



Outcomes of atherectomy combined drug-coated balloons vs. atherectomy combined with plain balloons in femoropopliteal artery disease

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ABSTRACT

Objectives: Purpose : To evaluate the outcomes of atherectomy plus drug-coated balloon(DCB) angioplasty in comparison with atherectomy plus plain balloon angioplasty for femoropopliteal artery lesions.

Methods : In a single center, retrospective study, from July 2009 to March 2018, 120 patients with femoropopliteal artery lesions who treated with atherectomy were reviewed. There were 66 patients who treated with Atherectomy plus plain balloon (group A) and 54 patients treated with atherectomy plus DCB (group B). Clinical primary patency and target lesion revascularization (TLR) free survival was compared.

Results : Baseline clinical and lesion data were comparable between the group A and B except for presence of CAD (74.3% vs 56.7%, p=0.034) and incidence of bailout stenting (22.5% vs. 6.7%, p=0.012). The 2-year clinical primary patency was significantly higher in group B than in group A (80% vs. 57.7%, log rank p =0.04). However, the 2-year TLR free survival did not differ significantly (85% vs. 70% log rank p =0.144).

Conclusion: The combined therapy of atherectomy and DCB was superior to atherectomy with plain balloon in primary clinical patency at 2 years.

Table 1. Baseline clinical data

| | Atherectomy + plain balloon (Group A) | Atherectomy + DCB (Group B) | P-value |
|------------------------|---|-----------------------------------|---------|
| Patients | 63 | 54 | |
| Limbs | 71 | 60 | |
| Age, y | 67.0 ± 9.9 | 67.5 ± 11.6 | 0.695 |
| Male | 54 (76.1%) | 50 (83.3%) | 0.305 |
| Critical limb ischemia | 29 (40.8%) | 25 (41.7%) | 0.924 |
| HTN | 55 (77.5%) | 53 (88.3%) | 0.103 |
| DM | 47 (66.2%) | 48 (80.0%) | 0.078 |
| Dyslipidemia | 66 (93%) | 53 (88.3%) | 0.361 |
| CKD | 31 (43.7%) | 26 (43.3%) | 0.970 |
| ESRD | 7 (9.9%) | 13 (21.7%) | 0.061 |
| smoking | 38 (53.5%) | 23 (38.3%) | 0.083 |
| CAD | 52 (74.3%) | 34 (56.7%) | 0.034 |
| CVA | 16 (22.9%) | 11 (18.3%) | 0.526 |
| Discharge medication | | | |
| Aspirin | 65 (91.5%) | 55 (91.7%) | 0.981 |
| Clopidogrel | 65 (91.5%) | 49 (81.7%) | 0.094 |
| Cilostazol | 22 (52.4%) | 20 (47.6%) | 0.774 |
| Statin | 59 (83.1%) | 53 (88.3%) | 0.397 |

Table 2. Lesion and procedural characteristics

| | Atherectomy + Plain balloon (Group A) | Atherectomy + DCB (Group B) | P-value |
|----------------------|---|-----------------------------------|---------|
| TASC II Lesion types | | | |
| A/B | 21(29.6%) | 20(33.3%) | 0.644 |
| C/D | 50(70.4%) | 40(66.7%) | |
| Lesion length (mm) | 199.4±125.2 | 231.9±130.5 | 0.149 |
| Total occlusion | 33(46.5%) | 28(46.7%) | 0.983 |
| In-stent restenosis | 16(22.5%) | 18(30%) | 0.332 |
| Lesion location | | | |
| CFA only | 3(4.2%) | 5(8.3%) | NS |
| SFA only | 54(76.1%) | 39(65%) | NS |
| Popliteal only | 4(5.6%) | 4(6.7%) | NS |
| Femoro-popliteal | 10(14.1%) | 12(20%) | NS |
| Severe calcification | 22(31%) | 27(45%) | 0.099 |
| Atherectomy devices | | | |
| Directional | 68(95.8%) | 38(67.3%) | <0.001 |
| Rotational | 3(4.2%) | 22(36.7%) | |
| Filter use | 7(9.9%) | 29(48.3%) | <0.001 |
| Combined lesions | | | |
| Iliac | 5(7%) | 3(5%) | NS |
| BTK | 13(18.3%) | 12(20%) | NS |
| Distal run-off ≤ 1 | 41(61.2%) | 36(66.7%) | 0.534 |
| Bail-out stenting | 16(22.5%) | 4(6.7%) | 0.012 |
| Technical success | 97.2% | 98.3% | 0.661 |
| Preprocedural ABI | 0.53±0.19 | 0.59±0.87 | 0.526 |
| Postprocedural ABI | 0.83±0.17 | 0.85±0.18 | 0.443 |
| Major complication | 1(1.4%) | 1(1.7%) | 0.708 |
| Distal embolization | 0 | 0 | NS |
| Vascular perforation | 3 (4.2%) | 4 (6.6%) | 0.541 |

Table 3. Subgroup analysis in Atherectomy & DCB group (Group B)

| | 2-year primary patency | p-value |
|---------------------------------------|------------------------|---------|
| DM vs non-DM | 77.1% vs 88.3% | 0.687 |
| ESRD vs non-ESRD | 46.2% vs 87.2% | 0.003 |
| CKD vs non-CKD | 61.5% vs 91.2% | 0.013 |
| Severe vs non-severe calcification | 70.4% vs 84.8% | 0.115 |
| Directional vs Rotational atherectomy | 83.8% vs 69.6% | 0.199 |
| Popliteal a. involve vs non-involve | 62.5% vs 84.1% | 0.026 |
| Bail-out stenting vs without stenting | 80.0% vs 78.2% | 0.811 |
| Lesion length ≥ 150mm vs <150mm | 71.8% vs 90.5% | 0.062 |
| Total occlusion vs non-total lesion | 75.0% vs 81.3% | 0.493 |
| ISR vs non-ISR lesion | 66.7% vs 83.3% | 0.068 |

Figure 1. Primary clinical patency

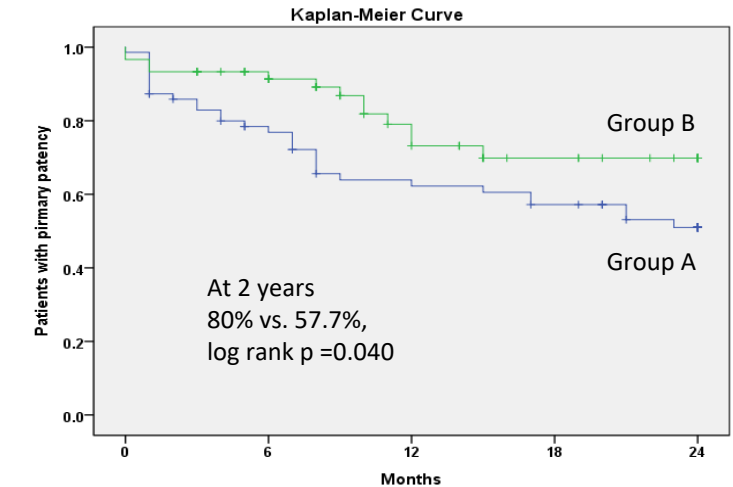
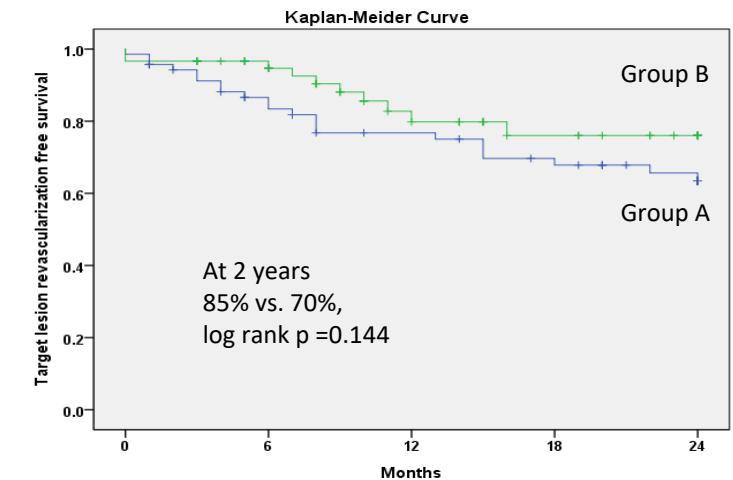


Figure 2. TLR-free survival



Conclusion

The combined therapy of atherectomy and DCB was superior to atherectomy with plain balloon in clinical primary patency at 2 years in femoropopliteal artery lesions.