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CASE REPORT

Long-term efficacy of drug-coated balloon for renal artery in-stent restenosis

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1. Introduction

The optimal treatment of renal artery in-stent restenosis (ISR) has not been established yet. Various methods including traditional or cutting balloon angioplasty,¹ placement of additional bare metal stents² or drug eluting stents³ have been used with high initial success rates, but long term follow up still showed high recurrences.

2. Case report

A 51-year-old male presented to our out-patient clinic complaining of resistant hypertension (HTN) in 2011. The patient had a history of coronary artery disease and was a current smoker. His serum creatinine was 2.5 mg/dl. Renal artery duplex revealed bilateral renal artery stenosis (RAS). After staged bilateral renal artery percutaneous transluminal angioplasty (PTA) with bare metal stents, we observed sustained improvement of blood pressure control and after four weeks the serum creatinine level dropped to 1.3 mg/dl. In addition, the kidney length increased from 6 cm to 9 cm. One year later the patient showed worsening of the renal function with an increase in creatinine to 1.9 mg/dl; he underwent computed tomography (CT) scan, showing critical in-stent restenosis (ISR) of the right renal artery, which was confirmed by renal arteriography. Renal arteriography revealed 80% diffuse ISR involving proximal and mid segments (Fig. 1) and the trans-stenotic gradient was 60 mmHg. We decided to treat the ISR with a drug coated balloon (DCB) strategy: through right radial approach and the use of a sheathless guiding catheter (Asahi, Japan), the lesion was predilated with a 4.5 non-compliant balloon followed by a DCB (In Pact Pacific 5.0/40, Medtronic/Invatec, USA) with final percent diameter stenosis of 20% (Fig. 2). During Subse-

quent angiography performed in 2016, renal arteriography revealed a still patent stent in the right renal artery with residual 30% stenosis (Fig. 3). Creatinine level was 1.4 mg/dl.

3. Discussion

In the coronary arena, DCB proved to be highly effective for ISR management.^{4–6} With this technology short term transfer of antiproliferative drugs to the arterial wall is achieved without the requirement of an implanted drug delivery system, thus potentially reducing the untoward effects associated with polymer-based stent technologies.⁷ DCBs nowadays are increasingly used for coronary and peripheral vascular interventions. Their use might determine a significant impact on all types of percutaneous cardiovascular interventions and may play an important role in the management of renal ISR as well. This is the first documented case of DCB use for ISR management of a renal artery, with very long term follow up.

4. Conclusion

This case report represents the first case where DCB was used in renal artery ISR with documented patency on long term follow up. More data is needed for the assessment of the long term efficacy of DCBs in such patients.

Conflicts of interest

None.

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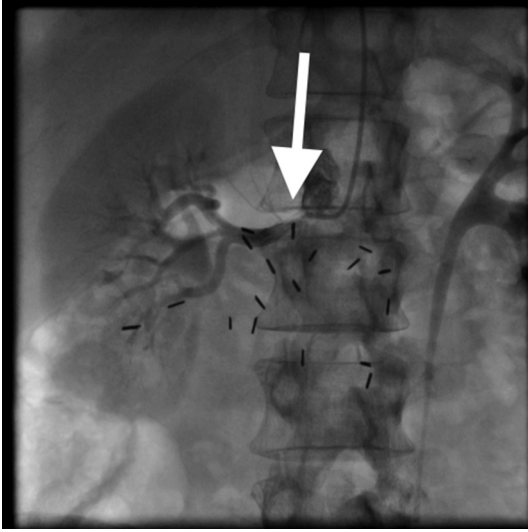


Fig. 1. Shows tight ISR in the proximal portion of the right renal artery.

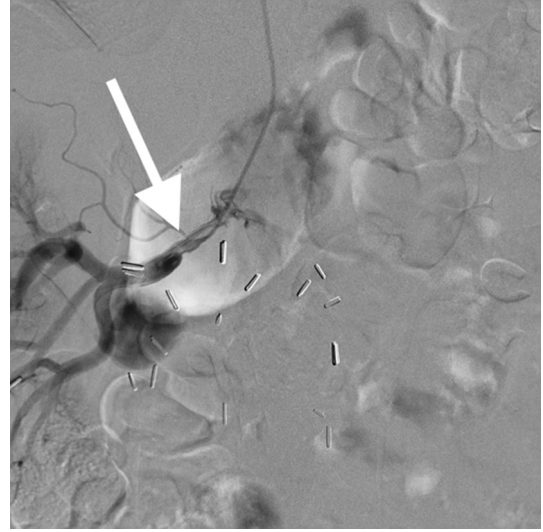


Fig. 3. Four year follow up showing patent stent with moderate restenosis in the proximal portion.



Fig. 2. Shows final result after DCB application.

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