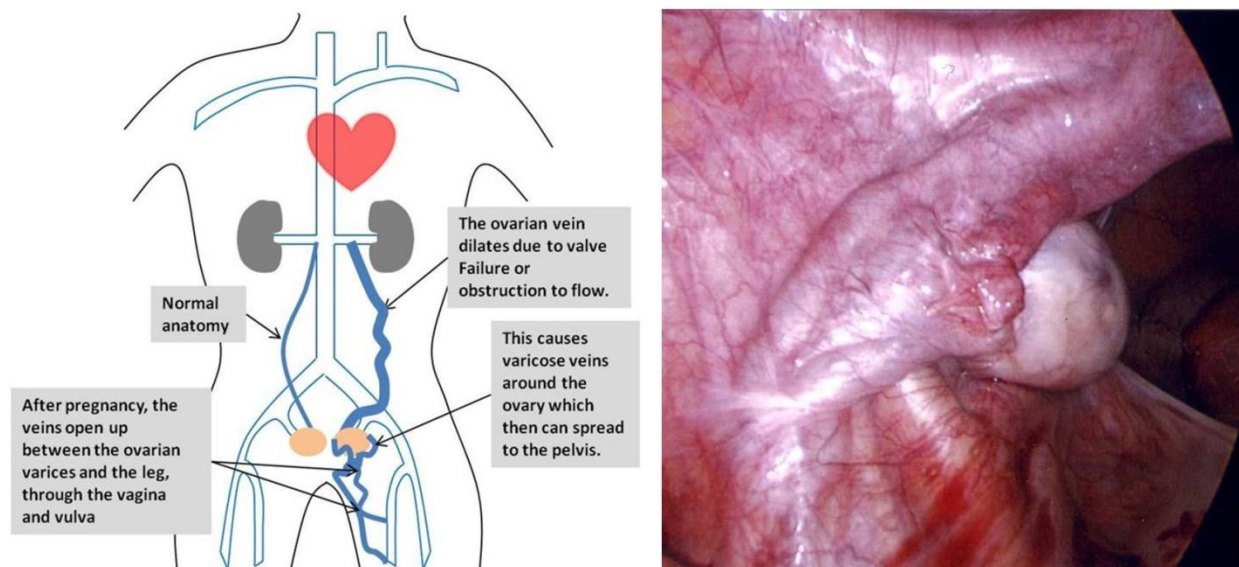


## PELVIC CONGESTION SYNDROME

Pelvic Congestion Syndrome is almost invariably found in women who have had children and are still premenopausal. It is described as one sided and throbbing pelvic pain that worsens through the day when there has been excessive standing or straining. Alternatively, it can be triggered by deep penetration during vaginal coitus.

Although Pelvic Congestion Syndrome is not by itself a cause of many cases of pelvic pain, it is a significant cause of pelvic pain when other common causes have been excluded.<sup>1-2</sup> In a multi-specialty evaluation of chronic pelvic pain, Pelvic Congestion comes into consideration when the initial work-up is negative or when dilated pelvic vessels are noted at the initial laparoscopy. Dilated pelvic vessels, usually on one side, is the key diagnostic finding in this condition.

Diagram 1.



### Causation—

The association between prior pregnancy and Pelvic Congestion Syndrome suggests some aspect of pregnancy is related to its cause. Gross dilation of the pelvic vessels accompanies pregnancy. Many investigators believe in some cases either the gross dilation of the vessels during pregnancy or hormonal factors predispose to incompetence of the veins and venous reflux.<sup>3</sup> Venous insufficiency of the major pelvic veins (internal iliac or ovarian veins) results in pelvic and peri-ovarian varicosities.<sup>4</sup>

The higher prevalence of PCS in multiparous women may be related to the 50 percent increase in pelvic vein capacity during pregnancy, which may lead to venous incompetence and reflux after pregnancy is over. Most cases of pelvic congestion present with left sided pain. This may be due to extrinsic compression of the left renal vein between the aorta and superior mesenteric artery.<sup>5</sup> It may also result from valvular incompetence of the ovarian vein due to absent ovarian vein valves is more common on the left side.<sup>6</sup>

The mere presence of dilated pelvic veins does not always correlate with complaints of pain. Anatomic studies in asymptomatic women show ovarian vein valves are missing in 15 percent of women on the left side and 6 percent of women on the right and nearly one-half of these women have valvular incompetence on at least one side. In fact, Ovarian vein dilatation, stasis and reflux on pelvic venography are common findings in multiparous premenopausal women, and most of these women are asymptomatic.<sup>7-8</sup>

Why these findings are associated with chronic pelvic pain in some women, but not in others, remains uncertain. A causal relationship has not been proven, but is supported by limited data showing pain relief upon administration of venoconstrictors or direct treatment of the ovarian either with ligation or embolization. For example, a trial that randomly assigned 12 women with PCS to treatment with dihydroergotamine (a selective venoconstrictor) or saline placebo during an acute attack of pain noted that narrowing of dilated pelvic veins and reduction of venous congestion on venography was associated with diminution in pain.<sup>9</sup> Other small studies of women with chronic pelvic pain, venous congestion, and reflux by either Doppler ultrasound and/or venography and no evidence of pelvic pathology at laparoscopy have reported improvement in pain after embolization or venous ligation.<sup>10-11</sup>

Pelvic Congestion Syndrome is never found in post-menopausal women. This is believed to be due to the marked decline in estrogen, which acts as a venous dilator. This hypothesis is supported by observations that pharmacologic or surgical induction of a hypoestrogenic state may result in improvement or resolution of symptoms.<sup>12-13</sup>

## DIAGNOSIS—

There are no agreed upon criteria for making the diagnosis of Pelvic Congestion Syndrome. In general, the diagnosis is based on a combination of characteristic symptoms, tenderness on physical examination, and documentation of pelvic vein dilatation or incompetence, after exclusion of other causes for these nonspecific findings.

Patient history and physical examination begin the process. Chronic pelvic pain and tenderness on physical examination are essential findings. It often begins during or after a pregnancy, and worsens with subsequent pregnancies.<sup>14-15</sup> The pain varies in severity, but is usually described as a dull ache or heaviness that increases premenstrually. Pain is increased with prolonged standing or walking, abdominal straining and exercise. Pain is usually unilateral, but can be bilateral or shift from one side to the other. Pelvic Congestion Syndrome is also associated with

menstrual cycles (dysmenorrhea), vaginal intercourse (deep dyspareunia), and urinary urgency. Varicosities of the vulva or thigh are the principal findings on physical examination.<sup>14,16</sup>

In the context of our multi-disciplinary pelvic pain program, consideration of Pelvic Congestion Syndrome as the cause of chronic pelvic pain is strengthened with the following possible observations: first, dilated pelvic veins observed during ultrasound; second, dilated pelvic veins on the CT Urogram; third, dilated pelvic veins on the MRI of the pelvis; or, fourth, on direct observation during laparoscopy.

### Imaging:

In addition, although dilatation of the ovarian vein is necessary but not sufficient for diagnosis, there is no consensus on the optimum cut-off for ovarian vein diameter in PCS, and no validated measure for venous congestion or tortuosity.<sup>17</sup>

**Ultrasound** — Dilated pelvic veins in the adnexal regions or in the outer one-third of the uterine myometrium are common findings suggesting pelvic congestion syndrome. Dilated arcuate veins have no clinical significance, unless associated with other dilated pelvic veins in women with chronic pelvic pain. Focal dilation of these veins could be due to prior instrumentation, trauma, or complications of pregnancy.

Ovarian veins are examined as part of the examination. The diagnosis is supported by visualization of dilatation of the left ovarian vein with reversed caudal flow, presence of tortuous and dilated pelvic venous plexuses, dilated arcuate veins crossing the uterine myometrium, and variable duplex waveform in varicoceles during the Valsalva's maneuver. In one study, the mean diameters of the left ovarian vein in 32 patients with presumed PCS and 32 control subjects were 7.9 and 4.9 mm, respectively; the difference was statistically significant.<sup>18</sup>

Ultrasound does not always detect venous changes in affected women because imaging is performed with the patient in the supine position when the veins are flaccid. Sensitivity for detection is higher if changes are noted during Valsalva. Despite these maneuvers, there is still a poor correlation between ultrasound findings and venography for the presence or absence of pelvic varices.<sup>14</sup> This is why the absence of findings on ultrasound does not exclude Pelvic Congestion Syndrome from the differential diagnosis.

**CT or MRI** — Identification of tortuous, dilated pelvic and ovarian veins, broad ligament vascular congestion, and ovarian varicoceles are associated with Pelvic Congestion Syndrome. Such observations during these routinely obtained studies strengthens the supposition of the diagnosis.

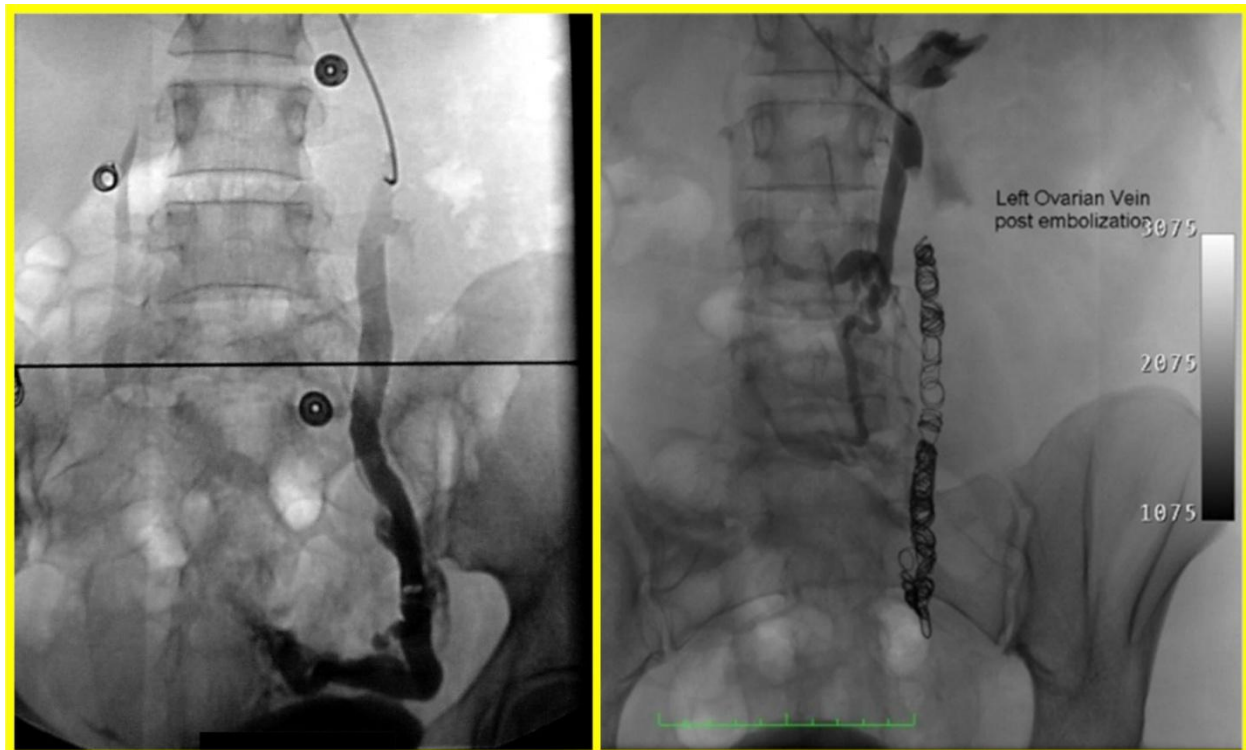
**Laparoscopy** — Visualization of thickened vessels of the pelvic sidewall during laparoscopy are also suggestive of the diagnosis. Some centers offer fluoroscopic venography and direct clipping of ovarian veins at the time of laparoscopy.<sup>10,19-20</sup>

## TREATMENT—

In the context of our pelvic pain program, if suspicion of Pelvic Congestion Syndrome is sufficiently high after the initial evaluation, we proceed to Venography. In a single appointment a diagnosis can be confirmed and treatment performed. The procedure should include selective ovarian and internal iliac venography. This requires catheterization of the right and left ovarian veins via a percutaneous femoral or jugular approach. Ovarian venograms in patients with PCS usually demonstrate abnormally dilated ovarian veins (>10 mm in diameter), sluggish blood flow, reflux causing retrograde fill and congestion of the ovarian venous plexus, tortuosity of venous plexuses, uterine venous engorgement, and filling of pelvic veins across the midline.

Venography is more sensitive than ultrasonography since it can be performed in the upright or semi-upright position with a tilting table. The Society for Vascular Surgery (SVS) and the American Venous Forum (AVF) clinical practice guidelines recommend retrograde ovarian and internal iliac venography as the test of choice for the diagnosis of pelvic venous disorders. In addition to making the diagnosis, it provides an opportunity for concurrent therapeutic transcatheter embolization or sclerotherapy.<sup>21</sup>

Diagram 2.



The effectiveness of invasive therapy for Pelvic Congestion Syndrome is supported by observational data and case series. The reported technical success rates of embolization for

treatment of PCS range from 89 to 100 percent with clinical success rates of 58 to 100 percent over a follow-up period of up to five years.<sup>13,17,22-23</sup> Pain relief occurs immediately.

Some centers perform fluoroscopic venography with direct clipping of dilated vessels at the time of laparoscopy.<sup>10</sup> Surgical ligation of the ovarian vein has been associated with improvement in pain in about 75 percent of patients.<sup>17</sup>

#### Medical Treatments—

Medical management of patient with Pelvic Congestion Syndrome has been shown to be effective and is supported by some authorities as first-line therapy. Progestins and Gonadotropin-releasing hormone (GnRH) agonists have both been shown to effectively decrease pain in these patients.

In one study Farquhar and colleagues randomized 84 patients to one of four different treatment arms: (1) medroxyprogesterone acetate, 50 mg per day; (2) medroxyprogesterone acetate, 50 mg per day, plus psychotherapy; (3) psychotherapy plus placebo; or (4) placebo.<sup>12</sup> Women in the 'medroxyprogesterone acetate' and 'psychotherapy plus medroxyprogesterone acetate' groups were more likely to report significant pain relief than women not receiving any hormonal therapy. When treatment was stopped after four months, the pain recurred in both groups, but returned more rapidly in the medroxyprogesterone acetate group than in the medroxyprogesterone acetate plus psychotherapy group.

In another study Soysal and associates randomized 47 women with venographically documented pelvic congestion to six months of treatment with oral medroxyprogesterone acetate (30 mg per day) or depot goserelin (3.6 mg per month).<sup>2</sup> Both groups showed improvement in venography scores and in pelvic pain symptoms, but goserelin more effectively decreased both measures. GnRH agonists cannot be used long-term (ie, more than 6 to 12 months).

In the third study Shokeir and Abdelshaheed, randomized 23 patients with PCS to treatment with a subcutaneous etonogestrel insert or no treatment.<sup>24</sup> After 12 months, pain scores and venography findings significantly improved in the treatment group, but not in controls.

Patients who do not respond to medical therapy or those who have recurrence of symptoms following cessation of therapy, can then consider embolization or sclerotherapy of the ovarian veins with or without the internal iliac veins, which can be performed at venography. Pain relief is immediate.<sup>22</sup>

### References

1. Beard RW, Highman JH, Pearce S, Reginald PW. Diagnosis of pelvic varicosities in women with chronic pelvic pain. *Lancet* 1984; 2:946.
2. Soysal ME, Soysal S, Vicdan K, Ozer S. A randomized controlled trial of goserelin and medroxyprogesterone acetate in the treatment of pelvic congestion. *Hum Reprod* 2001; 16:931.
3. Taylor HC Jr. Vascular congestion and hyperemia; their effect on structure and function in the female reproductive system. *Am J Obstet Gynecol* 1949; 57:211.
4. Hobbs JT. The pelvic congestion syndrome. *Practitioner* 1976; 216:529.
5. Menard MT. Nutcracker syndrome: when should it be treated and how? *Perspect Vasc Surg Endovasc Ther* 2009; 21:117.
6. Ahlberg NE, Bartley O, Chidekel N. Right and left gonadal veins. An anatomical and statistical study. *Acta Radiol Diagn (Stockh)* 1966; 4:593.
7. Beard RW, Highman JH, Pearce S, Reginald PW. Diagnosis of pelvic varicosities in women with chronic pelvic pain. *Lancet* 1984; 2:946.
8. Rozenblit AM, Ricci ZJ, Tuvia J, Amis ES Jr. Incompetent and dilated ovarian veins: a common CT finding in asymptomatic parous women. *AJR Am J Roentgenol* 2001; 176:119.
9. Reginald PW, Beard RW, Kooner JS, et al. Intravenous dihydroergotamine to relieve pelvic congestion with pain in young women. *Lancet* 1987; 2:351.
10. Gargiulo T, Mais V, Brokaj L, et al. Bilateral laparoscopic transperitoneal ligation of ovarian veins for treatment of pelvic congestion syndrome. *J Am Assoc Gynecol Laparosc* 2003; 10:501.
11. Venbrux AC, Chang AH, Kim HS, et al. Pelvic congestion syndrome (pelvic venous incompetence): impact of ovarian and internal iliac vein embolotherapy on menstrual cycle and chronic pelvic pain. *J Vasc Interv Radiol* 2002; 13:171.
12. Farquhar CM, Rogers V, Franks S, et al. A randomized controlled trial of medroxyprogesterone acetate and psychotherapy for the treatment of pelvic congestion. *Br J Obstet Gynaecol* 1989; 96:1153.
13. Chung MH, Huh CY. Comparison of treatments for pelvic congestion syndrome. *Tohoku J Exp Med* 2003; 201:131.
14. Hobbs JT. The pelvic congestion syndrome. *Br J Hosp Med* 1990; 43:200.
15. Beard RW, Reginald PW, Wadsworth J. Clinical features of women with chronic lower abdominal pain and pelvic congestion. *Br J Obstet Gynaecol* 1988; 95:153.S
16. Scultetus AH, Villavicencio JL, Gillespie DL, et al. The pelvic venous syndromes: analysis of our experience with 57 patients. *J Vasc Surg* 2002; 36:881.
17. Tu FF, Hahn D, Steege JF. Pelvic congestion syndrome-associated pelvic pain: a systematic review of diagnosis and management. *Obstet Gynecol Surv* 2010; 65:332.
18. Park SJ, Lim JW, Ko YT, et al. Diagnosis of pelvic congestion syndrome using transabdominal and transvaginal sonography. *AJR Am J Roentgenol* 2004; 182:683.
19. Leung SW, Leung PL, Yuen PM, Rogers MS. Isolated vulval varicosity in the non-pregnant state: a case report with review of the treatment options. *Aust N Z J Obstet Gynaecol* 2005; 45:254.

20. Mathis BV, Miller JS, Lukens ML, Paluzzi MW. Pelvic congestion syndrome: a new approach to an unusual problem. *Am Surg* 1995; 61:1016.
21. Gloviczki P, Comerota AJ, Dalsing MC, et al. The care of patients with varicose veins and associated chronic venous diseases: clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum. *J Vasc Surg* 2011; 53:2S.
22. Cordts PR, Eclavea A, Buckley PJ, et al. Pelvic congestion syndrome: early clinical results after transcatheter ovarian vein embolization. *J Vasc Surg* 1998; 28:862.
23. Sichlau MJ, Yao JS, Vogelzang RL. Transcatheter embolotherapy for the treatment of pelvic congestion syndrome. *Obstet Gynecol* 1994; 83:892.
24. Shokeir T, Amr M, Abdelshaheed M. The efficacy of Implanon for the treatment of chronic pelvic pain associated with pelvic congestion: 1-year randomized controlled pilot study. *Arch Gynecol Obstet* 2009; 280:437.

■ PRE-AUTHORIZATION REQUEST FAX TO AUTHORIZATION DEPT: 602-798-9557

Please direct any PRE-AUTH questions to: DEANNA 602-406-2884 or STEFANIE 602-406-2885

Interventional Radiology Procedure

Patient Name: \_\_\_\_\_ DOB: \_\_\_\_\_ Date: \_\_\_\_\_

Patient Phone: \_\_\_\_\_ Work Phone: \_\_\_\_\_

Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Exam(s) Requested Bilateral selective ovarian and internal iliac venography and embolization as indicated

CPT Code(s) \_\_\_\_\_ ICD-9 Code(s) 625.9 and 625.5

Clinical History (required) \_\_\_\_\_

Please ✓ and attached following items for Pre-Authorization

- Current Insurance Card (front and back)
- Signed Provider Order (no stamp signatures)
- Clinical Notes and History
- Previous Reports (related to diagnosis)
- Member/ID No \_\_\_\_\_

Based upon this patient's clinical history, exam, and diagnosis, I have requested the above diagnostic imaging procedure(s). I hereby certify that these tests are medically necessary for the diagnosis and treatment of this patient.

TIN: 462258965 for all physicians Phone: 480-559-4776

Provider Signature: \_\_\_\_\_ Richard H. Demir, MD

**STATS AND ASAP AUTHORIZATION MUST BE OBTAINED BY THE REFERRING ENTITY**

Demir Medical Group, S.C., dba Desert Women's Care Group NPI 1720415508 Dr. Demir NPI 1255410791  
mail: 8711 East Pinnacle Peak Road, PMB #218, Scottsdale, Arizona 85255  
facsimile: 866-526-7086 email: MDZC@Live.com

\*\*\*HIPAA Confidentiality Notice\*\*\*

The documents inside this electronic transmission contain confidential information belonging to the sender that is legally privileged. This information is intended only for the use of the individual or entity named above. The authorized recipient of this information is prohibited from disclosing this information to any other party and is required to destroy the information after its stated need has been fulfilled, unless otherwise required by law. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution, or action taken in reliance on the contents of these documents is strictly prohibited. If you received this electronic transmission in error, please notify the sender immediately to arrange for return.