

Combined Transradial and Transpedal Approach for Femoral Artery Interventions



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ABSTRACT

OBJECTIVES The purpose of this prospective study was to evaluate the acute success and complication rates of combined transradial and transpedal access for femoral artery intervention.

BACKGROUND Improved equipment and techniques have resulted in transition from transfemoral to transradial access for intervention of superficial femoral artery.

METHODS Between 2014 and 2016, clinical and angiographic data from 145 consecutive patients with symptomatic superficial femoral stenosis, treated via primary radial access using the 6-F SheathLess Eaucath PV guiding catheter were evaluated in a pilot study. Secondary access was achieved through the pedal or popliteal artery. The primary endpoints were major adverse events, target lesion revascularization, and rates of major and minor access-site complications. Secondary endpoints included angiographic outcome, procedural factors, crossover rate to femoral access site, and duration of hospitalization.

RESULTS Technical success was achieved in 138 patients (95.2%). Combined radial and pedal access was obtained in 22 patients (15.1%). The crossover rate to a femoral access site was 2%. Stent implantation was necessary in 23.4% of patients. Chronic total occlusion recanalization was performed in 63 patients, with a 90.4% technical success rate. The mean contrast consumption, radiation dose, and procedure time were 112.9 ml (101.8 to 123.9 ml), 21.84 Gy/cm² (9.95 to 33.72 Gy/cm²), and 34.9 min (31.02 to 38.77 min), respectively. The cumulative rate of access-site complications was 4.8% (0% major, 4.8% minor). The cumulative incidence rates of major adverse events at 3 and 12 months follow-up was 8.3% and 19.2%. The cumulative incidence rates of death at 3- and 12-month follow-up were 2.8% and 5.6%.

CONCLUSIONS Femoral artery intervention can be safely and effectively performed using radial and pedal access with acceptable morbidity and a high technical success rate. (J Am Coll Cardiol Intv 2018;11:1062-71)
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The radial artery (RA) is the preferred access site for percutaneous coronary interventions. It is also gaining popularity for peripheral interventions (1-3) because of patient comfort and the higher risk for vascular complications when using femoral and brachial artery access (4,5). For percutaneous superficial femoral artery (SFA) intervention, the common anatomic limitations of the arteries in the upper extremity are the narrower access lumen and the distance between the puncture site and target lesion, while the main advantage

is that atherosclerotic involvement is rare. The SheathLess Eaucath PV (Asahi Intecc, Tokyo, Japan) is a new hydrophilic sheathless guide (SG) catheter system available in 6-F size and 120-cm length, which does not require the use of an introducer sheath. The internal luminal size of the system is similar to or even larger than ordinary catheters, despite its smaller external diameter, which makes it more effective for SFA intervention without increasing the risk for RA complications (3,6,7). Another alternative to femoral access is the transpedal (TP) approach, but

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Manuscript received December 11, 2017; revised manuscript received February 26, 2018, accepted March 20, 2018.

this access site has many limitations in everyday clinical practice and is therefore used mostly when the antegrade SFA intervention has failed (6-8). The purpose of our prospective pilot study was to evaluate the acute success and complication rates of transradial (TR) and transulnar access in combination with TP access for femoral artery percutaneous transluminal angioplasty (PTA), using SG catheters.

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METHODS

Clinical and angiographic data from 145 consecutive patients with symptomatic SFA stenosis were evaluated in a prospective pilot study. Between 2014 and 2016, the patients were treated using RA and ulnar artery (UA) access and 6-F peripheral SG catheters. We analyzed the impact of right- and left-hand access selection. The impact of the learning curve was analyzed after 50 TR cases. Our institutional review committee approved the study, and all patients provided written informed consent prior to study inclusion.

INCLUSION CRITERIA. We included patients with significant SFA stenosis and intermittent claudication (Fontaine IIa, IIb, III, or IV) or critical limb ischemia (CLI) (crural ulcer, pedal gangrene, ischemic rest pain) with proven limb viability.

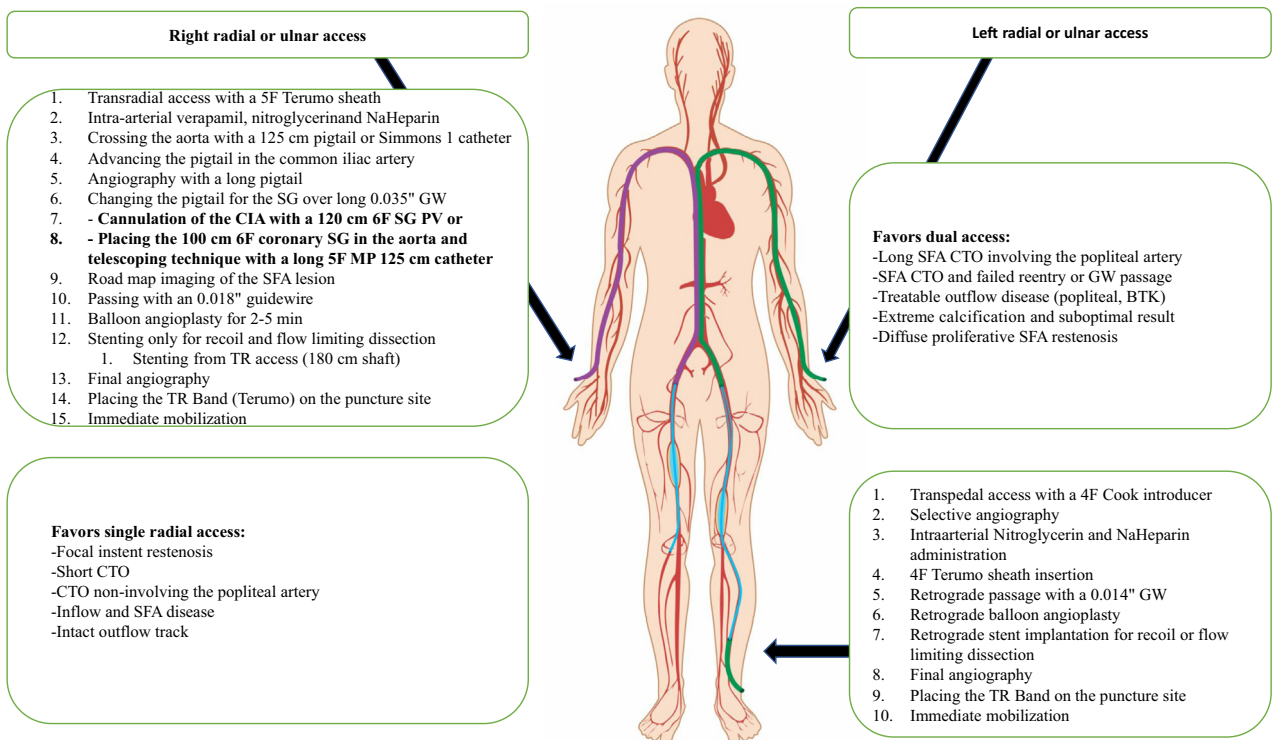
EXCLUSION CRITERIA. Patients with negative results on Allen tests or nonpalpable RA or UA were not included. The left-hand approach was used when the right RA was occluded but the left RA was patent. We also excluded patients in whom the 125-cm diagnostic catheter did not reach the common iliac artery from the right radial access site.

DUPLEX ULTRASOUND PROTOCOL. Routine duplex ultrasound was used for RA access when the RA was weak by palpation or when distal TP access has been used. In these patients, the RA and UA diameters were measured at the wrist level. On the first post-operative day, the patency of the RA was evaluated when the RA was not palpable. The TP access site was investigated in all cases by vascular ultrasound.

ABBREVIATIONS AND ACRONYMS

- CLI** = critical limb ischemia
- GW** = guidewire
- MAE** = major adverse event(s)
- PTA** = percutaneous transluminal angioplasty
- RA** = radial artery
- SFA** = superficial femoral artery
- SG** = sheathless guide
- TP** = transpedal
- TR** = transradial
- UA** = ulnar artery

FIGURE 1 Description of the Transradial Percutaneous Transluminal Angioplasty Technique and Indications for Transpedal Access



BTK = below-the knee; CIA = common iliac artery; CTO = chronic total occlusion; GW = guidewire; MP = multipurpose; PV = peripheral vascular; SFA = superficial femoral artery; SG = sheathless guide; TR = transradial.

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