

Post-tonsillectomy surgical emphysema – a case report

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Tonsillectomy is still the most common surgical procedure performed in most ENT departments worldwide. Although it is considered a safe procedure, its complications can be serious and potentially life threatening. The development of cervicofacial emphysema after tonsillectomy is a very rare complication, which in most cases resolves spontaneously, but on the other hand it can be life threatening especially if associated with pneumothorax or pneumomediastinum.

Keywords:

complication, subcutaneous emphysema, tonsillectomy

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Objective

The objective of this study was to highlight the importance of avoiding and at the same time recognizing post-tonsillectomy subcutaneous emphysema early and its potential life-threatening pneumomediastinum.

Case report

A 9-year-old girl was referred by her general practitioner to the otolaryngology outpatient clinic because of persistent halitosis after trying different mouth rinses and oral hygiene with no benefit.

She was previously assessed by her dentist who found that one tooth needed filling, but otherwise no other abnormality was found, and she was discharged from his care.

Her relevant otolaryngological history was only one episode of tonsillitis, which was treated with supportive measures without need for antibiotics. Otherwise she did not suffer from any red-flag symptoms such as weight loss, night fevers, or night sweating.

Oropharyngeal examination in clinic revealed grade II asymmetrical tonsillar hypertrophy, with the right tonsil seeming larger in size and showing suspicious mucosal covering, but the rest of the ENT examination was unremarkable including neck palpation.

After thorough explanation and discussion with the family, the girl was listed for tonsillectomy and biopsy to exclude malignancy.

The procedure was performed under general anesthesia with orotracheal intubation using cold-steel dissection

technique with bipolar diathermy hemostasis and silk ties for the lower tonsillar poles. The tonsil dissection procedure was uneventful.

Approximately 30 min following the procedure, while in the recovery area, the attending nurse reported that the child developed notable swelling on her right cheek and neck, after coughing. The surgeon and anesthetist were called immediately and confirmed the finding of mild subcutaneous right neck and cheek emphysema with characteristic feel of crepitus, but there was no notable chest involvement, any pain, or breathing difficulty.

The uvula was found to be mildly enlarged, but the airway was normal with neither stridor nor difficulty in breathing; no tear could be identified in the left tonsil bed.

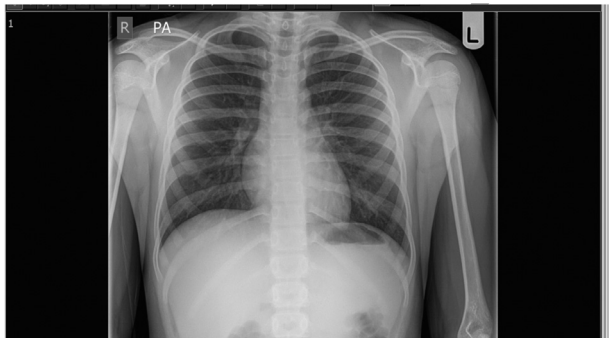
A chest radiograph was requested urgently, which reported central trachea and normal mediastinum (Fig. 1).

The child was observed overnight, and prophylactic broad-spectrum oral antibiotics and parenteral steroids were administered.

On the next morning, she was afebrile and had normal oxygen saturations overnight on air with normal oral feeding. The swelling improved by about 50%, and

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Fig. 1



Post-operative chest radiograph showing no evidence of mediastinal emphysema.

therefore she was discharged with a 7-day course of antibiotics and open access to the pediatric ward.

She was seen a week later in the outpatient clinic when the swelling had subsided completely; her halitosis symptom disappeared; her oropharyngeal examination was unremarkable, and the biopsy reported reactive lymphoid hyperplasia of both tonsils.

Discussion

Subcutaneous emphysema is a well-known reported complication following many surgical procedures. Its presentation, severity, and management depend mainly on the affected tissue or organ.

In the head and neck region, it can be associated with maxillofacial surgery or trauma, dental extraction, tonsillectomy, or tracheostomy, and in all cases it is triggered by a breach in the mucosal integrity [1,2].

The pathogenesis of surgical emphysema is poorly understood, but it is thought to take place as a result of either a pressure difference across a break in the epithelial surface or the release of gas by organisms into an enclosed space [3].

The condition can be attributed to either anesthetic or surgical causes. Traumatic intubation followed by excessive positive-pressure ventilation either manual or through ventilator is thought to be the most acceptable anesthesia-related cause [4].

Surgical techniques can lead to injury to the pharyngolaryngeal mucosa, with subsequent entrapment of air in the tissue planes. In both cases, positive-pressure ventilation, Valsalva maneuver, or coughing can

precipitate further dissection of tissue planes and extension of air further even into the mediastinum.

Air can spread through parapharyngeal, retropharyngeal, and prevertebral spaces through their direct communication.

Further air spread can rarely descend to the mediastinum, leading to pneumomediastinum, pneumothorax, or cardiac tamponade, and much more rarely to the peritoneum through the diaphragmatic aperture, leading to pneumoperitoneum [5–7].

Although, in our case, no difficulty in tonsil dissection was encountered, the most probable cause is a minor breach in the left tonsil fossa – namely, the epimysium of the pharyngeal superior constrictor muscle, which allowed subsequent aero dissection, and hence air spread to the superficial tissue planes. The postoperative cough probably made the condition clinically identifiable.

At least 32 cases of subcutaneous emphysema have been reported in the literature following tonsillectomy, including 17 male patients, 14 females, and a child of unknown sex. The mean age was 18.6 years (range: 2–65 years). All tonsillectomies were performed with a cold-steel technique, except for one case where diathermy was used. In this group, the emphysema was first noted intraoperatively in eight (25%) patients, at a mean of 3.5 h (range: 10 min–14 h) after the procedure in 18 (56%) patients, and not until the next morning in six (19%) patients [2].

The condition is easily diagnosed by a progressive painless facial or neck swelling with the characteristic palpable crepitus. A plain chest radiograph is essential to exclude intrathoracic spread of air. Patients developing this complication need to stay in the hospital under close observation and are to be given prophylactic antibiotics. In rare occasions, a surgical repair of a pharyngeal tear might be required. In extremely rare cases, a tracheostomy or a chest tube might be necessary to secure the airway.

Conclusion

Meticulous dissection – especially whenever there are tissue adhesions – is of great importance to prevent breaches to the tonsil bed tissue layers – namely, the epimysium of the pharyngeal muscles – while performing tonsillectomy.

Avoidance of postoperative coughing and excessive ventilation would hopefully prevent or at least lessen the severity of swelling. Close monitoring of patients postoperatively and proper advice and instructions would help diagnose such a complication as early as possible.

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Conflicts of interest

There are no conflicts of interest.

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