Role of Atherectomy in Severe Calcium: My Algorithm for the Selection of the Appropriate Device

Prakash Krishnan MD

Associate Professor of Medicine
System Director, Endovascular Services (Cardiology)
The Mount Sinai Health System
New York
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- Assessment of lesion morphology: How bad is the calcium?
- Does Subintimal or True Lumen Crossing Matter?
- Can we protect from emboli?
- What definitive therapy are we able to deliver?
- What is “good enough”?
Why Do Stents Work?

Bigger Net Gain
Calcified Plaque in IVUS and OCT

Images courtesy of Nabil Dib, MD
No Calcium Fracture Effect

Courtesy: Hiram Bezerra, MD and Marco Costa, MD, PhD
Partial Calcium Fracture

Courtesy: Hiram Bezerra, MD and Marco Costa, MD, PhD
Complete Calcium Fracture
GOALS OF LESION PREPARATION

• Primary goal of imaging prior to plaque modification is to identify concentric (or nearly concentric) calcification

• Plaque Modification aims to achieve plaque fracture to ensure optimal vessel expansion

• Rarely would plaque modification therapy be a “stand-alone” therapy but virtually always precedes stent implantation in heavy calcification
A typical Case: This vessel is a rock
Difficult to Wire
Orbital Atherectomy
Debris in the filter
After Atherectomy
Wire both directions and kiss
Intervention Summary

• Wire True Lumen
• EPD
• Debulk with Atherectomy – CSI/Jetstream > Hawk > Laser
• Dilate aggressively – consider scoring/focal force balloons
• Drug Delivery +/- Scaffolding
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• Assessment of lesion morphology: How bad is the calcium?
  – Consider use of adjunctive imaging like IVUS
• Does Subintimal or True Lumen Crossing Matter?
  – To me it does, I’m much more aggressive with atherectomy near the lumen than when I’m far away
• Can we protect for emboli?
  – I try to use EPDs for the long calcified lesions when possible
• What definitive therapy are we able to deliver?
  – Drug Delivery +/- scaffolding
• What is “good enough”?
  – “We’re not plastic surgeons”
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