International Journal of Ayurveda Orientation

Volume 1, Issue 11, November 2016

STUDY ON THE ANOMALOUS ORIGIN OF TESTICULAR ARTERIES ARISING FROM ACCESSORY RENAL ARTERIES

Vinod Choudhari, Archana Dachewar

Received: August 17, 2016 | **Published:** November 18, 2016

Article ID: 7 | DOI: https://doi.org/10.67949/ijao.2016.7
www.ijao.in

STUDY ON THE ANOMALOUS ORIGIN OF TESTICULAR ARTERIES ARISING FROM ACCESSORY RENAL ARTERIES

Vinod Choudhari, Archana Dachewar

Vinod Choudhari (Shri Ayurved Mahavidyalaya Nagpur); Archana Dachewar (Shri Ayurved Mahavidyalaya Nagpur)

Received: Aug 17, 2016 **Published:** November 18, 2016

ABSTRACT: Testicular arteries are paired vessels, arising from the abdominal aorta, at the level of second lumbar vertebra. Variations in the origin of these vessels highlight a potential importance regarding the vascular supply to the gonads and kidneys. This study was designed to assess the variations in the origin, course, and distance about the point of origin of the testicular arteries. The point posterior abdominal walls of male cadavers were studied on either side, during routine- dissection in the Department of Rachana Sharir at Shri Ayurved Mahavidyalaya Nagpur.

A majority has a normal course and the variations were reported as:

a) Bilateral origin of gonadal arteries from accessory renal artery.

b) Unilateral origin of the gonadal artery from the left accessory renal artery.

c) Unique origin of the right testicular artery from the right inferior epigastric artery and left testicular artery from descending thoracic aorta above the aortic opening of the diaphragm. Due to the embryological attribution, these variations threat to the testicular arteries indicate an alarming threat to the radiologists and surgeons during renal transplants and nephrectomies, as these vessels monopolize the vascular supply to the gonads. This study was undertaken to document the incidence of testicular arteries originating from accessory renal arteries.

INTRODUCTION

The testicular artery originates from the antero-lateral surface of the abdominal aorta,

© 2016 IJAO

below the level of origin of the renal arteries, usually at the level of the second lumbar vertebra. Each testicular artery passes obliquely downward along with the corresponding vein and to the peritoneum on the psoas major muscle. It enters the inguinal canal through the deep inguinal ring, reaches the gonads to supply the testis , and accompanied by the pampiniform plexus of veins in scrotum, the testicular arteries are accompanied by the testicular vein (1,2) The anomalies can be explained by the embryological development of both the kidney from the intermediate mesoderm of the mesonephric crest, and vascularization of both the kidneys and gonads from the lateral mesonephric branches of the dorsal aorta.(3)

The vertebral level of origin of the testicular arteries varies from the first to third lumbar level. Variations related to origin, course and number of the renal and testicular arteries have been reported. The test is mainly receives its blood supply from the testicular artery and drains into the testicular vein. Testicular vessels have an important role in testis thermoregulation. Variations of these arteries and veins have been extensively studied pertaining to their importance in testicular physiology.(4)

The vascular and developmental anomalies of the kidneys can be associated with variations in the course of the testicular arteries.(5)

The anatomical variations of testicular arteries are of clinical importance as well as embryological and anatomical interest. In the present study, we analyzed the origin, course origin of the testicular arteries and highlighted the embryological variations and their clinical concerns.

MATERIAL AND METHODS

During routine dissection in the Department of Rachna Shavir at Shri Ayurved Mahavidyalaya Nagpur. The posterior abdominal wall of male cadaver was studied either sides retroperitoneal structures were exposed after the routine dissection of the abdominal cavity. The connective tissues around the renal and testicular arteries. were removed for a good clarity of vision.

OBSERVATIONS

I) Variation in the origin of testicular arteries.

II) The distance assessment about the point of origin of the testicular artery from the accessory renal artery taking aortic bifurcation into consideration.

© 2016 IJAO | Volume 1, Issue 11, November 2016

RESULTS

We found that in 78% of the cases, the testicular arteries were normal in their origin, course and number, as cited in standard anatomical text books. However, in testicular arteries were noticed

Variation :-1

The testicular artery on the right side had a normal pattern of origin and course, whereas it arose from the accessory renal artery on the left side. It traveled front of the left ureter and followed a normal course.

The left testicular artery appose from renal artery, before the origin of the superior renal capsular branch from the accessory renal artery, and descended down toward the deep inguinal ping.

Variation :-2

The left testicular artery arose from renal artery, before the origin of the superior renal capsular branch from the accessory renal artery , and descended down towards the deep inguinal ring.

Variation:-3

The right testicular artery arose from the renal accessory artery before it bifurcated. The left testicular artery arose from the accessory real artery.

Variation :-4

The left testicular artery arose from the accessory renal artery crossed the ureter as it descended and passed laterally toward the inguinal canal. The right testicular artery had a usual course.

Variation:- 5

The right testicular artery arose from the right inferior epigastric artery traveled downward to reach the deep inguinal ring and further their termination was as usual. The left testicular artery arose from the descending thoracic aorta above the aortic opening of the diaphragm above the level of T12, later descended down along with testicular veins and left ureter had a normal course to the gonads.

© 2016 IJAO | Volume 1, Issue 11, November 2016

DISCUSSION

A wide range of variability is seen in the origin length course and celebrity of the testicular arteries. Many authors have reported about the anomalous origin of the testicular arteries. The surgical importance of testicular arteries seems to be the prime consideration during the interventional there pies for varicocele and undecided testis. The origin of the testicular artery from the inferior epigastria artery is a unique and very rare variation. These variations create subtle, a wariness for the surgeons during surgical managements in order to take meticulous precautions. If one of the main renal artery persists, in the origin of accessory renal artery. Nine lateral mesonephric arteries are divided into cranial, middle and caudal groups. The caudal arteries give rise to gonadal arteries. The middle group of lateral mesonephric arteries gives rise to the renal arteries. A higher level of the origin denotes the original position of the before the caudal migration (2, 3). The presence of testicular artery originated from the accessory renal artery may lead to its injury during the percutaneous treatment of the syndrome of the pelvic urethral junction becoming a major contraindication; such an arterial injury follows a massive bleeding that imposes homeostasis by embolization. Various disappearing phases of the lateral mesonephric arteries and their longitudinal anastomotic channels take place during the embryonic development of the gonads. These modification can lead to variations in the origin of suprarenal renal and testicular arteries (3,4).Testicular and renal capsular arteries arose from a common trunk on the left side. It is known that genetics, various chemical agents, ,growth and transcription factors and hemodynamic forces take part in the selection and persistence of a particular congenital vascular channel. The surgeons should take into account the aberrant origin and course of the gonadal artery when operating hear bend pedicle (5).
Retroperitoneal approach provides a better solution. It signifies the importance of the anteriography or Doppler ultrasound examination of the renal hilum, prior to any surgical procedures. Our finding agree with reports of the testicular artery arising from the accessory artery (6,7). Our findings of the bilateral origin of testicular arteries originating from ARA are similar. However the unilateral origin of testicular arteries is frequently seen. Bilateral variations to the origin as such are rare, whereas such a variation features of the testicular vessels are relatively constant, occasional developmental and anatomical variations have been reported. A majority of the arteries arose from the right renal artery.(9,10)

© 2016 IJAO

CONCLUSION

A higher frequency of the left testicular variation may determine some authors to suggest that the right kidney as the preferred choice for the renal transplant. Variations in the origin of testicular arteries may cause varucocele due to testicular vein compression hydronephrosis, occlusion of the ureter, nephroptosis, arterial hypertension produced by renal arterial constriction and incidences of kidney infarction during urologic and ontological intervention. Anatomical knowledge of the origin course of the testicular artery is of great importance to be aware that accessory renal arteries are end arteries. Therefore, if an accessory artery is damaged, the part of the kidney supplied by it becomes ischemic.

The origin and course of the testicular artery just be carefully identified and demarcated in order to preserve and prevent testicular atrophy. Beside surgical interst arterial and venous perfusion may have sever con-sequences for the thermoregulation of the testicular glands and hence influence spermatogenesis. With the increasing demand for kidney transplantation living donor grafts have become the major source for major source for main tainting the donor pool, and the successful allograft with multiple arteries has become a necessity. Multiple renal arteries can present a challenge during live laparoscopic donor nephrectomy procedures. Due to the embryological attribution, these variations in the testicular arteries indicate an alarming threat to the radiologists and surgeons during renal transplants, total or partial nepherctomies, and theses vessels monopolize the vascular supply to the gonads.

The study was undertaken to document the incidence of testicular arteries originating from accessory renal arteries. A meticulous observation of the vascular patency and prevention of testicular atrophy are desirable to avoid life threatening complication. In our consideration, it is crucial for surgeons to explore the knowledge of such possibilities of anomalous accessory renal vessels and testicular arteries rising from them before performing any transplantation surgeries, as kidney transplantation with multiple renal arteries has a chance of reaction tubular necrosis and poor graft function.

Anatomical knowledge of these surgical procedures to avoid any vascular complication can be executed with the help of multi detector computer tomography, angiography and arteriography prior to nephrectomy procedures. Awareness of the above mentioned variations of the renal arteries is necessary for adequate surgical management in the exploration and treatment of renal trauma, renal trans-plantation and urological operations.

© 2016 IJAO

REFERENCES

:

1. Hollinshead, W. H. (1971). Anatomy for surgeons: Vol. 2. The thorax, abdomen, and pelvis (2nd ed.). Harper & Row.

2. Petru, B., et al. (2007). Arterial supply of the adrenal glands: Anatomical study and clinical implications. Surgical and Radiologic Anatomy, 29(5), 367–371.

3. Paraskevas, G. K., et al. (2011). Left accessory renal artery that may cause ureteropelvic junction obstruction: A case report. Journal of Medical Case Reports, 5, Article 75.

4. Pai, M. M., et al. (2008). Great vessel variations in the thoracic and abdominal segments: A cadaveric study. Anatomical Science International, 83(3), 147–152.

5. Sylvia, S., et al. (2009). Variations in the origin of the testicular artery: A case report. Cases Journal, 2, Article 114.

6. Ravery, V., Cussenot, O., Desgrandchamps, F., Teillac, P., Martin-Bouyer, Y., & Lassau, J. P. (1993). Variations in arterial blood supply and the risk of hemorrhage during adrenal surgery. Surgical and Radiologic Anatomy, 15(3), 173–177.

7. Lippert, H., & Pabst, R. (1985). Arterial variations in man: Classification and frequency. J.F. Bergmann-Verlag.

8. Asala, S., Chaudhary, S. C., Masumbuko-Kahamba, N., & Bidmos, M. (2001). Anatomical variations in the human testicular blood vessels. Annals of Anatomy - Anatomischer Anzeiger, 183(6), 545–549.

© 2016 IJAO | Volume 1, Issue 11, November 2016

HOW TO CITE THIS ARTICLE:

APA: Vinod Choudhari, Archana Dachewar (2016). STUDY ON THE ANOMALOUS ORIGIN OF TESTICULAR ARTERIES ARISING FROM ACCESSORY RENAL ARTERIES. *International Journal of Ayurveda Orientation*, 1(11), 40-46. DOI: https://doi.org/10.67949/ijao.2016.7

MLA: Vinod Choudhari, et al. "STUDY ON THE ANOMALOUS ORIGIN OF TESTICULAR ARTERIES ARISING FROM ACCESSORY RENAL ARTERIES." *International Journal of Ayurveda Orientation* 1.11 (2016): 40-46.

Vancouver: Vinod et al. STUDY ON THE ANOMALOUS ORIGIN OF TESTICULAR ARTERIES ARISING FROM ACCESSORY RENAL ARTERIES. International Journal of Ayurveda Orientation 2016;1(11):40-46.

© 2016 IJAO | Volume 1, Issue 11, November 2016