Patient Description

A 65-year-old woman presents with 12 months of low back pain radiating into the left leg. Previous history of surgeries includes breast reduction, abdominoplasty, right hip replacement, and jaw surgery. MRI of the left hip/pelvis and lumbar spine were performed to further evaluate for structural causes of her pain (Fig 1). Based on the below images, what is this patient’s diagnosis? Answer on following page.
Retro-Psoas Right Common Iliac Artery

This anomaly of the iliofemoral arterial system is rare. Just a few cases have been published describing this anomaly over the last 25 years; these include singular reported cases by Vohra in 1991, Sonneveld in 1998, Jain in 2008, Delasotta in 2012, and Yang in 2015. Overall, it appears the anomaly was incidental to the patient’s presenting symptoms and/or pathology in all reported cases.

Answer

Figure 2

Retro-psoas right common iliac artery.

Figure Legend: A) Coronal T1 image demonstrates abnormal origin of right common iliac artery (arrows) with nearly 70° angle from aorta. B) Coronal T1 image further posteriorly shows right common iliac artery (arrow) posterior to the psoas muscle along the posterior third of the 4th and 5th lumbar vertebra contiguous with the lumbosacral plexus. C) Axial T2 image at level of L4/5 disc shows common iliac artery (CI) at lateral margin of the right intervertebral foramen abutting the right L4 nerve root (arrow). D) Sagittal T2 shows CI coursing caudally along the lateral margins of the L4/5 and L5/S1 right intervertebral foramina with the right L5 nerve root (arrow) seen just caudal to the artery.
The patient reported by Vohra had iliac artery stenosis, but no causation was suggested. Sonneveld discovered the anomaly as an incidental finding with unrelated but clinically significant abdominal aortic aneurysm. Jain encountered this anomaly in the setting of iliac fossa renal transplantation, and Delasotta was evaluating a patient for possible spinal fusion through a far lateral approach. Finally, Yang et al discovered their case in the evaluation of a patient requiring pelvic surgery for urothelial malignancy. Unlike the more common iliofemoral anomaly of a persistent sciatic artery, which is predisposed to aneurysm formation, the few reported cases of retro-psoas iliac artery were found incidentally.

**Embryology**

The lower limb vasculature arises as a continuation of the internal iliac artery but largely degenerates. The external iliac artery becomes its primary supply, which arises from the fifth lumbar intersegmental artery.

Sonneveld proposed that “the common iliac and external iliac arteries are derived from the umbilical arteries at the end of the fourth week of gestation. The umbilical arteries develop a secondary connection to the fifth lumbar intersegmental branches of the aorta; these new trunks form the common iliac arteries from which the external iliac arteries subsequently arise. It may be possible that the retro-psoas iliac artery in our case embryologically was derived from an abnormal secondary connection between the umbilical artery and the fourth, instead of the fifth, lumbar intersegmental artery.”

**Significance**

Delasotta initially raised the concern that the position of the retro-psoas iliac artery could pose an unexpected hemorrhagic problem in managing patients with lumbar disc disease. Whether being managed by discectomy or transforaminal steroid injection, the juxtaposition of this vessel may cause difficulty.

While vascular complications from these procedures are uncommon, life-threatening hemorrhage from vascular injury in far lateral disc surgery and caudal spine cord infarction in foraminal steroid injections have been reported. Furthermore, the incidence of far lateral disc protrusions attributed as the source of radicular symptoms has increased, incidence of far lateral disc herniation ranging between 0.7%–1.7% of all disc herniations, with the increased use of MRI for diagnosis.

Certainly, the limited surgical exposure and close approximation of the retro-psoas iliac artery to the far lateral disc protrusion will make knowledge of this anomaly before the surgical approach helpful. Similarly, the typical posterolateral approach to transforaminal epidural steroid injection results in high likelihood of arterial puncture.

Overall, while the retro-psoas iliac artery is not associated with an apparent inherent increase in pathology, the few reported cases have illustrated how knowledge of this anomaly may reduce the likelihood of difficulty when involved with pelvic or lumbar surgical procedures.

**References**


**Correspondence**

Address to: Jeffrey W. Hanna, MD, Greenville Health System, Department of Radiology, 1210 W Faris Rd, Greenville, SC 29605 (jhanna@ghs.org)