

Short Communication

GROSS ANATOMICAL STUDIES ON OS COXAE OF INDIAN EAGLE OWL (*BUBO BENGALENSIS*)

Kamal Sarma¹, Shalini Suri², Jasvinder Singh Sasan^{3*}

Received 29 May 2018, revised 16 November 2018

ABSTRACT: The present study was conducted on the os coxae of adult Indian eagle owl. The os coxae of Indian eagle owl consisted of 3 bones namely ilium, ischium and pubis. All the three bones were fused and the space between the pelvic bones was occupied by lumbo-sacral mass. Ventrally, the bones did not unite with each other leaving pelvis open. Ilium was divided into pre-acetabular and post-acetabular parts. The dorsal surface of pre-acetabular part was concave whereas post-acetabular part was small and slightly convex. A very sharp and prominent crest was observed dorsally on either side of the lumbo-sacral mass. Anteriorly, the ventral surface of the ilium was flat and posteriorly, it presented renal fossa for the lodgment of the kidneys. The ischium was flat and somewhat triangular in outline. It formed a large sciatic foramen with ilium and a small obturator foramen with pubis. Pubis was a thin rib-like elongated bone situated along the ventral border of ischium and formed ischio-pubic incisures with the ventral border of ischium. There was no pectineal process at the anterior end of the pubis. The acetabulum was circular in outline and in the form of a foramen. A large triangular shaped anti-trochanter was observed in the caudo-dorsal aspect of acetabulum for articulation with trochanter major of the femur.

Key words: Os coxae, Pectineal process, Sciatic foramen, Indian eagle owl.

The Indian eagle-owl, also called the rock eagle-owl or Bengal eagle-owl (*Bubo bengalensis*), is a species of large horned owl restricted to the Indian subcontinent. They are typically large owls, and have “tufts” on their heads. They are generally nocturnal and flies with slow, deliberate wingbeats interspersed with long bouts of gliding on outstretched wings. They usually fly close to the ground. They primarily hunt rats and mice, but also take birds up to the size of peafowl. The literature is available on the gross anatomy of os coxae of spot-billed pelicans (Sathyamoorthy *et al.* 2012), emu (Mehta *et al.* 2013), ostrich (Tamilselvan *et al.* 2015) and Bar-headed goose (Sasan *et al.* 2017) but very little information is available about Indian eagle owl. Keeping in view the paucity of literature, this study was conducted so as to generate the useful baseline data for clinicians in treating surgical and other clinical disorders in this species.

The study

The present study was conducted on the os-coxae of one adult Indian eagle owl obtained dead near the Division of Veterinary Anatomy, F.V.Sc & A.H, SKUAST-

J, R.S Pura. The bones were processed as per standard technique (Raghavan 1964) and subsequently studied to record its gross morphological features.

The os coxae of Indian eagle owl consisted of 3 bones namely ilium, ischium and pubis as also reported by Bharath Kumar *et al.* (2016). All the three bones were fused. The space between the pelvic bones was occupied by lumbo-sacral mass (Fig. 1) (Lavanya *et al.* 2017). The pelvis together with lumbo-sacral vertebrae formed an irregular, shell-like structure extending superiorly from tail to thoracic region. The sacrum together with ilium formed pelvic roof. Ilium and ischium formed its lateral walls. Ventrally, the bones do not unite with each other, so pelvis was an open structure (Fig. 2) as observed by Mehta *et al.* (2013) in emu and Sasan *et al.* (2017) in Bar-headed goose. This open structure act as shield for protecting underlying viscera (Kumar and Singh 2014).

Ilium

The ilium was elongated in shape and divided into pre-acetabular and post-acetabular part (Fig. 1). Both parts were joined with lumbo-sacral mass. Cranially, the pre-

¹ Professor, ² Professor and Head, ³ Assistant Professor, Division of Veterinary Anatomy, F.V.Sc & A.H, SKUAST-J, R.S Pura- 181102, Jammu and Kashmir, India.

* Corresponding author. e-mail: jssasan216@gmail.com

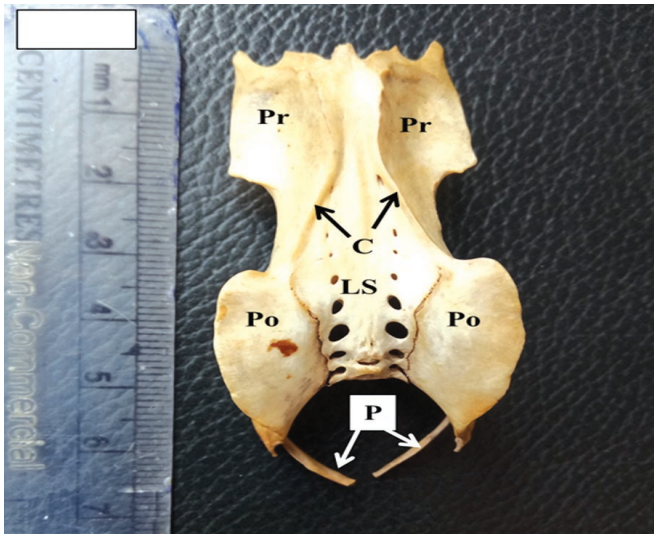


Fig. 1 Photograph of dorsal aspect of os-coxae of Indian eagle owl showing pre-acetabular (Pr), post-acetabular (Po) parts of ilium, lumbo-sacral mass (Ls), crest (C) and posterior extremity of pubis (P).

acetabular part was completely fused with the dorsal spinous processes of lumbo-sacral mass. In contrast, such fusion was absent in pigeon (Lavanya *et al.* 2017).

The dorsal surface (gluteal surface) of pre-acetabular part was concave whereas the post-acetabular part was small and slightly convex as observed by Bharath Kumar *et al.* (2016) in Barn owl. A very sharp and prominent crest (Fig. 1) was observed dorsally on either side of lumbo-sacral mass. Anteriorly, crests of both sides were very close to each other but posteriorly they widened apart. The maximum width was seen at the level of acetabulum. The crest of pre-acetabular part continued as lateral border of post-acetabular part.

Anteriorly, the ventral surface of ilium was flat and fused with transverse processes of lumbo-sacral mass. At this part, four large foramina were observed on either side of median plane (Fig. 2) for the passage of spinal

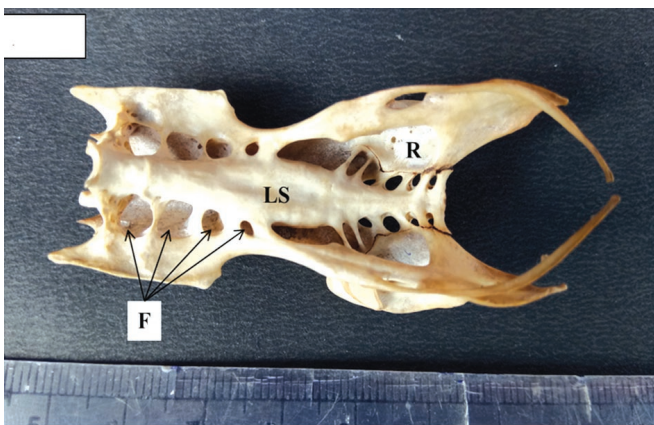


Fig. 2. Photograph of ventral aspect of os-coxae of Indian eagle owl showing lumbo-sacral mass (LS), foramina (F) and renal fossa (R).

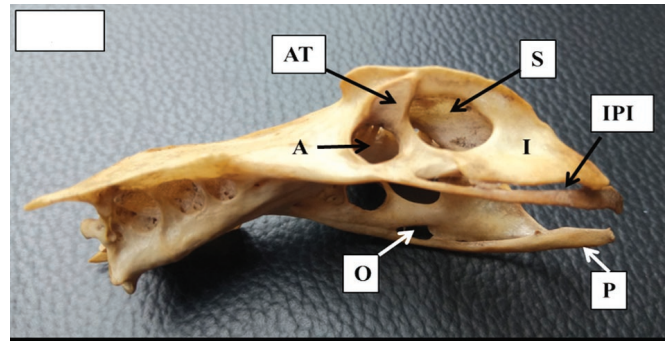


Fig. 3. Photograph of lateral aspect of os-coxae of Indian eagle owl showing acetabulum (A), anti-trochanter (AT), ischium (I), pubis (P), sciatic foramen (S), obturator foramen (O) and ischio-pubic incisure (IPI).

nerves. Posteriorly, it presented a depression, the renal fossa (Fig. 2) for the lodgment of kidneys. However, no such depression was observed in emu (Mehta *et al.* 2013) and Bar-headed goose (Sasan *et al.* 2017). This might be due to species variations.

Ischium

Ischium was flat, somewhat triangular (Fig. 3) in outline and lies below the post-acetabular part of ilium. Its pointed end was directed posteriorly. It formed a large sciatic foramen (Fig. 3) with ilium posterior to acetabulum. Similar observations were made by Nickel *et al.* (1977) in domestic fowl and Lavanya *et al.* (2017) in guinea fowl and pigeon. The ventral border of ischium joined with pubis anteriorly to form obturator foramen (Fig. 3). It continued behind as a fissure (ischio-pubic incisure) (Fig. 3) as also observed by Lavanya *et al.* (2017) in guinea fowl and pigeon and Nickel *et al.* (1977) in domestic fowl and duck. The posterior border was free.

Pubis

It was a thin rib-like elongated bone (Fig. 3) situated along the ventral border of ischium and formed ischio-pubic incisure with the ventral border of ischium. In guinea fowl and pigeon, ischio-pubic incisure continued anteriorly with obturator foramen (Lavanya *et al.* 2017). Pubis extended beyond the level of ilium and ischium in corroboration to the findings of Sasan *et al.* (2017) in Bar-headed goose. However, in emu, pubis did not project beyond the ilium and ischium (Mehta *et al.* 2013). The caudal end of pubis was bent medially to meet with its fellow of opposite side. Pubis was narrow anteriorly and wide posteriorly. The posterior end was roughly rounded. No pectineal process observed at the anterior end of the pubis. Similar findings were reported by Mehta *et al.* (2013) in Japanese quail and Lavanya *et al.* (2017) in

pigeon. However, pectineal process was present in domestic fowl (Nickel *et al.* 1977).

Acetabulum

It was circular in outline and in the form of a foramen (Fig. 3). A large triangular shaped anti-trochanter (Fig. 3) was observed in the caudo-dorsal aspect of acetabulum with its pointed apex projecting dorso-caudally. This facet is for articulation with trochanter major of femur as mentioned by Resk (2015) in cattle erget.

REFERENCES

Bharat Kumar ML, Santhi Lakshmi M, Pramod Kumar D (2016) Gross anatomy of different bones in the Barn owl (*Tyto alba*). *Int J Sci Env Tech* 5(4): 1893-1896.

Kumar P, Singh G (2014) Gross anatomy of wing and pelvic limb bones in emu (*Dromaius novaehollandiae*). *Indian J Vet Anat* 26(2): 82-86.

Lavanya C, Jayachitra S, Iniyah K, Balasundaram K (2017) Comparative anatomy of os coxae in guinea fowl and pigeon. *Int J Cur Micro App Sci* 6(9): 3655-3659.

Mehta S, Guha K, Singh KK (2013) Gross anatomical studies on the os-coxae and synsacrum of emu (*Dromaius novaehollandiae*). *Indian Vet J* 90(9): 79-81.

Nickel R, Schummer A, Seiferlie E (1977) *Anatomy of the domestic birds*. Verlag Paul Parey, Berlin. 16-17.

Raghvan D (1964) *Anatomy of ox*. Indian Council of Agricultural Research, New Delhi. 17.

Resk HM (2015) Anatomical investigation on the appendicular skeleton of the cattle erget (*Bubulcus ibis*). *J Exp Clin Anat* 14(1): 5-12.

Sasan JS, Suri S, Sarma K (2017) Gross anatomical studies on the os-coxae of Bar-Headed goose (*Anser indicus*). *Indian Vet J* 94(05): 09-10.

Sathyamoorthy OR, Thirumurugan R, Senthil Kumar K, Jayathangaraj MG (2012) Gross morphological studies on the pelvic girdle of spot-billed pelicans (*Pelecanus philippensis*). *Indian J Vet Anat* 24: 109-110.

Tamilselvan S, Iniyah K, Jayachitra S, Sivagnanam S, Balasundaram K, Lavanya C (2015) Gross anatomy of os-coxae of ostrich (*Struthio camellus*). *Int J Curr Micro App Sci* 4(4): 201-205.

Cite this article as: Sarma K, Suri S, Sasan JS (2018) Gross anatomical studies on Os coxae of Indian eagle owl (*Bubo bengalensis*). *Explor Anim Med Res* 8(2): 208-210.