Clinical experience with very high-pressure dilatation for resistant coronary lesions


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Abstract

BACKGROUND:

Calcific coronary lesions can be so resistant to prevent symmetric stent dilatation with high risk of ISR/thrombosis. The aim of the current study is to evaluate the safety and efficacy of super high-pressure dilatation (>30-to-45Atm) using a dedicated NC-balloon (OPN, SIS-Medical-AG, Winterthur-Switzerland).

METHODS:

We retrospectively evaluated 326 consecutive undilatable lesions in which conventional NC-balloons failed to achieve adequate post-dilatation luminal gain. After the failed attempt an OPN-balloon was inflated up to achieve a uniform balloon expansion (maximal dilatation pressure of 45-50 Atm). Lesions were divided into two groups according to the final inflation pressure: Group-1: lesion responsive to 30-40Atm and Group-2:>40 Atm. Angiographic success was defined as residual angiographic stenosis<30% assessed by visual estimation with TIMI3-flow. Procedural
success was defined as the achievement of angiographic success without any MACE.

RESULTS:
Angiographic success was achieved in 97.5%, procedural success in 96.6%; 53% of the lesions were responsive to a slower inflation pressure (Group I) while in the remaining 47%, the optimal expansion required a pressure > 40ATM (Group II). In 3 patients coronary rupture occurred after balloon inflation and was successfully treated with stent implantation with a final TIMI3-flow. The OPN alone was able to achieve adequate expansion in >90%. 0.9% days MACE were reported.

CONCLUSION:
The OPN-dedicated high-pressure balloon provides an effective and safe strategy for treatment of severe resistant coronary lesions.

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Calcific lesions; Coronary angioplasty; Drug eluting stents; Non-compliant balloon; PCI