Drug Eluting Stents versus Drug Coated Balloons: Which is Best Which is More Cost Effective

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Disclosures
Nothing to disclose.

Long SFA CTO (>40 cm)
SFA Stump
mid SFA
distal SFA
Pop II
Subintimal
Recanalization
Re-entry
DES 5 mm
DES 6 mm

Enrolled in BEST CLI

Endovascular Evolution for Femoropopliteal Disease

Improving Patency after Peripheral Vessel Interventions- Local Delivery of Drugs

Restenosis after PVI, remains one of the major limitations of PVI, particularly in long SFA segments
Restenosis despite systemic therapy has led to development of technology to reduce intimal hyperplasia by methods of local delivery of agents.

DCB is More Effective Treatment than POBA

Schneider P, et al. Circ Cardiovasc Interv 2018

Evaluation of Cost-effectiveness: Mathematical Model

A mathematical model that assumes gradual adoption of the technology based on historical data.

Decision analytic model. A state transition decision analysis model was used as the primary method to simulate, by index procedure strategy and associated costs. Key procedure options were PTA with balloon test, primary BMS DES, and DCB with balloon test. Several important assumptions were made in our model.

Clinical parameter assumptions. Clinical parameters were obtained from pooled weighted results from the aforementioned BMS and DCB trials and additional literature searches. When no data were available, estimates were made with published data following major clinical parameters and primary references are summarized in Table 2.

ICER = ∆Cost($)/QALY

Natalie Sridharan, MD

DCB could be first line treatment for many cases but...

Limitations
- Procedural Effectiveness same as PTA
- Recoil

DCB can be first line treatment for many cases but...

Limitations
- Procedural Effectiveness same as PTA
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- Dissection
DCB can be first line treatment for many cases but...

**Limitations**
- Procedural Effectiveness same as PTA
- Recoil
- Dissection
- Calcification?

Calcium is a barrier for drug absorption

Fanelli et al. Cardiovasc Intervent Radiol 2014

Calcium Distribution

DCB can be first line treatment for many cases but...

**Limitations**
- Procedural Effectiveness same as PTA
- Recoil
- Dissection
- Calcification?
- Long Lesions would require bailout stenting

Bail-out Stenting After DCB is Low?

...but this is not what I see in my daily practice...

ILLUMINATE EU RCT IN.PACT SFA LEVANT 2

Bail-Out Stenting

Bail-out Stenting After DCB is Low?

Need for Stenting is high in Complex Lesions & Real Life

<table>
<thead>
<tr>
<th>Lesion</th>
<th>IN.PACT Global Long Lesion</th>
<th>IN.PACT Global Clinical Cohort</th>
<th>Leipzig Registry</th>
<th>XLPAD Registry</th>
<th>SFA Long Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provisional Stenting</td>
<td>157</td>
<td>1406</td>
<td>288</td>
<td>225</td>
<td>105</td>
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<tr>
<td>39%</td>
<td>21.2%</td>
<td>23.3%</td>
<td>31%</td>
<td>10.5%</td>
<td></td>
</tr>
</tbody>
</table>

~ 25%

Schaefer et al. Circ Cardiovasc Intervent 2018
Ansel et al. J Endovasc Ther 2018
Scheinert et al. JACC Intv 2018
Kokkinidis et al. Vasc Med 2018
Micari et al. JACC Intv 2016

Drug Eluting Stents

Zilver PTX

Implementation of drug-eluting stents for the treatment of femoropopliteal disease provides significant cost-to-system savings in a single-state outpatient simulation.

Methods: Model inputs

- Florida SASD, SID, Cook Medical

“Results from this study lend support to the argument that adoption of a somewhat more costly new technology can improve clinical outcomes while reducing expenditure, making both clinical and economic sense for health care system to adopt the technology. To realize these benefits, it requires payers’ willingness to take a longer-term view of spending.”

“Widespread adoption of drug-eluting endovascular therapies for femoropopliteal disease would add meaningful clinical benefit at reasonable costs to NHS.”

Natalie Sridharan, MD

- In PP model highest primary patency decision model (single intervention)

**DES** → **DCB** → **BMS** → **POBA**

**Treatment** | **PP at 1-year, %** | **Cost per patient, $** | **ICER (Cost/ additional patency), $** | **NNT to avoid one loss of PP**
---|---|---|---|---
POBA | 64 | 9289 | ref | 
DCB | 74 | 9918 | 14,136 | 10
DES | 79 | 14,820 | 87,377 | 20
BMS | 71 | 14,237 | Dominated | Dominated

DCB is more cost-effective than DES

Primary patency is significantly better and TLR is significantly less in patients who had PVI with DCB or DES.

This will lead to a significant ICER ($/QALY) despite initial higher costs of DCB or DES. DES is more costly, DCB is most cost-effective.

Complexity of the lesion should dictate the best type of endovascular device being used.

DES leads to better outcomes in complex calcified lesions than DCB.

Conclusions

- **DES** leads to better outcomes in complex calcified lesions than **DCB**.
- **POBA** is non-inferior to **DES**.
- DCB is more cost-effective than DES.
- Primary patency is significantly better and TLR is significantly less in patients who had PVI with DCB or DES.
- This will lead to a significant ICER ($/QALY) despite initial higher costs of DCB or DES. DES is more costly, DCB is most cost-effective.
- Complexity of the lesion should dictate the best type of endovascular device being used.

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