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Surgical management of late bullet embolization from the abdomen to the right ventricle: Case report

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ABSTRACT

INTRODUCTION: Secondary embolus from gun projectile is a rare entity, it represents a clinical and therapeutic dilemma because the potential complications involving central and peripheral circulation. Each case reported in the literature represents a challenge because their unique and different clinical scenarios.
PRESENTATION OF CASE: We present the management of a 33-year-old man with past history of a gunshot wound on left flank with no evidence of any exit wounds, treated with exploratory laparotomy without removing the gunshot bullet from the abdomen. The patient presents 6 years later with non-productive cough and retrosternal pain with no other symptoms; the patient underwent a chest x-ray, electrocardiogram, thoracoabdominal CT, echocardiogram and cardiac catheterization and showed a bullet in the right ventricular floor. The projectile was extracted by sternotomy with extracorporeal circulation through the right atrium, without any complications.
DISCUSSION: In 1834, Thomas David reported for the first time a wood-fragment embolization. There have been reported less than 200 cases including embolization of other materials; most of the gunshot bullet embolization cases reported on literature were reported after war. Clinical manifestations are associated with the anatomical site of embolism and mortality rate for a retained bullet is 6% associated with complication in 25% of cases. Mortality rate decreases to 1–2% if the bullet is removed.
CONCLUSION: There are no established guidelines about the management of migrating foreign bodies or bullets, however, conservative, endovascular and surgical management have been proposed. In the cases of bullet embolization to the thoracic cavity, surgery represents a safe, low risk approach with high success rates.

1. Introduction

Secondary embolus from gun projectile is a rare entity with few published cases in the literature. It represents a clinical and therapeutic dilemma because of the potential complications involving central and peripheral circulation, including pulmonary complications [1,2]. There have been reported less than 200 cases including embolization of other materials [3,4]. Clinical manifestations are associated with the anatomical site of embolism and mortality rate for a retained bullet is 6% associated with complication in 25% of cases. Mortality rate decreases to 1–2% if the bullet is removed [5]. We present a case of a retained and late bullet embolization, from the abdominal cavity to the right ventricle. Treated conservative initially and six years later after receiving a penetrating gunshot trauma, a sternotomy was performed. This patient was treated in a private practice hospital by a cardiothoracic surgeon.

2. Case report

A 33-year-old man with no personal, family or psychosocial history presented to the emergency department after receiving a gunshot wound on left flank with no evidence of any exit wounds. The patient had stable vital signs and no clinical data of abdominal tenderness at admission. Abdominal CT showed free intra-abdominal fluid and a gunshot bullet on the pelvic cavity medial to the iliopsoas muscle, the chest x- ray showed no abnormalities (Fig. 1). An exploratory laparotomy was performed finding 2500 ml of blood in the abdomen. A grade I and III vascular lesions were found in the jejunum mesentery and left iliac vein respectively; and a grade II intestinal lesion in the distal sigmoid. All the lesions were repaired and the gunshot bullet was not extracted because of hemodynamic instability at the moment. At that time,

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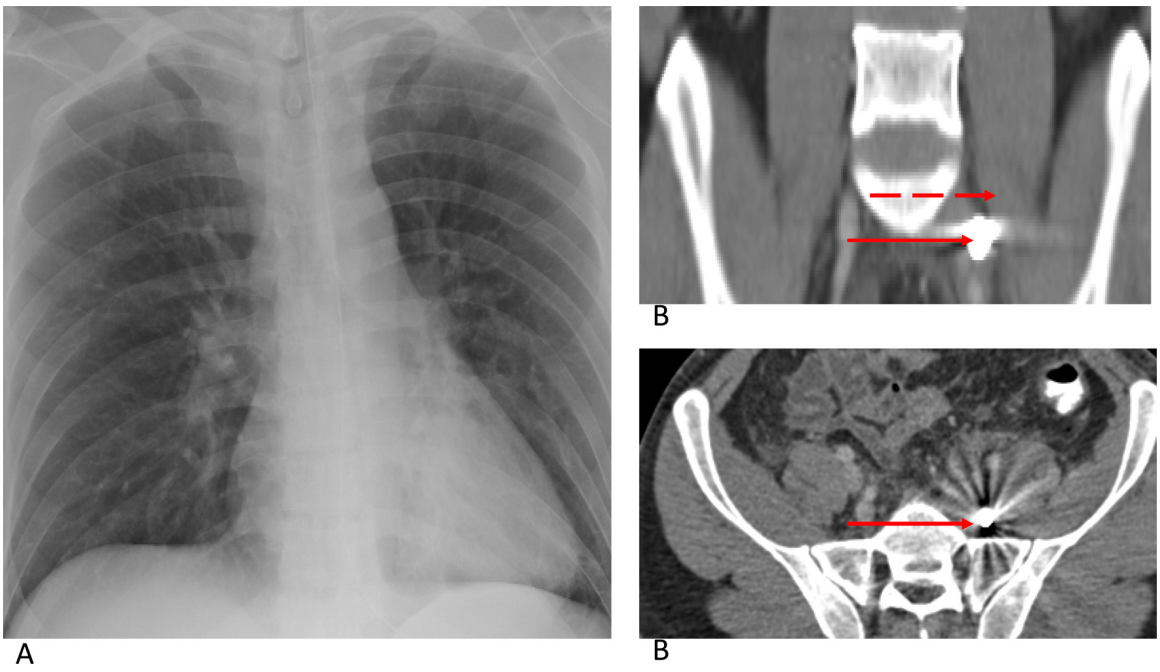

Fig. 1. (A) Chest X ray showing no abnormalities. (B) Abdominal CT showing a bullet (red arrow) medial to the iliopsoas muscle (red dashed arrow).

the patient was treated by a general surgeon in a private practice hospital.

The patient presents 6 years later with non-productive cough and retrosternal pain with no other symptoms. Physical exploration was non-remarkable. A chest x-ray and thoracoabdominal CT showed a radiopaque artefact on the ventricular floor. An EKG, transthoracic echocardiogram and cardiac catheterization were performed showing no disruptions or alterations in the cardiac anatomy and physiology (Fig. 2).

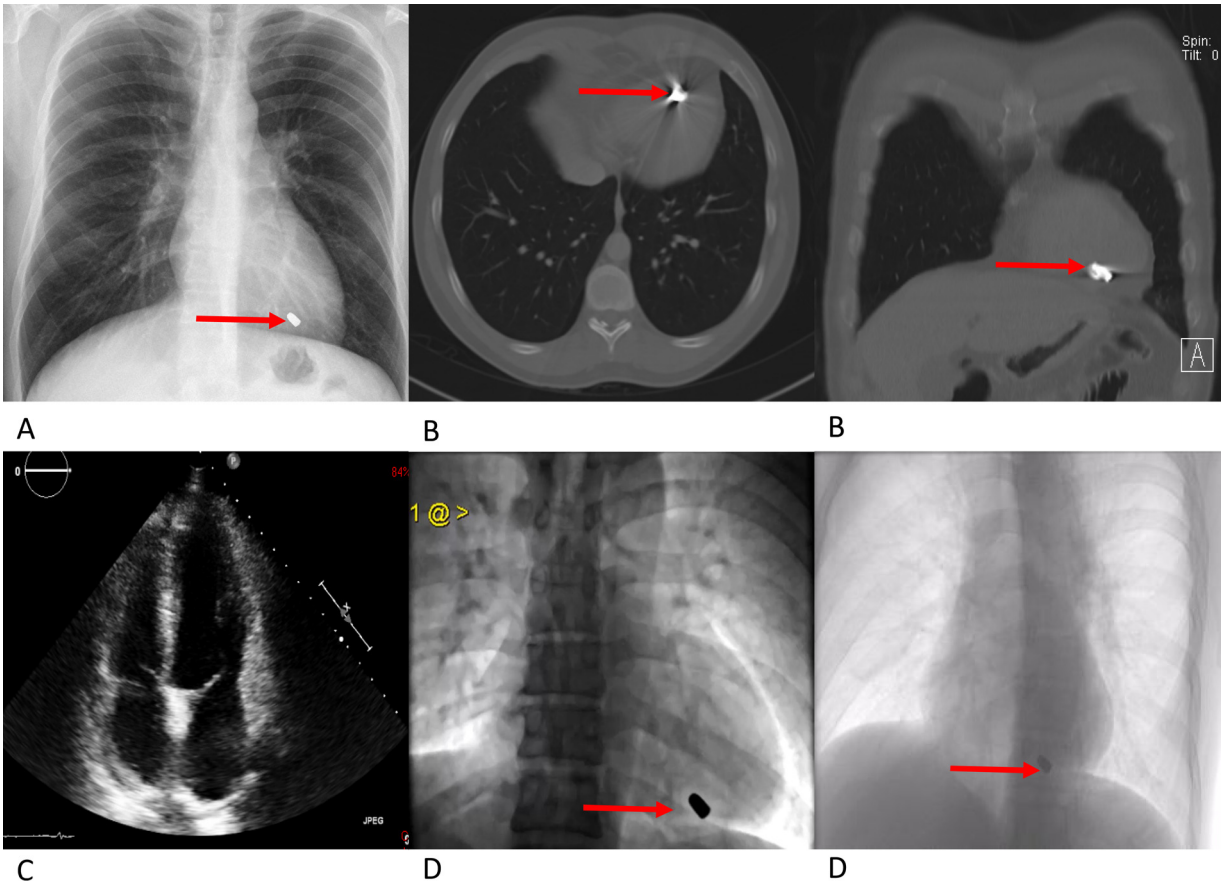

Fig. 2. (A) Chest X ray, (B) Thorax CT and (D) Cardiac catheterization showing and artefact or bullet on the ventricular floor (red arrow). (C) Echocardiogram and (D) Cardiac catheterization showed no abnormalities in cardiac anatomy or physiology.