

2. **Outcome of Critical Limb Ischemia Managed with Directional Percutaneous Atherectomy**

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OBJECTIVE: To analyze long-term outcome in patients with critical limb ischemia (CLI) managed with directional percutaneous atherectomy (DPA).

METHODS: During a 30-month period, 44 limbs in 43 patients with peripheral vascular occlusive disease complicated with category 4-5 CLI (gangrene, n=20, non-healing ulcer, n=22 and isolated rest pain, n=2) were managed with DPA using the SilverHawk Plaque Excision System (FoxHollow Technologies Inc, Redwood City, Calif). Patients had multiple co-morbidities, including chronic kidney disease (n=23, 16 with end-stage renal disease -- ESRD) and diabetes (n=33). Data were analyzed on an intention-to-treat basis to include partially successful procedures.

RESULTS: In 50% of cases, DPA was performed for combined femoropopliteal and tibial disease. DPA was technically successful in 34 cases and partially successful (due to residual stenosis) in seven cases (total 93%). Twenty-one cases (48%) required at least one adjunctive, including 4 hybrid and 5 iliac stenting procedures for concomitant remote lesions, predilatation (n=7), angioplasty±stenting for post-atherectomy residual stenosis (n=7) or thrombectomy/thrombolysis for intraoperative thromboembolism (n=3). One patient was converted to an open bypass and constituted the only mortality (2%). Five patients (11%) developed postoperative complications. Limb salvage rate at 6 and 12 months was 77%. ESRD, rest pain, baseline toe-brachial index (<0.13), baseline toe pressure (<19mmHg) and follow-up toe-brachial index (<0.15) were associated with an increased risk of limb loss during follow-up, while use of dual anticoagulants postoperatively was associated with reduced risk of limb loss. Multivariate analysis using Cox regression identified ESRD as an independent predictor of worse limb salvage (P=.008, relative risk 8.5) and dual postoperative anticoagulant therapy as a positive predictor of improved limb salvage (P=.007, relative risk 0.10). Patient survival at 1 year was 75%.

CONCLUSIONS: DPA as part of complex procedures for lower limb revascularization in CLI is an important tool in our endovascular armamentarium, associated with acceptable limb salvage rates. Further research regarding the possible benefit of combined antiplatelet agents used in conjunction with atherectomy is warranted.