

Infrequent Foreign Posttraumatic Body in the Chest: A Case Report

Volkan Sarper Erikci^{1*}, Elif Abay¹, Tunç Özdemir¹ and Gökhan Köylüoğlu²

¹Departments of Pediatric Surgery, Tepecik Training Hospital, Sağlık Bilimleri University, Izmir, Turkey

²Departments of Pediatric Surgery, Tepecik Training Hospital, Katip Çelebi University, Izmir, Turkey

***Corresponding Author:** Volkan Sarper Erikci, Departments of Pediatric Surgery, Tepecik Training Hospital, Sağlık Bilimleri University, Izmir, Turkey.

Received: May 11, 2018; **Published:** June 27, 2018

Abstract

Retained foreign bodies (FB) in the chest wall after a penetrating chest trauma are rare in children. In order to keep the prognosis good, these patients should undergo a rapid and accurate diagnostic work-up and an adequate surgical management is paramount. Here we present a 8-year-old boy with a penetrating thoracic wall injury from a broken door during play in home. A dagger-shaped glass penetrated the chest wall between ribs 2-3 anteriorly and it was successfully removed from the chest wall. It is aimed in this report to review the presentation, imaging findings and management of penetrating thoracic wall trauma in children with special reference to post-traumatic retained FBs and the topic is discussed under the light of relevant literature.

Keywords: Chest Wall Trauma; Retained Foreign Body; Children

Introduction

In contrast to other locations, FBs in thoracic wall after a penetrating trauma in children have been rarely reported. A variety of FBs in the chest after a trauma may be observed and include shell fragments, bullets, shrapnel, pieces of clothing, bones, rib fragments and a piece of glass as in the presented case. Rapid and accurate diagnostic work-up followed by an appropriate surgical management is important. In this report, a 8-year-old boy having a thoracic wall injury with a penetration of a dagger-shaped glass is presented and discussed.

Case Description

A healthy 8-year-old boy with a penetrating thoracic wall injury from a broken door during play in home was brought to the emergency department by his parents. He was otherwise normal and physical examination revealed a penetrating wound with a diameter of 2 cm on the anterior wall of the left hemitorax close proximity to sternum which was presumed to be the entry site of the FB (Figure 1). Chest roentgenogram and computed tomography revealed neither hemo-pneumothorax nor signs of pulmonary parenchymal injury but a long and radiopaque FB was noted in the left hemithoracic wall (Figures 2 and 3). The patient was transferred to the operating room for wound exploration and surgical treatment under general anesthesia was performed. The entry site of FB on the left hemithorax was widened medially and laterally. A piece of dagger-shaped glass violating intercostal muscles with a length of 4.5 cm was found with its sharp tip looking downwards located between ribs 2 - 3 anteriorly and was easily extracted (Figure 4). Hopefully the visceral and parietal pleura was found to be intact without producing any pulmonary parenchymal injury. Primary suture closure with fine absorbable materials was performed and the postoperative recovery was uneventful. Postoperative chest roentgenogram was normal (Figure 5). The child made a good post-operative recovery and was discharged home well the following day.



Figure 1: The infant with a penetrating wound with on the anterior wall of the left hemitorax close proximity to sternum.

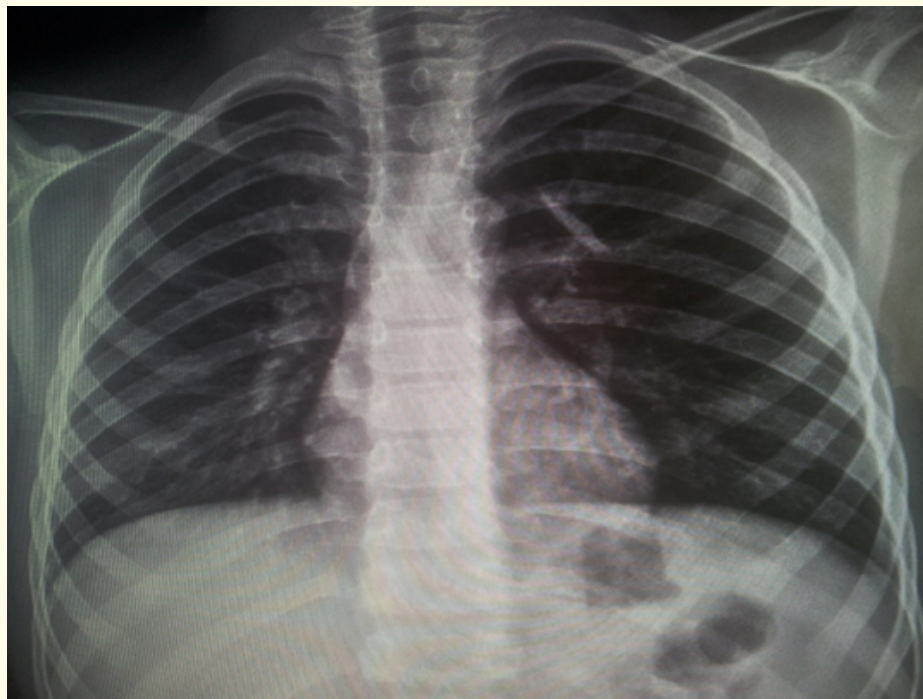


Figure 2: Posteroanterior radiograph showing the radiopaque FB in the left upper hemithorax.

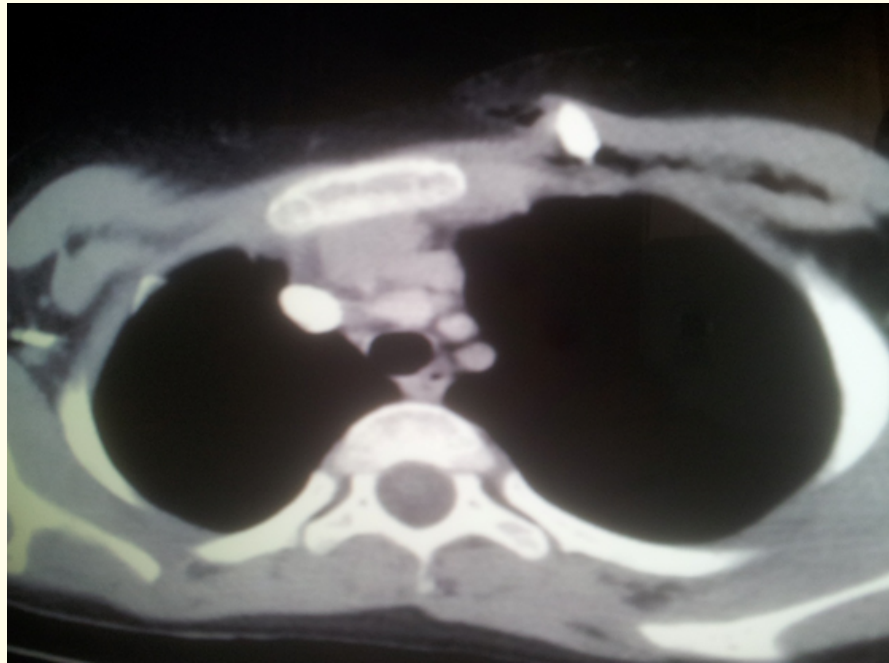


Figure 3: Computed tomography image revealing the retention of FB in the left thoracic wall.



Figure 4: The dagger-shaped glass after removal from chest wall.

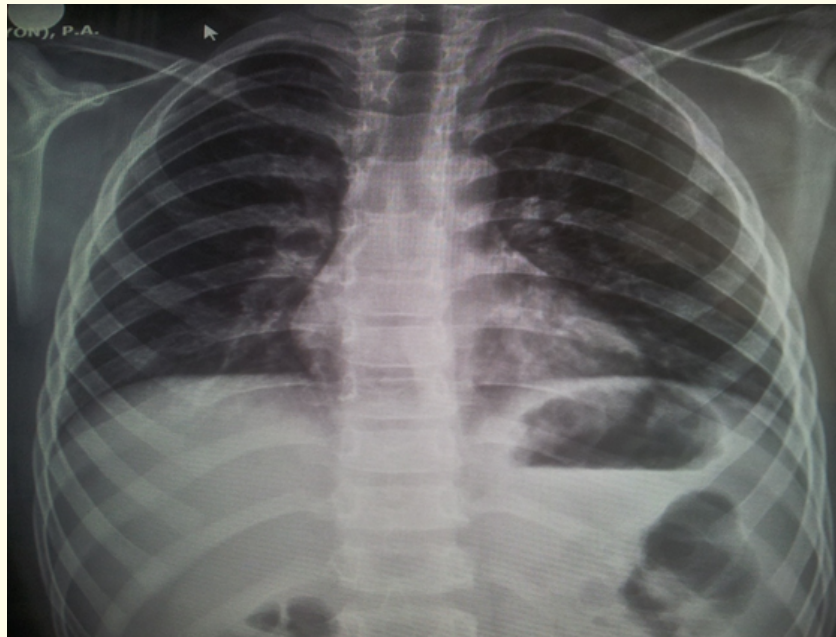


Figure 5: Posteroanterior radiograph of the chest after removal of FB.

Discussion

In contrast to other locations, FBs in the chest wall in children have rarely been reported [1]. These reports usually include case reports usually coming from adult series and there is no consensus with regard to treatment [2-7]. Literature on the retention of FBs in the chest wall pertaining children after a trauma is scarce [1,8]. Penetration of a FB into the chest wall may result from direct injury to the thoracic wall. Although it is stated that most lung injuries can be managed conservatively, to leave a FB in the chest may produce major concern to both the patients and the families [8,9-12]. Because leaving the FB in chest wall may predispose the patient to a potential infection at future, as a general rule, FBs in the chest wall should be removed whenever possible.

It has been reported previously that thoracic FBs may be classified into three types according to the cause [13]: These include type-I (Aspiration), type-II (Trauma or accident) and type-III (Iatrogenic). Type-II thoracic traumas may occur due to either thoracic FBs originating from a laceration or to an injury by gun or explosion. It has also been reported that penetrating wounds of the thorax caused by a knife, a fragment of glass or a bullet may induce pneumothorax in 20% of such cases or hemothorax in 60 - 80% [13]. Besides there is a danger of an associated damage to other intrathoracic structures which may be detected by clinical and imaging findings [14]. Hopefully the visceral and parietal pleura including the lung parenchyma was found to be intact without any pneumothorax or hemothorax in our patient. It should be kept in mind that these injuries may easily be missed if surgical exploration of the wound is not properly performed.

Mechanism of the injury is also important in these patients and the clinician getting the history from the patient should pay great attention to this. Radiological findings are also important in identifying these FBs and in assisting with their removal. The metallic and high-attenuation FBs can easily be detected by direct roentgenography or CT. Interestingly, although it is often stated that “nonleaded” glass is radioluscent, in fact almost all types of glass are radiopaque [13,15]. The FB in the presented case was detected in the imaging studies preoperatively and after surgical treatment it was found to be a piece of glass with a dagger shape (Figure 4). Sonography may be the cho-

ice of investigation if there is a suspicion of a nonradiopaque FB. Long standing FBs may incite the formation of a foreign body granuloma and magnetic resonance imaging (MRI) has been proposed in diagnosing these cases but findings on MRI are usually nonspecific [16].

Special attention should be reserved for patients with iatrogenic chest wall traumas. Literature on this issue usually comes usually from adult series and include gauze granuloma (gossypiboma), complications related to thoracic plombage, gold acupuncture needle and esophageal speech device [17-20]. Iatrogenic injury to chest wall during the pediatric age is extremely rare. It has been stated previously that a biopsy forceps has been broken during thoracoscopy in a 2-year-old child [1]. Retention of these iatrogenic FBs may be associated with medicolegal implications that sometimes can influence the choice of treatment and these FBs should be removed.

Conclusion

In conclusion, FBs in the chest wall should be removed whenever possible. Forgotten FBs may produce medicolegal implications for clinicians dealing with these patients. Further surgical management options including thoractomy or video assisted thoracoscopy may be necessary for the patients with retention of FBs. This report is unique in that it highlights the unpredictability of a glass injury in a child with penetrating thoracic wall trauma. If proper surgical exploration of the wound is not performed, these injuries may easily be missed. This report adds to literature that the physicians and radiologists should be aware of this rather rare clinical entity and appropriate surgical intervention is paramount.

Bibliography

1. Weissberg D and Weissberg-Kasav D. "Foreign bodies in pleura and chest wall". *The Annals of Thoracic Surgery* 86.3 (2008): 958-961.
2. Brodsky JB, *et al.* "Thoracoscopy for retrieval of intrathoracic foreign bodies". *Anesthesiology* 54 (1981): 91-92.
3. Moore JP, *et al.* "Extraction of an intrapleural foreign body with a flexible endoscope". *The Journal of Thoracic and Cardiovascular Surgery* 91.6 (1986): 929-936.
4. Bartek JP, *et al.* "Thorascopic retrieval of foreign bodies after penetrating chest trauma". *The Annals of Thoracic Surgery* 63.6 (1997): 1783-1785.
5. Dieter RA Jr and Dieter RA 3rd. "Unusal and infrequent indications for thoracoscopy". *International Surgery* 83.1 (1998): 15-20.
6. Williams CG, *et al.* "Video-assisted thoracic surgery removal of foreign bodies after penetrating chest trauma". *Journal of the American College of Surgeons* 202.5 (2006): 848-852.
7. von Riedenauer WB, *et al.* "Video-assisted thoracoscopic removal of migratory acupuncture needle causing pneumothorax". *Chest* 131.3 (2007): 899-901.
8. Sersar SI, *et al.* "Impacted thoracic foreign bodies after penetrating chest trauma". *Asian Cardiovascular and Thoracic Annals* 24.8 (2016): 782-787.
9. Petricevic A, *et al.* "War injuries of the lungs". *European Journal of Cardio-Thoracic Surgery* 11 (1997): 843-847.
10. Musgrove CD. "Gunshot wounds of chest with penetration of lung: extraction of bullets: recovery". *British Medical Journal* 1.1900 (1897): 1342-1343.
11. Nixon JA. "Closed wounds of the chest and the physician's place in a chest team-II". *British Medical Journal* 5 (1941): 24-26.
12. "Late extraction of missiles embedded in the lung [editorial comment]". *Annals of Surgery* 69.1 (1919): 90-4.

13. EXTRACTION_OF_MISSILES_EMBEDDED_IN_THE_LUNG_16.aspx. Accessed August 25, 2016.
14. Kim TJ, *et al.* "Foreign bodies in the chest: how come they are seen in adults?". *Korean Journal of Radiology* 2.2 (2001): 87-96.
15. Baharloo F, *et al.* "Tracheobronchial foreign bodies: presentation and management in children and adults". *Chest* 115.5 (1999): 1357-1362.
16. Donnelly LF, *et al.* "The multiple presentation of foreign bodies in children". *AJR* 170 (1998): 471-477.
17. Monu JUV, *et al.* "Soft tissue masses caused by long-standing foreign bodies in the extremities: MR imaging findings". *AJR* 165.2 (1995): 395-397.
18. Choi BI, *et al.* "Retained surgical sponge: diagnosis with CT and sonography". *AJR* 150 (1988): 1047-1050.
19. Wigneswaran WT and Ramasastry SS. "Paraffin plompage of the chest revisited". *The Annals of Thoracic Surgery* 62.6 (1996): 1837-1839.
20. Imray TJ and Hiramatsu Y. "Radiographic manifestations of Japanese acupuncture". *Radiology* 115.3 (1975): 625-626.
21. Johnson A. "Voice restoration after laryngectomy". *Lancet* 343.8895 (1994): 431-432.

Volume 7 Issue 7 July 2018

©All rights reserved by Volkan Sarper Erikci, *et al.*