

1. Introduction

Venous outflow obstruction as a cause of chronic venous disease has been neglected for a long time. Partly because other factors like valve incompetence and reflux were the main focus of attention, partly because long-term outcome of revascularization was poor. Treatment options have long been limited to invasive surgical techniques like crossover femorofemoral bypass grafting with limited patency rates. Over the last 2 decades however, minimal invasive treatment options gained popularity, mainly through improvement in endovascular materials, i.e. innovative stent design. With increasing experience, recanalization and stenting of venous obstructions have evolved and the endovascular approach is now generally accepted as a superior treatment in most patients. Although patency rates after stenting of chronic venous obstruction are relatively high, early failure remains a serious problem. Mainly, this is a result of significant stent compression or kinking at the location of the treated lesions. Over the last years we have found several stents on the market to comprise unfavourable characteristics like limited radial force and/or flexibility. In the case of a common and external iliac vein obstruction both of these features are of the highest importance. The external compression of the common iliac artery must be overcome and the strong curvature at the level of the internal/external confluence asks for optimal flexibility. This report deals with the recanalization and stenting of a chronic postthrombotic iliac vein obstruction, using the new sinus-Venous stent.

2. Clinical problem

A 41 year old female was referred to our institution with chronic venous claudication, peripheral leg edema and ulcerations on the left leg. In 2007 she had a deep venous thrombosis which was treated with oral anticoagulation. Further evaluation in our center showed flow obstruction and common iliac vein compression on duplex examination and postthrombotic changes in the external iliac vein on MR venography. The patient was scheduled for recanalization and stenting of the common and external iliac vein.

3. Intervention

Due to the possibility of extreme pain sensation associated with venous recanalization and stenting all of our procedures are performed under general anesthesia.



Access to the vein was as always done through an antegrade puncture of the femoral vein under ultrasound guidance. Then the external and common iliac vein was passed with a curved 5F catheter and stiff hydrophilic guidewire. After predilation, stenting was performed with a 16x150mm sinus-Venous stent, extended down to the level of the saphenous vein inflow with a 14x100mm sinus-Venous stent.



The segmental design of the stent enables stable and accurate positioning during its release using the pull-back system. After post-dilation a rotational cone-beam CT showed optimal deployment and apposition of the two stents.

After intervention the patient was placed under vitamin K antagonist anticoagulation treatment for at least 6 months. 3 month follow-up showed healed ulcerations

on the left leg and significant improvement of complaints. The stented segments were patent without signs of luminal narrowing on duplex.

4. Summary and critical evaluation

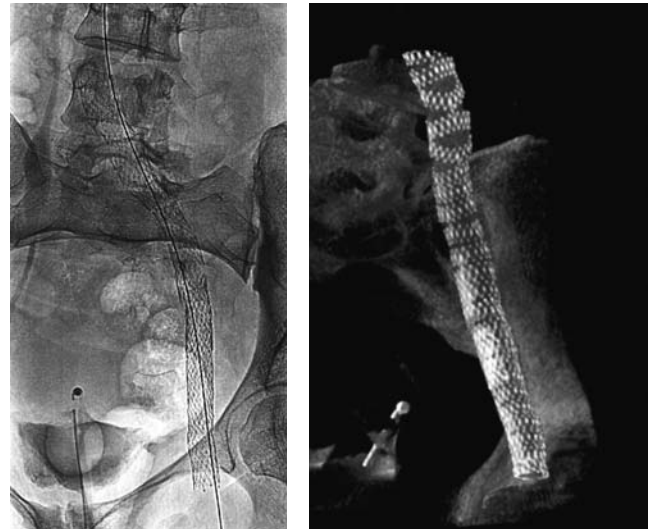
A female patient with chronic venous outflow obstruction was successfully treated by the implantation of two sinus-Venous stents. The sinus-Venous stent comes in diameters up to 18mm and lengths up to 15 cm. The pull-back release and segmental design accommodate precise positioning of the proximal stent at the iliac confluence and the distal stent at the level of saphenous vein inflow. Finally, the high radial force and optimal flexibility of the sinus-Venous stent resulted in outstanding dilatation and configuration of the stented segments.



Phlebology from the recanalized external iliac vein (A) shows extensive trabeculation in the common iliac vein, associated with a May-Thurner syndrome.



The collaterals coming from the common iliac vein were also visible on the pre-operative MR venography. Furthermore, postthrombotic strands causing significant obstruction of flow were seen in the external iliac vein (arrow).



Reconstruction of a post-operative cone-beam CT showing optimal flexibility of the sinus-Venous stent at the level of the internal/external confluence. Note the segmental design which enables this favorable configuration.

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