A CASE REPORT OF SACRALIZATION OF COCCYGEAL VERTEBRA

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ABSTRACT: The human sacrum is a wedge shaped bone with its base superior and formed by fusion of five sacral vertebrae inferior to the lumbar region. Its superior wide base articulates with fifth lumbar vertebra at lumbo sacral angle & its blunted caudal apex articulates with coccyx. Sacrum consists of four pairs of sacral foramina.

When first coccygeal vertebra fuses with the apex of sacrum, this process is known as sacralization of coccygeal vertebra. This sacrum is present with five pairs of sacral foramina. This anatomical variant is important during surgical procedures at the sacrococcygeal region, pediatric surgeries and obstetrics.

KEY WORDS: Sacralization, lumbar vertebra, coccygeal vertebra, spinal block.

MeSH Term:
Sacrum- [A02_835_232_834_717]
Lumbar vertebrae-[A02_835_232_834_519]
Coccyx – [A02_835_232_834_229]

INTRODUCTION: Sacrum consists of four pairs of sacral foramina. Coccyx is a small triangular bone formed by fusion of four rudimentary coccygeal vertebrae. Body of first coccygeal vertebra articulates with the apex of the sacrum [1]. When first coccygeal vertebra fuses with the apex of sacrum, this process is known as sacralization of coccygeal vertebra [2,3]. It may be either developmental or congenital anomaly.

CASE REPORT: We observed first coccygeal vertebra was fused with the apex of the sacrum. The transverse process of first coccygeal vertebra was fused with inferior angle of sacrum on both sides, coccygeal cornua of first coccygeal vertebra was also fused. [fig.1 & fig.2] This complete fusion of coccygeal vertebra with sacrum generated the formation of fifth sacral foramina. Five pairs of sacral foramina were present at the ventral surface of sacrum.

DISCUSSION: Normally sacrum is formed by fusion of five sacral vertebrae and it contains 4 pairs of sacral foramina. At the cranial end of sacrum there is fifth lumbar vertebra, which when fused with the first sacral vertebra is known as sacralization of lumbar vertebra. Similarly, at the caudal end, first coccygeal vertebra when fuses with the apex of sacrum is known as
sacralization of coccygeal vertebra. Both these condition leads to fifth pair of sacral foramina [2,3].

The appearance of sacrum with five pairs of foramina may be a developmental or congenital defect. Vertebrae are derived from the sclerotome portion of the somites. Patterning of the shapes of the different vertebrae is regulated by HOX GENES. So, probably mutation of HOX GENE leads to sacralization of coccygeal vertebra [4].

In lumbo-sacral spine disorders caudal epidural block is performed. In this procedure sacral cornua are identified. In case of sacralization of coccygeal vertebra, it will be difficult to identify the sacral cornua [5].

In sacralization of coccyx, coccyx becomes fixed and there is no increase in antero-posterior diameter of pelvic outlet. This may lead to prolonged second stage of labor and perineal tears and foetal distress [6].

Thus clinically, the sacralization of coccygeal vertebra is important which demands correct clinical and radiological assessment prior to spinal block and interventional procedures.

ACKNOWLEDGEMENT: We extend our thanks to Bhaskar RVS, Office superintend, Department of Anatomy, NRIIMS, Sangivalasa, Visakhapatnam, A.P (India).

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Figure 1. Dorsal aspect

Figure 2. Ventral aspect

(SF1: first pair of sacral foramina; SF5: fifth pair of sacral foramina; TP: transverse process of coccyx; CC: coccygeal cornua)