

ACCIDENTAL BLUNT TRAUMA LEADING TO TRACHEO-BRONCHIAL INJURY: A CASE REPORT

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Abstract

Tracheal rupture can result from blunt chest trauma, commonly occurring in the posterior membranous region. However, anterior tracheal rupture near the carina is extremely rare and potentially disastrous. Trauma can lead to air leakage into the mediastinum and surrounding major blood vessels, potentially causing cardiac tamponade if the leak extends into the pericardium. This report presents a remarkable case of posterior tracheal rupture at the carinal level triggered by accidental trauma.

Keywords: Blunt Trauma, Tracheal Rupture, Mediastinal Emphysema.

INTRODUCTION

Blunt force trauma to the chest can cause internal injuries to organs without visible external damage. The absence of external signs of injury does not necessarily rule out severe internal harm. Factors such as clothing can conceal external trauma, while age also plays a significant role in injury patterns. Children and young adults, whose chests are pliable and elastic, may sustain severe injuries to the intrathoracic viscera without fractures of the sternum and ribs, whereas in older people, fractures of the ribs and sternum are frequent.¹ Traumatic rupture of the trachea or the bronchi is reported with increasing frequency nowadays. This life-threatening trauma usually develops after road traffic accidents or fall from heights. Such rupture may follow penetrating wounds, but the common cause is blunt force trauma to the neck or the chest. The posterior membranous part of the trachea is the commonest site of rupture. The rupture of the tracheobronchial tree following blunt thoracic trauma generally occurs around the carina, that is to say, the distal trachea or the main bronchi at the origin.² In the present case, dead body of a twelve-year-old female with accidental trauma was brought for postmortem examination. She succumbed on the same day as a result of rupture of the tracheo - bronchial tree on the right side.

Case Report

A 12 year old girl sustained blunt force trauma to the chest when a bullock cart fell on her while she was playing near it. She survived for a period of 14 hrs before succumbing to the injuries.

External examination:

Contusion, reddish in colour, was present over the right side of chest (Figure 1). No other external injuries were noted.



Figure 1

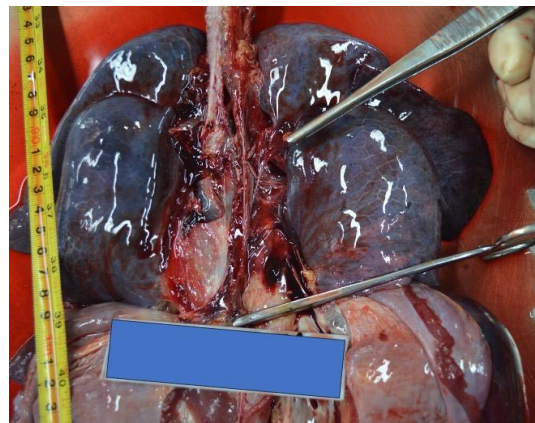


Figure 2

Internal examination:

Internally, the strap muscles of neck were contused with ecchymosis of the surrounding tissues. Contusion was present over right chest wall involving the 1st to 3rd intercostal spaces. Further thoracic examination revealed 50 ml of blood stained fluid in the pleura bilaterally. Exploration of the trachea revealed blood stained fluid (Figure 4).

Transection of the lower part of the trachea and the right main bronchus was present near the bifurcation of the trachea with extravasation of blood into the surrounding tracheal and para-tracheal region (Figure 2 and 3).

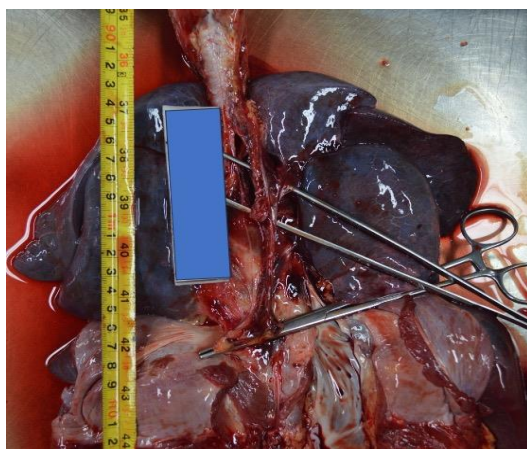


Figure 3

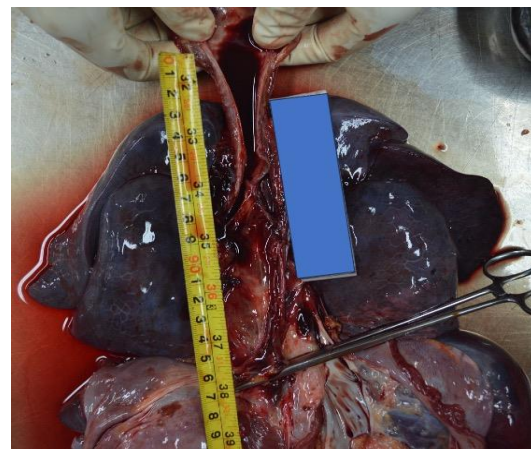


Figure 4

DISCUSSION

In chest injuries damage can be sustained to either the chest wall or to the contents.³ At times tracheobronchial damage may be the only serious injury encountered.⁴ Blunt trauma to the chest can lead to a devastating and potentially life-threatening injury: tracheal rupture. The trachea, or windpipe, is susceptible to damage from significant force, commonly resulting in rupture of the posterior membranous portion. However, anterior tracheal rupture near the carina, the point where the trachea divides into the bronchi, is an exceedingly rare but catastrophic occurrence.

The consequences of tracheal rupture can be severe. Death occurs in approximately 30% of patients with tracheal tears.² Air escaping from the trauma site can disseminate

through the mediastinum, the region surrounding the heart and great vessels, potentially causing cardiac tamponade. Additionally, air leakage can compromise respiratory function, leading to respiratory distress or failure.

In our case rupture there was rapid antero-posterior compression of the chest leading to the rupture of the trachea at the carina and the right main bronchus in its proximal part. The cause of death was opined as sequelae of injury to the right main bronchus as a result of blunt force trauma to the chest.

CONCLUSION

Non-penetrating blunt force injuries to the chest can result in significant internal damage to vital organs. Interestingly, these internal injuries can occur with or without visible external evidence of trauma to the chest wall. This phenomenon highlights the importance of thorough evaluation and diagnosis, as external appearances can be deceiving. Autopsy surgeons and forensic pathologists must remain alert to this potentially fatal injury, ensuring thorough examination and accurate documentation to facilitate justice and improve trauma care.

Conflict of interest: The authors declare that they have no conflict of interest.

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