

Pelvic congestion syndrome: Early clinical results after transcatheter ovarian vein embolization

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Purpose: This case series describes the early radiographic and clinical results of attempted transcatheter ovarian vein (OV) embolization in 11 women with symptoms that were suggestive of the pelvic congestion syndrome (PCS).

Methods: Eleven women (mean age, 33.1 years) who were multiparous were referred for lower extremity or vulvar varicosities (n = 8) or for tubo-ovarian varicosities (n = 3). After a clinical diagnosis of PCS was established, the women underwent ovarian (n = 5) or ovarian and iliac vein (n = 6) venography. Enlarged or incompetent OVs were embolized with 0.035-inch stainless steel coils or with 0.018-inch platinum microcoils and absorbable gelatin sponge. Incompetent tributaries to hypogastric veins were embolized as well (n = 1). Symptoms before embolization and after embolization were recorded with a standard questionnaire, and the post-embolization symptoms were expressed as individual and overall percent relief.

Results: Nine of the 11 women underwent embolization. Embolization of both OVs (n = 4), of the left OV alone (n = 4), or of a left obturator vein that communicated with vulvar varices (n = 1) was performed. Eight of the 9 women (88.9%) had more than 80% immediate relief. Overall and individual symptom relief varied from 40% to 100% at the mean 13.4-month follow-up. One woman with variant anatomy and one woman with evidence of prior left OV thrombosis were not treated. There were no major complications. Two women had a mild to moderate return of the symptoms at 6 and 22 months.

Conclusions: Transcatheter embolization provides excellent initial and variable midterm relief in women with typical PCS symptoms and with OV or OV and internal iliac (hypogastric) tributary vein incompetence. This interventional technique may replace or complement the traditional surgical approaches to this rarely recognized and poorly understood disease. (*J Vasc Surg* 1998;28:862-8.)

Chronic pelvic pain (CPP), defined as noncyclic abdominal and pelvic pain of at least 6-months duration, may account for approximately 10% of outpatient gynecologic visits and for one third of diagnostic

laparoscopy performed.¹ The contributing causal conditions include the following: endometriosis, pelvic adhesions, atypical menstrual pain, urologic disorders, irritable bowel syndrome, and psychosocial issues. The diagnosis and the management of CPP are difficult, and exhaustive evaluation often identifies no specific organic cause. In the late 1940s and the early 1950s, investigators reported the findings of venous pelvic congestion in women with CPP.²⁻⁶ A 1966 autopsy series⁷ and a 1968 series of selective renal venography⁸ supported the concept of ovarian vein (OV) incompetence as a potential cause for CPP. In 1984, a series that correlated laparoscopic and venographic findings in women with unexplained CPP showed that up to 91% of the women had marked pelvic venous congestion.⁹ Pelvic congestion syndrome (PCS), a condition associated with OV incompetence, is manifested by pelvic pain of variable intensity that is heightened before or during menses and that is aggravated by pro-

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longed standing, fatigue, and coitus. Women also may report pelvic or perineal heaviness and bladder urgency. The traditional therapy for PCS has included both medical approaches (eg, dihydroergotamine, ovarian suppression, and rheologic agents) and surgical approaches (uterine ventrosuspension, hysterectomy, OV ligation, and excision). This paper is a consecutive case series that describes the early clinical and radiographic results of OV embolization, a relatively recent, less invasive approach to perhaps more accurately diagnose and definitively treat women with this troubling disorder.

MATERIALS AND METHODS

Duplex scanning. Lower-extremity venous duplex scan studies (Advanced Technology Laboratories, HDI 3000, Bothell, Wash) were performed when indicated with a P32 2 to 5 MHz sector probe to evaluate varicose veins. The women were positioned in 20-degree reverse Trendelenburg position. The methods used to produce reflux included proximal compression and Valsalva's maneuver. The greater saphenous vein, the lesser saphenous vein, the common femoral vein, and the popliteal veins were interrogated. In addition, bilateral OV duplex studies were attempted (with an LA7 4 to 7 MHz linear array probe; Advanced Technology Laboratories) with the women in a similar position via an anterior transabdominal approach. Valsalva's maneuver was used to elicit reflux.

Venography. With the patient in a supine position, venographic access was obtained with the Seldinger technique via either a right common femoral vein or with an internal jugular vein approach, and a guidewire was advanced into the inferior vena cava (IVC). After the placement of a 6F introducer sheath and a 5F Cobra catheter (Cook, Bloomington, Ind), a left renal venogram was performed to evaluate the left OV during both normal breathing and Valsalva's maneuver. The IVC and the left renal vein pressures were not measured routinely. Selective proximal and distal injection of the left OV then was performed (Fig 1A). An enlarged or incompetent left OV was treated with transcatheter coil embolization with Gianturco 0.035-inch stainless steel coils (Cook) or 0.018-inch platinum microcoils (Cook; Fig 1B). An average of 16 coils was used for each OV that was embolized (range, 6 to 24 coils). No liquid sclerosants were used. Distal coil deployment occasionally required the placement of a coaxial 3F Tracker system (Target Therapeutics, Fremont, Calif) via the Cobra catheter. The criteria for embolization included the following: an OV diameter of more than 10 mm, moderate to severe congestion of the ovarian plexus, uterine venous engorgement,

Table I. Pelvic congestion symptoms of 11 women at presentation

<i>Symptoms</i>	<i>No. of women (%)</i>
Long periods of standing	11 (100)
Perineal heaviness	9 (82)
Postcoital discomfort	9 (82)
Discomfort with fatigue	9 (82)
Premenstrual pelvic pain	8 (73)
Bladder urgency	7 (64)
Dyspareunia	6 (55)
Pelvic pain during menses	3 (27)

and filling of the contralateral pelvic veins. Parallel OV trunks that entered the main trunk or that directly entered the left renal vein were embolized as well. After embolization, repeat venography was performed to confirm OV thrombosis, the thrombosis of the concomitant parallel trunks, and the patency of the left renal vein. A selective right OV study was performed with direct cannulation from the IVC and was dealt with in similar fashion (Fig 1C). Fig 2 shows a completion kidneys-ureters-bladder after successful bilateral OV embolization.

The iliac vein studies consisted of left and right common iliac and external and internal iliac vein injections. Enlarged or incompetent internal iliac tributaries or tributaries that communicated with vulvar varices were embolized after selective internal iliac vein catheterization. Left common iliac vein compression was evaluated further with the measurement of pressure gradients. Patients with vulvar varices underwent vulvar varicography in an attempt to identify a source of reflux.

Questionnaire. A standard questionnaire was administered by the primary author both before and after the embolization. The women were asked to express symptomatic relief as a percent relief of each presenting symptom (eg, pelvic pain with long periods of standing: 80% relief after embolization).

RESULTS

Eleven women were referred to the vascular clinic for the evaluation of the following: lower extremity varicosities (n = 6), vulvar varices (n = 2), tubo-ovarian varicosities diagnosed either by laparoscopy for chronic pelvic pain (n = 1) or by transvaginal ultrasound scan for chronic pelvic pain (n = 1), or laparotomy for chronic abdominal pain (n = 1). Ten women were multiparous (Gravida 2 Para 2 or higher), and one was primigravida. Seven women had pelvic symptoms after the second or third pregnancy, and four after the first. Eight women reported

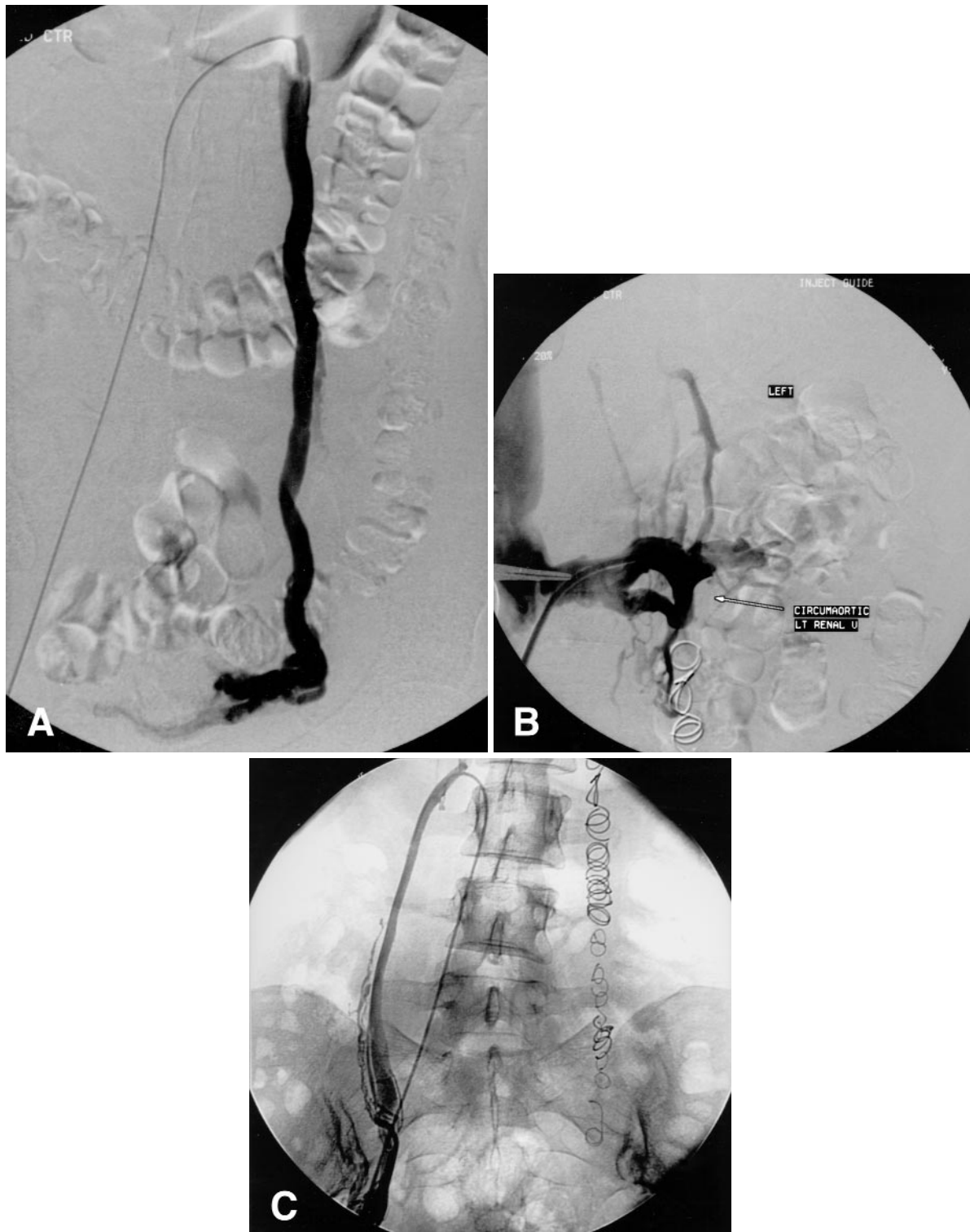


Fig 1. **A**, Selective left OV injection shows free reflux into broad ligament. Maximum left OV diameter is 12 mm. **B**, Left OV is successfully embolized to proximal aspect. Note circumaortic left renal vein. **C**, Right OV dilation and reflux shown on selective injection. Note small distal parallel ovarian vein channels (frequent finding).



Fig 2. Completion kidneys-ureters-bladder that shows successful bilateral OV embolization.

either lower-extremity varicose veins ($n = 5$) or spider telangiectasias ($n = 3$). One woman had undergone 2 prior right lower-extremity venous surgeries. Physical examination revealed vulvar varices in 9 women and varices involving the buttocks in 3 women. Pelvic congestion symptoms of the 11 women at presentation are shown in Table I.

Six women underwent lower extremity duplex scanning. All of the deep and superficial veins were competent in each woman, except for one in whom the greater saphenous vein was incompetent. Two women underwent OV duplex scanning. In one, neither OV could be seen despite a clear visualization of the left renal vein and the IVC. In the other, a vein without reflux was seen that was presumed to

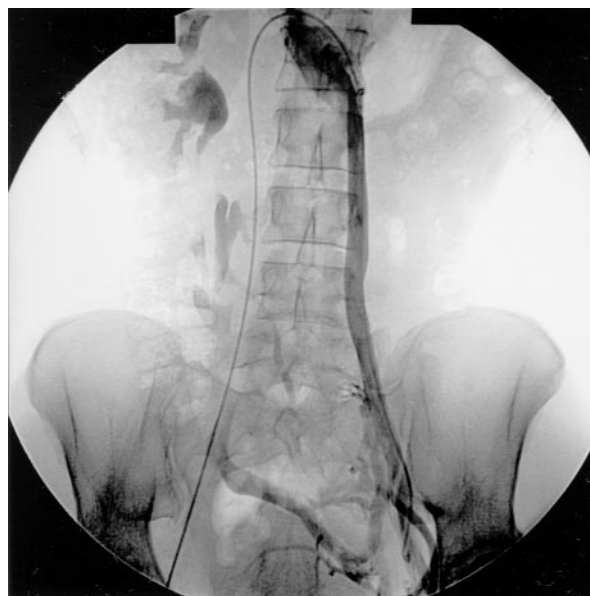


Fig 3. Right common femoral vein venogram. Selective left external iliac vein injection shows persistent left IVC and crossed renal ectopia (both right and left renal collecting systems located to right of spine); prominent pelvic venous collaterals.

Table II. Average percent relief by symptoms at most recent follow-up in 9 women who underwent embolization

	No. of women with symptoms*	Average improvement (%)	Range (%)
Postcoital discomfort	6	83	40 to 100
Perineal heaviness	7	81	40 to 100
Long periods of standing	9	80	40 to 100
Bladder urgency	6	78	50 to 100
Discomfort with fatigue	8	72	40 to 100
Premenstrual pelvic pain	9	70	40 to 100
Dyspareunia	3	60	0 to 100
Pelvic pain during menses	1	40	—

*Not all women complained of every symptom upon presentation. Mean follow-up time was 13.4 months.

be the left OV. Subsequent venography in both women showed chronic left OV occlusion and normal-caliber competent right OVs.

All of the women ($n = 11$) underwent venography. Nine women underwent embolization with a mean follow-up of 13.4 months (range, 3 to 28 months). One of the attempted embolizations was postponed for 1 week as a result of early contrast extravasation (88.9% initial technical success). Post-embolization results are shown in Table II. The data are expressed

Table III. Venographic findings, treatment, and relief (by patient)

Patient no.	Age (years)	Veins studied	Findings	Embolization	Variant anatomy	Venographic complications	Overall % relief	Follow-up (months)
1	37	Left OV	Left OV inc	Left OV	Retroaortic left RV	Contrast extravasation	95%	4
2	31	Bilateral OV	Bilateral OV enlarged, inc	Both OVs	None	Left lower lobe coil pulmonary embolus (retrieved)	90%, until 22 months; 40%, 22 to 28 months	28
3	43	Left OV	Left OV inc	Left OV	None	None	80%	19
4	29	Left OV	Left OV enlarged, inc	Left OV	None	Contrast extravasation	85%	16
5	35	All	Bilat OV enlarged, inc	Both OVs	Left common iliac vein compression	None	100%, 4 to 6 months; 80%, after 6 months	17
6	27	Bilateral OV	Left OV inc; right OV competent	Left OV	Circumaortic left RV	None	95%	13
7	40	All	OVs not located	None	Persistent left IVC, crossed renal ectopia	None	Not embolized	12
8	34	All	Bilat OV enlarged, inc	Both OVs	Circumaortic left RV; left hypogastric varix	None	100%	7
9	31	All	Left OV discontinuous; right OV competent	None	None	Contrast extravasation	Not embolized	12
10	20	All	Bilat OV enlarged, inc	Both OVs	Circumaortic left RV	None	40%	14
11	27	All	Left OV chronic occlusion	Left obturator vein	Left obturator to external iliac vein connection	None	80%	3

OV, Ovarian vein; RV, renal vein; *inc*, incompetent; *All*, both ovarian veins and both common/external/internal iliac veins; IVC, inferior vena cava.

as average percent relief with symptoms in descending order from symptoms most relieved to least relieved. Table III shows venographic findings, treatment, overall percent relief, and pertinent data by patient. Four patients underwent left OV embolization alone. Among the 4 patients, in 3, the right OV could not be located, and, in 1, it appeared competent.

One woman in whom the right OV could not be located had had a prior right salpingo-oophorectomy. One woman with evidence of chronic left OV thrombosis underwent embolization of the left obturator vein, which communicated with left-sided vulvar varices.

Although 8 of the 9 embolized women (88.9%) experienced excellent initial pain relief (>80%), 2 complained of symptom return. One woman (Table III, no. 3) related a 95% to 100% overall symptom relief for 22 months that then deteriorated to a 30% to 40% relief. She has not been studied again. The other woman (Table III, no. 5) noted a milder return of symptoms at 6 months after an initial 100% relief.

This woman was studied again with ovarian and iliac vein venography (initial OVs only). Both OVs remained thrombosed. Left common iliac vein compression (60% diameter reduction) was shown with preferential filling of a large ascending lumbar vein. In addition, there was significant cross-filling of pelvic collaterals from left to right via the hypogastric veins. No treatment was performed. A third patient noted a 40% initial overall symptom relief with no subsequent improvement. Repeat venography at 15 months revealed only an incompetent right hypogastric vein (main trunk). No treatment was performed.

Two women were not treated (Table III, nos. 7 and 9). Venography in 1 woman (no. 7) showed a persistent left inferior cava and a crossed renal ectopia with extensive pelvic collaterals (Fig 3). Neither OV could be identified. Venography in the second (no. 9) showed a tortuous and discontinuous left OV and a normal iliac venous system. No treatment was performed in either patient.

The complications that occurred during venog-

raphy included the following: a contrast extravasation in 3 women (no sequelae), a left lower-lobe coil pulmonary embolus in 1 woman (retrieved), and a self-limited tachyarrhythmia in 1 woman. There were no major morbidity rates and no mortality rate.

DISCUSSION

These data show that OV venography with embolization for PCS can be performed with a high degree of technical success, although the identification of the right OV-IVC confluence is difficult. Eight of the nine women (89%) treated with embolization reported excellent initial symptom relief (>80%). In 2 women, the symptoms have returned—1 mild, 1 moderate. One woman reported a 40% overall symptom relief, but repeat venography failed to identify the cause for her persistent pain. Anatomic venous variation was common. However, an uncommon embryologic variant precluded treatment in 1 patient. One woman showed venographic evidence of prior left OV thrombophlebitis. There were no major complications related to this procedure.

Although extensive literature on the diagnosis and the treatment of PCS exists,¹⁰⁻¹⁹ studies of 56 women who underwent OV embolization are currently published or in press from 1993 to the present.²⁰⁻²⁵ With follow-up ranging from 6 to 15.4 months, relief varied from “cure” to no change or a worsening of the symptoms. In April 1997, Capasso et al²⁰ reported the results of OV embolization in 19 women. Variable symptomatic relief was seen in 73.7% of the cases (14 of 19), with complete relief in 57.9% at a 15.4-month follow-up. Eight women who complained of dyspareunia before embolization reported partial or no pain relief. Dyspareunia was considered a poor prognostic factor. In February 1998, Vogelzang et al²⁵ reported the results of 23 women with PCS that was treated with embolization. At a 15-month follow-up, 78% of the women (18 of 23) reported an improvement in the pain severity and frequency, 13% had no change, and 9% reported that the pain was worse. The visual analogue pain scales showed significant improvement after treatment. Although all of the patients in our study reported an initial improvement, these studies and ours highlight the variable nature of midterm symptom relief and the tendency, in some cases, for symptoms to recur. The study of Vogelzang et al²⁵ is the first to apply objective parameters to the measurement of pain relief, an absolute requirement for future studies and a valid criticism of our study.

Several surgical series focus on OV ligation or resection for PCS. Lechter et al^{26,27} described exposure and ligation of the OVs via an extraperitoneal

approach bilaterally in 32 women, right OV only in 12 and left side only in 6, with “excellent” results. Hobbs^{28,29} describes a similar approach. Rundquist et al³⁰ reported either “cure” or significant symptomatic improvement in 11 of 15 patients after extraperitoneal resection of the left OV with a 6-month to 3-year follow-up. Villavicencio et al³¹ reported the long-term relief of symptoms in 95% of the women who underwent extraperitoneal resection of OVs, ligation of internal iliac vein tributaries, and sclerotherapy or local excision of residual vulval varicosities (mean, 12.6-year follow-up). Although the reported surgical results of OV ligation and resection appear favorable, most series lack a valid methodology for pain assessment before and after embolization. Mathis et al³² reported the first patient treated for PCS with transperitoneal laparoscopic bilateral OV ligation and resection. Beard et al³³ showed effective treatment of PCS in 36 women with bilateral oophorectomy and hysterectomy with hormone replacement. In his series, the median pain scores decreased from 10 to 0 at 1 year and the median frequency of sexual intercourse increased from 1 to 8 times per month after surgery. Of note, the uterus was histologically normal in 25 of 36 women.

The results of our study must be viewed with caution. Symptomatic improvement after embolization, or lack thereof, was measured with a questionnaire and not with a validated pain scale method. Symptom reporting was subject to potential bias because the primary author, not a blinded interviewer, administered all of the questionnaires. Because OV embolization was not compared with surgery, psychotherapy, or any other form of therapy in a prospective, randomized fashion, it is impossible to draw strong conclusions about the relative effectiveness of this technique. The embolization results appear favorable and perhaps comparable with surgery (OV ligation and excision, ligation of internal iliac tributaries), but whether durable relief³¹ can be achieved is currently unknown. A careful pretreatment evaluation, a standardized venographic technique, and quantitative measures of pain response are needed to accurately assess each treatment method.

OV duplex scanning was attempted unsuccessfully in our series. The technical aspects of performing OV duplex scanning were not worked out well in our vascular laboratory, and perhaps upright positioning may help. The venographic studies were performed with the women in a supine position. Most authors recommend venography in a semi-erect position to allow maximum reflux and filling of pelvic veins. Cineangiography may be a useful tech-

nique,³¹ although radiation exposure is significantly higher than with digital or cut-film techniques. Although we did not suspect mesoortic compression of the left renal vein in our patients on the basis of supine venography, the "nutcracker syndrome" must be considered in PCS patients as well.³¹

In conclusion, OV or OV and iliac vein embolization is a minimally invasive, well-tolerated interventional technique that may represent a viable alternative to surgery for women with PCS. Because of the multifactorial and often complex nature of CPP, we recommend a multidisciplinary approach with a complete gynecologic and vascular surgical evaluation before treatment. The venographic technique and the criteria for embolization must be standardized as must the evaluation methods for gauging pain relief. A heightened level of awareness by referring primary care providers, gynecologists, and vascular surgeons may help many women with this potentially treatable condition.

REFERENCES

- Reiter RC. A profile of women with chronic pelvic pain. *Clin Obstet Gynecol* 1990;33:130.
- Taylor HC. Vascular congestion and hyperaemia I. Physiological basis and history of the concept. *Am J Obstet Gynecol* 1949;57:211-30.
- Taylor HC. Vascular congestion and hyperaemia II. The clinical aspect of congestion fibrosis syndrome. *Am J Obstet Gynecol* 1949;57:637-53.
- Taylor HC. Vascular congestion and hyperaemia III. Etiology and therapy. *Am J Obstet Gynecol* 1949;57:654-68.
- Taylor HC. Pelvic pain based on a vascular and autonomic nervous system disorder. *Am J Obstet Gynecol* 1954;57:1177-96.
- Duncan CH, Taylor HC. A psychosomatic study of pelvic congestion. *Am J Obstet Gynecol* 1952;64:1.
- Ahlberg NE, Bartley O, Chidekel N. Right and left gonadal veins: an anatomical and statistical study. *Acta Radiologica Diagnosis* 1966;4:593-601.
- Chidekel N. Female pelvic veins demonstrated by selective renal phlebography with particular reference to pelvic varicosities. *Acta Radiol* 1968;7:193-211.
- Beard RW, Highman JH, Pearce S, Reginald PW. The diagnosis of pelvic varicosities in women with chronic pelvic pain. *Lancet* 1984;ii:946-9.
- Hodgson T J, Reed MWR, Peck RJ, Hemingway AP. Case report: the ultrasound and doppler appearances of pelvic varices. *Clin Radiol* 1991;44:208-9.
- Stones RW, Rae T, Rogers V, Fry R, Beard RW. Pelvic congestion in women: evaluation with transvaginal ultrasound and observation of venous pharmacology. *Br J Radiol* 1990;63:710-1.
- Giacchetto C, Cotroneo GB, Marincolo F, Cammisuli F, Caruso G, Catizone F. Ovarian varicocele: ultrasonic and phlebographic evaluation. *J Clin Ultrasound* 1990;18:551-5.
- Craig C, Hobbs JT. Vulval phlebography in the pelvic congestion syndrome. *Clin Radiol* 1974;25:517-25.
- Venbrux AC. Ovarian vein and pelvic varices in the female. In: Savader SJ, Trerotola SO, editors. *Venous interventional radiology with clinical perspectives*. New York: Thieme Medical Publishers, Inc; 1996. p. 159-62.
- Allen WM. Chronic pelvic congestion and pelvic pain. *Am J Obstet Gynecol* 1971;109:198-202.
- Stearns HC, Sneed VD. Observations on the clinical and pathologic aspects of the pelvic congestion syndrome. *Am J Obstet Gynecol* 1966;94:718-32.
- Dixon JA, Mitchell WA. Venographic and surgical observations in vulvar varicose veins. *Surg Gynecol Obstet* 1970;131:458-64.
- Beard RW, Reginald PW, Wadsworth J. Clinical features of women with chronic lower abdominal pain and pelvic congestion. *Br J Obstet Gynecol* 1988;95:153-61.
- Reginald PW, Beard RW, Kooner JS, Mathias CJ, Samarage SU, Sutherland IA, et al. Intravenous dihydroergotamine to relieve pelvic congestion with pain in young women. *Lancet* 1987;2:351-3.
- Capasso P, Simons C, Trotteur G, Dondelinger RF, Henroteaux D, Gaspard U. Treatment of symptomatic pelvic varices by ovarian vein embolization. *Cardiovasc Intervent Radiol* 1997;20:107-11.
- Edwards RD, Robertson IR, MacLean AB, Hemingway AP. Case report: pelvic pain syndrome—successful treatment of a case by ovarian vein embolization. *Clin Radiol* 1993;47:429-31.
- Machan L, Vogelzang R. Interventional radiologic diagnosis and embolization of ovarian varicoceles in the treatment of chronic pelvic pain. *The Female Patient* 1997;22:25-8.
- Sichlau M J, Yao JST, Vogelzang RL. Transcatheter embolotherapy for the treatment of pelvic congestion syndrome. *Obstet Gynecol* 1994;83:892-6.
- Edwards RD, Rowlands PC, Moss JG, Robertson IR. Pelvic pain syndrome treated with ovarian vein embolization [abstract]. San Diego, Calif: Society of Cardiovascular and Interventional Radiology, 23 Mar 1994.
- Hachan L, Mowatt J, Hurwitz T, et al. Clinical outcome of women with chronic pelvic pain treated by ovarian vein embolization. San Francisco, Calif: Society of Cardiovascular and Interventional Radiology, 3 Mar 1998.
- Lechter A. Pelvic varices: treatment. *J Cardiovasc Surg* 1985;26:111.
- Lechter A, Alvarez A, Lopez G. Pelvic varices and gonadal veins. *Phlebologie* 1987;2:181-8.
- Hobbs JT. The treatment of vulval and pelvic varices. In: Bergan JJ, Yao JST, editors. *Venous disorders*. Philadelphia: W.B. Saunders; 1991. p. 250-7.
- Hobbs JT. The pelvic congestion syndrome. *Br J Hosp Med* 1990;43:200-6.
- Rundquist F, Sandholm IE, Larsson G. Treatment of pelvic varicosities causing lower abdominal pain with extraperitoneal resection of the left ovarian vein. *Ann Chir Gynaecol* 1984;73:339.
- Villavicencio JL, Gillespie D, Durholt S, Pikoulis E, Rich NM. Diagnosis and treatment of the pelvic venous disorders: pelvic congestion and pelvic dumping syndromes. In: Raju S, Villavicencio JL, editors. *Surgical management of venous disease*. 1st ed. Baltimore: Williams and Wilkins; 1997. p. 462-83.
- Mathis BV, Miller JS, Lukens ML, Paluzzi MW. Pelvic congestion syndrome: a new approach to an unusual problem. *Am Surg* 1995;61:1016-8.
- Beard RW, Kennedy RG, Gangar KF, Stones RW, Rogers V, Reginald PW, et al. Bilateral oophorectomy and hysterectomy in the treatment of intractable pelvic pain associated with pelvic congestion. *Br J Obstet Gynaecol* 1991;98:988-92.

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