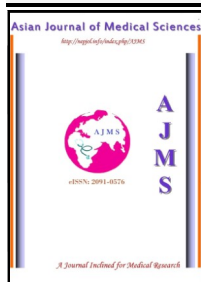


ASIAN JOURNAL OF MEDICAL SCIENCES



Rare Variant origin of right Testicular artery- A Case Report

Mamatha Y^{1*}, Prakash B S², Padmalatha k²

¹Hassan institute of medical sciences, Hassan Karnataka, ²Dr. B. R. Ambedkar Medical College. Bangalore, Karnataka, India

Abstract

Variations in the origin of arteries in the abdomen are very common but with the invention of new operative techniques within the abdomen cavity, the anatomy of abdomen vessels has assumed much more clinical importance. The gonadal arteries normally arise caudal to the renal arteries as antero-lateral branch. In contrast to classical description, very rarely originate from lumbar, common or internal iliac artery, or superior mesenteric artery. Here we report a very rare case of variant origin of right testicular artery from right common iliac artery. Awareness of such variations becomes very significant and important during surgical or interventional procedures in abdomen-pelvic areas.

Key words: Testicular artery; Aberrant artery; Variant origin; Renal artery; Gonadal vessels

1. Introduction

Reproduction is a fundamental process that allows the living organisms to preserve their progeny and evolve by transmitting genes. The testis is an important reproductive organ, upon which the survival of the human species depends. The testicular vessels play major role in the thermoregulation of this organ.¹ The gonadal artery arises normally arise from anterolateral aspect of abdominal aorta at L2 level. Then pass laterally over the front of the psoas major muscle in a retroperitoneal position. Each crosses in front of the corresponding ureter giving a branch to it. The artery skirts pelvic brim and crosses anterior to the distal end of external iliac artery to enter deep inguinal ring. Then it accompanies the ductus deferens through the inguinal canal and supply testis. In contrast to the classical description it may originate from renal/accessory renal artery, followed adrenal, lumbar, common iliac or superior mesenteric artery.² Deep knowledge of these variations and their relations to the adjacent structures is very important in avoiding the complication in operative surgery. With the advent of newer surgical and diagnostic techniques understanding of atypical

anatomical presentations gains more importance.³

2. Case report

During routine dissection of an adult male cadaver, allotted for first year student at Hassan institute of medical sciences, it was observed that right testicular artery took origin from right common iliac artery approximately at L5-S1 (fig 1).

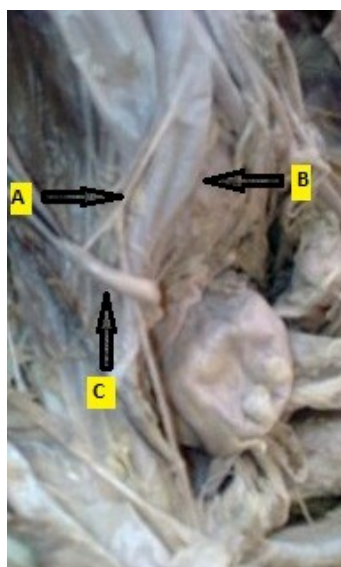


Figure-1: A-Right testicular artery, B- Right common iliac artery, C- Ureter



Figure-2: A- Right testicular artery, B - Testis

*Correspondence:

Dr. Mamatha Y, Hassan institute of medical sciences, Hassan Karnataka.
E-mail- drmamthay@gmail.com. Ph no.09448669850.

Further passed posterior to the ureter and provided a twig to it and traversed deep inguinal ring accompanied ductus deferens and supplied the testis. Left sided artery was normal (Fig 2). No abnormality of testicular veins was observed.

3. Discussion

The anatomy of the gonadal arteries has assumed importance because of the development of new operative techniques within the abdominal cavity for operations such as varicocele and undescended testes.⁴ During laparoscopic surgery of the male abdomen and pelvis many complications are due to unfamiliar anatomy in this operative field. Thus it becomes imperative to carefully preserve the gonadal artery in order to prevent any vascular troubles of the gonad, the genital artery being its unique source of blood supply.^{4,5} Odekunle A et al stated gonadal artery embryologically develops from caudal group of lateral mesonephric artery. Interruption or complete arrest of any developmental stage may produce various variations in origins, number and course of these arteries.⁶

El Mamoun B A stated that description of the common iliac artery and its branches varies significantly in various anatomic references. In a study done among 143 cadavers 93 (65%) - no branch found, 50 (35%)-lateral branch found. Such branches supplied the iliopsoas muscle, occasionally ureter, lymphnodes and kidney.⁷ Machniki et al examined the variations of the testicular arteries in fetuses and adults. Four types of testicular arteries were identified according to their site of origin from aorta or renal arteries: type A- a single testicular arising from the aorta, type B- a single testicular artery arising from renal artery, type C- two arteries arising from aorta and penetrating the same gonad, type D- two arteries penetrating the testis, one from aorta and other from renal artery.⁸

Emine Cicekcibasi in a study conducted among 90 fetuses, variation of the origin of gonadal artery was classified into four types: type-I - from suprarenal, type-II- from renal artery, type-III-high origin close to renal level, type-IV- duplication of testicular arteries.⁹ Ravery v et al states embryologically such variation can result from double movement with ascent of kidney and descent of testis. Gonadal arteries possess a mesonephric origin, so with the descent of testis, it will be supplied successively from different lower levels, while the upper branches suffer a major atrophy.¹⁰

Notkovich reported in a study done among 405 testicular or ovarian arteries, the gonadal arteries of renal origin were found in 14%, taking origin either from main or accessory renal artery.¹¹ Loukas M; reported high origin single left testicular artery with a course on the anterior surface of left kidney towards the pelvic region; this artery was connected to the left renal artery. Over the last two decades arterial revascularisation has been slowly but steadily moving from open surgical to endovascular procedures. Detailed knowledge of the arterial vascular anatomy is a crucial element to enable safe and successful vascular catheterization for the purpose of diagnosis and treatment of vascular disease management.¹² On review of literature it can be concluded that the testicular artery is one of the chief source of blood supply to an important reproductive organ essential for sustainance of species. This artery is more variable in origin and course. Commonest variant site of origin is renal followed rarely lumbar, iliac and superior epigastric artery. Our case report is clinically significant because of its site of origin - which is rare and a region for many endovascular invasive procedures, variant course passing posterior to ureter, resultant artery can get compressed and may result in obstruction of blood flow to testis which may lead to abnormal spermatogenesis and hormone production. Thus the present case was reported. Although the incidence of this variant is very low and rare and no clinical cases of such variant have been well documented in the available literature, it may be more important for clinicians and surgeons to be aware of the presence of this arterial variation when surgical and diagnostic procedures performed in abdomino-pelvic areas in order to attain a correct diagnosis during radiological procedure and to perform complication free surgery.

4. Conclusion

Testis is an important reproductive organ, having greater role in the transmission of traits and sustainance of species through reproduction process. Testicular vessels play an important role in thermoregulation process of this organ. This artery is the one which show common variation in its origin, number and course among the abdominal vessels. Commonly being the branch of abdominal aorta caudal to renal artery it may originate from lumbar, common or internal iliac arteries which have been reported has rare occurrence. One such rare variant origin and course of testicular artery

has been reported in the present case. Such knowledge of variant arterial anatomy is very essential for surgeons and radiologists to avoid any untoward adverse complications during surgical procedures.

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