

—Report on Experiments and Clinical Cases—

Subcutaneous Emphysema after Tonsillectomy: A Case Report

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Abstract

We experienced a case of a subcutaneous emphysema after tonsillectomy. The patient, a 24-year-old man, complained of a recurrent sore throat and was diagnosed as having chronic tonsillitis. Pre-operative general examinations revealed no abnormalities. The operation was carried out under general anesthesia. The adhesions between the tonsils and the surrounding tissues were moderate. The bi-lateral tonsils were easily removed. The recovery period was uneventful. On the next morning, marked swelling of the left cheek and submandibular area was noted. On palpation, there was a characteristic crepitation and softness in these areas. The X-ray examination revealed subcutaneous emphysema. There was no finding of airway obstruction. We diagnosed him as having a subcutaneous emphysema and administered antibiotics for 5 days. From clinical findings, the subcutaneous emphysema was thought to be caused by surgical rather than anesthetic factors. The subcutaneous emphysema gradually disappeared. One year after the tonsillectomy, the patient is under observation as an outpatient and is free from any abnormal symptoms. To avoid this kind of complication, we should pay attention to carefully separate the tonsil from its fossa and to make appropriate selection of surgical equipments.

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Key words: tonsillitis, tonsillectomy, subcutaneous emphysema

Introduction

Tonsillectomy is one of the most common surgical procedures performed in an ENT clinic. Jash¹ reported that the first description of tonsillectomy had appeared in 600 B.C. Tonsillectomy is indicated for patients with recurrent tonsillitis, peritonsillitis, peritonsillar abscess or tonsillar hypertrophy². This procedure is considered a relatively safe procedure; however, like all surgical procedures, it entails the risk of mortality, which is reported to be 1.03 per 10,000 operations³. Various complications, such as

hemorrhage, infection and surgical trauma have been reported³. Post-operative hemorrhage may be caused by abnormal clotting, insufficient ligation of the blood vessels and local infection. Compared to these complications, subcutaneous emphysema after tonsillectomy is quite uncommon^{1,3-6}. We experienced a case of subcutaneous emphysema after tonsillectomy and report this unusual but potentially important complication of tonsillectomy.

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Case Report

The patient, a 24-year-old man, complained of a recurrent sore throat and fever. He visited our clinic in June 2001 and was first treated with antibiotics. However, during the observation period as an outpatient, he developed tonsillitis once per month. We diagnosed him as having chronic tonsillitis and recommended tonsillectomy.

On physical examination, the tonsils were slightly swollen. The bacterial culture of the pus on the surface of tonsils revealed only normal flora. Pre-operative general examinations revealed no abnormalities. The surgery was carried out under general anesthesia on November 19th. Intubation was carried out smoothly. The patient was mechanically ventilated using a positive pressure ventilation. Anesthesia was maintained with a mixture of nitrous oxide, oxygen and sevoflurane. The adhesions between the tonsils and the surrounding tissues were moderate. There were no muscle defects. The bilateral tonsils were easily removed. The recovery period was uneventful. On the next morning, marked swelling of the left cheek and the submandibular area was noted (**Fig. 1a**). On palpation, there was a characteristic crepitation and softness. The X-ray examination revealed subcutaneous emphysema (**Fig. 1b**). There was no airway obstruction. We diagnosed him as having a subcutaneous emphysema and administered antibiotics for 5 days. The subcutaneous emphysema gradually decreased. The patient was discharged on November 27th.

One year after the tonsillectomy, the patient is under observation as an outpatient and has presented no abnormal signs.

Discussion

Subcutaneous emphysema has rarely been reported as a complication of tonsillectomy. The pathological entry of air into the soft tissues results in emphysema. Minton and Tu⁷ reported that emphysema was caused by facial trauma. The anesthetic procedure itself may cause emphysema

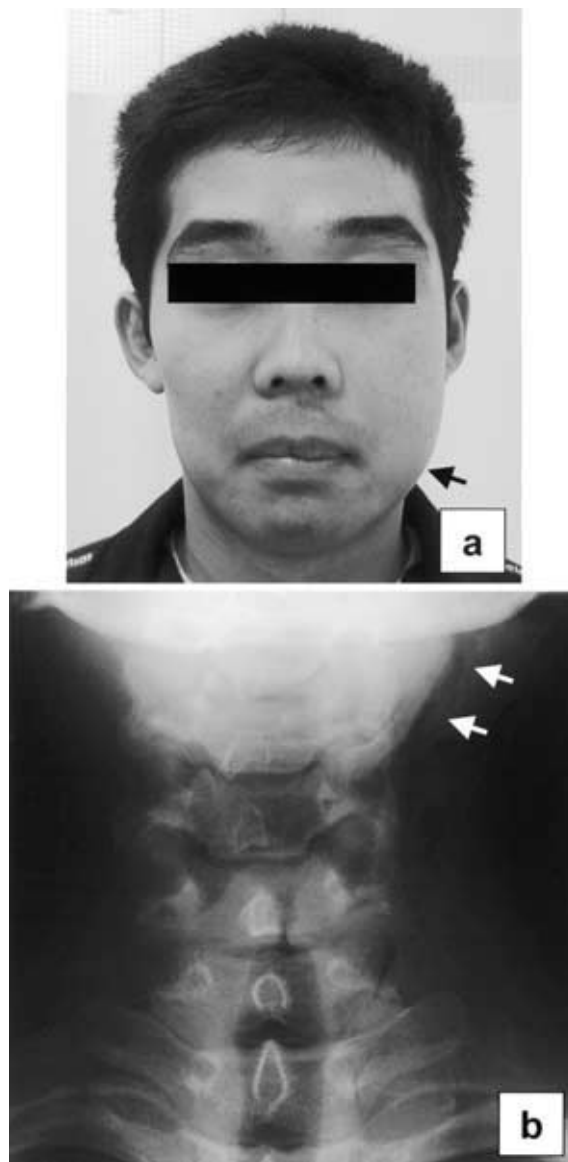


Fig. 1 photograph and X-ray image
 (a) Photograph of the patient on the day after the operation. His left cheek and submandibular area were swollen (**arrow**). There was a characteristic crepitation and softness on palpation.
 (b) X-ray image showing a low intensity area in the left neck (**arrows**).

due to an excessively high alveolar pressure, the malfunction of the ventilator or the laryngeal trauma during intubation^{5,6}. Surgical procedures, such as tonsillectomy or adenotonsillectomy can also cause emphysema^{1,3-6}. In the case of an anesthetic origin, the emphysema usually occurs within few hours^{1,3-6} and sometimes refers to the mediastinum. It is a fact that in our case the tonsillectomy caused the subcutaneous emphysema. In our patient, the

anesthetic procedures were uneventful and the swell of the cheek and the submandibular area, which are near to left surgical field, became apparent after 20 hours. These features suggest that the emphysema was induced by surgical rather than anesthetic factors. The skill of the surgeon can be a cause of complications. The rough separation of the capsule of the tonsil from its fossa damages the parapharyngeal muscle. When the surgeon clamps the bleeding vessels, the deep suture also injures the surrounding muscles. We suppose that the air leaked from the left surgical area and spread via the pharyngeal muscle and the parapharyngeal space to the cheek and submandibular area. For the diagnosis, careful observation and physical examination are necessary. The X-ray image is also important^{1,3-6}. In our patient, the X-ray image revealed the subcutaneous emphysema.

As for the treatment, conservative therapy, including bed rest, restriction of oral uptake, antibiotics and oxygen supply, are necessary⁶. In our patient, there were no signs of airway obstruction and the emphysema gradually disappeared. In some cases with massive subcutaneous emphysema, tracheostomy is necessary⁴.

After the disappearance of the emphysema, the prognosis is usually good^{1,3-6}. However, a subcutaneous emphysema is potentially serious. Thus, to avoid the subcutaneous emphysema, we

should pay attention to carefully separate the tonsil from its fossa and to make appropriate selection of surgical equipments.

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