



Ectopic kidney vascularization

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The ectopic kidney is one of the anatomical anomalies due to the absence of ascension of the kidney from the pelvis during the metanephros stage of embryogenesis. Its incidence varies from 1 per 1000 births [1]. It is often asymptomatic with a high risk of trauma, urinary tract infections, but associated with other congenital malformations (müllérian agenesis).

The vascularization of the ectopic kidney is not classical. We present a case of an incidental finding of a left ectopic (pelvic) kidney with vascularization by the artery (double) and the left primitive iliac vein (Figure 1).

The iliac artery ensures vascularization in a normal position during the ascent, followed by the aorta distally and the proximal aorta.

Sebe P et al. found a single (49%), double (40%) and triple or quadruple (11%) arterial vascularization [2].

Venous vascularization is also variable, and its anatomy has never been described.

The pelvic renal veins are always multiple and of small caliber. They usually drain into the inferior vena cava and the ipsilateral

common iliac vein [3]. CT angiography is still the examination of choice to determine the location and vascularity of the ectopic kidney.

Erdoğan investigated the origin of the vascular structures in ectopic kidneys with multidetector computed tomography, and in terms of the location of ectopic kidneys, the common sites were abdominal (35.9%), iliac (57.5%) and pelvic (6.6%) [4].

The vascularity is divided into several types as in a study by Erdoğan H. [5]:

- Type I: bifurcation of the aorta and inferior vena cava (IVC) 28.3%
- Type II: aorta and infra renal IVC 23.6%.
- Type III: Common iliac artery and vein 12.2%.
- Type IV: aortic bifurcation/infra renal IVC 10.4
- Type V: aortic bifurcation/common iliac vein 7.5
- Type VI: normal renal artery/vein origin 4.7a
- Type VII: renal artery and infra renal IVC origin 4.7
- Other types 8.6

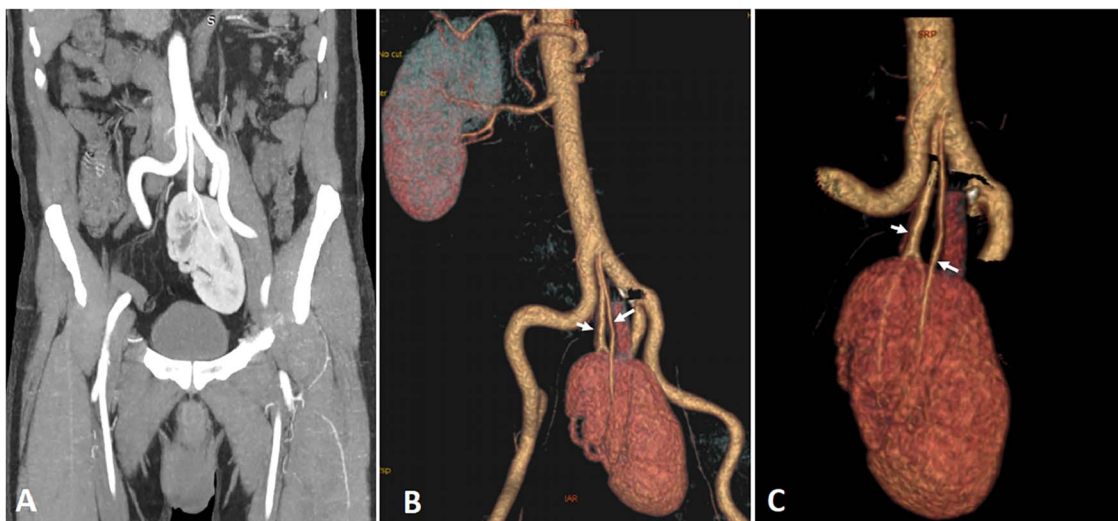


Figure 1. Contrast-enhanced abdominal CT scan on the coronal plane (A) and volume rendering (B, C) showing a pelvic kidney with double artery vascularization from common iliac arteries (arrows).

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The knowledge of vascular variants is essential to prevent iatrogenic bleeding during surgery, nephrectomies, renal transplantation or renal pathologies. The nephrectomy of the pelvic kidney is complex due to the proximity of anatomical structures, a tortuous ureter or other adjacent neurovascular anomalies [4].

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CONFLICT OF INTERESTS

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CONSENT

Written consent has been obtained.

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REFERENCES

1. Chavis CV, Press HC Jr, Gumbs RV. Fused pelvic kidneys: case report. *J Natl Med Assoc* 1992;**84**:980–2 PMID: 1460687.
2. Zmerli S, Court B, Arkam B. Les ectopies rénales pelviennes (à propos de 25 cas). *J Urol Nephrol* 1968;**74**:51–71.
3. Sebe P, Chemla E, Varkarakis J, Latrémouille C. Variations anatomiques de la vascularisation des reins pelviens: à propos d'un cas et revue de la littérature. *Morphologie* 2004;**88**:24–6. <https://doi.org/MORPH-04-2004-88-280-1286-0115-101019-ART04>.
4. Erdoğan H. Evaluating the origin of vascular structures in ectopic kidneys with multidetector computed tomography. *Abdom Radiol* 2020;**45**:1907–14. <https://doi.org/10.1007/s00261-020-02455-0>.