Relining of Gardener’s Stent Fracture (*Supera*™ *stent*) in Popliteal artery

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Disclosure

Speaker name:

......Prof. Jae Kyu Kim

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
SUPERA™ STENT — LIKE NO OTHER STENT

The Supera™ Peripheral Stent is indicated for the superficial femoral artery (SFA) and the proximal popliteal artery. Engineered by a unique interwoven wire technology, this nitinol stent offers physicians unmatched clinical outcomes across varied lesion complexities and lengths.

Unlike any other stent design platform, the Supera™ Stent is uniquely designed to keep vessels open with its distinct platform, created by interwoven individual, flexible nitinol wires.

- High Compression Resistance\textsuperscript{26}
  - 4x greater strength for compression resistance—so it can maintain a round, open lumen, which can be especially beneficial in calcified lesions

- Low Chronic Outward Force\textsuperscript{26}
  - One sizing, which exerts the least chronic outward force and results in minimal vessel injury\textsuperscript{28}

- High Flexibility\textsuperscript{27} and Fracture Resistance\textsuperscript{5}
  - Unparalleled flexibility,\textsuperscript{27} which mimics the natural structure and movement of the anatomy\textsuperscript{29,31}

  Zero stent fractures reported at 1 year in over 2,000 patients across 17 studies\textsuperscript{3,5,20}
75yrs, M
C/C
sudden onset Lt leg numbness & pain
HTN(+)  
Duration
5 days
Occupation
Gardener
Recurred Sx

POD # 3.5 ms
My Recommendation(s) after Fem-pop stenting

• Continuous Medications etc
• Continuous Exercise........

• Change or modify the life style / habitus  !!!!! to avoid too excessive, repeated knee flexion
Excessive Knee Flexion during Gardening
Biomechanical Forces in the Femo-popliteal Segment

- F-P segment is fixed at groin and adductor canal
- F-P artery is repetitively deformed in multiple directions by leg movement
  - Crossing flexion points
  - Interaction with surrounding musculature
  - Compression, torsion, elongation

Image courtesy of Dr. Chris Metzger.

3. Maximum compression from muscular contraction; based on arterial pressure of 160 mmHg for a 6 x 100 mm vessel under 1 mm compression. Supinski GS, et al., Effect of diaphragmatic contraction on intramuscular pressure and vascular impedance, Journal of Applied Physiology, 1990, 68(4): 1486-1493.
## Endovascular Treatment of Popliteal Artery Occlusion Caused by a Ruptured Supera Interwoven Nitinol Stent

Ann Vasc Surg 2019:59;308.e9-308.e13

### Authors

Enrique M. San Norberto, Liliana A. Fidalgo-Domingos, Irene García-Saiz, James Taylor, and Carlos Vaquero, Prof. Valladolid and Valencia, Spain

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
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<th>Stent fracture</th>
<th>12-month follow-up</th>
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<td>Goltz et al.</td>
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<td>León et al.</td>
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<td>Werner et al.</td>
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<td>Chan et al.</td>
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<td>George et al.</td>
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<td>Myint et al.</td>
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</table>

\(^a\)Only popliteal lesions.

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### Results

**Kum S LINC 2016**
- One (Type V)

**FDA 2017 by manufacture**
- One (Type III)

**San Norberto 2019**
- One (Type III)

**Amin SS LINC 2020**
- One (Type IV)

**Freitas B LINC 2020**
- One

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**6 (8?)/ 8 in Popliteal artery**

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**1. Type III**

**2. San Norberto et al. 2017**
- One (Type V)

**3. Kum S LINC 2016**
- One (Type V)

**4. FDA 2017 by manufacture**
- One (Type III)

**5. San Norberto et al. 2019**
- One (Type III)

**6. Type III**

**7. Amin SS LINC 2020**
- One (Type IV)

**8. Freitas B LINC 2020**
- One
Endovascular Treatment of Popliteal Artery Occlusion Caused by a Ruptured Supera Interwoven Nitinol Stent

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Enrique M. Sans-Norberto,1 Liliama A. Fidalgo-Domingos,1 Irene García-Saté,2 James Taylor,2 and Carlos Vaquero,2 Prof. Valladolid and Valencia, Spain

Fracture of a Supera Interwoven Nitinol Stent After Treatment of Popliteal Artery Stenosis

Tommaso Cambiagi1, Andrea Spertino, MD2, Luca Bertoglio, MD3, and Roberto Chiesa, MD1

Adventitial Cystic Disease of the Popliteal Artery Contributing to Supera Stent Fracture
Presumptive Causes

- Knee flexion -> *extensive kinking, functional stenosis*
- Biomechanical stress, external mechanical forces from surrounding musculature -> *compression, torsion, elongation*


- **Oversized dilation** after stent / atherectomy -> structurally damage a stent

- **Excessively rapid deployment** -> improperly distribute the nitinol wire & damage its integrity

Post- 2nd re-intervention
POD # 2 months
Lever

P2 segment
What’s your recommendation(s)??

• Relining with Supera stent / Stent-graft ?

• Surgical bypass ?

• Other option(s) ?
Thanks for your kind attentions !!!

&

waiting for

the excellent recommendation!!

Contact e-mail ; kjkrad@jnu.ac.kr
Relining of Gardener’s Stent Fracture (Supera™ stent) in Popliteal artery

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