Tracheal Injury Caused by Self-stabbing over the Low Anterior Neck

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We report on a 36-year-old man who presented to the emergency department with a self-inflicted neck stab injury. Initial vital signs were stable. Arterial blood test revealed pH 7.41, pCO₂ 38 mmHg, pO₂ 71 mmHg, and SaO₂ 94%. On physical examination, a 10 cm length transverse laceration with a skin defect in the lower anterior neck was observed. Computed tomography (CT) angiography showed a soft skin defect in the anterior neck at Zone I, subcutaneous emphysema at the anterior neck and chest wall, and pneumomediastinum. Emergency operative findings showed a penetrating tract in the direction of the trachea just above the suprasternal notch in the laceration wound. A 1.5 cm laceration of the tracheal membrane was observed between tracheal rings 4 and 5. The tracheal rings were repaired by absorbable sutures. The patient was discharged without any complications.

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Key Words: Trachea injuries; Neck injuries; Mediastinal emphysema; Trachea

CASE

A 36-year-old man presented to the emergency department with a self-inflicted neck stab injury. His vital signs were blood pressure 110/70 mmHg, pulse rate 112 beats/min, respiration rate 20 breaths/min, body temperature 36.2°C, and oxygen saturation 97%. Laboratory examination revealed pH 7.41, pCO₂ 38 mmHg, pO₂ 71 mmHg, SaO₂ 94%, white blood cell count 22.0 x 10³ /μL, hemoglobin 14.1 g/dL, platelet 356 x 10³ /aL, lactic acid 2.5mmol/L, and base excess -0.3. A 10-cm transverse laceration with a skin defect in the lower anterior neck was observed on physical examination. Neck computed tomography (CT) angiography

showed a soft skin defect in the anterior neck of Zone I, subcutaneous emphysema at the anterior neck and chest wall, and pneumomediastinum. An endotracheal intubation was performed in the emergency department. An emergency operation was performed under suspicion of tracheal injury. Operative findings showed a penetrating tract in the direction of the trachea just above the suprasternal notch in the laceration wound. A 1.5 cm laceration was observed in the membrane between 4th and 5th tracheal rings, and a balloon of endotracheal tube was observed through the defect of the trachea. After gentle repositioning of the endotracheal tube to the proximal site from the tracheal defect, the tracheal defect was repaired by absorbable sutures. Extubation was

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Fig. 1. Neck CT demonstrates subcutaneous and mediastinal emphysema. (A) Emphysema on the upper neck. (B) Penetrating focus on the neck (red arrow). (C) Suspicious disruption point of continuity of trachea (red arrowhead). (D) Pneumomediastinum.

performed in the operating room after the operation. At a bronchoscopy performed on postoperative day 3, the repaired defect of the trachea was intact and there was no any other abnormality. Neck CT on postoperative day 5 showed no subcutaneous and mediastinal emphysema. The patient was discharged without any complications.

DISCUSSION

Bronchial injuries are relatively rare but often fatal. Huh et al. (1) reported a 0.13% incidence of broncho-tracheal injury in their university level I trauma center. For successful management of penetrating neck injuries, aggressive initial airway management, high index of suspicion, accurate diagnosis of tracheobronchial injury,

and the appropriate repair in the early stage are essential (1-7). Multidetector CT (MDCT) and bronchoscopy before or during surgery are helpful for diagnosis (7,8). Inaba et al. (9) reported that multi slice helical CT angiography (MCTA) appears to be a sensitive and safe screening modality. MCTA achieved 100% sensitivity and 93.5% sensitivity in detecting all vascular and aerodigestive injuries sustained. The indications for surgery in cases of penetrating neck trauma included increased subcutaneous emphysema, bleeding from the wound, and mediastinal hematoma (4). Modern operative approaches have significantly decreased the incidence of complications in the past, such as wound infections, tracheal stenosis, splitting of sutures, and tracheoesophageal fistulas. These operative approaches for penetrating

Fig. 2. Operative findings show tracheal injury just above the suprasternal notch. (A) A 10-cm laceration with skin defect on low anterior neck. (B) A 1.5-cm sized laceration in the membrane between 4th and 5th tracheal rings, and a balloon of endotracheal tube was observed inside the trachea. (C) After gentle repositioning of the endotracheal tube to the proximal site from the tracheal defect, the tracheal defect was repaired by absorbable sutures. (D) Features after simple repair for the tracheal defect.

Fig. 3. A bronchoscopy performed on postoperative day 3 shows the repaired defect of the trachea is intact.

tracheal injuries included the following conditions: 1) an emphasis on clinical recognition of injury, 2) minimal

peritracheal dissection and repair with absorbable sutures, 3) limited use of protective tracheostomies, and 4) use of muscle buttresses to cover tracheal repairs (10). Simple repair can be performed safely for airway injuries with good results (3). In this case, simple repair was performed using 3-0 Vicryl. Togashi et al. (6) reported that controlled ventilation was required under heavy sedation for more than 1 week after end-to-end anastomosis if the trachea was completely disrupted.

Conflict of Interest Statement

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Fig. 4. Neck CT on postoperative day 5 shows resolution of the subcutaneous and mediastinal emphysema. The patient was discharged without any complications.

Fig. 5. Two clips indicating the level of tracheal injury are observed on postoperative neck CT.

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