Character And Localization Of Arterial Calcification: What Significance Does It Have For Producing Ischemia And Making Endovascular Treatments Difficult

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Atherosclerotic Plaque Progression in Peripheral Arteries

Intimal Calcification in Peripheral arteries

Medial Calcification

How to manage severely calcified lesion in SFA

Disclosure Statement of Financial Interest

Within the past 12 months, I or my spouse/partner have had a financial interest/arrangement or affiliation with the organization(s) listed below.

Consultant: 480 Biomedical, Abbott Vascular, Medtronic, and W.L. Gore.
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Owner of a healthcare company: No
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### Patient Characteristics

<table>
<thead>
<tr>
<th>Overall</th>
<th>n=8 (12 limbs)</th>
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</thead>
<tbody>
<tr>
<td>Age, years</td>
<td>82 [77-87]</td>
</tr>
<tr>
<td>Male gender</td>
<td>6 (75%)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>6/8 (75%)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>4/8 (50%)</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>5/8 (63%)</td>
</tr>
<tr>
<td>Smoking</td>
<td>8/8 (100%)</td>
</tr>
<tr>
<td>COPD</td>
<td>3/8 (38%)</td>
</tr>
<tr>
<td>Renal failure</td>
<td>3/8 (38%)</td>
</tr>
</tbody>
</table>

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### Thrombotic lesion in peripheral artery

- **Plaque Rupture (PR)**: 2 lesions (17%)
- **Calcified Nodule (CN)**: 3 lesions (25%)

7% had PR vs. 24% had CN

83 Symptomatic pts with SFA disease underwent IVUS followed by EVT


### Correlation between calc and %stenosis

- **Intimal calc**
- **Medial calc**

### Diabetes and degree of calcification in PAD

- **Intimal calcification**
  - DM: 6 legs from 4 Pts, n=1441
  - non-DM: 6 legs from 4 Pts, n=2546
  - 2.0% 2.5%
  - 0.4% 0.1%

- **Medial calcification**
  - DM: 6 legs from 4 Pts, n=1441
  - non-DM: 6 legs from 4 Pts, n=2546
  - 0.3% 0.5%
Bone formation in AK and BK
10 in 12 legs (83%)

![Bone formation images]

Why vessels below the knee occlude?
10 in 36 BK vessels (27.8%) are CTO lesions

![Diagram showing CTO and intimal calcification]

CTO secondary to atherosclerosis
82 y.o. Male Smoker, COPD, DM Asymptomatic

![CTO images with annotations]

CTO secondary to distal emboli
85 y.o. Male Smoker, HT, DM Asymptomatic

![CTO images with annotations]

Summary
- Intimal Atherosclerosis: Calcification is frequently observed in both coronary and lower extremities, and is more common in above the knee.
- Medial calcification is observed in lower extremities, and calcification is especially high in diabetic and renal failure patients.
- Ischemia is likely more severe and difficult to treat in the lower extremities as compared to coronary arteries because calcification is greater in peripheral arteries (medial and intimal).
- Heavily calcified (intimal and medial) peripheral artery interventions are associated with worse outcome.
- Calcification does not allow good vessel preparation and therefore penetration of the drug especially with Drug eluting balloons is not as effective as with minor or mild calcification.

![Summary diagram with bullet points]

Calcification worsen the outcome of both DCB and stent

![Calcification images]

153 Symptomatic pts with SFA disease underwent PTA5 followed by EVT

![Graph showing late lumen loss and primary patency]

After revascularization of SFA lesion by DCB (n=53), 86 Symptomatic Pts, age 65±21, Lesion length 3cm-30cm

![Graph showing secondary patency and late lumen loss by lesion length]

1513 Symptomatic pts with SFA disease underwent PTA5 followed by EVT

![Graph showing radial stent symmetry index]


a = <3cm
b = >3cm
Calcification
Grade
Calcified Nodule
Plaque
Rupture

1.68
6.00
0.58
0.80
% Primary patency
Late lumen loss
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Question

What thrombotic lesion is the most common in lower extremities in diabetic patients (Femoropoplital artery)?

1, Rupture
2, Erosion
3, Calcified Nodule

Answer

What thrombotic lesion is the most common in lower extremities?

1, Rupture
2, Erosion
3, Calcified Nodule