ORIGINAL RESEARCH PAPER

Volume-8 | Issue-8 | August - 2019 | PRINT ISSN No. 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

THE ORIGIN VARIABILITY OF ILIOLUMBAR ARTERY

Anatomy

Dr. Aparna Veda Priya. K Incharhge professor/HOD,Dept of Anatomy, Osmania medicalcollage, Koti, Hyderabad, Telangana.

Dr. Tuniki Meena* Post graduate,dept of Anatomy, Osmania medical collage,Koti,Hyderabad,Telangana. *Corresponding Author

Dr. Heena Fathima Post graduate,dept of Anatomy, Osmania medical collage,Koti,Hyderabad,Telangana.

Dr. Mohd. Imtesal Ali Zishaan Post graduate,dept of Anatomy, Osmania medical collage,Koti,Hyderabad,Telangana.

ABSTRACT

Introduction: The aim of this study is to reveal the variations of origin of iliolumbar artery and its relations with the surrounding surgically important anatomical structures.

Methods: The origin of iliolumbar artery were determined unilaterally in 22 formalin-fixed cadavers (18male and 4 female) in the Department of anatomy.

Results: Iliolumbar artery was originating from bifurcation of internal iliac artery in one cadaver out of twenty two.

Conclusion: The anatomical properties of iliolumbar artery and its relation with anatomical landmarks, which were presented here, would be helpful in decreasing iatrogenic trauma to iliolumbar artery during pelvic surgery.

KEYWORDS

Iliolumbar artery ,Posterior trunk, spine surgery,lumbosacraltrunk

INTRODUCTION:

Iliolumbar artery classically arises from the posterior trunk of internal iliac artery and extends in an oblique diction superiorly and laterally in front of sacroiliac joint and lumbosacral trunk. It crosses obturator nerve and external iliac artery and vein. Subsequently it reaches to medial edge of psoas major, branches of lumbar and iliac arteries behind this muscle and joins the arterial supply of iliac bone, iliopsoas, quadratus lumborum. Iliolumbar arterial injuries can be seen during anterior and anterolateral surgical procedures of lumbar/lumbosacral vertebrae and major vascular and neural structures. Location and variations of iliolumbar artery are very important for surgeons, since it is used as feeding pedicle in bone flaps and has injury risk after pelvic trauma or regional operations . On the other hand, there are only a few studies investigating its anatomical variations and its relations with the important neurovascular structures. In this study, we aimed to determine the variations of iliolumbar artery and its relation with important anatomical structures.

MATERIALS AND METHODS:

This study investigated 22 hemipelves from 22 cadavers (18males &4females) dissected to study the origin of the ILA. The peritoneum was removed carefully. At the level of the sacral promontory, the sigmoid colon was sectioned from the rectum at the rectosigmoidal junction, Waldeyer's fascia was incised and the rectum released from the pelvic wall. Afterward reflection of the pelvic viscera, the pelvic fascia was divided and removed from the pelvic wall. Subsequent to removal of the endopelvic fascia, the iliac system (venous and arterial) was exposed,The veins were carefully removed up to the level of formation of the common iliac vein. As soon as the internal iliac artery bifurcation appears, the posterior trunk has to be inspected carefully. In case of finding difficulty to observe the ILA as a branch of posterior trunk, the medial and dorsal aspect of the internal iliac artery has to be inspected or even higher level as common or external iliac artery

RESULTS:

The present study comprises 22hemipelves from 22cadavers (18males & 4females) dissected to investigate the Iliolumbar artery origin. The iliolumbar artery usually arose from posterior trunk of internal iliac artery .In my study iliolumbar artery arose from bifurcation of internal iliac artery in 4.5%.In few studies iliolumbar artery arose from common iliac artery in 4.8% , from internal iliac artery 19%, from posterior trunk of internal iliac artery in 71.9%. Obturator nerve is one of the important neural structures closely related with iliolumbar artery before dividing to lumbar and iliacus branches. Lumbosacral trunk was the other neural structure closely related with the artery.

DISCUSSION :

In reconstructive bone surgery, vascularized bone grafts have some advantages such as rapid bone healing and decreased morbidity. Iliac crest is supplied by different vessels and it can be used in reconstructive bone surgery in different ways.Deep circumflex iliac artery, superior gluteal artery, fourth lumbar artery, and iliolumbar artery are used as vascular pedicle in iliac crest flaps. Iliolumbar artery and its branches are used in bone reconstructions and particularly in lumbar spinal surgery as supplying pedicle, because it is easily defined, lies in loose connective tissue, and has appropriate length and diameter. Besides serving as a vascular pedicle of bone grafts, the trajectory of iliolumbar artery is important because it is vulnerable to injury during lumbosacral spinal surgery, anterior approaches to sacroiliac joint, and posterior pelvis fractures. Harrington reported that iliolumbar artery can be injured during L5-S1 far-lateral disc excision and emphasized the importance of its variations at this level. Ebraheim et al. reported that iliolumbar artery and branch supplying ilium that arises from iliolumbar artery have injury risk during anterior approaches to sacroiliac joint for arthrodesis and internal fixation. Thus, the anatomic location of the artery must be well known In addition, Yiming et al. suggested that iliolumbar artery can be injured during open-book or shearing fractures because it has very close relation with sacroiliac joint. So if a patient has pelvic posterior arcus fracture and bleeding symptoms, injury risk of iliolumbar artery should be considered. The vascular anatomy of pelvis and sacrum is also very important in orthopedic surgery and in some spinal fixations. The relationship of the iliolumbar artery with sacroiliac joint and L5 increases the injury risk of artery during posterior pelvic fixations or lumbosacral implantations. Anterior exposure of the lumbosacral junction and the L4/L5 disc space is widely used in the surgical treatment of tumors, infections, and degenerative disorders. Posterior surgery is advocated for open-book type pelvic fractures, and it can be used by percutaneous way.[9] It is also indicated for spinopelvic fixations in neuropathic scoliosis. For these approaches, determination of variations of the iliolumbar artery and topographical patterns are crucial. This study showed that iliolumbar artery arising from bifurcation of internal iliac artery.Injury of iliolumbar artery during surgery may lead to acute hemorrhage or postoperative hematoma. Anatomical variations of iliolumbar artery can also be important for harvesting the vascular iliac bone graft. The surgeon should consider that the anatomical variations of iliolumbar artery may complicate both anterior exposure of lumbosacral junction and posterior sacroiliac fixation.

CONCLUSION:

The posterior trunk of the internal iliac artery is the most common origin of the iliolumbar artery (77.9 %). The variability origin of the iliolumbar artery can improve our understanding of the vascular

complication and complex clinical hemorrhage affecting this region.This study was done to improve the effectiveness of surgical approaches to this region and decreasing iatrogenic trauma to iliolumbar artery during surgery.

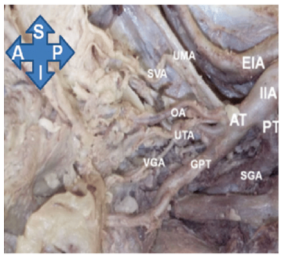

Fig. 1 Iliolumbar artery is the first branch of the posterior tru
common iliac artery, EIA external iliac artery, IIA internal iliac
posterior trunk, UMA umbilical artery, SVA superior vesical a
gluteo pudendal artery, SGA superior gluteal artery, ILA iliolu

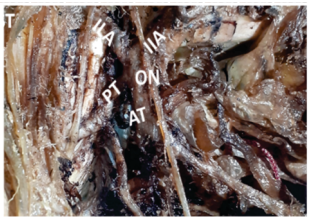

Fig.2 Iliolumbar artery arising from bifurcation of internal iliac artery. IIA internal iliac artery , ILA iliolumbar artery ,LST lateral sacral trunk PD posterior trunk, AD anterior trunk , obturator nerve.

REFERENCES

1. Winters HA, van Harten SM, van Royen BJ. The iliolumbar artery as the nutrient pedicle for an iliac crest graft: a new technique in reconstruction of the lumbar spine. Plast Reconstr Surg 2002;109:249-52.
2. Chen RS, Liu YX, Liu CB, Hu YS, Xu DC, Zhong SZ, et al. Anatomic basis of iliac crest flap pedicled on the iliolumbar artery. Surg Radiol Anat 1999;21:103-7.
3. Harrington JF Jr. Far lateral disc excision at L5-S1 complicated by iliolumbar artery incursion, Neurosurgery 2001;48:1377-80.
4. Hayashi A, Maruyama Y, Okajima Y, Motegi M. Vascularized iliac bone graft based on a pedicle of upper lumbar vessels for anterior fusion of the thoraco-lumbar spine. Br J Plast Surg 1994;47:425-30
5. Carter H (ed) (1867) Anatomy descriptive and surgical. Philadelphia, London, pp 429–446
6. Sharpey W, Thomson A, Cleland J (eds) (1867) Quain's elements of anatomy, 7th edn. Longmans, Green and Co, London, pp 418–442 3. Wilson E (ed) (1868) A system of human anatomy, general and special, 7th edn. Philadelphia, London, pp 323–333
7. Feneis H, Dauber W (2007) Pocket atlas of human anatomy, 4th edn. Wemding Stuttgart, Germany, pp 264–272
8. Quain R (1844) The anatomy of the arteries of the human body. Taylor and Walton, London
9. Chen R, Liu Y, Liu C, Hu Y, Xu D, Zhong S, Li ZH (1999) Anatomic basis of iliac crest flap pedicled on the iliolumbar artery. Surg Radiol Anat 21(2):103–107
10. Bleich A, Rahn D, Wieslander C, Wai C, Roshanravan S, Corton M (2007) Posterior division of the internal iliac artery: anatomic variations and clinical applications. Am J Obstet Gynecol 197(6): 658.e1–5
11. Kiray A, Akc¸alı O, Tayefi H, Kos¸ay C, Ergu ¨r I (2010) Anatomical variations of iliolumbar artery and its relation with surgical landmarks. Acta Orthop Traumatol Turc 44(6):464–468. doi:10.3944/AOTT.2010.2347
12. Rusu MC, Cergan R, Dermengiu D, Curca ˘ GC, Folescu R, Motoc AGM, Jianu AM (2010) The iliolumbar artery—anatomic considerations and details on the common iliac artery trifurcation. Clin Anat 23(1):93–100
13. Teli CG, Katate NN, Kothandaraman U (2013) Morphometry of the iliolumbar artery and the iliolumbar veins and their correlations with the lumbosacral trunk and the obturator nerve. JCDR7(3):422