

CASE REPORT

Migrated subcutaneous sharp foreign body in the anterior chest wall: An unusual presentation

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Key Clinical Message

Migration of any foreign body can cause potentially life threatening complications and should be reviewed by a multidisciplinary approach for the management. Diagnosis can be challenging; a history of foreign body injury could be suspicious.

Abstract

Foreign body injury to the chest wall can be an emergency situation and require a multidisciplinary approach for the management of the condition. Migration of the foreign body, though rare, can lead to potentially life threatening complications and require a multidisciplinary approach for the localization of the foreign body and subsequent management of the condition. A 50-year-old male presented to the emergency department with the complaint of left sided chest pain. Upon examination, the patient was found to have a penetrating injury 6 years back by a sharp object. Radiological investigations helped in the localization of the migrating foreign body, which was removed with effective surgical intervention. The postoperative chest x-ray was normal, the patient was asymptomatic and thus the patient was discharged on the same day following surgery.

KEYWORDS

extraluminal migration, foreign body, migrated foreign body, radiology, subcutaneous migration

1 | INTRODUCTION

Injury to the chest wall can cause several life-threatening conditions and emergency surgical intervention is usually required. A large foreign body can easily be located, however if the foreign body gets impacted between the soft tissues, there may only be skin and soft tissue damage in the outside but serious vascular, nervous or

musculoskeletal complications, often resulting in misdiagnosis.¹ Extraluminal foreign body migration, though rare, can lead to serious complications such as esophageal perforation, abscess, mediastinitis, atriopharyngeal fistula, tracheoesophageal fistula, carotid rupture and many more.² A multidisciplinary approach of radiologists, anesthesiologists and surgeons are needed for the localization, planning and surgery of the patients, and to

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prevent the complications.³ We hereby present a case of a 50-year-old male, carpenter by occupation, who presents with the complain of pain in the left side of the chest, with the history of trauma in the right side 6 years back, who was found to have a foreign body migrated towards the left sided chest wall touching the pectoralis muscle, who was managed successfully with the help of a multidisciplinary approach.

2 | CASE HISTORY

A 50-year-old male, carpenter by occupation presents to the Emergency Department with a history of left sided chest pain, gradual onset, pricking sensation over the chest wall with no relevant aggravating, relieving factors or any associated conditions for 2–3 weeks. On examination, the general condition of the patient was fair, BP was 130/90 mmHg, HR was 82 bpm, RR 24/min, and SpO₂ of 98% on room air. Clinical examination revealed a healed wound in the right side of the chest.

3 | METHODS

ECG was done immediately for the ongoing chest pain, which showed normal sinus rhythm. Baseline investigations were done. Hb, TLC, DLC, LFT, serum amylase, serum lipase, and cardiac troponin I were within normal limits. A chest x-ray (Figure 1A,B) was ordered, which revealed an opaque structure within the left side of the chest. Upon inquiry, it was revealed the patient had a history of superficial cut injury caused by a sharp object (saw) in the right sided anterior chest wall 6 years back at his workplace. The superficial cut injury was managed by wound cleaning, suturing, and regular dressing. x-ray was not done as there were no nearby primary care centers and patient did not recall any other complications

that warranted further investigations. The patient had no complaints during these 6 years. USG chest showed a hyperechoic linear structure with posterior acoustic shadowing in deep subcutaneous plane (Figure 2). CT scan (Figure 3) was done to localize the foreign body and estimate its impact. After the proper localization and diagnosis, the patient was advised for surgery for the removal of the foreign body.

4 | CONCLUSION AND RESULTS

Foreign body removal was done, and the patient was discharged on the same day following day care surgery (Figure 4). Repeat x-ray showed absence of any opacity seen in previous x-ray (Figure 5). The procedure was uneventful. The patient presented to follow up on Day 3 following surgery and the patient had no any further complaints.

5 | DISCUSSION

Foreign bodies may be located superficially or deeply, and may require radiological investigations to demonstrate the exact location for the surgical approach for foreign body removal. Conventional radiography such as x-ray, remains the first line investigation of choice for the preliminary imaging due to its high rate of success, low cost and low dose of radiation exposed.⁴ It is very necessary to locate the exact site of foreign body due to the proximity to the tendons, neurovascular structure and other visceral structure. Furthermore, if the foreign bodies get undetected, it may lead to a worse patient outcome, longer hospital stays and repetitive surgeries.⁴ Extraluminal migration is rare and can lead to potentially life threatening complications.² Remson et al. in 1983 reported 43 extraluminal migration of foreign

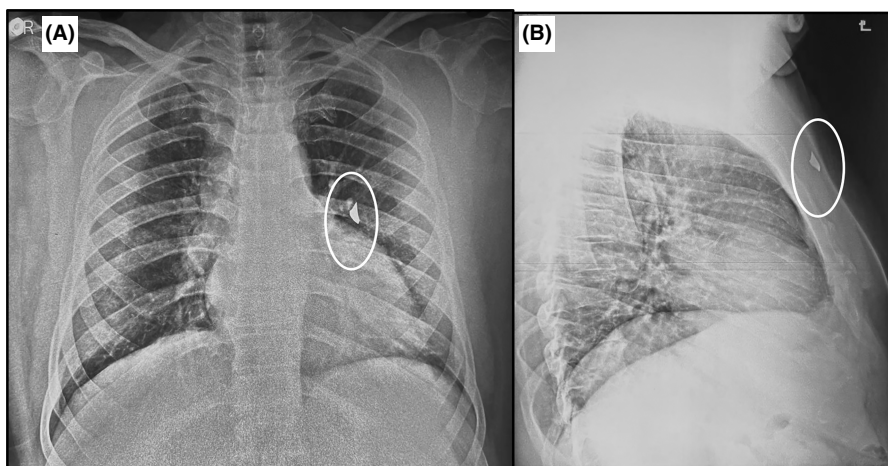


FIGURE 1 (A, B) Chest radiograph frontal and lateral view showing wedge shaped opacity (white circle) in left anterior chest wall.

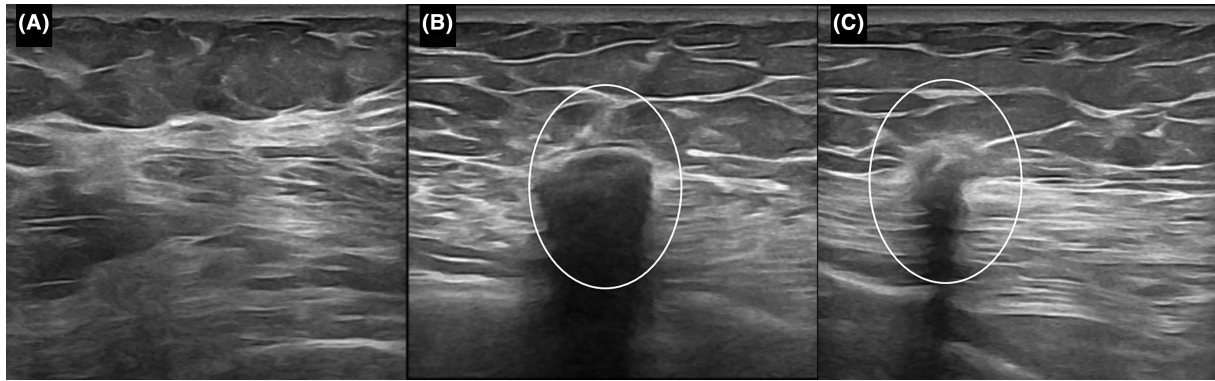


FIGURE 2 USG images of (A) right anterior chest wall showing normal subcutaneous fat and pectoralis muscles. No foreign body seen. USG longitudinal (B) and transverse (C) images showing hyperechoic object showing posterior acoustic shadowing (white oval shape) along deep subcutaneous plane with some part in pectoralis muscle. USG marking of the site was done and patient was posted for surgery.

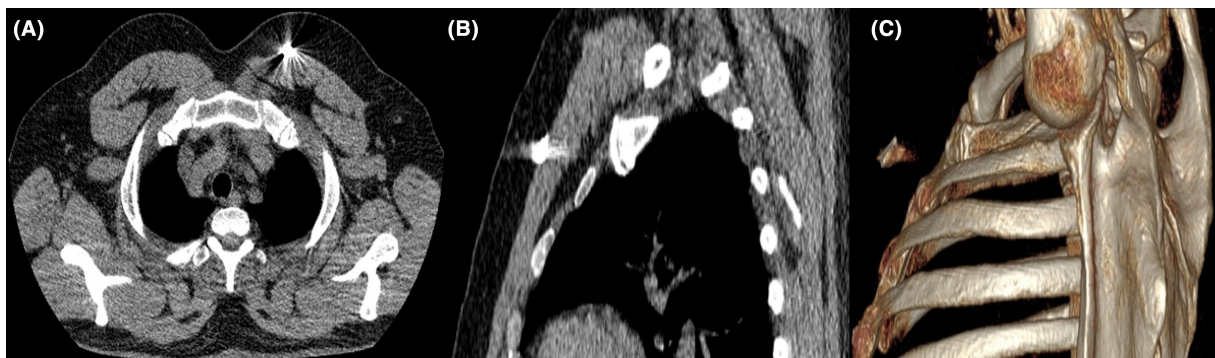


FIGURE 3 Axial (A), Sagittal (B) and 3-dimensional virtual rendered images of chest CT (C) showing dense structure abutting pectoralis major and causing beam hardening artifacts.

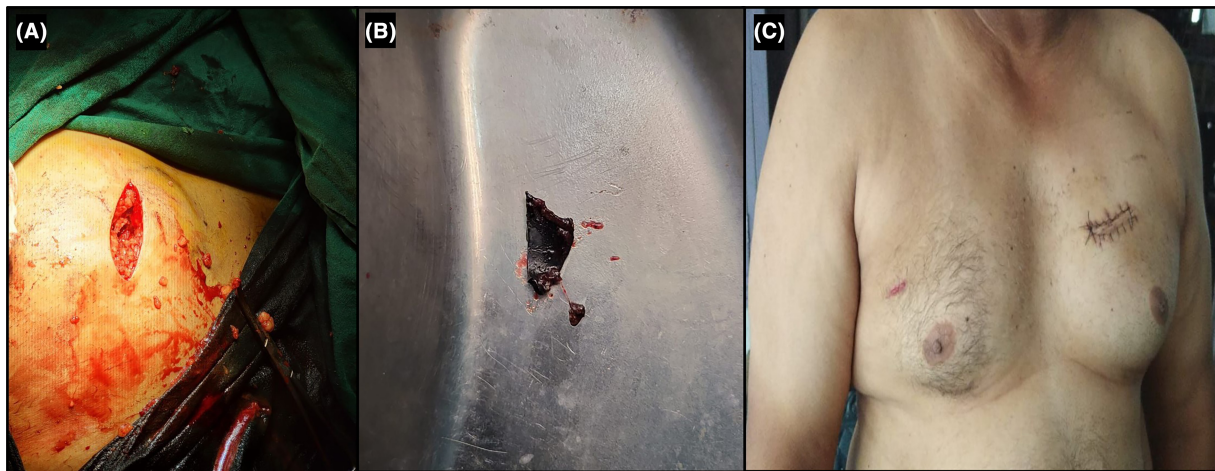


FIGURE 4 (A) Intra-operative picture showing incision along the subcutaneous tissue. (B) Sharp foreign body (part of saw) removed from the local site. (C) Post surgery clinical picture showing healed scarred wound in the right side and post surgical wound with skin sutures on the left side.

bodies among the 321 cases.⁵ Foreign bodies, which are sharper have higher tendency of penetrating the muscular wall. The mechanism of migration is believed to be due to the contraction of the muscles and viscera during voluntary or involuntary movements.⁶

Sakuma et al. reports the effective removal of a superior mediastinal foreign body in a 74-year-old male, by video-assisted mediastinoscopy.⁷ In order to prevent the damage to the surrounding organs, it is advised to not remove the foreign body forcibly rather to dissect the



FIGURE 5 Postoperative chest radiograph showing absence of any opacity suggesting successful removal.

surrounding tissues carefully.⁷ A multidisciplinary approach is required; some foreign bodies may not be visible only via conventional imaging and may require advanced technologies for the further management.^{3,4,8,9} Sharma et al. presents and labels a case of retained Stienman pins interesting for how the pin remained undetected even after “removal” of the pin.¹⁰ Similarly, Moshin et al. also reported a case of a 24 year male, presenting with the complaint of subcutaneous swelling in the neck which gradually migrated to the subcutaneous plane, on the anterior chest. A series of radiological investigations including CT scan helped in the diagnosis and management of the case.² Though the mechanism of migration of FB still remain a topic of debate, it is believed to occur due to increased muscular activity in young and bone resorption in the elderly. The migration into the thoracic cavity can be explained by the recurrent respiration and due to the negative intrathoracic pressure.¹⁰

Extraluminal migration can lead to some potentially life threatening complications.^{2,6,10} Though it may remain clinically silent for years, there is always a risk of late sequelae, in the form of infections, abscess, fistulas, necrotizing fasciitis, and also potential musculoskeletal, and neurovascular complications.¹¹ Moreover, undetected or retained foreign bodies may also involve medicolegal consequences.^{12,13} A retrospective study of 377 patients in a tertiary center in Turkey, revealed soft tissue infections to be the major complications following abscess, osteomyelitis, and nerve and tendon injuries.¹⁰ Radiological imaging is used to localize the foreign body, and it also serves as a “road map” to the surgeons for the effective management of the condition.⁶ Various imaging modalities maybe required depending upon the condition of the patients, as all the materials may not be detected by a single test and to be

familiar with the diagnostic pitfalls to avoid any false positive results.^{14,15} In conclusion, migration of foreign body is a rare but a life-threatening condition. The management requires a multispecialty approach for the prompt and effective management of the condition. Radiological diagnosis is usually reliable and can be very cost effective in most of the cases. Though most commonly encountered in the children, this rare event can also be observed among the adult and more vulnerable population. Complications can also lead to high mortality, most commonly due to the vascular complications, which can be prevented by timely approach.

AUTHOR CONTRIBUTIONS

Shritik Devkota: Conceptualization; formal analysis; investigation; methodology; resources; supervision; validation; visualization; writing – review and editing. **Prajwal Pokharel:** Data curation; formal analysis; investigation; software; writing – original draft; writing – review and editing. **Samiksha Lamichhane:** Formal analysis; investigation; methodology; resources; software; writing – review and editing. **Harsha Bhola:** Conceptualization; investigation; resources; supervision; validation. **Tajinder Bhalla:** Conceptualization; formal analysis; methodology; resources; supervision; visualization.

ACKNOWLEDGMENTS

We thank Dr. Kamal Baghi and Dr. Saurabh Baghi for the helpful insights.

FUNDING INFORMATION

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CONFLICT OF INTEREST STATEMENT

The authors have declared that no competing interests exist.

DATA AVAILABILITY STATEMENT

The datasets analyzed during the current study are available from the corresponding author upon reasonable request. Additionally, comprehensive literature sources used for the literature review are cited appropriately within the manuscript.

ETHICS STATEMENT

The authors declare that the procedures were followed according to the regulations established by Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in 2013.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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How to cite this article: Devkota S, Pokharel P, Lamichhane S, Bhola H, Bhalla T. Migrated subcutaneous sharp foreign body in the anterior chest wall: An unusual presentation. *Clin Case Rep.* 2024;12:e8565. doi:10.1002/ccr3.8565