Pelvic venous reflux

Vincent VIDAL
Effectiveness of Embolization or Sclerotherapy of Pelvic Veins for Reducing Chronic Pelvic Pain: A Systematic Review

Jane P. Daniels, PhD, Rita Champaneria, MPhil, Laila Shah, MSc, Janesh K. Gupta, FRCOG, Judy Birch, BSc, and Jonathan G. Moss, FRCS, FRCR

ABSTRACT

Purpose: Chronic pelvic pain (CPP) in the presence of dilated and refluxing pelvic veins is often described as pelvic congestion syndrome (PCS), although the causal relationship between pelvic vein incompetence and CPP has not been established. Percutaneous embolization is the principal treatment for PCS, with high success rates cited. This study was undertaken to systematically and critically review the effectiveness of embolization of incompetent pelvic veins.

Materials and Methods: A comprehensive search strategy encompassing various terms for pelvic congestion, pelvic pain, and embolization was deployed in 17 bibliographic databases, with no restriction on study design. Methodologic quality was assessed. The quality and heterogeneity generally precluded meta-analysis. Results were tabulated and described narratively.

Results: Twenty-one prospective case series and one poor-quality randomized trial of embolization (involving a total of 1,308 women) were identified. Early substantial relief from pain was observed in approximately 75% of women undergoing embolization, and generally increased over time and was sustained. Significant pain reductions following treatment were observed in all studies that measured pain on a visual analog scale. Repeat intervention rates were generally low. There were few data on the impact on menstruation, ovarian reserve, or fertility, but no concerns were noted. Transient pain was common following foam embolization, and there was a < 2% risk of coil migration.

Conclusions: Embolization appears to provide symptomatic relief of CPP in the majority of women and is safe, although the quality of the evidence is low.
Definition

PCS is a clinical syndrome with specific anatomic findings,
- chronic pelvic pain
- greater than 6 months duration
- secondary to pelvic venous insufficiency
- associated pelvic venous distention

Epidemiology

Chronic pelvic pain may account for approximately 10% of outpatient gynecologic visits.

30% are unexplained.

Pelvic varicosities are present in up to 30% of women with unexplained chronic pelvic pain.

Up to 20% of patients with lower limb varices partly or completely of pelvic origin.

Asciutto et al. Eur J Vasc Endovasc Surg 2009
Bora et al. JBR-BTR 2012
Mechanism

3 connected systems

Femoro-ilio-caval

Internal iliac veins

Ovarian veins

Umeoka et al. Radiographics 2004;24:193-208
Pelvic leakage sites?

Up to 20% of patients with lower limb varices partly or completely of pelvic origin.

- Inferior gluteal vein
- Internal pudendal vein
- Obturator vein
Symptoms

Chronic pelvic pain and heaviness
   Without evidence of other obvious pathology
   Worsened by walking, standing position and before menstruation

Dyspareunia, post-coital pain, dysmenorrhea

Unexplained dysuria

Perineal heaviness
Symptoms

Fullness of leg veins (with or without leg varices) and previous pregnancies or surgery for lower limb varices... when combined with ovarian point tenderness.

94% sensitive and 77% specific for PCS...

Imaging

Transvaginal US
MDCT
MR angiography
Venography

The findings are underestimated because the patient is not in the upright position
Retrograde selective venography

Left renal vein study

Ovarian veins study

Internal iliac veins
  Inferior gluteal vein
  Internal pudendal vein
  Obturator vein

Left ilio-caval return study
Venographic findings suggesting PCS

Dilation of the ovarian vein (diameter > 6 mm)
Ovarian vein reflux
Uterine vein engorgement
Congestion of the ovarian venous plexus
Filling of pelvic veins across midline
Filling of vulvovaginal or thigh varicosities

**Principles of treatment**

Complete and **definitive** occlusion
- Pelvic leakage sites
- Pelvic venous hyperpressure

**Before** treatment of lower limb varices

Femoral/jugular approach

Pain control
Large choice ...

Coils

Plugs

Foam sclerosants

Cyanoacrylate glue

Onyx

Combination ?
Combination: detachable coils + liquids
Combination: plugs + foam
Embolization of ovarian vein for pelvic congestion syndrome with ethylene vinyl alcohol copolymer (Onyx®)

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33 yo PCS
uterine plexus
left obturator V
left iliac V
36 yo PCS
Onyx embolization
right obturator
Pudendal
### Studies of embolization for PCS

<table>
<thead>
<tr>
<th>Study</th>
<th>Patients</th>
<th>Clinical Success</th>
<th>Technical Success</th>
<th>Follow-up (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maleux et al, 2001</td>
<td>41</td>
<td>58.5%</td>
<td>98%</td>
<td>19.9</td>
</tr>
<tr>
<td>Venbrux et al, 2002</td>
<td>56</td>
<td>96%</td>
<td>100%</td>
<td>22.1</td>
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<tr>
<td>Kim et al, 2006</td>
<td>131</td>
<td>83%</td>
<td>100%</td>
<td>45</td>
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<tr>
<td>Kwon et al, 2007</td>
<td>67</td>
<td>82%</td>
<td>100%</td>
<td>44.8</td>
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<tr>
<td>Gandini et al, 2008</td>
<td>26</td>
<td>100%</td>
<td>100%</td>
<td>12</td>
</tr>
<tr>
<td>Hocquelet et al, 2013</td>
<td>33</td>
<td>93%</td>
<td>96%</td>
<td>26</td>
</tr>
<tr>
<td>Nasser et al, 2013</td>
<td>113</td>
<td>100%</td>
<td>100%</td>
<td>12</td>
</tr>
<tr>
<td>Laborda et al, 2013</td>
<td>202</td>
<td>93.85%</td>
<td>100%</td>
<td>60</td>
</tr>
<tr>
<td>Gandini et al, 2014</td>
<td>38</td>
<td>100%</td>
<td>100%</td>
<td>12</td>
</tr>
<tr>
<td>Pyra et al, 2016</td>
<td>12</td>
<td>100%</td>
<td>91%</td>
<td>6</td>
</tr>
<tr>
<td>Marcelin et al, 2017</td>
<td>27</td>
<td>94.1%</td>
<td>100%</td>
<td>24.2</td>
</tr>
</tbody>
</table>
Abstract

Purpose: To evaluate the safety and efficacy of pelvic embolization using ethylene vinyl alcohol copolymer (Onyx®) for pelvic congestion syndrome.

Material and methods: Between March 2012 to September 2016, 17 women (mean age, 44.7 ± 12.2 (SD) years; range: 34–71 years) presenting with pelvic congestion syndrome were evaluated for transvenous embolization with Onyx®. Pelvic congestion syndrome was initially diagnosed by clinical examination and the results of transvaginal Doppler ultrasound and further confirmed by pelvic venography. Primary and secondary clinical efficacy was defined respectively by the resolution of the symptoms after embolization and at the end of the follow-up, irrespective to the number of embolization procedures.

Results: Technical efficacy of embolization was 100% with no significant complications during and after embolization. After a mean follow-up time of 24.2 months (range: 6–69 months) a primary and secondary clinical efficacy of 76.4% (13/17 women) and 94.1% (16/17 women) respectively were observed. Four women (23.5%) underwent a second embolization procedure with one woman requiring a third embolization procedure. These additional embolization procedures were associated with direct puncture of vulvar varices for sclerotherapy in two women. Five women (29%) had recurrent symptoms 21 months post-treatment (7–42 months).

Conclusion: Pelvic embolization using ethylene vinyl alcohol copolymer (Onyx®) has a favorable clinical success for pelvic congestion syndrome.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Mean [range]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (year)</strong></td>
<td>44.7 [34–71]</td>
</tr>
<tr>
<td><strong>Parity</strong></td>
<td>2.6 [0–7]</td>
</tr>
<tr>
<td><strong>Gravidity</strong></td>
<td>2.2 [0–4]</td>
</tr>
<tr>
<td><strong>Symptoms</strong></td>
<td></td>
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<tr>
<td>Chronic pelvic pain</td>
<td>17</td>
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<tr>
<td>Dyspareunia</td>
<td>10</td>
</tr>
<tr>
<td>Vulvoperineal varicosities</td>
<td>3</td>
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<tr>
<td>Painful defecation, mictional urgency</td>
<td>3</td>
</tr>
<tr>
<td>Painful menstruation, dysmenorrhea</td>
<td>6</td>
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<tr>
<td>Lower limb varices</td>
<td>11</td>
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<tr>
<td><strong>Medical history</strong></td>
<td></td>
</tr>
<tr>
<td>Essure® placement for birth control</td>
<td>1</td>
</tr>
<tr>
<td>Intern iliac vein thrombosis</td>
<td>1</td>
</tr>
<tr>
<td>Laparoscopic surgery for endometriosis</td>
<td>1</td>
</tr>
<tr>
<td>Negative laparoscopy for pelvic pain</td>
<td>1</td>
</tr>
</tbody>
</table>
Strengths

Onyx™ forms a **cast** and is **cohesive**

Low risk for microcatheter entrapment

**Low migration** risk

Avoid use of multiple coils in relatively large and long veins
Safety

No major or minor complications were noted.

The average volume of Onyx™ liquid embolic injected was **5.2 ml** (2 – 9 ml).
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Conclusions: Embolization appears to provide symptomatic relief of CPP in the majority of women and is safe, although the quality of the evidence is low.
Relief from pain 75 %
  - increase over time and sustained
Repeat intervention rates low
No concerns noted for impact on
  - menstruation / Ovarian reserve / fertility
Transient paint following embolization
< 2 % risk of coil migration

Embolization provide symptomatic relief of CPP in the majority of women and is safe
Conclusion

PCS: Clinical syndrome

Imaging studies: venous angiography

Major role of the radiologic consultation

Embolization and combination of materials

Treat only PCS patients, not images!
Pelvic venous reflux

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