

# Revasculariser ou préserver

## l'hypogastrique en endovasculaire:

### trucs et astuces

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T Konings, O Zarrouk (Research)



# Faculty disclosures

## *Barend M.E. Mees*

- **Consulting, research grants, scientific advisory board**  
Philips, Cook Medical Inc., Bentley Innomed, TripleMed
- **Director**  
European Vascular Course
- **Intellectual property**  
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# Just another case of AIOD

2020

50-year old male

Short distance claudication L

No effect of SET

Statin and ASA

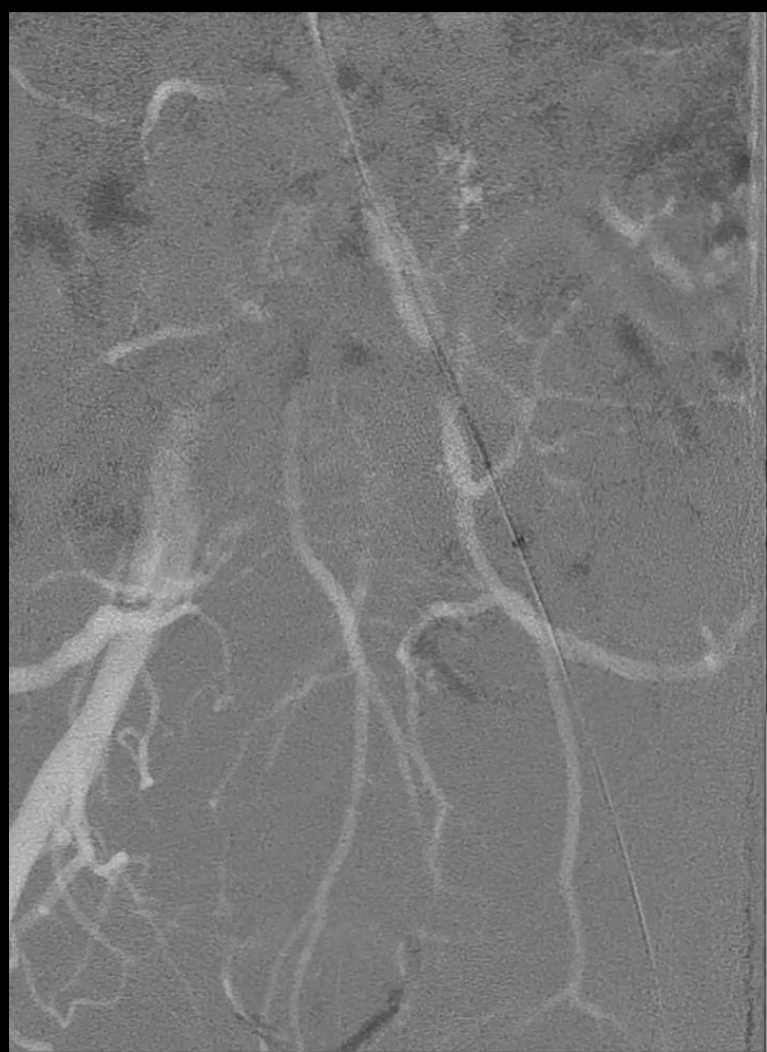
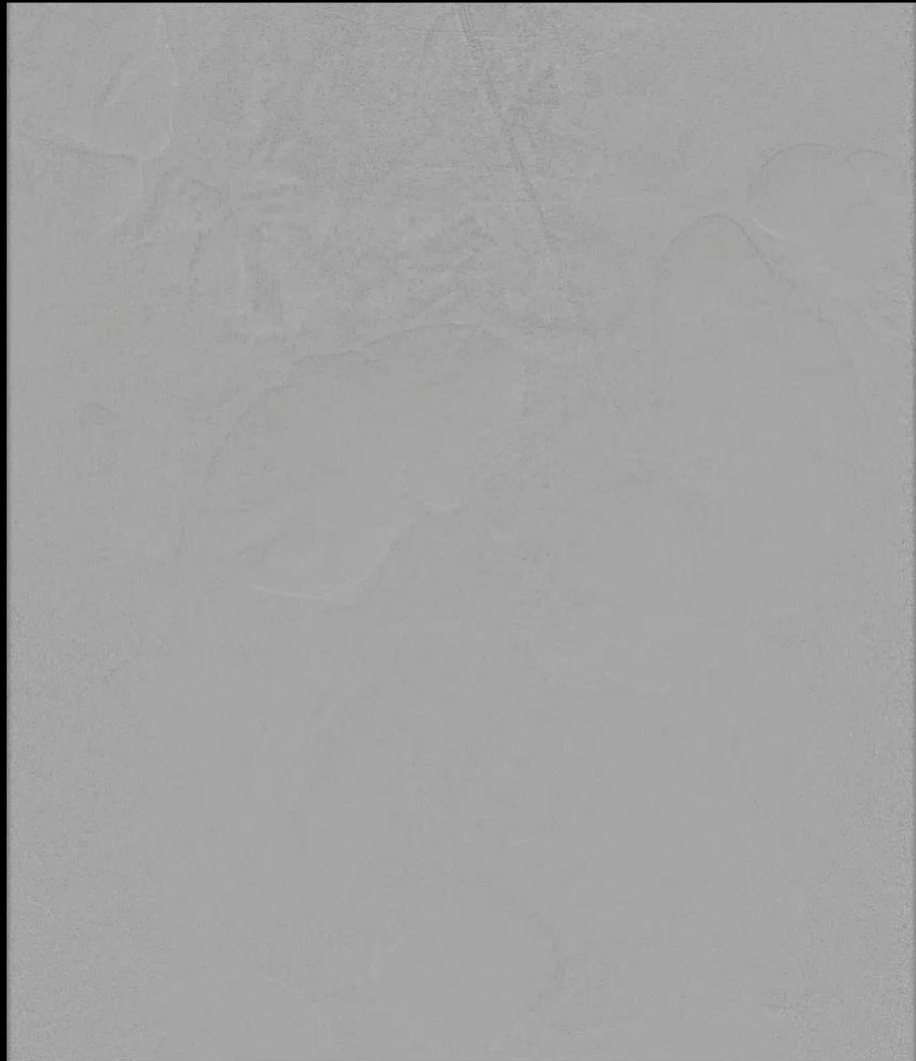
Stopping smoking

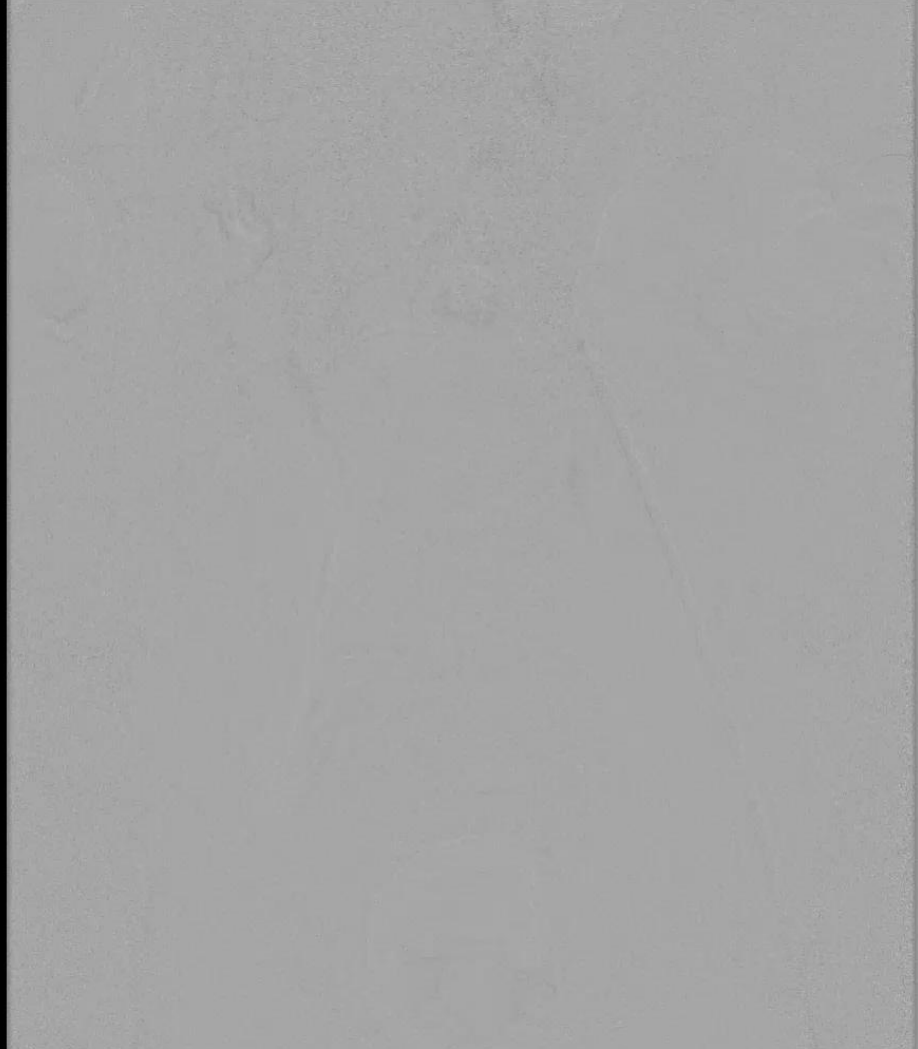
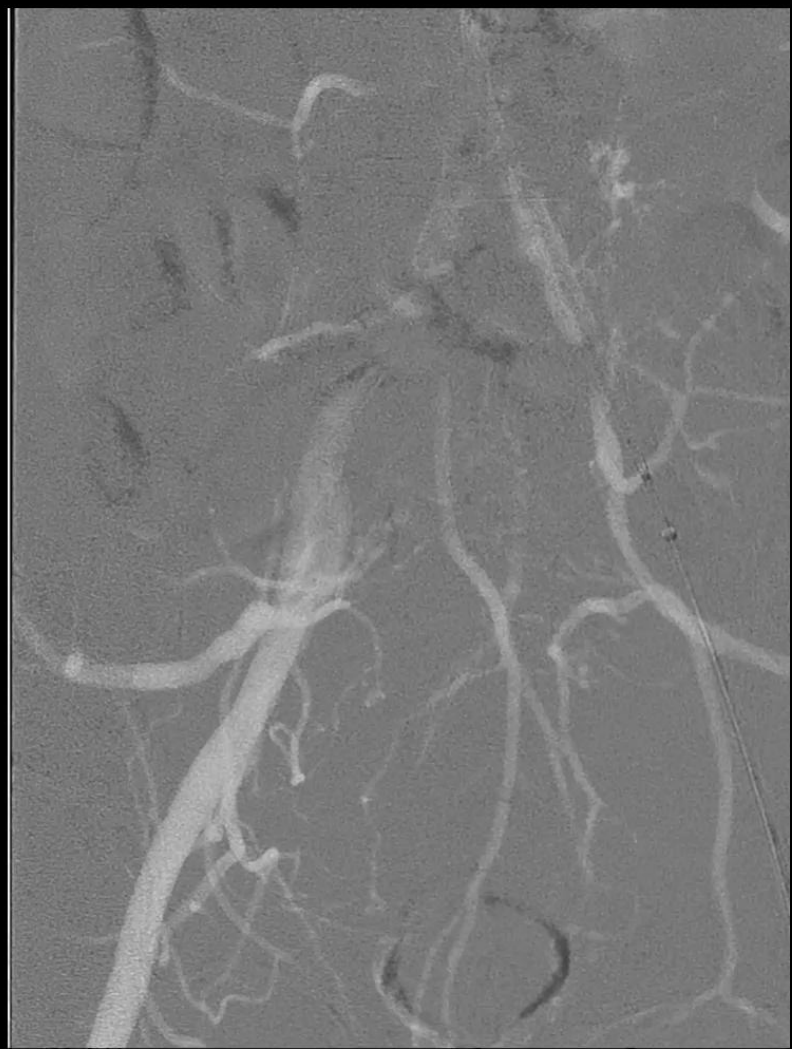
No femoral pulse on L

ABI R 100% → 102%

ABI L 72% → 27%







# Just another case of AIOD

2022

Recurrent buttock claudication L

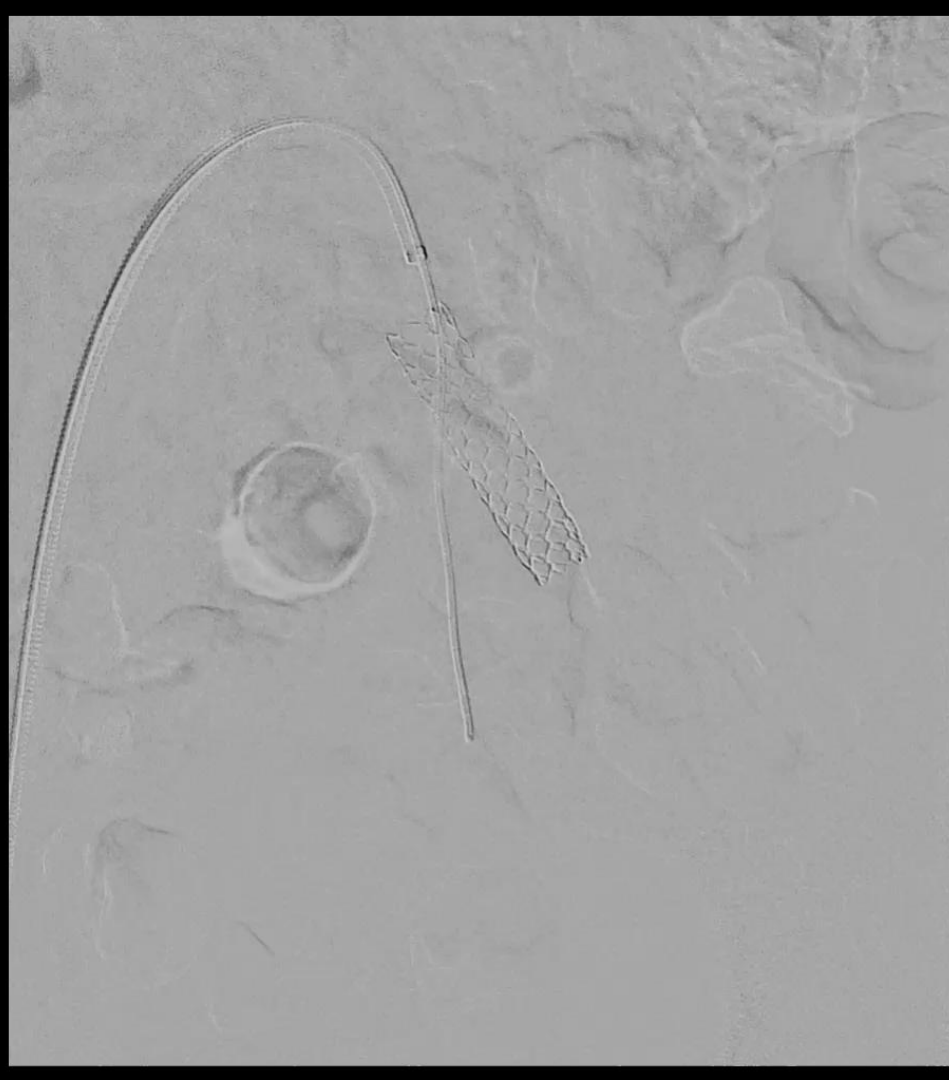
ABI R 106% → 106%

ABI L 93% → 87%

Duplex: patent iliac stent L, stenosis origin hypogastric L







# Just another case of AIOD

2024

R leg claudication

ABI R 91%

ABI L 96%

Duplex: stenosis R CIA





# Just another case of AIOD

2025

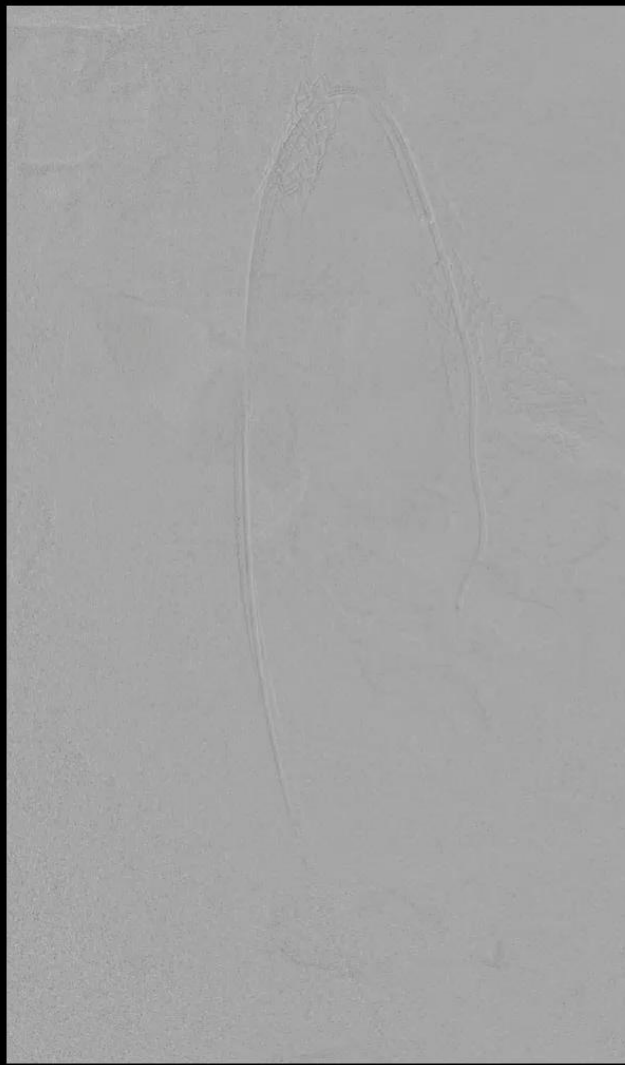
Recurrent L buttock claudication

ABI R 103% → 100%

ABI L 91% → 91%

Duplex: stenosis origin L hypogastric artery





# My questions from this case

How often is hypogastric artery involved in AIOD and how harmful is bare coverage?**5-14% of patients with PAD**

What is the optimal treatment of hypogastric stenosis (through previously placed iliac stent), angioplasty or stent?

What is known about the technique and outcomes of T-stenting?

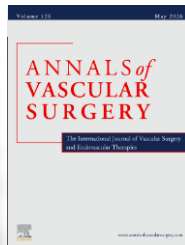




*Clinical Research*

**Outcomes of Hypogastric Coverage and Occlusion during Endovascular Treatment of Aortoiliac Occlusive Disease**

*Andrew H. Smith, Siddhartha Dash, Erin C. Driscoll, Levester Kirksey, Jarrad Rowse, David Hardy, Sean P. Lyden, Francis J. Caputo, and Christopher J. Smolock, Cleveland, OH*



251 from 1020 patients had hypogastric coverage during iliac stenting (338 limbs).

**Rutherford classification**

|     |             |
|-----|-------------|
| III | 150 (59.8)  |
| IV  | 67 (26.7)   |
| V   | 29 (11.6)   |
| VI  | 5 (2.0)     |
| ABI | 0.59 ± 0.23 |

**Table II.** Anatomic and operative characteristics

| Factor  | Totals (N = 338) |
|---|------------------|
| Prior intervention for AIOD                   |                  |
| Endovascular                                  | 58 (17.3)        |
| Open  | 14 (4.2)         |
| Prior aortoiliac aneurysm surgery             |                  |
| Endovascular                                  | 3 (0.89)         |
| Open  | 1 (0.30)         |
| Prior infrainguinal intervention              |                  |
| Endovascular                                  | 36 (10.7)        |
| <b>Aortoiliac TASC classification</b>         |                  |
| A   | 8 (2.4)          |
| B   | 81 (24.0)        |
| C   | 38 (11.1)        |
| D   | 211 (62.6)       |
| Aortic occlusion                              | 10 (3.0)         |
| Ipsilateral CIA occlusion                     | 28 (8.3)         |
| Ipsilateral EIA occlusion                     | 28 (8.3)         |
| Hypogastric ostial Stenosis                   |                  |
| 0–25%   | 60 (18.7)        |
| 25–50%  | 88 (27.4)        |
| >50%  | 173 (53.9)       |
| IMA patency                                   | 270 (83.1)       |
| Contralateral hypogastric patent              | 293 (86.7)       |
| Ipsilateral profunda patent                   | 331 (98.2)       |
| Ipsilateral inferior epigastric patent        | 318 (94.1)       |
| Ipsilateral circumflex patent                 | 321 (95.1)       |
| Concurrent aortic intervention                | 64 (18.9)        |
| Bilateral iliac intervention                  | 242 (73.3)       |
| Contralateral hypogastric coverage            | 183 (55.3)       |
| Concurrent femoral endarterectomy             | 177 (52.4)       |
| <b>Total aortoiliac stented length</b>        | 139.1 ± 48.6     |
| <b>Diameter of stent covering hypogastric</b> | 9.1 ± 1.2        |
| Type of stent covering hypogastric            |                  |
| Self-expanding                                | 322 (96.4)       |
| Balloon-expandable                            | 12 (3.6)         |
| Postdilation diameter                         | 7.4 ± 0.94       |
| Prothrombin reversal                          | 270 (80.5)       |
| Procedure time                                | 263.4 ± 157.5    |

Statistics presented as Mean ± SD and N (%).

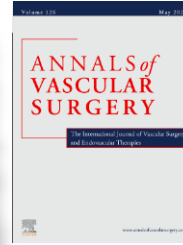




*Clinical Research*

**Outcomes of Hypogastric Coverage and Occlusion during Endovascular Treatment of Aortoiliac Occlusive Disease**

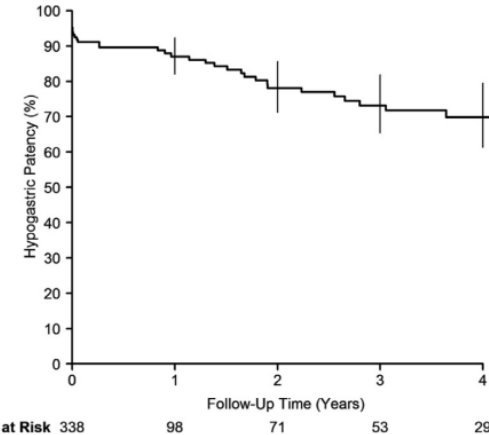
*Andrew H. Smith, Siddhartha Dash, Erin C. Driscoll, Levester Kirksey, Jarrad Rowse, David Hardy, Sean P. Lyden, Francis J. Caputo, and Christopher J. Smolock, Cleveland, OH*



5.6% acute hypogastric occlusion after BMS coverage

78% hypogastric artery patency at 24 months after BMS coverage

Predictors for loss of patency were smaller hypogastric diameter and EIA occlusion




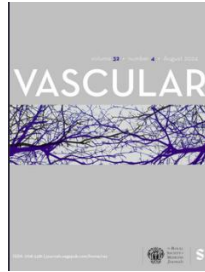
**Fig. 1.** Kaplan-Meier curve for hypogastric patency during the study period. Vertical bars represent the 95% confidence interval of the mean.



Original Article

## Hypogastric artery luminal diameter predicts common-external iliac stent patency and major adverse limb events in patients with aortoiliac occlusive disease

Andrew H Smith , Siddhartha Dash, Sean Steenberge, Jon G Quatromoni, Jarrad W Rowse, Francis J Caputo, Levester Kirksey, Linda M Graham, Sean P Lyden and Christopher J Smolock



236 patients (318 limbs) with hypogastric coverage during iliac stenting  
96% self expanding stents  
78% C-EIA stenting primary patency at 48 months

**Table 3.** Multivariable analysis for C-EIA stent primary patency loss at 4 years.

| Factor | Level | Hazard ratio<br>(95% CI) | p-Value |
|--------|-------|--------------------------|---------|
|--------|-------|--------------------------|---------|

**Table 4.** Multivariable analysis for major adverse limb events at 4 years.

| Factor                                | Level              | Hazard ratio<br>(95% CI) | p-Value         |
|---------------------------------------|--------------------|--------------------------|-----------------|
| Proximal hypogastric luminal diameter |                    | 0.79 (0.66, 0.93)        | <b>.006</b>     |
| Diabetic                              | Insulin-controlled | 2.29 (1.31, 4.00)        | <b>.004</b>     |
| Rutherford classification             | IV                 | 2.19 (1.19, 4.04)        | <b>.012</b>     |
| Rutherford classification             | V                  | 3.76 (1.76, 8.06)        | <b>&lt;.001</b> |
| Rutherford classification             | VI                 | 10.47 (4.06, 26.98)      | <b>&lt;.001</b> |
| Aortoiliac TASC classification        | C                  | 2.00 (0.87, 4.63)        | 0.1             |

Bold and italic values represent statistical significance.



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Clinical Research

## Outcomes of Hypogastric Coverage and Occlusion during Endovascular Treatment of Aortoiliac Occlusive Disease

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**Risk of immediate and delayed hypogastric occlusion is low** following BM-SES coverage during stenting for occlusive disease, and if it occurs it does not influence perioperative outcomes.

Luminal **diameter of the hypogastric** origin is an **important predictor** of **MALE and C-EIA patency loss** following hypogastric BM-SES coverage during treatment of AIOD.

Should we be **more liberal in treating the hypogastric artery** concomitantly?



# Last week's CERAB case

60-year old male

Short distance claudication L

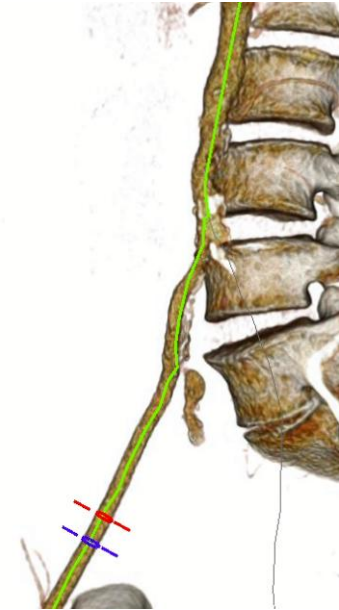
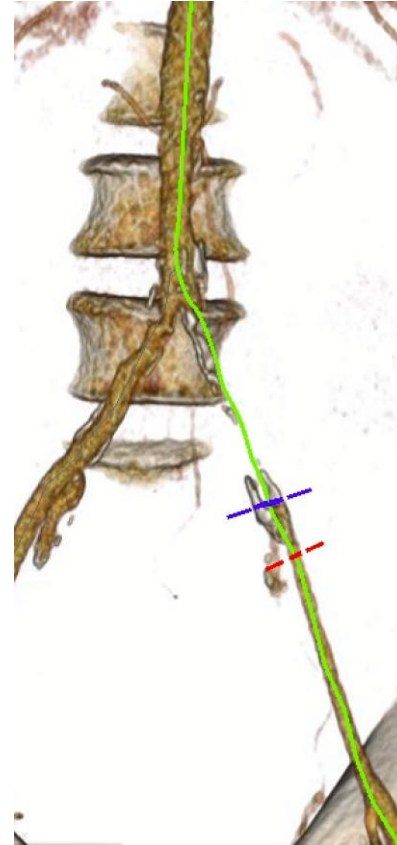
No effect of SET

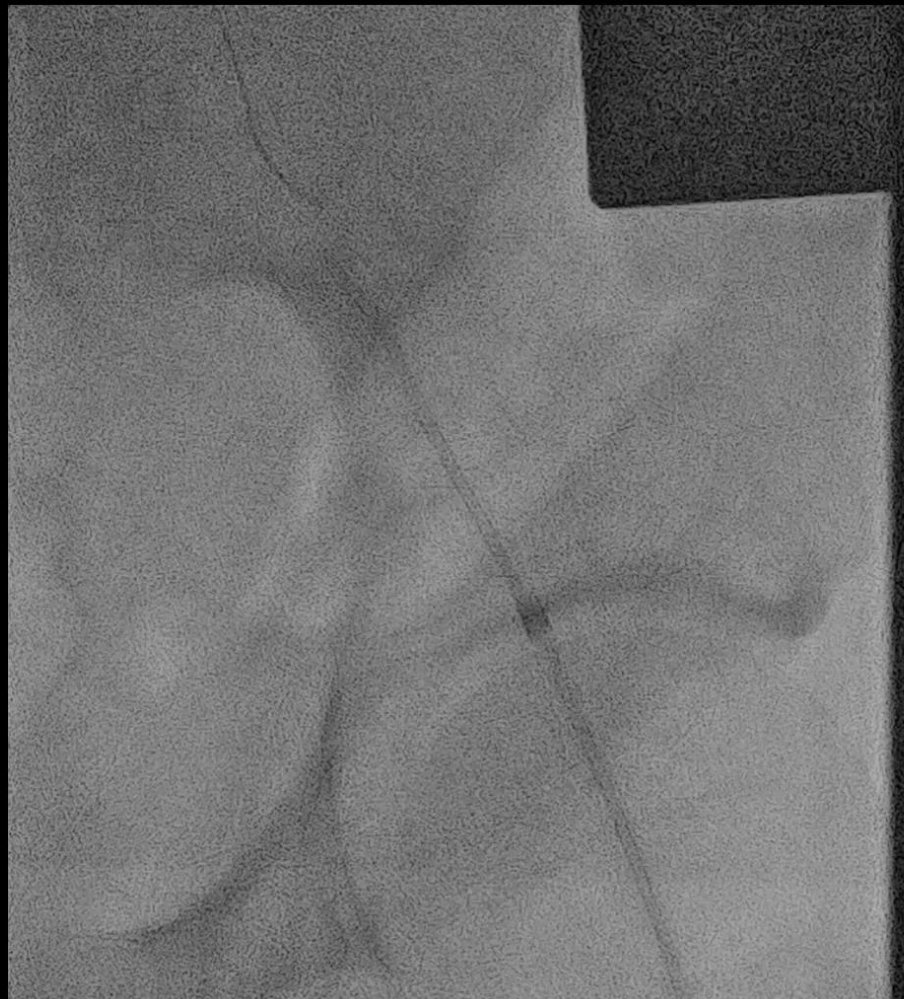
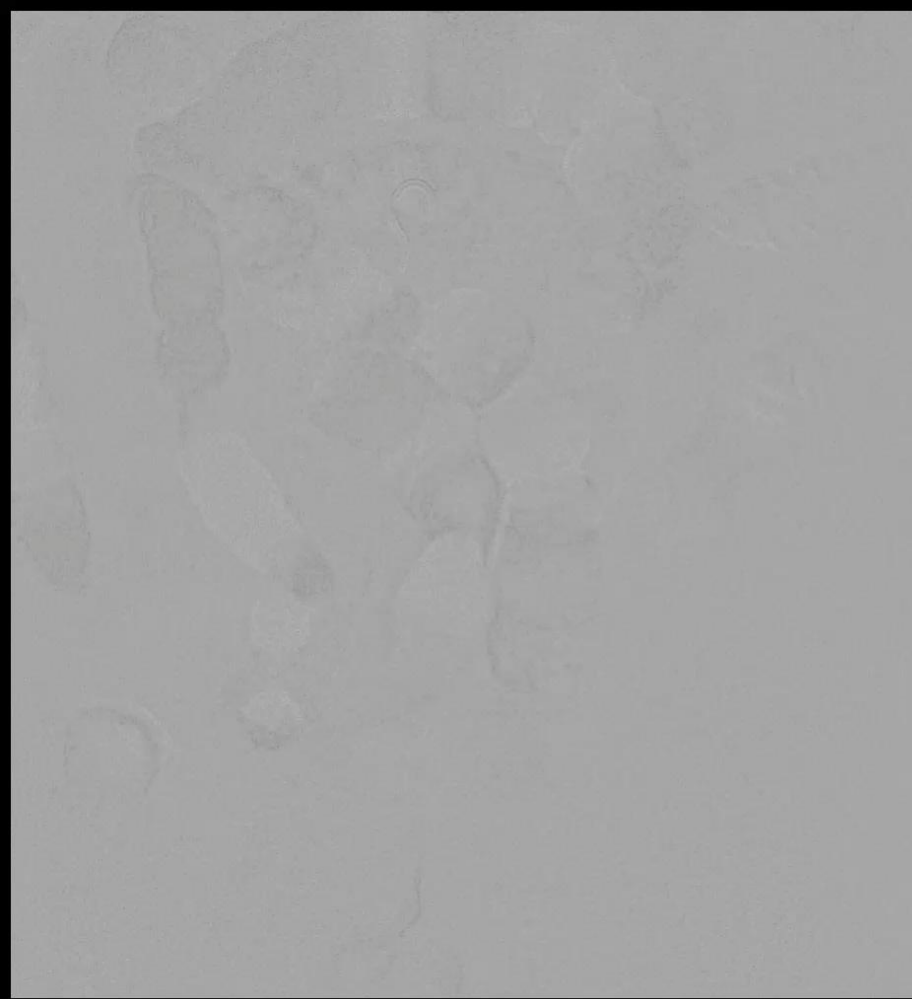
Statin and ASA

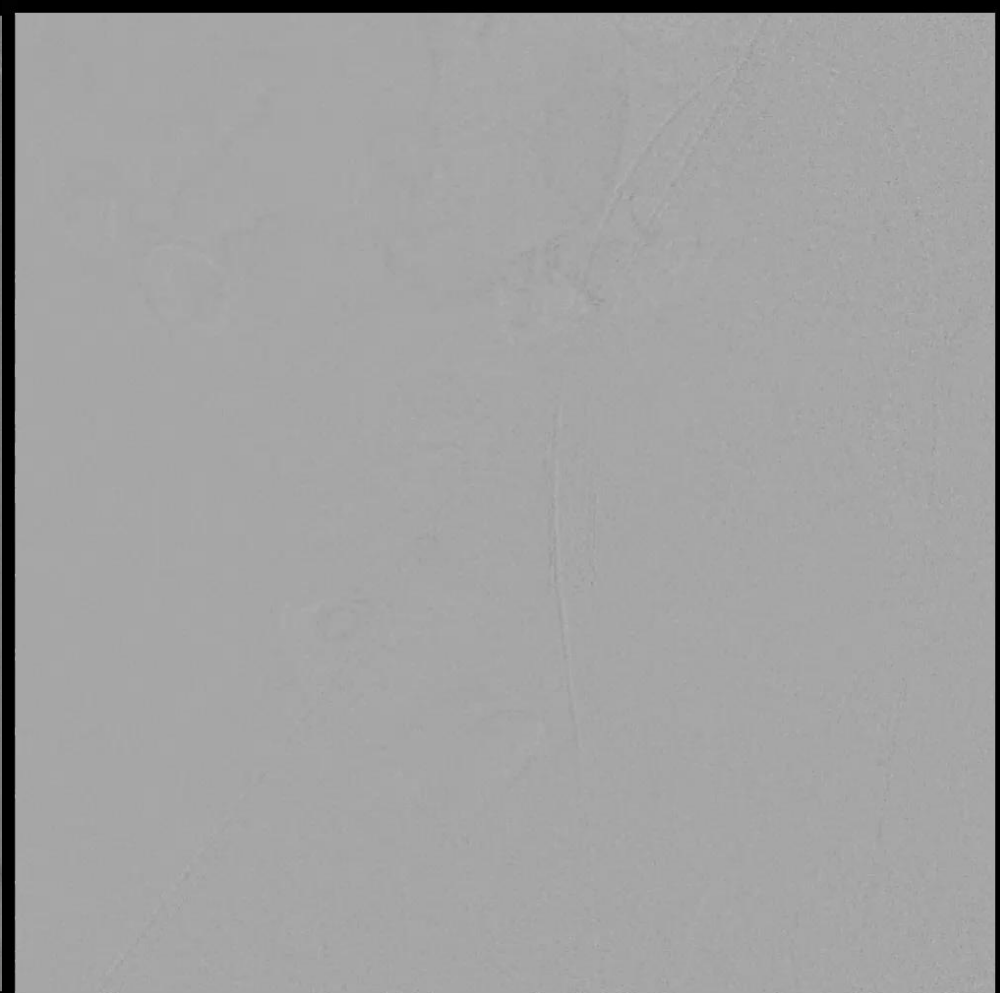
No femoral pulse on L

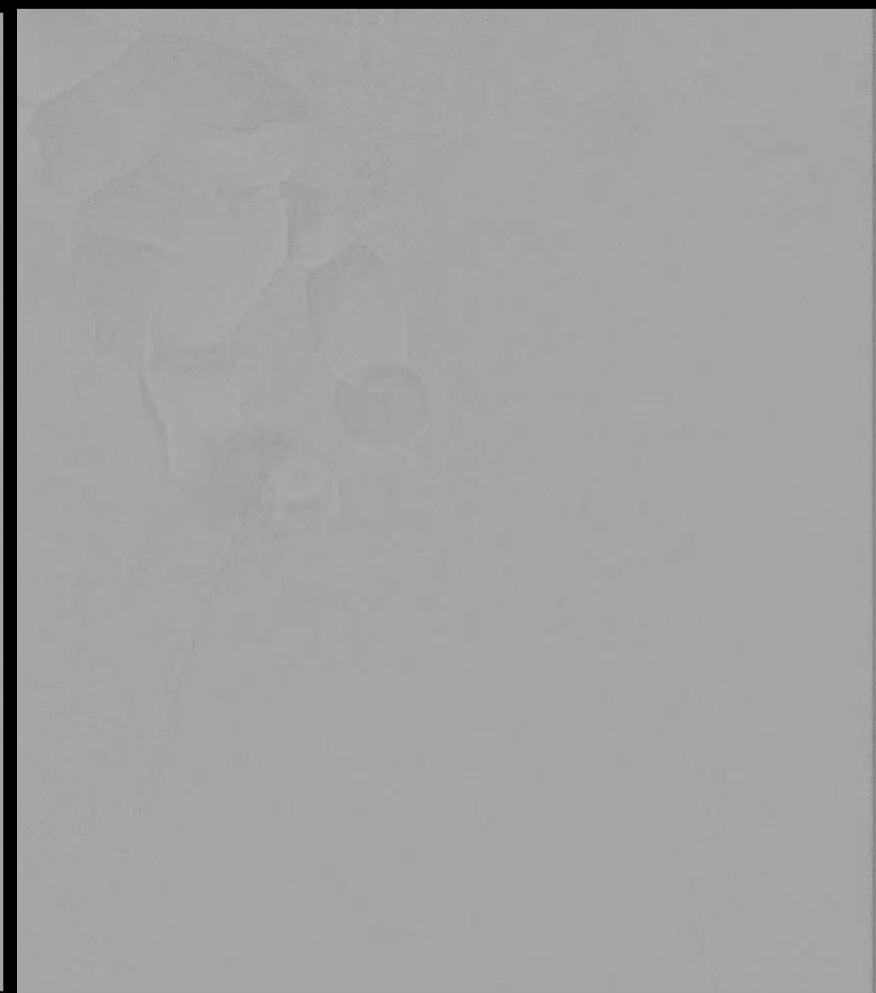
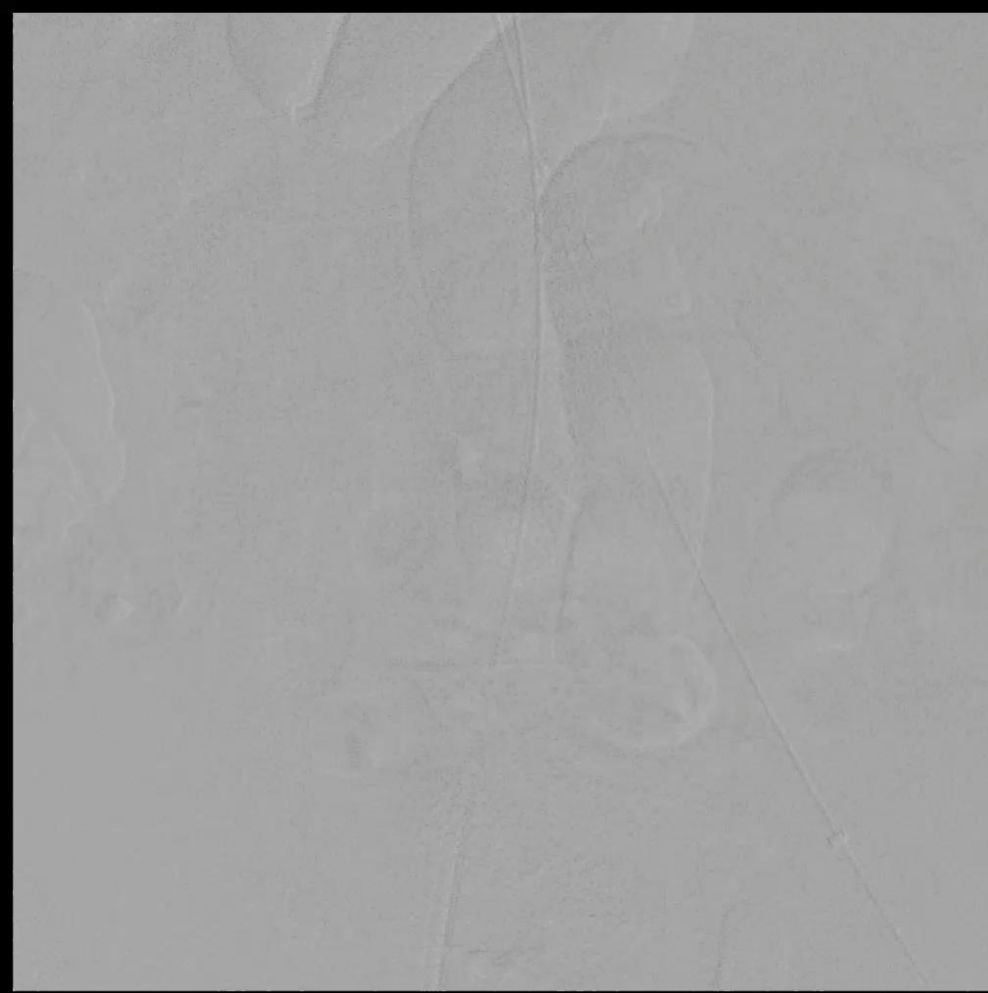
ABI R 106%

ABI L 63%









# BeGlow



**Table 1:** Baseline characteristics

|  | N= 669      |
|--|-------------|
| <b>Age</b>                               | 65.5 ± 8.4  |
| <b>BMI</b>                               | 26.0 ± 4.6  |
| <b>Gender (male)</b>                     | 415 (62.0%) |
| <b>Worse foot ABI</b>                    | 0.5 ± 0.2   |
| <b>Cardiovascular risk factors</b>       |             |
| Active smoker                            | 327 (48.9%) |
| Hypertension                             | 487 (72.8%) |
| Diabetes                                 | 219 (32.7%) |
| COPD                                     | 106 (15.8%) |
| Coronary artery disease                  | 221 (33.0%) |
| Stroke or TIA                            | 81 (12.1%)  |
| Congestive heart failure                 | 62 (9.3%)   |
| Renal dysfunction                        | 337 (50.4%) |
| <b>ASA Classification ≥ 3</b>            | 402 (60.1%) |
| <b>Acute</b>                             | 32 (4.8%)   |
| <b>Rutherford Classification Chronic</b> |             |
| Mild Claudication                        | 7 (1.0%)    |
| Moderate Claudication                    | 73 (10.9%)  |
| Severe Claudication                      | 336 (50.2%) |
| Rest Pain                                | 127 (19.0%) |
| Minor Tissue Loss                        | 84 (12.6%)  |
| Major Tissue Loss                        | 10 (1.5%)   |

Abbreviations: BMI Body Mass Index, COPD Chronic Obstructive Pulmonary Disease , ABI Ankle-brachial Index, TIA Transient Ischemic Accident , ASA American Society of Anaesthesiologists

N= 669

## TASC II

|         |             |
|---------|-------------|
| TASC A  | 3 (0.5%)    |
| TASC B  | 63 (9.4%)   |
| TASC C  | 99 (14.8%)  |
| TASC D  | 490 (73.2%) |
| Missing | 14 (2.1%)   |

## Complete aorto-iliac occlusion

79 (11.8%)

## Aortic lesion length, mean (SD)

44.5 ± 31.7

## Aortic CTO

91 (13.5%)

## Iliac lesion length, mean (SD)

48.6 ± 37.8

## CIA CTO

365 (54.6%)

### Right

137 (20.5%)

### Left

131 (19.6%)

### Bilateral

97 (14.5%)

## Runoff score

4 (1-6)

## Whole iliac axis (CIA+ AIE) CTO

### Right

48 (7.1%)

### Left

56 (8.3%)

### Bilateral

0 (0.0%)

## IIA stenosis

335 (50.1%)

## IIA occlusion

176 (26.3%)

## EIA stenosis

369 (55.2%)

## EIA occlusion

166 (24.8%)

Abbreviations: SD Standard Deviation, TASC Trans-Atlantic Inter Society Consensus, CTO Chronic Total Occlusion, IIA Internal iliac artery, EIA External iliac artery



**Table 3:** Most frequent concomitant procedures during CERAB procedure

| Concomitant procedure     | Count (%)   |
|---------------------------|-------------|
| <b>CFA endarterectomy</b> |             |
| Unilateral                | 130 (19.4%) |
| Bilateral                 | 89 (13.3%)  |
| <b>EIA intervention</b>   |             |
| PTA + stenting            | 309 (46.2%) |
| PTA                       | 158 (23.6%) |
| <b>IIA intervention</b>   |             |
| PTA + stenting            | 17 (2.5%)   |
| PTA                       | 7 (1.0%)    |
| Above knee PTA            | 23 (3.4%)   |
| Below knee PTA            | 12 (1.8%)   |
| Femoro-popliteal bypass   | 12 (1.7%)   |

Abbreviations: CFA Common Femoral Artery, EIA External Iliac Artery, IIA Internal Iliac Artery, PTA Percutaneous Transluminal Angioplasty

### Number of aortic stents, median [IQR]

Diameter first aortic stent (mm), median [IQR]

Length first aortic stent (mm), median [IQR]

### Number of iliac stents per side, median [IQR]

Diameter Iliac stents (mm), median [IQR]

Length iliac stents (mm), median [IQR]

### Landing in the EIA

|                                     |              |
|-------------------------------------|--------------|
| IIA coverage                        | 158 (23.5%)  |
| Duration operation (min), mean (SD) | 152.8 ± 90.9 |
| Fluoroscopy time (min), mean (SD)   | 28.9 ± 22.4  |



# Endovascular Treatment for Symptomatic Hypogastric Artery Stenosis or Occlusion: A Systematic Review and Meta-Analysis

Nicola Cicala,<sup>1</sup> Claudio Bianchini Massoni,<sup>2</sup> Davide Maria Pressanto,<sup>1</sup> Paola Meroni,<sup>1</sup> Beatrice Daldoss,<sup>1</sup> Giulia Rossi,<sup>2</sup> Antonio Freyrie,<sup>1,2</sup> and Paolo Perini,<sup>1,2</sup> Parma, Italy



6 studies; 96 patients (117 treated hypogastric arteries)  
72.5% unilateral and 89.5% stenosis

Angioplasty in 54% versus stenting in 46%

BES 85% versus SES 15%

BMS 64% versus covered stents 36%

CERIB in 13 patients



# Endovascular Treatment for Symptomatic Hypogastric Artery Stenosis or Occlusion: A Systematic Review and Meta-Analysis

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6 studies; 96 patients (117 treated hypogastric arteries)

Technical success was 96%

Clinical success was 90% with complete symptom resolution in 84%

Estimated primary patency at 1 year was 93.4%

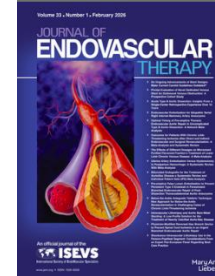
Estimated secondary patency at 1 year was 95.9%



# Covered Endovascular Reconstruction of the Iliac Artery Bifurcation (CERIB)

Paula Rosalie Keschenau, MD<sup>1</sup> , Mirja Stark, MD<sup>1</sup>, Benjamin Weiss, MD<sup>1</sup>, Daniel Palacios, MD<sup>1</sup>, and Johannes Kalder, Prof<sup>1</sup>

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DOI: 10.1177/15266028241258659  
www.jevt.org  
Mary Ann Liebert  
A Part of Sage



31 MARS  
1<sup>ER</sup> AVRIL 2026  
MÉRIDIDIEN PARIS ARC DE TRIOMPHE

13 patients

12 patients with claudication (4 isolated buttock claudication)

1 patient with minor wounds

8 TASC C/D and 5 TASC B lesions

2 chronic CIA/EIA occlusion

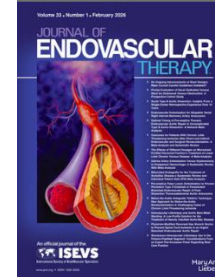
2 occluded hypogastric arteries



# Covered Endovascular Reconstruction of the Iliac Artery Bifurcation (CERIB)

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13 patients

6 concomitant femoral endarterectomy

100% technical success

No mortality

Mean 20 months follow-up

2 patients died

1 patient had two reinterventions (ilio-profunda bypass)

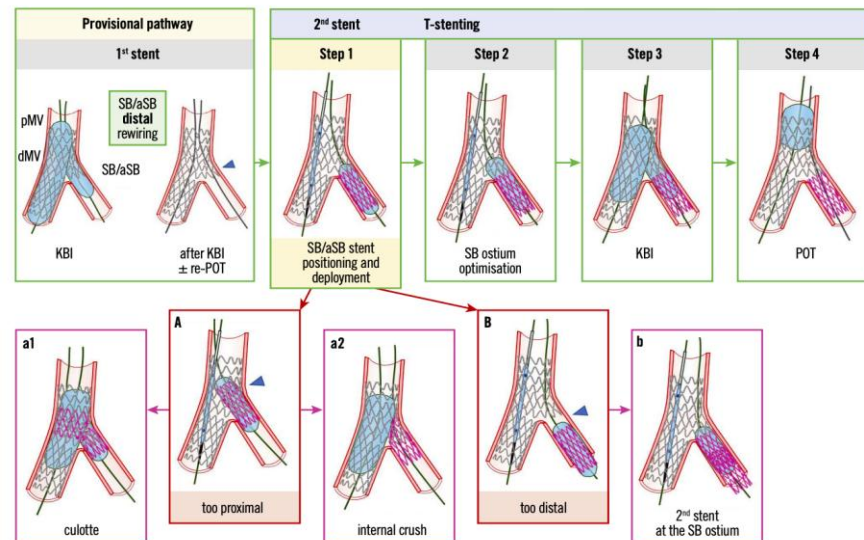
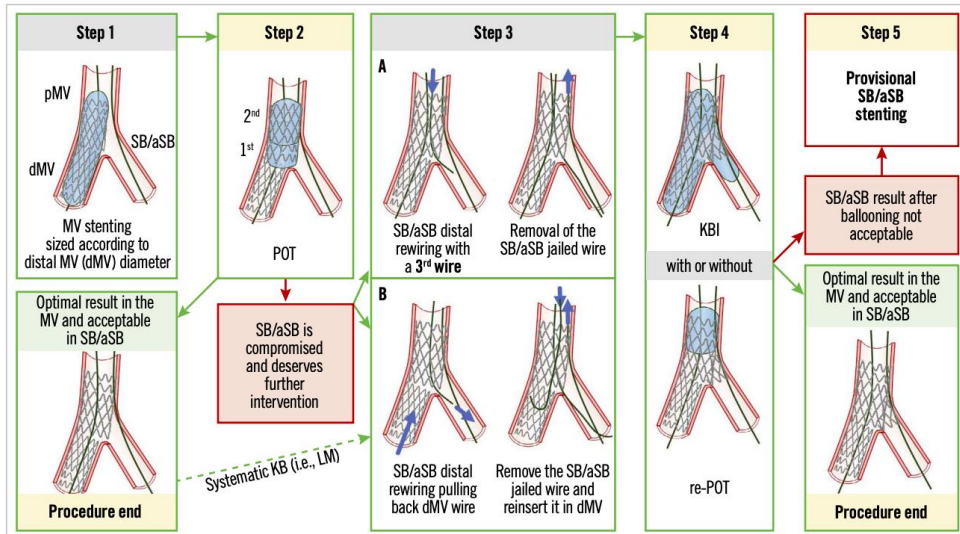


## Treatment of coronary bifurcation lesions, part I: implanting the first stent in the provisional pathway. The 16<sup>th</sup> expert consensus document of the European Bifurcation Club

Remo Albiero<sup>1\*</sup>, MD; Francesco Burzotta<sup>2</sup>, MD, PhD; Jens Flensted Lassen<sup>3</sup>, MD, PhD; Thierry Lefèvre<sup>4</sup>, MD; Adrian P. Banning<sup>5</sup>, MD, PhD; Yiannis S. Chatzizisis<sup>6</sup>, MD, PhD; Thomas W. Johnson<sup>7</sup>, MD; Mirosław Ferenc<sup>8</sup>, MD, PhD; Manuel Pan<sup>9</sup>, MD, PhD; Olivier Darremont<sup>10</sup>, MD; David Hildick-Smith<sup>11</sup>, MD; Alaide Chieffo<sup>12</sup>, MD; Yves Louvard<sup>4</sup>, MD; Goran Stankovic<sup>13</sup>, MD

## Treatment of coronary bifurcation lesions, part II: implanting two stents. The 16<sup>th</sup> expert consensus document of the European Bifurcation Club

Jens Flensted Lassen<sup>1\*</sup>, MD, PhD; Remo Albiero<sup>2</sup>, MD; Thomas W. Johnson<sup>3</sup>, MD; Francesco Burzotta<sup>4</sup>, MD, PhD; Thierry Lefèvre<sup>5</sup>, MD; Tinen L. Iles<sup>6</sup>, PhD; Manuel Pan<sup>7</sup>, MD, PhD; Adrian P. Banning<sup>8</sup>, MD, PhD; Yiannis S. Chatzizisis<sup>9</sup>, MD, PhD; Mirosław Ferenc<sup>10</sup>, MD, PhD; Vladimir Dzavik<sup>11</sup>, MD; Dejan Milasinovic<sup>12</sup>, MD; Olivier Darremont<sup>13</sup>, MD; David Hildick-Smith<sup>14</sup>, MD; Yves Louvard<sup>5</sup>, MD; Goran Stankovic<sup>12</sup>, MD, PhD



# Conclusion

- **Hypogastric coverage** with BMS during endovascular treatment of AIOD has **low risk on complications**, but a **medium risk of occlusion**.
- Since **hypogastric artery diameter** is **predictive of outcomes** of iliac stenting, it may be **considered to comcomitantly treat** hypogastric artery, especially in CERAB cases.
- Endovascular **treatment of hypogastric** stenosis/occlusion with **stenting rather than angioplasty may be considered**, however this is non-evidence based.
- CERIB and T-stenting are novel techniques for endovascular treatment of iliac bifurcation lesions.
- There is no recommendation on treatment or preservation of hypogastric artery during endovascular AIOD treatment in ESVS or ESC guidelines

# See You Next Year!



## March 7-9, 2027

30<sup>th</sup> European Vascular Course • Maastricht, the Netherlands