

# Pelvic venous disorders in women – diagnosis and therapy

## Das Beckenvenensyndrom der Frau – Diagnose und Therapie

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### ABSTRACT

Chronic pelvic pain may cause a significant reduction in the quality of life for affected women, and the extent of the lim-

itation is often underestimated. Chronic pain can lead to life-long problems. Currently, PCS is probably significantly underdiagnosed as a cause of chronic pelvic pain in women. To diagnose PCS, other common causes of chronic pelvic pain must be excluded and typical changes in pelvic vein syndrome must be detected, ideally using MR phlebography. If the indication is correct and the procedure is carried out appropriately – ideally by experienced interventionalists certified according to DeGIR/EBIR – the symptoms can be eliminated in the long term with a high success rate and few complications. Simultaneous psychotherapeutic treatment should always be discussed with the patients.

### Key Points

- PCS is a common cause of chronic pelvic pain in women.
- Imaging requires Doppler sonography and contrast-enhanced magnetic resonance angiography.
- Typical symptoms and dilated pelvic veins (>8 mm) indicate interventional therapy.
- Pathological pelvic veins are embolized using coils and alcohol foam.
- Published success rates and long-term results suggest propagating interventional therapy.

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### ZUSAMMENFASSUNG

Der chronische Beckenschmerz bedeutet für die betroffenen Frauen eine erhebliche Einschränkung der Lebensqualität, das Ausmaß der Einschränkung wird durch Ärzte häufig unterschätzt. Im Rahmen der Chronifizierung des Schmerzes können ggf. lebenslange Problemen entstehen. Aktuell ist das PCS – eine wichtige Ursache des chronischen Beckenschmerzes der Frau – wahrscheinlich erheblich unterdiagnostiziert. Für die Diagnose des PCS müssen andere häufige Ursachen des chronischen Beckenschmerzes ausgeschlossen und gleichzeitig typische Veränderungen des Beckenvenensyndroms idealerweise mittels MR-Phlebografie nachgewiesen werden. Bei korrekter Indikationsstellung und Durchführung – am besten durch erfahrene und nach DeGIR/EBIR-zertifizierte Interventionalist\*innen – können die Symptome langfristig mit hoher Erfolgsrate und komplikationsarm beseitigt werden. Die gleichzeitige psychotherapeutische Behandlung sollte immer mit den Patientinnen besprochen werden.

### Kernaussagen

- Das PCS ist eine häufige Ursache des chronischen Beckenschmerzes der Frau.
- Die bildgebende Diagnostik erfolgt mit der Dopplersonografie und der kontrastmittelverstärkten Magnetresonanztomografie.
- Bei typischen Beschwerden bilden erweiterte Beckenvenen (>8 mm) die Indikation zur interventionellen Therapie.
- Die pathologischen Beckenvenen werden mit Coils und Alkoholschaum embolisiert.
- Publierte technische Erfolgsraten und Langzeitergebnisse sprechen für die konsequente Anwendung des Verfahrens.

## Introduction

Chronic lower abdominal and pelvic pain is increasingly understood to be an major cause of reduced quality of life among women. Various pelvic venous diseases can cause such symptoms and the term pelvic venous disorder (PVD) is currently used internationally to refer to them collectively. In German-speaking countries, the term pelvic congestion syndrome (PCS) is still primarily used. This is a group of diseases causing chronic lower abdominal/pelvic pain in women that is currently still rarely taken into consideration. Globally, chronic pelvic pain in women occurs with a frequency of up to 27% [1]. PCS represents an easily treatable cause of this symptom complex in up to 30% of cases [2]. The global prevalence of PCS is up to 44% among women. Therefore, the correct diagnosis of PCS is extremely important with regard to treating patients with chronic pelvic pain. While the importance of social and socioeconomic factors in the development of chronic pelvic pain has been examined in epidemiological studies, the presumably immense economic consequences of neither chronic pelvic pain nor PCS have been examined.

PCS as a disease of the pelvic veins was described for the first time 150 years ago in the medical literature [3, 4]. The term PCS has been used since approximately the end of the 1940s, and the connection to chronic pelvic pain has been known since the 1950s [5, 6].

To provide guidance for physicians treating women with chronic lower abdominal pain, the S2k guidelines were updated in 2022 as part of the guideline program of the Association of the Scientific Medical Societies in Germany [7]. Even if chronic lower abdominal pain in women is not uniformly defined in the international literature, there is consensus regarding the following symptoms: Either intermittent or cyclical pain lasting for more than 6 months and reduced quality of life among affected women. The pain can be divided into three large groups based on cause:

1. Somatic pain
2. Pain with a somatic and psychological origin
3. Pain with a psychological origin [7].

For patients with PCS, minimally invasive catheter-angiography embolization as the least invasive method is the method of choice when conservative treatment methods fail.

## Diagnosis

Prior to diagnosing PCS or PVD, somatic and psychological differential diagnoses must be ruled out on an interdisciplinary basis (► **Table 1**). The most probable differential diagnoses are endo-

metriosis, inflammation of the adnexa and the bladder, tumors of the internal genitals and bowel, chronic bowel diseases, and psychosomatic diseases. Various disciplines like general medicine, gynecology, surgery/proctology, gastroenterology, urology, orthopedics, etc. are thus involved in the diagnosis of somatic causes. It must be taken into consideration in the diagnostic workup that most patients have a long history of suffering. Their symptoms are often insufficiently acknowledged by their primary physicians so that they have repeatedly had frustrating interactions with physicians from various disciplines. Since potential psychological disease triggers can be overlooked due to a concentration on somatic causes and patients may be diagnosed with a somatic origin of their pain, the workup of psychological causes should be performed in parallel with the search for somatic causes in accordance with the national care guidelines “Nationale Versorgungsempfehlung chronische KHK” [8]. Chronic pain that can result in a long-term reduction of the quality of life of affected women even after treatment a somatic cause can also be treated with psychotherapy [7].

Most of these women are between 20 and 50 years of age and report multiple pregnancies/births in their medical history. The current symptoms are nonspecific. A dull pain and/or feeling of fullness in the pelvis or back is often described. Back pain that seems to be coming from the spine is also not uncommon. These symptoms are often exacerbated by long periods of standing or sitting, in the case of physical stress, and during pregnancy. Additional symptoms often include dyspareunia, dysmenorrhea, dysuria, and bladder irritation. Psychological symptoms with depression and general fatigue can also occur. Clinical examination can be largely unremarkable. There may be varicose veins on the external genitals, proximal thigh, and buttocks. These varicosities have an atypical distribution pattern compared to those seen in extrapelvic diseases. Patients sometimes report clear vaginal discharge [9, 10, 11].

Imaging methods are used not only to rule out differential diagnoses but also to confirm PCS. Transvaginal ultrasound to assess changes in the width of the pelvic veins when lying and standing, possibly supplemented by abdominal ultrasound and MRI (magnetic resonance imaging) with MR phlebography (► **Fig. 1**) have proven to be most useful here [7]. However, since dilated pelvic veins are seen among 25% of all women regardless of the suspected diagnosis [12], the morphological finding alone is not sufficient for diagnosis. Catheter-based phlebography of the veins of the parametria and the uterus is often still considered the diagnostic gold standard in the literature. Since radiation exposure purely for diagnostic purposes should be avoided as much as possible in women who may want to have children, du-

► **Table 1** Somatic sources of chronic pelvic pain in females, modified from [1].

Gynecological	Urological	Gastrointestinal/proctological	Musculoskeletal
Endometriosis	Inflammatory or infectious diseases of the kidneys and urinary tract	Constipation, irritable bowel syndrome	Fibromyalgia, myofascial pain syndrome, coccygodynia
Adenomyosis	Impaired bladder function, bladder pain syndrome	Intestinal malabsorption	Scar pain
Inflammation and infections of the ovaries/adnexa	Interstitial cystitis	Hernia	Chronic back pain
Uterine malformations	Malignant urological diseases	Benign and malignant obstructions and stenoses of the gastrointestinal tract	Malignant diseases of the regional muscular and skeletal system and the connective tissue
Pelvic inflammatory disease	Radiation cystitis	Diverticulosis, diverticulitis, appendicitis	Neuralgia
Adhesions	Urinary obstruction, residual urine	Crohn's disease, ulcerative colitis	Hernia
Benign and malignant masses of the uterus and ovaries	Urolithiasis	Gastroenteritis, colitis with another cause	Nerve compression syndromes
Congested pelvic veins, pelvic varicose veins	Urethral syndrome	Paralytic intestinal motility disorders	Changes in posture and movement
Actinomycosis		Vascular bowel diseases	Increased tension of the pelvic floor muscles, dysfunction of the pelvic floor
Vulvodynia, sexual dysfunction		Fissures and fistulas in the anal and rectal region	
		Proctalgia fugax	

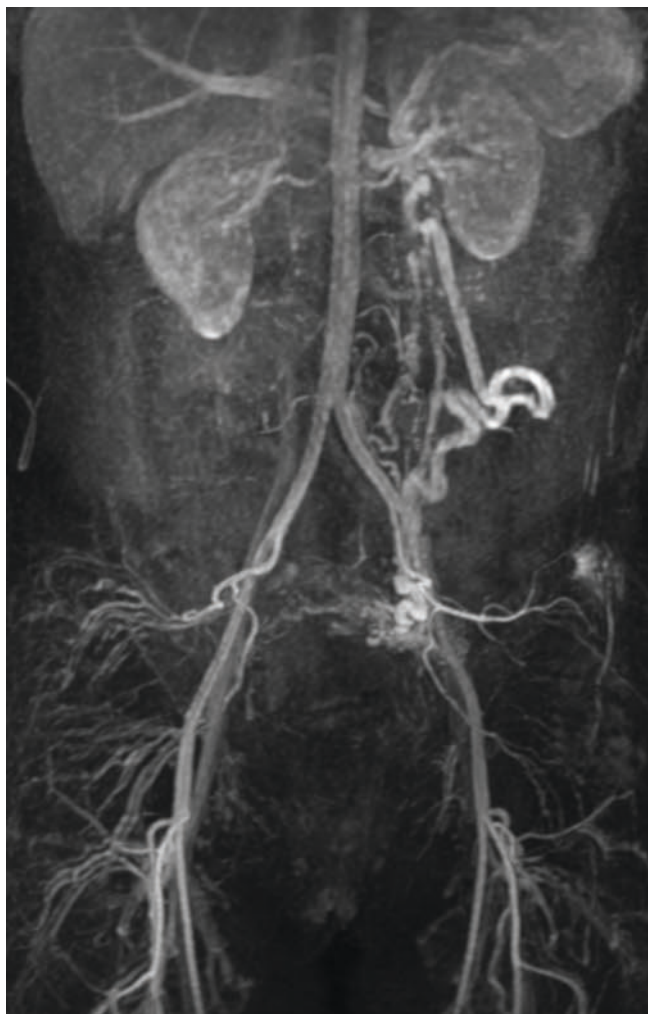
plex ultrasound and MR phlebography are typically used. In addition to increasing clinical evidence, there has also been study data in recent years showing that MRI is suitable for the visualization of possible intrapelvic varicosities. MR phlebography allows time-resolved imaging of venous perfusion dynamics in the abdomen and pelvis without radiation – just like catheter-based phlebography [9, 13]. The central outflow (ovarian veins, femoral veins) and the femoral junction are shown at the same time [9]. The diagnostic criteria are [14]:

1. Detection of more than four tortuous parametrial veins with a diameter of more than 4 mm
2. Dilation of the diameter of the ovarian vein – usually on the left side – to greater than 8 mm
3. Filling of the right-sided parametrial veins from the left ovarian vein on dynamic MR phlebography.

Reflux into the ovarian veins and significant dilation of the parametrial veins can be seen with transvaginal duplex sonography in a standing position. This finding is the most common cause of PCS. This method requires significant experience, intuition, and technical knowledge on the part of the examiner and is barely used in spite of the high validity.

A surface coil allowing a sufficiently large field of view is used for MR phlebography. It must extend from the upper edge of the left kidney to the middle third of the thigh. In this way, not only the ovarian veins with their collateral systems but also the bilateral

parametrial veins, the connection to the internal iliac system, and dilated veins of the pelvic region and in the proximal thigh can be visualized. Dynamic visualization with contrast agent and the evaluation of all these regions are extremely important for determining a suitable interventional treatment strategy. Subtracted T1-weighted three-dimensional gradient echo sequences with fat suppression with a spatial resolution of 1.5–2 mm in all three spatial directions are used. The temporal resolution should be between 10 and 15 seconds. With a total measurement time of approx. 5 minutes and a pause of approximately 5 seconds for respiration between the individual breath holds, approximately 15 contrast agent phases are acquired. Intravenous contrast agent (2 ml/s) is administered in the elbow and with a delay allowing acquisition of an initial non-contrast dataset. Valsalva maneuvers are not recommended due to the typically significantly reduction in image quality. The early contrast phases in which the contrast flows from the renal veins, which fill early, in a caudal direction into the ovarian veins, which often have already dilated collaterals, is extremely important in most patients. The final phases show the congested parametrial varicosities and possible hemodynamically relevant shunts to the internal iliac system. To evaluate the pathologies that can be detected in these late phases, the subtraction of the early contrast phases from the late contrast phases can be useful to visualize the pelvic veins without the arterial vascular system. Thus, contrast leaks, e.g. from the parametrial veins into the internal iliac system, can be better detected.



► **Fig. 1** Early phase of contrast-enhanced MR angiography of a patient with PCS and left ovarian vein insufficiency. Contrast enhancement of the arteries, the portal vein, and – depending on the outflow of the blood from the left renal vein – the left ovarian vein can be seen. Significant dilation (12 mm) and elongation of the left ovarian vein; medial therefrom a branched venous collateral system with contact to the lumbar veins can also be seen. In later contrast phases, the extent of the congestion of the parapelvic venous plexus can be seen.

Various scoring systems for standardizing diagnosis have been proposed for more precise description of the findings in the case of suspicion of PCS. However, these have not yet been sufficiently validated so that they are not generally used [13].

There are four different pathophysiological groups of mechanisms that can result in PCS. The most common cause of pelvic vein dilation is (1) postpartum valve insufficiency of the ovarian veins – particularly due to the fact that these veins can dilate up to 60 times their normal size during pregnancy. Even if an irreversible dilation effect of progesterone on the venous wall during this time is suspected, the pathophysiology of this primary PCS is not yet sufficiently understood [13]. Similar intrapelvic venous morphologies can sometimes occur in insufficiencies of the internal pelvic veins (2) with communication to the sapheno-femoral junction, which can occur in the case of varicosities of the leg

veins. There are also compression syndromes (3) like May-Thurner and Nutcracker syndrome, which can also lead to secondary dilation of the ovarian and pelvic veins. Due to their origin and the consequently different treatments, these must be differentiated from primary PCS just like increased pelvic blood flow (4) due to AV fistulas or other vascular malformations [11].

Anatomical variability of the vascular systems in the pelvis can complicate the noninvasive diagnostic workup of pelvic veins. The variations in the time from the onset of initial symptoms to diagnosis of the disease can have a complicating effect, particularly when the venous system of the pelvis has been further challenged by a pregnancy in the meantime. The extent and severity of venous insufficiencies can therefore vary greatly. The extent of the morphological findings seen on imaging doesn't always correlate with the symptoms. In the case of signs of more complex venous changes that cannot be sufficiently evaluated noninvasively, the preinterventional diagnostic workup can be supplemented by invasive pelvic vein phlebography with visualization of all systems. This should be performed in the same session as interventional treatment.

## Treatment

After the exclusion of other somatic causes, a conservative approach with NSAIDs, medroxyprogesterone acetate, or gonadotropin-releasing hormone (GnRH) agonists is used at the start of treatment, even if PCS has not yet been diagnosed [15]. This somatic treatment should be accompanied by psychosomatic treatment in these patients who usually have chronic pain. It must be taken into consideration that symptoms can disappear within months even without specific therapy [7].

If conservative therapy does not yield sufficient and long-term symptom improvement and if a PCS diagnosis is confirmed, catheter-based interventional treatment is indicated. Already more than 20 years ago it was able to be shown that embolization of varicose veins is superior to surgery involving hysterectomy and unilateral or bilateral oophorectomy for primary PCS with respect to improving symptoms and also has a lower rate of complications [16]. These results were also able to be confirmed in more recent studies in a comparison with laparoscopic resection of the ovarian vein [17]. There are currently only limited and poorly comparable study results for all types of PCS treatment [13]. This should be discussed in detail in a personal informed consent discussion with the patient. Due to the chronic nature of the symptoms of these patients who have often had numerous and possibly negative encounters with physicians, these discussions should be conducted by experienced interventional radiologists.

## Main focus of interventional treatment of PCS

The main goal of pelvic vein embolization (PVE) is to eliminate pathological flow into the ovarian and pelvic veins as well as into resulting varicosities. This is achieved by occluding the corresponding veins.

After the failure of conservative therapy and following intervention planning using the typical methods available on-site (usually



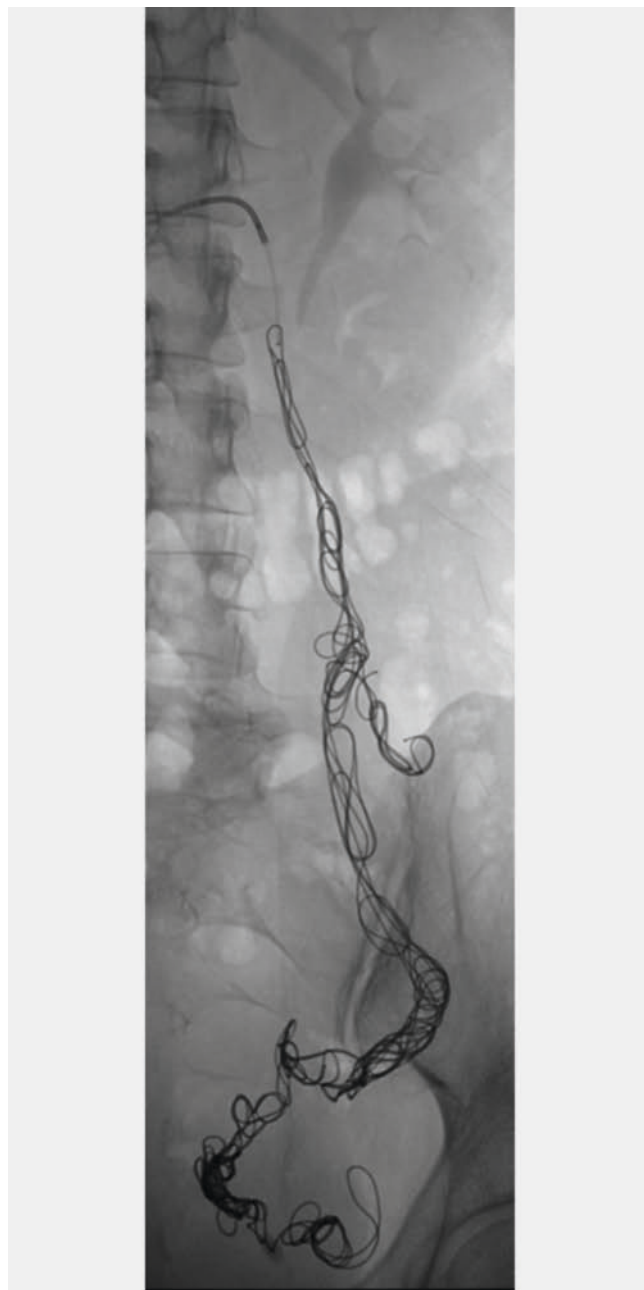
transvaginal ultrasound and/or MRI with MR phlebography [7]), diagnostic phlebography of the ovarian and pelvic veins on both sides is performed as necessary with and without function tests. Based on all available results, embolization of the corresponding veins (PVE) is then performed in the same session. Transfemoral access is currently still primarily used for this intervention in Germany. With respect to patient comfort and radiation protection for those conducting the examination, a right transjugular or a transbrachial approach should be favored in the future. As in the case of all patients to be treated with interventional radiology procedures, care of patients with PVS should be based on the CIRSE Clinical Practice Manual [18]. To ensure uniform and high treatment quality, patients should be treated by experienced and ideally certified interventionalists (DeGIR, EBIR) with sufficient experience treating PCS patients. After obtaining informed consent from the patient, examiners should participate in the DeGIR registry for interventions as well as provide documentation for the PCS registry study currently being created by DeGIR.

After the creation of sterile conditions and the administration of local anesthesia, the selected vein, which is possibly dilated by increased blood filling due to the patient's position, is punctured under ultrasound control and a vascular sheath (4–5F) is inserted. The Practice Guidelines for Central Venous Access of the American Society of Anesthesiologists [19] can be used as a guide for the preparation and implementation of puncture procedures.

After completing the invasive diagnostic workup (see above), this vessel is examined, for example with a vertebral catheter, in the case of classic PCS with reflux of venous blood into the left ovarian vein and is shown on phlebography possibly during the Valsalva maneuver. The vessel is then examined in a distal direction and occluded if necessary using a microcatheter directly from the periphery toward the center, or possible varicosities, e.g. to the labia, are also examined and selectively occluded. Primary occlusion of the right ovarian vein is only performed in the case of definitive right-sided varicose veins [20]. All veins with pathological changes must be occluded, while retaining sufficient central venous flow. Therefore, in cases of doubt, embolization should be performed conservatively and further vessels should be treated in a second session only in the case of persistent symptoms. Particularly in the outflow region of the internal iliac vein, collaterals to the common iliac vein or also to the femoral vein must be expected. Unintentional occlusion of these veins must be avoided in order to avoid severe and difficult-to-treat complications.

In the past, long soft coils have often been used for ovarian vein occlusion (► **Fig. 2**). Sclerosing foams that cause the vascular wall to react are now increasingly used in addition to coils for venous embolization depending on the experience of the interventionalist [13]. In the case of coils it must be taken into consideration that standard coils known from the arterial system have a significantly higher radial force and, therefore, in individual cases, especially in the case of an oversized diameter, can result in perforations [21]. Consequently, volume coils which have a significantly lower radial force and allow much looser packing should be used in spite of the higher price. To prevent displacement possibly into the pulmonary arteries, the coils must be selected to be sufficiently large. Detachable coils should be given preference. Regardless of the coil being used, the coil displacement rate is low

(approx. 1.4%) (usually undersized coils), particularly when it is taken into consideration that only approximately half of displaced coils migrate to locations at which they need to be recovered with a snare or the like [22]. Pain and postembolization syndrome are more common in the case of sclerosing agents than coils [22]. Macrogol lauryl ether (e.g., polidocanol or lauromacrogol) is used and can be mixed with a local anesthetic. The application of the sclerosing agent must be coordinated with the Valsalva maneuver of the patient here in order to prevent embolization errors



► **Fig. 2** Coil occlusion of the left ovarian vein and communicating collateral systems. Long soft volume coils are used here. In contrast to the arterial system, long-term complete occlusion of the treated veins can also be achieved with loose packing of the coils. Shorter and oversized coils increase the risk of perforation of the venous wall.

that cannot be corrected. Due to the significantly shorter intervention time with reduced radiation exposure and economic advantages, the use of foam for embolization is becoming increasingly established (► Fig. 3). In the current discussion, the application of foaming sclerosing agents is preferred for venous occlusion over a long stretch supplemented by individual shorter coils at the beginning and end of the embolization area (► Fig. 4). This is also possible for the occlusion of collateral systems. Vascular plugs, copolymers, and tissue adhesives no longer play a role in the treatment of PCS since the space-occupying effect of the congested veins is suspected to be a significant cause of symptoms in patients. This space-occupying effect remains if the veins are occluded with a cast or by large stiff plugs. Regardless of the selected method, it is important not only to fully occlude the primary insufficient vein but also to reach the communicating collateral systems in order to keep the risk of relapse as low as possible.

After the end of the treatment, the sheath is removed and soft manual compression is performed until it is clear that blood flow has been stopped. A compression bandage as used for the arterial system is not necessary. However, bed rest is required after transfemoral access.

If the patient reports pressure or pain in the pelvis after embolization, short-term NSAID treatment is recommended. Such symptoms are the most common complications of this intervention according to an analysis including 2038 women (less than 4%) [22] and they resolve within hours to a few days.

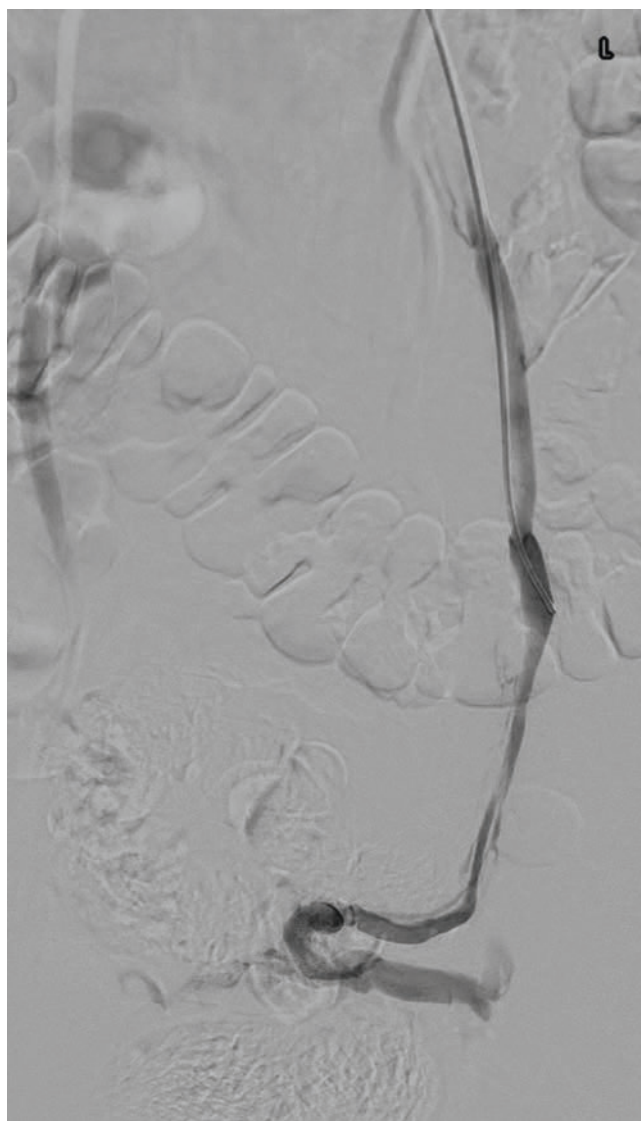
## Follow-up and prognosis

Even if the follow-up of many patients is usually performed by the referring physician in Germany, consultations with treating physicians are also required over the course of the disease. Interventional radiology follow-up for 4–6 weeks after the intervention is recommended in the literature [18]. The treatment result is checked and another PVE procedure can be discussed in the case of persistent symptoms.

In a Cochrane analysis of 13 randomized controlled studies, Cheong et al. were able to show in 2014 that pain reduction of up to 50% lasting 9 months was able to be achieved with non-surgical treatment with progesterone in patients with chronic lower abdominal pain after the exclusion of endometriosis or acute inflammation [23].

A further Cochrane analysis regarding surgical therapy of chronic pelvic pain by Leonhardi et al. in 2021 showed only minimal evidence of symptom improvement [24]. Similar results were also seen for ablation of the pelvic nerves [25].

A meta-analysis regarding PVE by Champaneria et al. from 2016 showed that 75% of the women in the included studies reported moderate to excellent improvement of symptoms, particularly pain, after PVE. In contrast, 2.2–11% of the women experienced only minimal or no change in symptoms [13]. In addition, in 2023, Kashef et al. were able to show in their study that technical success rates of 96–100% and clinical success rates of 70–90% in the follow-up period of up to over three years were able to be achieved with PVE for PCS [26]. A meta-analysis of 1466 patients showed a recurrence rate after embolization of 8%, resulting in a second embolization intervention in 4% of the women [22].



► Fig. 3 Vascular spasms after application of 5 ml of a foaming sclerosing agent made with 2% polidocanol. Due to the quick reaction of the vascular wall to the sclerosing agent, the veins are occluded immediately after application. Short soft coils can be used at the distal end of the embolization area for flow reduction to reduce the risk of unintended embolization of fluids. Coils at the proximal end of the embolization area can reduce the probability of recurrence due to reflux into the mouth of the vein resulting in the formation of new collaterals.

Interventional treatment is the most promising, least invasive method with the least amount of complications that is currently available for treating PCS. However, even after this treatment, not all women are completely symptom-free. This must be discussed during the initial counseling of these women. There are various possible reasons for less successful treatments:

1. Not all pathologies causing the symptoms are identified during the diagnostic workup and during the intervention. However, PVE should treat the main findings thereby significantly reducing clinical symptoms. If the patient still does not see sufficient improvement six months after the intervention, the



► **Fig. 4** Occlusion of the mouth of the left ovarian vein with a tornado coil immediately proximal to the occlusion of a long stretch of the distal ovarian vein with alcohol foam (not able to be shown). Bifid ureter with contrast enhancement lateral thereto.

diagnostic workup should be repeated and a new treatment decision should be made based on the findings. This often relates to collaterals in the small pelvis.

2. In spite of sufficient treatment and initial elimination of symptoms, new symptoms develop after a longer period of time. The reason for this is usually venous insufficiencies that could not yet be detected in the initial diagnostic workup and only become obvious after treatment of the main finding or new varicosities that can develop with or without a new pregnancy. A classic example of this is the development of an insufficient right ovarian vein after successful PVE of the initially isolated insufficient left ovarian vein. Interventional therapy is also performed here after a new noninvasive diagnostic workup.
3. When performing extensive PVE – typically of the left ovarian vein – using a combination of coils and sclerosing agents, all paths to collateral systems, e.g., paralumbar or pelvic, should

be occluded. If this is not successful in the first intervention, similar symptoms to the ones that disappeared after the initial intervention can develop again based on newly developed ectatic venous collateral systems. In such cases, it can be substantially more difficult to reach the pathological veins with interventional methods. Therefore, the first intervention should not be too conservative in relation to collateral systems.

4. In the case of very long disease courses prior to diagnosis, patients have sometimes suffered from chronic (pelvic) pain for years. Pain perception can become independent and increasingly decoupled from the somatic origin of the pain. The nerve system can develop a pain memory and even the smallest triggers that are independent from the original cause can result in severe symptoms. The fear of the recurrence of pain can also trigger or intensify such processes. In such cases, only psychotherapy (possibly long-term) after interventional treatment of the cause of the pain can interrupt the dynamics of the pain cascade and reduce the patient's pain.

Due to the fact that patients with chronic pelvic pain and PCS have often been suffering from symptoms for a long time, it is recommended to inform the patient during initial counseling of the possibility that a further improvement of symptoms can be achieved with additional embolization. Prior to another intervention, the supportive benefit of psychotherapy must be considered and, if not yet already implemented, should be discussed on an interdisciplinary basis and recommended as applicable to women in such a situation.

## Outlook

No large randomized studies on the treatment of PCS or PVE are currently available. The increasing awareness of this group of diseases increases the possibility of such randomized prospective studies being conducted. Regardless of this, every individual intervention should be documented in the intervention database of the DeGIR for evaluation.

The available comprehensive scientific literature, “AWMF-Leitlinie zum chronischen Beckenschmerz der Frau und ie Erfahrungen deutscher DeGIR-Zentren” made it possible to create these guidelines. This was an important step toward improving interdisciplinary patient care and can now be used by patients and their general physicians as well as by other disciplines treating chronic pelvic pain in women. We hope for an improvement in the management of the disease, particularly earlier diagnosis during the course of symptoms and further standardization of the diagnostic workup and treatment.

Based on the present publication and a current survey among interventional radiologists, the DeGIR is currently working on creating a Germany-wide PCS registry database that takes the special challenges of pelvic vein diseases into consideration. It will record the details of the interdisciplinary diagnostic workup, preinterventional imaging, interventional therapy, and especially technical success rates and long-term prognosis. The goal is to expand the knowledge base regarding the disease to include known facts based on the experiences of many interdisciplinary treat-



ment centers. Thus, the results of the individual groups already performing interventions in this field can be validated based on external data. There are also efforts to establish such registries within Europe. We hope to achieve a significant improvement in the quality of life of our patients.

After PVE, in-depth communication of the results both with patients and referring physicians is important. The possible need for additional psychotherapeutic treatment must also be taken into consideration. In addition to the 6-week follow-up, we recommend further follow-up after 6 months and one year to ensure optimized care and better patient relationships. In general (and especially for those affected by chronic pelvic pain) interventional radiology should target greater visibility for referring physicians and patients with respect to preparation and follow-up of interventions. This is best achieved by creating interventional radiology outpatient facilities and increasing and improving “digital” awareness.

## Abbreviations

CT	Computed tomography
DeGIR	German Society for Interventional Radiology and Minimally Invasive Therapy
DSA	Digital subtraction angiography
EBIR	European Board for Interventional Radiology
CM	Contrast medium
MRI	Magnetic resonance imaging
NSAID	Non-steroidal anti-inflammatory drug
PCS	Pelvic congestion syndrome
PVD	Pelvic venous disorder
PVI	Pelvic venous insufficiency
PVE	Pelvic vein embolization

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## Conflict of Interest

The authors declare that they have no conflict of interest.

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