



## Impaction Due to Sharp-Shaped Trauma in the Thoracic Abdominal Region: A Case Report

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### Abstract:

**Introduction:** Cases in which impalement occurs have a very low incidence, especially those in which more than one anatomical region is involved.

**Objective presentation of the case:** To present to the scientific community a case report about a case of impalement and its therapeutic behavior

**Presentation of the case:** In the following report, the case of a 57-year-old patient who, after suffering an occupational accident, is pierced by an iron rod, thus causing left pneumothorax, ipsilateral diaphragm wound, who was managed in a multidisciplinary way, with satisfactory results for the patient.

**Conclusions:** Cases of impalement will always be a challenge in terms of choosing the best therapeutic behavior, in the previous case it was evidenced as an integral management with a group of trained specialists, it could be reflected in the evolution of the patient.

**Keywords:** Impalement, trauma, sharp, thoraco-abdominal

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### Introduction

Impalement is called any penetrating wound caused by a sharp object, in those cases in which the foreign object is incorporated into the patient's body, cases of impalement by their nature are extraordinary cases, which, depending on their early and well directed, will be reflected in the clinical evolution of the patient. (1,2)

### Case Report

A 57-year-old male patient is admitted to the emergency service, with no significant pathological history, who is brought by an ambulance from the I level of medical care by a

nursing assistant and family member, who refers to a clinical picture of approximately 30 minutes of evolution consisting of Penetrating trauma with a sharp object (iron rod) at the right hypochondrium level below the costal margin (entry hole), whose trajectory ended in 4 left intercostal space at the level of the midaxillary line (exit hole). see image 1 Family member refers that the incident occurred after a fall from a ladder approximately 2.5 meters high, where he was working.

**Image 1.** Sharps wound in the thoracoabdominal region.

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Upon admission to the institution, the patient is diaphoretic, conscious, oriented in 3 mental spheres with preserved vital signs, finding a heart rate of 80 beats per minute, blood pressure 100/60 mmHg, without clinical signs of low output, good hemodynamic status, at physical examination trauma described above in the thoracic region, however the patient presents adequate saturation indices, decreased vesicular murmur in the left lung and well-pitched rhythmic heart sounds,

which is why the patient is admitted for urgent evaluation by general surgery, to define conduct and management, Paraclinical and extension imaging studies are requested.

Paraclinical report arrives showing hemogram with expected hemoglobin figures for sex and age group of patient, with leukocytosis with shift to the left, ionogram without alterations, coagulation times within normal ranges, preserved renal and hepatic function. (See table 1)

**Table 1. Paraclinical.**

PARACLINICAL	
HEMOGLOBIN	15.0 G/DL
HEMATOCRIT	47.1%
RBC COUNT	5.21X10 <sup>6</sup> /MM <sup>3</sup>
MEDIUM CORPUSCULAR VOLUME	90 FL
MEDIUM CORPUSCULAR HB	31.8 PG
PLATELET COUNT	339 X10 <sup>3</sup> /MM <sup>3</sup>
WHITE BLOOD CELL COUNT	12.8 x10 <sup>3</sup> MM <sup>3</sup>
GRANULOCYTES	66.9%
LYMPHOCYTES	28.8%
MONOCYTES	4.3%
BUN	12 MG/DL
CREATININE	0.4 MG/DL
GLUTAMIC-PYRUVICA TRANSAMINASE	23 U/L
GLUTAMIC OXALOACETIC TRANSAMINASE	33 U/L
PROTHROMBIN TIME	14.1 SECONDS
PARTIAL THROMBOPLASTIN TIME	32 SECONDS

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Chest x-ray report is received in anteroposterior and lateral projections that show the presence of a foreign object (iron rod) that crosses from the abdominal cavity to the thoracic cavity, in an anterosuperior direction, in a trajectory from right to left, it is also visualized as follows, opacities in both lung bases secondary to pleural effusion, deviation of the trachea. See image 2. Reason for

which the institution's surgical group decided to intervene surgically on the patient as soon as possible in order to reduce the risk of mortality associated with perforation of a hollow viscus or risk of cardiac contusion, which led to The patient underwent emergency surgery to perform an open thoracotomy with rib resection.

**Image 2.** AP chest X-ray



### Surgical Description

An exploratory laparotomy of the abdominal cavity is performed, after review of the intestinal loops, liver and stomach, no important surgical findings are found, after which an incision is made on the 4 left intercostal space, dissecting by planes, until a foreign body is found (Portion rod distal) that comes from the abdominal cavity, compromising structures such as; diaphragm, pericardial laceration is observed, without cardiac or pulmonary involvement, the heart is moved to extract a foreign body from the cavity. See figure 6. After this, a raffia of the diaphragmatic lesion is performed with vicryl 3/0, a pericardiotomy is performed, observing the exit of clear pericardial fluid, a raffia of the pericardial lesion is performed, the thoracic cavity is washed with

abundant physiological saline, it is left fixed thoracostomy tube number 32.

Upon completion of 48 hours in the patient's intensive care unit, the patient is undergoing renal replacement therapy for acute renal failure, broad-spectrum biconjugate antibiotic management; vancomycin-meropenem, with non-invasive high-flow supplemental oxygen requirement, with good respiratory pattern, without clinical signs of shock, vital signs within normal parameters, with satisfactory clinical evolution, chest computed tomography report is received, which shows bibasal consolidations associated with scant left pleural effusion with lower lobe atelectasis, well-positioned chest tube.

After 5 days in the intensive care unit, the patient continues to present a satisfactory clinical

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evolution, with an improvement in the respiratory pattern, for which the oxygen was gradually weaned, without presenting desaturation or signs of respiratory distress, vital signs within normal

parameters, which is why it is decided to discharge from the intensive care unit to continue his recovery in the general room. See image 3

**Image 3. Patient in the intensive care unit in the postoperative period.**



### Discussion

Cases of impalement trauma have a very low incidence in the literature and can affect any body cavity. The most frequent locations are the pelvis, abdominal cavity, thoracic cavity and thoracoabdominal area, as was the case discussed.(3) In most cases In some cases, this incident is irrelevant and the injurious object is removed from the area involved without major complications. In other cases, timely and rapid multidisciplinary management will be needed to improve patient survival. (4)

The mechanisms of injury are going to be multifactorial and depend on the patient's occupation, people who work in structures that are at heights, patients with behaviors of high social risk, such as alcohol and drug consumption or also domestic accidents. (5) According to the author Eachempati, these traumas can be classified into 2 groups. The first group are those that occur the most and these result from the impact of a body against a stationary object, as occurs in traffic or work accidents. The second group occurs when

there is intentional manipulation of the body with a known object, either self-inflicted or by an external person, and these are mostly located in the anal and genital region, and these occur in the context of sexual abuse. (6)

Associated injuries depend on the anatomical region involved in the impalement, determining the severity of the condition. Thus, when the thoraco-abdominal region is going to be compromised, organs such as the lungs, diaphragm, esophagus, heart, trachea and large vessels may be compromised. an entity of high mortality for the patient. (7.8)

### Conclusion

To conclude, we must bear in mind that each case of impalement trauma is going to do differently, depending on the anatomical area involved, each case will have a special approach and management, according to its particularity, although sometimes due to the extraordinary forms of presentation of this entity. wrong decisions tend to be made, however, in the case

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documented in this work, an early and timely interdisciplinary management could be carried out, allowing the patient a good recovery.

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**Pertuz, J. G. V. . (2022). Impaction Due to Sharp-Shaped Trauma in the Thoracic Abdominal Region: A Case Report. Journal of Medical Research and Health Sciences, 5(4), 1941–1945. <https://doi.org/10.52845/JMRHS/2022-5-4-13>**

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