Routine Stenting Should not be Performed When Treating Iliac Vein Compression

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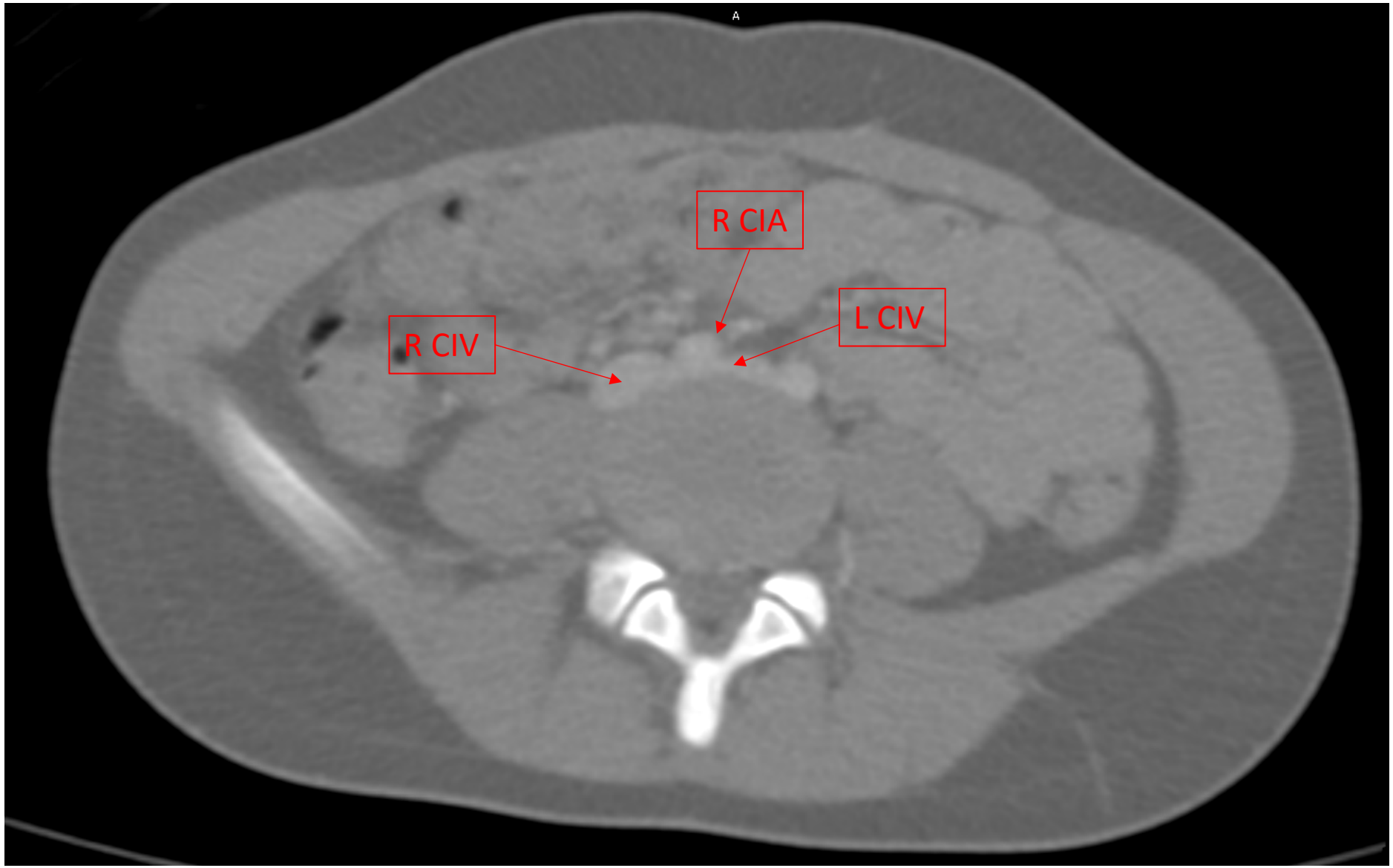

Non-thrombotic Iliac Vein Lesion (NIVL)

How should we treat NIVL?

- Key maneuver: decide if you actually need to treat it

Iliac Vein Compression is common in asymptomatic population.

From the Midwestern Vascular Surgical Society

Iliac vein compression in an asymptomatic patient population

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Objective: May-Thurner syndrome is a well-recognized anatomic variant that is associated with the development of symptomatic acute venous thrombosis of the left iliac vein. However, the natural frequency of compression of the left iliac vein and its clinical significance in asymptomatic disease has not been established. Therefore the purpose of this descriptive anatomic study was to determine the incidence of left common iliac vein compression in an asymptomatic population.

Methods: A retrospective analysis of medical records and helical abdominal computed tomography scans was conducted in 50 consecutive patients evaluated in the emergency department because of abdominal pain. Medical records were reviewed for symptoms and risk factors for deep venous thrombosis, and data were collected and reported according to the Joint Society Reporting Standards for acute lower extremity venous thrombosis. All computed tomography was performed with intravenous contrast medium, and 2-mm to 5-mm axial images were obtained. The minor diameter of the common iliac arteries and veins was measured. The technique of transverse image measurement was validated with multiplanar reconstructions and orthogonal diameter measurements in a subset of subjects. Statistical analysis was performed with the Student *t* test or Spearman rank correlation.

Results: Mean age of subjects without symptoms was 40 years (range, 19-85 years), and 60% (n = 30) were female patients. The mean acute lower extremity venous thrombosis risk factor score was 1.16 ± 0.23 (range, 0-6; maximum possible score, 28). It was surprising that 24% (n = 12) of patients had greater than 50% compression and 66% (n = 33) had greater than 25% compression. Mean compression of the left common iliac vein was 35.5% (range, −5.6%-74.8%). The structure most often compressing the left common iliac vein against the vertebral body was the right common iliac artery (84%). There was no strong correlation between patient age or common iliac artery size and compression of the left common iliac vein. However, women had greater mean compression of the left common iliac vein (women, 41.2% ± 3.1%; men, 27.0% ± 3.0%; $P = .003$).

Conclusion: Hemodynamically significant left common iliac vein compression is a frequent anatomic variant in asymptomatic individuals. Therefore compression of the left iliac vein may represent a normal anatomic pattern that has thus far been thought of as a pathologic condition. (J Vasc Surg 2004;39:937-43.)

Prevalence and predictors of radiological left common iliac vein compression in asymptomatic patients

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ABSTRACT

Objective: The aim of this study was to investigate the prevalence of radiological left common iliac vein (LCIV) compression among the asymptomatic population and identify possible predictors.

Methods: Contrast-enhanced abdominal and/or pelvic computed tomography scans of eligible asymptomatic patients were examined. The LCIV diameter was measured from different horizontal planes in the venous phase using PACSView. Degree of LCIV compression (D_c) was calculated by a predefined formula and graded as insignificant ($D_c < 25\%$), mild ($\geq 25\%$ $D_c < 50\%$), moderate ($\geq 50\%$ $D_c < 75\%$), and severe ($D_c \geq 75\%$). Venous stenosis was defined as a D_c of $\geq 50\%$. Comparison of variables, including gender, age, body mass index (BMI), and comorbidities was performed between the different grades of LCIV compression.

Results: Between November 2019 and July 2022, 1698 eligible asymptomatic patients (53.1% females; mean age, 39.3 ± 11.8 years; mean BMI, 22.9 ± 3.6 kg/m^2) were reviewed. The mean D_c was 46.2% (range, 0.29%-90.4%). Insignificant, mild, moderate, and severe compression were distributed in 14.5%, 38.0%, 42.2%, and 5.2% of the cohort population, respectively. Prevalence of venous stenosis was higher in females than males (58.1% vs 42.2%; $\chi^2 = 15.52$; $P < .001$). Females aged ≥25 and <35 years accounted for the highest proportion of venous stenosis than other age groups and was a significant predictor (odds ratio [OR], 3.18; 95% confidence interval [CI], 1.74-7.79; $P < .001$). In the Asian BMI classification group, being underweight is associated with venous stenosis (OR, 4.69; 95% CI, 2.70-8.14; $P < .001$) and obesity may be a protective factor (OR, 0.38; 95% CI, 0.23-0.64; $P < .001$). There is an inverse relationship between D_c and age and BMI.

Conclusions: The prevalence of radiological LCIV compression on computed tomography scans was high, but all patients were asymptomatic. Female gender, especially those aged ≥25 and <35 years, and underweight were possible predictors for venous stenosis. (J Vasc Surg Venous Lymphat Disord 2024;12:101661.)

Keywords: Left common iliac vein compression; Venous thromboembolism; Chronic venous insufficiency; May-Thurner syndrome; Radiology

May-Thurner and Cockett’s Syndrome

- May Thurner – Extrinsic Compression
- Cockett Syndrome – Internal Fibrotic Spur

The danger of injudicious stenting

- While venous stenting appears safe – long term outcomes are still relatively unknown, and the risks of treating asymptomatic or minimally symptomatic lesions are real
  - In Stent Stenosis
  - Stent Thrombosis
  - Stent Migration
  - Life Long Anticoagulation


REF

Circulation: Cardiovascular Interventions

SPECIAL REPORT

Consensus Statement on the Management of Nonthrombotic Iliac Vein Lesions From the VIVA Foundation, the American Venous Forum, and the American Vein and Lymphatic Society

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ABSTRACT: A nonthrombotic iliac vein lesion is defined as the extrinsic compression of the iliac vein. Symptoms of lower extremity chronic venous insufficiency or pelvic venous disease can develop secondary to nonthrombotic iliac vein lesion. Anatomic compression has been observed in both symptomatic and asymptomatic patients. Causative factors that lead to symptomatic manifestations remain unclear. To provide guidance for providers treating patients with nonthrombotic iliac vein lesion, the VIVA Foundation convened a multidisciplinary group of leaders in venous disease management with representatives from the American Venous Forum and the American Vein and Lymphatic Society. Consensus statements regarding nonthrombotic iliac vein lesions were drafted by the participants to address patient selection, imaging for diagnosis, technical considerations for stent placement, postprocedure management, and future research/educational needs.

Key Words: disease management ■ iliac vein ■ lower extremity ■ stents ■ venous insufficiency

2024

Consensus recommendations:

- Stent placement for NIVL may be appropriate in the presence of asymmetrical edema significantly affecting QOL, after excluding other systemic causes of edema and primary lymphedema.
- Stent placement for NIVL may be appropriate in the presence of progressive Clinical-EtiologyAnatomy-Pathophysiology class 4 to 6 venous disease or venous claudication with minimal superficial venous disease or following previous treatment of underlying superficial venous reflux.
- Stent placement for NIVL is inappropriate in patients with minimal to no symptoms.
- Prophylactic stent placement for NIVL is inappropriate in asymptomatic patients to prevent possible future venous thromboembolism events.
- Stent placement for NIVL may have a role in some cases with QOL-impacting chronic pelvic pain (CPP) of venous origin in the presence of dilated parauterine veins with or without pelvic venous reflux.

CEAP Classification System and Reporting Standard Revision 2020

C (Clinical Manifestations), **E** (Etiology), **A** (Anatomic Distribution), **P** (Pathophysiology)

C0	No visible or palpable signs of venous disease
C1	Telangiectasias or reticular veins
C2	Varicose veins
C2r	Recurrent varicose veins
C3	Edema
C4	Changes in skin and subcutaneous tissue secondary to chronic venous disease
C4a	Pigmentation or eczema
C4b	Lipodermatosclerosis or atrophie blanche
C4c	Corona phlebectatica
C5	Healed
C6	Active venous ulcer
C6r	Recurrent active venous ulcer

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Lurie et al. *J Vasc Surg Venous Lymphat Disord, May 2020*

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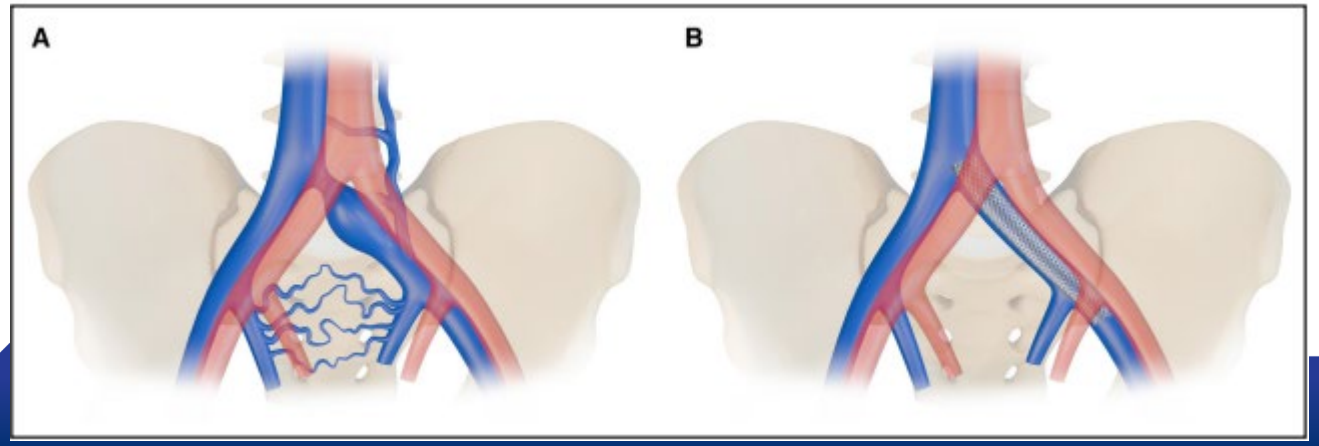

Uncertain Threshold – Permanent Implant

From the American Venous Forum

Utility of the 50% stenosis criterion for patients undergoing stenting for chronic iliofemoral venous obstruction

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ABSTRACT

Objective: The criterion for venous stenting in symptomatic chronic iliofemoral venous obstruction has been the arbitrary use of stenosis of ≥50%. In the present study, we evaluated the intravascular ultrasound (IVUS)-determined degree of stenosis in patients who had undergone stenting for quality of life (QOL)-impairing symptoms and assessed the utility of the 50% stenosis cutoff.

Methods: A retrospective review of contemporaneously entered electronic medical record data from 480 continuous patients (480 limbs) with initial iliofemoral stents placed (2014 to 2017) for symptomatic chronic iliofemoral venous obstruction impairing their QOL was performed. The IVUS-determined normal minimal luminal areas for the common femoral vein (125 mm), external iliac vein (150 mm), and common iliac vein (200 mm) were used to group limbs as having <50% (low-grade stenosis [LGS]) or ≥50% (high-grade stenosis [HGS]) stenosis. The variables compared included the visual analog scale (VAS) for pain score, venous clinical severity score (VCSS; range, 0-27), ulcer healing, supine foot venous pressures, QOL (20-item chronic venous disease QOL questionnaire), and stent patency. A composite chronic venous insufficiency score (CCVIS) incorporating the VAS score, VCSS, and CIVIQ-20 score for predicting improvement after stenting was evaluated.

Results: Of the 480 limbs, 283 and 197 were in the LGS and HGS groups, respectively. A preponderance of women, left laterality, and post-thrombotic syndrome were noted in both groups. At baseline, although no difference was found in the VAS for pain score between groups, the LGS group had a higher VCSS than did the HGS group ($P = .05$). The baseline median supine foot venous pressure was 15 and 14 mm Hg in the LGS and HGS groups, respectively ($P = .17$). At 24 months after stenting, the mean VCSS had improved from 6.3 to 4.4 ($P < .0001$) and from 5.7 to 3.7 ($P < .0001$) in the LGS and HGS groups, respectively, without significant differences between the two groups ($P = .07$). A greater prevalence of ulcers was found in the LGS group (18% vs 11%; $P = .04$), with no differences in healing ($P = .41$) or recurrence rates ($P = .36$). The QOL scores had improved in both groups (LGS, from 58 to 37 [$P < .0001$]; HGS, from 61 to 35 [$P < .0001$]), without differences between the two groups ($P > .3$). No significant differences in stent patency or reinterventions rates were found. A baseline CCVIS of ≥84.5, ≥86.9, or ≥105.3 was needed for a 30-, 40-, and 50-point improvement in most limbs after stenting.

Conclusions: The degree of IVUS-determined iliofemoral venous stenosis did not appear to affect the initial clinical presentation, CEAP (clinical, etiologic, anatomic, pathophysiologic) clinical class, supine foot venous pressure, clinical improvement, QOL improvement, stent patency, or reintervention rates after stenting. Patients presenting with QOL-impairing symptoms in whom conservative treatment has failed merit consideration of correction of their obstruction even if the degree of stenosis is <50%. The use of a CCVIS might be helpful but requires further study. (J Vasc Surg Venous Lymphat Disord 2021;9:1408-15.)

Keywords: Chronic iliofemoral venous obstruction; Iliac vein stenosis; May Thurner syndrome; Non thrombotic iliac vein lesion; Post thrombotic syndrome; Venous stenting

In patients who qualify for intervention, balloon venoplasty alone is likely insufficient for correction of the anatomic abnormality and remediation of symptoms.

The Effect of Balloon Angioplasty Without Stenting for Iliac Vein Stenosis

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Objectives: Iliac vein stenting of NIVL (nonthrombotic iliac vein lesions) is an evolving treatment option for venous insufficiency. We examined our experience with these lesions with balloon angioplasty before stenting.

From the Society for Clinical Vascular Surgery

Efficacy of balloon venoplasty alone in the correction of nonthrombotic iliac vein lesions

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ABSTRACT

Objective: Iliac vein stenting of nonthrombotic iliac vein lesions is an evolving treatment course for management of chronic venous insufficiency. To characterize these lesions, we examined our experience treating these lesions with balloon venoplasty before stenting.

Methods: A retrospective analysis was performed to study all patients who underwent venograms with venoplasty and stenting of iliac veins from February 2013 to July 2016. All patients included in the study were treated with a trial conservative management for 3 consecutive months before venogram and, if indicated, venoplasty was performed. If a greater than 50% reduction in cross-sectional area or diameter was observed on intravascular ultrasound examination, the stenotic area was treated with balloon angioplasty, sized to nonstenotic distal vein segment (range, 10 × 40 mm to 16 × 60 mm). Intravascular ultrasound examination was also used to measure the area of stenotic iliofemoral veins before and after balloon angioplasty.

Results: A total of 1021 venograms with venoplasty and stenting of iliac veins were performed in 713 patients from February 2013 to July 2016. The mean age of the study population age was 64.88 years (range, 21-99 years; standard deviation [SD], 14.57), with 451 female and 262 male patients. Before angioplasty, the mean cross-sectional stenotic area was 67.97 mm^2 (range, 6-318 mm^2; SD, 34.87). After balloon angioplasty, the mean stenotic area increased to 78.80 (range, 6-334 mm^2; SD, 44.50; $P < .001$). The targeted stenotic areas were categorized into three categories: group A, increased (>10% of baseline before venoplasty); group B, decreased (<10% of baseline), and group C, no area change (±10% of baseline). In 500 limbs (48.9%), the stenotic areas improved after venoplasty (average 36.99%), with a prevenoplasty average area of 60.81 mm^2 (SD, 32.80 mm^2) and a postvenoplasty average of 96.52 mm^2 (SD, 49.85 mm^2). In 294 limbs (28.8%), the area decreased (average 28.90%), with a prevenoplasty average area of 76.43 mm^2 (SD, 38.80 mm^2) and a postvenoplasty average of 53.22 mm^2 (SD, 26.61 mm^2). There were 227 patients (22.2%) who had the same area before and after venoplasty. Left-sided lesions had a greater increase in area than right-sided lesions (51.3% vs 46.2%, respectively; $P = .048$). No significant correlation of stenotic area response with age, presenting symptoms of Clinical, Etiology, Anatomy, and Pathophysiology (C2-C6), gender, or location of targeted lesion was observed.

Conclusions: Our data show there is a highly variable response after venoplasty of stenotic area of nonthrombotic iliac vein lesions. Balloon venoplasty showed greater improvement in improving the area of stenotic left-sided lesions. However, stenting of the lesions should be performed routinely owing to recoil and spasm in lesions. (J Vasc Surg: Venous and Lym Dis 2019;7:665-9.)

Keywords: Iliac vein stenosis; Iliac vein stenting; Balloon angioplasty; May Thurner syndrome; Venoplasty