

Penetrating Nail Gun Injury to the Abdomen

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Abstract

Case Report

Injuries associated with the use of compression guns vary widely in site and severity [1]. The injuries caused by these devices can be devastating due to the great force they can deploy [2]. Most injuries are self-inflicted and the majority of cases occur accidentally but suicides and suicide attempts using nail guns have been reported [3]. We describe the case of a 32-years-old male tradesperson who suffered a penetrating nail gun injury to the abdomen, a CT scan revealed that the nail landed in the left thoraco-abdominal region, a few millimeters distant from the stomach, we opted for a conservative procedure by local extraction of the foreign body and the patient was discharged at the third day after uneventful postoperative monitoring.

Keywords: Penetrating Nail Gun Abdomen.

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INTRODUCTION

Several thousand individuals are treated every year for nail gun injuries [4-6]. Most commonly, white males are affected and in the majority of cases, minor injuries to the extremities occur [5]. If head, chest or the abdomen are involved in such injuries, patients may sustain life threatening injuries [6]. Abdominal injuries represent a minority of cases [7].

CASE REPORT

While a 32-years-old male tradesperson was working on a building site, he was accidentally hit by a nail gun held by his friend who was attempting to fix it. Therefore, the patient drove himself to the emergency room of our hospital.

The patient was alert and oriented, hemodynamically stable with a blood pressure of 130/80 mmHg and a heart rate of 76 bpm, but complained of a slight left basithoracic pain. Pain control was easily achieved and antitetanic serum administered.

On physical examination, the patient showed no abdominal tenderness, an entry point was found at the patient's left thoracic passage without a corresponding exit wound.

Laboratory tests were normal.

The chest x-ray centered on the diaphragmatic domes showed the presence of a thoraco-abdominal foreign body penetrating the left thoracic base without pneumoperitoneum or intraperitoneal effusion (figure 1).

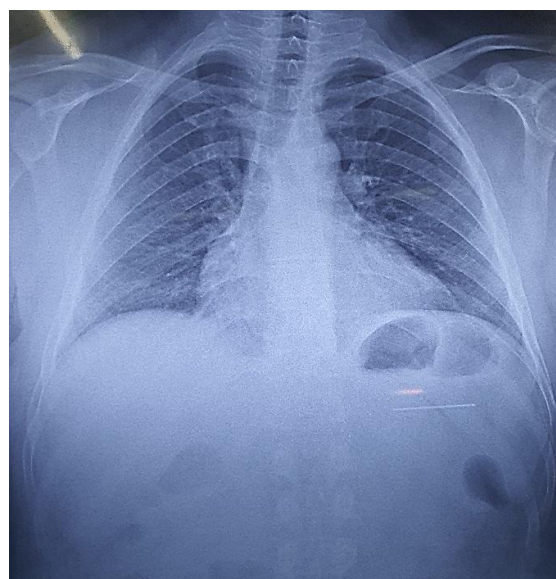


Fig-1: Chest x-ray centered on the diaphragmatic domes showing the presence of the Nail at the left thoracic base

A Computed tomography scan revealed the presence of the foreign body (nail) in the left thoraco-abdominal region, 3 millimeters from the stomach without pneumoperitoneum or intraperitoneal fluid effusion (Figure 2).

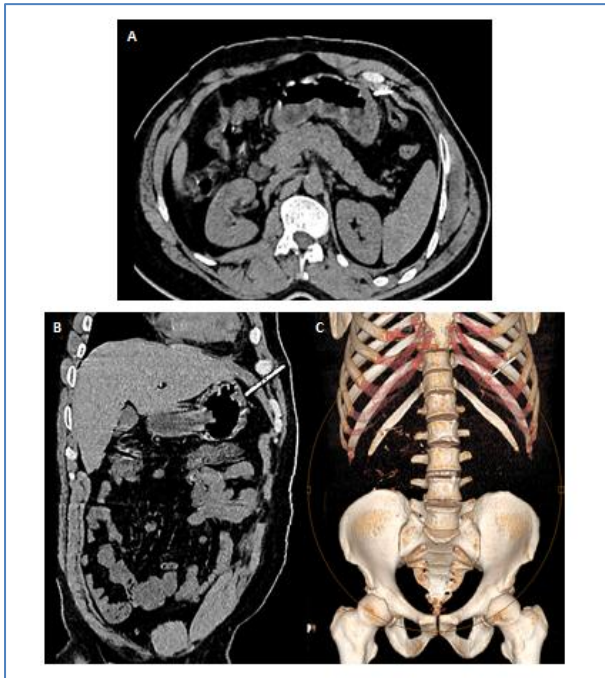


Fig-2: Abdominal CT scan: axial (A), coronal (B) slice and 3D reconstruction (C): Nail present in the left thoraco-abdominal region, 3mm from the stomach without pneumoperitoneum or intraperitoneal fluid effusion

After transferring the patient to the operating room, under local anesthesia, we made a small atypical skin incision of about 1.5 cm next to the entry point. After careful dissection, given the risk of pushing the foreign body inside (based on nail shape), extraction was successful (Figure 3).



Fig-3: Picture showing: (A) the extracted foreign body "Nail"; (B) Aspect of the wedge incision

Post-operative course was simple, clinical and laboratory monitoring being without abnormalities, the patient was discharged from the hospital after 3 days.

DISCUSSION

Nail gun abdominal injuries are survivable and can cause multiple penetrations for multiple organs, occult injuries can be overlooked, resulting in devastating complications [8-10].

The signs and symptoms of penetrating abdominal trauma depends on various factors, including the type of penetrating weapon or object, the range from which the injury occurred, which organs may be injured, and the location and number of wounds.

The management of patients with penetrating abdominal trauma has significantly changed in recent years. While exploratory laparotomy was the gold standard in all patients up to the 1970s, selective nonoperative management (SNOM) is increasingly being discussed in hemodynamically stable patients without pathological findings in computed tomography (CT) scan or extended focused assessment with sonography for trauma (eFAST).

Hemodynamically unstable patients should undergo an immediate laparotomy as damage control surgery followed by a second look procedure after 48 h. hemodynamically stable patients should primarily undergo diagnostic laparoscopy and be treated by early total care surgery, depending on the clinical and diagnostic imaging findings. Patients without clinical symptoms or pathological findings in imaging studies should be treated according to SNOM with close clinical controls [11].

Surgical removal of nails can be complicated by numerous barbs or glue placed along the length of the shaft, with serious iatrogenic damage to the surrounding structures [12, 13].

A greater understanding of mechanisms of injury, the results of surgery and the improvements of imaging and interventional radiology has led to more conservative operative strategies being adopted [14].

Nail guns, being very powerful handy tools, must be equipped with safety mechanisms to prevent deployment during reloading and avoid unnecessary accidents.

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