

Transluminal Angioplasty of Peroneal Artery Branches in Diabetics: Initial Technical Experience

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Abstract The present study aimed to report the technical feasibility of percutaneous transluminal angioplasty (PTA) of obstructed or insufficient collateral branches (anterior and posterior perforating branches) from distal peroneal to foot arteries in diabetic patients with chronic critical limb ischemia (CLI) and chronic noncrossable occlusion of the anterior and posterior tibial arteries. Twenty-four diabetic CLI patients (age, 67 ± 8 years; 87% males) undergoing collateral PTA were included. Baseline clinical angiographic and follow-up data were retrospectively reviewed. Collateral PTA was associated with a concomitant PTA of other sites in 21 (83%) cases. In 15 cases the treated collateral linked the peroneal with the plantaris communis; in 9 cases, the peroneal with the dorsalis pedis. Angiographic results of collateral PTA were good in 13 cases (30% residual stenosis), whereas the result was considered moderate (30%–49% residual stenosis) in the remaining cases. Neither perforation nor acute occlusion of the treated collaterals or other relevant complications were observed. Mean follow-up was 32 ± 17 months. Major amputation was necessary for two (8.3%) patients. Cumulative limb salvage rates at 2 and 4 years were 96% and 87%, respectively. In conclusion, this initial experience shows

that PTA of the collateral branches from distal peroneal to foot arteries is a feasible technique. Future studies are required to define the clinical role of this novel approach.

Keywords Percutaneous transluminal angioplasty · Critical limb ischemia · Diabetes mellitus · Diabetic foot · Collateral circulation

Introduction

Percutaneous transluminal angioplasty (PTA) has emerged as a valid alternative to bypass surgery for the treatment of critical limb ischemia (CLI) [1, 2]. This is particularly true in CLI patients with diabetes mellitus [3, 4], as well as in those in chronic dialysis [5], in whom PTA has proven to be safe and effective in avoiding major amputation. Nevertheless, it must be considered that PTA may be technically challenging in diabetic subjects with CLI, as they mostly have infrapopliteal disease, usually characterized by long chronic occlusions of anterior and posterior tibial arteries [6].

The importance of providing direct straight-line flow to the foot for thus obtaining limb salvage in diabetic patients with CLI has already been emphasized by vascular surgeons who reported better results with distal bypass compared to femoropopliteal graft or profundoplasty [7]. However, improvement of collateral circulation by surgical or endovascular procedures has also been reported. In the case of noncrossable superficial femoral artery (SFA) occlusion, an alternative to increasing the blood supply to the foot is to improve the collateral circulation by the treatment of ostial stenosis of the profunda femoris. However, the clinical efficacy of this procedure in diabetic patients with CLI is doubtful [8, 9], probably due to the

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