

Expedited Discharge Following Outpatient Orbital Atherectomy: There Is No Place Like Home

ADHIR SHROFF, MD, MPH, UNIVERSITY OF ILLINOIS – CHICAGO

In the current healthcare environment, providers and patients are looking for opportunities to safely minimize time in the hospital. Same day discharge after outpatient percutaneous coronary intervention (PCI) procedures meets this goal.

The Diamondback 360[®] Coronary Orbital Atherectomy System (OAS) is a useful tool to adjunctively treat severely calcified coronary artery stenoses. Our institution has successfully incorporated Diamondback[®] atherectomy into our outpatient same day discharge PCI program.

Our institution has successfully incorporated Diamondback atherectomy into our outpatient same day discharge PCI program.

Below we share two patient cases using Diamondback with the new nitinol ViperWire Advance[®] with Flex Tip atherectomy guidewire to treat heavily calcified lesions via a radial approach, safely discharging them on the same day of their procedure.

Patient 1

A 68-year-old woman who came for diagnostic coronary angiography after experiencing chest heaviness with yard work for several weeks. She is diabetic and has hyperlipidemia. Despite the focality of the extremely tight mid-RCA lesion (Figure 1A), due to the extent of calcification we used an orbital-first approach to streamline treatment. Initial attempts to deliver the Diamondback system were unsuccessful so a 1.5 mm compliant balloon was used to facilitate access (Figure 1B). We performed atherectomy at 80 kRPM for two passes, administering an aminophylline infusion (250 mg IV over 5 minutes) just prior to beginning OA. No bradycardia or heart block was observed during atherectomy.

We performed wire exchanges with a 2.5 mm OTW balloon which we then used for predilation.

Finally, we deployed a 3.5x23 mm DES at 18 atm, noting uniform stent expansion with an optimal angiographic result (Figure 1C). The sheath was removed, and a hemostasis band provided site compression. The patient was observed for six hours and discharged home at 5 pm. We contacted her the following morning and she had an uneventful night.

Patient 2

A 72-year-old man referred for a coronary angiogram after anterior wall motion abnormality was observed on stress echo. He has hypertension and hyperlipidemia treated with medications. We confirmed the significance of the LAD lesion with FFR of 0.72 (at baseline, prior to hyperemia) and an angiogram identified a long, diffuse, severe calcification (Figure 2A). After crossing the lesion with a workhorse wire, we exchanged for Viperwire Advance with Flex Tip and performed three passes of OA at 80 kRPM (Figure 2B). During treatment the patient became transiently hypotensive but responded to a bolus injection of neosynephrine. (Interestingly, the patient admitted to using an erectile dysfunction medication on the morning of the procedure).

We predilated the lesion with a 2.5 mm balloon, then deployed a 2.5x23 mm DES distally and 3.0x12 mm DES proximally in this long, tapered lesion and post-dilated to 3.25 mm. Final results showed optimal stent expansion with normal flow into the distal vessel and side branch (Figure 2C). The radial band was removed, and hemostasis confirmed. Recovery was uneventful, and the patient was discharged after six hours of observation. He was contacted the following morning and reported no adverse events overnight.

Economic Considerations

Calcification can impede stent delivery and

deployment and increase procedural risk.^{1,2} Atherectomy has improved clinicians' ability to treat calcified lesions. In 2015, the Centers for Medicare & Medicaid Services assigned unique codes with incremental reimbursement for PCI with atherectomy. This enabled physicians to incorporate imaging and hemodynamic assessment alongside atherectomy to optimize procedural outcomes with less financial concern.

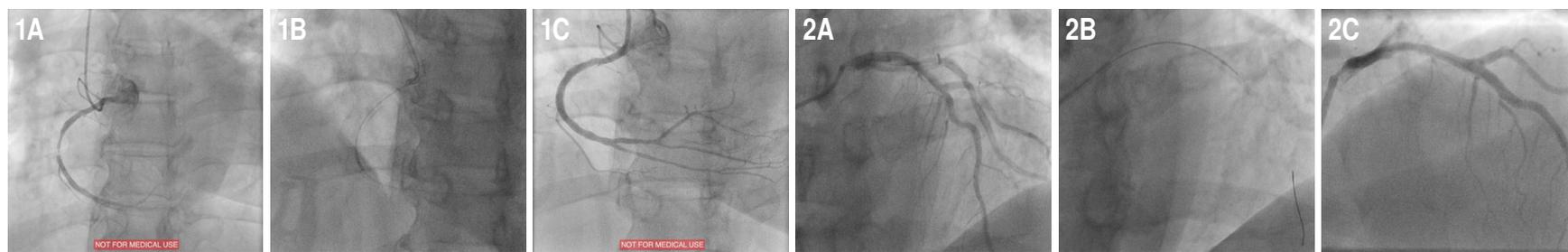
Same Day Discharge

With technical, pharmacologic and PCI-related advancements, many atherectomy patients are suitable for same day discharge, enabling patients to recover at home and avoid hospital-related infections, and helping hospitals maintain capacity while reducing costs of routine observation.

In 2018, SCAI updated their length of stay guidelines.³ Focus shifted from proscriptive criteria to a more patient-focused approach, including consideration of same day discharge for stable patients undergoing successful procedures as part of a structured program. We were able to successfully incorporate Diamondback into this program because it safely treats vessels from 2.5 to 4.0 mm with 6 Fr radial-compatible access.

We were able to successfully incorporate Diamondback into this program because it safely treats vessels from 2.5 to 4.0 mm with 6 Fr radial-compatible access.

In summary, orbital atherectomy with the Diamondback system can facilitate evidence-based⁴ adjunctive therapy for PCI procedures in calcified lesions. Carefully selected patients may be suitable for shortened length of stay as part of a structured program. With current outpatient reimbursement programs, clinicians can utilize appropriate therapies to achieve optimal clinical results with fiscal responsibility.



1. Fitzgerald PJ, et al. *Circulation*. 1992;86:64-70.

2. Cavaroglu E, et al. *Cathet Cardiovasc Intervent*. 2004;62:485-498.

3. Seto AH, et al. *Catheter Cardiovasc Interv* 2018.

4. Généreux P, et al. *Am J Cardiol* 2015;115(12):1685-1690.

Indication: The Diamondback 360 Coronary Orbital Atherectomy System (OAS) is a percutaneous orbital atherectomy system indicated to facilitate stent delivery in patients with coronary artery disease (CAD) who are acceptable candidates for PTCA or stenting due to *de novo*, severely calcified coronary artery lesions. **Contraindications:** The OAS is contraindicated when the ViperWire Advance[®] Coronary Guide Wire cannot pass across the coronary lesion or the target lesion is within a bypass graft or stent. The OAS is contraindicated when the patient is not an appropriate candidate for bypass surgery, angioplasty, or atherectomy therapy, or has angiographic evidence of thrombus, or has only one open vessel, or has angiographic evidence of significant dissection at the treatment site and for women who are pregnant or children. **Warnings/Precautions:** Performing treatment in excessively tortuous vessels or bifurcations may result in vessel damage; The OAS was only evaluated in severely calcified lesions. A temporary pacing lead may be necessary when treating lesions in the right coronary and circumflex arteries; On-site surgical back-up should be included as a clinical consideration; Use in patients with an ejection fraction (EF) of less than 25% has not been evaluated. See the instructions for use before performing Diamondback 360 coronary orbital atherectomy procedures for detailed information regarding the procedure, indications, contraindications, warnings, precautions, and potential adverse events. **Caution:** Federal law (USA) restricts this device to sale by or on the order of a physician.

Diamondback 360, Diamondback, ViperWire, ViperWire Advance are registered trademarks of Cardiovascular Systems, Inc. ©2020 Cardiovascular Systems, Inc. EN-6395.A 0920