Fractured Sternal Wire With Distal Migration and Penetration of the Right Ventricle

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A 63-year-old woman with a history of patent ductus arteriosus closure 17 years ago presented to hospital with palpitations. Chest X-ray revealed the presence of a fractured sternal wire at the level of the upper sternum and a radiopaque body with a cardiac shadow that was suspected to be a fragment of the sternal wire (**Figure A**). ECG-synchronized computed tomography and echocardiography revealed that a fragment of the sternal wire in the apex of the right ventricle (RV) had penetrated through the myocardium into the RV cavity without apparent pericardial effusion, floating or vegetation/thrombus (**Figure B,C; Supplementary Movies 1,2**). The patient had undergone chest X-ray follow-up in other clinics over the intervening years (**Figure D**). A chest X-ray performed 10 years prior to the current presentation revealed the presence of a cracked sternal wire at the upper sternum level, and fragmentation of the sternal wire was observed 5 years later. The option of surgical removal of the wire fragment from the RV apex was discussed and the following were considered in her management. First, symptoms were not apparent with either exercise or postural change. Second,

a second invasive open-chest operation would cause systemic stress and risked unexpected complications. Third, the patient and her family did not want to receive further invasive treatment. Therefore, conservative management and strict follow-up was conducted. At 2 years after presentation, the position of the wire fragment was stable. This case highlights the potential complications of a fragmented sternal wire and the need for periodic chest X-ray after sternotomy.

Disclosures

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Data Availability

The deidentified participant data will not be shared.

Supplementary Files

Supplementary Movie 1. Echocardiography images of a sternal wire penetrating through the myocardium.

Supplementary Movie 2. CT images of a sternal wire penetrating through the myocardium.

Please find supplementary file(s);
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Figure. (A) Chest X-ray, (B) CT, and (C) echocardiography images of a fractured sternal wire at the level of the upper sternum (blue arrow) and a fragment of the fractured sternal wire penetrating the right ventricle (RV: yellow arrow). (D) Magnified images of the fractured sternal wire (blue arrow) at 10 and 5 years prior to presentation.