

## GROSS MORPHOLOGICAL CHARACTERISTICS OF SACRUM OF LANGUR (*SEMNOPITHECUS ENTELLUS*)

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Received: 10.10.2015; Accepted: 24.12.2015

### SUMMARY

Sacrum of the langur was formed by union of three sacral vertebrae and was roughly quadrilateral and flattened dorsoventrally. It had two surfaces, two borders, broad cranial end and narrow caudal end. Dorsal surface of the sacrum was slightly convex and was divided into two equal halves by a median sacral crest. The height of supraspinous processes decreased cranio-caudally. On the either side of median sacral crest, small spiny protuberances were present. Sacral wings were roughly quadrilateral in shape. The diameter of sacral foramina was uniform. Ventral surface was concave and smooth. Two transverse ridges were distinct.

**Key words:** Morphology langur, sacrum

Langur is one of the wild species under threat of extinction in India. The main threat to the wild population are habitat destruction, loss and fragmentation and poaching for pelt, flesh, blood, organs to produce medicines and aphrodisiacs (Reddy, 2008). Sacrum is important fused vertebrae of the vertebral column and plays a vital role in transmission of force of thrust from hindlimb to forelimb by forming fixed sacro-iliac articulation. Accordingly, the present study was undertaken to study sacrum of langur.

The sacrum of two adult langurs was procured during the postmortem examination from Department of Veterinary Anatomy, College of Veterinary Science and Animal Husbandry Anjora, Durg. The bones were macerated, cleaned, processed and prepared for study (Young, 1980).

Sacrum of the langur was formed by fusion of three sacral vertebrae because two dorsal and two ventral sacral foramina were present. Sacrum was roughly quadrilateral and flattened dorso-ventrally. It had two surfaces, two borders with broad cranial end ( $6.20 \pm 0.17$  cm) and narrow caudal end ( $4.00 \pm 0.05$  cm) as described in carnivores by Liebich and Konig (2004). However, Getty (1975) described that sacrum was triangular shaped in domestic animals.

Dorsal surface of the sacrum was slightly convex and divided in to two equal halves by a median sacral crest (Fig. 1). Median sacral crest was formed by the fusion of supraspinous processes of the vertebral segments as reported in cattle by Dyce *et al.* (2009). The fusion

was complete at the base of the supraspinous processes while, fusion was complete only between first two sacral vertebrae towards the apex. The height of supraspinous process decreased cranio-caudally. The approximate ratio between height of first and third supraspinous process was 2.5:1. Beside, the median sacral crest, a small spiny protuberance was present at the first and second dorsal sacral foramina, which may indicate the presence of rudimentary articular process. Sacral wings were roughly quadrilateral in shape. Ratio between articular (*Facies auricularis*) to non-articular part was 3:1. Sacral wings were extended upto the caudal third part and were formed by the contribution of transverse processes of first and second sacral vertebrae. Lateral plate was small and formed by the contribution of second and third sacral vertebrae. The length of sacral wing and lateral plate was  $4.0 \pm 0.12$  and  $2.0 \pm 0.14$  cm, respectively. The large cranial articular process of first sacral vertebra had oval to elongated flat articular facet that directed cranio-dorsally

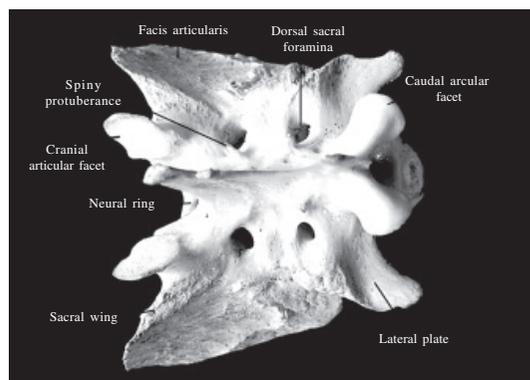


Fig 1. Dorsal surface of sacrum of langur

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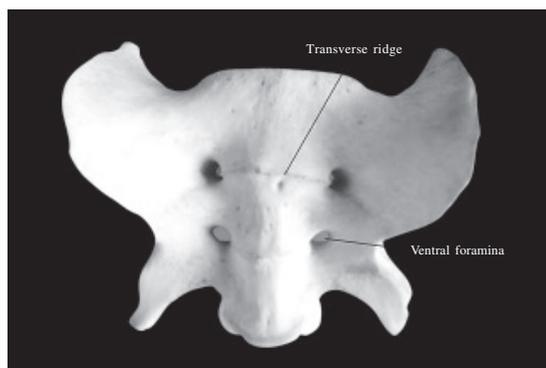


Fig 2. Ventral surface of sacrum of langur

at wide angle. But small caudal articular process was round in shape. The cranial articular notch separated the cranial articular facet and sacrum promontory. The neural ring was almost equilateral triangle in shape. Similar finding was reported by Nickel *et al.* (1986) in cattle. The diameter of sacral canal decreased caudally. There were two pairs of small, medio-laterally directed dorsal sacral foramina on either side of spine protuberance. The diameter of foramina was uniform.

Ventral surface was concave and smooth (Fig. 2). Two pairs of ventral sacral foramina were seen distinctly on either side of the body. Presences of two transverse ridges indicated the fusion of the vertebrae. The length (cm) of first, second and third sacral vertebrae was  $1.7 \pm 0.02$ ,  $1.3 \pm 0.05$  and  $1.1 \pm 0.12$ , respectively.

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