



Case Report

SUBCUTANEOUS EMPHYSEMA: A RARE POSTOPERATIVE COMPLICATION AFTER TONSILLECTOMY

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Abstract:

Tonsillectomy is considered as a relatively safe procedure. This report aimed at describing an uncommon complication of this surgical procedure - subcutaneous emphysema. A 12 years old girl admitted for tonsillectomy operation. After routine preoperative assessment her operation was performed under general anesthesia. Surgery was uneventful. 7-8 hours after surgery, during follow-up in postoperative room progressing subcutaneous emphysema was noticed which initially involved the neck. But later on, it extended upper chest, upper arms, face & back. Crepitus swelling of neck and bilateral parotid region, typical of subcutaneous emphysema was noted. Chest X ray showed free air in the cervical regions reaching upper mediastinum. There was no airway obstruction and patient's general condition was stable. Emphysema was no longer clinically evident 3 days after & patient was released.

Subcutaneous emphysema is an uncommon complication of tonsillectomy, appearing almost ever after deeper dissections of the pharyngeal mucosa, when a porous surface is created, thus providing a route for the entry of air. Increased upper airway pressure may contribute to this injury.

Key Words: Subcutaneous Emphysema, Surgical Emphysema, Tonsillectomy

Introduction:

Subcutaneous emphysema occurs when air is introduced into the tissues. This can happen as a complication during, or immediately after surgery. It has rarely been described after tonsillectomy.¹ Most authors reporting surgical emphysema after tonsillectomy suspected the air entered through tonsillar bed. Although most cases resolve without complication, its is a potentially life threatening clinical entity.² This report aimed at describing a case of post-tonsillectomy subcutaneous emphysema.

Case Report:

A 12 years old girl hailing from Noakhali admitted into Mitford hospital on last 15 December, 2011 with recurrent tonsillitis. She was undergone tonsillectomy under general anaesthesia.

Surgery was uneventful. At evening 7-8 hours after surgery, gross and crepitus swelling of neck and bilateral parotid region, typical of subcutaneous emphysema, was noted. Chest X ray showed free air in the cervical regions, reaching upper mediastinum. There was no airway obstruction and his general condition was stable.

Patient was observed for the next 24 hours, oxygen inhalation, injection steroid and under broad-

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spectrum antibiotics. No cardiopulmonary changes were observed during this period and subcutaneous emphysema has progressively resolved within next 2 days.



Fig.-1: 10 hours post OP.



Fig.-2: Emphysematous change in CXR.



Fig.-3: days post OP.

Discussion:

Post-tonsillectomy subcutaneous emphysema is described in the medical literature sometimes associated to pneumomediastinum⁶⁻⁸, pneumothorax^{3,6} and pneumoperitoneum, although being an uncommon complication of this surgery.^{3,9-11}

Traumatic intubation, local anesthetic infiltrations and deep tonsillar lodge dissection break pharyngeal mucosa integrity and may create a porous surface which helps the entry of air.^{3,6} Increased pharyngeal pressure caused by situations such as coughing, vomiting, physical effort, ventilation under excessive positive pressure, post-intubation manual ventilation and anesthetic circuit defects are decisive for the development of emphysema.^{3,6}

When the air enters the mucosa, it goes through upper pharyngeal constrictor muscle and easily dissects cervicofacial planes occupying parapharyngeal spaces. The anatomic connection between parapharyngeal and retropharyngeal spaces may promote upper airway obstruction.^{6,8,12} This is especially dangerous in young children, who have very fragile tracheal rings and may require emergency tracheostomy.⁹

When large volumes of air progressively enter, there is the possibility of pneumomediastinum and even cardiac tamponade.¹¹ Dyspnea, dysphagia, chest pain, cyanosis and skin crepitation synchronized with cardiac systole (Hamman's sign) indicate pneumomediastinum.⁹

Pneumothorax and pneumoperitoneum caused by air entry in the abdominal cavity via diaphragm orifices³ may limit respiratory function and worsen symptoms.

Crepitation and depression at palpation, in addition to radiological findings, confirm subcutaneous emphysema, and CT scan is the most recommended additional test.³

The evolution of subcutaneous emphysema secondary to tonsillectomy is usually benign and self-limiting.³ Treatment is conservative because, in general, process is spontaneously resolved.^{3,9} Strict observation of cardiopulmonary function and progression of emphysema is critical.³ Attitudes which may worsen the problem should be avoided, such as activities increasing airway pressure (coughing, vomiting, physical effort, etc.).^{3,9} Broad spectrum antibiotics are indicated to prevent infection,^{3,6,8,9} as well as feeding restriction.⁹ Whenever possible, pharyngeal mucosa should be sutured to prevent emphysema progression and the entry of opportunistic bacteria.⁹ In our case, it is possible that the loss of pharyngeal mucosa integrity secondary to tonsillar dissection, associated to physical effort during postoperative recovery, were the probable causes of the complication.

Treatment includes frequent assessment of extent of emphysema site & airway. Monitoring of cardio-respiratory function may require ECG & Oxygen saturation monitoring. Patient should refrain from strenuous exertion, coughing & straining until resolution. Broad spectrum antibiotic should be used Prophylactically.¹³ Very rarely patient may need Thoracotomy to relieve trapped air.¹⁴

To conclude, careful dissection in tonsillar fossa to avoid pharyngeal muscular damage may help to avoid such situation. It is important, the Otolaryngologists & Anaesthesiologists should be aware of such complications which can happen in a very straight forward operation like tonsillectomy.

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