The Importance of Vessel Preparation Prior to Stenting.

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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.

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<th>Company</th>
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Percutaneous Lower Extremity Intervention: 
*Evolution in Technique and Treatment Paradigm*

- SFA “Full Metal Jacket” likely not the best treatment strategy anymore
- Diverse range of options for SFA treatment has seen a shift away from balloon/stent
- Increasing number of treatment options have ushered in greater focus on technique
- Technique now individualized to patient or lesion
Evolving Concept of Vessel Preparation

- Cutting Balloon
- CSI Atherectomy
- TurboHawk
- Chocolate PTA
- Angiosculpt
- Intravascular Lithotripsy
What Is “Vessel Preparation”? 

- Improving luminal gain to deliver an implant 
- Altering residual mechanical forces in vessel 
- Debulking calcium or barriers to diffusing
When is Vessel Prep Most Important?

- Drug-coated Balloons in complex lesions
- Interwoven Nitinol Stent implantation
- Bioresorbable Technology

Supera Stent

INPACT DCB

ABSORB Stent
Vessel Prep for Woven Nitinol Stents

When nominally deployed:\(^1\)
- 91% 12mo Primary Patency
- 94% 36mo Freedom from TLR

\(^1\)Data from Superb Trial, Presented at VIVA 2015
Vessel prep strategy needs to be aggressive to achieve optimal deployment, particularly in calcified lesions.
Vessel Prep for Woven Nitinol Stents
Vessel Prep for Woven Nitinol Stents
Vessel Prep for Woven Nitinol Stents

Predilate with 6x250 Armada35

Residual focal waists

Options:
- Short NC balloon
- Atherectomy
- Scoring balloon
- Cutting balloon
- “Pave & Crack”
Vessel Prep for Woven Nitinol Stents

High-magnification
Slow deployment
5.5x120 Supera (x2)
Vessel Prep for Woven Nitinol Stents

Primary Patency (K-M) by Percent Compression/Elongation at 12 months:

- Moderate (21-40%) - n=6, 83.3% (p=0.480)
- Minimal (11-20%) - n=22, 81.8% (p=0.268)
- Nominal (± 10%) - n=74, 90.5% (p=0.026)
- Minimal (11-20%) - n=38, 73.7% (p=0.029)
- Moderate (21-40%) - n=39, 74.4%
- Severe (>40%) - n=26, 57.7% (p<.001)

- Compressed
- Nominal
- Elongated
When is Vessel Prep Most Important?

- Drug-coated Balloons in complex lesions
- Interwoven Nitinol Stent implantation
- Bioresorbable Technology
Late (2-3-year) difference in:
- Target lesion failure
- Stent thrombosis

No differences in:
- Cardiac death
- All-cause death
- Patient-oriented cardiovascular events

WASHINGTON, DC—Three-year outcomes from the ABSORB II trial, a time point in which the Absorb GT1 bioresorbable vascular scaffold should be degraded, did not result in an improvement in vasomotor tone and was associated with an increase in late lumen loss when compared with the Xience everolimus-eluting metallic stent.

The study also showed that treatment with Absorb (Abbott Vascular) was associated with a two-fold increased risk of device-oriented clinical events, specifically an increased risk of target-vessel revascularization for Absorb compared to Xience.

WASHINGTON, DC—Two-year results from the ABSORB III study presented at the American College of Cardiology 2017 Scientific Session show that the bioresorbable vascular scaffold (BVS, Abbott Vascular) is associated with a significant risk of target lesion failure, stent thrombosis, and patient-oriented cardiovascular events compared to the Xience everolimus-eluting metallic stent.
Vessel Prep for Bioresorbable Vascular Scaffolds

**PSP (Pre-dilate, appropriate Sizing, Post-dilation)**

Predilate with 2.75x20 NC Trek

ABSORB GT1 3.0x28 Scaffold

Post-dilate with NC 3.5x20 balloon
Vessel Prep for Bioresorbable Vascular Scaffolds

PSP (Pre-dilate, appropriate Sizing, Post-dilation)
Vessel Prep for Bioresorbable Vascular Scaffolds

**CONCLUSIONS** In the present large-scale analysis from the major ABSORB studies, after multivariable adjustment for baseline patient and lesion characteristics, vessel sizing and **operator technique were strongly associated with BVS-related outcomes during 3-year follow-up.** (ABSORB II Randomized Controlled Trial [ABSORB II]; NCT01425281; ABSORB III Randomized)
Vessel Prep for Bioresorbable Vascular Scaffolds

Optimal implantation technique substantially reduces adverse events, now confirmed in GHOST-EU analysis

1-Year GHOST-EU Data Analysis: Complete PSP versus Incomplete PSP

Event Rate %

- Incomplete PSP (N=1071) [7.4%] vs. Complete PSP (N=156) [3.5%, 2.3%, 0.0%]
- P=0.037

Technique and vessel prep matters!
Conclusions

- Increasing number of effective interventional tools means that we can optimize and individualize treatment for specific lesion types.

- Vessel preparation is becoming increasingly recognized as an important component of that individualized treatment and is likely essential to achieving optimal outcomes.

- Strategies for vessel prep are especially important for improving outcomes prior to deployment of scaffolds, and this may not be limited to a specific type of scaffold.
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