Abstract:
AIM: Recent registries and randomized trials support the role of percutaneous revascularization in patients with critical limb ischemia (CLI) due to below-the-knee (BTK) atherosclerotic disease, as percutaneous transluminal angioplasty (PTA) for BTK disease has shown to be feasible and safe in this setting. Nonetheless, success rates remain suboptimal with current techniques. The authors aimed to appraise clinical results following PTA of foot vessels exploiting a novel technique, based on the recanalization of both pedal and plantar arteries and their anatomical anastomosis in order to restore direct arterial in-flow from both anterior and posterior tibial vessels, defined as the pedal-plantar loop technique.

METHODS: Baseline, procedural and mid-term outcome data of all consecutive patients with CLI due to BTK disease in which PTA was attempted using the pedal-plantar loop technique were prospectively collected between January 2007 and September 2008. The primary end-point was acute success (i.e. the composite of technical, angiographic and procedural success). Secondary end-points included limb salvage rate, major (above the ankle) and minor (below the ankle) amputation, change in Rutherford class and transcutaneous oxygen tension, reocclusion/restenosis, rehospitalization, and repeat revascularization after 12 months.

RESULTS: A total of 1331 consecutive
patients with CLI were treated using BTK PTA and 135 (10.1%) were approached with the pedal-plantar loop technique in order to recanalize the foot arteries. Target lesions were mostly occlusive and diffusely diseased, involving in most cases the tibial arteries as well as the in-flow and out-flow vessels. Acute success was achieved for tibial PTA in 100% of the cases, with ability to position and inflate the balloon and achieve adequate angiographic results without peri-procedural complications in all, whereas acute success for the pedal-plantar loop technique was 85%. Clinical improvement in functional status was obtained and maintained after an average of 12 months, with a significant improvement of transcutaneous oxygen tension after 15 days, 59+/-16 mmHg in the group of patients in which the foot arteries revascularization was successfully feasible, versus 42+/-12 mmHg in patients achieving patency of two BTK vessels at the ankle level with partial out-flow in the foot (P<0.001). CONCLUSIONS: Percutaneous revascularization of foot arteries in patients with CLI is feasible and safe, and appears to provide positive clinical results at both acute and mid-term follow-up.