

Os Sterna Foramina: An Observational Study

S.Yamona Nidhya

How to cite this article:

S.Yamona Nidhya. Os Sterna Foramina: An Observational Study. Ind Jr Anat. 2024;13(3):101-103.

Abstract

Introduction and Objectives: Sternum, looks like a sword which is the important bone forms the skeletal framework of the chest and it is the main protective bone of vital organs. The purpose of the study is to view the presence of foramen, shape, location, number of sternal foramen.

Materials and Method: A total of 35 dried sternum were obtained from the department of anatomy Shri Sathya Sai Medical College and Research Institute. The broken bone and the sternum with the degenerative changes is excluded from this study. The photos were documented.

Results: Out of 33 bones, one double foramen noticed at the body of the sternum and the xiphoid process and four single foramen is noticed at the body of the sternum and the Xiphoid process and body of the sternum. The foramen shape shows elliptical and round.

Conclusions: The anatomical knowledge of features and variations of sternum be important for the clinician and radiologists for proper interpretation.

Keywords: Sternebrae, Sternal foramen, Xiphoid process.

INTRODUCTION

The flat breast bone which protects and supports all the vital organs of the chest consist of prosternum, mesosternum and metasternum which also holds a notch, facet in the superior and lateral aspect for the articulation of ribs to form a complete, compact chest wall. Embryological sternum develops from four mesenchymal bars known as sternal bars. Six ossification centers

manubrium and xiphoid process each whereelse body of the sternum holds four.

The broad and superficial bone is a common puncture site for bone marrow aspiration, the thickness of the bone influence occurrence of fractures during minor injury to the anterior thoracic wall, results in ventilation and complicate recovery. Fractures cause severe heart injuries which is highly fatal. Osteoporosis of sternum is more common in female. The Median sternotomy common surgical approach for heart surgeries, hence the deep knowledge of this bone is important for any cardio-thoracic surgical intervention.

Author's Affiliation: Tutor, Department of Anatomy, Shri Sathya Sai Medical College and Research Institute, Chengalpattu 603108, Tamil Nadu, India.

Corresponding Author: S.Yamona Nidhya, Tutor, Department of Anatomy, Shri Sathya Sai Medical College and Research Institute, Chengalpattu 603108, Tamil Nadu, India.

E-mail: Yammonidhya@gmail.com

Received on: 29.07.2024 **Accepted on:** 02.09.2024

AIM

The aim of this study is to view the shape, presence or absence of sternal foramen.

MATERIALS AND METHOD

The present study was conducted at Shri Sathya Sai Medical College and Research Institute,



Chengalpattu, Tamil Nadu. The bones were collected from the Osteological Session of Anatomy Department. A total of dried 35 human sternum were observed for sternal foramen in this study. Two sterna were excluded due to malformations. Photographic documentations was done. The anatomic variations were noted during routine osteological classes.

RESULTS

A total of 35 sternum were observed in that two sternum were excluded for some morphological changes. Out of 33 only three sternum shows sternal foramen at the body of the sternum, one in Xiphoid process and only one with presence of double sternal foramen one in body of the sternum and the other at xiphoid process. The shape of the sternal foramen varies from oval, elliptical, round.



Fig. 2: Single foramen at the body of the sternum

Table 1: Tabulation showing the sternal foramen and it's percentage

Site/Location	Foramen	Shape	Total	Percentage
Body of the sternum	Single	Elliptical, Round, Oval	3	10
Xiphoid process	Single	Round	1	3.5
Body of the sternum and xiphoid processd	Double	Round, Oval	1	3.5



Fig. 1: Double foramen at the body of the sternum and the xiphoid process of the sternum

DISCUSSION

Balta *et al.*¹ stated the incidence of double sternal foramina in body of the sternum.

Arumugam *et al.*⁵ quoted presence of double sternal foramen present over the manubrium in one bone, double foramina in Xiphoid process

The present study is highly correlated with Arumugam *et al.* and Balta *et al* with presence of double sternal foramen.

Selthofer *et al.*⁷ stated oval shape of foramen in his study

Nikolaos, Gkasdaris⁶ observed high percentage 14% of sternum, shows foramen at the body of the sternum.

CONCLUSION

The Presence of sternal foramen is a common variation. Epigastric mass often mistaken for an elongated xiphoid process. Osteological knowledge, Radiological analysis is important to start of with any surgical intervention to avoid any serious complications.

REFERENCES

1. Balta C. An Anatomic Abnormality: Double sternal foramina. *Int J Clin Med Imaging*.2018;5
2. Standring S. *Gray's Anatomy the anatomical basis of clinical practice*, 40th edition, Churchill Livingstone-Elsevier, Edinburgh, London 2008:917p.
3. Ashley GT.A comparison of human and anthropoid mesosterna. *American Journal of Physical Anthropology*.1956;14(13):449-61.
4. Tandon A, Garo R, Sternal Foramen Case Report. *Med J Dr. DY Patil University*. 2016;9:1.
5. Arumugam K, Hemalatha Morphometric study of sternal foramen in adult human dry sternum. *Int J Anat Var*. Dec 2018;11(4);111-114.
6. Nikolaos, Gkasdaris. Morphological approach of the sternal foramen:An anatomic study and a short review of the literature. *Folia Morphologica* 1644-3284.
7. Selthofer, Rudez Morphometric Analysis of the sternum. *Coll Antropol*. 30(2006)1:43-47
8. Changani, Javia.Determination of sex from various measurements of human sternum and manubrium in Gujarat Population, *Journal of Research in Medical and Dental Science*.Vol:2, Issue1;59-65

