



Endovascular stent treatment of the iliac vein stenosis caused by a pelvic lymphocele secondary to gynecologic malignancy

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ABSTRACT

Over the past two years, 6 patients had iliac vein stenosis caused by radiation and pelvic lymphocele secondary to gynecologic malignancy. Patients had symptomatic lymphoceles induced lower limb edema. Poor treatment of symptomatic lymphoceles, compression symptoms persist, all patients were performed endovascular stent therapy, clinical symptoms of lower limb were completely relieved. Iliac vein stenosis caused by radiation and pelvic lymphocele secondary to gynecologic malignancy, endovascular stent placement is a nonsurgical alternative for the reestablishment of venous flow and sustained relief of symptoms.

1. Introduction

Gynecologic cancers record a high incidence globally; in particular, cervical and endometrial cancers rank third and fifth, respectively, worldwide.¹ With the increasing incidence of gynecologic malignancy, radical hysterectomy has become part of the adequate treatment in these patients. Retroperitoneal lymph node dissection is included in the treatment of oncogynecological operative procedures. A common complication of retroperitoneal lymph node dissection is the formation of lymphoceles. Most patients with a lymphocele are asymptomatic. When symptoms manifest, they are typically related to compression of the adjacent structures and may lead to lower abdominal pain, which may radiate to the leg and back, abdominal fullness, urinary urgency, constipation, and genital and lower limb edema. Symptomatic lymphoceles should usually be treated because they can reduce the quality of life of patients and may result in a delay in postoperative adjuvant therapy. The treatment of the iliac vein stenosis caused by a pelvic lymphocele secondary to gynecologic malignancy has rarely been reported in the literature.

2. Cases report

The study was approved by the ethics committee of Dazhou Central Hospital. All clinical practices and observations were conducted in accordance with the Declaration of Helsinki. Informed consent was obtained from each patient before the study was conducted. Written informed consent was obtained from patients for publication of these

case reports and any accompanying images. This was a retrospective analysis of data collected from patients presenting with cervical or endometrial cancer between January 2015 and July 2017 at the Dazhou Central Hospital. Patient inclusion criteria comprised the diagnosis of cervical or endometrial cancer and surgical treatment with radical hysterectomy with unilateral or bilateral anexectomy and pelvic/para-aortic lymphadenectomy, with or without neoadjuvant radiotherapy. Overall, six patients were identified during the selected time period. Five patients had cervical cancer, and one patient had endometrial cancer. Four patients underwent radical surgery, followed by radiation. Two patients underwent neoadjuvant radiotherapy, followed by radical surgery. All patients were diagnosed with a pelvic lymphocele using imaging studies. Patients had symptomatic lymphocele-induced lower limb edema. With the poor treatment of symptomatic lymphoceles, compression symptoms persisted, including deep vein thrombosis (DVT) in four patients and hydronephrosis in two patients. One patient underwent anticoagulation, and three patients underwent thrombolysis with popliteal vein catheterization under color ultrasound guidance. Venography revealed that the stenosis was in the external iliac vein and in the right iliac vein in five patients. All patients underwent gradual balloon dilation of the iliac vein stenosis and placement of a stent fully covering the stenosis. Post-dilation was performed in the stent until the residual stenosis disappeared (Fig. 1). In all patients, lumbosacral pain during balloon dilation and after stent implantation gradually alleviated and disappeared after endovascular therapy. The stent was placed in patients with the right iliac vein stenosis. One patient developed a vascular rupture after placement of the left iliac vein stent, which resolved after balloon

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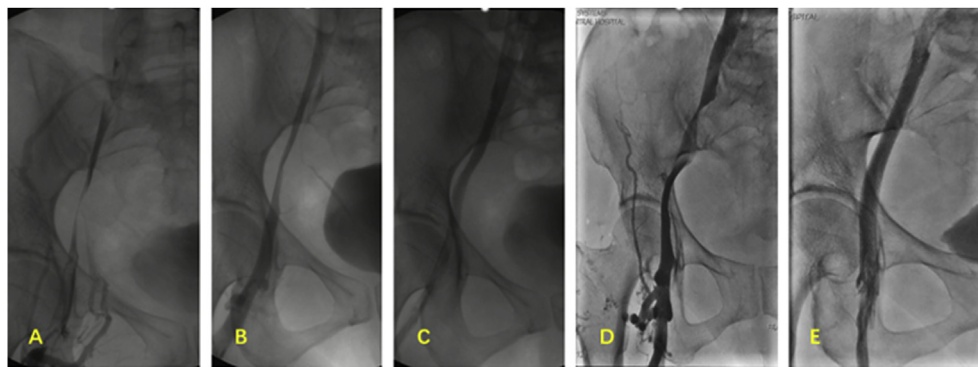


Fig. 1. Venography revealed severe stenosis of the right external iliac vein(D), and thrombosis was seen in the femoral vein cavity(A). The thrombus disappeared after thrombolytic therapy(B), and the iliac vein stenosis was relieved after stent placement (C,E).

insertion and placement of another stent. All but one were Wallstents. Clinical symptoms of the lower limb were completely relieved in all patients (Table 1). Postoperatively, patients took warfarin and maintained an international standardized ratio of 2–3. After 2 years of follow-up, color ultrasonography revealed patent blood flow in the stent.

3. Discussion

A lymphocele is defined as a lymph-filled collection in the retroperitoneum devoid of epithelial linings. The occurrence of lymphoceles after surgery for gynecologic malignancy seems multifactorial in etiology. Recently, a retrospective cohort study revealed that the low parity, adjuvant pelvic radiotherapy, and peritoneal non-closure without pelvic drainage were associated with increased lymphocele formation.² Adjuvant pelvic radiotherapy might be detrimental to the development of new lymphatic vessels, thus resulting in delayed absorption of the lymph and a greater incidence of lymphocele formation during the follow-up. The incidence of lymphocele after radical surgery for gynecological cancers varies across reports.^{3–6} This considerable variability might be due to the use of different methods for lymphocele detection and different definitions of symptomatic lymphoceles. If symptomatic, the lymphocele may result in significant postoperative morbidity and even delay further cancer treatment. A symptomatic lymphocele may compress the adjacent structures (ureters, urinary bladder, rectum, or large vessels) and consequently cause pain, hydronephrosis, urinary urgency, or

thrombosis, mostly from pressure on the adjacent structures or organs, which is related to the size and site of occurrence. The presence of a pelvic lymphocele is a significant risk factor for the development of postoperative hydronephrosis and pelvic abscess, but not for DVT, lymphedema, or bowel obstruction. Radiotherapy is a risk factor for postoperative complications both at individual and global levels.⁵

Ultrasound can confirm the diagnosis in most cases; unique ultrasound features of a lymphocele may help distinguish a pelvic lymphocele from a tumor relapse, hematoma, abscess, seroma, or urinoma. In addition, ultrasound can help distinguish features of symptomatic and asymptomatic lymphoceles,⁷ guide the percutaneous evacuation and drainage of pelvic lymphoceles, and assess hemodynamic changes resulting from external iliac vein compression caused by a lymphocele that has developed after pelvic lymphadenectomy. Blood stasis may develop and increase the risk of thrombosis when the iliac vessels are surrounded by a lymphocele greater than 75% of its circumference.⁸

Arterial stenosis is a well-known complication of radiation therapy; carotid, coronary, and iliac artery stenoses are known to occur around 10 years after radiation therapy of the head, neck, breast, and pelvis. The radiation-induced iliac vein stenosis is rare and can manifest as acute proximal DVT.⁹ Studies on the effects of radiation on vessel walls have been controversial. Variable results from multiple clinical and experimental trials suggest that the complex biologic interaction between radiation and the vascular wall has not been fully elucidated, and further exploration of the mechanism of the radiation-induced venous stenosis is

Table 1 Patient demographics and intervention data.

	Patient series					
	ZJ	XSL	HJX	ZHB	ZZX	LQL
Cancer	Endometrial cancer	Cervical Cancer	Cervical Cancer	Cervical Cancer	Cervical Cancer	Cervical Cancer
Therapy	Surgery Radition	Surgery Radition	Radition Surgery	Surgery Radition	Surgery Radition	Radition Surgery
Clinical presentation	limb edema limb pain hydronephrosis	limb edema limb pain	limb edema limb pain	limb edema limb pain	limb edema limb pain hydronephrosis	limb edema limb pain
With DVT	Yes	No	Yes	No	Yes	Yes
Stenosis position	right external iliac vein	right external iliac vein	right external iliac vein	right external iliac vein	left external iliac vein	right external iliac vein
Endovascular therapy	Thrombolysis stent	Stent	Thrombolysis stent	Stent	Thrombolysis stent	Thrombolysis stent
Balloon (max diameter)	8/40mm INVATEC	12/40mm INVATEC	12/40mm INVATEC	12/40mm INVATEC	14/90mm INVATEC	12/40mm INVATEC
Stent	Complete SE 10/80mm	Wallstent 14/90mm	Wallstent 14/90mm	Wallstent 14/90mm	Wallstent 14/90mm 14/60mm	Wallstent 14/90mm
Complication and treatment	pain	pain	pain	pain	Iliac vein rupture balloon insertion placement into another stent	pain
Residual stenosis	No	No	No	No	No	No
2 year-Follow up	US	US	US	US	US	US
Stent patency	Yes	Yes	Yes	Yes	Yes	Yes

warranted.¹⁰

Treatment options described for venous stenosis include nonoperative management, including compression hose, extremity elevation, and anticoagulation, and operative treatment, including tumor debulking, venous bypass, or angioplasty with or without stent placement.

Worldwide, venous stenting has proven to be a low-risk procedure with negligible morbidity and mortality.¹¹ Femoro-ilio-caval stenting has become the primary treatment for obstructive venous pathology. When patients with pelvic malignancies develop stenosis or occlusion of the veins resulting from their diseases and radiation therapy, salvage therapy can become difficult because of tumor progression and radiation fibrosis. Regardless of whether radiation-induced venous stenosis is located in the central vein or the iliac vein, the treatment modalities usually used are angioplasty and stenting.^{9,10,12,13} Although the articles are all case reports, for patients with malignancy, venous stenting is performed only when excision of the tumor/open reconstructive surgery is not possible and the goal of therapy is palliation.¹⁴

In this study, all patients underwent radical surgery and radiation therapy, and the iliac vein stenosis was located in the external iliac vein. We surmise that combined radiation to the pelvis and retroperitoneum and a lymphocele secondary to radical surgery in our patients led to a condition in which there was a fixed amount of space in the retroperitoneum with minimal flexibility of the adjacent structures. This led to compression of the iliac vein and leg swelling and pain. With the poor treatment of symptomatic lymphoceles, compression symptoms persisted, and patients underwent the endovascular stent treatment of the iliac vein stenosis and showed better clinical efficacy.

4. Conclusion

In cases of the iliac vein stenosis caused by a pelvic lymphocele secondary to gynecologic malignancy, the endovascular stent placement is a nonsurgical alternative for the reestablishment of venous flow and sustained relief of symptoms. Due to the small sample size and short-term follow-up, the intervention timing and long-term outcome require further studies.

Declaration of competing interest

None.

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