Comparison of angiographic dissection patterns caused by Long vs. Short balloons during balloon angioplasty for chronic femoropopliteal occlusions

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OBJECTIVE

- The aim of this study was to describe the feasibility of balloon angioplasty using a long-length balloon for chronic femoropopliteal occlusions with TASC II class C/D lesions by evaluating angiographic dissection patterns.

METHODS

- A retrospective, single center analysis examined 101 patients with de novo 101 symptomatic femoropopliteal occlusive disease treated with endovascular therapy between August 2012 and October 2016.
- The patients were classified into 2 groups:
  - Long-length balloon group; L-BA ($\geq 220\text{mm}$) : 51 patients
  - Short-length balloon group; S-BA ($\leq 150\text{mm}$) : 50 patients

RESULTS

- Severe vessel dissection patterns, defined as type C or higher, were fewer in the L-BA group (47.1% vs 70.0% in the S-BA group, $p=0.019$). Although the results showed no significant differences between the two groups regarding the length of chronic total occlusions (L-BA: 228.6±73.2 vs S-BA: 226.0±53.8 mm, $p=0.83$), inflation pressure (L-BA: 8.2±2.6 vs S-BA: 8.1±2.9 atm, $p=0.86$), and the other lesion characteristics, inflation time was significantly longer in the L-BA group (161.2±68.7 seconds vs 51.1±54.0 seconds in the S-BA group, $p<0.001$).
- Multivariate analysis identified a balloon length $\geq 220\text{ mm}$ as an independent negative predictor of severe vessel dissection.

DISCUSSION

- The development of DCBs has resulted in favorable outcomes and has made a substantial contribution to “leave nothing behind” therapies. In terms of preventing severe dissection, optimization of balloon angioplasty outcomes is key to achieving “leave nothing behind” therapies.

CONCLUSION

- Based on the concept of balloon edge dissection in CTOs, the use of long balloons covering as much of the CTO length as possible may help prevent severe vessel dissection in the femoropopliteal segment. Additional validation needs to be performed to optimize balloon angioplasty outcomes.