Effect of Venogram Puncture Site on Post-Intervention Thrombosis After Iliac Vein Stenting

Objective
Prior literature suggests that routine femoral vein puncture is necessary for interrogation of the iliac veins for stenosis to avoid missing common femoral vein (CFV) lesions. However, this can be technically challenging and poses small but increased risks. The purpose of this study is to compare the safety of two venous puncture sites in ambulatory, office-based iliac venograms.

Methods
Over 4 years, we performed 1605 lower extremity venograms with intravascular ultrasound (IVUS) in the outpatient setting. There were 1048 females and 554 males with an average age of 66 years old (range 21-99; SD +/- 14.3). 1548 patients received venous stenting during the procedure: 962 patients received stent placement in the common iliac vein, 513 in the external iliac vein, 24 in the common femoral vein, and 12 in the superficial femoral vein. The venous puncture site, identified via ultrasound-guidance, varied between the CFV and superficial femoral vein (SFV) as per surgeons’ choice, which was documented based on the most distal IVUS measurement. Patients were followed with iliocaval and lower extremity duplex within 2 weeks, and every 3 months thereafter for the first year.

Results
995 patients received common femoral vein (CFV) puncture and 611 patients received superficial femoral vein (SFV) puncture. 39 (3.9%) patients receiving CFV punctures developed any stent thrombosis within 30 days of the intervention, in which 27 (69.2%) were complete thromboses. 21 (3.4%) patients who received SFV punctures developed any stent thrombosis within 30 days of intervention, 17 (81.0%) of which were complete thromboses.

There was no significant difference ($\chi^2 = 0.2452; P$-value = 0.620507) in frequency of 30-day thrombosis following venograms involving puncture of the SFV or CFV. 18 patients developed in-stent thrombosis >30 days after intervention; 11 in limbs that received CFV puncture, and 7 with SFV puncture. Complete stent occlusion occurred in 3 cases of CFV puncture. No SFV punctures led to >30-day complete stent thromboses. The median time-to-diagnosis of >30-day thrombosis was 11.1 months (range 2.6-31.9; SD +/- 12.86). Median follow-up was 20 months (SD +/- 19.18).

Conclusion
There was no significant difference between in-stent thrombosis rate and location of initial venous puncture in the setting of outpatient IVUS-guided venograms. Both the CFV and SFV can be safely utilized as puncture sites for lower extremity venography.