

# Ingestion of Metallic Shrapnel by a Bomb-blast Victim: A Case Report and Literature Review

Saeed A. Alsareii

Department of Surgery, Faculty of Medicine, Najran University, King Khalid Hospital, Najran, Saudi Arabia

**Correspondence:** Dr. Saeed Ali Alsareii, Department of Surgery, Faculty of Medicine, Najran University, King Khalid Hospital, Najran, Saudi Arabia. E-mail: Alsareii997@hotmail.com

## ABSTRACT

This case report describes an unusual incidence of shrapnel ingestion by a bomb-blast victim with infliction of multiple, simultaneous, penetrating injuries. Consequently, the foreign body that appeared within the lumen of cecum on the computed tomography (CT) scan was thought to have entered through one of these penetrating injuries. A 31-year-old male, who was the victim of a bomb-blast, was brought to the emergency room with multiple, penetrating wounds. The CT scan of the abdomen showed a dense metallic body within the cecum but cecal perforation was not ruled out. Exploratory laparotomy revealed a metallic body within the lumen of the cecum with no gut perforation. The metallic foreign body, which was actually ingested shrapnel, subsequently passed out in the stools. Even with the use of high-tech investigations and diagnostic tools, the clinician was unable to reach a conclusive diagnosis. Therefore, the importance of a thorough and detailed clinical history and physical examination and their interpretation should not be underestimated, and physicians should be open to a wide variety of possible causes.

**Key words:** Foreign body ingestion, Najran, shrapnel

ملخص البحث :

يصف هذا التقرير حادثة غير اعتيادية لابتلاع مريض لشظية ناتجة عن انفجار قنبلة مع حدوث جروح نافذة متعددة. احضر المريض البالغ من العمر 31 سنة إلى قسم الطوارئ. وكان يعاني من إصابته بجروح نافذة متعددة. وضحت صورة الأشعة المقطعية للبطن وجود جسم معدني داخل المعى الأعور، أجريت عملية استكشاف للمريض والتي بينت وجود جسم معدني داخل تجويف المعى الأعور لم يؤدي إلى ثقب في أي جزء من الأمعاء. وتبين ان هذا الجسم كان شظية مبتلعة وخرجت لاحقاً مع البراز. وعلى الرغم من استعمال الوسائل التشخيصية عالية الدقة لم يتم التوصل إلى التشخيص النهائي. وتؤكد هذه الحالة أهمية التاريخ المرضي وكذلك الفحص السريري والربط بينهما.

## INTRODUCTION

Ingestion of foreign bodies is a known clinical entity, primarily common in children, alcoholics, denture-wearing elderly individuals, and psychologically disturbed patients. Most of the ingested foreign bodies are coins, bones, safety pins, and razor blades.

Foreign-body ingestion may go unnoticed without any apparent symptoms. However, in some cases,

particularly those that involve ingested toothpicks and chicken or fish bones, it may result in gastrointestinal perforation with bleeding or an obstruction.<sup>[1]</sup> These ingested foreign bodies, which may be found anywhere in the gastrointestinal tract or even outside the gastrointestinal tract because of transmural migration, rarely lead to abscesses and esophagoaortic fistulae formation.<sup>[2,3]</sup>

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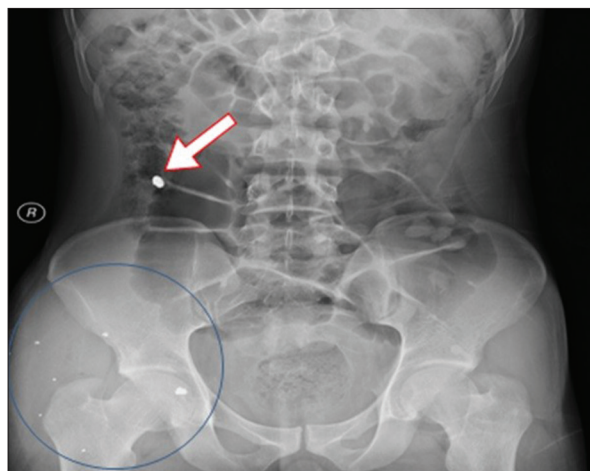
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This case report focuses on a patient who had received multiple penetrating injuries on the body as a result of a bomb explosion and had unknowingly ingested a metallic fragment (shrapnel). A computed tomography (CT) scan revealed that the ingested shrapnel was within the lumen of the cecum. A review of literature has revealed that this is the first report of ingestion of shrapnel in a bomb-blast victim who had also sustained multiple penetrating injuries.

## CASE REPORT

A 31-year-old male bomb-blast victim was brought to the emergency room. On examination, his heart rate was 64 beats/min, blood pressure 134/74 mmHg, and oxygen saturation 99% on room air. He was found to have penetrating wounds on the right side of the neck and the lateral side of the middle third of the right arm, with no active bleeding or hematoma formation. There was another wound in the right gluteal region without active external bleeding or hematoma formation. Neurovascular examination of the upper and lower limbs was unremarkable. The abdomen was soft without distension or tenderness.

X-rays of the chest, abdomen, and right upper and lower limbs showed radiopaque foreign bodies in the right arm, right gluteal region, right thigh and right lower abdomen [Figure 1]. The radiopaque foreign body in the abdominal region was the largest one measuring 2 cm × 1 cm. An ultrasound of the abdomen revealed no free fluid in the peritoneal cavity. As the foreign body in the abdominal region appeared to be intraperitoneal on a plain X-ray, a CT scan of the abdomen was done which showed a dense metallic body within the lumen of the cecum. However, the



**Figure 1:** Plain abdominal X-ray showing the multiple metal bodies.

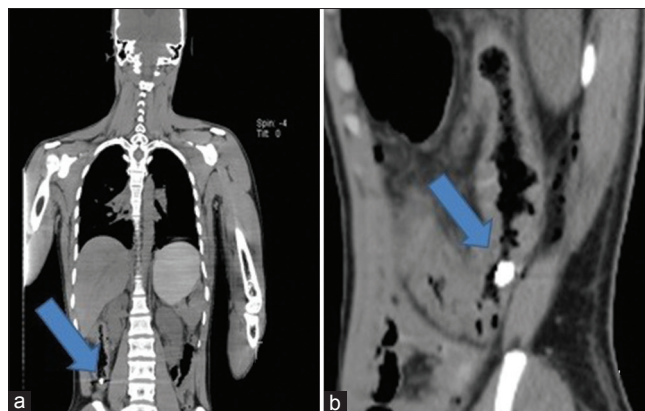
CT scan did not rule out perforation of the caecal wall. Based on the outcome of this investigation, an exploratory laparotomy was decided and performed on the assumption that the intraluminal foreign body was shrapnel that had entered the cecal lumen as a result of the explosion and had caused an undetected perforation [Figure 2].

The peritoneal cavity was explored through a midline incision, but no intraperitoneal bleeding, fecal contamination, or any sign of solid organ injury was found. The gastrointestinal tract from the esophagogastric junction down to the rectum was normal without any perforation or expanding hematomas. However, on palpation of the cecum and the ascending colon, a solid metallic object was felt in the distal part of the ascending colon. A C-arm image intensifier was used to confirm its presence. After confirmation of the presence of the metallic foreign body, the cecum and the ascending colon were mobilized. The posterior wall showed no evidence of perforation [Figure 3].

On the 2<sup>nd</sup> postoperative day, an abdominal X-ray was done, which showed the radiopaque foreign body to be present on the right side of the abdomen. On the 5<sup>th</sup> postoperative day, the foreign body was no longer visible [Figure 4].

The patient subsequently reported that he had passed a metallic object in the feces on the night of the 4<sup>th</sup> day. On a subsequent interview, he reported that at the time of explosion he felt a metallic object in his throat, which he swallowed reflexly. It was concluded that this metallic object was the shrapnel from the bomb explosion.

Postoperatively, the patient was stable, tolerated a normal diet and was discharged home to convalesce uneventfully.



**Figure 2:** Coronal abdominal computed tomography scan showing the foreign body intraluminal (a). Sagittal abdominal computed tomography scan showing the foreign body intraluminal (b).



**Figure 3:** Photograph of ascending colon showing the presence of intraluminal foreign body.

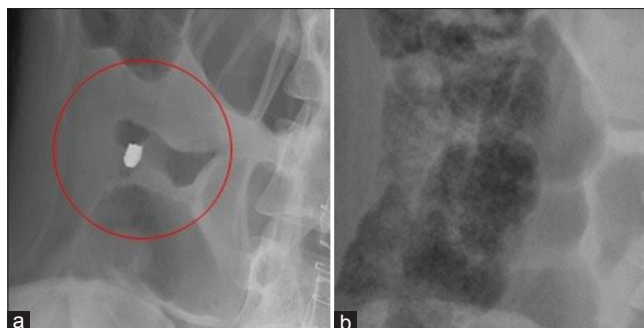
## DISCUSSION

The ingestion of foreign bodies is common especially in children, who frequently place things in their mouths and swallow them accidentally. The majority of adults that ingest a foreign body are either alcohol users, psychiatric patients, or elderly individuals who wear misfitting dentures. In this reported case, the patient unknowingly ingested a shrapnel fragment following a bomb explosion; he also suffered from multiple penetrating injuries to his neck, upper and lower limbs, and gluteal region almost synchronously. This was a unique combination of two separate events occurring simultaneously.

The mechanisms and physical characteristics of penetrating injuries are different, as are the relevance and accuracy of investigations, the methods and timing of surgical repair. The basic aim is to identify and treat the injuries appropriately in a cost-effective manner.

Signs and symptoms of penetrating abdominal trauma depend on many factors including the type of penetrating weapon or missile, the distance from which the missile was launched, which organs were injured, and the location and number of wounds. Some of wounds have a more predictable trajectory and hence the pattern of organ injury. However, occult injuries may be overlooked, resulting in devastating complications.

In patients with penetrating injuries, a great deal of controversy exists regarding appropriate management. It ranges from mandatory exploration to more conservative approaches.<sup>[3-6]</sup> The decision when to operate on a patient with a penetrating abdominal injury is a continuing challenge. Mandatory laparotomy for penetrating abdominal injuries leads to unnecessary



**Figure 4:** Plain X-ray of abdomen postsurgery showing foreign body (a). Plain X-ray of abdomen few days postsurgery after passing out the foreign body (b).

operations in 38–40% of patients and postoperative morbidity ranges from 3% to 16%.<sup>[7]</sup> In patients with penetrating abdominal trauma who are hemodynamically stable and without signs of peritonitis, the aim should be to identify injuries requiring surgical repair and to avoid unnecessary surgical exploration with its associated morbidity.<sup>[8]</sup> The incidence of negative explorations may be reduced by employing several diagnostic methods including serial physical examination, local wound exploration, ultrasound, CT, diagnostic peritoneal lavage, and diagnostic laparoscopy. Exploratory laparotomy for all penetrating abdominal wounds still has a role in resource-limited environments. However, in 12–14% of cases, the laparotomy will be negative, exposing a large number of patients to a considerable risk of complications, which makes it difficult to support such an exploration strategy where adjunctive methods are available and chances of missed injuries may be avoided by means of repeated physical examination.<sup>[9]</sup>

## CONCLUSION

Even in this era of high-tech investigative and diagnostic tools, we conclude that:

- The importance of a thorough and detailed clinical history and proper clinical examination cannot be underestimated under any circumstances
- Hemodynamically stable patients with penetrating abdominal injuries can be managed by serial observation without any surgical intervention.
- The repeated physical examination has an important role in the management of such patients with penetrating abdominal injuries.

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## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

1. Huiping Y, Jian Z, Shixi L. Esophageal foreign body as a cause of upper gastrointestinal hemorrhage: Case report and review of the literature. *Eur Arch Otorhinolaryngol* 2008;265:247-9.
2. Kelly SL, Peters P, Ogg MJ, Li A, Smithers BM. Successful management of an aorto-esophageal fistula caused by a fish bone – Case report and review of literature. *J Cardiothorac Surg* 2009;4:21.
3. Nair MS, Uzzaman MM, Al-Zuhir N, Jadeja A, Navaratnam R. Changing trends in the pattern and outcome of stab injuries at a North London hospital. *J Emerg Trauma Shock* 2011;4:455-60.
4. Clarke DL, Allorto NL, Thomson SR. An audit of failed non-operative management of abdominal stab wounds. *Injury* 2010;41:488-91.
5. Da Silva M, Navsaria PH, Edu S, Nicol AJ. Evisceration following abdominal stab wounds: Analysis of 66 cases. *World J Surg* 2009;33:215-9.
6. Navsaria PH, Berli JU, Edu S, Nicol AJ. Non-operative management of abdominal stab wounds – An analysis of 186 patients. *S Afr J Surg* 2007;45:128-30, 132.
7. Inaba K, Demetriades D. The nonoperative management of penetrating abdominal trauma. *Adv Surg* 2007;41:51-62.
8. Shan CX, Ni C, Qiu M, Jiang DZ. Is laparoscopy equal to laparotomy in detecting and treating small bowel injuries in a porcine model? *World J Gastroenterol* 2012;18:6850-5.
9. Sugrue M, Balogh Z, Lynch J, Bardsley J, Sisson G, Weigelt J. Guidelines for the management of haemodynamically stable patients with stab wounds to the anterior abdomen. *ANZ J Surg* 2007;77:614-20.