



Don't Use Risky and Embolizing Drug Coated Balloons Below The Knee !

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Disclosures

- Consultant / Speaker / Proctor / Advisory Board
 - Bayer
 - Bolton
 - Boston Scientific
 - Cook
 - CR Bard
 - Medtronic
 - Shockwave Medical
 - Philips
 - W.L. Gore & Associates



V. A., M, 71y

Diabetic

Heavy smoker (>30 cig/day for 30 years)

Hypertension under medical therapy

Hypercholesterolemia

Ulcer Rt foot

ABI: >1

Medical Therapy

- Statins 40 mg/d
- Oral hypoglycemic drug
- Aspirin
- Clopidogrel 75 mg/d



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Ulcer Rt foot

ABI: >1

USCD

- Occlusion of the middle portion of the ATA
- Patency of the third distal of the ATA
- Occlusion of the middle portion of the Peroneal a.
- Occlusion of the middle portion of the PTA
- Multiple stenoses of the distal portion of the PTA



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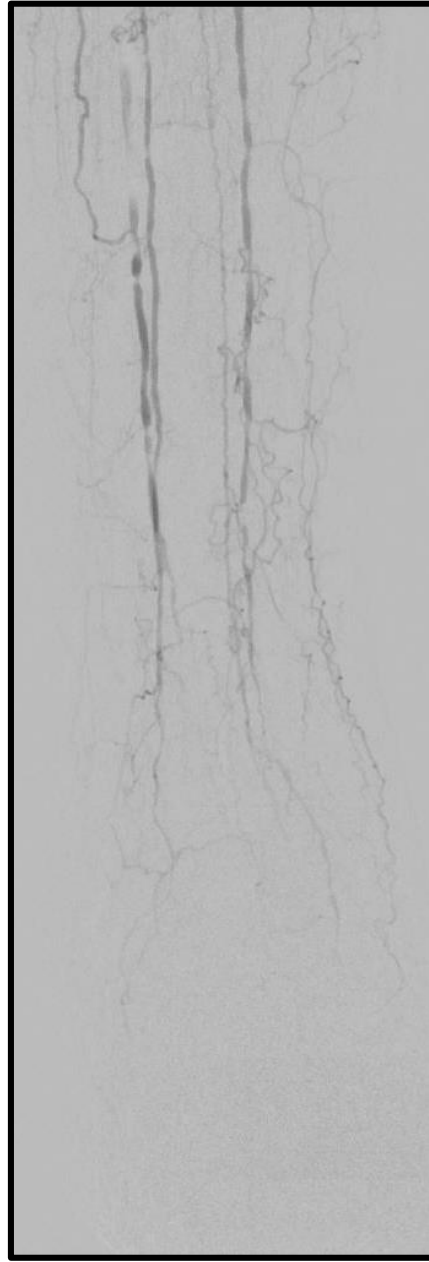
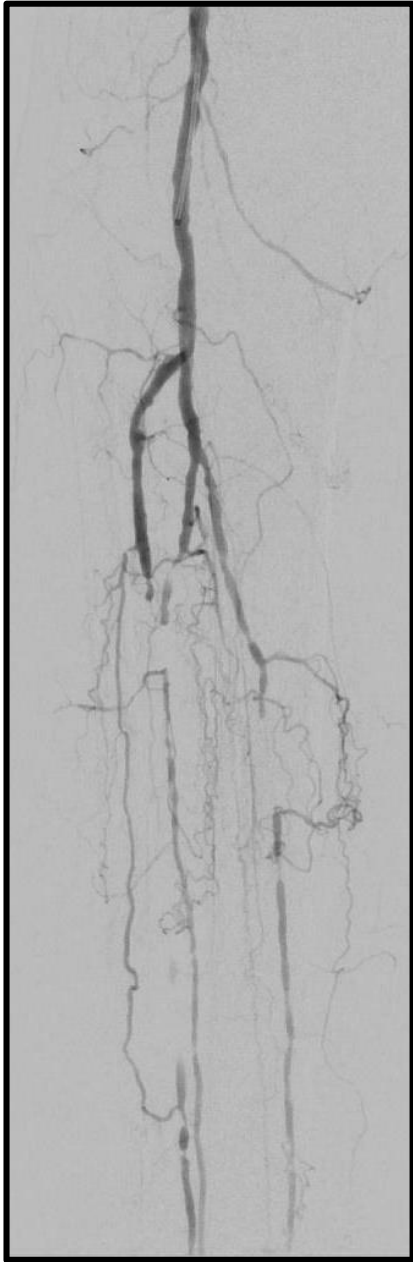
Hypertension under medical therapy

Hypercholesterolemia

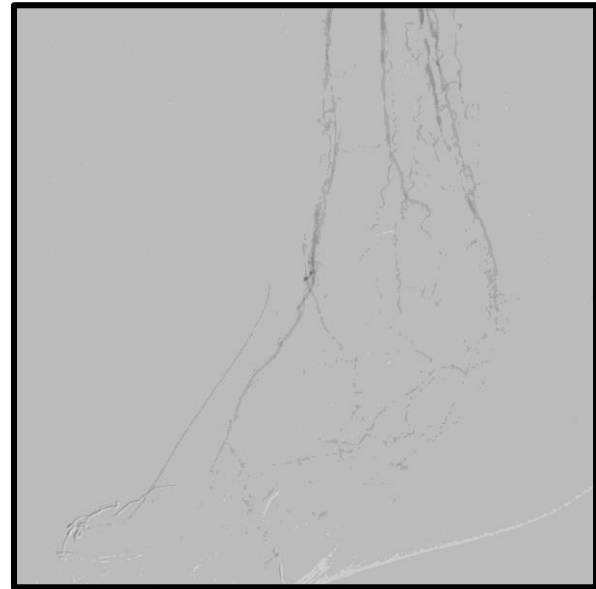
Ulcer Rt foot

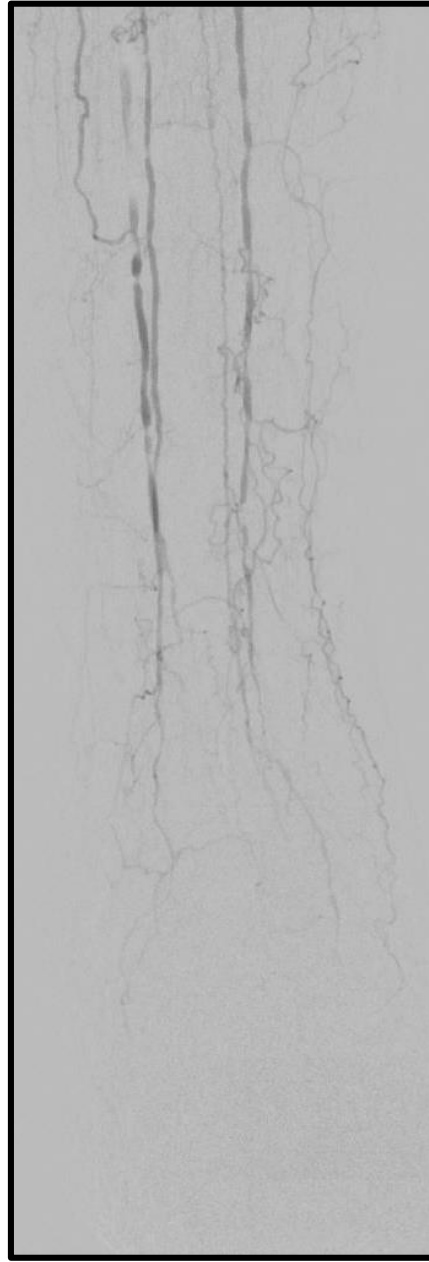
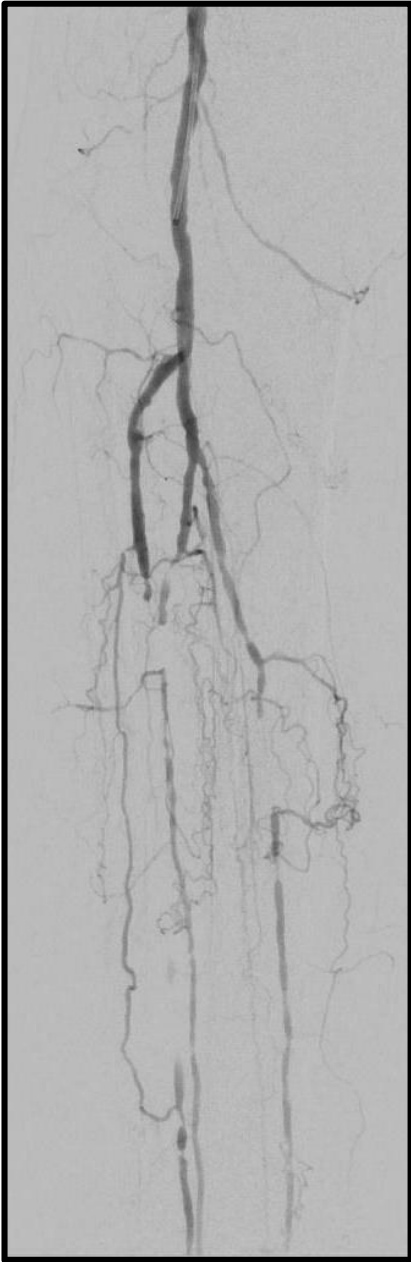
ABI: >1





- Antegrade access
- US-guided CFA puncture
- 7Fr / 25 cm
- 0.035" hydrophilic guidewire (Terumo)
- 4 Fr Berenstein catheter (Cordis)





Treatment Options:

- POBA
- Atherectomy
- Scoring balloon
- Stent
- DCB
- Combined



Endovascular Atherectomy Safety and Effectiveness (EASE) Study

- Prospective, single arm, multi-center, FDA-approved IDE study in US and Germany
- 105 total patients, 123 lesions enrolled
- Co-primary endpoints:
 - Acute debulking with $\leq 50\%$ residual stenosis (technical success)
 - 30-day major adverse events (safety)
 - Phoenix atherectomy device (Philips – Volcano)



Endovascular Atherectomy Safety and Effectiveness (EASE) Study

Primary Endpoint Attainment

Effectiveness:

Technical Success

117/123 (95.1%)

Target Performance Goal: >86%

Safety:

30-Day MAE

6/105 (5.7%)

Target Performance Goal: <20%

MAE Composite at 30 Days

Abrupt Closure	0
Clinically Driven TLR	1 (0.9%)
Perforation	2 (1.9%)
Grade C or greater Dissection	1 (0.9%)
Distal emboli req interv	1 (0.9%)
Unplanned Toe Amputation	4 (3.3%)
Unplanned BTK Amputation	0
Unplanned ATK Amputation	0





Jetstream
(Boston Scientific)
1.85 SC

Activation time: 5 min

JETSTREAM™ Catheter Selection Guide

JETSTREAM XC Atherectomy Catheters

2.4/3.4 Ordering Information: PV41340

Catheter Length	Min. Introducer Size	Max. Guidewire Diameter	Tip Diameter
120cm	7F	0.014"	2.4mm 3.4mm

2.1/3.0 Ordering Information: PV31300

Catheter Length	Min. Introducer Size	Max. Guidewire Diameter	Tip Diameter
135cm	7F	0.014"	2.1mm 3.0mm

JETSTREAM SC Atherectomy Catheters

1.85 Ordering Information: PV3118F

Catheter Length	Min. Introducer Size	Max. Guidewire Diameter	Tip Diameter
145cm	7F	0.014"	1.85mm

1.6 Ordering Information: PV3116F

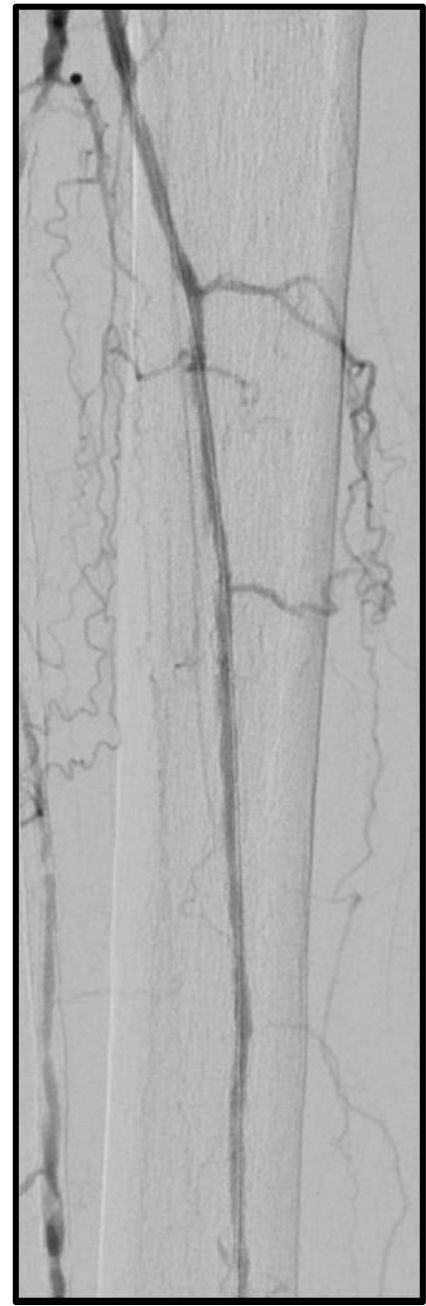
Catheter Length	Min. Introducer Size	Max. Guidewire Diameter	Tip Diameter
145cm	7F	0.014"	1.6mm

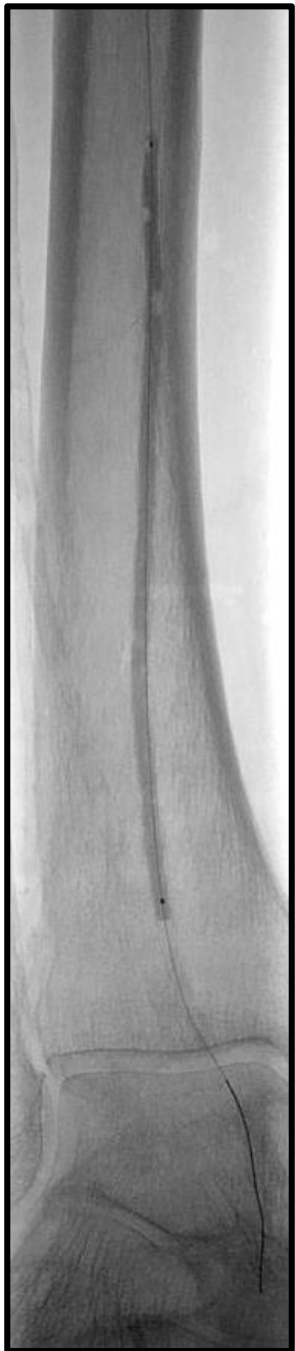




Jetstream
(Boston Scientific)
1.85 SC

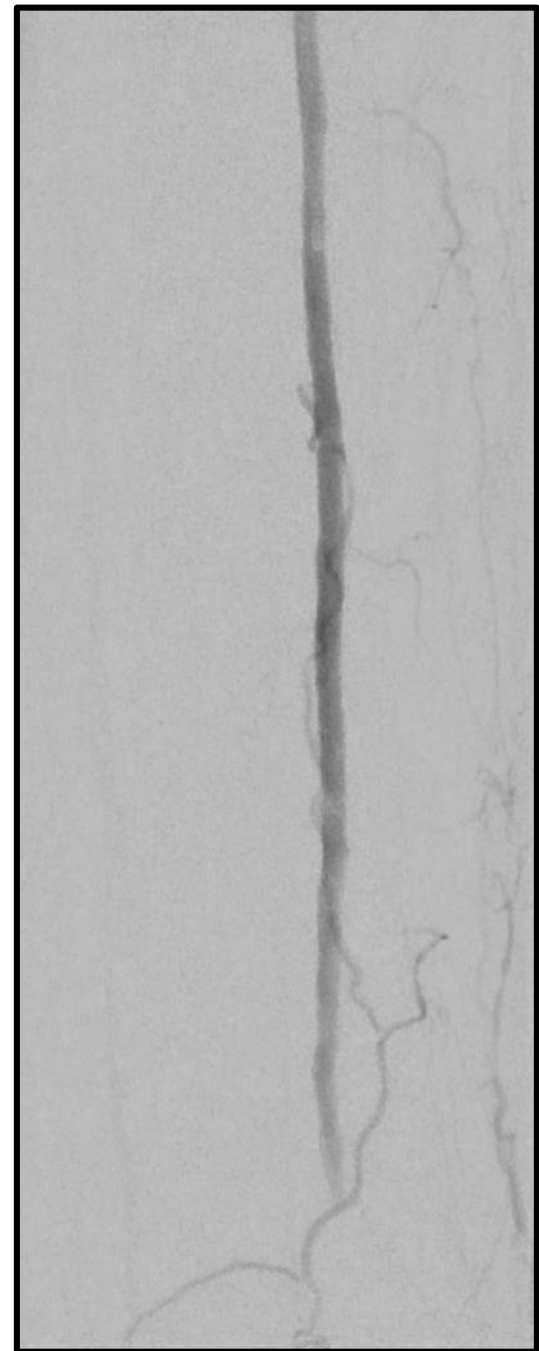
Activation time: 5 min

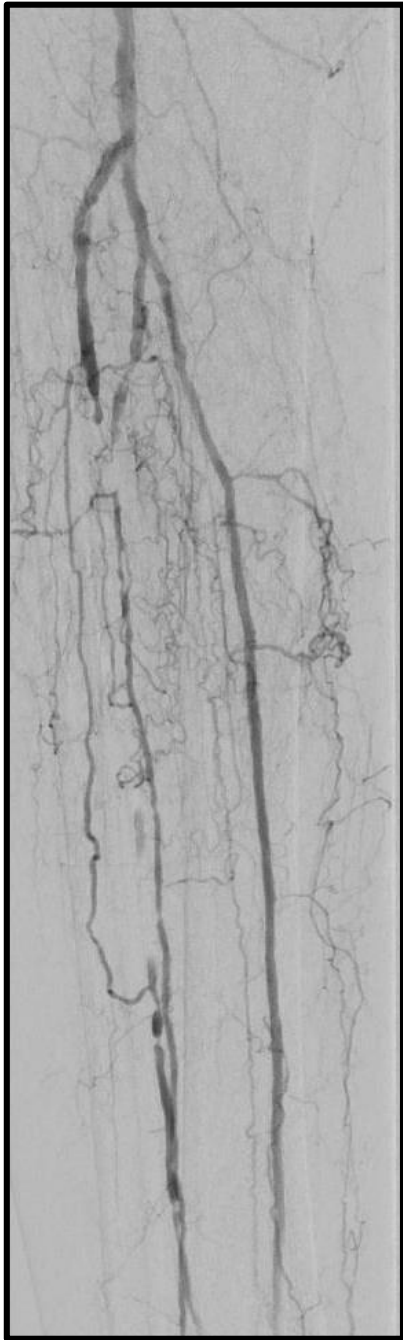




3 x100 mm
Lutonix DCB
(Bard)

Inflation Time: 3 min.





Jetstream
(Boston Scientific)
1.85 SC

Activation time: 5 min

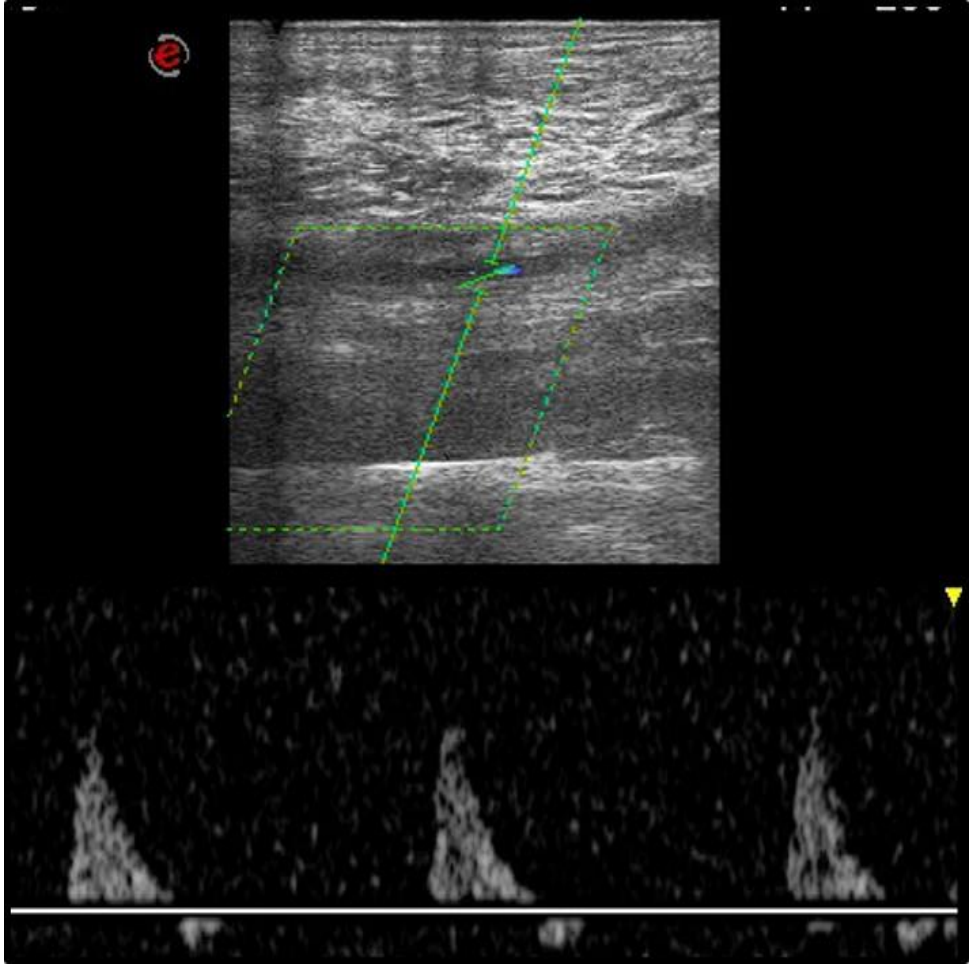
3 x100 mm
Lutonix DCB
(Bard)

Inflation Time: 3 min.





12 mos F.U.



Ant Tib

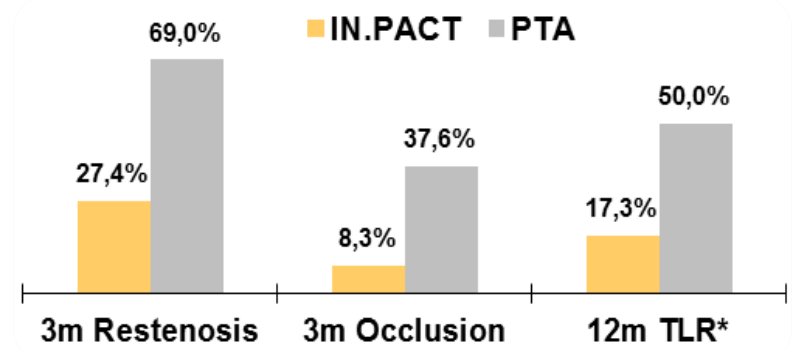


DCB in BTK-CLI: Early Evidence

2 single center studies show In.Pact Amphirion DCB reduce restenosis and reocclusion vs. PTA at 3 and 12 months

LEIPZIG Registry

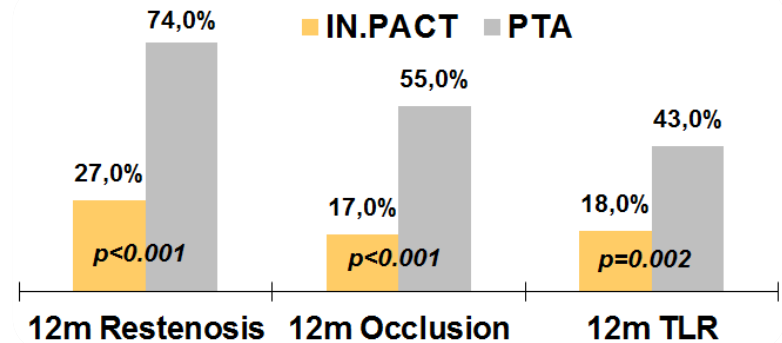
- 104 Patients
- CLI 82.6%
- Diabetes 73%
- Avg lesion length 17 cm
- CTOs 62%



- Schmidt A et al. J Am Coll Cardiol. 2011 Sep 6;58(11):1105-9
- Schmidt A et al. Catheter Cardiovasc Interv. 2010 Dec 1;76(7):1047-54

DEBATE BTK single-center RCT

- 132 Patients
- CLI 100%
- Diabetes 100%
- Avg lesion length ~13 cm
- CTOs ~80%



- Liistro F et al. Circulation. 2013 Aug 6;128(6):615-21



DCB in BTK-CLI: Early Evidence

**No difference in hard clinical endpoints:
more counts in clinical outcomes than just vessel patency**

LEIPZIG Registry

	DCB (12-month)	PTA (15 month)
Deaths	16.3%	10.5%
Limb Salvage	95.6%	100%
Wound healing	74.2%	78.6%

“...multiple factors contribute to wound healing and limb salvage, including local wound care and surveillance regimen, which may be equally as important as revascularization. It therefore may be difficult to prove the superiority of the DEBs over uncoated balloons for these clinical endpoints...”

- Schmidt A et al. J Am Coll Cardiol. 2011 Sep 6;58(11):1105-9
- Schmidt A et al. Catheter Cardiovasc Interv. 2010 Dec 1;76(7):1047-54

DEBATE BTK single-center RCT

12-month Outcomes	DCB	PTA	<i>p</i>
Deaths	7.7%	4.5%	0.4
Major Amputation	0%	1.5%	0.9
Wound healing	86%	67%	0.01

“...once discharged, patients were followed in a multidisciplinary, dedicated foot clinic to facilitate healing process and recovery of the ambulatory function. Office visits were scheduled 2 days/week for the first 2 months, once a week for the third month and then every two weeks...”

- Liistro F et al. Circulation. 2013 Aug 6;128(6):615-21



Evidence from multicenter DCB-BTK Trials

IN.PACT Amphirion: not efficacious, potentially harmful

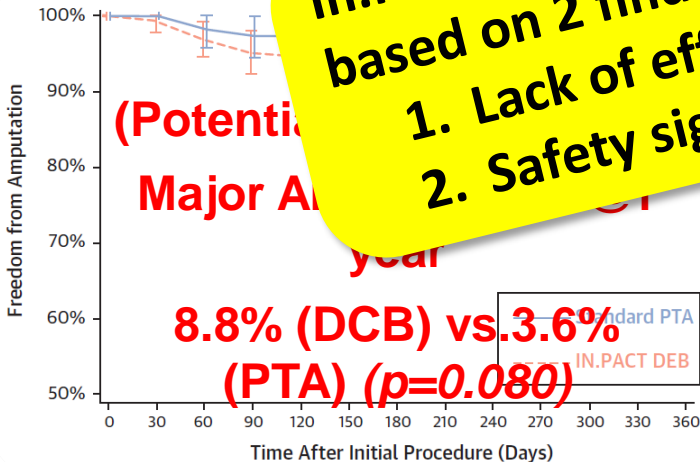
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Drug-Eluting Balloon Versus Standard Balloon Angioplasty for Infrapopliteal Arterial Revascularization in Critical Limb Ischemia

12-Month Results From the IN.PACT DEEP Randomized Trial

Thomas Zeller, MD,* Iris Baumgartner, MD,† Dierk Scheinert, MD,† Marianne Brodmann, MD,† Antonio Micari, MD, PhD,‡ Patrick Peeters, MD, PhD,‡ Frank Vermeulen, MD, PhD,‡ David B. Snead, PhD,†† K. Craig Kent, MD,†† Krishnamoorti Srinivasan, MD, PhD,††



In.Pact Amphirion withdrawn from the market based on 2 findings from In.Pact DEEP Trial :

1. Lack of efficacy vs. PTA
2. Safety signal in DCB arm

IN.PACT DEEP: 358-Patient, Multicenter Inpatient Randomized Trial to Assess the Efficacy of DCB Versus PTA in CLI

Primary Endpoint @ 1-year

	IN.PACT DEB	PTA	p Value
Binary restenosis*	41.0 (25/61)	35.5 (11/31)	0.609
Occlusion rate	11.5 (7/61)	16.1 (5/31)	0.531
Longitudinal restenosis†	62.7 ± 56.2	93.2 ± 60.8	0.167
Clinically driven TLR (AFS subjects)	9.2 (18/196)	13.1 (14/107)	0.291
Clinically driven TLR (all ITT subjects)	11.9 (27/226)	13.5 (15/111)	0.682

Values are mean ± SD or % (n/N). *Angiographic cohort (core lab analyzed). †Mean % of stenosis length versus treated lesion length (angiographic cohort).

AFS = amputation-free survival; TLR = target lesion revascularization; other abbreviations as in Table 1.

Zeller T, Baumgartner I, Scheinert D, Brodmann M, Bosiers M, Micari A, Peeters P, Vermeulen F, Landini M, Snead DB, Kent KC, Rocha-Singh KJ; IN.PACT DEEP Trial Investigators. Drug-eluting balloon versus standard balloon angioplasty for infrapopliteal arterial revascularization in critical limb ischemia: 12-month results from the IN.PACT DEEP randomized trial. J Am Coll Cardiol. 2014 Oct 14;64(15):1568-76.



Evidence from multicenter DCB-BTK Trials

Passeo 18 LUX: safe and NOT efficacious

PERIPHERAL

Paclitaxel-Coated Balloon in Infrapopliteal Arteries

12-Month Results From the BIOLUX P-II Randomized Trial (BIOTRONIK'S-First in Man study of the Passeo-18 LUX drug releasing PTA Balloon Catheter vs. the uncoated Passeo-18 PTA balloon catheter in subjects requiring revascularization of infrapopliteal arteries)

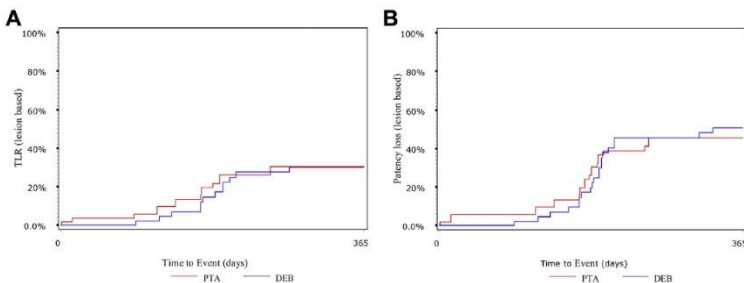
Thomas Zeller, MD,* Ulrich Beschoner, MD,† Ernst Pilger, MD,‡ Marc Bosiers, MD,§ Koen Deloose, MD,§ Patrick Peeters, MD,|| Dierk Scheinert, MD, PhD,* Karl-Ludwig Schulte, MD, PhD,* Aljoscha Rastan, MD,* Marianne Brodmann, MD, PhD‡



BIOLUX P-II: 72-Patient, Multicenter Independently Adjudicated Randomized Trial to assess the safety and efficacy of PASSEO 18 LUX vs. PTA in patients with infrapopliteal disease (77.8% CLI)

NO differences between DCB and PTA @ 1 year

FIGURE 2 Course of Target Lesion Revascularization and Patency Loss Per Kaplan-Meier Estimates



(A) Target lesion revascularization; (B) patency loss. Data are lesion based. Abbreviations as in Figure 1.

Patency Loss:

- 50.8% vs. 45.6% ($p=0.908$)

clinically-driven TLR:

- 31.3% vs. 26.9% ($p=0.805$)

Major Amputation (CLI subset):

- 4.3% vs. 7.1% ($p=NS$)

• Zeller T, Beschoner U, Pilger E, Bosiers M, Deloose K, Peeters P, Scheinert D, Schulte KL, Rastan A, Brodmann M. Paclitaxel-Coated Balloon in Infrapopliteal Arteries: 12-Month Results From the BIOLUX P-II Randomized Trial (BIOTRONIK'S-First in Man study of the Passeo-18 LUX drug releasing PTA Balloon Catheter vs. the uncoated Passeo-18 PTA balloon catheter in subjects requiring revascularization of infrapopliteal arteries). JACC Cardiovasc Interv. 2015 Oct;8(12):1614-22



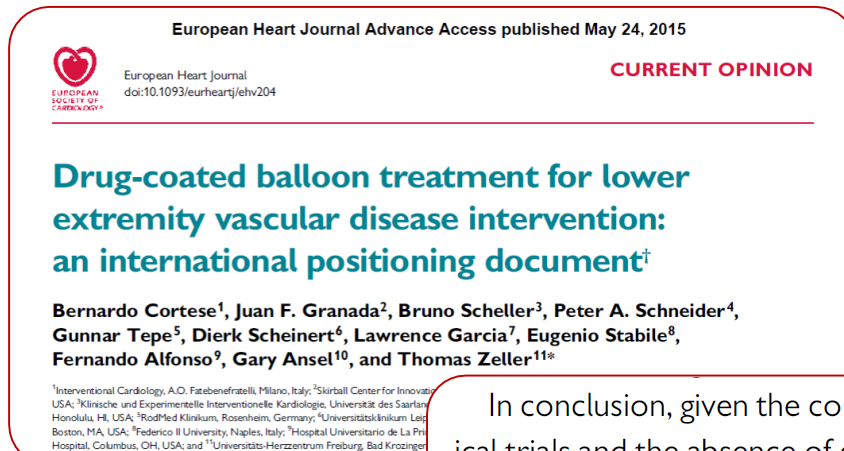
DCB in BTK: where is the truth??

2 multicenter, Core-lab adjudicated randomized trials contradict findings from single-center trials

- **Not a single cause identified, mix of multiple hypothesis raised:**
 - Sub-optimal trial design and trial conduct
 - Angiographic endpoint with low compliance to angiographic follow up
 - Lack of standardized wound care programs across sites
 - Single center, site-specific systematic (positive) errors (i.e. balloon sizing, pre-dilatation) / limited generalizability of single center studies
 - Sub-optimal performance of In.Pact Amphirion and Passeo 18 Lux when used in broader settings



Expert consensus raise caution against DCB widespread use in BTK



In conclusion, given the confusion generated by questionable clinical trials and the absence of clear evidence-based data, this experts' peripheral Positioning Document aims at defining the best indications for the use of this promising technology in peripheral artery disease management. The experts find a precise role of DCBs for the treatment of both native and restenotic femoro-popliteal lesions, whereas suggest a **limited and tailored use DCBs for the treatment of BTK lesions, until future evidence will become available.**



Post – treatment therapy:

- Clopidogrel 4 weeks
- Aspirin

Clinical evaluation:

Progressive healing of the ulcer solved after 5 months

1-y F.U.

Patency of ATA and PTA



Conclusions

- Atherectomy devices have been validated as a useful tool for calcified vessels in the BTK region
- Low rate of complications has been reported
- Atherectomy can be used also as a «stand alone» therapy
- Combine treatment provide an optimal vessel preparation in combination with the antiproliferative effect of DCB
- Open question for DCB in the BTK area
- More data from new generation and specifically designed DCB





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