Utility of Orbital Atherectomy in Calcified Vessels

George L. Adams, MD, MHS, FACC, FSCAI

Clinical Associate Professor of Medicine
University of North Carolina Health System
Director of Cardiovascular and Peripheral Vascular Research, Rex Healthcare
Raleigh, North Carolina
Disclosure

Speaker name:
George L. Adams, MD, MHS, FACC, FSCAI

I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

- I do not have any potential conflict of interest
Advanced Age

40.3M 65+yrs old in U.S.(1)
65+ age group is fastest growing in U.S(1)

Diabetes

Up to 26M in U.S.(2)
9% of global population (3)
Diabetes is fastest growing health problem in U.S.(4)

Kidney Disease

Up to 31M in U.S. (5)
10% of global population (6)
Diabetes is leading cause of kidney disease(2)

Multilevel PAD Patients with Calcified Plaque

1. The Older Population: 2010 (2010 U.S. Census Briefs; C2010BR-09)
4. Diabetes Fact Sheet from American Diabetes Association
Calcium can be predicted

**Independent Calcium Prediction Variables**

1. ABI > 1.3
2. Critical Limb Ischemia
3. Diabetes: Especially if neuropathy present
4. Calcium found on forefoot X-Ray
5. History of tobacco use
6. Creatinine > 1.7
7. Glomerular Filtration Rate (GFR) ≤ 60

---

Where is the Calcium located?

**Plaque burden**

- **Popliteals:** 63.30%
- **Tibials:** 52.60%

*Plaque burden was calculated as the plaque plus media cross-sectional area (CSA) divided by vessel CSA.*

**Plaque composition**

- **fibro-fatty**
- **necrotic core**
- **dense calcium**
- **fibrous**

*Popliteal arteries have increased mean plaque burden* compared to tibial arteries.

*Tibial arteries have 3x more dense calcium compared to popliteal arteries.*

Diabetes Influences PAD Calcification

- **No-DM → More likely to have**
  - ATK occlusion\(^1\)

- **DM → More likely to have**
  - BTK occlusion\(^1,3\) and
  - Tendency of higher calcification\(^2\)

---

A Solution For Calcified Vessels

Diamondback 360® Peripheral Orbital Atherectomy System by CSI
Reasons for using Orbital Atherectomy in Calcium

• Reduce Elastic Recoil
• Increase the Size of the Lumen
• Prevent Dissection$^1$
• Reduce Stent Fracture$^2$
• Optimize Stent
  • Apposition
  • Expansion

Optimizing Treatment with Orbital Atherectomy

Heterogenous Plaque – Stenting without Atherectomy

Calcific Plaque – Stenting with Atherectomy
Using Diamondback 3 Variables to Consider

1. **Vessel Diameter**
   - $\geq 4$mm use 1.50 to 2.00 crown
   - $< 4$mm use 1.25 to 1.50 crown

2. **Vessel Tortuosity**
   - If yes, use Classic or Micro Crown
   - If no, use any crown

3. **Lesion Length**
   - If $> 60$mm use Classic or Micro Crown
   - If $< 60$mm use any crown
The Impact is Real
The Impact is Real
Utility of Orbital Atherectomy in Calcified Vessels

George L. Adams, MD, MHS, FACC, FSCAI

Clinical Associate Professor of Medicine
University of North Carolina Health System
Director of Cardiovascular and Peripheral Vascular Research, Rex Healthcare
Raleigh, North Carolina