

ELEKTİF ENTÜBASYON SONRASINDA FARKEDİLMİYEN TRAKEAL RÜPTÜR *UNRECOGNIZED TRACHEAL RUPTURE AFTER ELECTIVE INTUBATION*

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ABSTRACT

Tracheal rupture is a rare but potentially a life-threatening condition. However sometimes, the symptoms and signs may be delayed. A case of tracheal rupture after elective orotracheal intubation for laparoscopic surgery who presented the next day to the emergency department with dyspnea is being presented. Tracheal rupture may present after hours, careful physical examination and diagnostic evaluation is crucial to decide the appropriate management plan.

Key words: *Dyspnea, Intraoperative Intubation, Subcutaneous Emphysema, Bronchoscopy, Complication.*

ÖZET

Trakeal rüptür nadir, fakat hayatı tehdit edebilecek bir komplikasyondur. Ancak bazen, semptom ve bulgular geç ortaya çıkabilir. Bu yazıda geçirdiği laparoskopik cerrahi öncesi elektif orotrakeal entübasyon yapılan, ertesi gün acil servise dispne şikayeti ile başvuran trakeal rüptürlü bir olgu sunulmuştur. Trakeal rüptür, gelişikten saatler sonra bulgu verebilir, dikkatli bir fizik muayene ve tanısal inceleme uygun tedavi yaklaşımına karar vermek için önemlidir.

Anahtar Sözcükler: *Dispne, Intraoperatif Entübasyon, Subkutan Amfizem, Bronkoskopi, Komplikasyon.*

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INTRODUCTION

Elective endotracheal intubation is a commonly performed procedure in the operating room with rare complications. Tracheal rupture is a very infrequent complication of intubation, with a reported incidence of 0.005% after orotracheal intubation¹. Nevertheless, it can complicate elective intubations and may be the cause of severe morbidity and mortality.^{2,3} A case of trachea rupture after elective intubation for laparoscopic surgery is being presented with a review of the literature.

CASE REPORT

A 47-year old woman presented to the emergency department with the complaints of difficulty in breathing and neck pain. She had a laparoscopic surgery two days before for an ovarian teratoma under general anesthesia. Postoperatively, she had sore throat, neck pain and swelling of the neck. On the following day, an ear, nose and throat (E.N.T) examination with a flexible laryngoscopy was performed and she was discharged, since no pathology was detected. On the second postoperative day, she recognized an increase in the neck swelling with an increase in pain and came to the emergency department because of dyspnea. She was 1.70 m tall, 65 kg and overall did not have a feature suggestive of difficult intubation. Her vitals were normal (blood pressure: 125/75 mmHg, heart rate:80 beats /min). Physical examination of the oropharynx and tonsilla was unrevealing. There was subcutaneous crepitation over the supraclavicular, subclavicular and submandibular areas extending to the left side of her neck. Upon auscultation, breath sounds were normal on both lung sides, and cardiac examination was normal. Incision sutures were clean and bowel sounds were normal, with mild tenderness. Neurological and extremity examination were normal. Pulse oximetry was 94% without oxygen supplementation. Chest and neck X-rays were obtained (Figure 1, Figure 2). They revealed subcutaneous emphysema on the left side of the neck and bilateral supraclavicular subcutaneous emphysema, pneumomediastinum, pneumopericardium and subdiaphragmatic free air. Subdiaphragmatic free air was probably related to laparoscopic surgery. Subsequent CT scan of the neck and thorax showed air density starting from the level of oropharynx extending to thoracic inlet bilaterally along the neck, between the muscle and soft tissue planes, including both posterior cervical triangles, the submandibular, sublingual, subclavicular areas and area over the thyroid gland. At the level of thoracic inlet (level of third thoracic vertebra), on the right posterolateral wall there was a minor tracheal rupture (<1 cm in length). Starting from the thoracic inlet, extending to anterior and posterior mediastinum there was air density, a finding compatible with pneumomediastinum. Air density was also seen in perihepatic, perihilar and the epigastric areas included in the sections. Her complete blood count and biochemistry results were within normal limits. (Hb:12.1 g/dL, Htc: 32.9, plt:174,000/mL, WBC:7,600/mL).

Prophylactic antibiotics were started and the patient was transported to a center for thoracic surgery consultation and hospitalization. On follow-up she was evaluated by a thoracic surgeon and an E.N.T specialist. Conservative treatment and observation with antibiotics were decided. After 5 days she was discharged,

since the subcutaneous emphysema resolved and her complaints subsided.



Figure 1 – Chest X-ray of the patient revealed bilateral subcutaneous amphysema around the neck, air density surrounding the pericardium and intraabdominal free air.



Figure 2 – X-ray showing free air between soft tissue planes surrounding the neck.

DISCUSSION

Tracheal rupture as presented is a rare complication after elective intubation. Yet, it should be kept in mind as a possible complication, especially after difficult airway intubations and emergency intubations.^{2,4} Risk factors for tracheal rupture are inadequate expertise, multiple attempts at intubation, stylet protrusion into the trachea, overinflation of cuff, cuff rupture, patient movement or coughing during and after intubation, pathologies involving tracheobronchial tree (tracheomalacia, tracheal inflammation, chronic steroid use), female gender and old age.²⁻⁵

Patients often complain of throat pain, subcutaneous emphysema or have respiratory symptoms such as difficulty in breathing and hemoptysis.³⁻⁵ These symptoms may start just after intubation or may be delayed up to several days as in our case.^{4,6} A dedicated physical examination can give clues to presence of tracheal rupture. Prompt deterioration in patient vitals and oxygenation after intubation should raise a suspicion for intubation complications. Findings such as crepitation over the head, neck or chest (subcutaneous emphysema) may be the sign of pneumothorax or pneumomediastinum due to tracheal rupture.³⁻⁵ However, these findings may be absent in some patients despite presence of a tracheal rupture.

Detection or suspicion of tracheal rupture should prompt fiberoptic bronchoscopic evaluation.⁴ Laryngoscopy, as such in our case, is not appropriate to detect tracheal ruptures while valuable for evaluation of other complications related to endotracheal intubation. For patients who are intolerant to bronchoscopy, computed tomography evaluation can be an option, especially when X-rays are unrevealing. Bronchoscopy confirms the diagnosis and reveals the extent and location of the rupture. For most patients, findings on bronchoscopy are important to decide on the management plan.⁴

Surgical repair, once the treatment of choice, is now a subject of debate.^{4,6,7} There is no consensus on who should undergo surgical repair. Conservative management is generally recommended for stable patients with mild symptoms and with lacerations smaller than 2 cm.^{4,5} Traditionally, goals of surgical repair as reported are: 1- Closure of defect and effective ventilation for patients in need of mechanical ventilation, 2- Prevention of mediastinitis (which in fact is very rare after tracheal injury and more commonly reported in patients who have undergone surgical correction), 3- Prevention of tracheal stenosis after wound healing.⁶ Yet, as presented in the study by Conti et al, all these goals can effectively be attained by an attentive conservative approach in patients with iatrogenic (in contrast to traumatic) tracheal ruptures.⁶ In their series, wounds up to 7.5 cm have been successfully managed conservatively and it is concluded that outcome is

independent of the length of rupture. On the other hand, surgical repair is reported to be associated with increased mortality compared to conservative management⁷. Recently, surgical repair is being recommended for patients with compromised ventilation or for patients with complications related to tracheal rupture.^{1,6}

CONCLUSION

In conclusion, tracheal rupture is a rare but potentially a fatal complication of intubation. Cases may present hours after intubation, even to different centers for evaluation of their complaints. Concise knowledge of possible complications of intubation and prompt evaluation of the findings is important for a satisfactory outcome. Surgery for tracheal rupture should be reserved for unstable patients with compromised ventilation.

REFERENCES

1. Schneider T, Storz K, Dienemann H, Hoffmann H. Management of iatrogenic tracheobronchial injuries: a retrospective analysis of 29 cases. *Ann Thorac Surg* 2007;83:1960-4.
2. Sternfeld D, Wrigth S. Tracheal rupture and the creation of a false passage after emergency intubation. *Ann Emerg Med* 2003;42:88-92.
3. Camkurt MA, Coşkun F, Aksu NM, Karakılıç E, Ramadan H, Özcan H, ve ark. Entübasyona bağlı gelişen nadir bir komplikasyon:Trakeal rüptür olgu sunumu. *Akademik Acil Tıp Dergisi* 2008;7:40-42.
4. Hofmann HS, Rettig G, Radke J, Neef H, Silber RE. Iatrogenic ruptures of the tracheobronchial tree. *Eur J Cardiothorac Surg*. 2002;21:649-652.
5. Carbognani P, Bobbio A, Cattelani L, Internullo E, Caporale D, Rusca M. Management of postintubation membranous tracheal rupture. *Ann Thorac Surg* 2004;77:406-9.
6. Conti M, Pougeoise M, Wurtz A, Porte H, Fourrier F, Ramon et al. management of postintubation tracheobronchial ruptures. *Chest* 2006;130:412-18.
7. Miñambres E, Burón J, Ballesteros MA, Llorca J, Muñoz P, González-Castro A. Tracheal rupture after endotracheal intubation: a literature systematic review. *Eur J Cardiothorac Surg* 2009;35:1056-62.