**Background:** Treatment of in-stent restenosis of the femoropopliteal artery is challenging with a high rate of restenosis. Excimer laser atherectomy (ELA) has a theoretical advantage of ablating restenotic tissue and reducing or delaying the need for repeat revascularization. We present a retrospective analysis from our center on the outcomes of ELA in the treatment of in-stent restenosis of the femoropopliteal arteries.

**Methods:** Demographic, clinical, angiographic and procedural data was collected on all patients that underwent ELA for in-stent restenosis from January 2005 until June 2010. Major adverse events and one-year target lesion revascularization (TLR) and target vessel revascularization (TVR) were obtained by reviewing of medical records. Descriptive analysis was performed on all variables. Kaplan-Meier survival curves for TLR were plotted.

**Results:** 40 consecutive patients (mean age 67.7 ± 9.0 years, 57.5% males) were included and followed for 1 year. The following variables were noted: mean ankle brachial index (ABI) of treated leg 0.6 ± 0.2; diabetes 47.5%; history of smoking 82.5%; number of vessel runoffs of treated limb 1.7 ± 1.0; hypertension 85.0%; lesion length 210.4 ± 104.0 mm; lesion severity 93.9 ± 8.9%; vessel diameter 5.6 ± 0.7 mm. 95% of patients received bivalirudin during the procedure and all were on aspirin and clopidogrel. Adjuvant balloon angioplasty was performed in 100% at a mean pressure of 12.4 ± 2.9 atm. Acute procedural success (<30% angiographic residual narrowing) occurred in 92.5% of patients. Embolic filter protection (EFP) was used in 57.5% of patients. Balloon stenting was 50.0%. Macroemboli was noted in 65.2% of filters. The following adverse events were reported: distal embolization (DE) requiring treatment 2.5% (patient with no EFP); planned minor amputation 2.5%, planned major amputation 2.5%, total death 7.5% (all cardiac related). One perforation occurred treated successfully with stenting. At one year, TLR and TVR occurred in 48.7% and 48.7% respectively. Independent predictors for reocclusion were male gender, severely calcified and TASC D lesions.

**Conclusion:** The current study demonstrated a high one-year rate of TLR and TVR and independent predictors for reocclusion were male gender, severely calcified and TASC D lesions.

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**Background:** Totally occluded femoropopliteal (TASC C&D) lesions, and determine predictors of reocclusion or restenosis. Methods: All patients treated by nitinol self-expandable stents for totally occluded femoropopliteal lesions between January 2002 and December 2010 were reviewed. Patient demographics, clinical features, anatomic, and procedure factors were retrospectively analyzed. Outcomes evaluated included long-term primary patency rate at three years and predictors of reocclusion or restenosis.

**Results:** The study group included 240 TASC C&D limbs in 213 patients (mean age 70.91 ± 9.373 years, male gender: 66.2%). One hundred-fifty-four (72.3%) were suffering from claudication, while 59 limbs (27.6%) underwent treatment for critical limb ischemia, including 31 limbs (14.5%) with tissue loss. All the lesions were total occlusion of the femoral artery ± the popliteal artery, with mean length of 17.94 ± 11.38 cm, and 31.2% of the target lesions were heavily calcified. A total of 509 nitinol self-expandable stents were implanted (average, 2.1stents/limb), with 95.8% technical success. There was one procedure related mortality or amputation. Follow-up was available for 240 limbs at a mean of 36.2 ± 22.6 months. No patient required a major amputation during this follow-up period. Thirty-nine limbs (16.2%) experienced reocclusion and twenty-one limbs (8.7%) experienced restenosis, all these limbs underwent reintervention during the follow-up period. Primary patency rates at 1, 2, and 3 years were 99.2%, 87.4%, and 74.4% respectively. Independent predictors for reocclusion were male gender, severely calcified and TASC D lesions, while diabetes, smoking and TASC D lesions were the predictors for restenosis.

**Conclusions:** Nitinol self-expandable stent implantation can be safely performed in long, totally occluded and heavily calcified femoropopliteal (TASC C&D) lesions, with highly comparable long-term primary patency rate to venous bypass surgery. TASC D lesion is the most important predictor for reocclusion or restenosis.