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Vessel Preparation With Orbital Atherectomy for Treating Severe Coronary Calcium for Stent Delivery

WITH JEFFREY MOSES, MD

What role does calcium play in PCI?

Coronary calcium tends to be underestimated; however, advanced imaging such as intravascular ultrasound (IVUS) or optical coherence tomography (OCT) optimize visual determination of calcification.[1,2] Data are lacking on patients with severe calcium because these patients are often excluded from randomized, clinical trials, possibly due to the challenges that are often encountered when treating calcific coronary disease.

Current data demonstrate that severe calcium makes stent expansion difficult and can contribute to higher MACE rates and mortality in patients undergoing complex percutaneous coronary intervention (PCI).[3-5] However, if stent delivery and expansion can be optimized, these complications may be decreased.[6]

What do you consider the best method to assess the degree of calcium?

If you look at the angiogram, it's pretty easy to spot severe calcification; it looks like railroad tracks near the vessel site. Even if you can't see it on the angiogram, it can be seen with IVUS and OCT. Compared to angiography, IVUS and OCT can be used to more accurately assess the degree and severity of calcium. These technologies are underutilized but are critical for the diagnosis of severe calcific disease and, therefore, appropriate treatment.

How do you prepare vessels for a PCI?

Complete expansion of the stent within the vessel is a critical aspect of a successful PCI. Using a technology such as Diamondback 360® Coronary Orbital Atherectomy System (OAS) to prepare the vessel by reducing the plaque on the vessel wall, it is possible to increase the chance of successful stent deployment when severe calcium is present. These days, I do most of my lesion modification with OAS. At my hospital, we seem to have a more controlled, simpler procedure with OAS.

Doesn't atherectomy add to the time and cost of the procedure?

In my opinion, the procedural time when you use OAS should be compared to fighting with multiple balloons. If you prepare the vessel adequately, which takes only a few extra minutes, you can save a lot of hassle on the back end, where you may struggle to deliver balloons and stents.

Orbital atherectomy usually takes less than 2 minutes to set up. In the prospective, multicenter ORBIT II clinical study, which included 443 patients, the total average OAS device run time was 66.8 seconds.[7] This additional step may reduce length of stay and readmissions, as well as reduce complications in the long run. Vessel preparation with orbital atherectomy contributed to a target lesion revascularization rate of 4.7% at 1 year in the ORBIT II study.[8]

Payers are becoming more aware of the value of vessel preparation and are trending toward reimbursement for techniques that optimize patient outcomes. However, it is up to physicians to help educate administrators about the rate of severe calcium and approaches for treating calcific disease.

Tracking severe coronary calcium with proper coding, using the diagnosis code 414.4, will provide additional data sets that may improve the availability of treatment options for patients with complex coronary artery disease. ■

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