

## A Case of Spontaneous Cervical and Mediastinal Emphysema

Subcutaneous cervical and mediastinal emphysema usually can occur as a result of surgery or trauma. Spontaneous cervical subcutaneous emphysema and pneumomediastinum, occurring in the absence of previous disorders or provoking factors, is very rare. The following case report of spontaneous cervical and mediastinal emphysema is assumed to be the first of its kind in Korea. The patient has been followed up for three years without recurrence or sequelae.

**Key Words :** *Subcutaneous emphysema spontaneous; Mediastinal emphysema; Neck, Mediastinum*

**Moo-Jin Choo, See-Ok Shin, Jin-Sup Kim**

Department of Otolaryngology, Chungbuk National University College of Medicine, Cheongju, Korea

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**Address for correspondence**

Moo-Jin Choo, M.D.

Department of Otolaryngology, Chungbuk National University College of Medicine, 62 Kaeshin-dong, Cheongju, Chungbuk 361-240, Korea

Tel : (0431) 69-6157/6350, Fax : (0431) 65-6157

### INTRODUCTION

Subcutaneous emphysema may develop from gas-forming infections, trauma or a break in the skin, airway or gastrointestinal tract (1). Spontaneous subcutaneous emphysema is defined as subcutaneous emphysema without an obvious cause, but is unusual and very rare. Knott reported the first case of spontaneous asthma-associated subcutaneous emphysema of the neck and mediastinum (2).

We present a case of spontaneous subcutaneous emphysema occurring in the neck and mediastinum of an 18 year old girl, and this is assumed to be the first such case in Korea.

### CASE REPORT

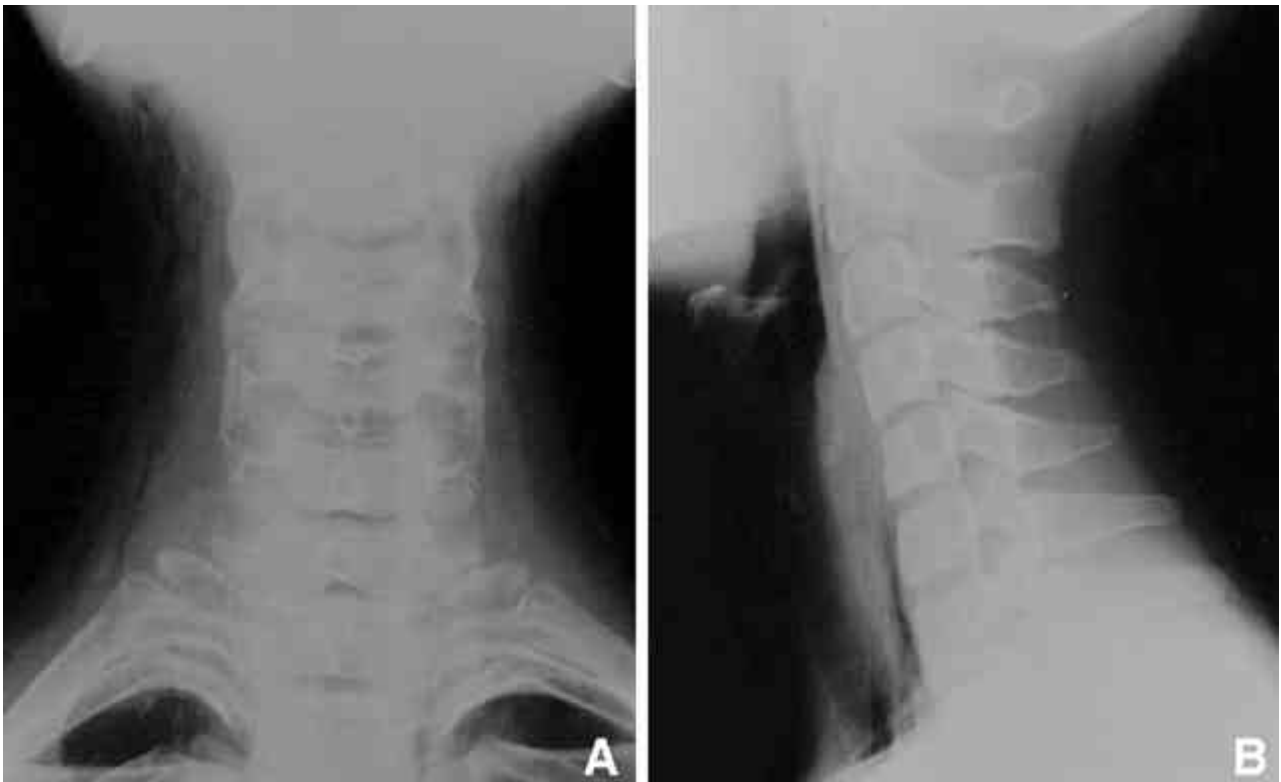
An 18-year old female was admitted on 8 July 1995, complaining of neck pain and limited neck motion.

Two days earlier, she had experienced neck pain on waking. She did not smoke, denied having taken any drugs or alcoholic beverages, and had no history of trauma. Nor did she have a history of upper airway disorders or symptoms including cough, hemoptysis, dyspnea, or voice change, other than those mentioned above. Physical examination revealed crepitus from the right anterior neck extending to the right clavicle level and the right submandibular area, and neck motion was limited. The oral cavity and oropharynx appeared normal, as did the larynx, including vocal cords and hypopharynx, as seen

on indirect laryngoscopy. Lung and heart sounds were also normal. Soft tissue AP and lateral neck X-rays revealed the multiple trapping of air in the neck (Fig. 1), while a plain chest X-ray showed that air was present in the upper mediastinum; the findings for lung parenchyma, however, were normal (Fig. 2). Computed tomography (CT) of the neck and chest confirmed the presence of air in the submandibular, retropharyngeal and parapharyngeal spaces, and the upper mediastinum (Fig. 3). The patient was admitted and medicated conservatively, and the results of blood chemistry tests and other laboratory studies were normal. She was observed for six days, at which point subcutaneous emphysema and pneumomediastinum were seen on the follow-up chest X-ray and soft tissue neck X-rays to have disappeared. She was discharged seven days after admission, and during follow-up of three years, no problems have been noted.

### DISCUSSION

Spontaneous cervical and mediastinal emphysema may have several causes (Table 1). In most cases, increased intrathoracic pressure has been reported, and has been found, for example, in postoperative intensive care unit patients with positive pressure ventilation (3), SCUBA diving (4), labour (5), Valsalva-type maneuver (6), excessive phonation (7), and excessive blowing have also been involved (8). In other cases, pulmonary conditions such as bronchiolitis (9), pneumonia (10) and asthma have



**Fig. 1.** (A) Soft-tissue neck AP X-ray shows an entrapped air shadow in both parapharyngeal spaces, as well as normal trachea. (B) Soft-tissue lateral neck X-ray shows an entrapped air shadow in the retropharyngeal space.



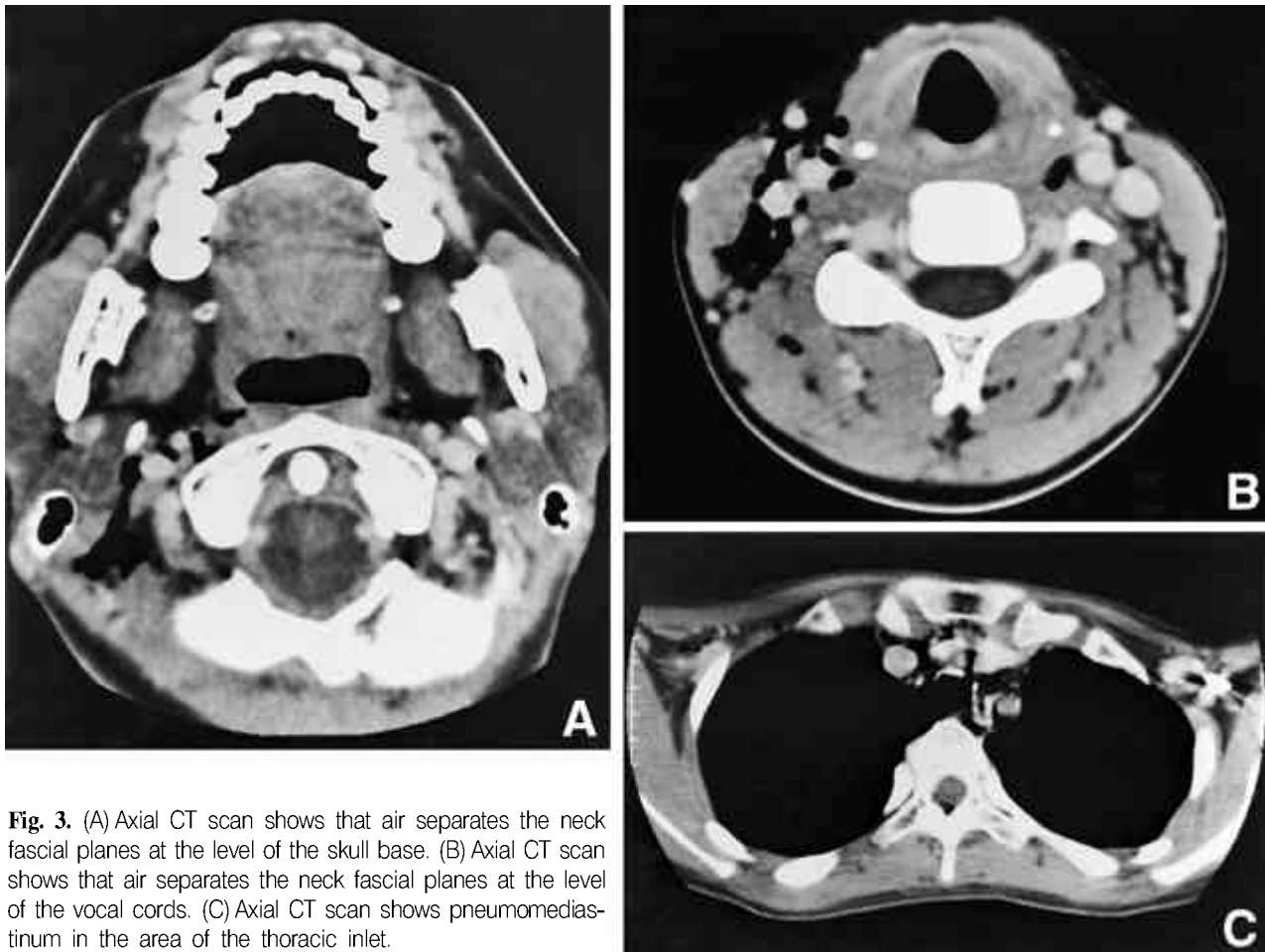
**Fig. 2.** Chest PA X-ray shows an air shadow in the upper mediastinum. Lung parenchymes show no abnormal findings.

been reported (11). Surgical tooth extraction (12), gastrointestinal tract surgery (1) could also cause subcutaneous emphysema. Some cases, however, are idiopathic. In our case, symptoms developed after waking during ordinary life and no related condition was found to be present. Physical examination and X-ray and CT findings suggested that air might be leaking from the neck.

According to Dekel et al. (6), the main symptoms of subcutaneous cervical and mediastinal emphysema were

**Table 1.** Etiology of cervical and mediastinal emphysema

Idiopathic
Increased intrathoracic pressure
labour and delivery
SCUBA diving
excessive voice exercise
excessive blowing
positive pressure ventilation
Valsalva-type maneuver
Pulmonary diseases
asthma
pneumonia
bronchiolitis
Instrument and surgical trauma
tooth extraction
digestive tract surgery



**Fig. 3.** (A) Axial CT scan shows that air separates the neck fascial planes at the level of the skull base. (B) Axial CT scan shows that air separates the neck fascial planes at the level of the vocal cords. (C) Axial CT scan shows pneumomediastinum in the area of the thoracic inlet.

neck pain and swelling, chest pain, and dyspnea (6). Clinical appearance depends on the degree and extension of emphysema, and typical findings of spontaneous subcutaneous emphysema are swelling and crepitus over the involved site. Pulmonary interstitial emphysema may be involved in pneumomediastinum and result in an unusual precordial crunching sound known as “Hamman’s sign” (13).

For initial diagnosis, soft-tissue neck and chest X-rays are useful, and to disclose the extension of air and reveal hidden pathologic conditions, computed tomography is excellent.

Management must take into account the underlying disease process, though in most cases, bed rest and analgesics are sufficient. Antibiotic therapy is not necessary unless the potential for infection exists. The patient must be cautioned against any form of coughing or straining, which would increase intrathoracic pressure. In the occasional severe or unresolved case, tracheostomy and the opening of fascial planes should be considered (3).

Dekel et al. reported that the long-term sequelae of spontaneous pneumomediastinum involved three clinical patterns: patients without any long-term sequelae; patients with a tendency to airway hyperreactivity and subclinical asthma; and patients in whom spontaneous pneumomediastinum was the presenting feature of their asthma (6).

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