Ovarian and Internal Iliac Vein Endovascular Occlusion as a Treatment of Pelvic Congestion Syndrome

Policy Number: 4.01.18  Last Review: 11/2019

Policy
Blue Cross and Blue Shield of Kansas City (Blue KC) will not provide coverage for ovarian and internal iliac vein Endovascular Occlusion as a treatment of pelvic congestion syndrome. This is considered investigational.

When Policy Topic is covered
Not Applicable

When Policy Topic is not covered
Endovascular occlusion of the ovarian vein and internal iliac veins is considered investigational as a treatment of pelvic congestion syndrome.

Description of Procedure or Service

<table>
<thead>
<tr>
<th>Populations</th>
<th>Interventions</th>
<th>Comparators</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals:</td>
<td><strong>Interventions of interest are:</strong></td>
<td><strong>Comparators of interest are:</strong></td>
<td>Relevant outcomes include:</td>
</tr>
<tr>
<td></td>
<td>▪ With pelvic congestion syndrome</td>
<td>▪ Medical therapy</td>
<td>▪ Symptoms</td>
</tr>
<tr>
<td></td>
<td>▪ Ovarian and/or internal iliac vein endovascular occlusion (eg, embolization, sclerotherapy)</td>
<td>▪ Surgical ovarian vein ligation</td>
<td>▪ Treatment-related morbidity</td>
</tr>
</tbody>
</table>

Pelvic congestion syndrome is characterized by chronic pelvic pain that is often aggravated by standing; diagnostic criteria for this condition are not well-defined. Endovascular occlusion (eg, embolization, sclerotherapy) of the ovarian
and internal iliac veins has been proposed as a treatment for patients who fail medical therapy.

For individuals who have pelvic congestion syndrome who receive ovarian and/or internal iliac vein endovascular occlusion, the evidence includes case series and systematic reviews. Relevant outcomes are symptoms and treatment-related morbidity. According to a systematic review of case series data, approximately 80% of patients have reported some degree of symptom relief 12 months after ovarian and/or internal iliac vein endovascular occlusion. It is difficult to draw conclusions from these data because of a lack of a placebo control or comparative data from current alternative interventions. Moreover, definitions of pelvic congestion syndrome vary, making it challenging to define a patient population with symptoms arising from pelvic congestion. Randomized controlled trials using well-defined eligibility criteria are needed. The evidence is insufficient to determine the effects of the technology on health outcomes.

**Background**

**Pelvic Congestion Syndrome**

Pelvic congestion syndrome is a chronic pelvic pain syndrome of variable location and intensity, which is associated with dyspareunia and postcoital pain and aggravated by standing. The syndrome occurs during the reproductive years, and pain is often greater before or during menses. The underlying etiology is thought to be related to varices of the ovarian veins, leading to pelvic vascular congestion. Because there are many etiologies of chronic pelvic pain, the pelvic congestion syndrome is often a diagnosis of exclusion, with the identification of varices using a variety of imaging methods, such as magnetic resonance imaging, computed tomography, or contrast venography. However, the syndrome is still not well-defined, and it is unclear whether pelvic congestion syndrome causes chronic pelvic pain. Although venous reflux is common, not all women with this condition experience chronic pelvic pain and, conversely, chronic pelvic pain is reported by women without pelvic congestion syndrome.

**Treatment**

Initial treatment of pelvic congestion syndrome includes psychotherapy and medical therapy (eg, nonsteroidal anti-inflammatory drugs) and hormonal therapy. For patients who fail initial therapy, surgical ligation of the ovarian vein may be considered. Embolization therapy and/or sclerotherapy of the ovarian and internal iliac veins has been proposed as an alternative to surgical ovarian vein ligation. Endovascular occlusion can be performed using a variety of materials including coils, vascular plugs, glue, liquid embolic agents, and gelatin sponge or powder (Gelfoam).

**Regulatory Status**

Ovarian and internal iliac vein embolization are surgical procedures and, as such, are not subject to regulation by the U.S. Food and Drug Administration.

Various products (eg, coils, vascular plugs, glue, liquid embolic agents, Gelfoam) and/or delivery-assist devices would be used to embolize the vein(s),
and they would be subject to Food and Drug Administration regulation. Several products have been cleared for marketing by the Food and Drug Administration through the 510(k) process for uterine fibroid embolization (eg, Embosphere® Microspheres, Cook Incorporated Polyvinyl Alcohol Foam Embolization Particles) and/or embolization of hypervascular tumors and arteriovenous malformations (eg, Contour® Emboli PVA). Several embolization delivery systems have also been cleared via the 510(k) process for arterial and venous embolization in the peripheral vasculature featuring vascular plugs (eg, ArtVentive Medical Group, Inc. Endoluminal Occlusion System [EOS™]) or coils (eg, Cook Incorporated MReye® Flipper®). FDA product code: KRD.

In November 2004, the sclerosant agent Sotradecol® (sodium tetradecyl sulfate injection) was approved by the U.S. Food and Drug Administration for use in the treatment of small uncomplicated varicose veins of the lower extremities that show simple dilation with competent valves (ANDA 040541).

**Rationale**

This evidence review was created in April 2004 and has been updated regularly with searches of the MEDLINE database. The most recent literature update was performed through May 31, 2019.

Evidence reviews assess the clinical evidence to determine whether the use of a technology improves the net health outcome. Broadly defined, health outcomes are length of life, quality of life, and ability to function-including benefits and harms. Every clinical condition has specific outcomes that are important to patients and to managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms.

To assess whether the evidence is sufficient to draw conclusions about the net health outcome of a technology, two domains are examined: the relevance and the quality and credibility. To be relevant, studies must represent one or more intended clinical uses of the technology in the intended population and compare an effective and appropriate alternative at a comparable intensity. For some conditions, the alternative will be supportive care or surveillance. The quality and credibility of the evidence depend on study design and conduct, minimizing bias and confounding that can generate incorrect findings. The randomized controlled trial is preferred to assess efficacy; however, in some circumstances, nonrandomized studies may be adequate. Randomized controlled trials are rarely large enough or long enough to capture less common adverse events and long-term effects. Other types of studies can be used for these purposes and to assess generalizability to broader clinical populations and settings of clinical practice.

**Pelvic Congestion Syndrome**

No randomized controlled trials have been published comparing endovascular occlusion for pelvic congestion syndrome with a relevant alternative comparator or
sham/placebo treatment. A randomized, prospective trial comparing embolization with coils vs vascular plugs is discussed. The remaining published evidence consists of case series, most of which were retrospective and conducted outside of the United States. Complicating the literature on this indication is a lack of standardized diagnostic criteria.

**Clinical Context and Therapy Purpose**
The purpose of ovarian and/or internal iliac vein endovascular occlusion in patients who have pelvic congestion syndrome is to provide a treatment option that is an alternative to or an improvement on existing therapies.

The question addressed in this evidence review is: Does the use of ovarian and/or internal iliac vein endovascular occlusion improve the net health outcome in patients with pelvic congestion syndrome?

The following PICO was used to select literature to inform this review.

**Patients**
The relevant population of interest is patients with pelvic congestion syndrome.

**Interventions**
The therapies being considered are ovarian and internal iliac vein endovascular occlusion.

**Comparators**
The following therapies are currently being used to make decisions about pelvic congestion syndrome: medical therapy (eg, analgesics, hormonal therapy) and surgical ovarian vein ligation.

**Outcomes**
The general outcomes of interest are symptom reduction (eg, pain related to varicose veins) and adverse events. Procedural follow-up ranges from 1 to 3 months.

**Systematic Reviews**
Tu et al (2010) published a systematic review of literature on the diagnosis and management of pelvic congestion syndrome. They observed that studies have rarely specified explicit diagnostic criteria for pelvic congestion syndrome and that definitions of pelvic pain have varied widely across studies. Moreover, most studies have not used objective outcome measures.

Two systematic reviews assessing endovascular occlusion for pelvic congestion syndrome were published between 2016 and 2018. Tables 1 and 2 summarize key characteristics and results.
### Table 1. Systematic Review Characteristics

<table>
<thead>
<tr>
<th>Study</th>
<th>Dates</th>
<th>Trials</th>
<th>Participants¹</th>
<th>N (Range)</th>
<th>Design</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>▪ pelvic congestion syndrome with signs of pelvic vein incompetence on catheter-based venography**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▪ percutaneous intervention for pelvic congestion syndrome (eg, sclerosis or embolization)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▪ outcomes assessed pre- and post-treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mahmoud et al (2016)⁴</td>
<td>1997-2014</td>
<td>20</td>
<td>Women with:</td>
<td>1,081 (6-218)</td>
<td>Prospective observational studies Case series</td>
<td>1-72 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▪ pelvic congestion syndrome**</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>▪ endovascular treatment of pelvic venous reflux</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹Key eligibility criteria.  
*Study design noted by author not consistent with design type.  
**No specific diagnostic criteria specified for pelvic congestion syndrome.

### Table 2. Systematic Review Results

<table>
<thead>
<tr>
<th>Study</th>
<th>Patients with Symptomatic Improvement</th>
<th>Patients with Little to No Symptomatic Improvement</th>
<th>Procedural Complications</th>
<th>Reports of Worsening Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown et al (2018)³</td>
<td>Overall relief</td>
<td>Overall relief</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N (Total N)</td>
<td>% (Range)</td>
<td>Median</td>
<td>IQRQ3-Q1</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
<td>-----------</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td>697 (762)</td>
<td>91.5% (68.3 - 100%)</td>
<td>95.1</td>
<td>17.4</td>
</tr>
<tr>
<td></td>
<td>57 (697)</td>
<td>8.2% (0-31.7%)</td>
<td>4.6</td>
<td>14.2</td>
</tr>
<tr>
<td></td>
<td>36 (944)²</td>
<td>3.8% (NR)</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td></td>
<td>6 (710)</td>
<td>0.8% (0-4.1%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>571 (648)</td>
<td>88.1% (NR)</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td></td>
<td>624 (721)</td>
<td>86.6% (NR)</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td></td>
<td>77 (648)</td>
<td>11.9% (NR)</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td></td>
<td>97 (721)</td>
<td>13.4% (NR)</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td></td>
<td>120 (1041)</td>
<td>11.5% (NR)</td>
<td>NR</td>
<td>NR</td>
</tr>
</tbody>
</table>

IQRQ3-Q1: interquartile range. NR: not reported.

¹Proportion of patients with outcome from population completing all relevant follow-up.
²Proportion of procedures with outcome from total number of procedures performed.

A systematic review by Mahmoud et al (2016) identified 20 case series (total N=1081 patients) assessing endovascular treatment for pelvic congestion syndrome. Reviewers did not require any particular diagnostic criteria for pelvic congestion syndrome. Only a single study used a comparison group, but patients in it received conservative treatment because they were ineligible for vein embolization therapy; as a result, outcomes following the two interventions cannot be compared. The authors included a quality assessment for the included studies - which were deemed to be of poor quality.

Brown et al (2018) evaluated patient outcomes following percutaneous treatment of pelvic congestion syndrome (N=828). Study inclusion criteria required symptom(s) of pelvic congestion syndrome and the presence of pelvic venous incompetence on catheter-based venography - criteria which were not specified or defined. This review also includes a randomized trial published by Chung and Huh (2003) that evaluated the efficacy of various treatments for pelvic congestion syndrome that had failed 4-6 months of treatment with medroxyprogesterone acetate (N=106). However, this study compared ovarian vein coil embolization to
hysterectomy with bilateral or unilateral oophorectomy and was therefore not assessed separately as evidence.

**Randomized Studies**
A randomized, prospective trial by Guirola et al (2018) in Spain compared the safety and efficacy of embolization with vascular plugs (VPs) or fibered platinum coils (FPCs) in women with pelvic congestion syndrome. Patients were enrolled (N=100) and randomly assigned to each treatment group via block randomization (N=50). Diagnosis of pelvic congestion syndrome was accomplished through a symptom screening questionnaire followed by an ultrasound study. Patients with 3 or more positive symptom responses advanced to the ultrasound screening, and patients with pelvic veins >6 mm in diameter and/or venous reflux or dilated midline communicating veins were advanced to randomization. Follow-up screening occurred at 1, 3, 6, and 12 months. The primary outcome was clinical success assessed subjectively through patient responses regarding relief of symptoms and pain scores assessed with the visual analog scale. Clinical success was achieved in 89.7% of the FPC group and 90.6% of the VP group (p = 0.760). Improvement in visual analog scale pain scores at the end of 12 months was 90.2% overall and improvement was seen in 95.9% of the FPC group and 96% of the VP group (p>0.999). A total of 11 (22%) complications were seen in the FPC group and 5 (10%) in the VP group (p = 0.059). Minor adverse events included access site hematoma and ovarian vein extravasation. Device migrations were considered major complications. A major limitation in the study is the significant difference in age (p = 0.004) and pre-treatment visual analog scale pain score between groups (p = 0.004), both of which were higher in the VP group despite randomization.

**Case Series**
Tables 3 and 4 summarize the characteristics and results of select case series that have reported on symptom improvements in patients with pelvic congestion syndrome treated with endovascular occlusion.

**Table 3. Summary of Key Case Series Characteristics for Pelvic Congestion Syndrome**

<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Participants</th>
<th>Treatment Delivery</th>
<th>Follow-Up, mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hocquelet et al (2014)</td>
<td>France</td>
<td>33</td>
<td>Vein embolization (foam, coil)</td>
<td>26</td>
</tr>
<tr>
<td>Nasser et al (2014)</td>
<td>Brazil</td>
<td>113</td>
<td>Vein embolization (coil)</td>
<td>12</td>
</tr>
<tr>
<td>Laborda et al (2013)</td>
<td>Spain</td>
<td>202</td>
<td>Vein embolization (coil)</td>
<td>60</td>
</tr>
<tr>
<td>Study</td>
<td>Treatment</td>
<td>Clinical Outcome (at Least Substantial Improvement in Symptoms), %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hocquelet et al (2014)</td>
<td>Vein embolization (foam, coil)</td>
<td>94 (61 complete, 33 partial)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nasser et al (2014)</td>
<td>Vein embolization (coil)</td>
<td>100 (53 complete, 47 partial)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laborda et al (2013)</td>
<td>Vein embolization (coil)</td>
<td>94 (34 complete)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gandini et al (2008)</td>
<td>Vein embolization (foam)</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kwon et al (2007)</td>
<td>Vein embolization (coil)</td>
<td>82</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a Based on 179 patients who completed the 5-year follow-up.

**Summary of Evidence**
For individuals who have pelvic congestion syndrome who receive ovarian and/or internal iliac vein endovascular occlusion, the evidence includes randomized studies, case series and systematic reviews. Relevant outcomes are symptoms and treatment-related morbidity. According to systematic reviews of case series data, approximately 86.6%, 88.1%, and 91.5% of patients have reported some degree of symptom relief after ovarian and/or internal iliac vein endovascular occlusion at short-term, long-term, or overall follow-up. In a randomized trial of embolization...
with vascular plugs or coils in patients with pelvic congestion syndrome, adverse
events were reported in 22% and 10% of patients, respectively. It is difficult to
draw conclusions from these data because of a lack of a placebo control or
comparative data from current alternative interventions. Moreover, definitions of
pelvic congestion syndrome vary, making it challenging to define a patient
population with symptoms arising from pelvic congestion. Randomized controlled
trials using well-defined eligibility criteria and relevant comparators are needed.
The evidence is insufficient to determine the effects of the technology on health
outcomes.

SUPPLEMENTAL INFORMATION

Practice Guidelines and Position Statements
A fact sheet from the Society for Interventional Radiology on chronic pelvic pain in
women endorsed ovarian vein embolization as an effective treatment option for
pelvic congestion syndrome.13

U.S. Preventive Services Task Force Recommendations
Not applicable.

Medicare National Coverage
There is no national coverage determination. In the absence of a national coverage
determination, coverage decisions are left to the discretion of local Medicare
carriers.

Ongoing and Unpublished Clinical Trials
Some currently unpublished trials that might influence this review are listed in
Table 5.

Table 5. Summary of Key Trials

<table>
<thead>
<tr>
<th>NCT No.</th>
<th>Trial Name</th>
<th>Planned Enrollment</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ongoing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCT03794466</td>
<td>Quantification of Pain Relief With Gonadal Vein Embolization for Pelvic Congestion Syndrome</td>
<td>30</td>
<td>Sep 2020 (recruiting)</td>
</tr>
<tr>
<td>NCT03165214</td>
<td>Effectiveness of Embolization of Pelvic Veins in Treatment of Pelvic Congestion Syndrome</td>
<td>52</td>
<td>Sep 2019 (recruiting)</td>
</tr>
<tr>
<td>NCT01909024a</td>
<td>Pelvic Embolisation to Reduce Recurrent Varicose Veins - Recurrent</td>
<td>270</td>
<td>Dec 2018 (unknown)</td>
</tr>
</tbody>
</table>
REFERENCES


Billing Coding/Physician Documentation Information

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>36012</td>
<td>Selective catheter placement, venous system; second order, or more selective, branch (eg, left adrenal vein, petrosal sinus)</td>
</tr>
<tr>
<td>37241</td>
<td>Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, inprocedural roadmapping, and imaging guidance necessary to complete the intervention; venous, other than hemorrhage (eg, congenital or acquired venous malformations, venous and capillary hemangiomas, varices, varicoceles)</td>
</tr>
</tbody>
</table>

**ICD-10 Codes**

N94.89 Other specified conditions associated with female genital organs and menstrual cycle.

There are no specific CPT codes for this procedure. The nonspecific CPT codes above may be used.
Additional Policy Key Words
N/A

Policy Implementation/Update Information
11/1/08 New policy; considered investigational.
11/1/09 No policy statement changes.
11/1/10 No policy statement changes.
11/1/11 No policy statement changes.
11/1/12 No policy statement changes.
11/1/13 No policy statement changes.
4/1/14 Removed deleted cpt code 37204.
11/1/14 No policy statement changes.
11/1/15 No policy statement changes.
11/1/16 No policy statement changes.
11/1/17 No policy statement changes.
11/1/18 No policy statement changes.
11/1/19 Policy title and language revised from embolization to endovascular occlusion to clarify policy inclusion of both embolization and sclerotherapy treatment strategies. Policy statement otherwise unchanged.

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