

Percutaneous retrieval of a shard of metal from the right ventricular apex after an industrial accident

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A 29-year-old man suffered from an industrial accident as a piece of metal of a die-cutter burst and shards of metal penetrated his right upper arm. One shard was localized via x-ray and computer tomography within the apex of the right ventricle. Here we report on a successful retrieval of this shard of metal by aspirating it via a 6F multipurpose (MP) catheter.

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Introduction

The field of cardiovascular interventions has experienced continuous technical progress in recent years. An increasing number of implantable or insertable devices have been developed with an increasing amount of implantations in patients. Therefore, the amount of devices lost or broken during procedures gains attention [1]. Several strategies for the retrieval of medical products from a patient are available [2]. We report on a

case of a young adult who suffered from an industrial accident where a shard of metal got stuck in his right ventricle.

Case report

A 29-year-old man without medical history suffered from an industrial accident as a piece of metal of a die-cutter burst and shards of metal penetrated his right upper arm. In an external hospital most of the shards were removed by orthopedic surgeons. During this local operation one shard of metal penetrated into the brachial

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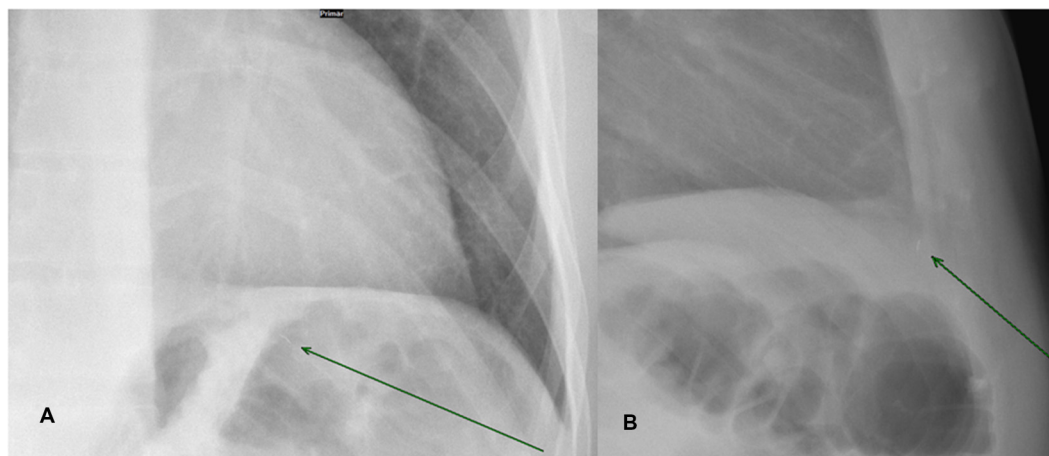


Figure 1. X-ray with the shard of metal in the right ventricular apex (green arrow). (A) Anterior-posterior view. (B) Lateral view.

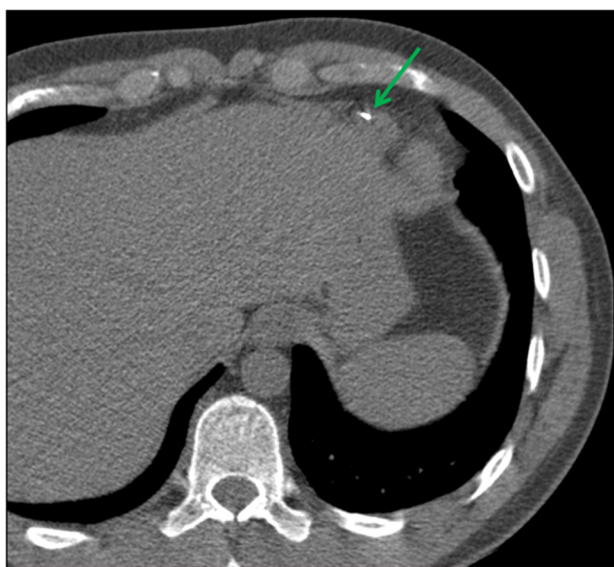


Figure 2. Computer tomography with the shard of metal in the right ventricular apex (green arrow).

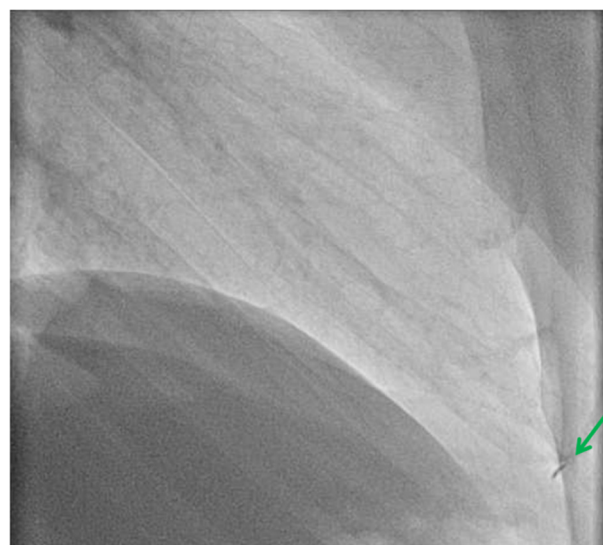


Figure 3. Fluoroscopy in right anterior oblique view showing the shard of metal (green arrow).

vein and got stuck—visualized by x-ray—in the subclavian vein. The patient was then initially admitted to our hospital for vascular surgery. In the x-ray of the right arm no shard of metal could be found, rather it was localized at the apex of the right ventricle (RV) with a chest x-ray (Fig. 1A and B). To determine the exact position, we performed a computer tomography (CT) scan of the thorax, where the presumed position in the RV apex was confirmed (Fig. 2). We discussed the case in our heart-team, arguing for the alternatives to either leave the shard in place, to surgically operate on the patient, or to retrieve the shard with a forceps via a percutaneous approach. As the shard of metal had a diameter of only 3 × 5 mm the use of a snare system did not seem

promising. Finally, we decided not to leave the unsterile piece of metal in its position, as it could potentially lead to pericardial effusion, arrhythmias, or inflammatory processes. In the next step we attempted to catch the shard with a flexible myocardial biopsy forceps (Cook Medical, Bloomington, IN, USA) via a jugular sheath (7F Ultimium, SJM). As the shard was stuck deep in the trabecular system of the right ventricle (Fig. 3) we were unable to get hold of it (Fig. 4). We accidentally touched the shard which moved it forward to the mid ventricle, where we still were unable to catch it. As the diameter was small and flat we decided to take a 6F multipurpose catheter (Medtronic, Minneapolis, MN, USA) with a 30-mL syringe and try to aspirate the shard of metal into the catheter. After a careful approach with the catheter

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