

# Migration of a Kirschner wire into the thoracic ascendent aorta artery

## *Migração de fio de Kirschner transfixando artéria aorta torácica ascendente*

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### *Abstract*

The orthopedic metallic pins and wires migration for the chest cavity is uncommon and rarely reported in medical literature although it is potentially lethal, especially when they reach the heart or mediastinum great vessels. We reported a case of Kirschner wire withdrawal, for right postero-lateral thoracotomy, which were transfixating ascendent thoracic aorta artery, in its due to its migration of left clavicle, where it was placed to fix an occurred fracture 10 years before.

**Descriptors:** Bone wires. Chest pain. Foreign-body migration.

### *Resumo*

A migração de pinos e hastas metálicas ortopédicas para a cavidade torácica é rara e pouco descrita na literatura médica, embora seja potencialmente fatal, principalmente quando atingem o coração ou grandes vasos intratorácicos. Reportamos um caso de migração de fio de Kirschner, implantado na clavícula direita há 10 anos, transfixando a aorta torácica em sua porção ascendente, sendo retirado por toracotomia póstero-lateral esquerda.

**Descritores:** Fios ortopédicos. Dor no peito. Migração de corpo estranho.

### INTRODUCTION

Clavicle fractures and sternoclavicular dislocations are common after traumatic chest injuries. In some cases, orthopedic surgeons need to use metal rods to fix and stabilize these fractures [1].

Kirschner wires are often used to perform osteosynthesis.

Despite being rare, the migration of these wires through the tissues is well known and several significant complications of clavicle fixation have been described, with their migration into the chest cavity, causing perforation of

the spinal cord, esophagus, lung, trachea, innominate artery, heart, pericardium and great vessels [2-5].

### CASE REPORT

We described a case of a male patient, 47 years old with a history of car accident that had fractured the right clavicle 10 years ago, surgically treated with fixation with the use of Kirschner wire.

The patient has not returned to the orthopedic service for a long time, and then, sought medical care at a reference

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hospital in Araguaina, Tocantins, with a pain chest for about 4 months.

The chest X-ray performed showed the presence of a metallic image approximately 10 cm long, in central projection (Figure 1). Exploratory thoracotomy was indicated at the reference hospital, and due to the presence of a foreign body transfixing the aorta, the local surgical team decided to discontinue the procedure and refer the patient to the Thoracic Surgery Department of Palmas Hospital, Tocantins.

In order to supplement the imaging studies, chest computed tomography revealed the presence of the steel rod in mediastinal position, and along with the information of the thoracotomy previously performed, the situation of the foreign body transfixing the ascending aorta was concluded (Figures 2 and 3).

The transfixation was approached through the left posterolateral thoracotomy. With the release of the ascending portion in the posterior face, dissection of the descending portion of the thoracic aorta and repairing the inlet and outlet with U stitches prepared with reinforced felt, it was possible to safely remove the Kirschner wire without bleeding. Considering the permanence time of the wire in the lumen of the aorta, there was a formation of a fibrin layer around the foreign body, with a twist of wire maneuver was necessary for its removal without tearing the vessel wall, as well as the instantaneous clamping of the carotid artery as a prevention of a possible fibrin embolus.

The patient had a satisfactory clinical evolution, and chest radiograph performed 48 hours after surgery confirmed the absence of foreign body. The patient was discharged on the 4th postoperative day and continued to be followed-up at the outpatient clinic, without complaints of prior chest pain

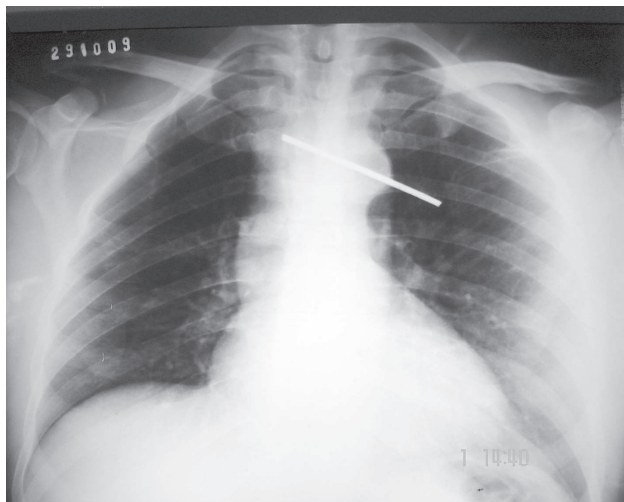


Fig. 1 - Chest radiography with steel wire in the mediastinum

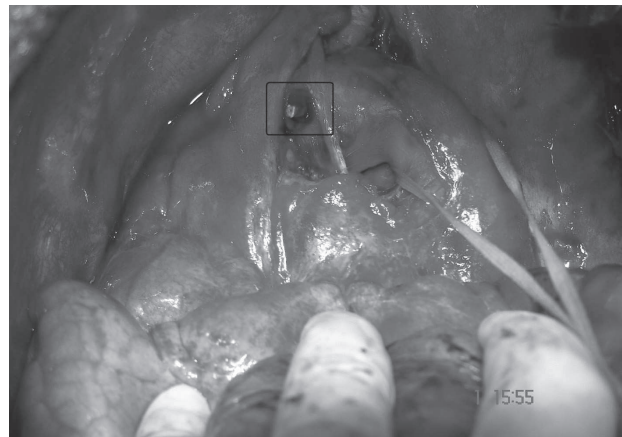


Fig. 2 - Intraoperative photo with the wire output location transfixing the thoracic aorta in the ascending portion

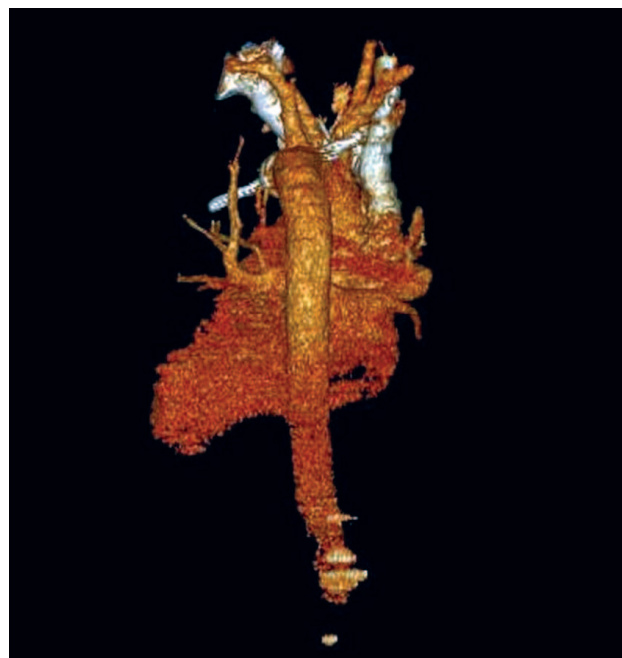


Fig. 3 - Chest tomography with three-dimensional reconstruction with foreign body transfixing the thoracic aorta

## DISCUSSION

The migration of orthopedic pins and rods placed around the shoulders into the thoracic cavity has been little reported, but it is a well known complication since it was first described in 1943 [6]. Some authors have published literature reviews, such as Rockwood & Lyons, in 1990 (47 cases) [7] and Freund et al. In 2007 (68 cases) [2], showing that the number of cases of this complication is growing around the world.

The time after the orthopedic surgery on the clavicle until the migration of the steel rod to the chest varies from

1 day to 21 years [7]. Its mechanism is still unclear, but shoulder movement, breathing movements, negative intrathoracic pressure, gravitational force and the local bone resorption are probably involved.

Although the literature shows mediastinal migration and perforation of the heart, great vessels, esophagus, trachea, lung and others, we found no reported case of the steel rod transfixing the ascending aorta and remaining in that position without hemodynamic repercussions.

The use of steel rods and pins to fix fractures and dislocations in the shoulder region are common procedures in orthopedic practice with good results when used in appropriate cases. Reported complications contribute to the sequential observations on the treatment.

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