Turkish Journal of Thoracic and Cardiovascular Surgery 2019;27(3):381-383
http://dx.doi.org/doi: 10.5606/tgkdc.dergisi.2019.16887

Case Report / Olgu Sunumu

Removal of a retained intracardiac guidewire fragment reaching out to subcutaneous tissue of thoracic wall in a pediatric patient

Bir çocuk olguda toraks duvarının subkutan dokusuna ulaşan unutulmuş intrakardiyak kılavuz tel parçasının çıkarılması

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ABSTRACT

The use of vascular access lines in both central venous and arterial sites has significantly increased over the past decades. A retained intravascular foreign body is a well-known complication of central venous catheter placement in children as well as in adults. Herein, we present our experience of surgical removal of a retained intracardiac guidewire fragment penetrating into the subcutaneous tissue of the thoracic wall in a pediatric case.

Keywords: Intracardiac foreign body, pediatric, surgery.

ÖZ

Santral venöz ve arteriyel alanlarda vasküler erişim yollarının kullanılması, son on yıllarda önemli ölçüde artış gösterdi. Damar içinde yabancı cisim unutulması, hem çocuklarda hem de erişkinlerde iyi bilinen bir santral venöz kateter yerleştirme komplikasyonudur. Bu yazıda, bir çocuk olguda toraks duvarının subkütan dokusuna nüfuz eden unutulmuş bir intrakardiyak kılavuz tel parçasının cerrahi olarak çıkarılmasına ilişkin deneyimimiz sunuldu.

Anahtar sözcükler: İntrakardiyak yabancı cisim, çocuk, cerrahi.

The use of vascular access lines in both central venous and arterial sites has significantly increased over the past decades. Several complications including bleeding, infection, air embolism, cardiac arrhythmias, vascular damage, and embolization of catheter or guidewire fragments have been well-described.[1] However, retained intravascular foreign body is a well-known complication of central venous access placement in children as well as in adults. Prompt diagnosis and emergency surgical intervention with or without cardiopulmonary bypass are usually required to save lives in such cases. Interventional therapy can be also considered for such cases. In our case, the guidewire migrated to the heart and originated from the right ventricular wall to the thoracic cavity, penetrating into the subcutaneous tissue. To the best of our knowledge, this is the first case in the literature to report a retained intracardiac guidewire fragment reaching out to the subcutaneous tissue through the thoracic cavity.

CASE REPORT

A 14-month-old boy, weighing 7.5 kg, was admitted to Gazi University Medical Faculty, Department of Cardiovascular Surgery, for chest pain and swelling on the chest following colostomy closure operation. Two weeks before the admission, the patient underwent internal jugular vein cannulation for central venous

Received: July 17, 2018 *Accepted:* February 27, 2019 *Published online:* June 14, 2019

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Cite this article as:
Özer A, Kılıç Y, Özbay A, Şıvgın V, Mardin B, İriz E, et al. Removal of a retained intracardiac guidewire fragment reaching out to subcutaneous tissue of thoracic wall in a pediatric patient. Turk Gogus Kalp Dama 2019;27(3):381-383

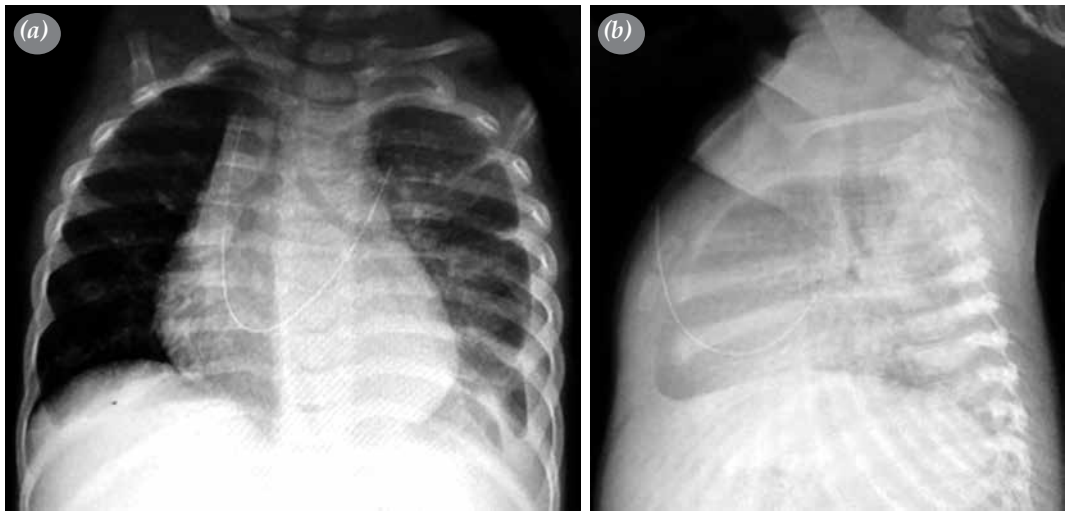

Figure 1. (a, b) Chest X-ray showing retained guidewire fragment in the right internal jugular vein, heart and reaching out to thoracic cavity and subcutaneous tissue.

access in preparation for the operation. During the attempt, no abnormality was noticed and the patient was discharged. In the next day, the patient was uncomfortable with chest pain, and his mother noticed a swelling on his chest. The patient was admitted to our emergency room. Chest X-ray showed a radio-opaque foreign body in the heart reaching out to the thoracic cavity consistent with a retained guidewire fragment in the right internal jugular vein and heart (Figure 1). Transthoracic echocardiogram revealed no injury of the valves.

Based on these findings, sternotomy was performed. Pericardium was, then, incised and hemorrhage was observed. The retained wire fragment was carefully removed out; however, the J-tip guidewire was not detected. Myocardium was sutured with 6.0 polypropylene suture (Figure 2). Although the whole procedure was on a beating heart, the cardiopulmonary bypass was kept on standby. No severe bleeding was observed, and the operation was successful. The patient was discharged from hospital nine days after surgery without any complications. A written informed consent was obtained from each parent.

DISCUSSION

Foreign bodies penetrated in the myocardium usually give no symptom.[2] However, guidewires tend to migrate through the tissue and may cause serious complications. Thus, early removal is important to avoid further damages to the heart and there is no consensus on the surgical technique.

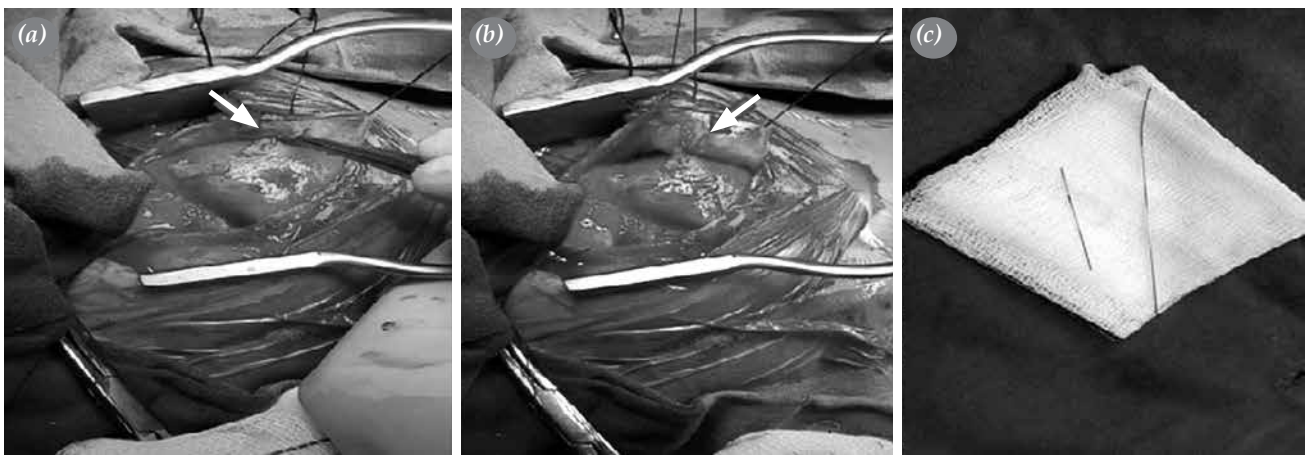

Figure 2. (a-c) An intraoperative view. White arrows show the guidewire fragment.

Several case reports of foreign bodies inside the heart, most of them after opening the chest with or without cardiopulmonary bypass, have been reported in the literature.[3] To the best of our knowledge, we report the first case of removal of a retained intracardiac guidewire fragment inside the heart originating from the right ventricular wall to the thoracic cavity and penetrating in the subcutaneous tissue of the thoracic wall.

Immediately after the injury clinical symptoms of a retained foreign body in the heart are associated with the cardiac injury, including cardiac tamponade and/or bleeding. If there is no injury of the valves or septa, the patient may be also asymptomatic at presentation. Intravascular foreign bodies can be removed with angiographic intervention, mostly without surgery. Surov et al.[4] reported that only 2.3% embolized fragments were removed surgically in 215 patients. Most embolized catheter fragments (93.5%) were removed percutaneously. Surgery is life-saving, when the foreign body cannot be removed by angiographic intervention or is penetrated into the thoracic cavity.

Obtaining central venous access in pediatric patients can be challenging. Steps of the Seldinger technique must be applied carefully for a safe procedure and the J-tip guidewire should be inserted through the needle without any resistance. In our case, the guidewire possibly became kinked at the needle tip and trying to remove the wire alone resulted in the shearing off the wire. In our case, the wire migrated to the heart, originating from the right ventricular wall and penetrating to the thoracic cavity, reaching the subcutaneous tissue of the thoracic wall. Instead, both the wire and the needle should be removed and the J-tip guidewire should be used.

In conclusion, steps of the Seldinger technique must be applied carefully and, in case of a retained intracardiac guidewire fragment causing cardiac injury, no time should be wasted for time-consuming investigations, as cardiopulmonary bypass should be a standby option during exploratory sternotomy.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

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