



A case of an incomplete sternal foramen

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Abstract

Sternal foramina have been repeatedly reported in the literature and carry the risk of a fatal cardiac puncture during acupuncture or sternal biopsy. Less attention has been paid to incomplete sternal foramina. A case of an incidentally found incomplete sternal foramen during computed tomography of the chest is presented. Especially in cancer imaging knowledge of this anatomical variation is crucial to prevent misinterpretation as an osteolytic lesion.

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Introduction

Midline sternal foramina have been repeatedly reported in the literature [1]. Because the close contact to a frequently punctured acupuncture meridian they carry a risk of life threatening complications like pneumothorax or even cardiac puncture [2]. Less attention has been paid to incomplete sternal foramina.

Case Report

A 55-year-old male patient underwent computed tomography (CT) of the chest to rule out malignancy. A standard chest CT scan was taken on a 16- slice CT scanner (Activion®, Toshiba Medical Systems, Tokio, Japan) with a slice thickness of 1 mm after intravenous administration of 60 mL iodized contrast media (Imeron® 350, Bracco Imaging, Konstanz, Germany). Incidentally a rounded defect in the posterior cortex of the caudal parts of the corpus sterni with sclerotic margins was found (Figure 1). No adjacent soft tissue mass could be found. The anterior cortex of the sternum was intact (Figure 1). The localization was similar to the described incomplete sternal foramina in the literature [3]. Overall there were no signs of

malignancy on the chest CT, especially no osteolytic lesions could be found.

Discussion

Different anatomical variations can be found at the human sternum. Because of the risk of incidental fatal cardiac puncture with acupuncture or sternal biopsy, complete sternal foramina have received most attention [1, 2]. There are other variations like incomplete fusions, sclerotic bands or incomplete sternal foramina [3]. In a CT study the frequency of incomplete sternal foramina, also called sternal notch or focal defect of sternal cortex, were found in 7.7% of subjects. Like in our case most of them were located in dorsal parts of the caudal manubrium sterni [3]. The incomplete sternal foramen in our case was incidentally detected. Incidental findings on imaging carry the risk to be misinterpreted as pathology leading to further unnecessary diagnostic test. So it is important to be aware of the incidental finding of an incomplete sternal foramen. Especially in cancer imaging, like in our case, an incomplete sternal foramen should not be confused with an osteolytic lesion.

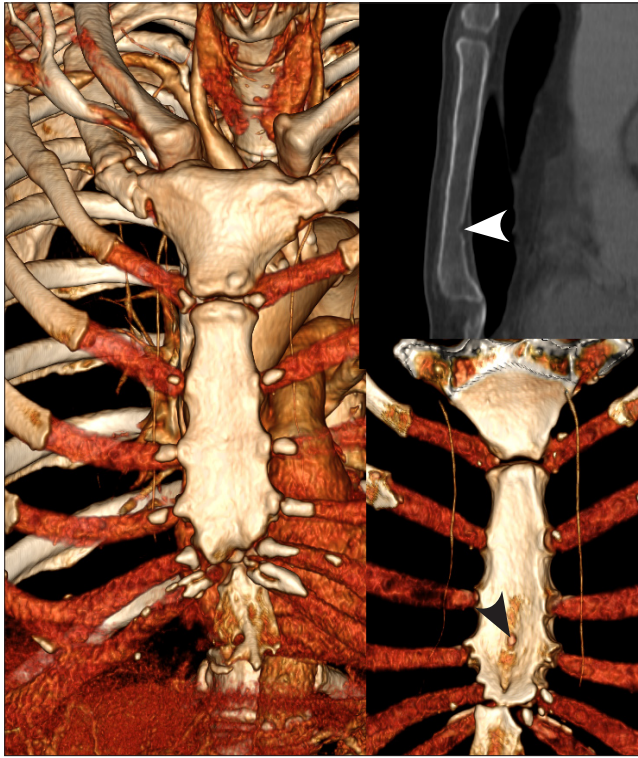


Figure 1. Computed tomographic images of the chest showing an *incomplete sternal foramen* (**arrowhead**) at the caudal posterior parts of the sternum (on the right). The frontal view is showing an intact cortex (on the left).

References

- [1] Kumarasamy SA, Agrawal R. A large sternal foramen. *Int J Anat Var (IJAV)*. 2011; 4: 195–196.
- [2] Halvorsen TB, Anda SS, Naess AB, Lewang OW. Fatal cardiac tamponade after acupuncture through a congenital sternal foramen. *Lancet*. 1995; 345: 1175.
- [3] Yekeler E, Tunaci M, Tunaci A, Dursun M, Acunas G. Frequency of sternal variations and anomalies detected with MDCT. *AJR Am J Roentgenol*. 2006; 186: 956–960.