



A STUDY OF SACRAL HIATUS:

Anatomy

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ABSTRACT

The sacrum was considered to be a sacred bone. In fact the very name sacrum comes directly from the word os sacrum, a Latin word which means sacred bone. The sacrum was related to reproduction, fertility, and reincarnation in meso America. In olden days it was considered as a door way for the translocation of spirits from one world to other. Backache especially that belongs to the lower back is now becoming the case trends because of the life style that has been adopted by the modern society. Is there an anatomical micro – evolution taking place due to this. No one knows the reason for these but for a definitive answer a data base has to be built for the same. This study puts in a sincere effort to study the level at which the sacral hiatus opens. This is considered clinically important.

KEYWORDS

Anatomy, Backache, Sacrum, Evolution, Hiatus.

Introduction:

Sacrum is a flat bone which is triangular in shape and is actually formed by the fusion of five sacral vertebrae. The sacrum was considered to be a sacred bone. In fact the very name sacrum comes directly from the word os sacrum, a Latin word which means sacred bone. The sacrum was related to reproduction, fertility, and reincarnation in meso America. In olden days it was considered as a door way for the translocation of spirits from one world to other.

It connects the two hip bones posteriorly and superiorly it articulates with the fifth lumbar vertebra and distally with the coccyx. The sacrum is a triangular bone which is formed by the fusion of five vertebrae and forms the posterosuperior wall of the pelvic cavity. The bone is wedged between two hip bones. Rostrally the bone articulates with the fifth lumbar vertebrae and caudally it articulates with coccyx. The spines of the sacral vertebrae are fused to form the medial sacral crest.

Majority of the times the coccyx will be fused with the sacrum. The spines of the vertebra fuse posteriorly but there is a hiatus at the lower end of medial crest because of the failure of fusion of the lamina of the fifth sacral vertebra. Back pain is the most common complaint in the modern life. In some incidences sacralisation of lumbar vertebra seems to be the most common cause for backache.

The medial sacral crest presents below a sacral hiatus which is arched and is produced by the failure of the lamina of the fifth sacral vertebra to meet in the median plane¹. If the laminae of the higher sacral vertebrae are not fused, then the hiatus will be seen at a higher level. The hiatus is one of the useful landmarks to give epidural analgesia². Sometimes non-fusion of all the five laminae of the sacrum is observed posteriorly which will present a midline gap³. This condition is observed in spina bifida. These kinds of anatomical variations can cause lower backache⁴ and also may cause the failure of epidural analgesia⁵ procedure. Our study aims to observe such variations and help the anesthetists and orthopaedicians to be aware of such conditions while performing surgical procedures^{6,7}.

This study puts in a sincere effort to study the level at which the sacral hiatus opens. This is considered clinically important.

Aims and Objectives:

To study the sacral Hiatus.

Materials and Methods:

1. Fifty Sacrum that was available in the Department of Anatomy, at, ACME, Pariyaram, Kannur District, Kerala. The study was conducted from July 2016 to June 2017.

All the statistical Analysis was done using the latest SPSS software (2015), California.

Results:

Table 1: Level at which the sacral Hiatus Opens

Sacral Vertebra Level	Frequency
S1	01
S2	01
S3	09
S4	38
S5	01

In this study majority of the specimen had a hiatus at the level of S4. In fact out of the fifty studied thirty eight specimens the hiatus opens at the level of S4. That accounted for 74%. The second commonest position was found to be at the level of S3. The total number was found to be 09 which accounted to 18% of the total study. The third position was shared by S1 level, S2 level and that of S5 levels which accounted to 2% each.

Table 2: Test for Significance:

Level	Frequency:	P Value	Significance
S4	38	0.012	Significant

There is a significant difference between the frequency that is found at the level of S4 than any other levels.

Discussion:

The sacrum is developed by the fusion of five sacral vertebrae. The embryological development is very complicated and any deviation from the normal causes drastic effects. Since the embryologic development is complicated the deformities are very easily formed then previously taught. The chronic back pain is one of the main complaints seen not only in the elderly but also in people in their second and third decade of life. The knowledge of structural modification is essential. In clinical practice it is very important because the success of the caudal epidural anaesthesia depend upon such variations. Spina bifida occulta or cystica can be accompanied and neurological deficits can be present in such cases. Nutritional factors and environmental factors may play a major role in such deformities. Maternal Diabetes during pregnancy has been observed to cause sacral agenesia. The other part of the study is sacralisation which is a result of pathological calcification which directly restricts the movements and also is one of the main cause for chronic back pain. According to M P Shah the hiatus was found at the level of fourth sacral vertebrae in 55.9%, at the level of third sacral vertebrae in 33.7%, at the level of fifth sacral vertebrae in 3.4% and at the level of second sacral vertebrae in 3.4% in 1.5 % of the cases it was unfused and the rest was found at the level of first sacral vertebra. Our study is not in agreement with that of the other study. The difference may be because of the study in different population, the environmental factors which result in such deformities may be some of the differentiating points which form such

anomalies. In clinical practice it is very important because the success of the caudal epidural anesthesia depend upon such variations.

REFERENCES

1. Susan S et al., Gray's Anatomy. The Anatomical basis of clinical practice, 39th edn. 2005; pp.749-50, Churchill Livingstone, London.
2. Letterman GS, Trotter M. Variations of male sacrum; their significance in caudal analgesia. *Surg Gynaecol Obstet* 1944; 78: 551-5.
3. Sekiguchi M, Yabuki S, Satoh K, Kikuchi S. An anatomic study of the sacral hiatus: a basis for successful caudal epidural block. *The Clinical Journal of Pain* 2004; 20: 50-1.
4. High sacral hiatus with non fusion of lamina of first sacral vertebrae: A case report Vishal K., Vinay K.V., Remya K., Arunachalam Kumar& Shishir K. Department of Anatomy, K. S. Hegde Medical Academy, Mangalore, Karnataka, India.
5. Das S, Paul S. Spina bifida with higher position of sacral hiatus: a case report with clinical implications. *Bratisl Lek Listy* 2007; 108: 467-9. [5] M.P.Shah A study of sacral hiatus in dry human sacra. *J.Anat.Soc.India* 53 (2) 18-21 2004.
6. Shivanand ND, BidarkotimathS, Kumar S. Chronic lower backache:is this the anatomical answer. *J.Evid.Based Med.Healthc*.2016; 3(20),830-831
7. Dr Thejeswari, Dr. Shishirkumar: Study of the Level at which the Sacral Hiatus Opens in South Indian Population. Volume 3 Issue 7, July 2014; 547-548.