

Case Report

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Quick Response Code:

Website: www.eurasianjpulmonol.com
DOI: 10.4103/ejop.ejop_40_18

Traffic accident like suicide

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Abstract:

Tracheal injury is a rare pathology, but 30% of all cases can be fatal and 50% of those patients will deteriorate in a couple of hours and may lead to death. The course of treatment must be scheduled by clinical status and severity of pathology; conservative approaches can be followed for minor injuries, but major surgeries must be performed for advanced cases. A 28-year-old male, who suffered from caught with a lasso around the neck in a traffic accident, was brought to our emergency service from a distant medical facility. It has been observed that tracheal integrity was lost, subcutaneous and mediastinal emphysema were evident, and bilateral pneumothorax was significant, especially at right with thorax computed tomography. His clinical condition was bad. Tube thoracostomy placement was successfully achieved from the right side, and neck exploration was performed for tracheostomy in operating theater; a total tracheal rupture was observed between the level of 2 and 3 cricoid cartilage, and the procedure was terminated after placing a tracheostomy cannula to the distal segment of trachea to wait for considering reconstruction following clinical progression and hemodynamic stabilization of the patient. Following the 7th day after the first operation, the patient was operated. The trachea was repaired by suturing using 3-0 polypropylene sutures. The patient was discharged after 12 h of intensive care and 5 days of follow-up in surgery service. Blunt tracheal injuries may not present any symptoms or signs but may also manifest dramatically. Mortality and morbidity rates may be drastically higher. For this reason, physical examination, radiological findings, and bronchoscopy should be performed early in diagnosis and the most appropriate treatment option that can prevent mortality should be decided quickly.

Keywords:

Blunt, surgery, tracheal injuries

Introduction

Trachea lies between cricoid cartilage and carinae in adults, approximately ranges from C6 to T4 vertebrae. It has a tube-shaped structure with an average length of 10–13 cm and diameter of 2.5 cm. Anterior part of trachea composes of C-shaped ring cartilage and posterior part consists of muscular, fibrous, and glandular tissues. It is adjacent to major vascular structures.

Tracheal injuries occur, mostly after blunt trauma.^[1] According to the severity, level, and localization of clinical injury, course of the patient will go along with minor unnoticed symptoms or much more serious occasions. It is a rare pathology, but 30% of all cases can be

fatal and 50% of those patients will deteriorate in a couple of hours and may lead to death.^[2,3]

Shortness of breath and subcutaneous emphysema are the most common symptoms in tracheal injuries.^[4] Furthermore, cyanosis, hemoptysis, hoarseness, and agitation may occur. Pneumothorax, hemothorax, and subcutaneous emphysema can be observed by further assessments.^[5] Bronchoscopy is necessary for precise diagnosis. The course of treatment must be scheduled by clinical status and severity of pathology; conservative approaches can be followed for minor injuries, but major surgeries must be performed for advanced cases.

Case Report

A 28-year-old male, presented with shortness of breath and cervical swelling,

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How to cite this article: Sezer HF, Dayanir H, Ziraman MY. Traffic accident like suicide. *Eurasian J Pulmonol* 2019;21:72-5.

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Received: 27-07-2018

Revised: 01-08-2018

Accepted: 11-09-2018

was brought to our emergency service from a distant medical facility. According to patient's statement, he suffered from caught with a lasso around the neck in a traffic accident, and as it was reported in medical records, repeated thoracentesis procedures were performed from 5 to 6 intercostal spaces in the anterior axillary line, bilaterally. After those interventions, the patient was transferred to our facility for further assessment at the 6th h of the incident.

In physical examination, there was a parabolic hanging trace around his neck. He had dyspnea, tachypnea, and inspiratory wheezing and instant coughs [Figure 1]. Blood pressure was stable, but he also suffered from tachycardia. SpO₂ level was 86%. Acidemia and hypoxic condition were evident in arterial blood sample analysis. There were crepitations in the proximal tracheal line while coughing. Furthermore, there was a significant subcutaneous emphysema all around the neck and face. In a few axial slides showing proximal trachea, it has been observed that tracheal integrity was lost, subcutaneous and mediastinal emphysema were evident, and bilateral pneumothorax was significant, especially at right with thorax computed tomography [Figure 2]. Bronchoscopy could not be performed to the patient because of insufficiency of our medical facility. In addition, we could not be able to use capnography because of insufficiency of our equipment during the whole process.

Tube thoracostomy placement was successfully achieved from the right side, and neck exploration was performed for tracheostomy in operating theater; a total tracheal rupture was observed between the level of 2 and 3 cricoid cartilage and the procedure was terminated after placing a tracheostomy cannula to the distal segment of trachea to wait for considering reconstruction following clinical progression and hemodynamic stabilization of the patient. He was delivered to ICU for follow-up.



Figure 1: Emergency service arrival photograph

Another thoracostomy tube placement was performed from second intercostal space because air leakage and expansion deficit have become evident at the right side in the early postoperative period. However, extended air leakage continued.

In intensive care unit follow-ups, significant clinical progress has been achieved. The patient had received mechanical ventilation assistance for the first 3 days; no clinical and biochemical sign of acidemia and hypoxemia remained during this period. After a successful weaning process including a 12-h long t-tube period, the patient was separated from mechanical ventilation and he sustained with his own ventilation until subsequent reconstructive procedures.

Following the 7th day after the first operation, reconstructive procedures were performed beginning with exploration by cervical collar incision and its extension to proximal part of cervical medial line. Ventilation was sustained by insertion of a reinforced tube to lower segment of trachea following removal of tracheostomy cannula. Anastomosis was performed between membranous segments of upper and lower trachea using continued stitches, cartilaginous parts with each other by using 3-0 nonabsorbable polypropylene stitches and with larynx in anterior segment [Figure 3]. No complication was noticed during procedures. The patient was taken to ICU for 12 h after the operation with no mechanical ventilation assistance; then, he was transferred to his bed in surgery service. Thoracostomy tubes were removed on the 2nd and 4th days of the postoperative period, and the patient was discharged from hospital on the 5th day with no serious complaints. He was summoned for regular controls to our facility in following 1st and 3rd weeks after his discharge.

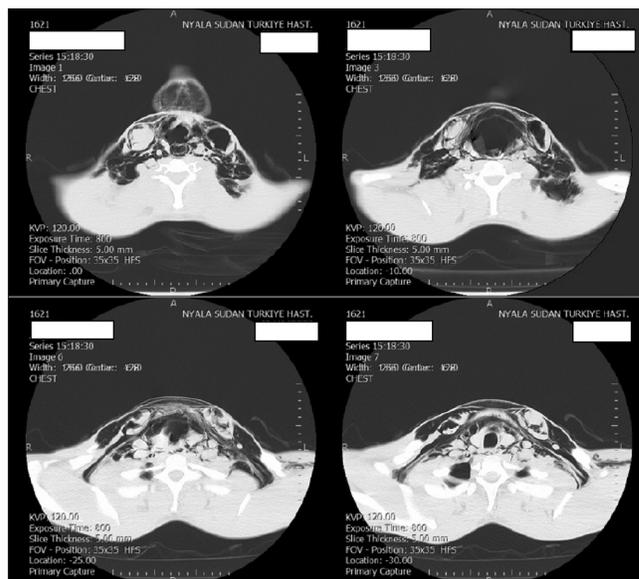


Figure 2: Thorax computed tomographic scans

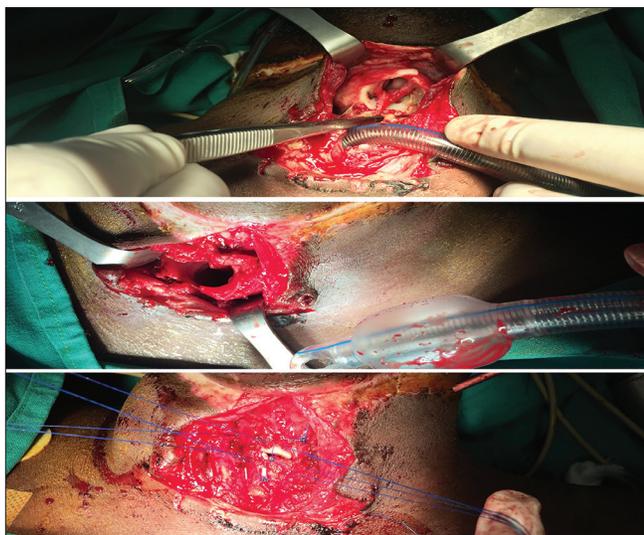


Figure 3: Operation pictures

According to physical and radiologic assessment, no complications were indicated in the survey. We are planning a rigid bronchoscopy to visually assess the surgical site for follow-up period at the 6th week, postoperatively. Fiber-optic bronchoscopy cannot be performed in our facility because of insufficient equipment.

Discussion

In further analyses of blunt trauma incidence, 59% of tracheal injuries are caused by motor vehicle accidents, 27% are accidents due to crushing and rapid compaction, and 12% are due to falling from higher ground.^[5] The most widely accepted views in rupture etiology are intratracheal pressure increase with immediate closure of glottis, narrowing of the anteroposterior diameter of thorax by direct compression, rupture of the trachea with sudden deceleration, neck hyperextension, or direct tracheal trauma.^[6] In our case, there were injuries with a rope directly compressing the trachea. The most frequent localization (80%) of tracheal injury due to blunt trauma is about 2.5 cm periphery of carinae.^[7] In our case, the injury was more proximally.

In these patients, a good anamnesis, physical examination, radiological findings, and bronchoscopy must be performed under the appropriate conditions. Conditions on when and to whom the bronchoscope should be performed are controversial.^[4,8] It should be kept in mind that small lesions may not be symptomatic and radiologically detectable. Because of the absence of bronchoscopy in our center, we have been convinced that there is tracheal rupture in our patient as a result of physical examination and radiological examinations and we applied surgical treatment.

The most common physical examination findings in blunt traumatic tracheal ruptures are respiratory insufficiency, hemoptysis, hoarseness, prolonged air leak in patients with chest drain, and air leakage if there is a skin defect related to tracheal injury. There are studies in the literature that report the frequency of these symptoms differently.^[4,8] The patient had respiratory insufficiency, subcutaneous emphysema, voice phobia, and prolonged air leak.

There are studies in the literature reporting that lesions can be followed conservatively and surgery is the gold standard in progressive cases.^[4] What is important is surgical repair of the injury as soon as possible after resolving life-threatening traumatic problems in injuries that cannot be solved with a conservative method. The principle of surgical repair is debridement of tracheal ends and the anastomosis of every tip with each other by using nonabsorbable sutures.^[5] The patient was followed up first with a tracheostomy cannula, and then he was taken into operation after the hemodynamic stability was achieved. In addition, polypropylene with nonabsorbable suture material was used for anastomosis after debridement in cricoid and trachea. The choice of incision is important according to the localization of the injury; low cervical collar incision will be appropriate for one-third proximal injuries of the trachea as in our patient. Because the injury was in the proximal trachea, for the assessment of vocal cord paralysis, and hyoid release maneuvers to reduce anastomotic tension, operation was performed with an otorhinolaryngologist.

Conclusion

As a result, blunt tracheal injuries may not present any symptoms or signs but may also manifest dramatically. Mortality and morbidity rates may be drastically higher. For this reason, physical examination, radiological findings, and bronchoscopy should be performed early in diagnosis, and the most appropriate treatment option that can prevent mortality should be decided quickly.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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