

A Crunch in the ER - Case Report

Dr Ashish Nair

Senior Resident, Bharti Vidyapeeth Hospital, Pune, Maharashtra, India
ashishnair1991[at]gmail.com

Abstract: A 33yr old male presented with extensive subcutaneous emphysema with hoarseness of voice following a road accident. Patient was haemodynamically stable with no clinical evidence of rib fractures or pneumothorax. Trauma protocol was followed which suggested no intracranial or bony involvement but, MSCT neck and thorax suggested a significant pneumomediastinum extending superiorly into the deep spaces of neck bilaterally with subcutaneous emphysema in the anterior chest wall. Narrowing of the trachea with thickening of the posterior tracheal wall at C7-T1 level-possible tracheal rent at T1 level. Air leak was suspected likely at the level of C6-C7.

Keywords: upper airway emergency, upper airway obstruction, subcutaneous emphysema; pneumomediastinum

1. Introduction

Traumatic perforation of the upper aerodigestive tract may lead to significant morbidity and mortality. Surgical emphysema has been well documented in the scenario of both penetrating injury and blunt trauma. Here we present a case of one such similar emergency case following blunt trauma.

2. Case

We reported a 33-year male patient who presented with swelling of the neck and face with hoarseness of voice following a road traffic accident. On clinical examination, he was conscious and reactive, afebrile and haemodynamically stable. The patient was eupnoic and his oxygen saturation was 98% on room air. Auscultatory findings suggested breath sounds were normal on pulmonary auscultation, but the presence of a *crunching sound* synchronous with the heart beat was noted on cardiac auscultation. A discrete subcutaneous emphysema was found on palpation of the left supraclavicular fossa and neck with slight tenderness. The rest of the physical examination was unremarkable. On initial evaluation, haemodynamics were stable so the trauma protocol was followed which involved initial stabilization of the patient considering RTA followed by e-FAST and USG lung screening. No sonological evidence of pneumothorax or abdominal injuries was established. Patient was shifted immediately for MSCT neck and thorax with CT brain (figure 3) with close monitoring. Patient was shifted back to the ER after the scans and a repeat clinical examination was done. The extent of the subcutaneous emphysema had increased with vitals still stable. Patient had 2 episodes of hemoptysis. CT reports suggested a significant pneumomediastinum extending superiorly into the deep spaces of neck bilaterally with subcutaneous emphysema in the anterior chest wall. Narrowing of the trachea with thickening of the posterior tracheal wall at C7-T1 level -possible tracheal rent at T1 level (figure 1,2). Plan for emergency Upper GI endoscopy with sosemergencytracheostomy was planned if required. Upper GI scopy was under without sedation which suggested no obvious oesophageal injury. Patient remained haemodynamically stable and the subcutaneous emphysema resolved within a week.

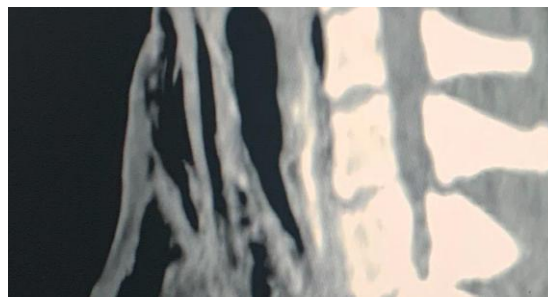


Figure 1: Tracheal compression at C7-T1 level

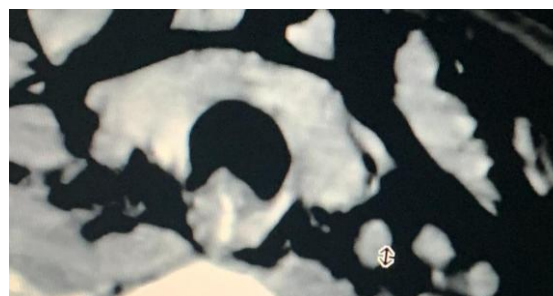


Figure 2: Tracheal rent at T1 Level

3. Discussion

Subcutaneous emphysema is relatively common in penetrating injury and blunt trauma and is usually a self-limiting condition. Involvement of the hypopharynx sufficient to cause airway obstruction is rare but may be rapidly fatal.² Traumatic perforation of the upper aerodigestive tract may be seen. The proposed mechanisms of perforation from blunt trauma may result from acceleration-deceleration injuries from motor vehicle accidents, blows to the neck. Perforation of the upper aerodigestive tract is caused by laryngeal cartilage being compressed against the vertebral bodies creating a shearing force or barotraumatic perforation. Signs and symptoms suggesting upper aerodigestive tract injury include cervical

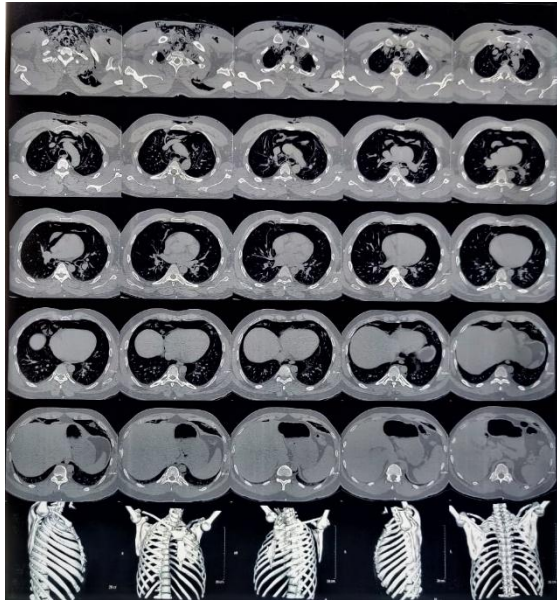


Figure 3: CT Thorax suggestive of pneumomediastinum

subcutaneous emphysema or crepitance, or a combination of these, which is thought to be diagnostic of injury. Pain, dysphagia, and sepsis may accompany injury.³ Radiographic studies typically obtained are chest radiograph and computed tomography (CT), which can reveal cervical emphysema, pneumomediastinum, or pneumothorax. Conservative management of these injuries was first proposed by *Mengoli and Klassen*⁴ in 1965, when they stressed the importance of early diagnosis, peripheral nutrition, keeping patients on NPO status, and administering broad-spectrum antibiotics⁴. The presence of hoarseness or stridor is an important indicator of potential upper aerodigestive tract injury when concomitant emphysema is present. Other complications from injury included aspiration, gastric tube dependence, vocal cord paralysis, and hypoglossal nerve paralysis which may require surgical intervention. Symptoms suggestive of airway obstruction require immediate intervention. Tracheal intubation and emergency tracheostomy (if the former is unsuccessful) may both be extremely difficult, and should be performed by an experienced anaesthetist and surgeon in the operating theatre with immediate access to additional staff and equipment. The anaesthetic technique depends on the patient's clinical condition and the judgement of the anaesthetist, but may include inhalation or i.v. induction, awake fibre-optic intubation, or awake tracheostomy under local anaesthesia.

4. Conclusion

Nonoperative management of upper aerodigestive tract injuries can be accomplished. The safety of this management strategy depends on a high index of suspicion for injury and early diagnosis. The examiner must also fully evaluate each patient for potential upper airway, vascular, neurological, or bony injuries to the head and neck. Broad-spectrum antibiotics, NPO status, and peripheral alimentation are fundamental. Evaluation of the injury should include chest radiograph, neck CT, and contrast swallow examination. Flexible and direct laryngoscopy and esophagoscopy are highly recommended when patients are in medically stable condition. Most of the lacerations identified are 1 to 2 cm in

diameter and, contrary to previous studies, patients with these injuries can be managed successfully without surgical exploration.⁸ Each patient must be closely followed and elective neck operation undertaken when sepsis is suspected or a vascular injury is evident.

References

- [1] Goudy SL, Miller FB, Bumpous JM. Neck crepitance: evaluation and management of suspected upper aerodigestive tract injury. *The Laryngoscope*. 2002 May;112(5):791-5.
- [2] Caraballo V, Barish RA, Floccare DJ. Pneumomediastinum presenting as acute airway obstruction. *The Journal of emergency medicine*. 1996 Mar 1;14(2):159-63.
- [3] Jacobs I, Niknejad G, Kelly K, Pawar J, Jones C. Hypopharyngeal perforation after blunt neck trauma: case report and review of the literature. *Journal of Trauma and Acute Care Surgery*. 1999 May 1;46(5):957-8.
- [4] Mengoli LR, Klassen KP. Conservative management of esophageal perforations. *Ann Surg* 1965; 19:238–240

Author Profile



Dr. Ashish Nair received his MBBS degree from GMC Kozhikode Medical College and his MD Degree in Anaesthesiology from Bharti Vidyapeeth Hospital, Pune. Currently he is pursuing his Fellowship in Critical Care in Pune