

Periphery, a glimpse on his first experience, and comment on Colombian results, announcement of activation and first results of randomised studies

Karl-Ludwig Schulte



**SANKT GERTRAUDEN
KRANKENHAUS** 

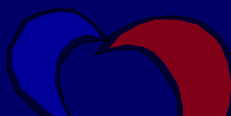


Vascular Center Berlin

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www.vascular-center-berlin.com
www.gefaesszentrum-berlin.de

Improvement of Patency in SFA, BTK

- Drugs
- Subintimal Angioplasty
- Bare Stent
- Covered Stent
- Drug Eluting Stent
- **Drug Eluting Balloon**
- Bioabsorbable Stent
- Brachytherapy
- Cryoplasty
- Cutting Balloon
- Photodynamic Therapy
- Debulking



THUNDER Trial

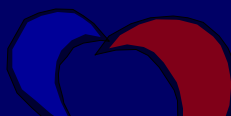
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Local Delivery of Paclitaxel to Inhibit Restenosis during Angioplasty of the Leg

Gunnar Tepe, M.D., Thomas Zeller, M.D., Thomas Albrecht, M.D.,
Stephan Heller, M.D., Uwe Schwarzwälder, M.D., Jean-Paul Beregi, M.D.,
Claus D. Claussen, M.D., Anja Oldenburg, M.D., Bruno Scheller, M.D.,
and Ulrich Speck, Ph.D.

Tepe et al., NEJM 2008; 358:689-699

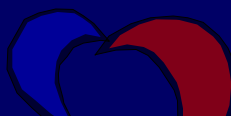


SUMMARY of FemPac- and Thunder-studies

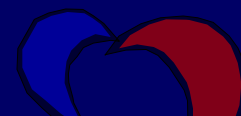
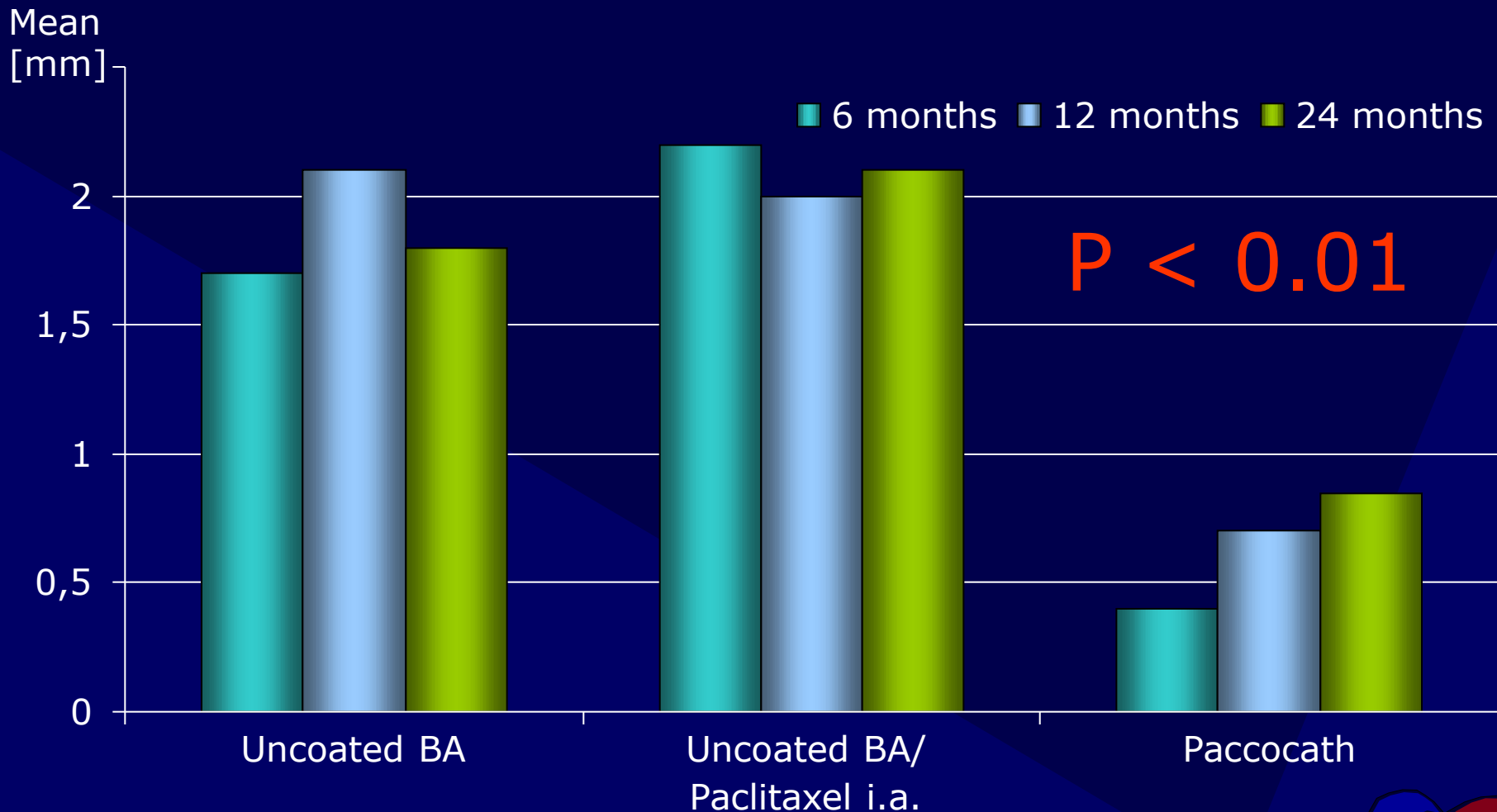
Table. Results of FemPac and Thunder Clinical Trials

Trial	Sample Size	Angiographic Follow-Up Rates, n (%)	6-Month Late Lumen Loss	6-Month Angiographic Restenosis, n (%)	6-Month TLR	18- to 24-Month TLR	6-Month Deaths, n	6-Month Major Amputation, n
FemPac	Rx (n=45)	31/45 (69)	0.5±1.1	6/31 (19)	9%	20%	2	0
	Control (n=42)	34/42 (81)	1.0±1.1	16/34 (47)	33%	48%	0	2
Thunder	Rx (n=48)	41/48 (85)	0.4±1.2	7/41 (17)	4%	15%	2	2
	Control (n=54)	48/54 (89)	1.7±1.8	21/48 (44)	37%	52%	1	0

TLR indicates target lesion revascularization; Rx, paclitaxel-coated balloon; and control, uncoated balloon.



Late Lumen Loss at 6, 12 or 24 Months or Before 1st TLR (Primary Endpoint)



LEVANT I 6-MONTH RESULTS OVERVIEW

Primary endpoint

Late Lumen Loss objective was met.

- ITT Analysis: 0.46 mm (Moxy) vs 1.09 (PTA) **p=0.016**
- PP Analysis: 0.36 mm (Moxy) vs 1.08 (PTA) **p=0.016**

Secondary Endpoint

Target lesion revascularization

- ITT Analysis: 13% (Moxy) vs. 22% (PTA)
- PP Analysis: 6% (Moxy) vs. 21% (PTA)

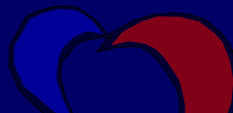
1 month (no stent) and 3 month (stent) clopidogrel regimen

- no reported incidents of acute or late thrombosis in Moxy group












Restenosis rates (%) PTA vs. Stent (Duplex)

Studie	Lesion (cm)	PTA	Stent	P<
ABSOLUTE	ca. 10	63 (33/52)	37 (18/49)	0.01
FAST	ca. 4.5	35 (29/82)	32 (31/97)	n.s.
		PTA	DEB	
THUNDER	ca. 7.5	49 (18/37)	21 (7/34)	0.01

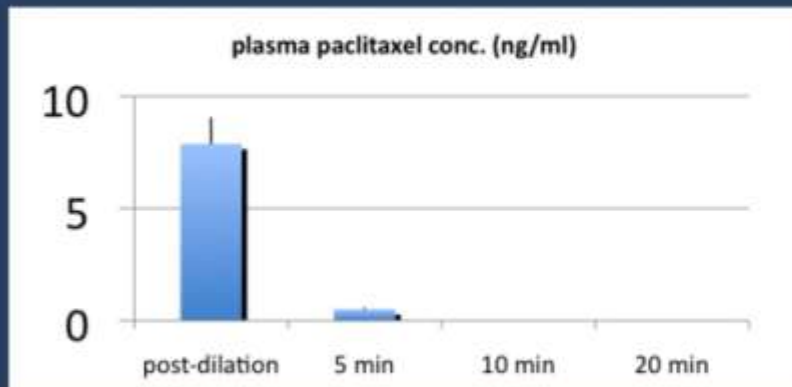
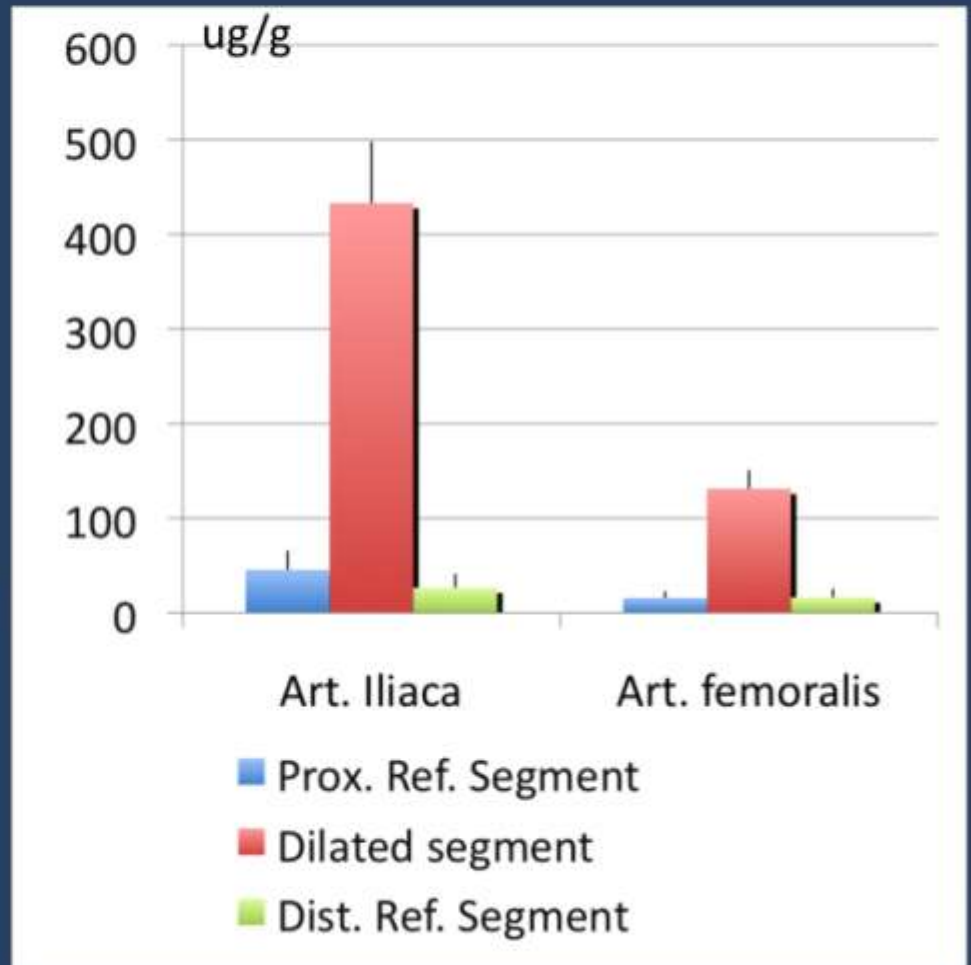


Eluting/Coating: competitors

Company	Catheter	drug coating	Dose ($\mu\text{g}/\text{mm}^2$)	availability
Bayer-Medrad	Cotovance™	PTX – Iopromide Paccocath technology	3	
B. Braun	SeQuent™ Please	PTX– Iopromide Paccocath technology	3	
Biotronik	Passeo-18 Lux	PTX – BTHC Butyryl-tri-hexyl- Citrate	3	
Invatech-Medtronic	IN.PACT Series (Admiral, Pacific, Amphirion)	PTX – Urea (FreePac™)	3	
Aachen-Resonance	Elutax	PTX(no carrier)	2	
<u>Eurocor</u>	<u>Freeway</u>	<u>PTX – Shellac</u>	<u>3</u>	
Abbott Vascular	ABT	Zotarolimus - ?	n.a.	
Lutonix	Moxy	PTX – carrier (?)	2	
Cook Medical	Advance 18 PTx	PTX – carrier(?)	3	

PIG PERIFERIAL ARTERY DEB-DILATION: SAFETY STUDY

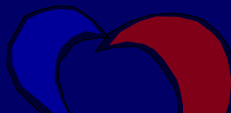
Balloon diameter [mm]	Length of balloon [mm]	Remnant paclitaxel on catheter-surface [$\mu\text{g}/\text{mm}^2$]
7-8 mm (art. iliaca)	40	1.1 ± 0.4
5 mm (art. femoralis)	30	1.0 ± 0.2



Safety examination of Freeway DEB

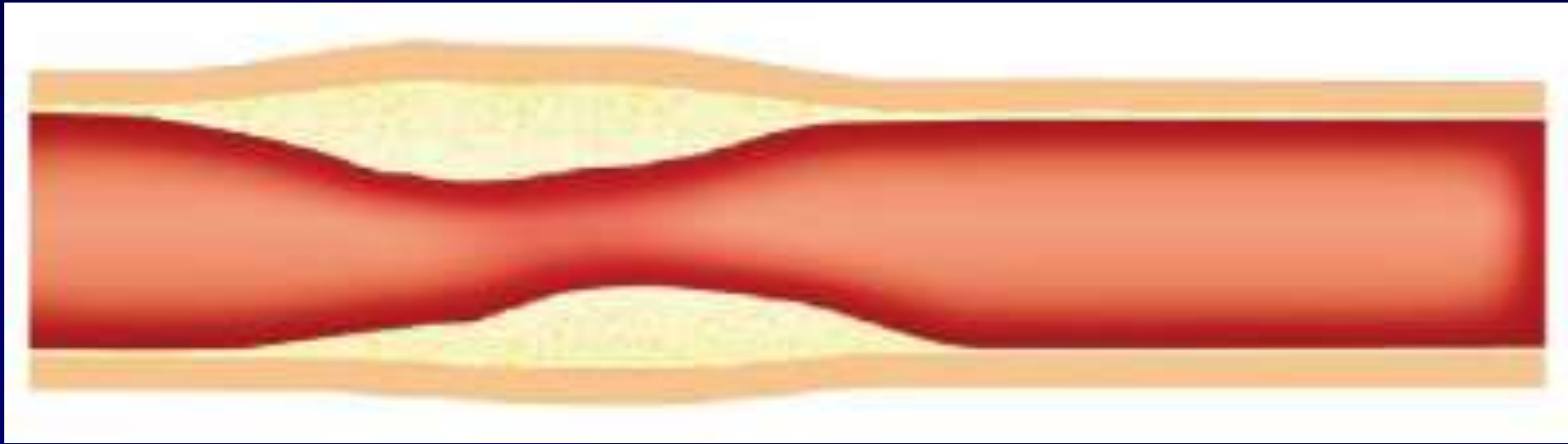
- Inflation of Freeway 0.35 (3 μ g/mm² Paclitaxel coating concentration) in the SFA
- Determination of Paclitaxel plasma concentration after intervention in 11 patients
- Acute concentration: **23.4 ng/ml** (3 μ g/mm² Paclitaxel coating concentration)
- Comparable results with Cotavance DEB(2-6 μ g/mm² Paclitaxel coating concentration) in 14 patients:
40 ng/ml acute concentration¹

¹ Freyhardt P et al. Plasma Levels Following... Fortschr Röntgenstr 2011

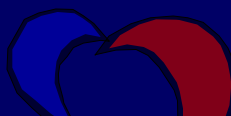


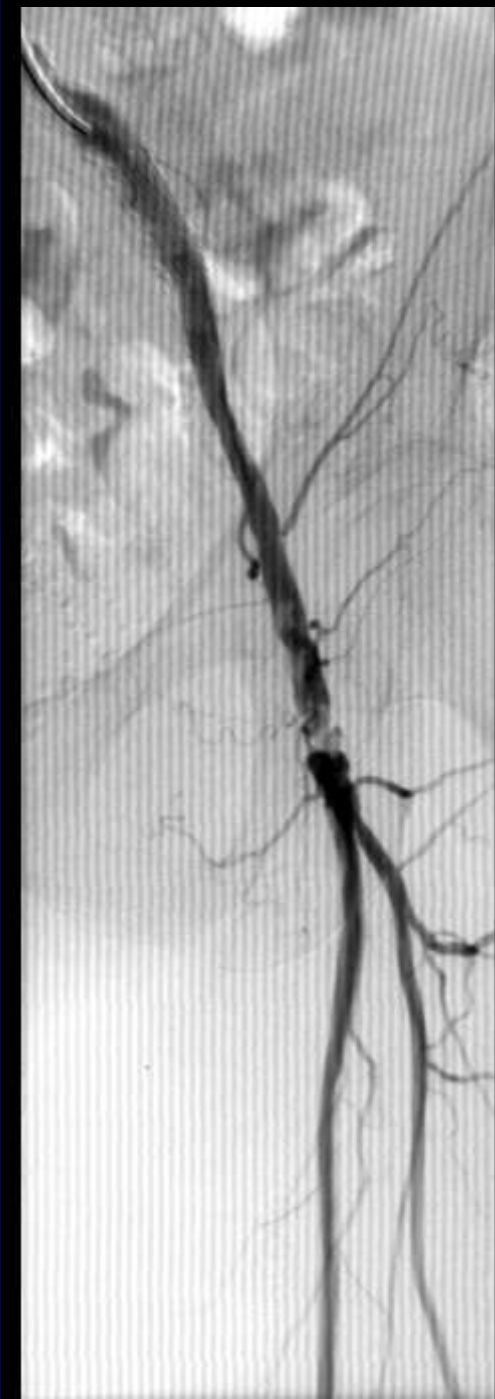
First Experiences

FREEWAY® 014, infrapopliteal PTA balloon 0.014" OTW

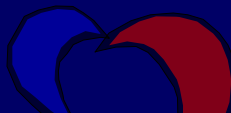


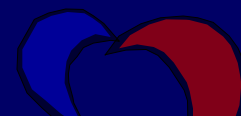
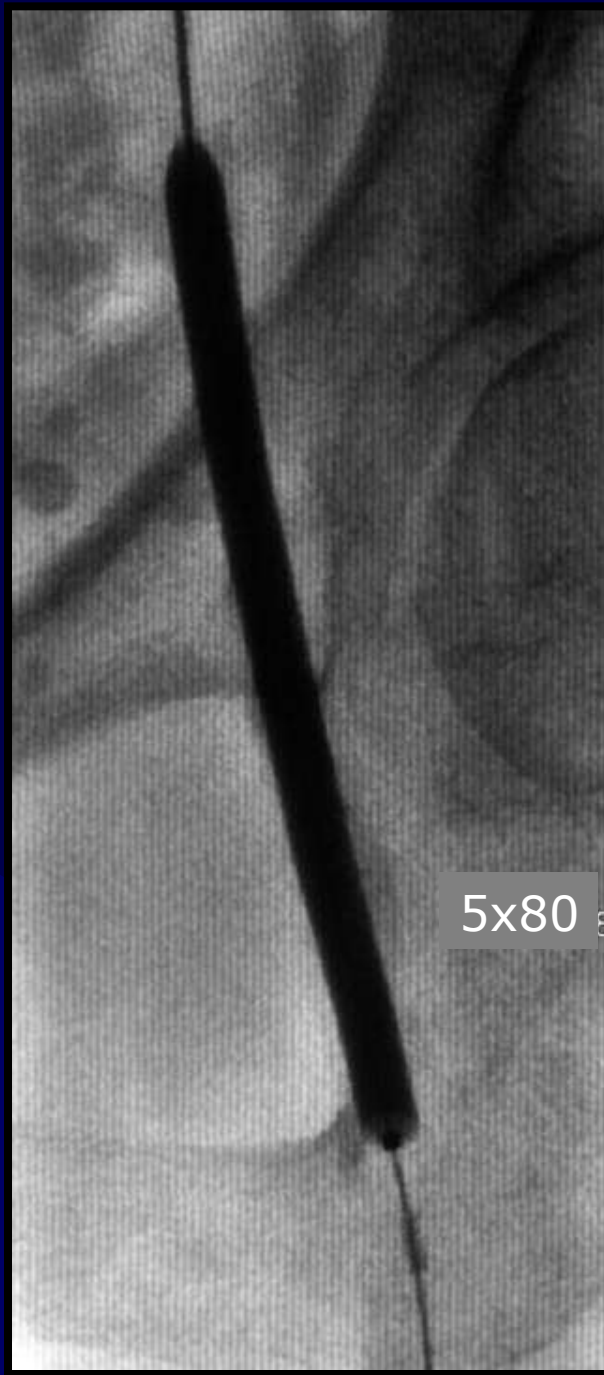
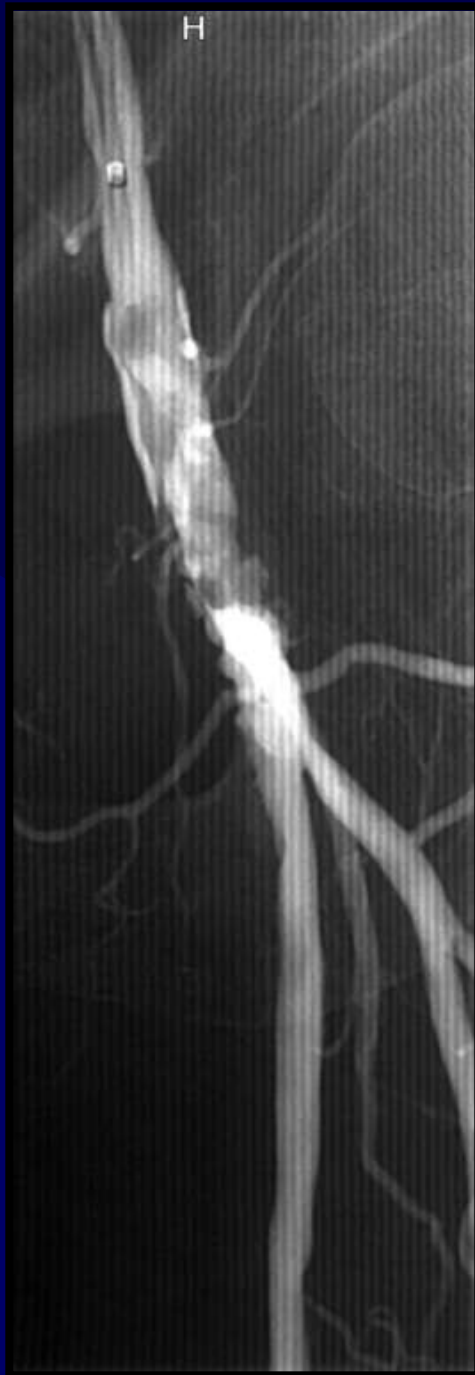
FREEWAY® 035, femoropopliteal PTA balloon 0.035" OTW





Left AFC,
Bending Zone





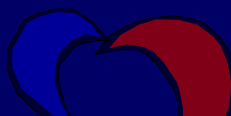


K.K., male, 56 yrs.

Rest pain right leg (Rutherford 4)

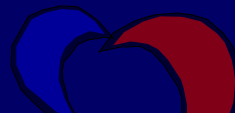
**Risk factors: Smoking,
Hypertension,
LDL-C**

**Therapy: ASS,
ACE-Inhibitor,
Statin**





3x60 PTA,
4x30 Dior (2)

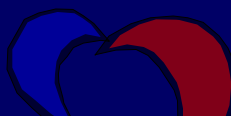
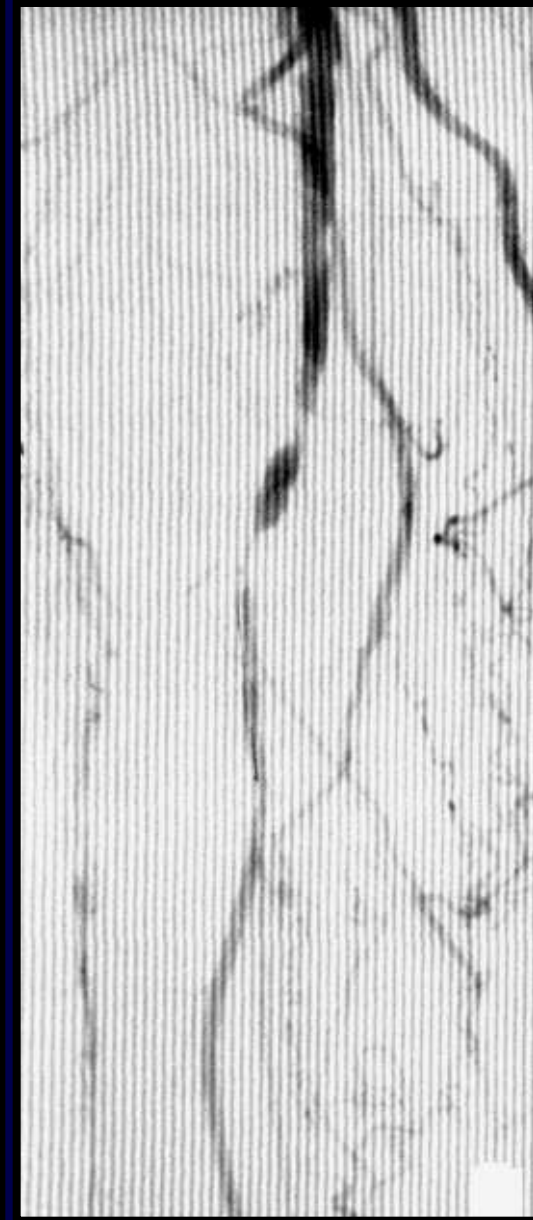
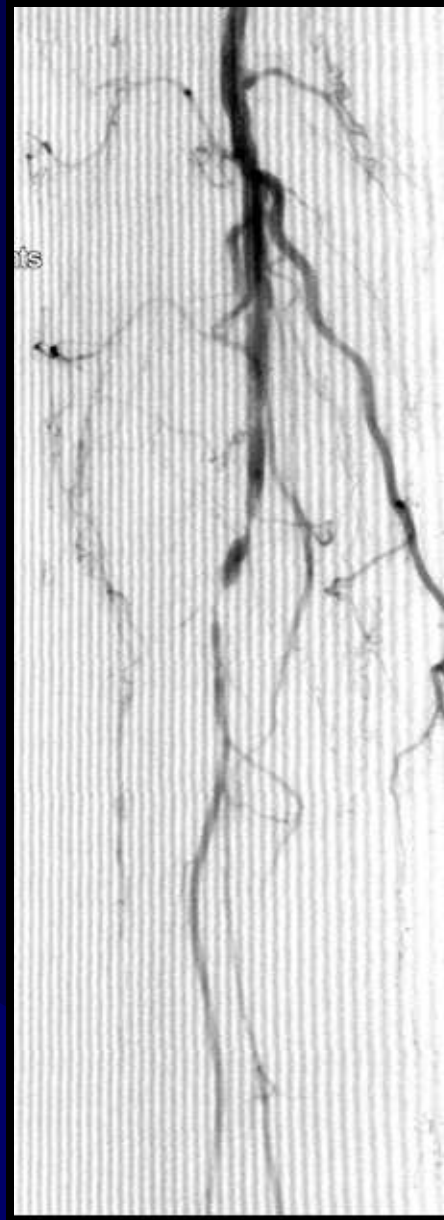


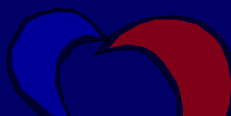
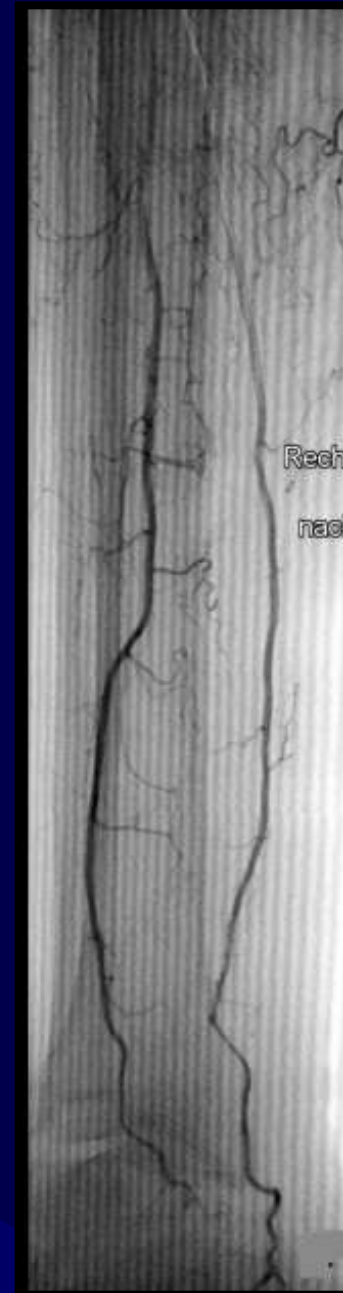
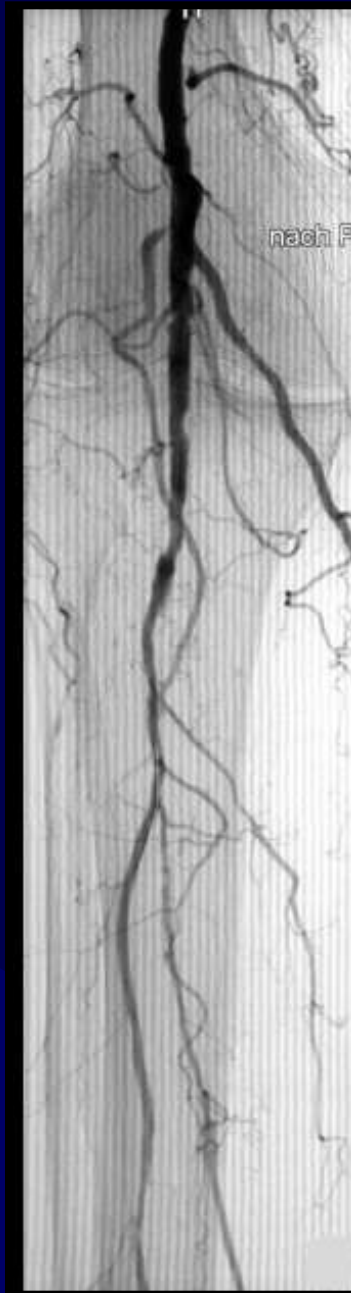
H.W., male, 72 yrs.

CLI right leg (Rutherford 4)

**Risk factors: Diab. (IDDM),
renal failure,
dislipidemia**

**Therapy: Insulin,
Statin,
ASA**





Berlin EXPERIENCES

BTK-DEB-PTA in 48 PAD-Patients

12-month-restenosis-rate > 50 %
(Duplex): 22 %

12-month-amputation free
survival: 92%



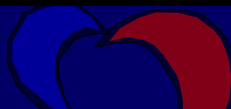
EXPERIENCES COLOMBIA

JP MARTINEZ, J VELEZ, V CALLE, J GONZALES

Nuestra Señora de los Remedios Clinic

Interventional Radiology and Endovascular Therapy Service, Cali

- 13 BTK-DEB-PTA in 8 PAD-patients
- 2-24 months follow-up: 100% amputation free survival and complete wound healing



FREEWAY STENT STUDY

Stent angioplasty with Paclitaxel-coated balloons versus plain stent angioplasty for prevention of restenosis due to intimal hyperplasia in peripheral arterial occlusive disease

Principal Investigator:

Prof. Dr. med. Josef Tacke

Institut für diagnostische und interventionelle Radiologie und
Neuroradiologie

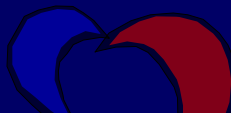
Klinikum Passau

Innstr. 76

94032 Passau

Germany

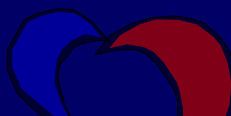
josef.tacke@klinikum-passau.de



Problems with Stenting



Restenosis



Objective and study design

Comparison of Paclitaxel-Coated Balloon (FREEWAY) with POBA in case of **postdilation of Nitinol stents** in the treatment of superficial femoral (SFA) or popliteal arteries (P I segment).

Prospective, randomized, multi-center, two-armed phase-III study conducted in Austria and Germany.

200 patients, 21 patients enrolled
Design: POBA versus FREEWAY®

Endpoints

Primary endpoint:

Rate of clinically driven target lesion revascularization at 6 and 12 months

Secondary Endpoints:

- Late lumen loss, i.e. the difference between the minimum lumen diameter after intervention and during the follow-up at 6 and 12 months determined by colour-coded duplex sonography and/or angiography

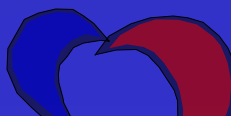
FREERIDE STUDY

- Prospective, Randomized, Controlled, Multicentre, Open Study
- Release of Paclitaxel during PTA versus PTA alone for the treatment of **de-novo occluded, stenotic or, reoccluded, restenotic superficial femoral (SFA) or popliteal arteries**

Principal Investigator:

Prof. Dr. med. Karl-Ludwig Schulte

Vascular Center Berlin / Dept. Internal Medicine
Ev. Hospital Königin Elisabeth Herzberge, St. Gertrauden Hospital
and CC11, Charité/Humboldt University
Berlin, Germany



Objective and Study Design

- Prospective, randomized, multi-center, two-armed phase-III study conducted mainly in Europe, but also in South- and North-America (Colombia, Canada).
- **280 patients: More patients (280) than in other studies and wide indication range**
- Design: POBA versus FREEWAY 035®



Primary and Secondary Endpoints

• **Primary Endpoint:** Rate of clinically driven target lesion revascularization (TLR) at 6 months *

Secondary Endpoints:

- Technical success defined as the rate of successfully performed index procedures after wire passage
- Late lumen loss, i.e. the difference between the minimum lumen diameter after intervention and during the follow-up at 6 determined by angiography
- Clinical success defined as technical success without the occurrence of serious adverse events during procedure
- Ankle-Brachial Index improvement of ≥ 0.1 (ABI before procedure compared with ABI at discharge and at 6, 12 (and 24) months)
- Primary and secondary patency rate defined as $< 50\%$ diameter reduction and peak systolic velocity < 2.4 at 6, 12 (and 24) months
- Change in WIQ i.e. walking impairment questionnaire from pre-intervention to 6, 12 (and 24) months follow-up improvement of walking distance before procedure compared with walking distance at discharge and at 6 and 12 months (if Treadmill test is available)
- Rate of minor and major complications at 6 and 12 (and 24) months
- Change in Rutherford classification grades of chronic limb ischemia from pre-intervention to 6, 12 (and 24) months follow-up.
- Rate of clinically driven target lesion revascularization (TLR) at 12 (and 24) months

* Assessed by an independent, blinded Core-Lab



Flowchart

280 patients August 2011 – August 2012

Randomization
1 : 1 ratio

GROUP A
POBA

GROUP B
FREEWAY 0.35[®]

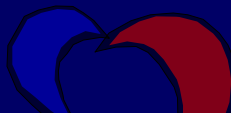
6 and 12-month Duplex follow-up
6 month angiographic follow-up (subgroup)



Summary: Drug Delivering Balloons in PAD

Practical guidelines

- Use appropriate, oversized or long sheath
- Predilation with an undersized balloon
- Do not touch the balloon surface
- Deliver fast
- Dilate at least for 1 minute
- For ISR extend over stent edges



Periphery, a glimpse on his first experience, and
comment on Columbian results, announcement of
activation and first results of randomised studies

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Thank you for your attention

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