



## Clinical Case

# Long Standing Retained Knife Blade after Stabbing to the Chest

## *Rétention prolongée d'un couteau après plaie pénétrante au niveau du thorax*

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### RÉSUMÉ

**Background.** Retained knife blade after a chest injury is a rare condition which can cause many complications with regards to important anatomical structures situated in the chest, particularly the mediastinum and the possibility of migration of the retained foreign body. As at now, only few cases have been reported in literature. **Case presentation.** We report the case of a 38-year old male Cameroonian, with no significant past medical history, referred to our out-patient department, for left shoulder pain following a penetrating chest injury seven weeks prior to the consultation. An intra-thoracic metallic foreign body resulting from a neglected penetrating chest injury was diagnosed. A chest CT scan permitted the precision of the foreign body with respect to internal chest structures. With the aide of this precision, under local anesthesia, the foreign body was then removed successfully. The patient was discharged after a period of three uneventful postoperative days and three control chest X-rays revealing no complications. **Conclusion.** Physical examination following a penetrating chest injury may not be sufficient to diagnose a chest foreign body. Therefore, a high index of suspicion should be kept for cases presenting with a penetrating chest injury, with emphasis on clinical examination, the mechanism of injury; supported by a chest X-ray and/or CT-scan when available.

### ABSTRACT

**Background.** L'impaction d'un couteau après une plaie thoracique pénétrante peut entraîner de graves conséquences causées des structures vitales se trouvant au niveau de la poitrine, surtout au niveau du médiastin ou le corps étranger peut même parfois migrer ailleurs. Très peu de cas ont rapportés dans la littérature à ce sujet. **Cas clinique.** Nous rapportons le cas d'un jeune homme de 38 ans sans antécédents particuliers qui a été référé pour douleur à l'épaule gauche après une plaie par arme blanche 7 semaines auparavant. Un corps étranger métallique intra thoracique a été démontré par les examens diagnostiques. La tomodensitométrie a permis de localiser la lame et a démontré que les structures vasculaires du médiastin étaient intactes. Cette précision anatomique nous a aidés à enlever le morceau de lame avec succès. Le patient est sorti de l'hôpital au 3ème jour postopératoire. La radiographie de control était sans particularités. **Conclusion.** L'examen clinique peut ne pas être suffisant après une plaie pénétrante et un bilan radiologique être très utile. Une importance particulière doit être accordée à la recherche des complications et il ne faut pas hésiter à demander des bilans radiologiques.

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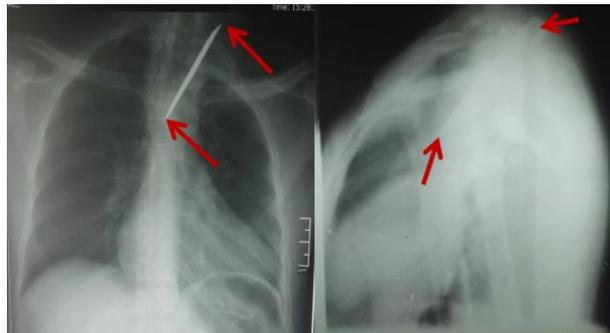
## INTRODUCTION

Delayed diagnosis of post traumatic metallic foreign bodies of the chest is rare. Only few cases have been reported<sup>1-4</sup>. Herein, we report the case of a 38 years old man in whom an initial undiagnosed thoracic knife was removed successfully after an incision on the initial traumatic penetrating point. We illustrate the importance of carrying out a systematic chest X-ray while examining a patient with penetrating chest wall injury; and the possibility to avoid thoracotomy.

## CASE PRESENTATION

A 38 years-old Cameroonian male patient with no significant past history, presented at the out-patients department, with a persistent left shoulder pain seven weeks after a penetrating left chest injury. The patient during altercation was stabbed at the left para-scapular region midway between the scapula and the spine. The wound and the exteriorized hemorrhage prompted an initial consultation at a primary health care center, where the wound was sutured. Analgesics, anti-tetanic serum and antibiotics were administered and the patient was discharged 24 hours later complaining of mild left shoulder pain. The persistence of this pain motivated

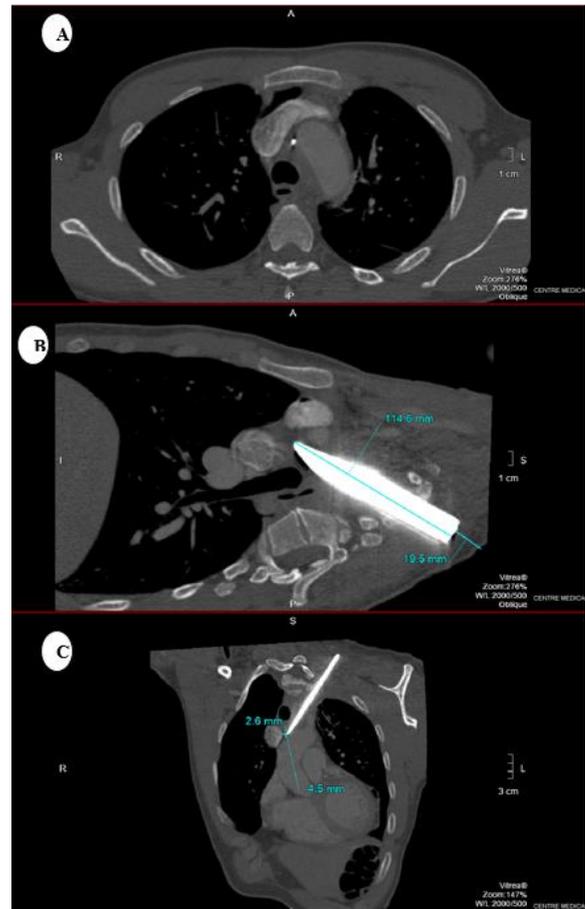
another consultation at a tertiary hospital four weeks later. A chest X-ray requested revealed a foreign metallic body within the chest wall (**Figure 1**).



**Figure 1:** Chest X-ray showing the foreign body.

The patient was then referred to our hospital for better management.

Clinical examination revealed a patient with normal vital signs: blood pressure of 120/80 mmHg, pulse of 68 beats per minute, respiratory rate of 24 breaths per minute and a temperature of 37.4° C. A linear, horizontal scar of about 2.5cm in length was visible on the left para-scapular region; midway between the scapula and the spine. The examination of the thoracic region was normal. Elsewhere, the physical examination was unremarkable. A chest Computed Tomography (CT) scan revealed an intrathoracic metallic foreign body (knife) with the tip at the mediastinum; 1mm to the aorta cross, 2.6 mm to the inferior vena cava and 4.5 mm to the trachea and covered by a fibrosclerotic sheath (**Figure 2**). After discussion with radiologist, a sonogram was done to measure the distance between the retained knife and the skin.



**Figure 2:** CT-Scan view of the foreign body. (long standing retained knife blade after stabbing to the chest)



**Figure 2:** CT-Scan view of the foreign body (long standing retained knife blade after stabbing to the chest)

The diagnosis of an intrathoracic metallic foreign body complicating a neglected left thoracic injury was made. A multidisciplinary discussion was held between thoracic surgeons, radiologists and anesthetists. The decision was made to attempt removing it through the old scar with arguments in favor of this being that: the knife was retained in a visible fibrotic sheath; the patient had no signs of respiratory distress. However, the Operating room was set-up for a sternotomy in case there was any resistance pulling the knife out locally.

After a pre-operative work-up (revealing a prothrombin time: 73.5%; cephalic activated time: 35.2s; International normalized ratio: 1.25; Blood group: A rhesus positive, white blood cell: 6450; Hemoglobin level: 12.5 G/l; Sedimentation rate: 76 mm/1<sup>st</sup> hour; random glycemia: 1.08 g/l,) the patient was installed in a prone position on the operating table. After infiltration with local anesthesia (xylocaine with adrenaline 2%), a 3cm incision following the previous scar was done, the trapezius muscle was carefully and progressively dissected with Metzenbaum scissors until the top of the knife was visible. The knife was then pulled out through the dissected pathway, and removed slowly, gently and successfully (**Figure 3**).



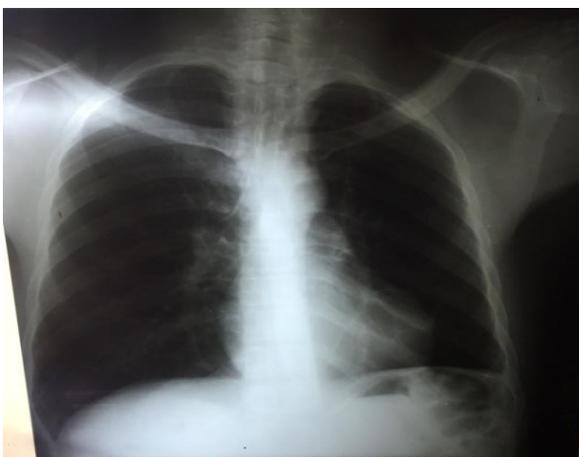
**Figure 3:** the foreign body removed: a Knife of 11 cm.

The trapezius muscle was closed with two points of stitches using an absorbable suture, and the skin closed with three vertical mattress suture points with a non-absorbable suture. An immediate post operative chest X-ray conducted did not reveal any signs of complications (**Figure 4**).



**Figure 4:** immediate postoperative chest-X ray

Following an uneventful postoperative period of 3 days, with 3 postoperative chest X-rays, the patient was discharged on analgesics and antibiotics, and a follow-up visit was scheduled one week later. The non absorbable sutures were removed after one week and the patient presented with no complain during a one-month period of follow-up and a satisfactory chest X-ray one month after the surgery (**Figure 5**).



**Figure 5:** chest-X rays one month after surgery.

## DISCUSSION

We presented the case of a 38 years old man in whom the diagnosis of an intra-thoracic metallic foreign body was missed following only a physical examination carried out in a primary care center with no trauma surgeon available. Chang *et al.*<sup>1</sup> in 2012 reported a case of a woman in whom a retained chest wall knife was not discovered, even after a thorough physical exam carried out by a trauma surgeon. This magnifies the importance of systematic chest X-rays in patients presenting with penetrating chest injury.

In this case report, a Chest CT scan permitted to describe anatomical connections of the thoracic retained knife blade to consider the best procedure for its removal. This was possible because the scarred tissue around the knife protected it from nearby vessels. This method of extraction of a thoracic foreign body was also described by Apiliogullari *et al*<sup>3</sup>. In developed countries, video-assisted thoracoscopic surgery (VATS), and open thoracotomy are the two main ways to remove thoracic foreign bodies, with open thoracotomy being the gold standard<sup>5</sup>. In low income countries where VATS are still unaffordable, a thoracotomy may be necessary. Using the CT scan localization, we were able to avoid a sternotomy with its majors complications. One of the complications that may occur in this patient is sepsis. This complication in patients having foreign bodies is frequent<sup>1</sup>, and cannot be treated definitely unless the foreign body is removed. Fortunately, our patient did not have any infectious complication prior to and after the surgery. Another complication that may happen is migration of the foreign body with lesion of the neighboring organs and structures like the lungs and great vessels<sup>1,6</sup>. This makes the presence of this foreign body a danger for the patient's life. In our patient's case the tip of the knife was very close to the aorta, inferior vena cava and the trachea. However, these structures seemed to have been protected by the on growing fibrosis surrounding the knife. This was a further justification for prompt surgery to remove the knife.

The fibrosis also protected the vessels during the manual retrieval of the knife which surprisingly was very easy. We expected it to be feasible but not so easy.

## CONCLUSION

A chest foreign body can be missed even after a thorough physical examination. A chest-X-ray should therefore be performed systematically in patients presenting with penetrating chest injury to rule out a retained foreign body or other lesions to chest organs. Multidisciplinary management may be useful as it may simplify the management of some of these patients.

## Ethical Statement

A written informed consent was obtained from the patient for publication of this case report and pictures.

## Authors' Contributions

DC wrote the manuscript. TAB, EMT, JCM and BNN read the manuscript for corrections.

BNN took care of the patient and revised the manuscript. BNN is the guarantor of the Case. All authors approved the final version of this manuscript.

**Competing interests**

None

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