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Report of a Case of Subcutaneous Emphysema in the Neck Region Following a Rhinoplasty Cosmetic Surgery

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ABSTRACT

Introduction: Insertion of a secure airway is an essential measure to be taken in production of a state of general anesthesia. Given the physiological and anatomical conditions of the patient's airway, insertion of the airway and provision of mechanical ventilation can sometimes lead to complications such as subcutaneous emphysema. Patient introduction: The patient was a 23-year-old woman hospitalized at the Otorhinolaryngology Department to undergo a rhinoplasty surgery. She had a history of asthma and use of bronchodilator inhaled medications. After surgery and 35 minutes of presence at the Recovery Department, the patient exhibited no serious problem, and was transferred to the department after consciousness was regained and full awareness was ensured, protective reflexes were regained, absence of bleeding was ensured and vital signs were stabilized, and absence of dyspnea was ensured. After fully awakened, she was transferred to the Otorhinolaryngology Department without dyspnea complaint. No serious problem was observed either, while the patient was hospitalized at the department, and she was discharged with good general condition. Two days later, the patient revisited the hospital complaining about dyspnea and subcutaneous emphysema in the neck region. Following this visit, she was hospitalized at the Intensive Care Unit. Upon entry into the hospital, the patient was provided with emergency general surgery advisory, where subcutaneous emphysema in the neck region was clearly diagnosed. During the three days of hospitalization at the ICU, she underwent recovery while receiving oxygen via the nasal cannula and drug treatment. After a considerable decrease in emphysema level, the patient was transferred to the Otorhinolaryngology Department as she had regained awareness, and exhibited no respiratory distress. She was discharged with good general condition five days after hospitalized given the results of the new advisory and visit.

Conclusion: According to its pathology, asthma involves extreme retention of air in the lungs and air trapping, which can probably be referred to as one of the causes of the patient's problem (emphysema and pneumomediastinum). Another cause for the above complication can be the mesh placed in the patient's nose for the period after surgery and the frequent sneezing and coughing resulting from it.

Key words: Dyspnea, Subcutaneous emphysema, Asthma

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INTRODUCTION

Subcutaneous emphysema is a rare complication that occurs after surgery in the oropharyngeal or tracheobronchial region. The exact pathogenesis is not yet clear, but there are two main theories. The first important probable cause concerns the method of anesthetization. In particular, emphysema may occur due to a tear in the tracheobronchial mucus or an injury to the larynx as the tracheal tube passes, overfilling of the tracheal tube cuff, an excessive increase in alveolar pressure, or a disorder in the functioning of the ventilator during intubation. Furthermore, congenital occurrence

of bullae, clefts, or laryngoceles in the mucus may make one prone to increase in emphysema after surgery [1-3]. This study reports a case of subcutaneous emphysema after rhinoplasty cosmetic surgery.

PATIENT INTRODUCTION

The patient was a 23-year-old married woman weighing 55 kg who was hospitalized in Otolaryngology ward (ENT) for rhinoplasty. In preoperative anesthesia visit, her vital signs and airway examination were normal (Mallampati class I). In clinical examination, a history of asthma and seasonal allergies was reported by the patient for different medications had been used (Salbutamol and fluticasone sprays). In the operating room, after ECG monitoring, pulse oximetry and controlling vital signs, pre-medication inducted with 2 mg of midazolam, 10 mg of morphine and 100 mg intravenous fentanyl. Vital signs before induction of anesthesia include: Respiratory Rate: 14, Temperature: 37, Heart Rate: 90, Blood Pressure: 90/60 and induction of anesthesia started with 250 mg Thiopental, 30 mg Atracurium and 60 mg lidocaine 2%; then, after 3 minutes mandatory ventilation with disposable endotracheal tube 7, intubation was performed in less than 15 seconds and the endotracheal tube cuff was filled with 6 ml air until the sound of air leaking was no longer heard from the patient's mouth. Laryngoscopy and intubation was done at the first try without any trouble. The patient's anesthesia was maintained during the surgery using lower MAC anesthetic isoflurane, Propofol, nitrous and Trinitroglycerin (In order to control hypotension and create a surgical field with less bleeding to facilitate operation). Atracurium effect was antagonized using 2.5 mg neostigmine and 1.5 mg atropine. After ensuring respiration, adequacy of respiratory volume and suctioning secretions, extubation was performed without any problem and the patient was transferred to the recovery room. During the 35 minute presence of the patient in the recovery room, she did not have any particular problem and after returning the consciousness and ensuring the full awakening, the return of protective reflexes, non-bleeding, having stable vital signs and having no complaint about dyspnea, she was transferred into the Otolaryngology ward (ENT). No particular problem also was observed during hospitalization in the ward and the patient was discharged with a good general condition. Two days later, complaining dyspnea and subcutaneous emphysema of the neck, the patient referred to the hospital. Routine tests of ECG, O_2 therapy, Chest and Neck X-ray and Close Observation together with SPO2 and ECG monitoring were performed. In Chest and Neck CT and X-ray, mild to moderate pneumomediastinum had been reported (Figure 1).

Neck emphysema was more obvious in second radiograph (Figure 2). The patient's relatives claimed that, problem had occurred after severe sneezing and coughing. General surgery emergency consultation was carried out and the surgeon emphasized the

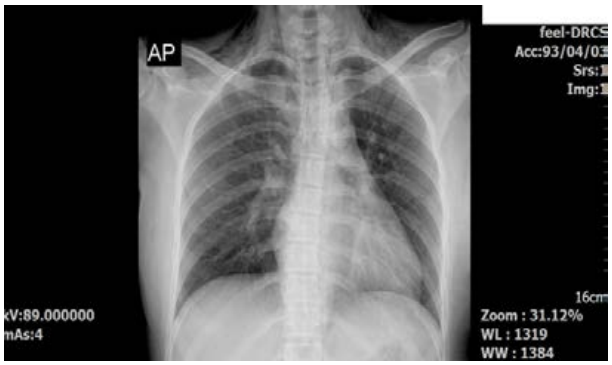

Figure 1: Chest and Neck X-ray; mild to moderate pneumomediastinum

Figure 2: Neck emphysema

self-improvement and self-limitedness of the above complication. However, to ensure more, the patient was transferred to the ICU. During three days hospitalization at ICU, while receiving oxygen through a nasal cannula and continued medication and a substantial reduction in emphysema level, she was gradually recovered and due to her consciousness and the lack of respiratory distress was transferred to the Otolaryngology ward; after 5 days of hospitalization in the ward she was again consulted and visited and was discharged with a good general condition. It should be noted that nasogastric tube insertion (as a risk factors of damage to the endotracheal tube) was not required in this patient thus, was not carried out.

DISCUSSION

Cosmetic nose surgery, known as rhinoplasty, is regarded as one of the most difficult, complicated cosmetic surgeries of the entire face, performed to make the nose appear better [4]. It is essential to create and maintain an airway for ventilation in people who undergo surgery with general anesthesia. This is realized through placement of a tube in the trachea

[5]. Laryngoscopy and tracheal intubation may be accompanied by physical trauma in the oral cavity, and may cause cardiovascular responses in children and adults, observed as vasovagal responses in children and as sympathoadrenal responses in adults [6]. In fact, the complications of intubation differ by patient conditions and degree of difficulty and direct injury to the upper airway will be more likely if tracheal intubation is performed with trouble while excessive force is applied to the airway, and intubation is repeated a number of times. Broken or loosened teeth, scratches or abrasions on the lips and the tongue, detached adenoid tissues, a scratched, bruised, or crushed posterior pharynx, submucosal hematoma in the vocal cords, subcutaneous emphysema and pneumomediastinum, a pneumothorax, wounds and granulomas in the vocal cords resulting from intubation hits, and undesired movements of the head or the tube may be observed [7-9]. Moreover, the method of anesthetization may itself be a cause for the occurring emphysema due to an excessive increase in alveolar pressure, a disorder in the functioning of the ventilator, or an injury to the larynx at the time of intubation [10,11]. Mild to moderate subcutaneous emphysema is not usually followed by specific clinical symptoms, but upper airway obstruction should be considered likely if the neck is also involved afterwards [12]. Treatment of subcutaneous emphysema differs by severity. It should be conservative in most cases and based on the benign nature and method of the disease. The intensity of emphysema and the airway need to be examined regularly for a few days. Any activity that causes upper airway pressure to increase, such as coughing and vomiting, should be avoided. Broad-spectrum antibiotics may be prescribed. Furthermore, if the mucus is injured at the time of diagnosis, it can be sutured for prevention of secondary entry of bacteria into subcutaneous emphysema and restriction of surgery emphysema extension. Tracheostomy or oven tracheotomy may be required in rare cases [13,14]. Subodh et al. introduced a patient in their study who had visited for laparoscopic surgery, and had confronted no problem up to the end of the surgery and the time of recovery, but had suffered severe edema in the cheek and neck region after coughing. According to the investigations, the patient had confronted no problem during tracheal intubation or tube removal, but the tip of the tracheal tube had hit the tissue around the pharynx and the hyper pharynx during removal, which was reported as the cause of the problem [15]. Kayaalp et al. reported about a 21 year old woman who had undergone laparoscopic gastric bypass that the patient had only suffered mild subcutaneous emphysema in the eyes region at the end of surgery. On the first day of hospitalization, however, she had suffered extensive subcutaneous emphysema in the face, neck, and upper rib cage region, anxiety, and oxygen saturation percentage drop. The patient had been intubated and undergone mechanical ventilation. Extensive subcutaneous emphysema and atelectasis had been reported on the thorax CT scan. However, she had finally been detached from the ventilator and transferred to the department after two days of hospitalization at the Intensive Care Unit as emphysema had gradually decreased [16].

CONCLUSION

According to the results obtained from this case study report and investigations of other reports concerning subcutaneous emphysema, the major cause of the problem particularly in the neck region seems to be associated mainly with the surgery itself performed in the face region and its following complications, although complications pertaining to general anesthesia and the patient's underlying diseases cannot be disregarded either (The patient had reported a history of asthma in this study). In similar surgeries, therefore, greater medical care during surgery and accurate monitoring are required, so that complications after surgery can be reduced.

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REFERENCES

1. Hung MH, Shih PY, Yang YM, et al. Cervicofacial subcutaneous emphysema following tonsillectomy: Implications for anesthesiologists. Acta Anaesthesiol Taiwan 2009; 47:134-7.
2. Chiu CL, Ong GS. Subcutaneous emphysema and pneumomediastinum after endotracheal anaesthesia. Ann Acad Med Singapore 2000; 29:256-8.
3. Ross HM, Grant FJ, Wilson RS, et al. Nonoperative management of tracheal laceration during endotracheal intubation. Ann Thorac Surg 1997; 63:240-2.
4. Most SP. Analysis of outcomes after functional rhinoplasty using a disease-specific quality-of-life instrument. Arch Facial Plast Surg 2006; 8:306-9.
5. Pardo MC, Miller R. Basic of Anesthesia. 6th edition. Tehran: Andisheh Rafee 2013.
6. Gobel FL, Norstrom LA, Nelson RR, et al. The rate-pressure product as an index of myocardial oxygen consumption during exercise in patients with angina pectoris. 1978; 57:549-56.
7. Divata JV, Bhowmick K. Complication of endotracheal intubation and other airway management Procedures. Indian J Anaesth 2005; 49:308-16.
8. Weber S. Traumatic complications of airway management. Anesthesiol Clin N Am 2002; 20:953-69.
9. Loh KS, Irish JC. Traumatic complications of intubation and other airway management

procedures. Anesthesiol Clin N Am 2002; 28:659-64
10. Podoshin L, Persico M, Fradis M. Posttonsillectomy emphysema. Ear Nose Throat J 1979; 58:37-41.
11. Miman MC, Ozturan O, Durmus M, et al. Cervical subcutaneous emphysema: An unusual complication of adenotonsillectomy. Paediatr Anaesth 2001; 11:491-3.
12. Veekash G, Xin Wei L, Su M. Carbon dioxide pneumoperitoneum, physiologic changes and anesthetic concerns. Ambulatory Sur 2010; 16:41-6.
13. Panerari ACD, Soter AC, La Porta Da Silva F, et al. Subcutaneous emphysema and pneumomediastinum after tonsillectomy: A case report. Revista Brasileira de Otorrinolaringologia 2005; 71:94–6.
14. Pratt LW, Hornberger HR, Moore VJ. Mediastinal emphysema complicating tonsillectomy and adenoidectomy. Ann Otol Rhinol Laryngol 1962; 71:158–69.
15. Subodh J, Sadhana J, Gupta HK. Localised subcutaneous emphysema following intubation. Indian J Anaesth 2002; 46:215-6.
16. Kayaalp C, Yilmaz S, Aydin C, et al. Massive subcutaneous emphysema involving the head and neck after laparoscopic roux-en-y gastric by-pass. Eur J Surg Sci 2010; 1:71-4.