

# Thoracoabdominal Rebar Injury: A Case Report

## İnşaat Demiri ile Torakoabdominal Yaralanma: Olgu Sunumu

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### Abstract

The removal of the foreign body from the body after a penetrant injury is critical. A 32-year-old male patient presented to our facility after falling on an iron reinforcement bar (rebar) while working on a construction site. The iron bar had entered the lateral side of the patient's left umbilicus and exited from the posterior scapula. After a physical examination and the necessary radiological investigations, the patient was operated on. Due to the position of the iron bar, the physical examination, radiological examinations, intubation and surgery were conducted with the patient slightly left of the lateral decubitus position, and the iron bar was removed. Although such cases are encountered only rarely, we consider it to be crucial for the emergency and surgical teams to work in coordination.

**Key words:** Torakoabdominal yaralanma, acil torakotomi, acil laparotomi.

### Özet

Penetrant yaralanma sonrası yabancı cismin çıkarılması önemli bir problemdir. Otuz iki yaşında erkek hastanın inşaat demiri üzerine düşme sonrası demir parçası sol umlukusun lateralinden girip skapula arkasından çıkmıştı. Fizik muayene ve gerekli radyolojik tetkikler yapıldıktan sonra hasta ameliyata alındı. Demir çubuğun konumundan dolayı fizik muayene, radyolojik tetkikler, entübasyon ve ameliyat, hafif sol lateral dekübit pozisyonda yapılarak demir parçası çıkarıldı. Sonuç olarak, bu tür olgular az görülmekle birlikte; acil ve cerrahi ekibin koordineli olarak çalışması çok önemlidir.

**Anahtar Sözcükler:** Thoracoabdominal injury, emergency thoracotomy, emergency laparotomy.

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Penetrating injuries in which the item remains in the body are rare. Many patients die at the scene. In cases where vital signs are stable, it is important to remove such objects (1). Here, we present the case of a thoraco-abdominal injury involving rebar.

## CASE

A 32-year-old male patient was evaluated in the emergency room after falling from a height of around 7 meters onto a reinforcement bar. Upon physical examination, the patient's blood pressure was 110/50mmhg, pulse was 98/min and saturation was 98%. The iron bar was noted to have entered the left lateral of the umbilicus and exited below the scapula on the right (Figure 1). Respiratory sounds were minimally reduced in the right hemithorax. For transportation and the radiological examinations, the patient was placed in a slightly left lateral decubitus position due to the position of the foreign body. A thorax-abdominal computed tomography showed minimal pneumothorax in the right hemithorax, minimal fluid around the liver, intra-abdominal free air, and a foreign body in the thorax and abdomen (Figure 2). The patient was taken for an emergency operation with general surgery. Due to the position of the iron bar, the patient was placed on the operating table in a slightly left lateral decubitus position. To remove the iron bar in a controlled manner, the patient underwent simultaneous thoracotomy and laparotomy after normal intubation. In an exploration after the thoracotomy, it was observed that the iron bar had caused an approximately 2.5 cm laceration to the diaphragm, a 1.5 cm laceration of the lung and a rib fracture. Simultaneous laparotomy revealed minimal laceration in the colon, small intestine and liver. The iron bar was removed from the abdomen in a controlled manner. No hemorrhages were observed, aside from minimal liver bleeding. The diaphragm and lung lacerations were repaired with primary suture. The liver, colon and small bowel lacerations were primarily sutured in general surgery. After the operation, the patient was extubated and taken to the intensive care unit. The thoracic and abdominal drains were removed on 5th and 6th postoperative days, respectively. The patient developed no postoperative complications, and was discharged with healing.

## DISCUSSION

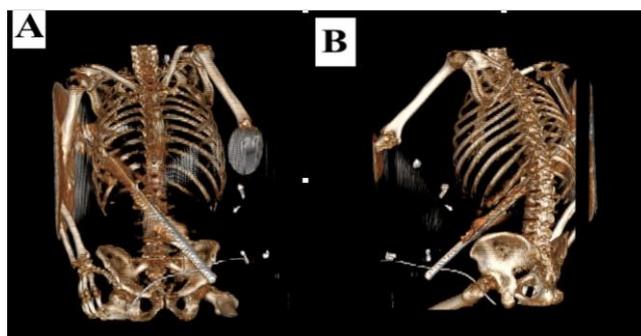
Penetrating traumas can occur in a wide spectrum, with injuries ranging from mild to life-threatening (2). Impalement injuries are a potentially dramatic rare form of

penetrating trauma. Most patients die at the site of occurrence. The removal of a foreign body from patients who present to hospital can be complicated. There are two types of impalement injuries. In type 1, the impalement is a result of the movement of the body onto a fixed object (e.g. falls from height onto a piece of rebar); while in type 2, a moving object enters the body (for example, when an object enters a vehicle) (3). The case presented here was type 1.

The majority of deaths arising from penetrating traumas result from severe vascular injuries, and so vital signs should be evaluated quickly and carefully. The location of the piercing item should not be changed during the physical examination, radiological examinations or transport to the operating room (2). No time should be lost in imaging hemodynamically unstable cases, although in some cases, some imaging methods may be hindered by the positioning of the foreign body. In such cases, imaging should not be insisted upon, as it may lead to the foreign body being disturbed, leading to serious problems (4). Our case was hemodynamically stable, and so a careful physical examination was performed prior to emergency surgery. Afterwards, the necessary radiological examinations were requested, after which, the location of the iron rebar in relation to visceral structures was determined. The patient was then quickly transferred to the operating room. Attention was paid not to disturbing the position of the iron rebar.



**Figure 1:** The entry point (A) of the iron rebar into the abdomen and the exit point (B) from the thorax



**Figure 2:** Three-dimensional CT image (A and B)

In such cases, the location of the foreign body may prevent the patient from being placed in a supine position, creating considerable problems for the surgeon and anesthesiologist. The patient should be transferred to the operating table using maneuvers that take into account the position of the foreign body, which also determines the surgery to be performed. The aim is to provide better airway control and to permit a more comfortable surgery (5). A simultaneous thoracotomy and laparotomy were to be performed, a mild left lateral decubitus position was decided upon after considering the current position of the iron rebar. The operation was started only after airway control was assured through anesthesia.

The uncontrolled removal of the penetrating item can cause massive bleeding, and so it should be removed in a controlled manner by taking foreign bodies into the operation. Potential bleeding sites should be identified prior to surgery, and the kind of surgery required for the removal of the object should be decided upon (6). We carried out a physical examination to determine possible bleeding areas, and opted for a simultaneous operation to allow interventions in these areas.

#### Conclusion

Penetrating injuries can be difficult to manage, and require the emergency and surgical team to work in a coordinated manner. Careful physical examinations and radiological examinations should be performed in hemodynamically stable cases as a priority, through which the relationship with important visceral organs can be determined. The removal of the foreign body should be carried out in a controlled manner, and so simultaneous surgeries should not be avoided.

#### CONFLICTS OF INTEREST

None declared.

#### AUTHOR CONTRIBUTIONS

Concept - T.S.; Planning and Design - T.S.; Supervision - T.S.; Funding - T.S.; Materials - T.S.; Data Collection and/or Processing - T.S.; Analysis and/or Interpretation - T.S.; Literature Review - T.S.; Writing - T.S.; Critical Review - T.S.

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