



## Case Report

## Liability under post-tonsillectomy lethal bleeding of the tonsillar artery: A report of two cases



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## ABSTRACT

Post-operative haemorrhage is a frequent complication of tonsillectomy: a primary haemorrhage occurring in the first hours is rapidly dealt with by the surgical team. A secondary haemorrhage, which commonly occurs once the child has returned home, can be fatal if it is not dealt with quickly.

We present two cases of a lethal outcome in children following a secondary post-tonsillectomy haemorrhage, for which the parents filed legal proceedings.

Medical liability can be exercised during all stages of health care. Performing an autopsy associated with histological analyses is found to be indispensable for the identification of the causes of bleeding, as well as its mechanism.

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### 1. Introduction

Tonsillectomy is the most common type of operation in ear, nose and throat surgery, in the paediatric population of western countries. However, such surgery is not free of all risks, and as a consequence of the frequency with which it is practiced, it is a non-negligible source of potential litigation for the otorhinolaryngologist. According to a recent American study dealing with cases of litigation in the USA, one third of lethal outcomes and serious injuries occurring after tonsillectomy appear to have been caused by haemorrhage [1]. According to one meta-analysis, post-tonsillectomy haemorrhage is the most frequent form of complication, with a prevalence ranging between 2% and 5% of all cases of tonsillectomy [2]. We present two cases of a lethal, post-tonsillectomy secondary haemorrhage for which the parents filed a complaint against unknown persons for manslaughter. These cases should provide a

warning for practitioners concerning the various medical responsibilities that may be sought in the case of haemorrhagic complications.

#### 1.1. Case number 1

A five-year-old girl, with no particular medical history, died at home on day 12 of a tonsillectomy and chronic tonsillitis-related adenoidectomy, in a scenario involving a haemorrhage externalised by the mouth and the nose. She had left the hospital on day 3, following an operation with no immediate complications. Following the operation, with the exception of pain felt during swallowing, no specific sign, in particular fever or haemorrhage, had alerted the parents. The autopsy showed that there was haemorrhagic flooding of the aero-digestive tracts (larynx, trachea and oesophagus) with bright red, unoxygenated blood, and the presence of clotted blood in the stomach and duodenum. The lungs were pale in colour, hyperinflated, with haemorrhagic foci on their surface. When dissected, they had a bilateral, haemorrhagic, mottled appearance suggesting massive alveolar flooding. Macroscopically, the surgical site of the tonsils appeared to be the cause of the bleeding, although no specific lesion could be incriminated. The tonsillar fossae were empty and irregular, but did not have an obvious necrotic or fibrinous deposit, nor any sign of superinfection. It was impossible to examine the surgical site of the adenoidectomy with no significant

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damage to the child's face. The remaining findings of the autopsy were of no particular significance. Apart from classical post-operative phenomena (granulation tissue replacing the tonsillar fossa), the histology revealed necrotic vascular lesions occurring on a small (1 mm) artery, anatomically corresponding to the tonsillar artery. No bacterial or mycelial microorganisms were observed on the special staining. In addition, the histology confirmed the presence of haemorrhagic alveolar flooding with no associated inflammation or infection, thus identifying the acute nature of this inhalation.

### 1.2. Case number 2

A six-year-old girl with no particular medical history received a tonsillectomy associated with an adenoidectomy, in the context of recurrent acute tonsillitis. She left the hospital on day 1, following an operation with no immediate complications. On day 3, the parents consulted the hospital's emergency department for pain during swallowing, which prevented the child from eating (liquids and solids). No specific care was recommended by the emergency department. She died at home, on day 4 in the context of a massive secondary haemorrhage, following food intake. The family considered that it had not been informed of the lethal risk in the case of haemorrhage.

The autopsy findings were similar to the previous case, concerning flooding of the tracheobronchial tree in particular. Macroscopic examination of the surgical site did not reveal any necrotic or fibrinous deposit, but a small non-adhering clot. Histological examination revealed significant necrotic-ischaemic and inflammatory lesions reaching the muscle mass at the level of the right tonsillar fossa, accompanied by the presence of numerous germs, but with no vascular lesion. On the left side, at the surface of the operated fossa, the lumen of the tonsillar artery (1 mm) presented a developing thrombus. The vascular wall in contact with the thrombus was inflammatory, oedematous and presented a full dissection. The adjacent tissues were mainly inflammatory, with necrotic-ischaemic manifestations and the presence of numerous germs (chain-like cocci) suggestive of streptococcal superinfection of the surgical site.

In both of these cases, death arose following an asphyxial syndrome caused by inhalation of a sudden secondary haemorrhage originating at the tonsillar artery. Although in case 1, no predictable factor promoting rupture could be found, in the second case the child presented with a poor general condition, accompanied by dysphagia together with signs of infection, as revealed by the histology.

## 2. Discussion

Surgical tonsillectomy is common, with more than 50,000 operations per year in France [3]. Although it is often planned and carried out by experienced surgeons, this operation is still a frequent source of potential litigation, whenever complications, haemorrhagic in particular, arise.

The most frequently occurring primary complications in tonsillectomy, i.e. occurring within the first 24 h following the operation, are respiratory complications, perioperative nausea and vomiting, as well as haemorrhage. The most frequent secondary complications, occurring after the 24th hour, are delayed haemorrhage, frequently referred to as "secondary bleeding", painful dysphagia with the risk of dehydration and respiratory obstruction [3].

In France, the involvement of the practitioner's medical responsibility following the occurrence of a lethal post-tonsillectomy haemorrhagic complication will be the basis for the identification of a causal relationship between medical malpractice and the patient's death. In the cases presented here, legal proceedings

were engaged. As the cause of death had not been determined when the proceedings were initiated, no practitioner was personally named. The autopsy and anatomopathological conclusions made it possible to establish a causal relationship between death and post-tonsillectomy bleeding from the tonsillar artery. Although this causal relationship does not necessarily imply that there was medical malpractice on the part of the practitioners, such malpractice will nevertheless be systematically sought during judicial proceedings.

### 2.1. Were the indications for surgery justified?

The French Otorhinolaryngology Society has published recommendations concerning the indications for tonsillectomy [4]. Currently, the primary surgical indication, representing two thirds of all tonsillectomies, is tonsillar hypertrophy of the tonsils leading to respiratory difficulties during sleep [3]. With a high level of evidence, this indication mainly concerns children less than 5 years of age. In the absence of any sleep disorder, tonsillar hypertrophy can be an indication for surgery in the case of a swallowing disorder or difficulties with phonation. Infections are the second indication for surgery, although with a lower level of evidence for recurrent acute tonsillitis, chronic tonsillitis, recurrent peritonsillar abscess, Marshall's syndrome, post-streptococcal syndromes and acute angina-induced dyspnea resulting from post-infectious mononucleosis. Tonsillectomy is also required without delay whenever there is unilateral tonsil tumefaction suspected of malignancy [4]. It should be noted that the historical and previously major indication of recurring tonsillitis is tending to diminish, with the use of rapid diagnostic tests to identify the presence of streptococcus A, the quality of antibiotherapy and improved pain management.

Despite a lower level of evidence than in the case of tonsillar hypertrophy, the operatory indications for chronic tonsillitis and recurring acute tonsillitis in the two cases presented here complied with the recommendations for clinical practice at the time of the events. In terms of the surgical indication, there does not appear to be any malpractice attributable to the surgeons.

### 2.2. Was the operating technique consistent with good practice?

There is no official recommendation concerning the surgical technique, which is left to the surgeon's discretion. In western countries, the reference technique for tonsillectomy is currently tonsillar dissection. This is an extracapsular total tonsillectomy technique, carried out with cold instruments or the fingers. Haemostasis is achieved immediately by swabbing the tonsillar fossae [4]. It is now accepted that so-called hot ablation electrosurgical techniques, making use of monopolar or bipolar diathermy in particular, allow the operating time to be reduced, and perioperative bleeding and so-called primary haemorrhagic episodes to be reduced. In children, several techniques have begun to emerge, such as coblation tonsillectomy, a hot ablation technique, or even the use of radiofrequencies. The technique based on the use of a CO<sub>2</sub> laser is reserved for tonsillectomy surgery in adults [4]. Several publications state that hot techniques are associated with a secondary haemorrhage risk factor, since the thermal lesions produced at the surgical site promote necrosis and infection of the tonsillar fossa, which is the main contributor to the occurrence and intensity of secondary haemorrhages [5]. Single step, partial tonsillectomy techniques in which only the prominent part of the tonsil responsible for pharyngeal obstruction is amputated, as well as intracapsular excision, are less invasive surgical alternatives than extracapsular (total) tonsillectomy. The aim is to reduce pain and haemorrhage.

In 2006, the French HAS (Haute Autorité de Santé), equivalent to the UK's National Institute for Health and Clinical Excellence (NICE),

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