Radiofrequency wire for the recanalization of chronic arterial occlusions that have failed conventional endovascular techniques

B. Henderson, M. Guimaraes, L.R. Wilkins, R. Yamada, B. Selby, Jr., M.B. Anderson, C. Hannegan, C. Schonholz; Interventional Radiology, Medical University of South Carolina, Charleston, SC

Purpose: Describe the technique and present the results of RF wire puncture for the recanalization of chronic arterial occlusions in symptomatic patients.

Materials and Methods: Between January and June 2012, 6 patients (5 male), age ranging from 58-72 years, presented with signs and symptoms of arterial occlusive disease. The lesions ranged from TASC C to D and were identified within the common iliac and superficial femoral artery. Despite multiple repeat attempts at recanalization using conventional endovascular techniques, the lesions were unable to be crossed. PowerWire RF wire (Baylis Medical, Canada) was advanced (via intra-luminal or subintimal approach) within a 5Fr KMP catheter using a 10 mm snare (iliac lesions) or arterial wall calcification (femoral lesions) as a target. Pre-stent balloon angioplasty was followed by stent placement. If the RF wire puncture was inadequate, a new location was pursued. Clinical assessment along with targeted diagnostic and imaging follow up was performed at 30 days and then at 3, 6, and 12 months.

Results: All patients were successfully treated with RF wire after previous failed attempts at recanalization using different combinations of catheter/wire techniques. There were no complications. All patients improved clinically and imaging of the treated segment showed patency at 10 months mean follow-up.

Conclusion: RF wire is a safe alternative in the recanalization of chronic arterial occlusions when conventional techniques have failed and provides an endovascular solution for patients who would otherwise be forced into undergoing surgical repair.

Limb salvage after endovascular recanalization of native arterial occlusions in patients with failed lower extremity bypass grafts

C. Wrigley, A. Vance, T. Niesen, S.A. Goodman, J. Velez-Velez, D.J. Agriantonis, G. Kimbiris, M.J. Garcia, D. Leung; Christiana Care Health System, Wilmington, DE

Purpose: Failed lower extremity bypass in patients with critical limb ischemia carries a high rate of amputation. Percutaneous revascularization of the native arterial occlusion can be performed as an alternative to redo bypass in patients who are poor surgical candidates. We set forth to investigate the feasibility, safety, and outcome of endovascular recanalization of chronic native occlusions in patients with failed bypass grafts.

Materials and Methods: We performed a retrospective review of 15 patients with failed lower extremity bypass who underwent recanalization of their native arterial occlusions between February 2009 and August 2012. Demographic, clinical, procedural and follow-up data were collected. Technical success was defined as the ability to recanalize the occlusion and restore flow with <30% residual stenosis. Kaplan Meier analysis was used to evaluate patency, limb salvage and amputation-free survival.

Results: Fifteen lower extremities were treated in 15 patients (7 male) with a mean age of 68 years. The mean patency of the failed bypass grafts (53% venous, 47% prosthetic) was 23.4 months. All patients had TASC C or D lesions of the native circulation. Technical success of the endovascular procedure was achieved in all but one patient (93%) with the majority undergoing subintimal recanalization. Retrograde recanalization was required in 3 patients using a transpedal or transgraft approach. Stents were placed in all patients. The mean ABIs before and after treatment were 0.34 and 0.73, respectively. There were no major complications or emergency amputations. Mean patient follow-up was 13.8 months. The mean time to PTA failure was 6.1 months. Primary patency at 3, 6 and 12 months was 78%, 47%, and 16%. Successful secondary procedures were performed in 5 patients to recanalize restenotic or recloacked lesions with secondary patency at 3, 6 and 12 months of 85%, 46%, and 17%. Limb salvage at 6, 12 and 24 months was 93%, 93%, and 62%. Amputation-free survival at 6, 12 and 24 months was 85%, 85% and 57%.

Conclusion: Endovascular recanalization of native arterial occlusions in patients with failed lower extremity bypass grafts is technically feasible, safe and results in acceptable limb salvage.

Stenting of superior mesenteric artery chronic total occlusions in patients with chronic mesenteric ischemia: technical and clinical outcomes

C.J. Grilli, C.R. Fedele, O.M. Tahir, J. Velez Velez, C. Wrigley, M.M. Ali, G. Kimbiris, M.J. Garcia, D. Leung; Christiana Care, Wilmington, DE

Purpose: While endovascular treatment of chronic mesenteric arterial stenosis is well accepted, management of chronic total occlusions (CTO) remains controversial with historical mainstays of treatment consisting of bypass or endarterectomy. Our goal is to evaluate the clinical and technical outcomes of endovascular recanalization and stenting of CTOs of the superior mesenteric artery (SMA).

Materials and Methods: We performed a retrospective review of 46 patients (18 M, 28 F) who underwent endovascular stenting of CTOs of the SMA between February 2008 and July 2012. All patients had symptoms of chronic mesenteric ischemia. Procedural and follow-up data were collected for assessment of technical success, safety and outcomes. Technical success was defined as the ability to traverse and stent the SMA occlusion without significant residual stenosis. Patency and freedom from symptom recurrence were calculated by Kaplan Meier analysis.

Results: Technical success was achieved in 40 of 46 patients (87%). Twelve patients underwent concurrent stenting of the celiac artery. Of the 6 technical failures, 2 were referred for bypass, 3 underwent celiac artery stenting, and 1 was lost to followup. Within 24 hours of the procedure, complete symptomatic relief was reported by 39 of 40 (97%) patients, while 1 patient (3%) reported partial improvement. No patients