

The logo for LINC (Leipzig Institute for Noninvasive Cardiac Imaging) is located in the top left corner. It features the letters 'LINC' in a white, sans-serif font, overlaid on a stylized graphic of three curved, overlapping brushstrokes in dark blue, red, and yellow.

# The “Crack and Pave” technique for highly resistant calcified lesions

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# Disclosure

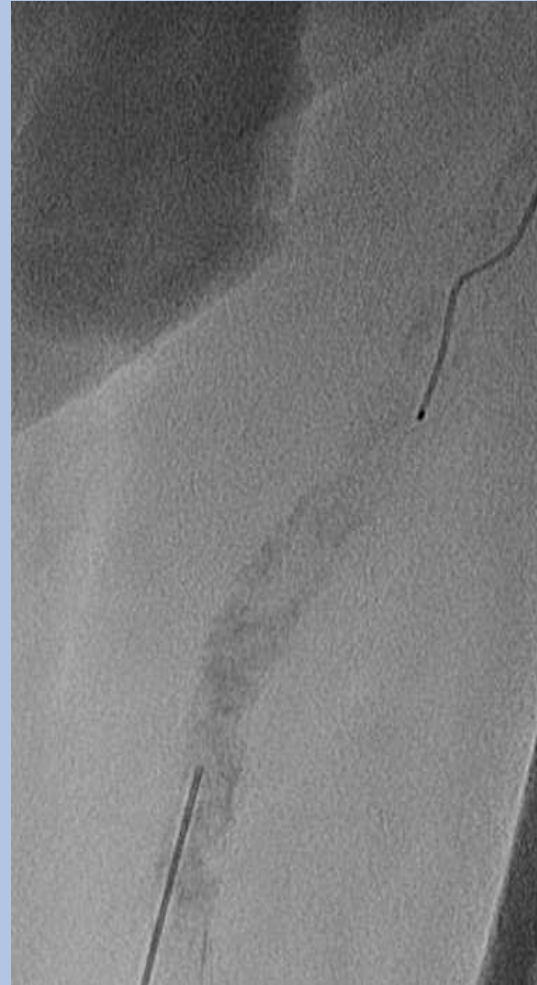
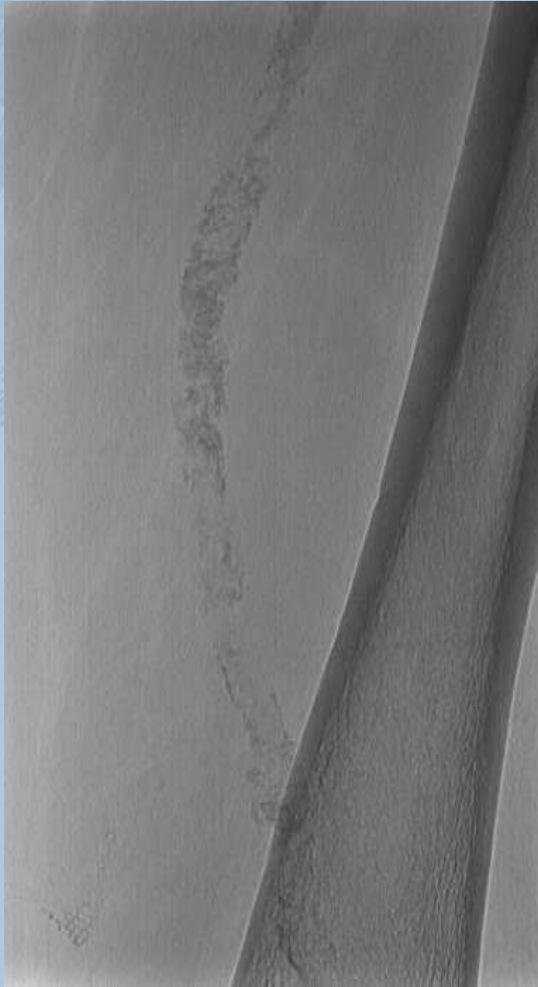
Speaker name:

Dr. med. Manuela Matschuck

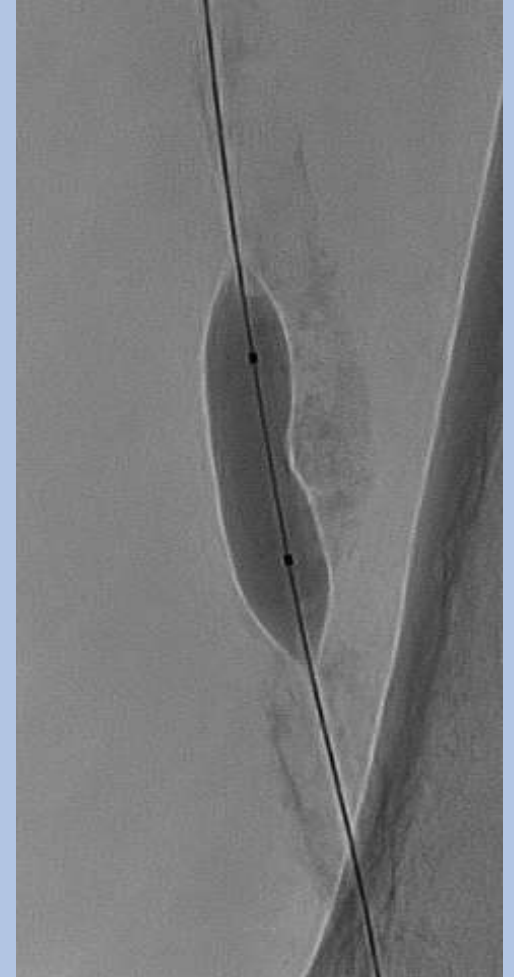
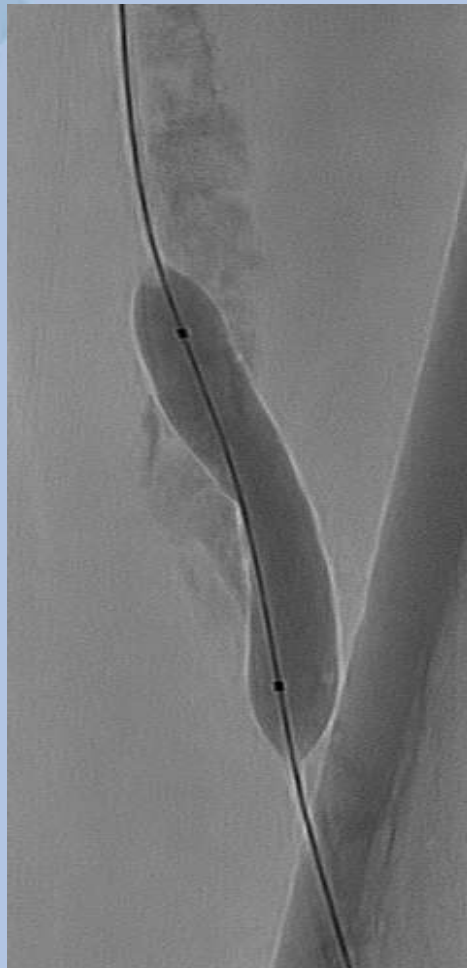
I have the following potential conflicts of interest to report:

- 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

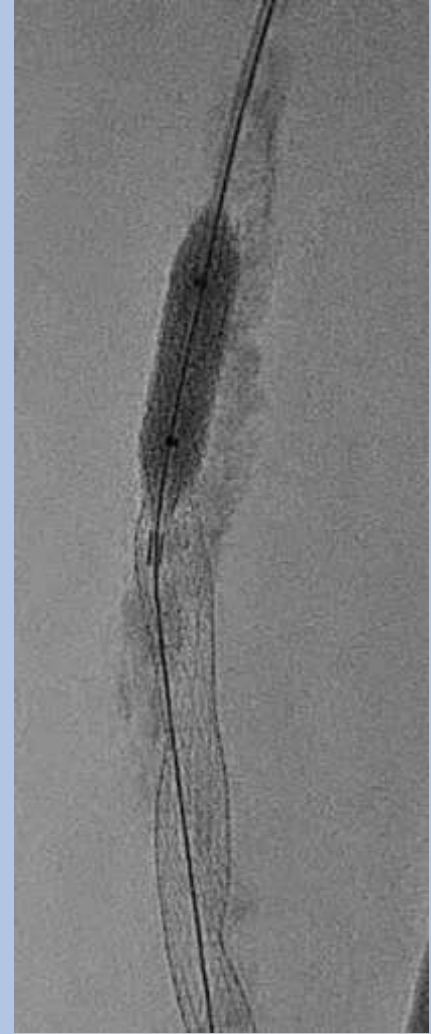
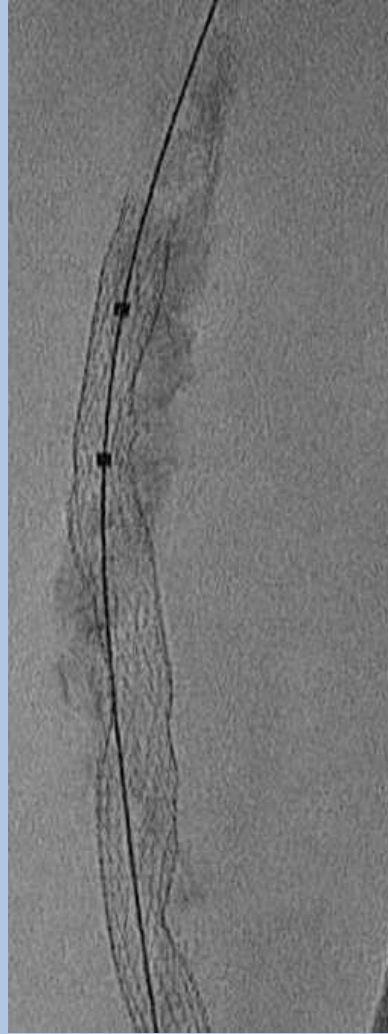
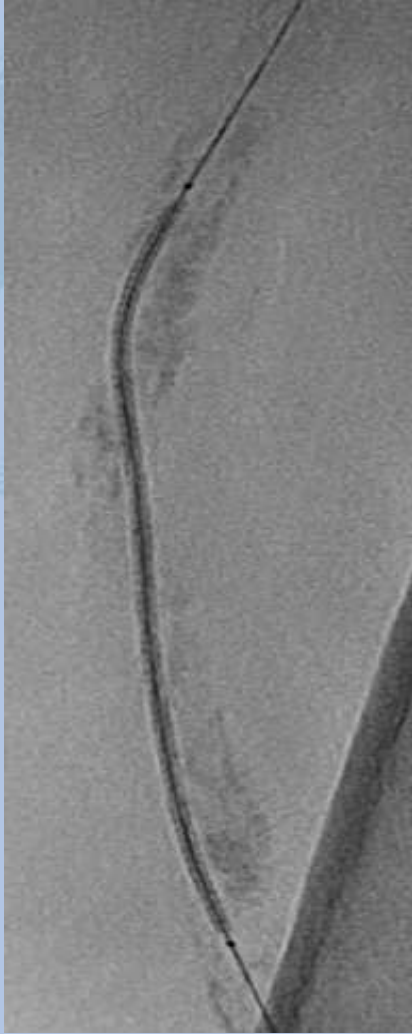
# Severe Calcification of the SFA



# Ineffective Predilatation



# „Pave and Crack“



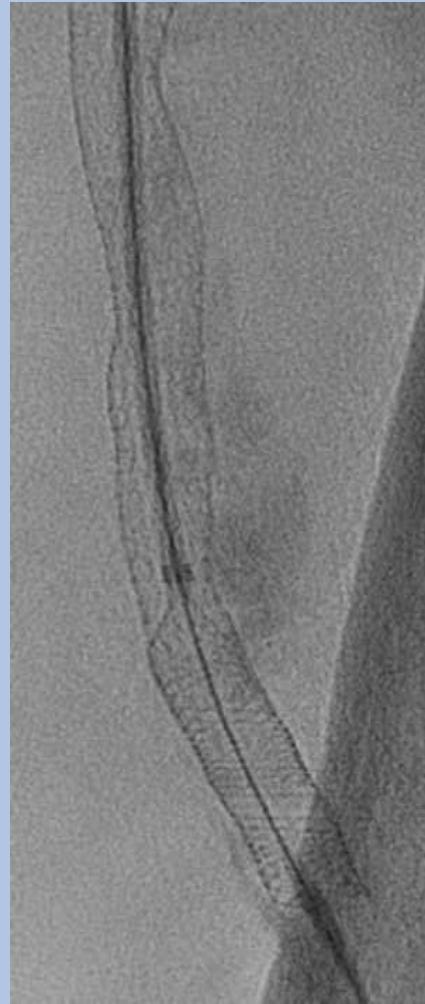
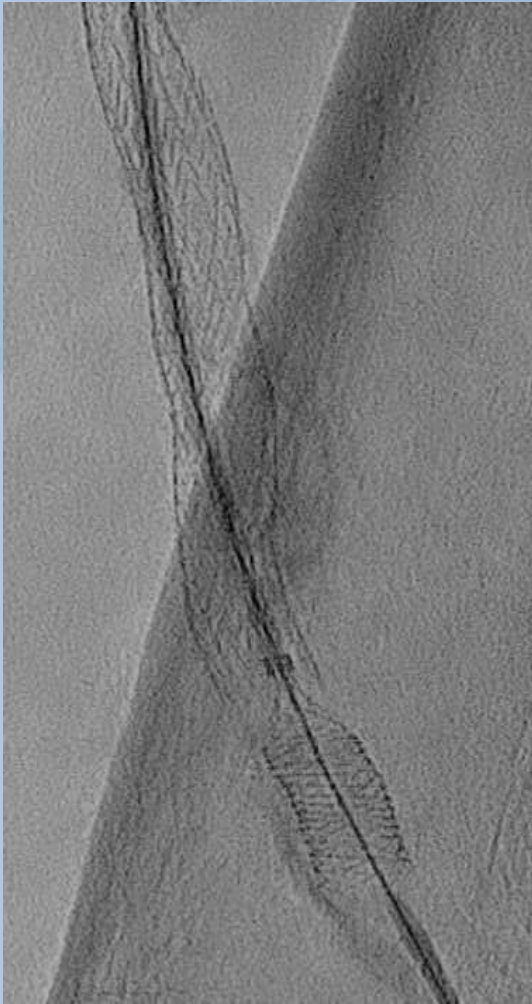
# Tumescent anaesthesia

Lidocain  
1%

21 gauge  
needle  
9cm long



# Relining with Supera<sup>®</sup>-Stent



# Demographics and Clinical Features at Baseline

Demographics and Clinical features at baseline	Number/Total (%) or mean±SD
<b>Patient Demographics</b>	
Gender	
Male	54/67 (80.6%)
Age (years)	71.4 ± 8.5
<b>Comorbidities</b>	
Diabetes	32/67 (52.2%)
Smoking (previous or current)	49/62 (79.0%)
Dyslipidemia	60/67 (89.6%)
Hypertension	65/67 (97.0%)
Coronary artery disease	30/66 (45.5%)
Chronic heart failure (NYHA II and III)	12/65 (18.5%)
Cerebrovascular disease	16/66 (24.2%)
Chronic renal insufficiency (grade 2-5)	24/46 (52.2%)
Chronic pulmonary obstructive disease	12/62 (19.4%)
<b>Contralateral treated or symptomatic disease</b>	52/65 (80.0%)
Previous surgical or endovascular treatment of target limb	45/67 (67.2%)
Previous surgical treatment of target lesion <sup>b</sup>	29/67 (43.3%)
Previous endovascular treatment of target lesion	18/67 (26.9%)
Previous failed target lesion revascularization	10/66 (15.2%)
<b>Baseline Rutherford Class (Target limb)</b>	
2	2/64 (3.1%)
3	<b>40/64 (62.5%)</b>
4	4/64 (6.2%)
5	13/64 (20.3%)
6	5/64 (7.8%)

IQR – interquartile range, NYHA – New York Heart Association classification for heart failure, PTA – angioplasty, SD – standard deviation, SFA – superficial femoral artery. <sup>b</sup>Femoropopliteal or femoro-BTK bypass or femoral thromboendarterectomy



# Angiographic Features at Baseline

Angiographic Features at Baseline	Number/Total (%) or mean±SD
<b>TASC II class</b>	
B	4/67 (6.0%)
C	11/67 (16.4%)
D	<b>52/67 (77.6%)</b>
<b>Chronic total occlusion</b>	<b>61/66 (92.4%)</b>
<b>Target Lesion Anatomical Distribution</b>	
SFA	63/67 (94.0%)
P1	47/65 (72.3%)
P2	35/65 (53.8%)
P3	15/64 (23.4%)
<b>Calcification (PACSS)</b>	
1	3/64 (4.7%)
2	2/64 (3.1%)
3	19/64 (29.7%)
4	40/64 (62.5%)
Severe calcification <sup>a</sup>	40/66 (60.6%)
<b>Number of runoff BTK vessels</b>	
0	1/62 (1.6%)
1	19/62 (30.6%)
2	26/62 (41.9%)
3	16/62 (25.8%)
<b>Lesion Length (cm)</b>	<b>26.9±11.2</b>

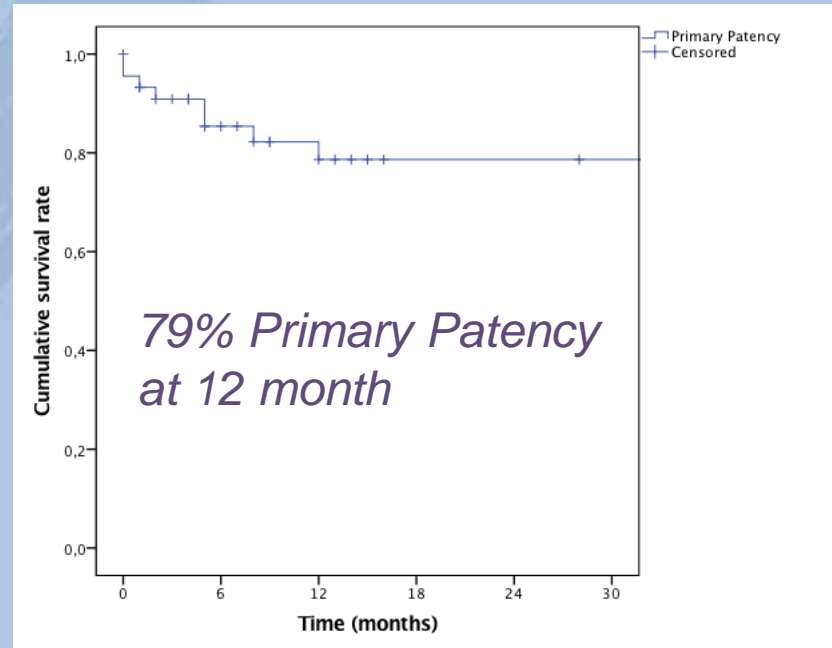
BTK – bellow-the-knee vessels, IQR – interquartile range, P1-P3 – first, second and thirds segment of popliteal artery, PACSS – peripheral artery calcium scoring system, SD – standard deviation, SFA – superficial femoral artery. <sup>a</sup>Dense circumferential calcification and calcification extending more than 5 continuous centimetres of the length prior to contrast ejection.

# Intervention Features

Intervention Features	Number/Total (%) or mean±SD
Maximum balloon diameter (mm)	
5	3/59 (5.1%)
6	<b>28/59 (47.4%)</b>
7	<b>21/59 (35.6%)</b>
8	5/59 (8.5%)
9	2/59 (3.4%)
Use of high pressure or cutting balloon	23/65 (35.4%)
Perforation	39/66 (59.1%)
Viabahn cumulative length (cm) <sup>b</sup>	<b>16.5±8.7</b>
Viabahn maximum diameter (mm)	
5	2/67 (2.9%)
6	<b>34/67 (50.7%)</b>
7	<b>28/67 (41.8%)</b>
8	3/67 (4.5%)
SUPERA cumulative length (cm) <sup>b</sup>	<b>22.9±12.0</b>
SUPERA maximum diameter (mm)	
5	<b>32/67 (47.8%)</b>
6	<b>34/67 (50.7%)</b>
7	1/67 (1.5%)
Additional procedures	
Iliac	4/66 (6.1%)
FP	42/66 (62.1%)
DCB	24/64 (37.5%)
Nitinol stent	18/64 (25.0%)
DES	11/64 (17.2%)
Other	5/64 (7.8%)
BTK	13/67 (19.4%)
Manual aspiration thrombectomy	1/67 (1.5%)
Procedure duration (min) <sup>a</sup>	125±43
Radiation	
Dose area product (Gycm2) <sup>b</sup>	50,0±39,0
Fluoroscopy time (min) <sup>c</sup>	40±16

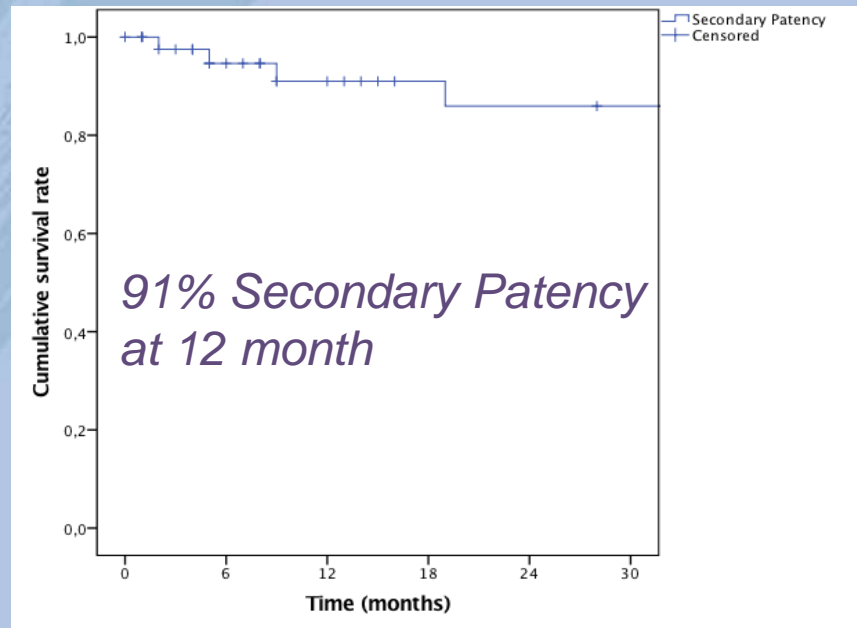
BTK – bellow-the-knee vessels, CFA – common femoral artery, DCB – drug-coated balloon, DES – drug-eluting stent, FP – femoropopliteal, IQR – interquartile range, P1-P3 – first, second and thirds segment of popliteal artery, PACSS – peripheral artery calcium scoring system, SD – standard deviation, SFA – superficial femoral artery. <sup>a</sup>Data available in 67 patients. <sup>b</sup>Data available in 51 patients. <sup>c</sup>Data available in 52 patients.

# Primary Patency



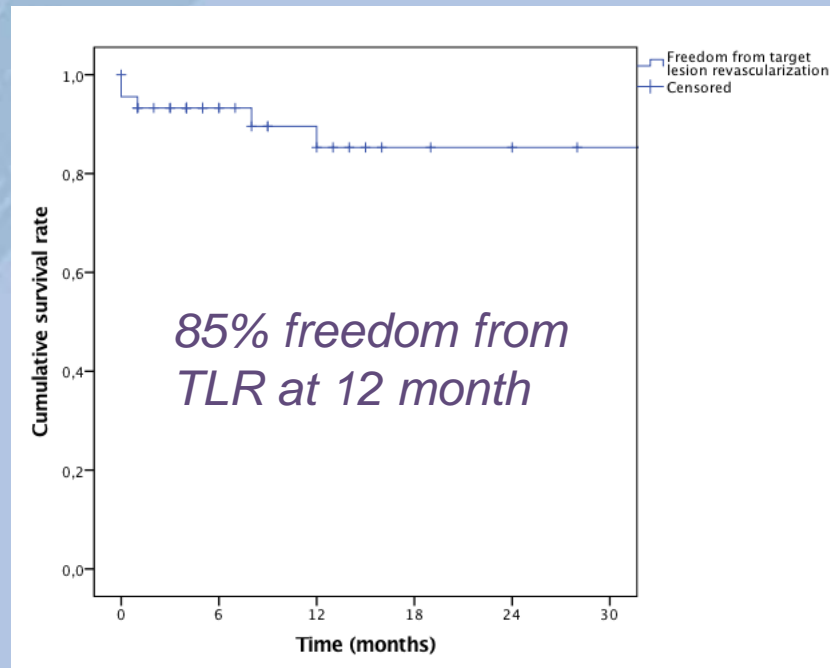
Time after intervention (months)	0	3	6	12	18	24	30
Number at risk	45	37	29	23	17	17	16
Estimate	95.6	90.9	85.4	78.6	78.6	78.6	78.6
Standard error	3.1	4.3	5.6	6.9	6.9	6.9	6.9

# Secondary Patency



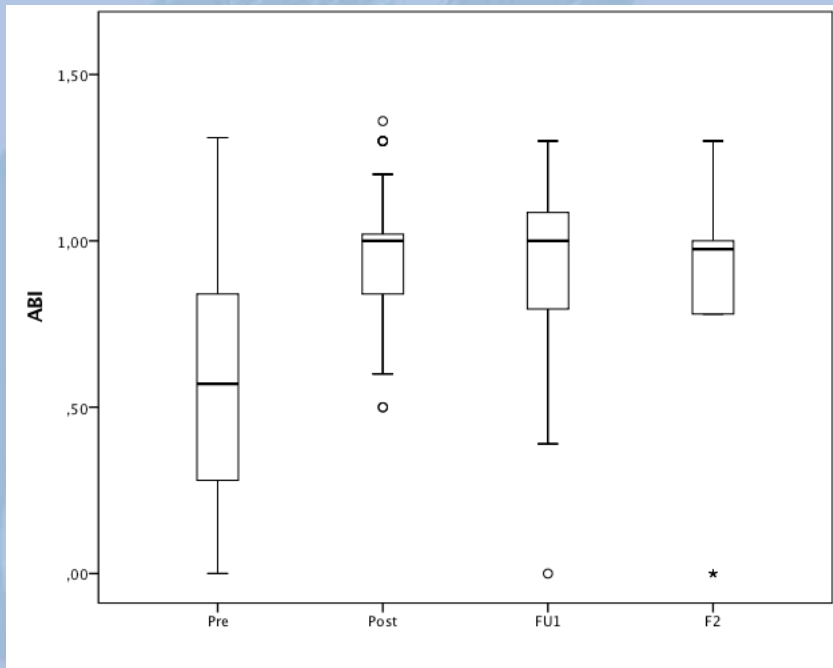
Time after intervention (months)	0	3	6	12	18	24	30
Number at risk	46	38	30	23	18	17	16
Estimate	-	97.5	94.6	91.0	91.0	85.9	85.9
Standard error	-	2.5	3.7	5.0	5.0	6.8	6.8

# Freedom from TLR

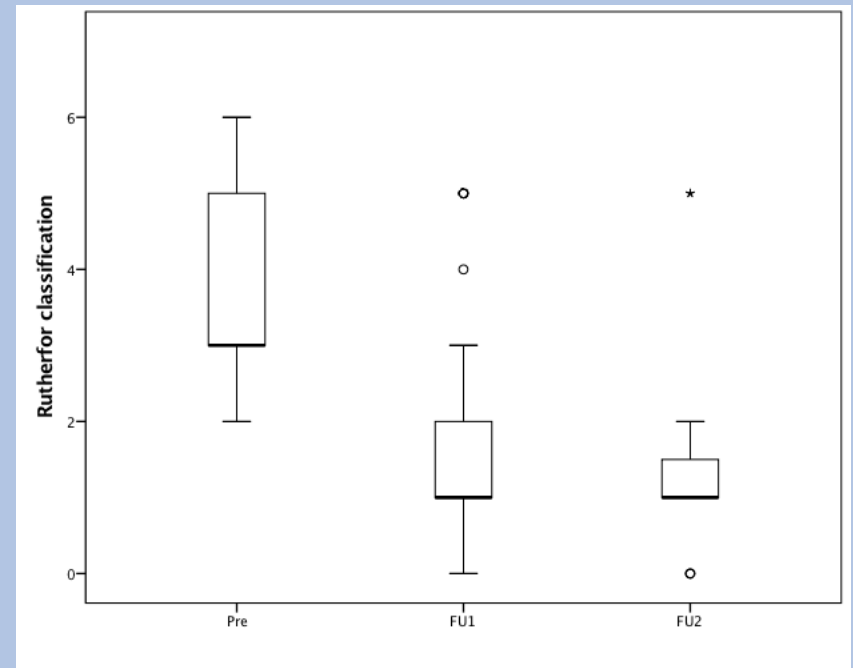


Time after intervention (months)	0	3	6	12	18	24	30
Number at risk	45	37	28	21	15	14	12
Estimate	95.6	93.3	93.3	85.3	85.3	85.3	85.3
Standard error	3.1	3.7	3.7	6.4	6.4	6.4	6.4

# ABI und Rutherford classification



Boxplot of the ankle brachial index (ABI) before (pre) and after (post) intervention, and at the first/second follow up visits (FU1 and FU2)



Boxplot of the Rutherford class before (pre) and at the first/second follow up visits (FU1 and FU2)

# Conclusions

- A novel endovascular strategy for severely calcified femoropopliteal lesions
- Even for long and complex lesions
- A high proportion of immediate technical success and safety
- Durable results out to 12-month follow up



Thank you for your attention