damage in comparison to sections treated with the forward-firing fiber. Both sample groups showed clear thermal damage at 40, 60, and 80 J/cm. Hematoxylin and eosin staining showed significant carbonized tissue (char) in veins treated with the forward-firing fiber, whereas no such char was observed in any samples treated with the radial fiber. The damage profile of the wall was confirmed with immunohistochemical staining with α-smooth muscle actin as a primary antibody.

Conclusions: There was clearly a significant difference on the vein wall at the tissue level between treatments with the forward-firing and radial fibers. The deeper penetration of thermal damage of the radial-firing laser fiber combined with the lack of char suggests that the forward-firing fiber may be wasting energy by overtreating the innermost layer of the vein wall. Hence, in this ex vivo model, using the same power, wavelength, and treatment time (and hence LEED), there is an apparent superiority in thermal damage and spread in veins treated with the radial fiber compared with the forward-firing fiber.

Peripheral Venous Pressure Before and After Iliac Vein Stenting

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Background: Venous hypertension is central to the pathogenesis of chronic venous disease. However, venous hypertension in the clinical setting has not been adequately documented. The purpose of this study was to monitor peripheral venous pressure in a chronic venous disease population undergoing iliac vein stenting before and after the procedure.

Methods: Supine foot venous pressure was measured before and after the procedure in 206 limbs of 199 patients. Data were compared using paired two-tailed *t*-tests and correlation coefficient (Pearson *r*).

Results: Demographic characteristics included a male to female ratio of 1:2, a left to right ratio of 1:1, and a nonthrombotic to post-thrombotic ratio of 1:2. The clinical, etiologic, anatomic, and pathophysiologic (CEAP) classification was as follows: C0 to C2, n = 4; C3, n = 102; C4, n = 61; C5, n = 13; and C6, n = 26. The median intravascular ultrasound area stenosis was 62% with a range of 4% to 100%. The median prestent supine venous pressure was 14 mm Hg (range, 6-24 mm Hg); 159 (77%) limbs had a venous pressure greater than the normal value of 12 mm Hg. The venous pressure was not significantly different between CEAP classes. The venous pressure did not correlate with intravascular ultrasound area stenosis ($r = 0.07$).

After venous stenting, peripheral venous pressure declined significantly ($P = .0004$) to a median pressure of 13 mm Hg (1-21 mm Hg). In 63 (31%) limbs, pressure became "normal" (<12 mm Hg) after iliac stenting; 114 (55%) limbs showed improved venous pressure, 74 (36%) became worse, and 18 (9%) did not change. The stent status in 92 limbs that failed to improve venous pressure was examined by duplex ultrasound; 48% of these limbs had stent compression/in-stent restenosis with compromise of >50% of the stent lumen. The remainder demonstrated varying levels of lesser stent lumen compromise.

Conclusions: Peripheral venous pressure is significantly elevated in iliac vein stenosis. After stenting, the pressure improves or normalizes in 55% of limbs. This parameter provides an avenue for preoperative assessment and postoperative surveillance in stented limbs.

Patency Rates After Stenting Across the Inguinal Ligament for Treatment of Post-Thrombotic Syndrome Using Nitinol Venous Stents

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Background: Endovenous stents can be used for deep venous reconstruction to treat patients with post-thrombotic syndrome. Guidelines on iliocaval stenting suggest that stenting across the inguinal ligament should be avoided. However, stenting from a normal peripheral inflow segment is more important; therefore, stenting across the ligament may be necessary. There are limited data on the outcomes of nitinol venous stents placed across the inguinal ligament for patients with occlusive post-thrombotic disease, but it is thought that this procedure is associated with early stent thrombosis because of the extensive nature of the disease. The aim of this study was to examine patency rates in patients having deep venous reconstruction using nitinol venous stents that were placed across the inguinal ligament.

Table. Patency rates after nitinol venous stenting above and below the inguinal ligament

	Primary patency	Primary assisted patency	Secondary patency
Above the ligament (n = 23), %	72	100	100
Across the ligament (n = 71), %	52	80	82

Methods: Consecutive patients in whom a venous stent was inserted for symptomatic post-thrombotic disease between 2012 and 2015 were included for analysis. All patients had a minimum of 1-year follow-up, with preoperative Villalta scores taken before intervention and at 1 year. Patients were therapeutically anticoagulated after surgery, and patency was assessed perioperatively using intravascular ultrasound and postoperatively using duplex ultrasound. Computed tomography and venography were also used in selected cases. Primary patency was defined as a patent stent with <50% diameter reduction; primary assisted patency included those requiring reintervention to maintain patency; and secondary patency was defined as stents that were blocked and successfully reopened.

Results: Of 168 patients treated in our venous program during the study period, 102 (61%) were treated for post-thrombotic obstruction. From this group, 94 of 102 (92%) patients had a nitinol venous stent, of which 71 (76%) crossed the inguinal ligament. In six patients, an endophlebectomy with fistula was also created to ensure adequate inflow. The respective patency rates are shown in the Table. Primary, primary assisted, and secondary patency rates were significantly better in stents placed above the inguinal ligament ($P < .05$). There was a significant improvement in Villalta scores of patients with patent stents in those placed above the inguinal ligament (median improvement of 9 points; range, 0-18) and those with stents placed across it (median improvement of 11 points; range, 0-25).

Conclusions: Patients with post-thrombotic syndrome frequently have lesions that involve the common femoral vein and often require stenting across the inguinal ligament. Maintaining stent patency when the stents cross the ligament can be challenging, and close surveillance is required as reintervention may be required. However, nitinol venous stent patency is good at 1 year in both groups, and significant clinical improvement can be achieved.

Impact of Degree of Stenosis in May-Thurner Syndrome on Iliac Vein Stent Outcomes

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Background: Symptomatic May-Thurner syndrome (MTS) patients undergo stenting of the iliac vein for compressive pathologic changes. The impact of the degree of stenosis on clinical presentation and outcomes after stenting is unknown and examined in our study.

Methods: Retrospective review of 202 patients who underwent stenting for MTS between 1999 and 2011 was performed. Classification into three groups based on luminal area obtained by intraoperative intravascular ultrasound interrogation of the involved femoroiliocaval segment

Table I. Patency after stenting for May-Thurner syndrome (MTS) based on degree of initial stenosis

Variable	<60% stenosis	60%-89% stenosis	≥90% stenosis
Primary patency, months	88 ± 17.0	93 ± 13.0	96 ± 21.0
Primary assisted patency, months	35 ± 7.4	38 ± 6.5	47 ± 5.7
Secondary patency, months	8 ± 2.6	20 ± 9.0	38 ± 5.0

Data are presented as mean values ± standard error.