

Widespread Subcutaneous Emphysema Developing After Thyroglossal Canal Cyst Surgery

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Case Report

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Abstract: Thyroglossal ductus cyst is the most commonly occurring congenital neck mass on the midline of neck. During the embryologic development of thyroid gland, thyroglossal ductus is formed and after thyroid gland completes its migration, it does not disappear, becoming cystic. The majority of thyroglossal cysts are detected during childhood. Thyroglossal ductus cysts should be treated surgically because of the risk of infection, cosmetics and malignant degeneration. Minor complications are usually associated with the wound, including superficial surgical site infections, small abscesses around the sutures, seromas and dehiscence of the wound. Potential major complications include nerve injury, airway injury, thyroglossal cyst recurrence, hypothyroidism, blood transfusion and the development of a haematoma or abscess, which may warrant further surgical intervention. In the present case, tracheal rupture and widespread emphysema which are rare complications occurred. As subcutaneous emphysema, particularly when it is widespread as in the present case, may lead to respiratory distress, it closely interests anesthesiologists. The most important problem for the anesthesiologist is the safety of airway.

Keywords: thyroglossal ductus cyst; tracheal rupture; widespread emphysema; respiratory distress.

INTRODUCTION

Thyroglossal ductus cyst is the most commonly occurring congenital neck mass on the midline of neck. During the embryologic development of thyroid gland, thyroglossal ductus is formed and after thyroid gland completes its migration, it does not disappear, becoming cystic [1].

Thyroglossal ductus cysts are usually located on the midline of neck and are painless swellings that move up and down with swallowing movements [2]. The majority of thyroglossal cysts are detected during childhood. The location of a thyroglossal duct cyst can vary. Some are located above the hyoid bone, others are between the hyoid bone and thyroid cartilage and others are below the sternum. Cysts may also occur within the tongue [3]. The majority of thyroglossal cysts are located below the level of the hyoid bone, with approximately 60-80% of thyroglossal cysts being infrahyoid [4].

CASE REPORT

A 4 year old male patient at the weight of 15 kg underwent operation for thyroglossal canal cyst by pediatric surgery department. There was no additional disease in preoperative evaluation. Laboratory results were all normal. Anesthesia induction was made with sevoflurane and venous access was obtained. 10 mg rocuronium (Esmeron, Organon, Greece) and 30 mcg fentanyl (Fentanyl, Abbott, Turkey) was administered. For anesthesia maintenance, sevoflurane was continued.

Thyroglossal cyst was excised with sistrunk surgery. After operation lasting for one hour, the patient was extubated without any problems and was transferred to recovery room and simultaneously with crying, widespread subcutaneous emphysema in head, neck and thorax and respiratory distress developed. The patient was desaturated and was urgently transferred to operating room and crash intubation was carried out. Consultation was made with Ear Nose Throat (ENT) Department and Ophthalmology clinics. He underwent operation again. Tracheal rupture was observed and repaired, pneumothorax and ocular damage was not detected. Patient was transferred to intensive care unit in intubated position. He was discharged on the third day of operation without any problems.

DISCUSSION

Thyroglossal duct cysts should be treated surgically because of the risk of infection, cosmetics and malignant degeneration [5]. Walter Sistrunk described the procedure for excision of the cyst and the track in 1920 [6]. As recurrences were common in reported case series, Walter Sistrunk described an

extended version of his previous operation. The Sistrunk procedure involves removing the cyst and part of the hyoid bone, as well as removing a small core of tissue from the hyoid bone all the way to the foramen caecum, culminating in a much lower rate of recurrence [4]. Minor complications are more common than major ones after Sistrunk surgery. Minor complications are usually associated with the wound, including superficial surgical site infections, small abscesses around the sutures, seromas and dehiscence of the wound. Major complications associated with the Sistrunk procedure are seldom seen. Potential major complications include nerve injury, airway injury, thyroglossal cyst recurrence, hypothyroidism, blood transfusion and the development of a haematoma or abscess, which may warrant further surgical intervention. In a patient series reported by Maddalozzo *et al.* [7] including 35 pediatric cases, no major complications were reported while the rate of minor complications was found to be 29%. In the present case, tracheal rupture, which is a rare complication occurred. As to iatrogenic tracheal rupture, it is quite rare and mostly occurs during bronchoscopic procedures or oesophagus or neck dissections [8]. In the present case, due to iatrogenic trachea rupture, widespread subcutaneous emphysema developed in head, neck and trunk. There was no pneumothorax. Although in the literature there is a case of emphysema developing after the excision of thyroglossal cyst, its etiology was found to be associated with intubation and a cause unrelated to surgical procedure (Pharyngeal tear produced by an object forced into the mouth of the child) [9]. Therefore, to our knowledge, the present case is the first report of a case in the literature in whom emphysema developed after the excision of thyroglossal cyst.

Whether mediastinal, pleural or pericardial involvement are present, subcutaneous emphysema of head and neck is an abnormal condition and tracheal pressure may be severe enough to threaten life [10]. Stridor, difficulty in swallowing, dyspnea and chest pain may develop. In case of an emphysema extending towards orbita, eye lid edema, proptosis, dyplopia, loss of vision and ophthalmoplegia may develop [11]. Therefore, in cases of emphysema on the face, Ophthalmology consultation should be kept in mind as in the present case.

As subcutaneous emphysema, particularly when it is widespread as in the present case, may lead to respiratory distress, it closely interests anesthesists. The most important problem for the anesthesist is the safety of airway. It is our suggestion that especially after surgical procedures in the neck, airway should be monitorized closely and necessary equipment for intubation should be readily available.

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