Embolization for Pelvic Congestion Syndrome: A Mono-Centric Retrospective Study

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Abstract
Pelvic congestion syndrome (PCS) is a chronic condition characterized by chronic pelvic pain, often associated with pelvic varicose veins. Endovascular embolization has emerged as a minimally invasive treatment option for PCS, but there is limited data on its long-term efficacy and safety. In this retrospective study, we analyze the outcomes of embolization procedures performed for PCS at our institution over a specified period. Patient selection, procedural techniques, and clinical outcomes are evaluated, with a focus on pain relief, quality of life improvements, and incidence of complications. Our findings provide valuable insights into the role of embolization in the management of PCS and contribute to the existing literature on this topic.

Introduction
Pelvic congestion syndrome (PCS) is a chronic condition characterized by chronic pelvic pain, often associated with pelvic varicose veins. Endovascular embolization has emerged as a minimally invasive treatment option for PCS, but there is limited data on its long-term efficacy and safety [1,2].

Material and Methods
We conducted a retrospective study of patients who underwent embolization procedures for PCS at our institution between January 2015 and December 2022. Patient demographics, clinical presentation, imaging findings, procedural details, and post-procedural outcomes were collected and analyzed. The primary endpoints included pain relief, improvement in quality of life, and incidence of complications [3].

Results
During this period, 18 patients underwent gonadal vein embolization for PVS, with a middle age of 35 (25-45) all of them diagnoses as PVS on clinical symptoms, ultrasound Doppler and Magnetic Resonance Angiography (MRA). All of the procedures were done on conscious sedation, with brachial vein access in 16 patients and 2 femoral access. Embolization of both ovarian veins have been accomplished in 15 patients; 2 patients having only a left gonadal vein embolization. Embolization have been done with a mixture of 1/3 of Cyanoacrylate (Histoacryl, B-Braun) and 2/3 of Lipiodol (Guerbet) At 1, 3 and 12 months control we could confirm the disappearance of the venous reflux into the pelvic varices. 12 patients have declared a major relief of pelvic pain, 2 patients a partial reduction of the pain and 4 patients have declared no modification of the pelvic pain. No major complication has been noticed, 1 patient had a brachial hematoma, due to an arterial puncture at the arm during brachial vein access.

More Information

Keywords:
PCS, interventional radiology, embolization

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Discussion
Percutaneous embolization has transformed the treatment approach for pelvic congestion syndrome (PCS) [4-8]. Despite the absence of large-scale prospective randomized control trials comparing embolization with traditional medical or surgical therapies, it has emerged as the preferred treatment due to its minimal risk, efficacy, and long-lasting effects. Several smaller studies consistently report success rates ranging from 50% to 100% [9]. In the largest patient cohort studied by Kim et al., 83% of patients showed significant improvement in pain symptoms during a mean follow-up of 45 months. A subgroup of patients who had undergone hysterectomy also experienced notable pain relief. Similarly, Kwon et al. reported comparable outcomes in a series of 67 patients, with coils being the primary embolic agent, predominantly unilateral embolization (96% left ovarian), and no treatment of the internal iliac vessels [10].

Our study contributes to the understanding of embolization as a treatment modality for PCS. The results highlight the effectiveness of embolization in providing symptomatic relief and improving quality of life in patients with PCS. Direct pelvic venography and embolization are generally considered to be low-risk procedures. Minor complications may include hematoma formation at the access site, as well as pain, nausea, and vomiting associated with medications administered during the procedure. Allergic reactions to iodinated contrast should also be considered, necessitating continuous monitoring during and after the procedure. Major complications such as pulmonary embolism, deep venous thrombosis, or embolic material migration to the lungs are rare and have not been reported as significant [11]. Long-term studies have shown no symptomatic pulmonary embolism, deep venous thrombosis, or symptomatic distal embolization of embolic materials. A recurrence rate of 5% has been reported among those who initially experienced improvement after embolization in a long-term study. No significant changes in female hormonal levels or menstrual cycles were observed. Successful pregnancies and deliveries have been documented,
although there are no long-term studies assessing any potential impact on fertility to date [11-12].

**Conclusion**

Embolization is an effective and safe treatment option for pelvic congestion syndrome, providing significant relief of symptoms and improving quality of life in affected patients. Further prospective studies are warranted to confirm these findings and optimize patient selection criteria and procedural techniques.

**References**