Pelvic Congestion Syndrome
## Pelvic Congestion Syndrome (PCS)

### Condition and Symptom Background

- **Condition Overview**
  - Non-cyclic pelvic pain affecting 39.1% of women at some point during lifetime\(^1\)
  - Typical age of onset: 20s or early 30s
  - May account for ~10 – 15% of outpatient gynecological visits\(^1\)
  - Dull aching pain
    - Unilateral
    - Worse with walking or postural changes

- **Urogynecological Symptoms\(^2\)**
  - Dysfunctional uterine bleeding
  - Dysmenorrhea
  - Dyspareunia
  - Dysuria without UTI

### Sources:

## PCS Diagnostic Testing
### Diagnostic Methods and Typical Indicators of PCS

<table>
<thead>
<tr>
<th>Method</th>
<th>Indicators</th>
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<tbody>
<tr>
<td><strong>Ultrasonography</strong>¹,²</td>
<td>• Sluggish venous flow&lt;br&gt;• Pelvic venous diameters &gt;4mm&lt;br&gt;• Tortuous pelvic vein &gt; 6 mm in diameter&lt;br&gt;• Blood flow of 3 cm/s or reversed caudal flow&lt;br&gt;• Dilated arcuate veins in the myometrium</td>
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<tr>
<td>**Magnetic Resonance Venography (MRV)**²,³</td>
<td>• Ovarian vein diameter &gt;1.5 times the size of the contralateral vein&lt;br&gt;• Contrast in the pelvic plexus&lt;br&gt;• Tortuous hypogastric veins&lt;br&gt;• 88-100% sensitivity&lt;br&gt;• Poor specificity</td>
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<tr>
<td>**Computed Tomography (CT)**²,⁴,⁵</td>
<td>• Ovarian vein diameter &gt; 8 mm&lt;br&gt;• Four ipsilateral parauterine veins of varying caliber with one measuring &gt; 4 mm in diameter and</td>
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<tr>
<td><strong>Venography</strong>²,⁶</td>
<td>• Ovarian vein diameter &gt; 10 mm&lt;br&gt;• Uterine venous engorgement&lt;br&gt;• Congestion of the ovarian plexus&lt;br&gt;• Filling of the pelvic veins across the midline or filling of thigh varices</td>
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</tbody>
</table>

### Sources:
PCS Therapeutic Options
Hormonal Manipulation

Rationale
• Intended to suppress ovarian activity via hormonal changes

Treatment Modalities

Medroxyprogesterone¹
• Daily administration
• Visual analogue score reductions while on therapy
• Requires concomitant psychotherapy
• Side effects
  – Bloating
  – Weight gain

Gonadotropin-Releasing Hormone (GnRH) Agonists¹
• Slightly more effective
  – Pain symptoms
  – Depressive symptoms
  – Sexual function
• Side effects
  – Hot flashes
  – Night sweats
  – Vaginal dryness
  – Mood changes

Sources:
PCS Therapeutic Options
Surgical Intervention

Rationale
- Intended to suppress ovarian activity via removal of organ or obstruction of blood flow to organ

Treatment Modalities

Hysterectomy
- Efficacy is unclear

Ovarian Vein Ligation
- 75% of women experienced pain reduction
- Follow-up 1.0 - 5.6 years
- No complications described

Sources:
PCS Therapeutic Options
Percutaneous Embolotherapy

Rationale
- Intended to suppress ovarian activity via obstruction of blood flow to organ

Treatment Modalities

Emboloetherapy¹

- 12 relevant studies
- Few explicit criteria
- 40-100% of patients with improvement in symptoms
- VAS improvement
  - 7.2 - 7.9 pretreatment
  - 2.5 – 5.6 post-treatment
- Potential complications¹,²:
  - Perforation of the ovarian vein
  - Coil migration into pulmonary vasculature
  - Stent migration
  - Flank pain
  - Fevers
  - Venipuncture site hematoma

Sources:
### Site of Entry
A. The right common femoral vein is cannulated using the Seldinger technique  
B. Place a 6-French sheath in the right common femoral vein

### Access Left Renal Vein
A. Perform a venogram of the inferior vena cava from the sheath to identify the level of the renal veins  
B. Insert a wire into the vena cava above the level of the renal veins  
C. Select an appropriately sized 6-French guiding sheath and insert it over the wire above the level of the left renal vein  
D. Retract the guidewire to the edge of the guiding sheath  
E. With the guiding sheath directed at the left wall of the vena cava, slowly retract it until it engages the left renal vein

Source:
Renal Vein, Ovarian Vein Venography\(^1,2\)

A. Must be performed in supine position

B. Ovarian vein venography is performed via cannulation of the left renal vein and remains the gold standard test for diagnosis of ovarian vein reflux and PCS

C. Selective venography performed during a Valsalva maneuver or with the table in the reverse Trendelenburg position

D. Reflux can also be exacerbated by tilting the table into a semi-upright position

Results from case studies are not necessarily indicative of results in other cases. Results in other cases may vary.

Sources:
PCS Percutaneous Embolotherapy
Single-Center Protocol: The Moore Method

Access Left Ovarian Vein$^{1,2}$

A. Advance diagnostic catheter into the distal ovarian vein

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Sources:
PCS Percutaneous Embolotheraphy
Single-Center Protocol: The Moore Method

Dual-Device Approach:

1. **Vascular Plug: Amplatzer**

2. **Embolization Coils: Interlock™-35 Fibered IDC Occlusion System**
   - A. Although any 0.035” coil can be used, the number of coils required to successfully occlude the entire of this dilated ovarian vein has led [this center] to primarily use Interlock™-35 coils.
   - B. Coils come in much larger diameters and in lengths up to 40cm, which are more appropriate for this indication.
   - C. Interlock coils have the ability to be recaptured until 95% deployed, allowing for optimal placement, especially near the confluence of the ovarian and renal veins.

Results from case studies are not necessarily indicative of results in other cases. Results in other cases may vary.

Sources:
In this study, use of Interlock™ embolization coils resulted in the need for fewer coils and superior packing into desired vessel\(^1\)

- Transcatheter therapy for PCS given grade 2B recommendation by AVF and SVS\(^2\)
- 75% - 80% of women report an improvement of symptoms within the first 2 weeks after embolization\(^2\)

Results from case studies are not necessarily indicative of results in other cases. Results in other cases may vary.

Sources:
CAUTION: Federal law (USA) restricts this device to sale by or on the order of a physician. Rx only. Prior to use, please see the complete “Directions for Use” for more information on Indications, Contraindications, Warnings, Precautions, Adverse Events, and Operator’s Instructions.

INTENDED USE/INDICATIONS FOR USE
The Interlock - 35 Fibered IDC Occlusion System is indicated for obstructing or reducing blood flow in the peripheral vasculature during embolization procedures. This device is not intended for neurovascular use.

CONTRAINDICATIONS
None known.

PRECAUTIONS
Do not attempt to use the Interlock - 35 Fibered IDC Occlusion System with a soft-walled delivery catheter. Do not advance the Interlock - 35 Fibered IDC Occlusion System if it becomes lodged within the catheter. Determine the cause of the resistance and replace the catheter and coil if necessary.

ADVERSE EVENTS
The complications that may result from a peripheral embolization procedure include, but are not limited to:
• Complications related to catheterization (e.g., hematoma at the site of entry, clot formation at the tip of the catheter and subsequent dislodgement, nerve and vessel dissection or perforation, etc.)
• Pain
• Hemorrhage
• Infection necessitating medical intervention
• Foreign body reactions necessitating medical intervention
• Emboli
• Ischemia
• Vasospasm
• Tissue necrosis
• Undesirable clot formation of the vasculature
• Recanalization
• Death
• Temporary neurological deficit

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