ORIGINAL REPORT

Pelvic congestion syndrome: Outcome after embolization with coils

M.A. Edo Prades*, M.D. Ferrer Puchol, E. Esteban Hernández, M. Ferrero Asensi

Sección de Radiología Vascular e Intervencionista, Hospital Universitario de la Ribera, Alzira, Valencia, Spain

Received 18 August 2011; accepted 14 January 2012
Available online 12 June 2014

KEYWORDS
Venous congestion; Pelvis; Veins; Ovary; Therapeutic embolization

Abstract

Objective: To study the clinical manifestations and findings at venography in patients with pelvic congestion syndrome and to evaluate the outcome after percutaneous embolization using coils. Materials and methods: We studied 34 women referred to the vascular radiology unit from the vascular surgery department for clinical suspicion of pelvic congestion syndrome. All patients underwent venography to assess the competence of the ovarian veins and to detect other varicose pelvic veins. When pelvic varicose veins were detected, they were embolized with coils. Clinical outcomes were recorded after reviewing the clinical history and administering a questionnaire over the phone.

Results: In 22 of the 34 patients, signs of pelvic venous insufficiency were found. The symptoms were mainly the sensation of pelvic and perineal heaviness (20/22) and pelvic pain (18/22). The technical success of venography and embolization was 100%, with three minor complications that did not require hospitalization. The sensation of pelvic heaviness improved in 14 patients (in 13 it was completely eliminated). Pain disappeared in 11 patients and was partially alleviated in another 2.

Conclusion: In patients with pelvic congestion syndrome, the embolization of insufficient pelvic veins brings about clinical improvement with short hospital stays and few complications.

© 2011 SERAM. Published by Elsevier España, S.L. All rights reserved.

PALABRAS CLAVE
Congestión venosa; Pelvis; Venas;

El síndrome congestivo pélvico. Resultados tras la embolización con espirales

Resumen

Objetivo: Estudiar las manifestaciones clínicas y los hallazgos venográficos en las pacientes con síndrome congestivo pélvico (SCP), y evaluar los resultados después de la embolización percutánea con espirales.

* Please cite this article as: Edo Prades MA, Ferrer Puchol MD, Esteban Hernández E, Ferrero Asensi M. El síndrome congestivo pélvico. Resultados tras la embolización con espirales. Radiología. 2014;56:235–240.

* Corresponding author.
E-mail address: miguel.angel.edo@gmail.com (M.A. Edo Prades).

2173-5107/$ - see front matter © 2011 SERAM. Published by Elsevier España, S.L. All rights reserved.
Introduction

The chronic pelvic pain (CPP) characterizes by pain in the pelvis and hypogastrium of 6 months duration not associated exclusively with menstrual cycle or sexual relations.\(^1\)\(^2\) Its prevalence in women between 18 and 50 years is around 15% and in 10% is the reason for external consultations in gynecology.\(^3\) Back in the 1950s pelvic venous congestion secondary to ovarian and/or hypogastric vein failure was proposed as one of the causes of CPP which in turn coined the term pelvic congestive syndrome (PCS).\(^4\) Pelvic venous incompetence is due to mechanical (multiparity, anatomical defects in ovarian veins or extrinsic vascular compression like the nutcracker syndrome) and hormonal factors.\(^5\)\(^-\)\(^7\) PCS is common in young multiparous women. The main symptom is unilateral or bilateral pelvic pain usually a dull intermittent pain more acute during premenstrual period presenting with fatigue and bipedalism\(^6\) and some times accompanied by a sensation of pelvic weight, dysmenorrhea, dyspaunia, pain on ovarian pressure points, vesical irritability, perivulvar varicosities and psychosocial alterations.\(^7\)

During the last three decades different therapies have been proposed with different acceptance and effectiveness. Until the 1980s treatment was symptomatic and in refractory cases doctors would perform hysterectomies with double anexectomy. In time we would see the arrival of progestagens and analogues of GnRH,\(^8\) and the resection of ovarian veins by retroperitoneal approach through laparoscopy\(^9\) to interrupt vein flow.\(^10\) In 1993, Edwards et al. described the percutaneous endovascular treatment of PCS\(^11\) which today is the preferred therapy due to its effectiveness–greater to surgery according to some studies; short hospital stays; low rate of complications–usually minor; and because it does not need extended use of drugs.\(^11\)

The goal of our work is to study the clinical manifestations and venographic findings in patients with PCS and evaluate the outcomes after the percutaneous embolization with coils.

Materials and methods

We did a retrospective study of a group of 34 female patients who–between January 1999 and January 2009–were referred to the unit of vascular radiology of our hospital from the vascular surgery unit with suspicion of PCS. These patients underwent digital venography without further image studies since this is the benchmark modality for the study of the pelvic venous competence. The endovascular therapy happened in the same act whenever pelvic venous incompetence was confirmed. All patients were briefed upon and signed a written informed consent in less than 24 h prior to the proceeding. License from the ethical committee of the hospital was not needed since it was a retrospective study that had nothing to do with the therapeutic attitude towards the patients.

The venographic finding to be able to diagnose pelvic venous incompetence was contrast reflow towards the ovarian and/or hypogastric veins. Other secondary signs are one ovarian vein >5 mm in diameter; the late clearance of contrast from pelvic veins; and the opacification of pelvic veins crossing the medial line and communicant veins with varicose veins in the obturation area.\(^13\)\(^14\)

Both venographies and embolizations were performed by two vascular radiologists with 10+ years of experience using Philips Allura XPer (Best, The Netherlands) digital subtraction angiograph. After the vein puncture procedure (through femoral or brachial approach) using the Seldinger technique and one 5F vascular introducer Terumo (Tokyo, Japan) the left renal vein was characterized with a visceral Cobra 2 type-catheter or 5F vertebral introducer Terumo (Tokyo, Japan). Contrast was injected being the patient relaxed and later using the Valsalva maneuver to see if there was reflow towards the ovarian vein. In presence of an incompetent vein surgeons proceeded to characterize it with the Terumo hydrophilic wire (Tokyo, Japan) to later embolize its lower part with platinum Nester-type coils from (Cook, Bloomington, Indiana) until complete occlusion (Fig. 1). Similarly both
the right ovarian vein and the hypogastric veins were characterized and studied assuming their competence if unable to characterize them and occluding them in cases of failure. Once the proceeding was over surgeons would proceed with mild compression. The patient remained in the observation room for a couple of hours and was discharged in the absence of further complications.

The variables taken into consideration in the study of the clinical evolution of patients were pain and sensation of weight. In the clinical history both the intensity of pain and pelvic weight were categorized according to the visual analogue scale (VAS) for pain. Complete symptom improvement after therapy indicated its complete disappearance; partial improvement suggested the reduction of intensity in at least 2 points in the VAS; the absence of changes suggested the lack of variation in scoring, and the symptomatic relapse indicated an increase in the intensity of the symptom of at least 2 points during follow-up. To assess the evolution of patients doctors reviewed their clinical history to assess the evolution of symptoms according to the VAS. When the history of their clinical evolution was not available patients were called over the phone and a descriptive analysis of data was done.

**Results**

In 22 of the 34 patients the venography showed pelvic venous failure thus confirming the clinical suspicion of PCS, in 20 cases it showed incompetence of left ovarian vein (Fig. 2) and in 2 cases due to varicose veins dependent on the left internal iliac vein (Fig. 3).

The average age of patients whose venography was positive was 42.6 years old (range 29–59 years) being the average of pregnancies per patient 2.27.

The clinical presentation described by patients was pain and sensation of weight. In the group of patients with venographic abnormalities pelvic pain was present in 18/22 patients (VAS-intensity range between 4 and 8) being the sensation of pelvic-perineal weight present in 20/22 patients (VAS-intensity range between 5 and 8).

The venous access for embolization was performed through right femoral approach in 13 patients, right brachial approach in 8 patients (obese with tough femoral approach) and jugular vein approach in 1 patient—obese patient with a history of venous thrombosis in her right arm. Surgical success in the embolizations was 100%. Two patients developed minor complications. One of patients had neuropathic pain in her right arm (venous access site) that disappearance after 72h leaving no sequelae. The second patient accidentally poked her humeral artery which so her proceeding was performed through femoral approach without further complications. All patients were discharged before 8h after the proceeding.

After embolization patients were evaluated after 3–4 weeks in external consultations of vascular surgery units. Further check-ups were done in the same consultations or on the phone (9 patients). This is how the clinical state of the 22 patients could be monitored with an average follow-up of \( 50 \pm 29.98 \) months (range 2–90 months) (Table 1). In 14/20 patients (70%) there was some improvement in the sensation of weight in 1 case partially and in 13 the symptom was completely gone. In 13/18 patients (72%) there was reduction of pain—in 11 cases the pain was completely gone and in
Figure 2  (A) 36 year old-patient with chronic hypogastric pain. One abdominopelvic CT with contrast was done showing the increased calibre (9 mm) of the left ovarian vein (arrow) and the perirectal varicose veins (arrow) dependent on the left ovarian vein. (B) Catheterization of left renal vein for the venographic study of the left ovarian vein. (C) Selective catheterization of left ovarian vein—prior to placing the coils. Contrast persistence in the ovarian vein and left periovarian plexus (arrow). (D) Image after embolization of the ovarian vein with coils (arrows) showing the disappearance of reflow in the treated vein. Weeks after the consultation the patient said both the pain and the sensation of weight were gone.

Figure 3  (A) Selective venography of the left hypogastric vein showing its incompetence. (B) Fluoroscopic control after embolization of the venous trunk with coils showing the occlusion of the vein (arrow).

Discussion

After the percutaneous embolization of incompetent pelvic veins 70% of our patients showed some clinical improvement of their symptoms without further significant complications. These numbers are framed within the range offered by other series published in medical literature (ranging between 40% and 100% according to different authors). 

During the last 15 years percutaneous embolization has set up as one safe option in the treatment of PCS with similar and even greater outcomes to pharmacological and surgical therapies. However both the venous trunks that need to be embolized and the appropriate materials of embolization are still controversial. Nonetheless some groups support bilateral embolization of gonadal and hypogastric veins to avoid repeating and symptomatic relapse. However because some authors have not found statistically significant

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Distribution of patients by months of follow-up.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Months of follow-up</td>
<td>Number of patients</td>
</tr>
<tr>
<td>0–6</td>
<td>2</td>
</tr>
<tr>
<td>6–12</td>
<td>2</td>
</tr>
<tr>
<td>24–48</td>
<td>6</td>
</tr>
<tr>
<td>48–72</td>
<td>6</td>
</tr>
<tr>
<td>≥72</td>
<td>6</td>
</tr>
</tbody>
</table>

2 cases it was partially gone (Table 2). Three women showed relapse of their pelvic pains (in one patient after 8 months and in the remaining 2 after 14 months). They were offered a new venography and 2 patients accepted. Vein structures treated seem to remain occluded showing no data of venous incompetence of pelvis.
differences in the benefit obtained by patients treated uni- or bilaterally and given that the latter modality extends the proceeding and increases the dose of radiation we decided to treat incompetent vessels only. 12,20

In our study we embolized patients with coils because it is a permanent; safe; and available material of occlusion in our setting. No sclerosing materials associated due to patients its irritant action and also because communicant veins between gonadal veins and other splanchnic vessels can occlude incidentally.20

The most common complications described in the percutaneous treatment of PCS–affecting 4% of all proceedings are the perforation of the ovarian vein; thrombophlebitis in the embolized vein; puncture site hematomas; and migration of the material of embolization. 12,16

Proximal migration of the material of embolization–potentially the most dangerous complication did not occur in any of our patients but in one of the largest series published so far it affected 2% of women treated.15

In our patients there were 2 minor complications associated with brachial approach–accidental puncture of humeral artery and neuropathic pain in one patient post-proceeding. Despite this fact, because they were minors, and given no additional actions were necessary we think that the brachial approach is a safe alternative to femoral approach.

Our study has limitations due to its retrospective nature, the reduced number of patients studied and to the subjectivity in the gradation of symptoms before and after treatment. Despite VAS has been used to quantify the severity of the symptoms described in the clinical history together with further interviews the most appropriate thing to do would have been to interview each and every patient with a shorter interval of time for a better knowledge of their clinical evolution–which was hard to do due to the fact that some patients belonged to other areas of health

The diagnosis of PCS is based on the absence of other pathological processes capable of causing pelvic discomfort. During the last years the diagnosis of PCS through non-invasive modalities–ultrasound and angioMR 17 has been very important. In our case patients were referred to the vascular radiology unit with clinical suspicion after anamnesis and exploration. Despite the previous study of patients could have been incomplete it was not considered necessary to do any more studies since pelvic venography is a safe proceeding and a necessary step prior to treatment that can be performed in the same surgical act.

In sum according to our experience the embolization of incompetent pelvic veins is a safe effective therapeutic strategy with few complications associated and a short hospital stay. It might even enable aggressive surgeries and extended use of drugs yet this needs to be confirmed in adequately designed cohort studies.

### Authors

1. Responsible for the integrity of the study: MAEP, MDFP.
2. Original idea of the study: MAEP, MDFP, EEH.
3. Study design: MAEP, MDFP, EEH.
4. Data mining: MAEP, MDFP, MFA.
5. Data analysis and interpretation: MAEP, MDFP, EEH.
6. Statistical analysis: MAEP, MDFP.
7. Reference search: MAEP, MDFP, EEH.
8. Writing: MAEP.
9. Manuscript critical review with intellectually relevant contributions: MDFP, EEH, MFA.
10. Final version approval: MAEP, MDFP, EEH, MFA.

### Conflict of interests

Authors reported no conflict of interest.

### References