

Bilateral Duplication of Gonadal Veins: a Case Report

Duplicación Bilateral de las Venas Gonadales: Reporte de Caso

*Juliana Ruiz Fernandes; **Maíra Bassi Strufaldi; ***Bruno dos Santos Machado;
****Sergio Ricardo Rios Nascimento; *****Nader Wafae & *****Cristiane Regina Ruiz

FERNANDES, J. R.; STRUFALDI, M. B.; MACHADO, B. S.; NASCIMENTO, S. R. R.; WAFAE, N. & RUIZ, C. R. Bilateral duplication of gonadal veins: a case report. *Int. J. Morphol.*, 30(4):1487-1489, 2012.

SUMMARY: The duplication of gonadal vessels is mainly found on the left side, with less numbers of bilateral cases. The objective of this work is describing a case of bilateral duplication of gonadal veins, where two veins were draining to inferior vena cava, being that the closest vein of kidney medial margin had a thickness of 2.68mm and was distant 64.41 mm of the organ. The second vessel had a thickness of 1.43mm and was distant 73.76mm. Two veins follow to left renal vein, being that the first vessel had a thickness of 2.7mm and was distant 21.8mm of the kidney medial margin; the other had a thickness of 1.64mm and was distant 35.13mm of the organ. The presence of variations on the local of drainage of gonadal vessels has clinical importance for comprehension of origin of varicocele cases, as well as the recurrence of them after surgical procedures.

KEY WORDS: Macroscopic anatomy; Dissection; Anatomical variation; Gonadal vessels; Varicocele.

INTRODUCTION

Anatomical variation means the presence of a structure infrequent but functionally active, without any prejudice of the organism vital functions (Ruiz, 2010). The presence of these variations on the gonadal veins local of drainage is very important to comprehend the origin of varicocele cases, and the recurrence of those after surgery procedures (Jetti *et al.*, 2008).

The testicular vein emerges posteriorly from the testicle and drains the epididymis, later joining to the pampiniform plexus, which amounts anteriorly to the ductus deferens. This plexus is drainage for three or four veins which pass through the inguinal channel and became two veins, which go up anteriorly to the ureter, following the testicular artery. The right testicular vein drains to the inferior vena cava, in an acute angle, under the renal veins. The left testicular vein drains to the left renal vein, in a right angle (Standing, 2008).

Only the right gonadal vein joins the inferior vena cava directly, and usually is duplicated all the way up, until a few centimeters of its drainage local (Gay *et al.*, 1991) (Fig. 1).

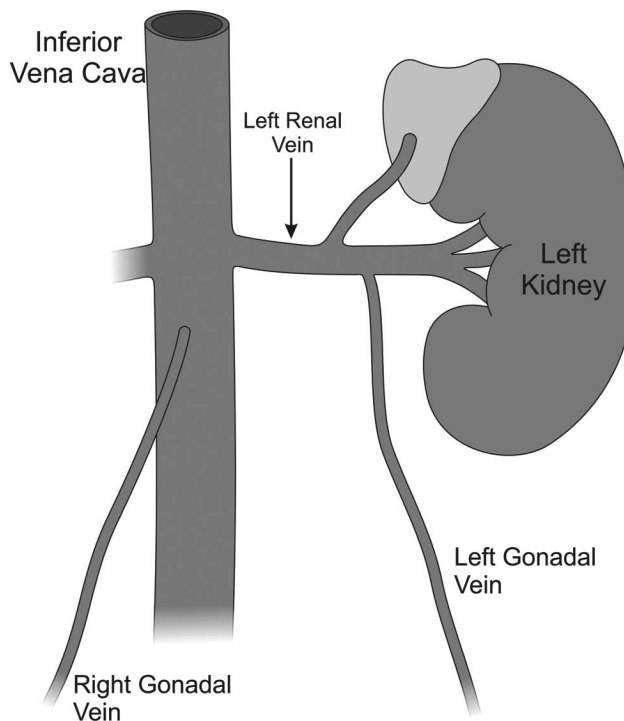


Fig. 1. Normal anatomy of gonadal veins.

* Biologist graduated at Centro Universitário São Camilo, São Paulo, Brazil.
** Nurse graduated at Centro Universitário São Camilo, São Paulo, Brazil.
*** Physiotherapy student at Centro Universitário São Camilo, São Paulo, Brazil.
**** Post Graduated in Anatomy at Centro Universitário São Camilo, São Paulo, Brazil.
***** PhD at Universidade Federal de São Paulo, São Paulo, Brazil.
***** Professor of Anatomy at Centro Universitário São Camilo, São Paulo, Brazil.

CASE REPORT

During a dissection of an anatomical piece in the anatomy laboratory in Centro Universitário São Camilo, a case of bilateral duplication of the gonadal veins was found (Fig. 2).

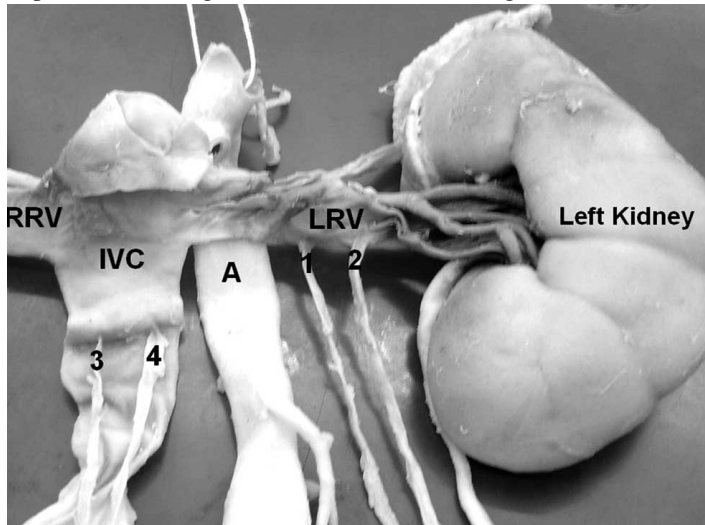


Fig. 2. Duplication of gonadal veins in a human piece from Centro Universitário São Camilo. LRV: Left renal vein; IVC: Inferior vena cava; RRV: Right renal vein; A: Aorta; 1: Medial left gonadal vein; 2: Lateral left gonadal vein; 3: Lateral right gonadal vein; 4: Medial right gonadal vein.

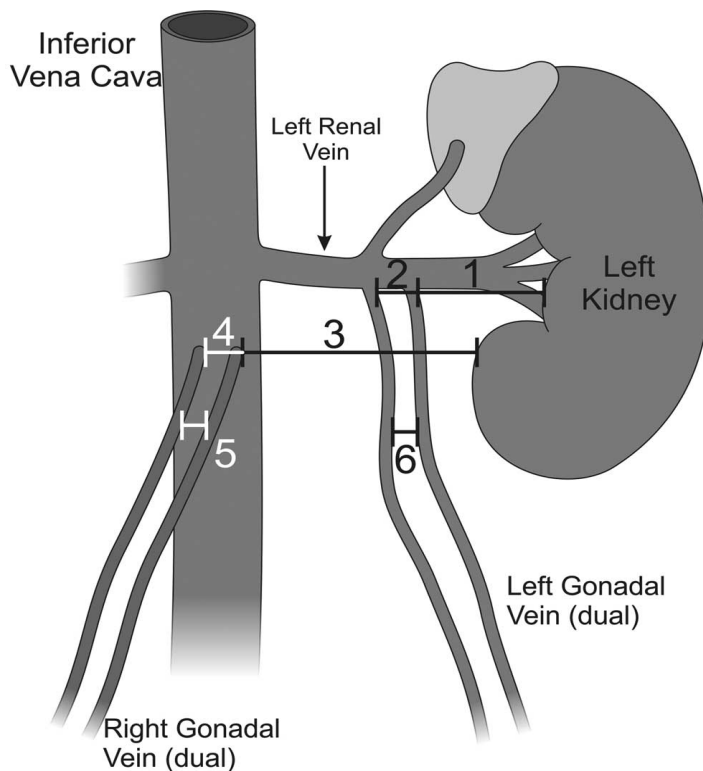


Fig. 3. Scheme of the gonadal vein duplication. 1= 21.8 mm; 2= 35.13 mm; 3= 64.41 mm; 4= 75.76 mm; 5= 7.18mm; 6= 8.59 mm.

In the piece, two gonadal veins draining to the left renal vein were apparent, perpendicular to this, where the lateral left gonadal vein, closest to the medial margin of the left kidney was distant 21.8 mm to the organ, and had a thickness of 2.7 mm, while the medial left gonadal vein was distant to the kidney 35.13 mm and had a thickness of 1.64 mm, following parallel the lateral vein. In the right side, there were two veins draining in an straight angle to the inferior vena cava, where the gonadal vein located more laterally was distant 64.41 mm from the left kidney and had a thickness of 2.68 mm, while the right medial gonadal vein was 73.76 mm distant and had a thickness of 7.18 mm (Fig. 3).

DISCUSSION

According to Gay *et al.*, 40% of patients present multiple gonadal veins. Lecther *et al.* (1991), show in their research that in the last 5 years, 120 cases had been seen of variation in the gonadal vessels.

Nayak (2008), described duplication of the gonadal vessels, but together with the duplication of renal veins. In 34 corpses analyzed for Duques *et al.* (2002), were present a single testicular/ovarian vein in 85.2% and double in 8.8%.

These anatomical variations related to testicular veins are more frequently found on the left side. In the study of Asala *et al.* (2001), 32 of 150 dissected corpses had variations, and 6 of these 32 the variation were present in both sides.

The variations were more frequent in the left side in the work of Favorito *et al.* (2007) too, with duplication in 15% of the cases. In the right side were found only 5% of duplication.

The dilatation of pampiniform plexus originates the pathological condition varicocele (Yang *et al.*, 2007). The varicocele affects in major number the left testicle, causing a deficit in the spermatogenesis because of an alteration of testicle temperature. About 41% of the infertile male population presents varicocele (Favorito *et al.*; Yang *et al.*).

Yang *et al.*, study confirms that variations of the testicular veins can result on the persistence of

varicocele, also hindering retroperitoneal surgical procedures and the own varicocelectomy.

The variation found in the gonadal vessels could be derived from alterations in the embryological origin of these vessels. The gonadal veins are originated from the subcardinal vein of fetus, however only in its distal position, when dysplasia occurs in the subcardinal venous system, between the 7th and 8th month, this bad formations of gonadal vein can be present (Yang *et al.*).

ACKNOWLEDGEMENTS: Our sincere thanks to all the people who helped and supported during the writing of this manuscript, specially for the teacher Luiz Antonio Pereira, who made the brilliant work of dissection and conservation of the anatomical piece, and Sergio Ricardo Rios Nascimento who made the great pictures of this work. We would thank our institution, Centro Universitário São Camilo, for allowing us to use the laboratory and material, as well as the faculty members without whom this manuscript would have been a distant reality.

FERNANDES, J. R.; STRUFALDI, M. B.; MACHADO, B. S.; NASCIMENTO, S. R. R.; WAF AE, N. & RUIZ, C. R. Duplicación bilateral de las venas gonadales: reporte de caso. *Int. J. Morphol.*, 30(4):1487-1489, 2012.

RESUMEN: La duplicación de las venas gonadales es más común en el lado izquierdo, con pocos casos bilaterales. El propósito de este reporte fue describir el caso de una duplicación bilateral de las venas gonadales, dos de las cuales desembocaban en la vena cava inferior. El vaso próximo del margen medial del riñón tenía un diámetro de 2,68mm y una longitud de 64,41 mm. La segunda vena tenía un diámetro de 1,43 mm y una longitud de 73,76 mm. Los dos vasos desembocaban en la vena renal izquierda. La primera vena tenía un diámetro de 2,7 mm y estaba a 21,8 mm del margen medial del riñón. La otra tenía un diámetro de 1,64 mm y se localizaba a 35,13 mm del margen medial del riñón. La presencia de variaciones donde se produce el drenaje de los vasos gonadales tiene importancia clínica para la comprensión del origen del varicocele y la recurrencia del mismo, después de procedimientos quirúrgicos.

PALABRAS CLAVE: Anatomía macroscópica; Dissección; Variación anatómica; Venas gonadales; Varicocele.

REFERENCES

- Asala, S.; Chaudhary, S. C.; Masumbuko-Kahamba, N. & Bidmos, M. Anatomical variations in the human testicular blood vessels. *Ann. Anat.*, 183(6):545-9, 2001.
- Duques, P; Rodrigues, J. R.; Silva Neto, F. B.; Neto, E. M. V. S. & Toledo, E. S. *Estudo anatômico da veia renal esquerda de cadáveres humanos brasileiros*. Medicina, Ribeirão Preto, 35:184-91, 2002.
- Favorito, L. A.; Costa, W. S. & Sampaio, F. J. Applied Anatomic Study of Testicular Veins in Adult Cadavers and in Human Fetuses. *Int. Braz. J. Urol.*, 33(2):176-80, 2007.
- Gay, S. B.; Armestead, J. P.; Weber, M. E. & Williamson, B. R. Left Infrarenal Region: anatomic variants, pathologic conditions, and diagnostic pitfalls. *Radiographics*, 11(4):549-70, 1991.
- Jetti, R.; Jevoor, P.; Vollala, V. R.; Potu, B. K.; Ravishankar, M. & Virupaxi, R. Multiple variations of the urogenital vascular system in a single cadaver: a case report. *Cases J.*, 1(1):344, 2008.
- Lechter, A; Lopez, G.; Martinez, C. & Camacho, J. Anatomy of the gonadal veins: a reappraisal. *Surgery*, 109(6):735-9, 1991.
- Nayak, B. S. Multiple variations of the right renal vessels. *Singapore Med. J.*, 49(6):e153-5, 2008.
- Ruiz, C. R. *Anatomia Humana Básica - Para estudantes da Área da Saúde*. 1a ed. São Caetano do Sul, Difusão, 2010.
- Standring, S. *Gray's Anatomy: The anatomical basis of clinical practice*. 40th ed. Londres, Churchill Livingstone Elsevier, 2008.
- Yang, C. Y.; Xue, H. G.; Tanuma, K. & Ozawa, H. Variations of the bilateral testicular veins embryological and clinical considerations. *Surg. Radiol. Anat.*, 30(1):53-5, 2007.

Correspondence to:
Cristiane Regina Ruiz
Centro Universitário São Camilo
Nazaré Avenue, 1501, Ipiranga, São Paulo – SP
BRAZIL

Email: crisruiz@ig.com.br

Received: 20-12-2011

Accepted: 16-08-2012