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A case report on cervical esophageal perforation in an young boy following trauma.

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Abstract:

Esophageal perforations are uncommon yet challenging to treat. Early clinical suspicion and imaging is crucial for case management to achieve a good outcome. A delayed diagnosis may cause a catastrophic clinical course due to mediastinitis and sepsis. Emergency management is challenging and mortality remains high. Treatment options include surgical intervention or conservative therapy. Options for treatment depends on hemodynamic stability, the severity of symptoms, nature of the injury and timing of the injury. Here, we describe a case of an young boy who sustained trauma to the neck and was diagnosed with esophageal perforation.

Keywords: esophageal perforation, trauma, pneumomediastinum, subcutaneous emphysema

Introduction

Esophageal perforation can be caused by iatrogenic injury, penetrating or blunt trauma [1]. Less than 10% of all esophageal injuries are caused by external trauma, with penetrating injury accounting for the majority of cases. Esophageal perforation due to blunt trauma is extremely rare accounting for less than 1% [2]. There should be high suspicion of esophageal injury when there are features such as pneumomediastinum, subcutaneous emphysema and chest or abdominal pain[3].

Case Report

A 13 year old boy presented with alleged history of fall from a tree and sustained injury to the neck. He presented with swelling of the neck, difficulty in breathing and swallowing. On examination there was a small penetrating wound over the midline of neck with diffuse subcutaneous emphysema which is involving the face and neck till the level of sternal angle (Figure 1). He also sustained both bone fractures of the right forearm.

He underwent emergency tracheostomy in view of obstructed airway.

Contrast enhanced computed tomography of the neck with oral contrast study was performed. It showed a focal rent at the level of C7 and TI suggestive of esophageal perforation and the oral contrast was seen to track anteriorly from the perforation site to the skin. There was associated pneumo-mediastinum and extensive subcutaneous emphysema which was extending from face to superior mediastinum (Figure 2 & 3). Barium swallow done with gastrograffin showed leakage of the contrast from the left lateral wall of the cervical esophagus (Figure 4).

He was advised for feeding procedure and conservative management for the esophageal perforation. Subcutaneous emphysema and pneumomediastinum decreased over the days following tracheostomy. He was treated with antibiotics.

Once he was stable, he underwent fracture reduction. FJ feeds were gradually started from trial feeds to full strength feeds. After 3 months, once the patient recovered, repeat barium swallow was performed, which showed no evidence of leak (Figure 5). Hence, the feeding procedure was reversed and started on oral feeds. The patient recovered completely (Figure 6).

Discussion

Although esophageal injuries as a whole are uncommon, they are significantly associated with mortality and morbidity[4]. Esophageal perforations are transmural disruptions of the esophageal wall that will lead to leakage of the intraluminal contents to flow into nearby structures [5]. The main causes of mortality as a result of this are mediastinitis and sepsis. Esophageal injuries can result from iatrogenic or following trauma. Other causes include acid ingestion or spontaneous rupture as in Boerhaave syndrome.

According to the American Association for Surgery of Trauma Classification, Esophageal injuries are graded from 1 to grade 5[5].

Penetrating injuries are more common than blunt injuries. It accounts about 5–12% of cases. The distal portion of the oesophagus is typically affected by blunt injuries. The mechanism by which it occurs is that sudden stretching of the gastroesophageal junction leads to shearing forces that will result in the tearing of the esophageal wall [6].

Early detection of esophageal injuries is aided by a thorough history and clinical examination. Subcutaneous emphysema, chest pain, and vomiting are the pathognomonic signs of esophageal perforations, known as Macklers triad [7]. Features like mediastinum widening with pleural effusion may be present in chest radiograph. The degree of the injury and treatment choices can be determined using contrast enhanced computed tomography. Features such as air foci, collection in mediastinum, pleural effusion, pneumo-pericardium and pneumoperitoneum may be seen [8].

Esophageal injury management can be divided into non-operative and operational management. In stable patients with confined leaks and little clinical sepsis evidence, non-operative therapy is advised.

Operative care includes primary healing of the perforation in two layers with buttressing of the site with local tissue and muscle flaps. Diverting cervical esophagostomy, esophageal exclusions, and esophagectomy are further alternatives [9].

Conclusion

Esophageal injuries might be surgical emergencies that require quick evaluation. Decreased mortality and morbidity are results of early diagnosis. High suspicion is required in all patients presenting to trauma care with penetrating or blunt trauma injuries since they are so uncommon and may present with vague symptoms.

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Figure. 1. Small penetrating wound in the neck and subcutaneous emphysema involving left eye, left cheek and neck

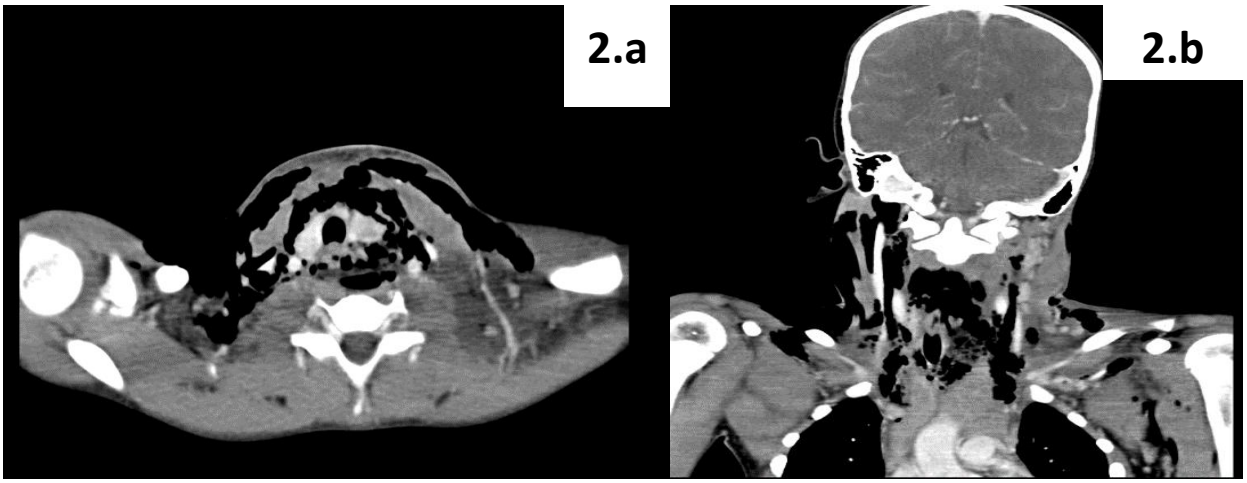

Figure. 2. a. CECT neck (axial), shows a focal rent in the left lateral wall of the esophagus. Diffuse subcutaneous emphysema and pneumomediastinum Fig. 2. b. CECT neck (coronal), shows a focal rent in the left lateral wall of the esophagus

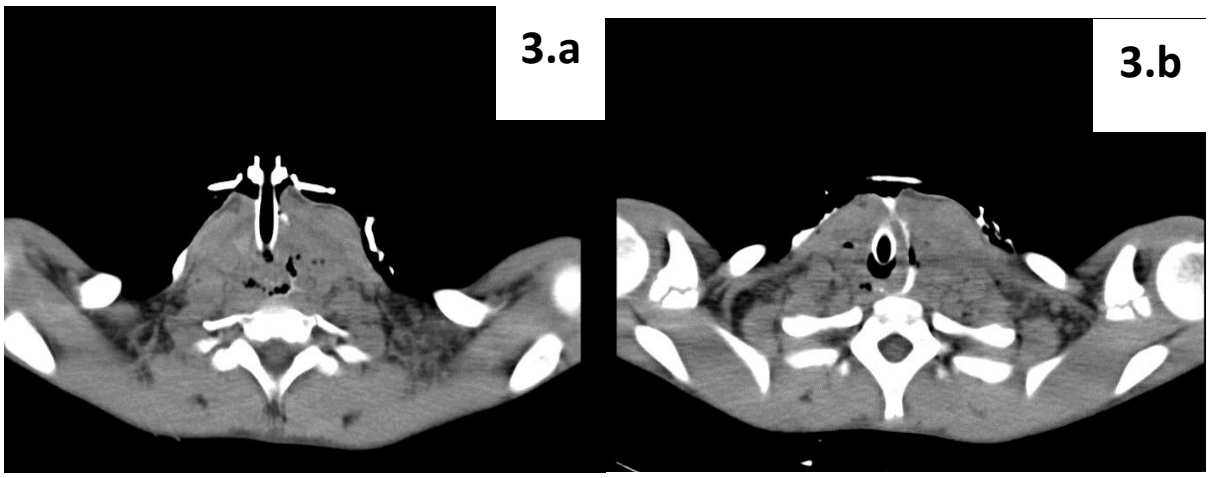

Figure. 3. a. CECT neck with oral contrast (axial), shows the leak of the oral contrast through the lateral wall of the esophagus Fig. 3. b. There is anterior communication to the overlying skin

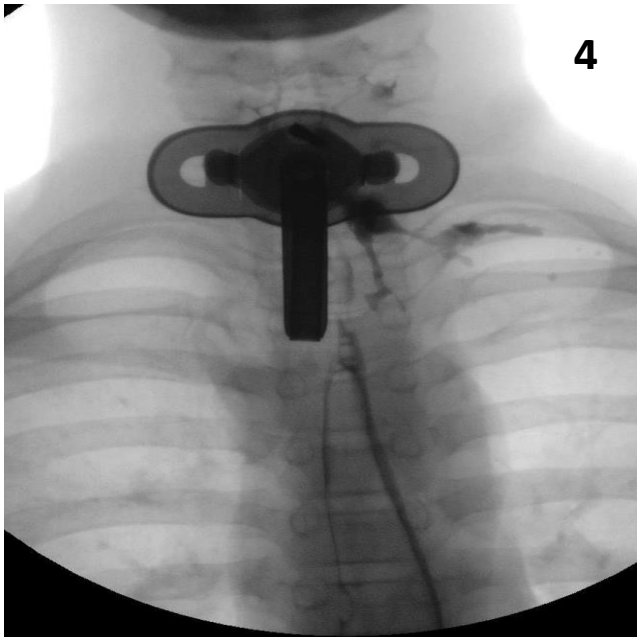

Figure. 4. Barium swallow erect view shows leakage of contrast along the left lateral aspect of the cervical esophagus

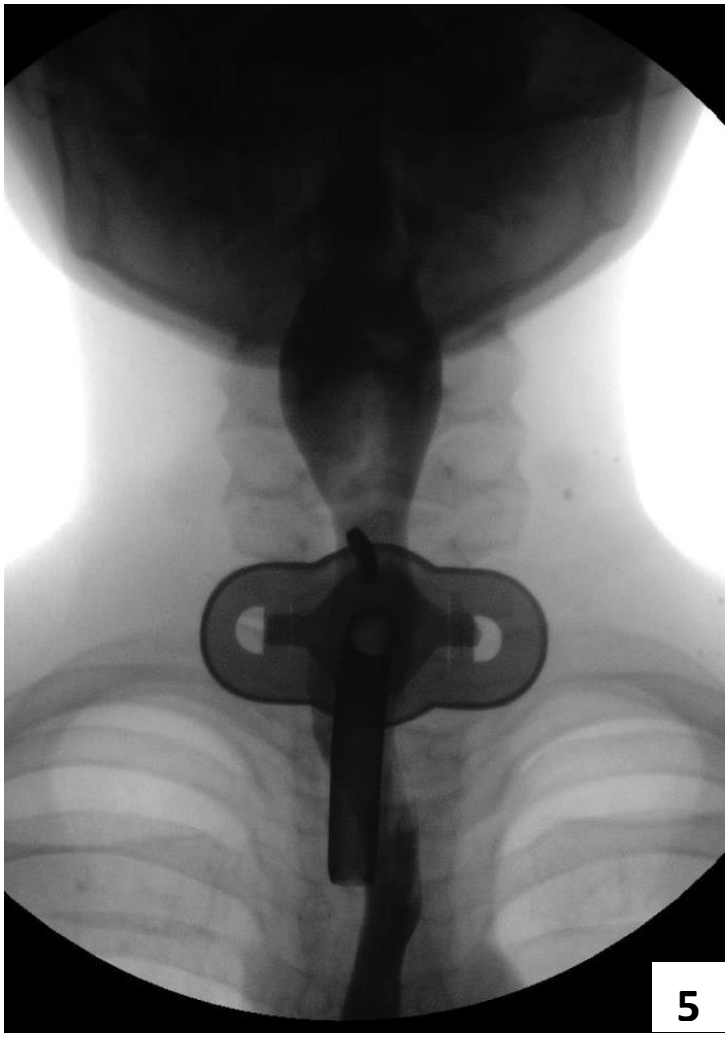

Figure. 5. Barium swallow erect view after 3 months shows no obvious leakage of contrast.

Figure. 6. Completely recovered child at the time of discharge