

# Embolization of the Ovarian and Iliac Veins for Pelvic Congestion Syndrome (for North Carolina Only)

**Policy Number:** CSNCT0574.03  
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[Instructions for Use](#)

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## Related Policy

- [Surgical and Ablative Procedures for Venous Insufficiency and Varicose Veins \(for North Carolina Only\)](#)

## Application

This Medical Policy only applies to the state of North Carolina.

## Coverage Rationale

Embolization of the Ovarian Vein or Internal Iliac Vein is unproven and not medically necessary for treating Pelvic Congestion Syndrome due to insufficient evidence of efficacy.

## Definitions

**Embolization:** A procedure that uses particles, such as tiny gelatin sponges or beads, to block a blood vessel. Embolization may be used to stop bleeding or to block the flow of blood to a tumor or abnormal area of tissue (National Cancer Institute).

**Internal Iliac Vein (Hypogastric Vein):** The Internal Iliac Vein is one of the principal venous tributaries that is located in the pelvis. Its primary role is to drain deoxygenated blood from pelvic organs and transport it back to the heart. Serving as the main pathway for venous drainage from the smaller veins of the pelvis, the Internal Iliac Vein also receives blood from the middle rectal veins, pudendal veins, and obturator veins as well as the inferior and superior vesical veins (Dao and Le, 2023).

**Ovarian Vein:** One of a pair of veins that emerges from the broad ligament near the ovaries and the uterine tubes and carries deoxygenated blood from the ovaries (Mosby's Pocket Dictionary).

**Pelvic Congestion Syndrome:** A syndrome involving chronic pelvic pain that is usually associated with the varices or varicosities in the pelvic area (Merck Manual).

## Applicable Codes

The following list(s) of procedure and/or diagnosis codes is provided for reference purposes only and may not be all inclusive. Listing of a code in this policy does not imply that the service described by the code is a covered or non-covered

health service. Benefit coverage for health services is determined by federal, state, or contractual requirements and applicable laws that may require coverage for a specific service. The inclusion of a code does not imply any right to reimbursement or guarantee claim payment. Other Policies and Guidelines may apply.

**Coding Clarification:** According to the American Medical Association (AMA), CPT code 37241 is specific to venous Embolization or occlusion and excludes lower extremity venous incompetency. Coding instructions state that 37241 should not be used to report treatment of incompetent extremity veins. For sclerosis of veins or endovenous ablation of incompetent extremity veins, refer to CPT codes 36468-36479 (CPT Assistant, 2014).

CPT Code	Description
37241	Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; venous, other than hemorrhage (e.g., congenital or acquired venous malformations, venous and capillary hemangiomas, varices, varicoceles)

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## Description of Services

Pelvic Congestion Syndrome (PCS), also known as pelvic venous incompetence or Ovarian Vein reflux, causes noncyclic pelvic pain and discomfort, lasting for at least 6 months, and typically affects women of reproductive age. Varicosities of the Ovarian Veins and/or Internal Iliac Veins are believed to lead to PCS. For those individuals who do not adequately respond to conventional treatments (e.g., pharmacological therapy, surgical intervention), Embolization therapy of the Ovarian Vein and/or Internal Iliac Vein is being investigated (Nasser et al., 2014).

Individuals with PCS may be treated with Ovarian Vein Embolization following venography to visualize the affected veins (Bittles et al., 2008; Nasser et al., 2014). Under fluoroscopy, an interventional radiologist guides a catheter to the affected vein and inserts inert embolic agents to completely seal the vein. As a result, blood flow is rerouted, thereby reducing pressure within the targeted veins. Several types of embolic agents may be used, and include, but are not limited to, metal coils, sclerosing agents, and gelatin sponges. These agents may either be temporary or permanent. Since the Ovarian Veins and Internal Iliac Veins are in close proximity, Embolization of the Internal Iliac Veins may also be necessary (Nasser et al., 2014).

## Clinical Evidence

The body of evidence in the peer-reviewed medical literature regarding embolization of the ovarian vein or internal iliac veins for the treatment of pelvic congestion syndrome (PCS) is insufficient and of poor quality. While some studies suggest favorable results with embolization for the treatment of PCS, additional well-designed randomized controlled trials are necessary to establish the relative safety and efficacy of the embolization procedure.

A retrospective single-center study conducted by Karakaya et al. (2025) investigated the efficacy of endovenous embolization for PCS and its impact on ovarian reserve. The study evaluated symptomatic outcomes associated with PCS and assessed changes in selected hormone levels following endovenous embolization. A total of 81 patients who were diagnosed with PCS and underwent endovenous embolization were included. All patients underwent a comprehensive preoperative assessment to exclude nonvascular etiologies for PCS and had to meet radiological criteria, confirmed by duplex ultrasound and, when indicated, computed tomography phlebography or magnetic resonance phlebography. Symptom severity was assessed using the visual analog scale (VAS), and serum levels of anti-Müllerian hormone (AMH), follicle-stimulating hormone, luteinizing hormone, estradiol, and prolactin, along with menstrual cycle characteristics, were measured at baseline, 6 months, and 12 months post embolization by the same vascular and gynecologic teams. The results demonstrated a statistically significant reduction in PCS-related symptoms, including VAS scores, dyspareunia, and dysmenorrhea, and a decrease in menstrual cycle duration. Although the reduction in menstrual cycle duration was statistically significant, the authors considered its clinical relevance to be limited. No significant changes were observed in serum levels of follicle-stimulating hormone, luteinizing hormone, estradiol, or prolactin following the procedure. However, a significant decrease in AMH levels was detected, which the authors theorized may indicate potential iatrogenic effects on fertility. The authors also noted that AMH naturally declines with age due to a reduction in oocyte quantity and quality, but further research is warranted to clarify these changes in individuals under 30 years of age. The study's limitations highlight the necessity for larger, prospective, and long-term studies, conducted across multiple centers, to validate these findings. The authors concluded that significant uncertainties and controversies persist regarding the management of PCS and the long-term outcomes associated with its treatment. Although endovenous embolization demonstrates potential efficacy in alleviating symptoms, further research is required to elucidate its impact on reproductive health.

Hanna et al. (2024) conducted a systematic review to evaluate the safety and efficacy of embolotherapy for the treatment of PCS. The primary outcome was improvement in pelvic pain which was measured using a 0 to 10 VAS. The secondary outcomes included other PCS symptom improvement, reintervention rate, recurrence rate, complication rate, and technical success. There were 25 studies included in the review with a combined total of 2,038 individuals. Of the 25 studies included, two were randomized clinical trials, 13 were retrospective cohort studies, eight were prospective cohort studies, and two were case series. Overall, 18 studies reported pre- and postprocedural pain outcomes using the VAS and all but one showed a statistically significant reduction in the VAS post-procedure. The seven studies that did not use the VAS demonstrated a subjective improvement in pain scores. Additionally, 17 of the studies reported a qualitative improvement in pain; however, five of these showed a proportion of individuals whose symptoms worsened at the time of follow-up. There were qualitative improvements for a variety of symptoms including dyspareunia (eight of 25), dysmenorrhea (six of 25), lower limb pain (two of 25), postcoital pain (three of 25), and urinary symptoms (five of 25). Symptom recurrence during the follow-up period was reported in 17 of the studies and ranged from 0% to 42%. Technical success was reported in 20 studies and was achieved in 94% of individuals. The most common complication was postembolization syndrome. There were 183 complications of which the majority (89%) were self-limiting and did not require pharmacological, radiological, or surgical treatment including postembolization syndrome and access site hematomas. Of the 183 complications that did require intervention, 13 were due to migrated coils, one was a common femoral artery injury, and one individual developed salpingitis. There are several limitations to this systematic review including the small number of studies with quantitative comparative data and heterogeneity of the study designs which prevented meta-analysis. Additionally, the majority of the studies were retrospective in design and did not control for other confounding factors, and the study time span was 25 years which brings into question the comparability of the data provided. The authors noted that robust prospective, randomized controlled trials are needed to define treatment and diagnostic protocols. (The following publications previously cited in this policy are included in this systematic review: Guirola et al., 2018, and Nasser et al., 2014.)

In a 2023 single center retrospective observational study, Smak Gregoor et al. evaluated the efficacy of endovascular embolization of pelvic varicose veins in the treatment of pelvic venous disorders. Overall, 90 patients underwent pelvic phlebography, 75 of whom received embolization of pelvic varicose veins. Of them, seven patients had an obstructive venous pathology, one presented with an anatomical anomaly, and in seven patients no varicose veins could be found. The primary end point was resolution of symptoms classified as complete improvement, partial improvement and no improvement. The results showed that at the end of the 13 month follow up, 26.6% of patients reported no improvement, 50.6% reported partial improvement and 20% had complete improvement of symptoms. There was a relatively high rate of recurrence of approximately 20%. The authors concluded that embolization of pelvic varicose veins can be an effective treatment for pelvic venous disorders, however for most women, symptoms remain following treatment, and future research should focus on which individuals are most likely to benefit, as well as treatment timing. This study is limited by its retrospective design and lack of objective outcome measures. Further high quality studies are needed to validate these findings.

A Hayes Health Technology Assessment (March 2020; updated April 2023) stated that a low-quality body of evidence indicates that most individuals with PCS who are treated with ovarian or internal iliac vein embolization or sclerotherapy improve. However, very limited evidence comparing embolization with other treatments was identified, and most showed a follow-up of  $\leq 1$  year. There was a wide range of complication rates (3.8% - 22%) in the included studies. Studies comparing this treatment with other minimally invasive PCS treatments, such as ovarian vein ligation, are needed.

Sutanto et al. (2022) conducted a systematic review on isolated coil embolization. The authors searched the MEDLINE and Embase databases from 1990 to July 20, 2020, for studies regarding isolated coil embolization for pelvic venous reflux. A total of 970 individuals who received ovarian vein or mixed vein embolization from 20 studies were included. A collective analysis revealed mean improvements of 5.47 points on the VAS. Common symptoms such as urinary urgency and dyspareunia had significant improvements of 78% to 100% and 60% to 89.5%, respectively. Complications were rare, with coil migration being the most common. Recurrence in pain was seen 1 to 2 years after coil embolization, ranging from 5.9% to 25%. Two randomized controlled trials revealed improved clinical outcomes with coil embolization compared with vascular plugs and hysterectomy. The limitations of the study are the large range of follow up periods between individuals; data on recurrence that may be inaccurate, and a small sample size. The authors concluded that the current data suggest that isolated coil embolization is technically effective and can result in clinical improvement among individuals with pelvic venous reflux. However, further evidence in the form of larger registries of randomized controlled trials with longer follow-up is required to ascertain its long-term effects.

Champaneria et al. (2016) conducted a systematic review of treatment to determine the effectiveness of treatment for PCS and concluded that the data supporting its diagnosis and treatment are limited and of variable methodological quality. Their assessment revealed that embolization appears to provide symptomatic relief in the majority of women and is safe; however, the majority of the included studies of embolization were relatively small case series and only a single

randomized controlled trial was considered at risk of potential biases. There are a scope and demand for considerable further research in which adequately powered randomized trials are essential to provide evidence on the effectiveness of embolization.

Daniels et al. (2016) conducted a systematic review to evaluate the effectiveness of embolization of incompetent pelvic veins performed to reduce chronic pelvic pain (CPP). Overall, 21 prospective case series and one poor-quality randomized trial of embolization (involving a total of 1,308 women) were identified. The authors found that early substantial relief from pain was observed in approximately 75% of women undergoing embolization, which generally increased over time and was sustained. In addition, significant pain reductions following treatment were observed in all studies that measured pain on the VAS. 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. In the authors' opinion, embolization appears to provide symptomatic relief of CPP in the majority of women and is safe, although the quality of the evidence is low.

O'Brien and Gillespie (2015) conducted a systematic review of the diagnosis and treatment of PCS. Overall, 37 references were small series including fewer than 50 individuals, or individual case reports documenting the medical, surgical, or endovascular treatment of PCS. The majority of these papers demonstrated successful treatment of symptoms from PCS with embolization of one or both ovarian veins, in addition to treatment of refluxing internal iliac vein branches. In addition, open surgery and, more recently, endovascular stenting of left renal vein obstruction have shown some promise in alleviating symptoms attributed to nutcracker syndrome. Whereas a fairly large body of data regarding transcatheter ovarian vein embolization exists, the authors summarized that these studies are limited to relatively small clinical series and retrospective reviews. The success rates for the reduction of CPP in these studies ranged from 47% to 94%, with average follow-ups of 12 to 36 months. The authors concluded that ultimately, there remains uncertainty as to the optimal technique for ovarian vein embolization, although a combination of coils and sclerosants has demonstrated clinical efficacy in a number of studies described before and is the most common published technique for ovarian vein embolization. In addition, there is currently no evidence to suggest a difference in symptomatic relief with regard to unilateral vs bilateral ovarian vein embolization.

In an evaluation of pelvic vein embolization indications, techniques and outcomes, Lopez (2015, included in Hayes Health Technology Assessment) summarized that evidence remains poor for the efficacy of the procedure, and although initially anecdotal by way of case reports and small series, data are accumulating in larger series. However, there remains a lack of robust evidence of its effectiveness, and this partly reflects the challenges of actually making the diagnosis clinically and radiologically, as well as the difficulty in assessing the outcome. For PCS, the symptomatic response is usually subjective but VASs (or variations thereof) have most often been used to attempt to identify a more objective outcome.

Hansrani et al. (2015) conducted a well-designed systematic review of the literature to evaluate the safety and effectiveness of transvenous occlusion of incompetent pelvic varicosities. The study authors selected 13 studies (n = 866) that evaluated individuals who had CPP, PCS, or pelvic pain. The interventions generally consisted of transvenous occlusion of the ovarian and internal iliac veins (via the femoral or jugular veins) using metallic coils, sclerosants, or glue. A total of 10 studies were prospective uncontrolled, two were retrospective, and one was a randomized controlled trial that included untreated controls. In nine of 13 studies, individuals experienced significant improvement in pelvic pain and other PCS symptoms following embolization of the pelvic varicosities compared with baseline symptoms. One study reported 13% of recurrence at 5 years of follow-up. Embolization was generally considered technically successful, with 98% to 100% of veins occluded at the first attempt. Adverse events included coil migration in 1.6% of individuals, abdominal pain in 1.2%, and vein perforation in 0.6%. One serious complication was reported as coil migration to the lungs.

## **Clinical Practice Guidelines**

### ***Society for Vascular Surgery (SVS)/American Venous Forum (AVF)***

In a guideline published by the SVS and the AVF in 2011, the guideline authors suggest "treatment of pelvic congestion syndrome and pelvic varices with coil embolization, plugs, or transcatheter sclerotherapy, used alone or together (2B)." The 2B recommendation indicates a weak recommendation based on moderate quality evidence, for which the benefits of the technology are considered closely balanced with risks and burdens (Gloviczki et al., 2011).

### ***American College of Obstetricians and Gynecologists (ACOG)***

In a 2020 practice bulletin on CPP, ACOG does not address embolization for treating CPP. With regard to PCS, ACOG states that it is a proposed cause of CPP related to pelvic venous insufficiency, and although venous congestion appears to be associated with CPP, the evidence is insufficient to conclude that there is a cause-and-effect relationship. Furthermore, there is no consensus on the definition of this condition, and the diagnostic criteria are variable. Further research is needed to establish consistency in diagnosis and the homogeneity of studies.

# U.S. Food and Drug Administration (FDA)

This section is to be used for informational purposes only. FDA approval alone is not a basis for coverage.

Numerous products used for vascular embolization, including sclerosing agents, and other substances, have been approved by the FDA. These products are generally classified under the product code: KRD (device, vascular, for promoting embolization), indexed in the Center for Devices and Radiological Health 510(k) database or Premarket Search Strategy. Available at: <https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmn.cfm>. (Accessed October 14, 2025)

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U.S. Food and Drug Administration. Available at: <https://www.fda.gov/radiation-emitting-products/medical-x-ray-imaging/fluoroscopy>. Accessed October 14, 2025.

## Policy History/Revision Information

Date	Summary of Changes
05/01/2026	<p><b>Definitions</b></p> <ul style="list-style-type: none"><li>Updated definition of:<ul style="list-style-type: none"><li>Internal Iliac Vein (Hypogastric Vein)</li><li>Ovarian Vein</li></ul></li></ul> <p><b>Supporting Information</b></p> <ul style="list-style-type: none"><li>Updated <i>Clinical Evidence</i> and <i>References</i> sections to reflect the most current information</li><li>Archived previous policy version CSNCT0574.02</li></ul>

## Instructions for Use

This Medical Policy provides assistance in interpreting UnitedHealthcare standard benefit plans. When deciding coverage, the federal, state, or contractual requirements for benefit plan coverage must be referenced as the terms of the federal, state, or contractual requirements for benefit plan coverage may differ from the standard benefit plan. In the event of a conflict, the federal, state, or contractual requirements for benefit plan coverage govern. Before using this policy, check the federal, state, or contractual requirements for benefit plan coverage. UnitedHealthcare reserves the right to modify its Policies and Guidelines as necessary. This Medical Policy is provided for informational purposes. It does not constitute medical advice.

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