TRIFURCATION OF POSTERIOR DIVISION OF INTERNAL ILIAC ARTERY: A CASE REPORT
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ABSTRACT: Internal Iliac Artery has a large territory of distribution like all pelvic viscera, Gluteal region and the posterior & antero medial compartments of thigh through its visceral and parietal branches. The rare variation in the branching pattern of posterior division of Internal Iliac Artery was noted during routine cadaveric dissection of pelvic region for first year medical undergraduates in a 60 year old male cadaver. Knowledge of the variations of Internal Iliac Artery may be of use to the radiologists and also to the surgeons to avoid accidental hemorrhage during pelvic surgeries.

KEYWORDS: Posterior division, Inferior Gluteal Artery, Internal Pudendal Artery.

INTRODUCTION: Internal Iliac Artery one of the terminal branches of Common Iliac Artery, extends from the lumbo-sacral inter vertebral disc to the superior margin of greater sciatic foramen¹,² During its course, it descends anterior to the sacro-ilial joint & divides into anterior & posterior trunks. The posterior trunk passes posterior to the greater sciatic foramen and gives off ilio-lumbar and, lateral sacral arteries and continued as Superior Gluteal Artery. Variations in the branching pattern of Internal Iliac Artery are common & reported by various authors. Inferior Gluteal Artery usually arises from the anterior division and passes below the ventral ramus of S1, then between piriformis and coccygeus and enters the Gluteal region through greater sciatic foramen. The origin of Inferior Gluteal Artery along with Superior Gluteal Artery from the trunk of Internal Iliac Artery is also common, but from the posterior division of Internal Iliac Artery was rare.³ In the present case the variant trifurcation of posterior division was noted. Inferior Gluteal Artery instead of taking origin from anterior division, arose as a branch of posterior division along with Obturator Artery & Ilio Lumbar Artery.

CASE REPORT: During regular dissection classes of pelvic region for first year medical undergraduates revealed the variant trifurcation of posterior division of Internal Iliac Artery in a 60 year old male cadaver. The posterior division of Internal Iliac Artery immediately at its origin trifurcated into 1) Lateral Sacral Artery, 2) Superior Gluteal Artery & 3) a common trunk, which further sub divided into Ilio-lumbar, Obturator & Inferior Gluteal Artery (Figures 1, 2).

1) Lateral Sacral Artery sprouted as 2 small branches from posterior division.
2) Superior Gluteal Artery bent towards the greater sciatic foramen and exited into the Gluteal region by passing above the superior margin of pyriformis.
3) The third branch gave rise to Ilio-lumbar, Obturator and continued as Inferior Gluteal Artery (Figures 2, 3). Except continuation of anterior division as Internal Pudendal Artery
through greater sciatic foramen, no other variation was noted in its origin and course (Figures 1, 3).

**DISCUSSION:** The first attempt made by Jastschinski 1891\[^4\] in Polish subjects to classify the variations in the origin of parietal branches into three categories as a) large caliber vessels (Superior Gluteal, Inferior Gluteal & Internal Pudendal arteries) b) Medium caliber vessels (Obturator Artery) and c) Small caliber vessels (Ilio-lumbar and Lateral Sacral Arteries). Jastschinski\[^4\] 1891 found that only the arteries in the first group showed regularity in their origin and classified the variations into four types. Adachi (1928)\[^5\] modified this method by adding a fifth type of variation and includes certain sub types, in a study of Internal Iliac Artery and its branches in Japanese subjects. Lipshutz (1918),\[^6\] Ashley & Anson (1941)\[^7\] employed the Umbilical Artery in addition to the three large parietal trunks for typing and the Obturator Artery for subtyping the Internal Iliac Artery variations. Braithwaite\[^8\] conducted study of Internal Iliac Artery variations in British subjects and he noted that the Obturator Artery was given off by Inferior Gluteal Artery very rarely (4.7% of cases in 169 pelvic halves.). Murli Manju et al\[^9\] in their study found type II a in 4 (6.6%) cases. Sateesha Nayak B et al\[^10\] mentioned the absence of Inferior Gluteal Artery and the origin of Internal Pudendal Artery from the posterior division of Internal Iliac Artery in their case report. The present case was a rare variant of type II a of Adachi’s classification. In this type the Superior Gluteal Artery and Inferior Gluteal arteries arise by a common trunk and Internal Pudendal Artery arises separately. In the present case, even though the Superior Gluteal and Inferior Gluteal arteries had a common origin from posterior division, Ilio-lumbar and Obturator Artery spring from a common trunk which continued as Inferior Gluteal Artery. As per the previous observations, during the development, the most appropriate channels enlarge and the others get retracted or disappear, which will result in the final arterial pattern.\[^11\]

**REFERENCES:**


Fig. 1: Shows the branches of both anterior and posterior divisions of Internal Iliac artery

(IIA: Internal Iliac Artery, AD: anterior division of Internal Iliac Artery, PD: posterior division of Internal Iliac Artery, LSA: Lateral sacral Artery, SGA: Superior Gluteal Artery, IGA: Inferior Gluteal Artery, IPA; Internal Pudendal Artery, OA: Obturator Artery)

Fig. 2: Shows the branches of posterior divisions of Internal Iliac artery
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(IIA: Internal Iliac Artery, AD: cut end of anterior division of Internal Iliac Artery, PD: posterior division of Internal Iliac Artery, LSA: Lateral sacral Artery, SGA: Superior Gluteal Artery, IGA: Inferior Gluteal Artery, IPA; Internal Pudendal Artery, OA: Obturator Artery, ON: Obturator nerve, ILA: Ilio-lumbar Artery)

Fig. 3: Shows the Inferior gluteal artery & Internal pudendal artery under Gluteus maximus muscle

(IGA: Inferior Gluteal Artery, IPA: Internal Pudendal Artery)

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