

CASE REPORT

Haemopericardium causing cardiac tamponade: a late complication of pectus excavatum repair

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A 24 year old man presented to the emergency department with clinical signs of cardiac tamponade requiring emergency surgery. The cause was a sternal wire from a pectus excavatum repair two years previously that had fractured and migrated through the pericardium causing an epicardial injury and a haemopericardium.

Complications of pectus excavatum surgery are few and minor. These include early complications such as limited pneumothorax, which may or may not require operation, and wound infection, which can usually be avoided with perioperative antibiotic coverage. Late complications include recurrence of pectus excavatum many years after surgical correction.¹⁻³

CASE REPORT

A 24 year old man presented to the emergency department in December 2002 with clinical signs of cardiac tamponade: muffled heart sounds, low blood pressure, raised jugular venous pressure, peripheral shut down, reduced QRS complex voltage on ECG, and a football shaped heart with evidence of a fractured sternal wire on radiography (fig 1).

The original operation was performed by a method developed by one of the authors (JAM) to support the sternum without the use of metal bars. Two nylon sutures are placed across the defect to stabilise the chest wall and two wire sutures are used to suspend the xiphisternum from the upper sternum. It was one of these wires that fractured.

Emergency thorax computed tomography showed a large pericardial effusion probably secondary to trauma from the broken sternal wire (fig 2).

The patient was transferred immediately to the operating room in a haemodynamically compromised state with a low



Figure 1 Chest radiograph showing the sternal wires used to repair the pectus excavatum. The fractured sternal wire is visible in the left lower zone around the lower left anterior surface of the heart.

cardiac output. A skin incision was made for median sternotomy. There was a large gap between the lateral surface of the sternum on both sides and the internal costal cartilages were visible. This allowed for an approach lateral to the sternum. The pericardium was identified, with a piece of fractured sternal wire seen going through a hole in the pericardium towards the myocardium. The pericardium was opened and the pericardial space was evacuated. There was immediate haemodynamic improvement. Further exposure of the pericardium showed a large area of abrasion on the epicardium on the anterior surface of the right ventricle, which was obviously the site of bleeding, but the exposed muscle was not actively bleeding. Some of the sternal wires were removed and some were left so as to maintain the pectus excavatum repair.

Postoperative chest radiography showed a much improved heart shape with the previous fractured sternal wire removed

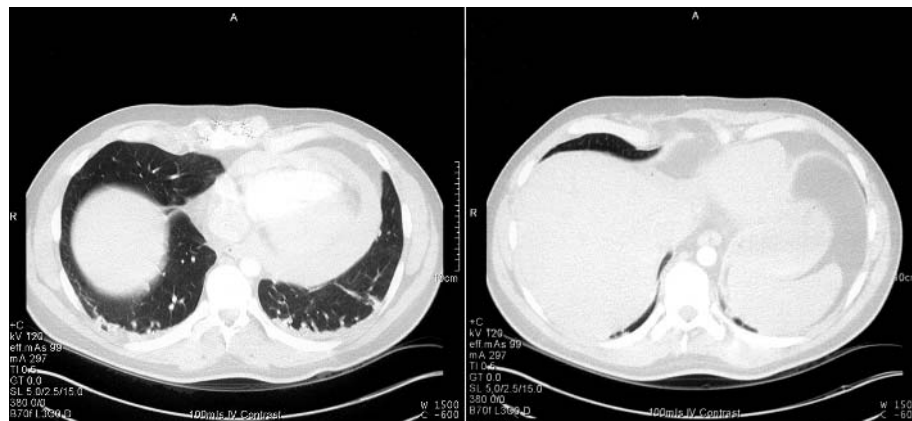


Figure 2 Computed tomographic scans of the thorax showing a large pericardial effusion consistent with clinical signs of cardiac tamponade.



Figure 3 Postoperative chest radiograph showing a much improved heart shape and absence of the fractured sternal wire.

(fig 3). The patient recovered fully and was discharged from hospital five days later.

DISCUSSION

There have been several reports of fractured wire migration as a late complication of orthopaedic procedures. Some authors have reported wire migration locally.⁴ Others have reported migration intraspinally⁵ and intracranially.⁶ There also have been reports of fractured sternal wires and Kirschner wires migrating intrathoracically and into the pericardium.⁷⁻⁹

However, there has been only a single previous case report of a similar situation. Elami *et al*¹⁰ in 1991 described a 12 year old boy who developed a life threatening haemopericardium

two years after pectus excavatum repair, which at surgery was confirmed to be caused by penetration of a fractured metal plate through the pericardium into the right atrium.

We have reported a very unusual, uncommon yet very serious late complication of pectus excavatum repair.

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