



Clinical outcome of ovarian vein embolization in pelvic congestion syndrome



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KEYWORDS

Pelvic congestion;
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Abstract *Introduction:* Pelvic congestion syndrome (PCS), is a condition associated with ovarian vein (OV) incompetence among other causes. It is manifested by chronic pelvic pain with associated dyspareunia and dysmenorrhea. The diagnosis of PCS is often overlooked and the management can be difficult. Traditional therapy for PCS has included both medical and surgical approaches and more recently endovascular therapy.

The aim of this work: The aim of this work was to assess the clinical efficacy of ovarian vein embolization in treatment of PCS associated with OV incompetence and in the management of pelvic varices via catheter directed coil embolization.

Conclusion: From our and previous results, we can conclude that catheter directed OV coil embolization is a feasible procedure for treatment of pelvic congestion syndrome associated with OV incompetence. Presence of bilateral OV incompetence should always be investigated prior this therapy. Further prospective trials are required to assess the full benefits and efficacy of this technique, and to assess which may be the best embolic agent.

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1. Introduction

Chronic pelvic pain (CPP) is a significant health problem in women particularly during childbearing age and may account for 10% of outpatient gynecologic visits.^{1,2} Etiology of chronic pelvic pain includes irritable bowel syndrome, endometriosis, adenomyosis, pelvic congestion syndrome, atypical menstrual pain, urologic disorders, and psychosocial issues.^{3,4}

Pelvic congestion syndrome occurs mostly because of ovarian vein reflux, but can also occur because of the obstruction of ovarian vein outflow resulting in reversed flow.⁵

Ovarian vein reflux (OVR) is found and PCS is diagnosed most frequently in multiparous women. During pregnancy, ovarian vein flow may increase up to 60 times. This increase in blood flow causes ovarian vein dilatation and may result in venous valve incompetence. PCS is likely caused by the incompetence of the venous valves of the ovarian and pelvic veins, which results in OVR leading to ovarian and pelvic vein dilatation and stasis. Therefore incompetence, venous reflux, and dilatation of the ovarian veins lead to the development of pelvic varicosities and congestion, which are known causes of pelvic pain and the most likely etiology of PCS.⁶

The presence of OVR by itself does not make the diagnosis of PCS. But venous reflux in the ovarian veins of patients with CPP and with no other identifiable cause of organic pain makes the diagnosis of PCS.⁶

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(a)

Patient Satisfaction Survey

Please answer all appropriate questions accordingly, making sure you use a black or blue pen. Please mark all boxes with a cross eg and write all numbers and letters clearly as they will be processed by computer. Many thanks.

Section A - Medical Condition Prior to Procedure

1) How would you describe the level of lower abdominal/pelvic pain prior to the procedure?
 Very Painful Painful Bearable No Pain

2) Would you describe this pain as being?
 Continuously present Intermittently present

2a) If Intermittently present, when did it occur?
 Just Before or During Period Different Moments of the Month Both

3) Did you experience painful Sexual Intercourse? Yes No

4) Did you have vulval varices (swelling)? Yes No Can't remember/Don't Know
 If you answered 'NO' or 'Can't Remember/Don't Know' go to Q5

4a) If Yes, What symptoms did you experience?

4b) How are you now in respect of this?

5) Please state the number of Pregnancies you have had:

6) In your profession, Please indicate which position you spent the majority of your day?
 Standing Sitting Down Both equally

7) Did you experience Urinary Urgency (poor control of urination)? Yes No

Section B - Medical Condition Post Procedure

1) How would you describe the level of lower abdominal pain post procedure?

	Very Painful	Painful	Bearable	No Pain
1 Month after procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-3 Months after procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-6 Months after procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
>6 Month after procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2) If you have experienced/experience pain after the procedure, Would you describe this pain as being?

	Continuously present	Intermittently present	Disappeared
1 Month after procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-3 Months after procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-6 Months after procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
> 6 Months after procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

DRAFT

Figure 1 (a and b) Mailed questionnaire.

Pelvic congestion syndrome can present with nonspecific pelvic pain, dyspareunia, and persistent genital arousal.⁵ The pelvic pain of PCS may vary along the menstrual cycle and worsen during menses and be exacerbated by conditions that may increase congestion such as the upright position, bending and lifting, and coitus. The pelvic pain may be described as fullness and heaviness. The pelvic examination may demonstrate pelvic tenderness, congestion of the vaginal walls, and varices.⁶ Pelvic varices can be seen in 10% of women in the general population and up to 60% of patients with pelvic varices may develop pelvic congestion syndrome. Varices can be seen in the vulva, buttocks, and legs.⁵

Venography, CT, MRI, and Doppler US can demonstrate OVR. Noninvasive imaging such as sonography, MR, or CT not only may demonstrate the retrograde ovarian vein flow but also may exclude other pelvic pathologies that may be the cause of CPP as well as determine the size of the ovarian veins, and the presence of pelvic varicosities.⁶ MRI is preferable as it avoids the large radiation dose associated with CT, which should be avoided where possible in young women. For PCS, an ovarian vein diameter of 8 mm on CT or MRI is considered diagnostic.⁷

Non-steroidal anti-inflammatory drugs may help relieve pain in the short term but these are not a long-term solution

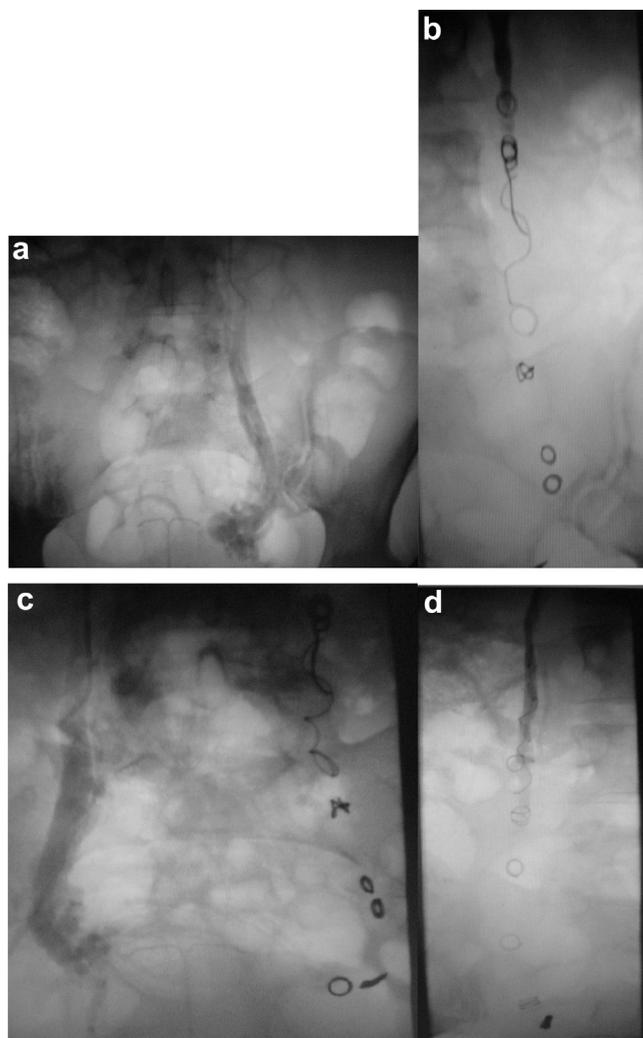


Figure 2 (a) Selective left ovarian vein (OV) venography showing dilated OV. (b) Left OV occlusion with multiple coils (6 mm in diameter). (c) Selective right ovarian venography in the same sitting shows dilated right OV. (d) Multiple coils are placed in the right OV and venography immediately after embolization demonstrates occlusion of the right OV.

embolizing the ovarian veins. Spasm and occasional rupture of the thin-walled ovarian vein can occur but this rarely leads to any sequelae and can be treated with simple analgesia.⁸

2. Material and methods

This study was conducted on 11 patients over a period of 3 years.

The mean age of the patients was 39.8 years with a range of 31–52 years. All patients were uniparous or multiparous.

10 patients presented with lower abdominal pain and vulval varicosities, 5 of them had thigh varicose veins as well. One patient had no pelvic pain symptoms, but presented with thigh varices; the Doppler scan of this patient suggested pelvic source of the varices.

Five patients had unilateral left OV embolization and 6 had bilateral OV embolization; in 5 patients bilateral embolization



Figure 3 (a) Transfemoral selective left ovarian venography shows dilated left OV and pelvic venous engorgement. (b) Left OV is successfully embolized in a caudocranial direction.

was performed in the same sitting, while the remaining patient underwent staged embolization. Embolization was performed using Spirale coils (Pyramed, Australia) in all patients.

Outpatient clinical assessment and mailed questionnaires (Fig. 1) were conducted 3–72 months post-embolization with a mean follow-up period of 28.1 months.

2.1. Procedure

The procedure was performed under local anesthesia. After puncture of the right femoral vein with a 5-French sheath (Cordis, Johnson & Johnson Medical, Diegem, Belgium), a cobra catheter (Cook Medical Inc, Bloomington, USA) was advanced into the left renal vein. Subsequently, the left ovarian vein was catheterized and a venogram was performed. The right ovarian vein is selectively catheterized directly into the IVC below the level of the right renal vein.

Embolization was performed with Spirale coils (Pyramed, Australia). After embolization, repeat venography was performed to confirm OV thrombosis, and the patency of the left renal vein.

The criteria for embolization included the following: an OV diameter of more than 8 mm, moderate to severe congestion of the ovarian plexus, 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.

3. Results

Intraprocedural ovarian venography confirmed presence of pelvic varices in all 11 patients.

Table 1 Clinical outcome of ovarian vein coil embolization in PCS in different studies.

	Abdelsalam	Kwon et al. ¹²	Cordts et al. ¹³	Capasso et al. ¹⁴	Bachar et al. ¹⁵
Number of patients in the study	11	67	11	19	6
Procedural success rate	100%	100%	88.9%	96.7%	100%
Immediate complications	Nil	3% coil migration	36.4% (3 contrast extravasation, 1 coil migration)	N/A (Not available)	Nil
Pelvic pain relief	70%	82%	88.9%	73.7%	83.3%
Mean follow-up period (months)	28.1	39.4	13.4	15.4	7.3
Recurrence of symptoms	10%	N/A	22.2%	26.3%	N/A

The procedural success rate was 100%; 5 patients had unilateral left OV embolization and 6 had bilateral OV embolization.

Post-embolization pelvic pain relief and relief of vulval varices were encountered in 7 of 10 patients (70%) by 3 months after the procedure.

Recurrent pelvic pain and vulval varices occurred in 1 patient (10%) after 6 months of embolization.

Improvement of thigh varicosities was reported in 4 of 6 patients (66.7%).

No significant complications encountered in the study group regarding coil migration, contrast extravasation, or puncture site hematoma (see Figs. 2 and 3).

4. Discussion

Women who report intermittent or continuous pelvic pain and have no apparent disease have to be considered potential candidates for pelvic congestion syndrome. The pelvic pain is often described as fullness or heaviness, has a variable intensity and duration, and often worsens pre-menstrually.¹⁰ Ovarian vein embolization has been used for many years as a treatment for OVS resistant to medical therapy. Coil embolization, first described in 1993.¹¹

Our results were comparable to other studies of clinical outcome of ovarian vein coil embolization in PCS, as summarized in Table 1.

We did not encounter any post-procedural complications, and other studies reported low rate of coil migration 3%¹² and 9.1%¹³. Coil migration could happen if the coil was not sized correctly, or if it was inserted too close to the renal vein.

Pelvic vein relief was variable ranging from partial to complete relief in all studies; in our study 7 out of the 10 patients with pelvic pain showed partial or complete relief, and our results were comparable to others. Pain recurrence occurred in 10% of cases in our study compared to 22–26% in other studies.^{13,14}

The clinical outcome of the patients did not differ according to whether the patient has unilateral or bilateral insufficient ovarian veins on retrograde venography, and the same finding was reported by Maleux et al.¹⁰

In Kwon et al.¹², 13.4% of patients underwent surgery to get relief from persistent pain after embolization. None of our patients underwent surgery following embolization.

Pelvic congestion syndrome is a clinical entity that is often disregarded; therefore, clinicians who do not include transvaginal ultrasound with color Doppler in the diagnostic evaluation of chronic pelvic pain continue to refer these women for psychotherapy, with a presumed diagnosis of undetectable

organic disease.¹⁶ Hence the relative small number of patients in most of the studies, including ours.

5. Conclusion

From our and previous results, we can conclude that catheter directed OV coil embolization is a feasible procedure for treatment of pelvic congestion syndrome associated with OV incompetence. Presence of bilateral OV incompetence should always be investigated prior to this therapy. Further prospective trials are required to assess the full benefits and efficacy of this technique, and to assess which may be the best embolic agent.

Conflict of interest

We have no conflict of interest to declare.

References

1. Park SJ, Lim JW, Ko TY, et al. Diagnosis of pelvic congestion syndrome using transabdominal and transvaginal sonography. *AJR Am J Roentgenol* 2004;**182**:683–8.
2. Beard RW, Pearce S, Highman JH, et al. Diagnosis of pelvic varicosities in women with chronic pelvic pain. *Lancet* 1984;**2**:946–9.
3. Liddle AD, Davies AH. Pelvic congestion syndrome: chronic pelvic pain caused by ovarian and internal iliac varices. *Phlebology* 2007;**22**(3):100–4.
4. Cheong Y, William Stones R. Chronic pelvic pain: aetiology and therapy. *Best Pract Res Clin Obstet Gynaecol* 2006;**20**(5):695–711.
5. Karcaaltincaba M, Karcaaltincaba D, Dogra V. Pelvic congestion syndrome. *Ultrasound Clin* 2008;**3**:415–25.
6. Cura M, Cura A. What is the significance of ovarian vein reflux detected by computed tomography in patients with pelvic pain? *Clin Imaging* 2009;**33**:306–10.
7. Bhutta H, Walsh S, Tang T, Walsh C, Clarke J. Ovarian vein syndrome: a review. *Int J Surg* 2009;**7**:516–20.
8. Nicholson T, Basile A. Pelvic congestion syndrome, who should we treat and how? *Tech Vasc Intervent Radiol* 2006;**9**:19–23.
9. Beard RW, Reginald PW, Wadsworth J. Clinical features of women with chronic lower abdominal pain and pelvic congestion. *Br J Obstet Gynaecol* 1998;**95**:153–61.
10. Maleux G, Stockx L, Wilms G, Marchal G. Ovarian vein embolization for the treatment of pelvic congestion syndrome: long-term technical and clinical results. *JVIR* 2000;**11**:859–64.
11. Edwards R, Robertson I, MacLean A, Hemingway A. Case report: pelvic vein syndrome – successful treatment of a case by ovarian vein embolization. *Clin Rad* 1993;**47**:429–31.
12. Kwon SH, Oh JH, Ko KR, Park HC, Huh JY. Transcatheter ovarian vein embolization using coils for the treatment of pelvic congestion syndrome. *Cardiovasc Intervent Radiol* 2007;**30**(4):655–61.

13. Cordts PR, Eclavea A, Buckley PJ, DeMaioribus CA, Cockerill TD, Yeager TD. Pelvic congestion syndrome: early clinical results after transcatheter ovarian vein embolization. *J Vasc Surg* 1998;**28**(5):862–8.
14. Capasso P, Simons C, Trotteur G, et al. Treatment of symptomatic pelvic varices by ovarian vein embolization. *Cardiovasc Intervent Radiol* 1997;**20**:107–11.
15. Bachar GN, Belenky A, Greif F, et al. Initial experience with ovarian vein embolization for the treatment of chronic pelvic pain syndrome. *Isr Med Assoc J* 2003;**12**:843–6.
16. Gargiulo T, Mais V, Brokaj L, Cossu E, Melis GB. Bilateral laparoscopic transperitoneal ligation of ovarian veins for treatment of pelvic congestion syndrome. *Am Assoc Gynecol Laparosc* 2003;**10**(4):501–4.