



## A rare osseous growth on sacrum

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### ABSTRACT

An unusual osseous growth on the ventral aspect of a male sacrum was observed during routine osteology demonstrations for undergraduate medical students. The osseous growth was predominantly arising from left half of the first sacral vertebral body and the promontory. Such a large growth on its ventral aspect can cause compression of rectum leading to pressure symptoms like constipation and of the sympathetic chain causing bladder and bowel dysfunction. If in female, its presence can also reduce the anteroposterior diameter of pelvic inlet thereby leading to obstructed labor. © *IJAV*. 2010; 3: 218–219.

**Key words** [sacrum] [variation] [congenital] [ossification]

### Introduction

The sacrum (os sacrum) is a large, triangular bone, situated in the lower part of the vertebral column and at the upper and back part of the pelvic cavity, where it is inserted like a wedge between the two hip bones; its upper part or base articulates with the last lumbar vertebra, its apex with the coccyx. It is curved upon itself and placed very obliquely, its base projecting forward and forming the prominent sacrovertebral angle when articulated with the last lumbar vertebra; its central part is projected backward, so as to give increased capacity to the pelvic cavity. The pelvic surface is concave from above downward, and slightly so from side to side. Its middle part is crossed by four transverse ridges, the positions of which correspond with the original planes of separation between the five segments of the bone. The portions of bone intervening between the ridges are the bodies of the sacral vertebrae.

Any osseous growth on the ventral aspect of sacrum can lead to obstruction symptoms since it is related rectum, sympathetic chain, urinary bladder and uterus.

### Case Report

During routine preclinical educational teaching of osteology specimens revealed an unusual osseous growth on the ventral aspect of a male sacrum (Figure 1). The osseous growth was predominantly arising from left half of the first sacral vertebral body and the promontory. It was directed vertically upwards anterior

to body of fifth lumbar vertebra along with 1.8 cm small extension originating from the right side of the main mass encroaching upon right half of promontory. The growth was irregularly oval in shape, measuring approximately 5 cm in length with a maximum width of 4 cm. The inferior part of the growth was thick, had regular margin and was fused dorsally with the ventral surface of body of first sacral vertebra. Superior part was lesser in thickness with irregular but smooth and free margin. Anterior surface of the growth was smooth but few vascular foramina were present on it. Posterior surface was rough with greater number of foramina. Rest of the sacral vertebrae including the ala and the lateral masses were as usual.

### Discussion

Presence of such a big osseous growth at this site was the unique aspect of this study. The study on dogs revealed that, because of appearance of separate centers of ossification in the ventral portion of the annulus, such a growth can be an osteophyte, large enough in size extending up to the midpoint of the ventral aspect of vertebral body [1]. Authors have not found any literature reporting such a big mass at this site in humans. This probably explains its occurrence at this site more in quadrupeds and rarely in humans because of adoption of erect posture. This growth can also occur as a result of disturbance of developmental sequence of axial skeleton which begins as early as fifteenth day of intrauterine life, from notochord, paraxial mesoderm, condensation of sclerotomes to the



**Figure 1.** Sacrum showing the rare growth on the ventral aspect.

formation of cartilaginous vertebral bodies [2]. Studies by other researchers reveal that instead of a single primary ossification center for the body, separate ventral and dorsal primary ossification centers appear for the centrum, which later fuse into single [3]. Based on

this it can be suggested that this rare variant could be a developmental anomaly because of the overgrowth of only the ventral ossification center. Longitudinal growth occurs as a result of proliferation and ossification of cartilages remaining on superior and inferior margins of vertebral bodies blending with developing intervertebral disc. According to some authors, on ventral aspect of each epiphyseal plate, cartilage cells are arranged in vertical columns and secondary ossification occurs by same process as seen in the metaphysis of long bones [4]. Unregulated chondrification on the ventral aspect may be responsible for the longitudinal growth of the mass. Another study suggests that on one side of outer edge of the first sacral vertebra, a separate ossification center occurs [5]. Overgrowth and incomplete fusion of this center with the first sacral body could be an alternate explanation to the present variant. The sacrum, by virtue of its anatomic location, grabs the attention of multiple medical specialists. Such a large growth on its ventral aspect can cause compression of rectum leading to pressure symptoms like constipation, and of the sympathetic chain causing bladder and bowel dysfunction. If in female, its presence can also reduce the anteroposterior diameter of pelvic inlet thereby leading to obstructed labor.

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