

CASE REPORT WITH REVIEW

An Unusual Cause of Pelvic Congestion Syndrome



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Abstract

Pelvic congestion syndrome (PCS) is widely thought to be due to ovarian or internal iliac vein reflux. We present a case where the symptoms of PCS resulted secondary to venous obstruction. A variant form of May-Thurner syndrome was identified on contrast-enhanced computed tomography, where the common trunk of the internal iliac veins was compressed by the right common iliac artery. The gonadal veins were dilated as an outflow tract. Stenting of the common trunk of the internal iliac veins was effective in managing PCS.

Introduction

Pelvic congestion syndrome (PCS) is common in multiparous women and is often overlooked and underdiagnosed.¹ Dilated gonadal veins indicate venous reflux, which results in pelvic venous varicosities. Ovarian vein embolization is a well-established endovascular treatment for PCS.^{2,3}

Case Report

A 31-year-old multiparous woman presented with chronic pelvic pain for 5 years with recent worsening. The pain was mostly on the left side with some left flank pain. She was diagnosed with PCS 5 months earlier and had undergone bilateral ovarian vein embolization. However, her pain scale had worsened from 6/10 to 8/10.

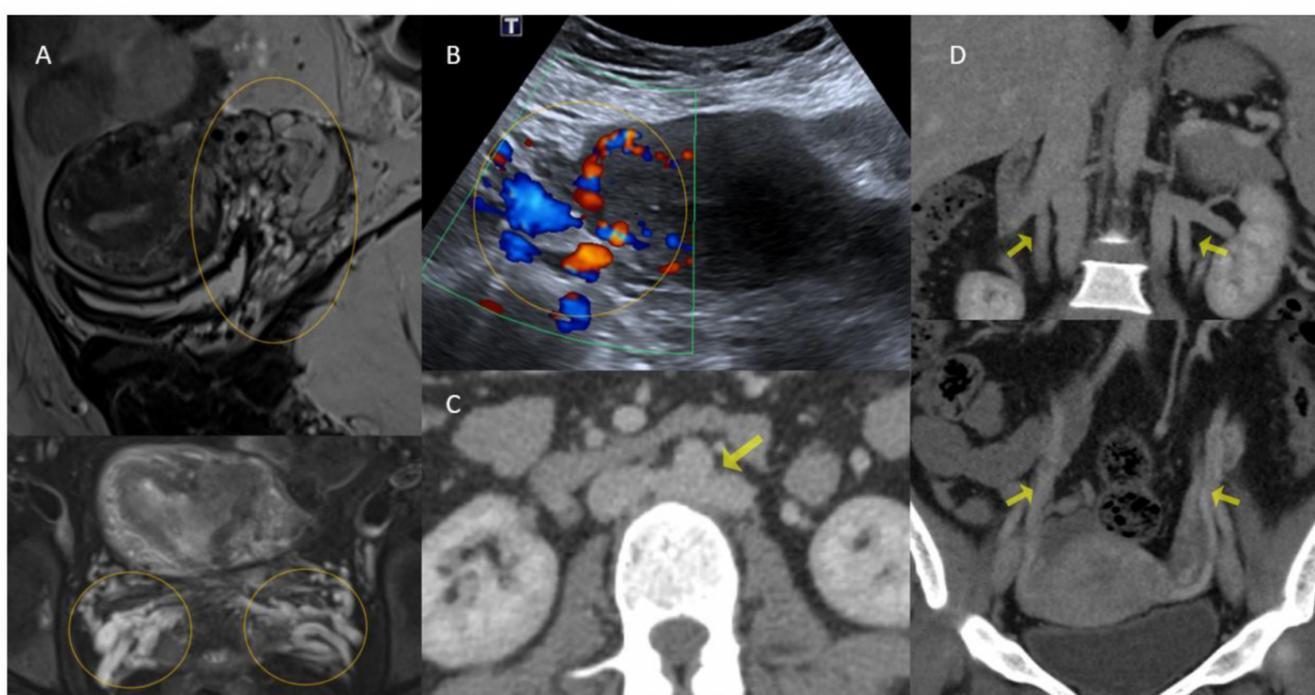


Figure 1. (A) Sagittal T2 and axial short-tau inversion recovery sections and (B) axial pelvic ultrasound image showing dilated parametrial and pelvic veins (encircled yellow line). (C) Axial contrast-enhanced computed tomography (CECT) section depicting the retroaortic course of the connector vein (presumed to exist as a nutcracker syndrome counterpart). (D) Coronal CECT sections showing dilated gonadal veins (R and L) joining the respective renal veins that eventually drain into the right and left inferior vena cava and also the gonadal veins near their origin from the ovarian plexus.

The patient's previous contrast-enhanced computed tomography (CECT) scan was reviewed (**Figure 1**), showing duplication of the inferior vena cava (IVC). The left common iliac vein was continuing as the left IVC, which was communicating with the right IVC through retroperitoneal collaterals in the lumbar region. The left internal iliac vein (IIV) was joining the right IIV. The right IIV (a common trunk for both IIVs) was extrinsically compressed by the right common iliac artery (**Figure 2**). Both gonadal veins were dilated. Magnetic resonance imaging of the pelvis showed persistent flow voids in the parametrium and adnexa, consistent with pelvic venous congestion (**Figure 1**).

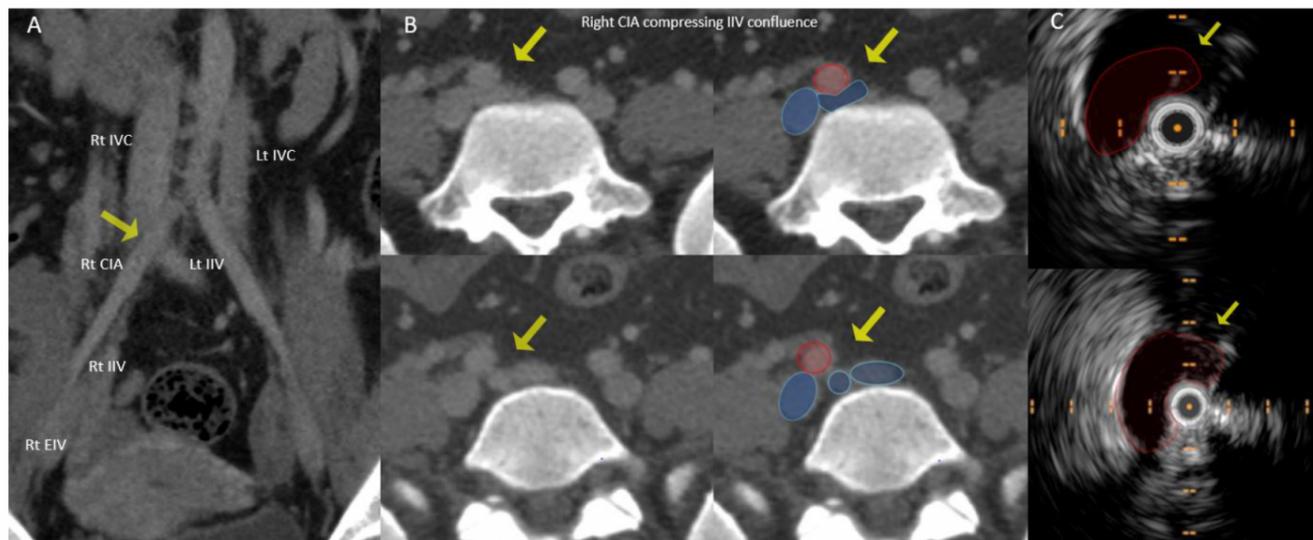


Figure 2. Selected contrast-enhanced computed tomography and intravascular ultrasound (IVUS) images depicting the May-Thurner variant. **(A)** Coronal image showing the right common iliac artery crossing over the confluence of bilateral internal iliac veins with duplicated inferior vena cava. **(B)** Axial image showing the extrinsic compression of the iliac venous confluence against the lumbar vertebral and venous structures below the compression. **(C)** IVUS images showing the extrinsic compression by the right common iliac artery over the iliac vein confluence.

Endovascular treatment was planned. Under aseptic precautions, the right internal jugular vein was accessed and a 5F sheath was placed. Using a 0.035" guidewire and 5F multipurpose catheter, the left IIV was cannulated. The venogram (**Figure 3**) showed significant extrinsic compression stenosis in the junction of the common venous trunk, correlating with the CECT (**Figure 2**). Multiple venous collaterals were seen in the pelvis with stagnation of the contrast.

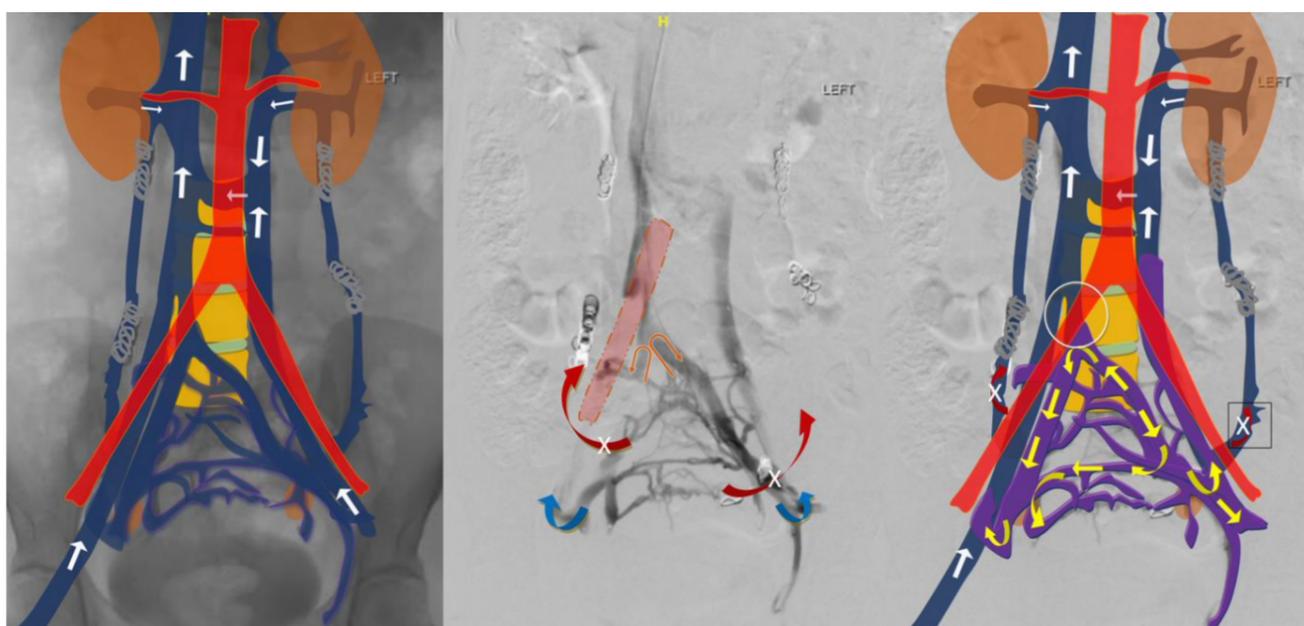


Figure 3. Illustrative diagrams overlaid on unsubtracted digital subtraction angiography (DSA) and DSA images (venogram obtained after selective left internal iliac vein cannulation) showing flow hemodynamic after ovarian vein embolization (OVE) in May-Thurner syndrome (MTS)-induced pelvic congestion syndrome (PCS). **(A)** Features of PCS with stasis and dilatation of parametrial pelvic visceral veins emptying into the internal iliac veins. Left retroaortic course of communicating/connecter vein simulating nutcracker syndrome. **(B)** DSA image: eventually, after OVE, few outlet channels are blocked (red curved arrows), aggravating the pelvic venous congestion/stasis with reflux into the bilateral external iliac veins (blue curved arrows) with coexisting obstruction due to right common iliac artery indentation. **(C)** Illustration demonstrating the flow dynamics in the presence of MTS variant, causing extrinsic compression of both internal iliac veins cranial to their confluence, which is the actual or primary point of reflux (congested pelvic veins demonstrated by violet color venous channels and altered flow pathway by yellow arrows).

On-table intravascular ultrasound (IVUS) confirmed the findings (**Figure 2**). The diameter of the venous trunk was 13.4 mm caudal to the narrowing. There was a pressure gradient of 5 mm Hg across the narrowing. A 16 mm x 6 cm Wallstent endoprosthesis self-expanding stent (Boston Scientific) was deployed across the narrowed portion of the common venous trunk (**Figure 4**). The stent was opened with a 14 mm x 4 cm balloon. Check venogram showed a brisk antegrade flow. The pressure gradient had reduced to 2 mm Hg. The patient had an uneventful recovery and was asymptomatic on follow-up at 6 months.

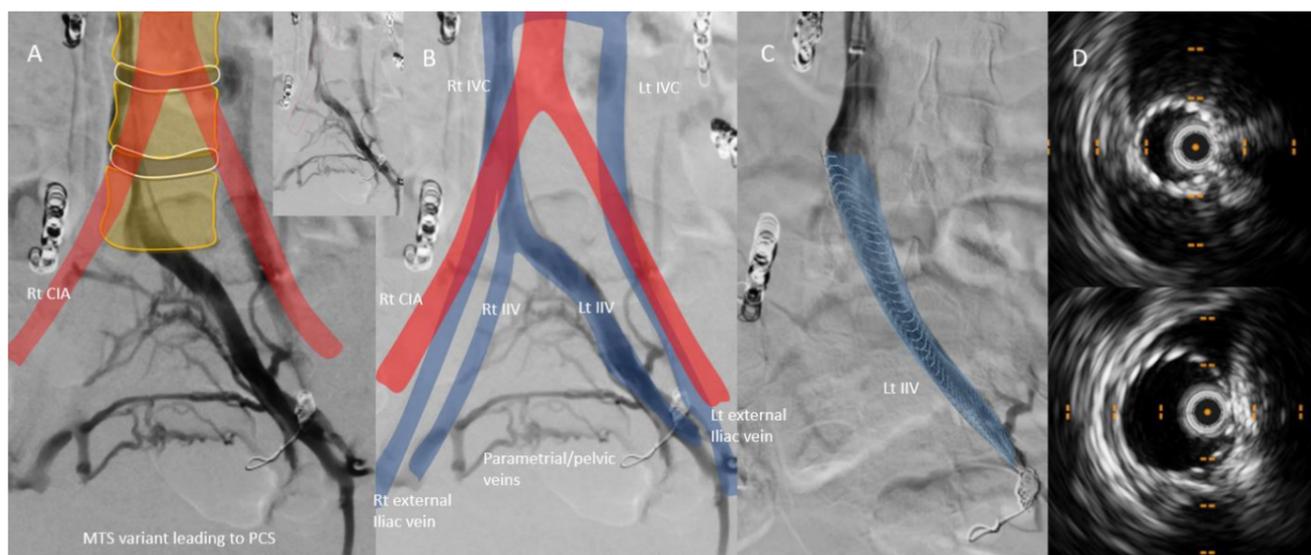


Figure 4. Illustrative diagram overlaid on digital subtraction angiography images. **(A)** and **(B)** Dilated pelvic visceral veins with opacification of internal iliac veins. Right common iliac artery indenting the internal iliac vein confluence at level of L4 lumbar vertebra: May-Thurner variance with depiction of altered anatomy of iliac veins and inferior vena cava (IVC). **(C)** After stent placement, the left internal iliac vein selective venogram shows a cessation of pelvic venous opacification/reflux and well-established antegrade flow. **(D)** Intravascular ultrasound images at the left internal iliac vein and the right IVC level after stent placement shows a patent lumen without indentation.

Discussion

Patients with PCS usually present with otherwise unexplained chronic pelvic pain that has been present for more than 6 months, along with anatomic findings that include pelvic venous insufficiency and pelvic varicosities. It remains an underdiagnosed explanation for pelvic pain in young, premenopausal, usually multiparous females. Venography is usually necessary to confirm ovarian vein reflux. Embolization has been shown to be more effective than surgical therapy in improving symptoms in patients who fail hormonal therapy.¹

CECT is the investigation tool of choice in diagnosing and planning treatment. The diagnostic criteria are dilated pelvic veins and gonadal veins measuring more than 5 mm.^{4,5} The reflux of the contrast during venography may not be apparent because patients are in a supine position during the procedure.⁶

Association of the anatomical variation, as in this patient, is extremely rare. In May-Thurner syndrome (MTS), patients present with left lower limb symptoms. Because the venous collaterals between the IIVs are present, the clinical manifestation of PCS may be less obvious because of MTS. In the index case, there was no compression over the left common iliac vein; instead, there was compression over the common venous trunk, draining both IIVs. This distinct entity may be called obstructive pelvic venous congestion syndrome for appropriate diagnosis and management.

Duplication of the IVC is an anatomical variation.⁷ Embryologically, it results when symmetrical pairs of the supracardinal veins do not fuse during the fourth to eighth week of gestation. An ascending interiliac communication between IIVs may be associated.⁸

The clinical presentation in this patient was similar to PCS, which is a common condition. However, the stagnation in the venous system was due to an obstruction to the pelvic venous outflow rather than venous reflux in the gonadal veins. The dilated gonadal veins represent an outflow tract. However, the principle of treatment is similar to treating MTS, with jugular venous access-facilitated venogram, IVUS, and stenting.

Adequate counseling is extremely important when dealing with such entities, as the literature regarding the outcome and long-term prognosis is lacking.

Conclusion

While evaluating clinically suspected PCS, anatomical variation in the pelvic venous anatomy should be looked for. Compression of bilateral IIV outflow tract, if present, may be effectively treated endovascularly by stenting. ■

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