

# TRACHEAL TUBE ASPIRATION : A CASE REPORT

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**Abstract** - A 62-yr-old woman with a history of papillary carcinoma of thyroid who had undergone thyroidectomy and tracheostomy 5 years prior to admission, presented with bleeding from the site of tracheostomy. Attempts to control the bleeding failed, and the patient was immediately transported to the operating room. Awake intubation was performed and the endotracheal tube was sutured to the skin. A tear in the left common carotid artery was detected and repaired during neck exploration. To secure airway, the trachea was not extubated postoperatively. Six hours after surgery, the tracheal tube was found to be missing. The patient had no respiratory difficulty. Chest radiography revealed aspirated tracheal tube lodged in the left main bronchus. A tracheostomy was performed under local anesthesia, the aspirated tube was removed and a tracheostomy tube was inserted. The patient was discharged from the hospital 5 days later in a good condition.

*Improper fixation of the tracheal tube and impaired airway reflexes due to old age might have led to tracheal tube aspiration.*

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**Key Words:** Endotracheal tube, anesthesia, aspiration

## CASE REPORT

A 62-yr-old woman (height 150 cm, weight 50 kg) was admitted to the hospital with the complaint of bleeding from the site of tracheostomy. She had undergone thyroidectomy and tracheostomy for papillary carcinoma of thyroid 5 years earlier and had stayed in the intensive care unit (ICU) for 7 days. The tracheostomy tube had been removed thereafter, and antibiotic therapy had been instituted because of continuous purulent discharge from the site of stoma.

Bleeding had started 5 days before her admission. Physical examination showed a fistula at the level of 2nd- 3rd rings of the trachea, and severe stiffness and fibrosis were noted. The patient was pale, with a blood pressure of 100/80 mmHg, a heart rate of 80 bpm, and a respiratory rate of 24 pm.

Preoperative laboratory findings were as follows: hemoglobin 8.3 g/dl, hematocrit 25.8%, plasma creatinine 1 mg/dl, blood urea nitrogen 22 mg/dl, fasting blood sugar 72 mg/dl, serum sodium 138 mEq/L, serum potassium 4.1 mEq/L, prothrombin time 14 sec. (control: 12-15 sec.), partial thromboplastin time

44 sec. (control: 15-35 sec.).

To control the bleeding and to prepare for further evaluation, the tracheostomy was sutured by an otolaryngologist, but bleeding increased while performing this procedure. With the suspicion of carotid artery rupture, the patient was immediately transferred to the operating room (OR).

Tracheostomy was difficult due to anatomic distortion and fibrosis of anterior aspect of the neck, so orotracheal intubation was planned. According to Mallampati classification (1), grade 4 difficult intubation was suspected, and awake direct laryngoscopy and intubation were performed following intravenous injection of 2 mg midazolam, 50 µg fentanyl, and laryngeal lidocaine 10% (5 puffs). A no. 5 uncuffed straight PVC tracheal tube was properly placed by listening to the sound of breathing airflow and was fixed with a glue tape, and then sutured to the skin.

Anesthesia was induced with 150 mg thiopentone and 50 µg fentanyl, and maintained using halothane, 40% N<sub>2</sub>O in oxygen and additional fentanyl as required. Spontaneous breathing was assisted manually. A tear in the left common carotid artery due to tumor invasion was detected and repaired during neck exploration. Duration of operation was 3.5 hours; total blood loss was 900 ml, which was substituted by 2 units of packed red cells and 3000 ml of crystalloid solution and no significant hemodynamic alteration was recorded. The patient was transported to the ICU. To secure her airway, extubation of the trachea was postponed and supplemental oxygen was provided through a T tube.

Six hours after her admission to the ICU, the nurse in charge reported that the patient's tracheal tube was missing. Our examination revealed no respiratory distress. She was conscious, calm and hemodynamically stable with an SPO<sub>2</sub> of 95% by pulse oximetry. Direct laryngoscopy was performed after topical anesthesia (with 3 puffs of lidocaine 10%, but the tracheal tube was not visible. Chest radiography revealed (Fig. 1) tracheal tube in the trachea with its tip lodged in the left main bronchus. Rigid bronchoscopy was not possible because of distorted anatomy and severe stiffness of the area due to tumor invasion and fibrosis. The patient was transferred to the OR. A tracheostomy was performed after local infiltration of 4ml lidocaine 2%, then the aspirated tracheal was removed and a no. 4 tracheostomy tube was inserted. The procedure took 15 minutes with no hemodynamic alteration.

## Tracheal tube aspiration

Afterwards, she was transferred to the ICU. On the 3rd postoperative day she was discharged from the ICU

and on the 5th postoperative day she was discharged from the hospital in a good general condition.



Fig. 1. The chest radiograph shows displacement of the endotracheal tube distally with its tip into the left main bronchus. Posteroanterior view (A). Lateral view (B).

## DISCUSSION

Aspiration of foreign bodies is not uncommon (3). Presenting symptoms are a function of both the location of the foreign body within the airway and the time of presentation (1). 80% of foreign bodies lodge in the right bronchus (3). Smaller objects may lodge more distally and may result in total obstruction (3). The passage of a foreign body into distal airway may elicit

mild symptoms (4). The nature of foreign body is also important (5) and can influence the clinical course (3). Inert substances such as plastics are relatively non-irritating and produce minimal reaction (4). Radiographic evaluation provides direct evidence if the aspirated object is radioopaque (1).

Failure to fasten an endotracheal tube properly may cause its displacement into pharynx or bronchus or dislodgement from nose and mouth (2). A mechanical airway obstruction and unintentional bronchial intubation leads to hypoxia (3). Pulmonary edema secondary to

obstruction may cause additional hypoxia (6).

Elderly people have diminished airway reflexes (2). The geriatric population is subject to progressive impairment of airway reflexes with age and this may be compounded by perioperative sedative drug administration (7). Pharyngeal weakness and abnormal cricopharyngeal relaxation have been documented in the elderly, with a 7% incidence of aspiration in asymptomatic subjects (8).

Because the patient in this case was old, and extensive intraoral lesions and distorted tissues due to tumor invasion and scar tissue formation had made airway protection difficult, awake intubation and spontaneous ventilation were desirable (9).

The national safety council of USA has reported that deaths from foreign body airway obstruction were approximately less than 1% of all sudden deaths (10).

It is concluded that loose fixation or failure to fasten the endotracheal tube and diminished airway reflexes were the main reasons for the tracheal tube aspiration in this case.

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