

**Case
Report**

Postoperative Elongation of the Xiphoid Process —Report of a Case—

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We report a case of a 66-year-old man who presented with an abnormal sensation, tenderness, and pain in the middle of his chest in May 2006, two years after a mitral valve replacement for severe mitral regurgitation and a MAZE operation for chronic atrial fibrillation elective cardiac. He was immediately admitted, and the x-ray examination revealed an abnormal elongation of the xiphoid process. At the time of discharge after the initial operation in 2004, x-rays indicated that the length of the xiphoid process was 3 cm; however, in 2006 it had elongated to 6 cm and was prominent in the anterior view. The patient underwent surgical extirpation of the xiphoid process while he was under local anesthesia. Histological examination of the resected xiphoid process revealed no signs of neoplastic or malignant change. The cause of the elongation of the xiphoid process was believed to be distraction tissue neogenesis. The xiphoid process, which fractured and separated from the sternum at the initial operation, was pulled down inferiorly by the rectus abdominis muscles, following which the xiphoid process became elongated and reconnected with the sternum. In cases of a fractured or amputated xiphoid process after median sternotomy, the xiphoid process should be resected to avoid its neogenesis.

Key words: elongation of the xiphoid process, poststernotomy, distraction tissue neogenesis

Introduction

Median sternotomy is the most common and standard approach for cardiac surgery. However, complications such as instability of the chest or mediastinitis sometimes occur after this procedure. Grauhan et al. have reported postoperative exostosis of the xiphoid process.¹⁾ Here, we describe a rare case of a patient with chest pain and an abnormal elongation of the xiphoid process that was surgically resected, 2 years after the initial cardiac surgery.

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Received: March 26, 2010; Accepted: April 11, 2010
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Case Report

A 66-old male who underwent mitral valve replacement (MVR) with a mechanical valve for mitral regurgitation and the MAZE procedure for atrial fibrillation 2 years previously was admitted to our hospital with a dull, heavy feeling of discomfort in the epigastric region. After the operation, the patient had been very well and under good control by anticoagulation therapy. However, 1 year after the operation, the xiphoid process had elongated and was protruding anteriorly, and the patient started to have a dull, heavy feeling of discomfort and bouts of pain in the mid portion of the epigastrium, particularly when in the prone position. At admission, x-rays indicated the length of the xiphoid process was 6 cm, whereas it was 3 cm in length at the time of discharge after the initial operation (**Fig. 1**). Also, 3D computed tomography (CT) scanning revealed a protruded and elongated xiphoid process (**Fig. 2**). The patient underwent

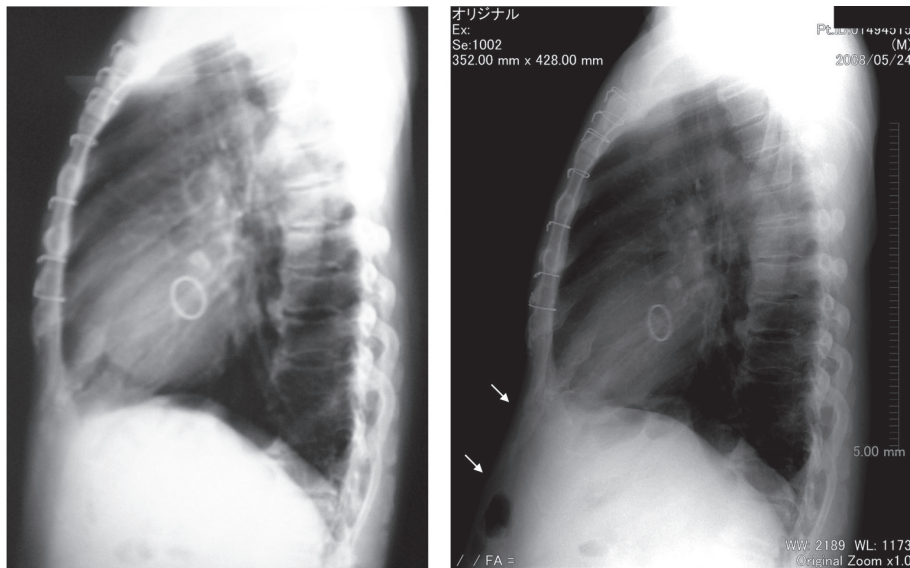


Fig. 1 Preoperative x-rays. A | B
 A: At the time of discharge after the initial operation, the length of the xiphoid process was 3 cm.
 B: At admission, the length of the xiphoid process was 6 cm.

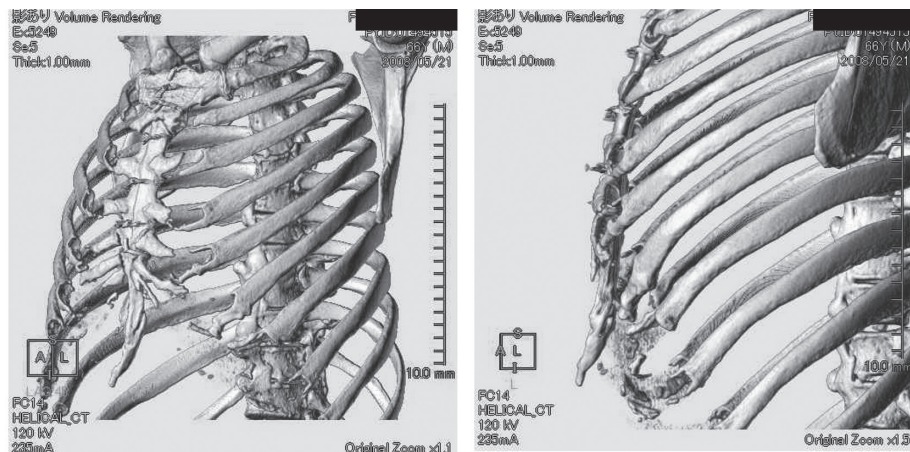


Fig. 2 3D-CT scanning revealed a protruded and elongated the xiphoid process. A | B
 A: Anterolateral view.
 B: Lateral view.

surgical extirpation of the xiphoid process under local anesthesia (**Fig. 3**). Histological examination of the resected xiphoid process revealed no signs of malignant or neoplastic change. The patient recovered uneventfully and the symptoms disappeared immediately after the operation. There have been no signs of recurrence 3 years after the resection.

Discussion

The cause of the elongation of the xiphoid process is

believed to be distraction tissue neogenesis. The xiphoid process which fractured and came off from the sternum in the initial operation was pulled down inferiorly by the rectus abdominis muscles, following which the xiphoid process elongated and reconnected to the sternum. The mechanism is the same as distraction osteogenesis for limb lengthening in orthopedic surgery.²⁻⁵⁾ After fracturing the xiphoid process and separating the xiphoid process from the sternum, we could lengthen the process by progressively stretching the gap that had been created. In cases where the xiphoid process has been fractured or

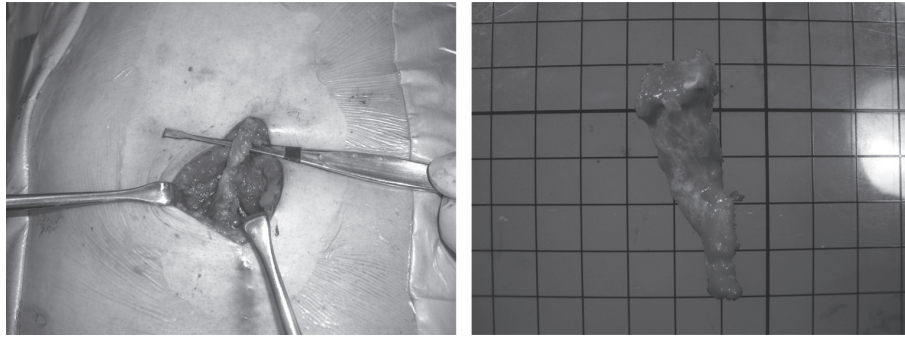


Fig. 3 Operative findings.

A: Intraoperative photograph.

B: Resected the xiphoid process.

A | B

amputated during a median sternotomy, the xiphoid process should be resected to avoid its neogenesis.

References

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