

## Sewing needle penetration into the heart in an infant

### *Bir bebekte dikiş iğnesinin kalbe batması*

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Sewing needle penetration into the heart is a rare occurrence. Clinical presentation and timing substantially affect the decision of surgeon and management approach. In this article, we report an 18-month case with a sewing needle penetration into the heart which was mistaken as foreign body aspiration showing migration. It should be kept in mind that sharp foreign objects can reach into the thoracic cavity through not only alimentary tract and airways, but also through externally penetrating trauma.

*Key words:* Cardiac; foreign body; trauma, penetrating.

It is important to be aware of the possibility of a penetrating injury to the chest cavity. There have been reports of penetrating intracardiac needles dating back to 1920,<sup>[1]</sup> but this is still a rare occurrence.<sup>[2]</sup> In a review of the papers published from 1950 to 2009, only 24 were found to be relevant, and these contained reports of 29 patients, most of which involved cases of needles being removed surgically. However, out of the 24 papers, four patients were treated conservatively. Heart injuries caused by sewing needles may occur accidentally, both in adults and children, and self-inflicted injuries due to mental disorders or as consequence of domestic violence have been described in the literature. In these cases, the diagnosis may be delayed.<sup>[2]</sup> In children, the needle often penetrates accidentally during movements in the cradle.<sup>[3]</sup> Cases of child abuse have also been reported and should also be considered in this context.<sup>[4]</sup> However, due to the young age of the child, it is often not easy to elucidate the history of the injury; therefore, clinical observation and early imaging of the needle are advocated.

Kalbe dikiş iğnesinin batması nadir görülen bir durumdur. Klinik tablo ve zamanlama, cerrahın kararını ve tedavi yaklaşımını önemli ölçüde etkiler. Bu yazıda migrasyon gösteren yabancı cisim aspirasyonu ile karıştırılan, kalbe dikiş iğnesi batan 18 aylık bir olgu sunuldu. Keskin yabancı cisimlerin yalnızca beslenme yolu ve hava yolundan değil, aynı zamanda harici penetre edici travmalar ile göğüs boşluğuna girebileceği unutulmamalıdır.

*Anahtar sözcükler:* Kardiyak; yabancı cisim; travma, delici.

### CASE REPORT

An 18-month-old male child presented at the Assiut University Hospital after being referred from a primary health care center with a 40-day history of fever, shortness of breath, and cough that had been diagnosed as a chest infection. There was no positive history given by the attendants about foreign body inhalation. On examination, the child was found to be in average health, and at the time of admission, there was no evident cyanosis or respiratory distress. Nothing abnormal was found in the rest of the general physical examination. However, a chest examination showed occasional inspiratory crackles bilaterally, but no signs of skin injury or penetration were found. Furthermore, there was no wheezing. A routine posteroanterior (PA) and lateral chest X-ray showed the radiopaque shadow of a sewing needle over the cardiac shadow away from the tracheobronchial tree (Figures 1 and 2).

The patient was then set for a left anterior thoracotomy after obtaining the informed consent of his parents. Exploration of the chest cavity,



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including the chest wall from inside, lung parenchyma, diaphragm, and pericardium, revealed no signs of needle penetration except for a bluish discoloration of the pericardium adjacent to the sternum. When the pericardium was opened longitudinally along the line of the phrenic nerve, a small amount of old, accumulated blood was revealed along with an area of fibrosis on the surface of the right ventricular wall. The needle was inside this area and had penetrated the myocardium. We removed the needle, and no suturing was required since there was no bleeding from the place of extraction. We then used loose, interrupted, nonabsorbable sutures to approximate the pericardium's edges. Afterwards, we inserted a chest drain in the plural space and closed the thoracotomy.

The postoperative period was uneventful, and the patient had a smooth recovery. A chest X-ray performed before the removal of the chest drain was normal, and an echocardiographic evaluation revealed no pericardial collection, intramural thrombus, or infective endocarditis. The patient was then discharged on the fifth postoperative day, but was placed on antibiotics in case infective endocarditis developed.

## DISCUSSION

Only 10 cases involving children with a penetrating intracardiac needle have been reported.<sup>[5-12]</sup> The interesting point in all the case reports is that the

mode of injury together with the timing of presentation after injury directly affected the type and approach of surgery. For example, six of the injuries in these 10 cases were self inflicted or accidental. Diagnosis occurred immediately, and they were operated on using a median sternotomy with or without the use of cardiopulmonary bypass (CPB).<sup>[6,9-12]</sup> On the other hand, the four remaining cases were discovered accidentally via a physical examination or routine chest X-ray and were operated using a left anterior thoracotomy or subxiphoid approach.<sup>[5-8]</sup>

This case was unique because a sewing needle had been inserted into a baby's forechest without any obvious skin mark and was surprisingly found inside the heart during the surgery. In addition, the location of the neglected foreign body ruled out aspiration, and the lateral chest X-ray had verified that aspiration could not be used because the needle was situated away from the tracheobronchial tree. We also did not perform a bronchoscopic examination on this patient because there was the possibility that the needle would migrate from the tracheobronchial tree to the lung parenchyma. Unfortunately, we do not have the capability of performing a pediatric thoracoscopy at our facility, so a thoracotomy was used to explore the chest.

The preoperative assessment of the location of the needle was based solely on the results of the chest



**Figure 1.** Posteroanterior chest X-ray film showed needle over the cardiac shadow near the diaphragm.



**Figure 2.** Lateral view chest X-ray film note the "out of focus" sign indicating the presence of the needle inside the heart.

X-ray. We were not able to interpret the “out of focus” outline of the needle on the lateral X-ray, which has been described in the literature as an indication of a bullet embolism in the heart.<sup>[13]</sup> We also did not anticipate the possibility of intracardiac penetration, and choosing a left anterior thoracotomy as the most appropriate surgical option was based on the anterior location of the needle in the lateral X-ray.

In conclusion, cases involving a sewing needle penetrating the heart are rare, but when this occurs, the clinical presentation and timing determine the best surgical approach. A left anterior thoracotomy is usually preferable when it is possible to ascertain the preoperative localization of the needle. However, it should be kept in mind that sharp foreign objects can reach into the thoracic cavity through the alimentary tract and airways as well as through externally penetrating trauma.

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