potential complications

It is an invasive procedure which requires a general anaesthetic. The child must keep water out of the ear after insertion, which is often difficult. The formation of tympanosclerosis (chalk patches) or

areas of calcification of the eardrum after grommet insertion is not predictable but is seen in some cases. There may be permanent eardrum perforation after grommet insertion, especially if the grommets have not extruded spontaneously within 1 year to 18 months after insertion.

Most cases of OME will respond to medical treatment, and there may not have been an adequate trial of medical therapy. There is also an erroneous perception that a child will need regular grommet insertion.

## Yes or no?

So, grommets or no grommets? It has been found that since 1960, when the procedure became freely available, the incidence of severe complications secondary to chronic ear infections like mastoiditis and brain abscesses, has dramatically diminished.

ENT surgeons practising before 1960 routinely performed mastoidectomy for complicated infections. This is now a rarity where First-World medicine is available.

Grommets are valuable if inserted after medical treatment has failed. The surgeon's judgement and experience should be trusted and respected.

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