

# Uncommon drainage of the gonadal vein: case report

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## Abstract

The gonadal veins are anatomically asymmetric and there are several anatomical variations involving them. During a renal vascular anatomy study through cadaver dissection, students of the School of Medical Science of Santa Casa of Sao Paulo, Brazil, found an anomalous drainage of the left spermatic vein. In the case presented here the right spermatic vein drains normally to the inferior vena cava, but the left spermatic vein penetrates in the inferior pole of the left kidney and there it tributes in a branch of the renal vein. According to the reviewed literature a case like this had never been reported. There was not any other abnormality in the renal vascular anatomy in this case. The gonadal vein, renal vein and the segments of inferior vena cava into which the gonadal vein drains have a common origin in the fetal subcardinal vein and or in its anastomosis with the supracardinal veins, which would justify the finding.

**Keywords:** gonadal vein, anatomical variation, anatomy, morphology, case report.

## 1 Introduction

The kidneys are even organs situated in the retroperitoneus and lie in the posterior wall of the abdomen. They have a characteristic form with a superior pole or extremity and an inferior pole or extremity, a convex lateral border and a concave medial border. The medial border presents a depression, the renal hilus, which contains the renal vases and the renal pelvis.

There are many anatomic variations involving the renal vascularization and the gonadal vein drainage. The renal veins are usually of large big size and pass ventrally to the renal arteries; the left renal vein is larger than the right and usually receives the spermatic and suprarenal veins of the same side. The right spermatic vein often drains into the inferior vena cava. The renal arteries before reaching the renal hilus are divided into 4 or 5 branches, which are located mainly between the renal vein and the ureter. Each vessel gives small branches to the adrenal gland (SAMPAIO, 1998, 2000; ITOH, MORIYAMA, TOKUNAGA et al., 2001).

It is necessary that the surgeon has a broad knowledge of the vascular anatomy of renal region, and the vessels crossing it may present as a complicating factor. The following describes an anatomical variation found in an anatomical dissection.

## 2 Case report

During the dissection of a formalized block of viscera performed by students of the School of Medical Science of Santa Casa of Sao Paulo, Brazil, we found that the right gonadal vein drained normally to the inferior vena cava, however, the left gonadal vein penetrates in the inferior pole of the left kidney and there it tributes into a tributary of the renal vein. According to the reviewed literature a case like this had never been related. There was not any other abnormality in the renal vascular anatomy in this case (Figure 1).

## 3 Discussion

Most of the references on variations of the gonadal vessels in anatomy books focus in arteries.

The normal testicular vein, the renal vein and the inferior vena cava segments into which the gonadal vein drain, have a common origin in the fetal subcardinal vein.

Bergman, Afifi and Miyachi (2004) mentioned that the gonadal vein can receive as tributary the duodenal vein or the suprarenal vein and included the gonadal veins as non-usual tributaries of the hemiazygos vein. Poynter reported that the gonadal veins may present as several communicant trunks, some of which can tribute in the common iliac vein. In 150 cadavers Asala, Chaudhary, Masumbuko-Kahamba et al. (2001) found variations of the spermatic vein in 21,3% of the studied specimens; in one of them the left testicular vein



**Figure 1.** Anomalous drainage of the left gonadal vein, penetrating directly into the inferior pole of the left kidney.

ended in the inferior vena cava at the level of the mesenteric superior artery, and this part of the inferior vena cava originates from the hepatic or sub-hepatic segment.

These variations, mainly duplications, were most often found on the left side. Sofikitis, Dritsas, Miyagawa et al. (1993) reported anastomotic branches of the testicular veins connecting with the spleen, adrenal, renal capsule, peritoneum and tributaries of the vena cava. These authors assume that these anastomosis may offer alternative venous drainages to the left kidney in patients which have the left renal vein obstructed, or collateral circulation in individuals with portal hypertension.

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