Rev Port Cardiol. 2012;31(1):1–6

Revista Portuguesa de
Cardiologia
Portuguese Journal of Cardiology
www.revportcardiol.org

ORIGINAL ARTICLE

Rotational atherectomy in the drug-eluting stent era: A recent single-center experience☆

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Received 13 May 2011; accepted 8 September 2011
Available online 23 December 2011

KEYWORDS
Coronary calcification;
Percutaneous coronary intervention;
Rotational atherectomy;
Drug-eluting stents

Abstract
Introduction: Percutaneous coronary intervention (PCI) of heavily calcified lesions is a challenge for the interventional cardiologist and is associated with a high rate of restenosis and target lesion revascularization (TLR). Adequate lesion preparation by rotational atherectomy followed by drug-eluting stent implantation has shown favorable results.
Objective: To report the recent experience of our center with rotational atherectomy (RA) of complex and heavily calcified coronary lesions.
Methods: We retrospectively analyzed consecutive patients who underwent PCI with RA in our center between January 2009 and December 2010. A total of 42 patients were included, 65% of whom had been previously refused for coronary artery bypass grafting due to unfavorable coronary anatomy or high surgical risk. RA was performed using the standard Boston Scientific Rotablator® system. The procedure was performed ad-hoc in 50% of patients and transradial access was used in 35%. Data were collected on immediate post-procedural events and major cardiac events during follow-up – cardiovascular death, myocardial infarction, TLR and recurrent angina.
Results: Of 1650 PCIs performed in a 23-month period from January 2009, 42 (2.5%) involved RA; from a total of 42 patients (mean age 70.3 ± 10.1 years, 67% male, 55% diabetic), three had left main disease, six had three-vessel disease, 18 had two-vessel disease and the other 15 had single-vessel disease. Of the lesions treated, 71% were >20 mm long and classified in 69% of cases as type C according to the ACC/AHA lesion classification, 4% being chronic total occlusions. The left anterior descending artery was treated in 56% of the procedures. The mean number of burrs used per lesion was 1.3 and a total of 69 stents were implanted, 81% of which were drug-eluting. During follow-up three patients had recurrent angina, one required TLR and two died due to a cardiovascular event. There was significant clinical improvement in 83% of patients.

☆ Please cite this article as: Seca, L. O ressurgimento da aterectomia rotacional na era dos *stents* farmacoativos – A experiência de um centro. doi:10.1016/j.repc.2011.09.015.

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Conclusions: This study demonstrates that rotational atherectomy followed by stenting in heavily calcified lesions can nowadays be performed with high success rates and few complications, extending the possibility of coronary revascularization to a greater number of patients.

PALAVRAS-CHAVE
Calcificação coronária;
Intervenção coronária percutânea;
Aterectomia rotacional;
Stents farmacoactivos

O ressurgimento da aterectomia rotacional na era dos *stents* farmacoativos – A experiência de um centro

Resumo
Introdução: A intervenção coronária percutânea (ICP) de lesões gravemente calcificadas constitui um desafio para o cardiologista de intervenção, estando associada a maior taxa de reestenose e necessidade de reintervenção na lesão alvo. A preparação adequada das lesões pela técnica de aterectomia rotacional (AR), seguida da colocação de *stent* farmacoactivo, tem demonstrado resultados favoráveis.
Objetivo: Reportar a experiência recente do nosso centro na utilização de AR para o tratamento de lesões coronárias complexas e calcificadas.
Material e Métodos: Analisámos retrospectivamente uma série de doentes consecutivos submetidos a ICP com recurso a AR no período de janeiro de 2009 a dezembro de 2010. Foram incluídos 42 doentes (dts), dos quais 65% tinham sido recusados para cirurgia por apresentarem múltiplas comorbilidades ou anatomia coronária desfavorável. A AR foi realizada utilizando o sistema Rotablator® da Boston Scientific. O procedimento foi realizado *ad-hoc* em 50% dos casos e utilizou-se a via radial em 35% dos dts. Foi avaliada a ocorrência de eventos no pós procedimento imediato e realizado *follow-up (FUP)* com avaliação de eventos cardiovasculares major após a alta hospitalar – morte cardiovascular (MCV), enfarte agudo do miocárdio, reintervenção na lesão alvo (RLA) e recorrência de angina (RA).
Resultados: De um total de 1650 ICP realizadas durante um período de 23 meses desde janeiro de 2009, 42 (2,5%) envolveram a técnica de AR. Num total de 42 doentes submetidos a AR ($70{,}3 \pm 10{,}1$ anos, 67% homens, 55% de diabéticos), três apresentavam doença (DC) de tronco comum (TC), seis dts DC de 3 vasos, 18 dts DC de 2 vasos e 15 dts DC de 1 vaso. As lesões tratadas (71% > 20 mm) classificaram-se como tipo C em 69% e oclusão total crónica em 4%. Intervencionou-se a descendente anterior em 56% dos casos. Utilizou-se uma média de 1,3 olivas por lesão e implantaram-se no total 69 *stents*, 81% dos quais eram farmacoactivos. Verificou-se RA em três dts, RLA em apenas um dt e MCV em dois dts. Em 83% dos doentes verificou-se melhoria da classe funcional.
Conclusão: A utilização da AR na ICP de lesões gravemente calcificadas, seguida de colocação de *stent*, é um procedimento seguro e com uma elevada taxa de sucesso, permitindo a revascularização coronária a um maior número de doentes.

Introduction

Percutaneous coronary intervention (PCI) of heavily calcified lesions is a challenge for the interventional cardiologist and is associated with a high rate of restenosis and target lesion revascularization (TLR). Significant calcification and atherosclerotic plaque morphology often make crossing the lesion by balloon or stent difficult[1] due to reduced vascular wall distensibility, which can lead to coronary dissection, poor expansion or incomplete stent apposition after angioplasty.[2,3] Adequate lesion preparation by rotational atherectomy (RA) to modify heavily calcified plaques and thus facilitate stent placement and appropriate expansion has shown favorable results.[4,5] Bare-metal stent implantation following RA of calcified lesions has high rates of immediate success but is associated with significant restenosis.[6] However, recent studies have demonstrated that use of drug-eluting stents after RA significantly reduces restenosis and need for TLR.[7]

The aim of this study is to report the recent experience of our center with RA of calcified coronary lesions and preferential use of drug-eluting stents.

Methods

We retrospectively analyzed consecutive patients with symptomatic coronary disease who underwent PCI with RA of heavily calcified and angiographically significant lesions ($\geq$50% stenosis) between January 2009 and December 2010. The decision to perform RA prior to angioplasty was based on the presence of severe calcification on fluoroscopy, with a view to avoiding any difficulties in crossing the lesion and achieving adequate balloon predilation.