Severe Thoracic Impalement Trauma Leading to Bronchial Injury: Conservative Management as a Viable Option

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INTRODUCTION

PEDİATRİC TRACHEOBRONCHIAL INJURIES
Rare and life-threatening [1]

The absence of pediatric-specific protocols often leads to aggressive surgical interventions based on adult approaches.[2]

Conservative management may be a safe and effective alternative selected pediatric cases, reducing surgical morbidity and complications.[3]

CASE PRESENTATION

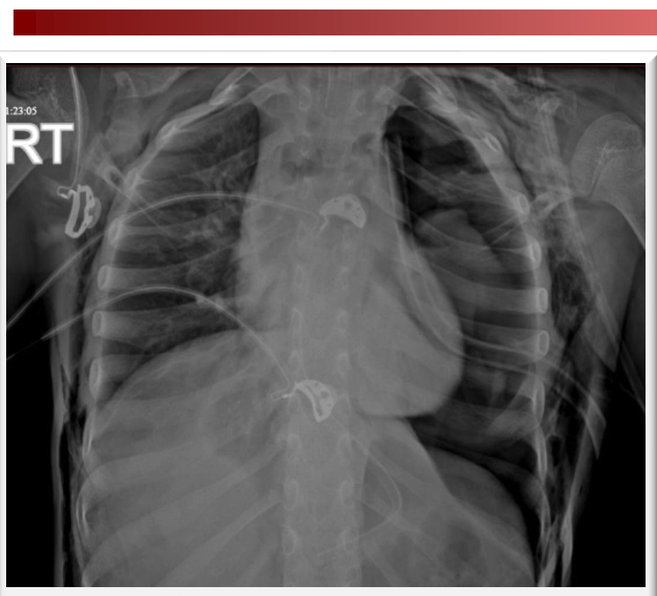

Figure 1: Chest X-ray on admission showing left pneumothorax, mediastinal shift, subcutaneous emphysema, and chest tube placement.

7-year-old boy

Rural farming village

Fall onto a 30 cm iron rod
→ **thoracic impalement**

→ Left chest wall, third intercostal space at midclavicular line

Initial Management: Primary wound closure performed at local health facility

Day 2: Patient transferred with respiratory failure requiring intubation → transferred to our ICU

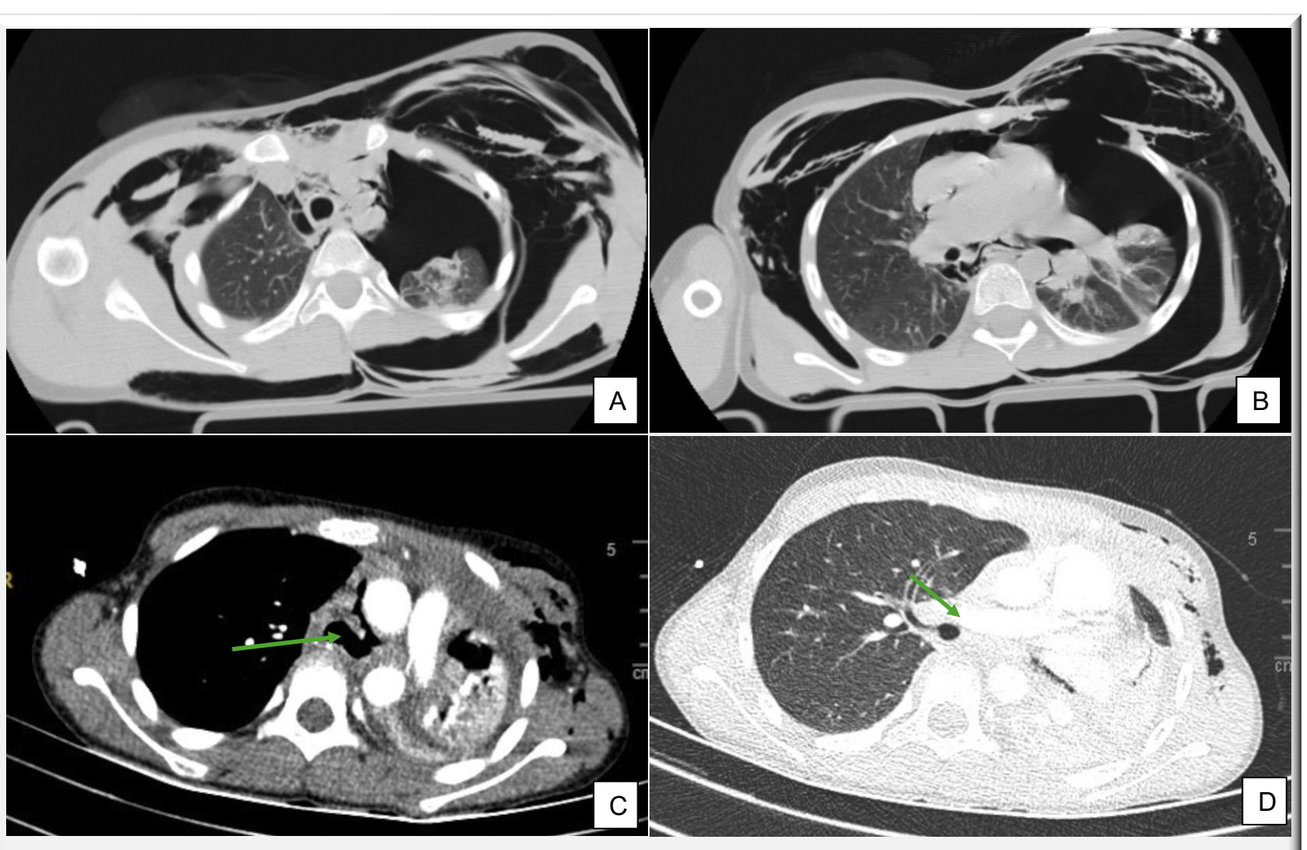

Figure 2: Thoracic CT scan findings. (A) Left-sided pneumothorax with lung collapse; (B) Massive pneumomediastinum with extensive air dissection; (C, D) 2-cm focal laceration near the left main bronchus origin (arrows) with peribronchovascular air tracking.

Day 5: Successfully extubated

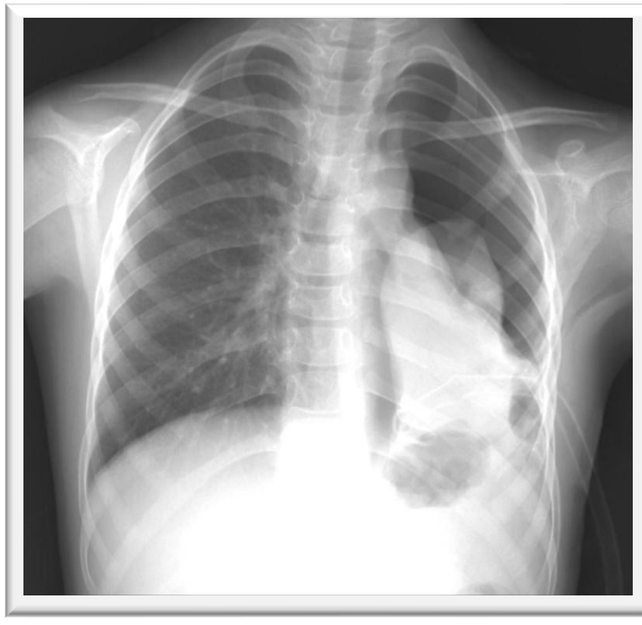

Figure 3: Post-extubation Chest X-ray imaging.

Total left lung collapse with recurrent pneumothorax

Follow-up CT: Minimal pneumomediastinum, distal bronchial narrowing (likely mucus plug or hematoma)

***Stable despite radiological findings*

- **Day 15:** Multidisciplinary decision for bronchoscopic evaluation
- Surgical teams on standby
  → venovenous ECMO prepared
- **Diagnostic Rigid Bronchoscopy Findings**:

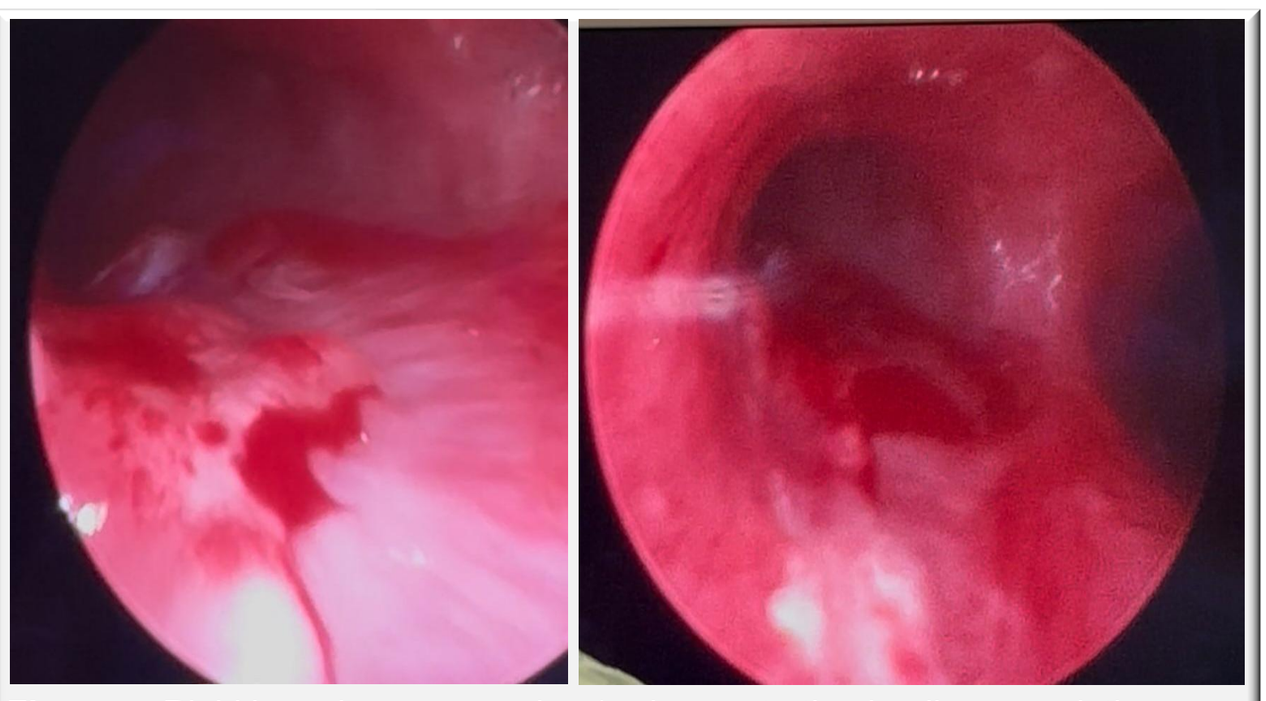

Figure 4: Rigid bronchoscopy on day 15 demonstrating healing granulation tissue at the injury site with intact mucosa, no active air leak, and patent airway without stenosis or foreign body.

Figure 5: Follow-up chest X-ray showing complete resolution of atelectasis, fully expanded left lung, and normalized mediastinal position following conservative management.

Non-invasive positive pressure ventilation

Complete resolution of atelectasis achieved

Day 20: Discharged on without surgical intervention
Ongoing follow-up for mild branchial plexus injury

CONCLUSION

For **selected pediatric bronchial injuries**
CONSERVATIVE MANAGEMENT
→ safe and effective alternative to surgery

BRONCHOSCOPY + CLINICAL MONITORING
→ confirm airway healing
→ avoid unnecessary thoracic exploration
→ reduce morbidity

MULTIDISCIPLINARY APPROACH is essential for successful conservative management of these rare and complex injuries.

REFERENCES

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3. *Prokakis C, Koletsis EN, Dedeilias P, et al. Airway trauma: a review on epidemiology, mechanisms of injury, diagnosis and treatment. J Cardiothorac Surg. 2014;9:117.*