

Multiple graft injury due to migrated non-broken sternal wires two years after cardiac surgery

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Abstract

Migration of sternal wires into vital structures is a rare but potentially life-threatening complication. While a few cases have been reported, the sternal wires were broken in those cases. To our knowledge, this is the first report of multiple, non-broken migrated sternal wires stabbing vascular grafts. A 65-year-old woman with a long history of treatment for extended aortic pathology, which included replacement of the aortic root (Bentall procedure, coronary artery reconstruction with Piehler technique), aortic arch and thoracoabdominal aorta, as well as thoracic endovascular repair (TEVAR), underwent mitral valve replacement due to severe mitral regurgitation under third median sternotomy. The postoperative course was uneventful, and she was followed as an outpatient. Two years after the surgery, she complained of anterior chest discomfort. Computed tomography (CT) revealed hemorrhaging around the vascular grafts in the mediastinum and migration of several non-broken sternal wires into the vascular grafts. We suspected graft injury due to the sternal wires, and open repair by reopening the sternotomy incision was performed. During redo sternotomy, massive bleeding occurred, so cardiopulmonary bypass was urgently established via femoral cannulation, and her body temperature was brought down. After careful dissection, tearing of the grafts at both the ascending aorta and left coronary artery was found under circulatory arrest with moderate hypothermia. Polypropylene sutures were placed to control bleeding.

Multiple graft injury due to migrated non-broken sternal wires two years after cardiac surgery

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Migration of sternal wires into vital structures is a rare but potentially life-threatening complication. While a few cases have been reported¹⁻⁴, the sternal wires were broken in those cases. To our knowledge, this is the first report of multiple, non-broken migrated sternal wires stabbing vascular grafts. A 65-year-old woman with a long history of treatment for extended aortic pathology, which included replacement of the aortic root (Bentall procedure, coronary artery reconstruction with Piehler technique), aortic arch and thoracoabdominal aorta, as well as thoracic endovascular repair (TEVAR), underwent mitral valve replacement due to severe mitral regurgitation under third median sternotomy. The postoperative course was uneventful, and she

was followed as an outpatient. Two years after the surgery, she complained of anterior chest discomfort. Computed tomography (CT) revealed hemorrhaging around the vascular grafts in the mediastinum (Fig. 1A) and migration of several non-broken sternal wires into the vascular grafts (Fig. 1B). We suspected graft injury due to the sternal wires, and open repair by reopening the sternotomy incision was performed. During redo sternotomy, massive bleeding occurred, so cardiopulmonary bypass was urgently established via femoral cannulation, and her body temperature was brought down. After careful dissection, tearing of the grafts at both the ascending aorta and left coronary artery was found under circulatory arrest with moderate hypothermia (Fig. 1C). Polypropylene sutures were placed to control bleeding. After surgery, a long hospital stay was required to treat the patient's deep sternal infection, and she ultimately died due to severe heart failure one year after this operation.

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Figure Legend

Figure 1. A and B: Computed tomography scan two years after cardiac surgery. Hemorrhaging around the ascending aorta (A, asterisk) and migration of non-broken sternal wires into the vascular grafts (B, white arrows) were seen. C: The intraoperative findings. Tearing of the vascular grafts was found under circulatory arrest (black arrows).

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