A Study of Sacral Hiatus

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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.

Keywords: Anatomy, Backache, Sacrum, Evolution, Hiatus.

1. 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 vertebrae 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 plane. 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 analgesia. Sometimes, non-fusion of all the five laminae of the sacrum is observed posteriorly which will present a midline gap. This condition is observed in spina bifida. These kinds of anatomical variations can cause lower backache and also may cause the failure of epidural analgesia procedure. Our study aims to observe such variations and help the anesthetists and orthopaedicians to be aware of such conditions while performing surgical procedures.

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

2. Aims and Objectives

To study the sacral hiatus

3. Materials and Methods

- Fifty Sacrum that was available in the Department of Anatomy, at K.S.Hegde Medical Academy.
- The study was conducted in the Department of Anatomy, K.S.Hegde Medical Academy, Deralakatte, Mangalore.
- The study was conducted from July 2016 to June 2017.
- All the statistical Analysis was done using the latest SPSS software (2015), California.

4. Results

<table>
<thead>
<tr>
<th>Sacral Vertebra Level</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>01</td>
</tr>
<tr>
<td>S2</td>
<td>01</td>
</tr>
<tr>
<td>S3</td>
<td>09</td>
</tr>
<tr>
<td>S4</td>
<td>38</td>
</tr>
<tr>
<td>S5</td>
<td>01</td>
</tr>
</tbody>
</table>

Table 1: Level at which the sacral Hiatus Opens

<table>
<thead>
<tr>
<th>Level</th>
<th>Frequency</th>
<th>P Value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>S4</td>
<td>38</td>
<td>0.012</td>
<td>Significant</td>
</tr>
</tbody>
</table>

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

5. 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 agenesis. 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