

The OstialPro Positioning System for a Renal Artery Stenosis

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Aorto-ostial lesions pose complex technical challenges in percutaneous revascularization procedures. The successful use of the ostial positioning system OstialPro has been reported in coronary arteries. This nitinol device has self expanding legs that open just distal to the guide catheter. This allows the stent to be deployed in the ostium of the vessel with the guide catheter positioned in the aorta and allows for accurate anatomic visualization of the plane between the ostium and the aorta. Besides coronary interventions, the OstialPro could be useful in peripheral vascular interventions for ostial renal, mesenteric or vertebral arteries stenoses. We report the case of a patient with a significant ostial renal artery stenosis who underwent a successful percutaneous intervention using the OstialPro device. © 2010 Wiley-Liss, Inc.

Key words: peripheral vascular; renal artery stenosis; ostial stenosis; stenting; percutaneous vascular intervention

Ostial lesions pose particularly difficult technical challenges to the interventionalist. Some common procedural difficulties include the precise positioning of the stent and guide catheter support. Data on treatment outcomes of ostial lesions have shown lower procedural success rates, more frequent in-hospital complications in the prestenosis era and evidence of a greater likelihood of late restenosis following stenting with need for more frequent revascularization procedures when compared with nonostial lesions [1–3]. The anatomic position of ostial lesions makes it difficult to accurately position the guide catheter, in addition to the risk of stent misplacement. The exact stent edge position in the vessel and relative to the aorta is essential for angiographic success. Suboptimal stent placement may lead to higher restenosis rates. In addition there is a high risk for longer procedure times, higher contrast volume use and higher radiation doses in cases fraught with difficulties such as poor guide catheter back up.

CASE REPORT

The patient was a 75-year-old man with a history of vascular disease, chronic renal insufficiency and recurrent hospitalization with circulatory congestive symptoms which were medically managed. He initially was seen in consultation to evaluate for epicardial coronary vessel disease. Coronary angiography and cardiac catheterization was done following a positive noninvasive test. He had an occluded right coronary artery unchanged from a previous study done 7 years before. The right coronary artery was well collateralized from the left system which demonstrated nonobstructive dis-

ease. He had preserved left ventricular systolic function. Renal artery angiography revealed a 70% lesion of the right renal artery with an associated renal artery/abdominal aorta pressure gradient of 35 mm Hg. Because of his recurrent hospitalizations with pulmonary edema, it was decided to proceed with right renal artery angioplasty and stenting.

This was a complex procedure because of the acute angulation of the renal artery and because of tight ostial disease resulting in difficulty engaging the ostium and wiring across the lesion. The patient was anticoagulated with Angiomax (Medicines Company) IV. The seven French renal double curvature guide was positioned in the right renal ostium (after an internal mammary guide did not engage well). A Spartacore (Abbott Vascular) wire was advanced past the target lesion into the distal segmental artery. The lesion was predilated with

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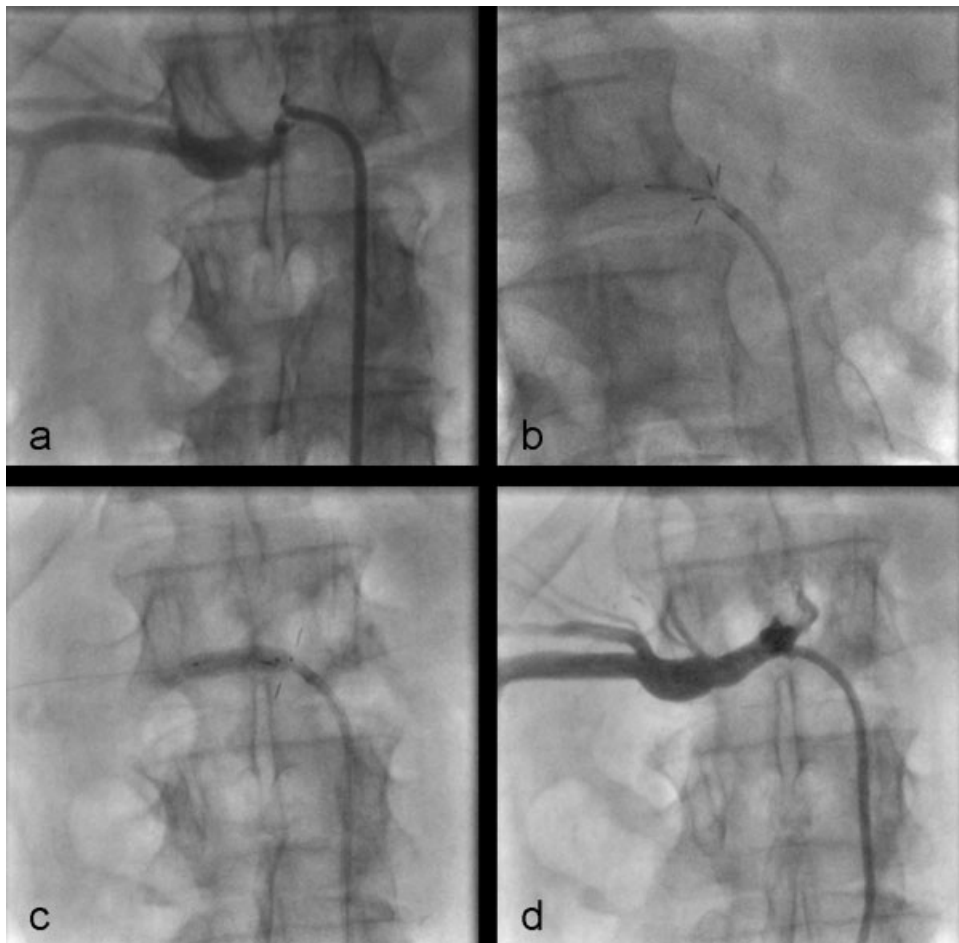


Fig. 1. (a) Right renal artery stenosis before intervention. (b) Deployment of OstialPro device and delineation of the aorto-ostial plane. Note the four radio-opaque legs of the OstialPro device marking out the aortic plane; also note that the stent is across the lesion and needs to be pulled back into position. (c) Stent deployment with OstialPro device in place. (d) Final result.

Maverick 3.0×12 mm and Maverick (Boston Scientific) 4.0×12 mm balloons to 8 atm. The OstialPro (Ostial Solutions) positional device was used to position the Herculink (Abbott Vascular) 5.0×15 mm stent accurately at the aorto-renal junction (Fig. 1). The stent was then deployed at 14 atm. Postdilation and flaring of the proximal stent was performed with the stent balloon to 20 atm. The postprocedural angiographic result was excellent with good TIMI III flow in the renal artery.

Following the procedure, the patient was not readmitted for heart failure but his renal function continued to decline. A follow-up ultrasound of the renal artery 3 months after the procedure showed no evidence of in-stent stenosis.

DISCUSSION

This single case report demonstrates the use of OstialPro positioning system in percutaneous endovas-

cular intervention of the renal artery. This has not been reported before. Ostial lesions pose particularly unique technical challenges to the interventionalist. The precise positioning of the stent is required to avoid potential short and long term risk. Several methods have been described in the literature for optimal positioning of the stent [4] in patients with ostial coronary and peripheral disease. The anatomic location of the disease in addition to stent malposition has been shown to lead to increased major adverse cardiac events in this patient population. The OstialPro positioning device is mechanically relatively simple to use. The nitinol legs, with radio-opaque tips lay out for the operator the aorto-ostial junction. This relative new device has been shown to successfully mitigate technical challenges in treating ostial lesions in the coronary arteries and vein grafts [5]. We demonstrate the utility of the device in percutaneous renal intervention. Some potential technical limitation in using this device will certainly include

concurrent use of other delivery systems with regards to guide catheter lumen dimension. Despite this, the technical benefits in this novel device are exciting and there certainly is a need for further investigation to determine if this translates to clinical benefit in the population of patients with ostial disease.

CONCLUSION

The Ostial Pro is a novel device that can be successfully used to treat ostial renal artery stenosis.

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