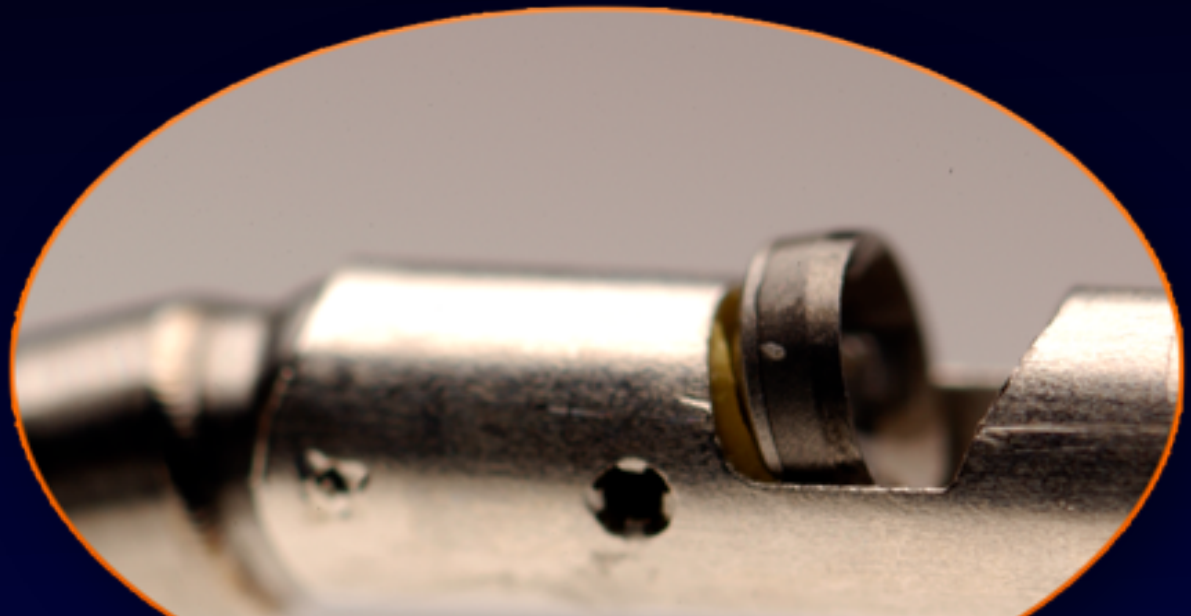


Vom SilverHawk zum ...



TurboHawk



Arno Bucker

Klinik für Diagnostische und Interventionelle Radiologie – UKS-Homburg

Table 18. Overview of Primary Patency and Limb Salvage Rates After Endovascular Procedures for Peripheral Arterial Disease of the Lower Extremities

Procedure	Lesion Type	Severity of Disease	Reference	No. of Limbs	% 30-Day Mortality (95% CI)	% Major Complication (95% CI)	% Technical Success (95% CI)	% Primary Patency (95% CI)*				
								1 yr	2 yrs	3 yrs	4 yrs	5 yrs
Iliac PTA	80% Stenoses, 20% occlusion	67% Claudication, 33% critical ischemia	(84) Bosch et al. Radiology 1997;204:87 Meta-Analyse	1473	1.0 (0–2.9)	4.3 (2.0–6.5)	91 (86–96)	74 (71–76)	66 (63–68)	61 (59–64)	58 (56–61)	—
	Stenoses	Claudication			ND	ND	96	79	72	68	65	—
	Stenoses	Critical ischemia			ND	ND	ND	72	61	56	53	—
	Occlusion	Claudication			ND	ND	80	66	60	57	54	—
	Occlusion	Critical ischemia			ND	ND	ND	60	51	47	44	—
Iliac stent	72% Stenoses, 28% occlusion	85% Claudication, 15% critical ischemia	(84) Bosch et al. Radiology 1997;204:87 Meta-Analyse	901	0.8 (0.7–0.9)	5.2 (3.5–6.9)	96 (91–100)	86 (84–89)	79 (76–81)	75 (72–78)	74 (69–78)	—
	Stenoses	Claudication			ND	ND	100	91	84	80	77	—
	Stenoses	Critical ischemia			ND	ND	ND	87	76	70	67	—
	Occlusion	Claudication			ND	ND	80	72	67	64	61	—
	Occlusion	Critical ischemia			ND	ND	ND	69	60	56	53	—
Femoropopliteal PTA	64% Stenoses, 36% occlusion	65% Claudication, 35% critical ischemia	(85,86) Hunink et al. Med Decis Making 1994;14:71 JAMA 1995;274:165	4800/1003†	0.9 (0.7–1.1)	8.1 (7.3–8.9)	89 (87–91)	59 (56–62)	54 (51–57)	52 (48–55)	49 (45–52)	45 (4–49)
	Stenoses	Claudication			ND	ND	95	79	75	74	71	68
	Stenoses	Critical ischemia			ND	ND	90	62	57	54	51	47
	Occlusion	Claudication			ND	ND	87	52	46	43	40	35
	Occlusion	Critical ischemia			ND	ND	75	26	21	18	15	12
Femoropopliteal stent	Stenoses and occlusions	80% Claudication, 20% critical ischemia	Meta-analysis‡	600	—	5.9 (1.7–10)	98 (97–100)	62 (48–80)	52 (33–83)	43 (22–86)	—	—
Infrapopliteal PTA	Stenoses and occlusions	14% Claudication, 86% critical ischemia	Meta-analysis§	1282	—	—	93 (90–96)	79 (68–90)	74 (65–83)	—	—	—

*All patency rates and limb salvage rates include initial technical failures. †Mortality and complication rates are based on n equals 4800, patency rates are based on n equals 1003. ‡Based on a random-effects meta-analysis of the results from various sources, each weighted with the inverse of the variance (17–27). §Based on a random-effects meta-regression analysis of the results from various sources, each weighted with the inverse of the variance (28–46). Reprinted from Kandarpa et al. J Vasc Interv Radiol 2001;12:683–95 (84a).

CI = confidence interval; ND = no difference by subgroup can be demonstrated; PTA = percutaneous transluminal angioplasty.

modified from: Kandarpa et al. J Vasc Interv Radiol 2001;12:683

Atherektomie

- Ballondilatation
- Barotrauma
- Ischämie bei Ballonblockade
- Eingeschränkte Schnittlänge
- OTW
- Schnittblatt – Edelstahl
- 2500 UPM



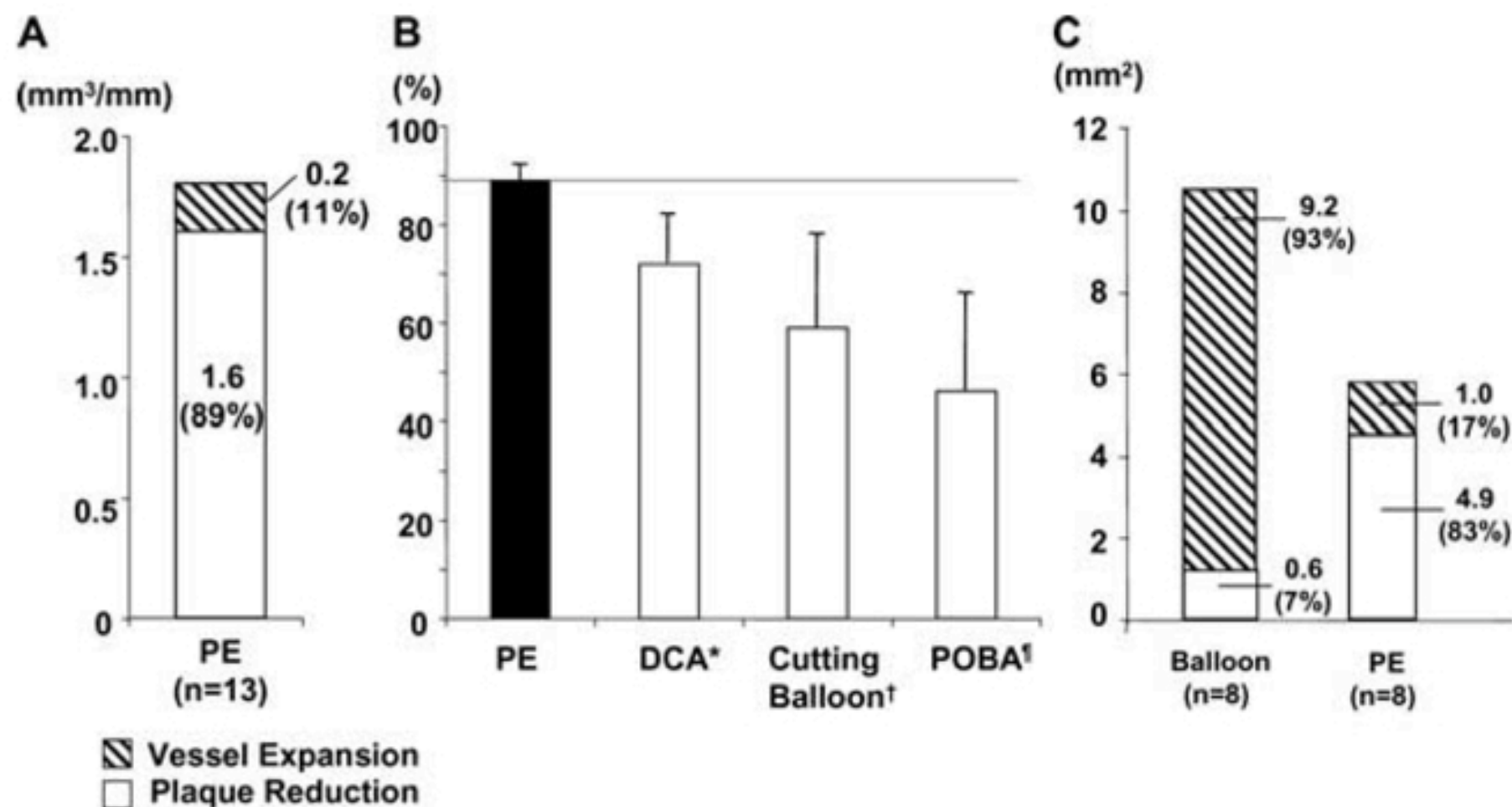
SilverHawk

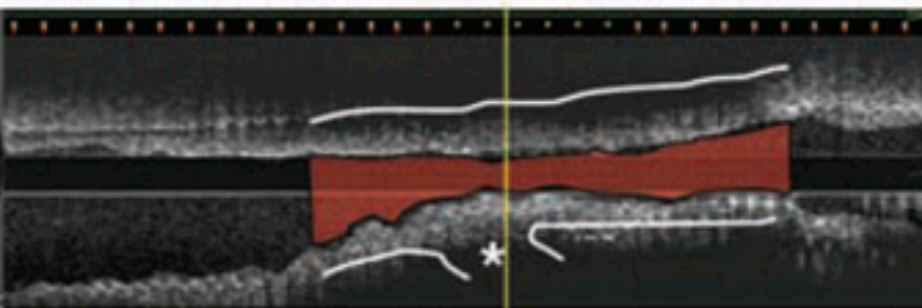
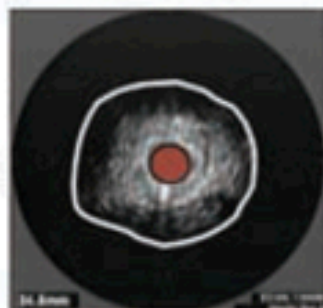
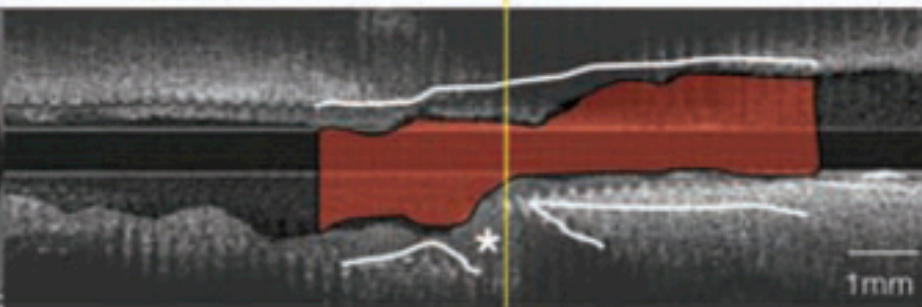
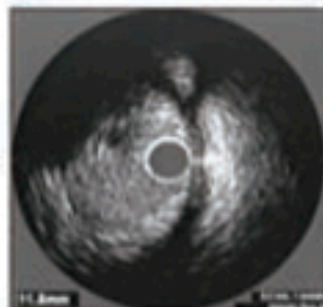
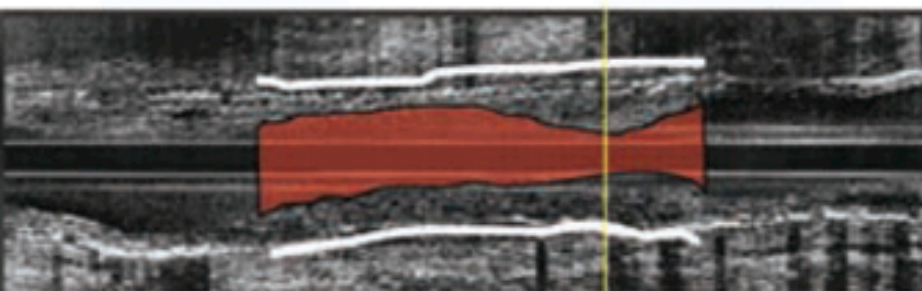
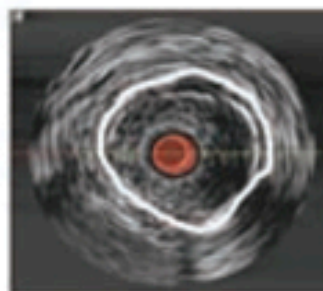
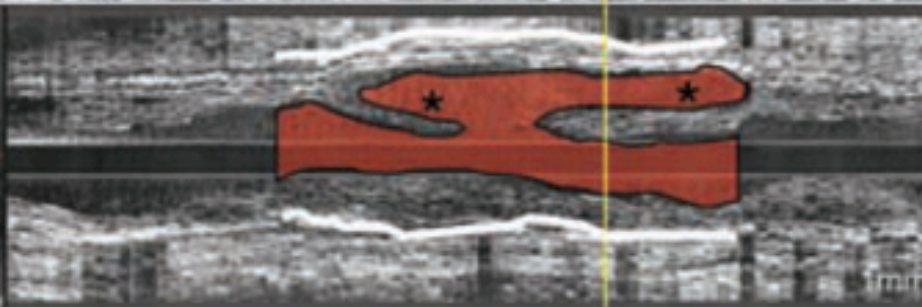
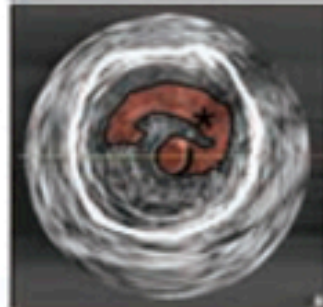
- Winkelmechanismus
- Kein Barotrauma
- Keine Flussblockade
- Variable Schnittlänge
- Schnittblatt – Carbid
- Rapid Exchange
- 8000 UPM



Mechanism of Luminal Gain with Plaque Excision in Atherosclerotic Coronary and Peripheral Arteries: Assessment by Histology and Intravascular Ultrasound

FUMIAKI IKENO, M.D.,¹ GREGORY A. BRADEN, M.D.,² HIDEAKI KANEDA, M.D., Ph.D.,¹
 YOICHIRO HONGO, M.D.,¹ TOMOAKI HINOHARA, M.D.,³ ALAN C. YEUNG, M.D.,¹
 JOHN B. SIMPSON, M.D., Ph.D.,³ and DAVID E. KANDZARI, M.D.⁴ (J Interv Cardiol 2007;20:107-113)

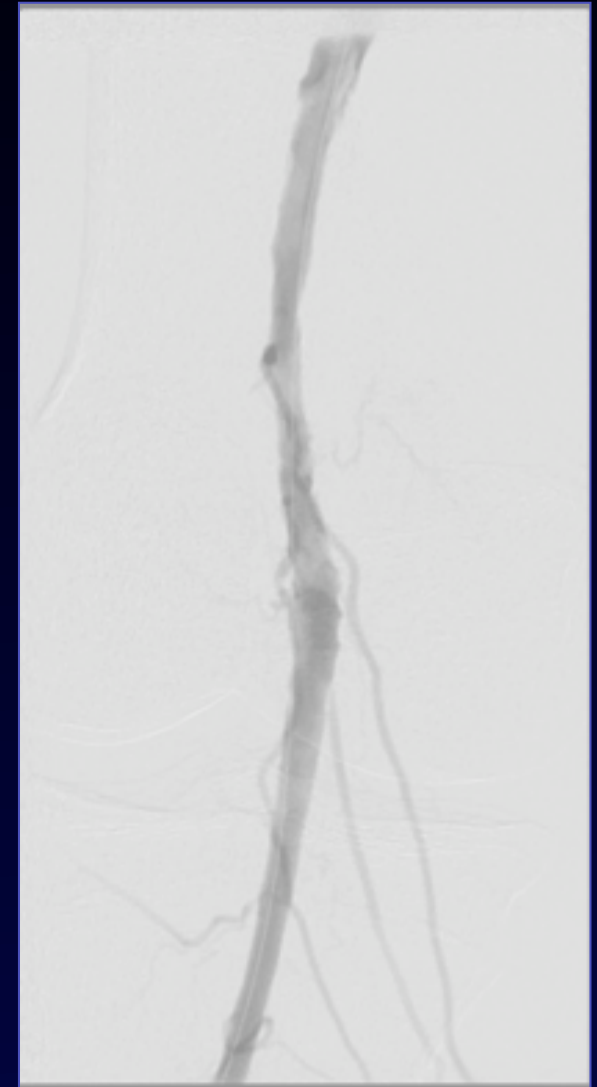
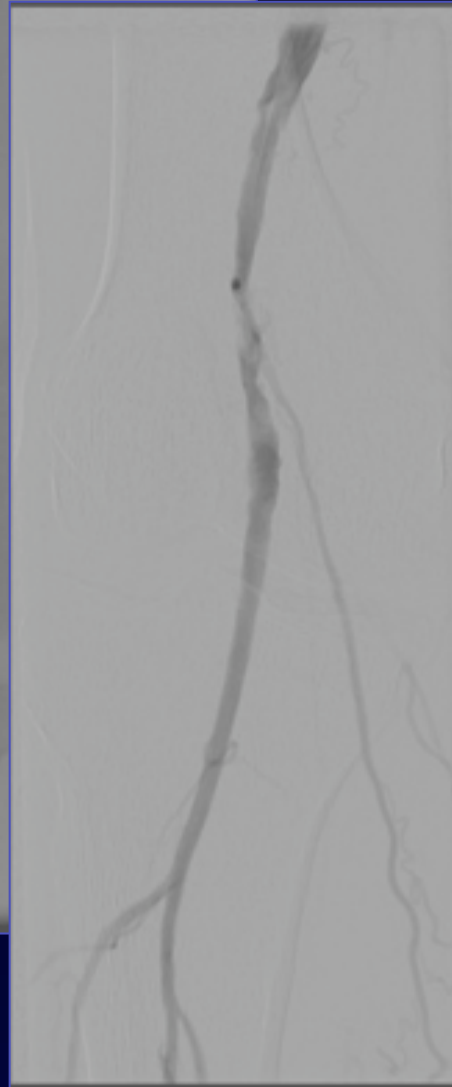
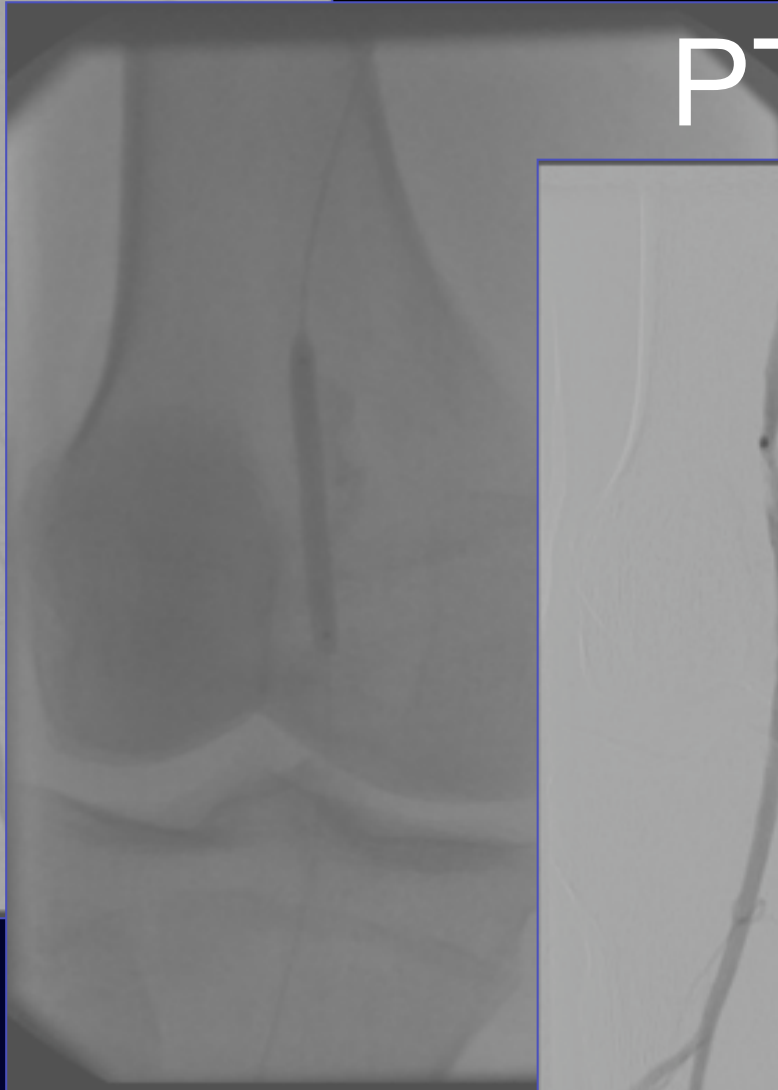
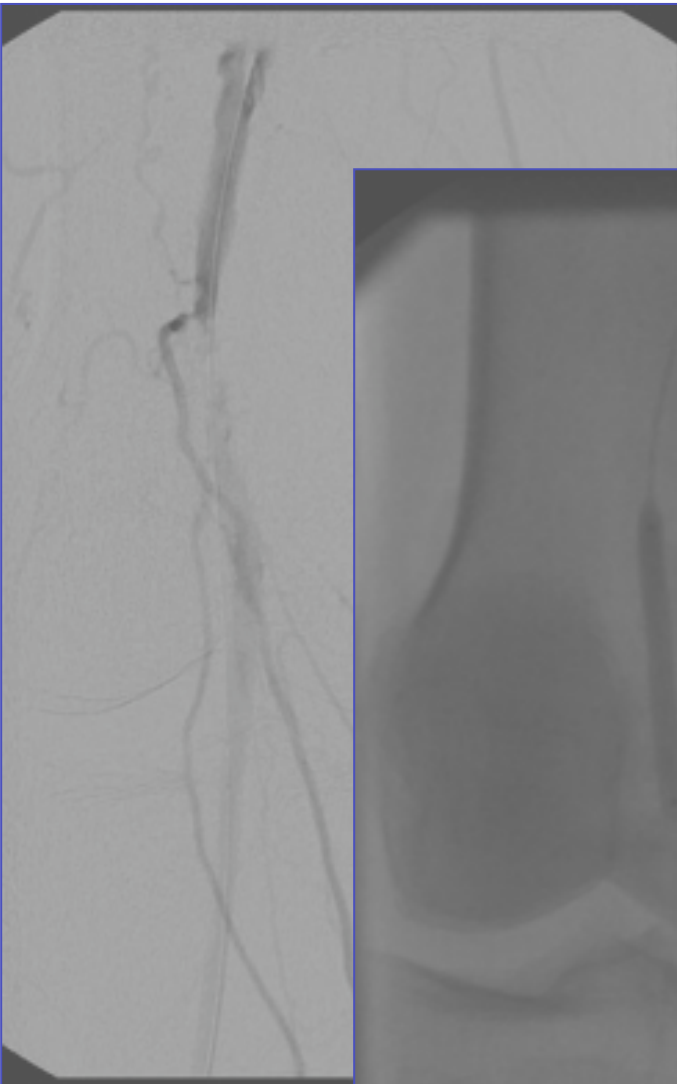


A**2D IVUS****3D IVUS****Pre
Plaque Excision****Post
Plaque Excision****B****Pre
Ballooning****Post
Ballooning**

Subtotaler Verschluss A: pop. (IIb)

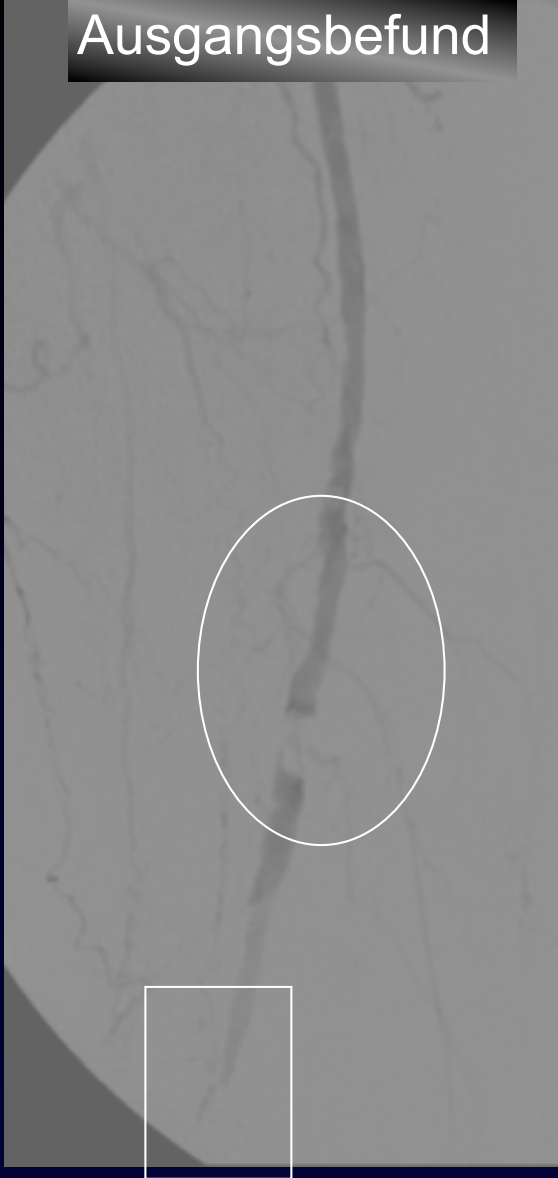
PTA

Stent



Kontrolle nach 3 Monaten

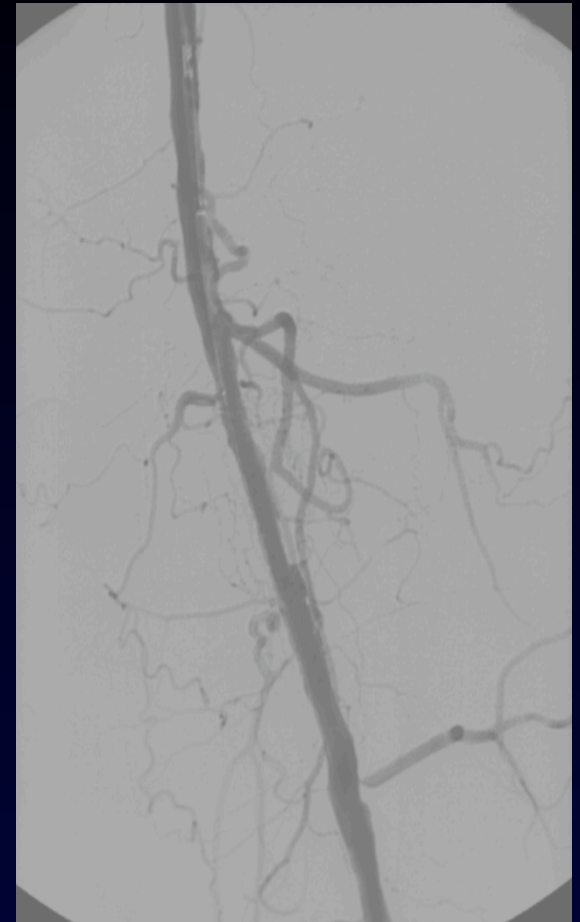
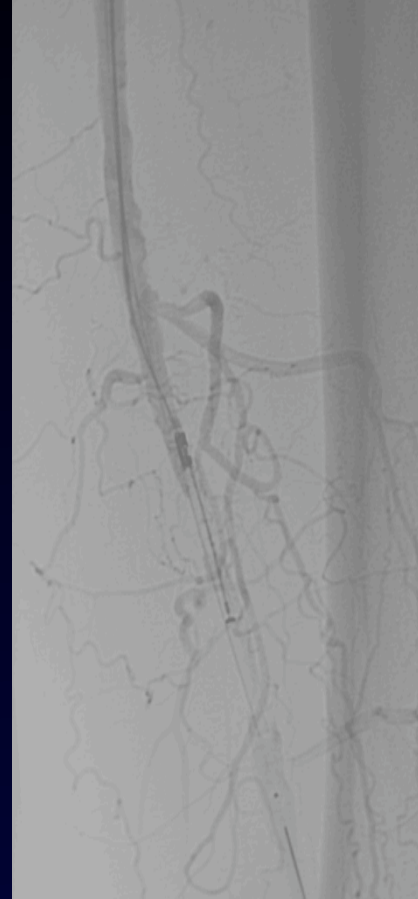
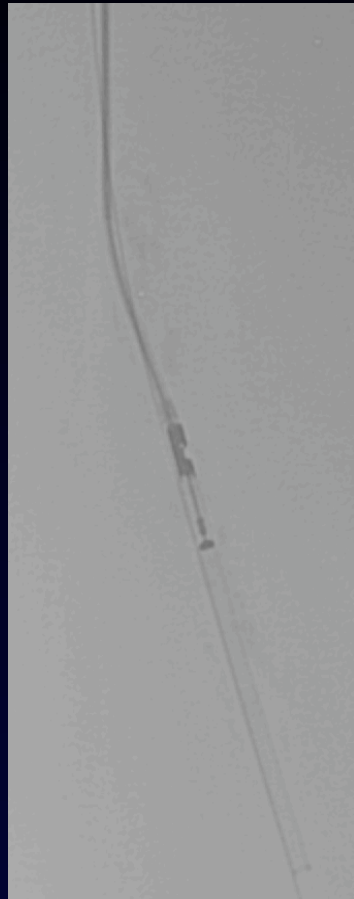
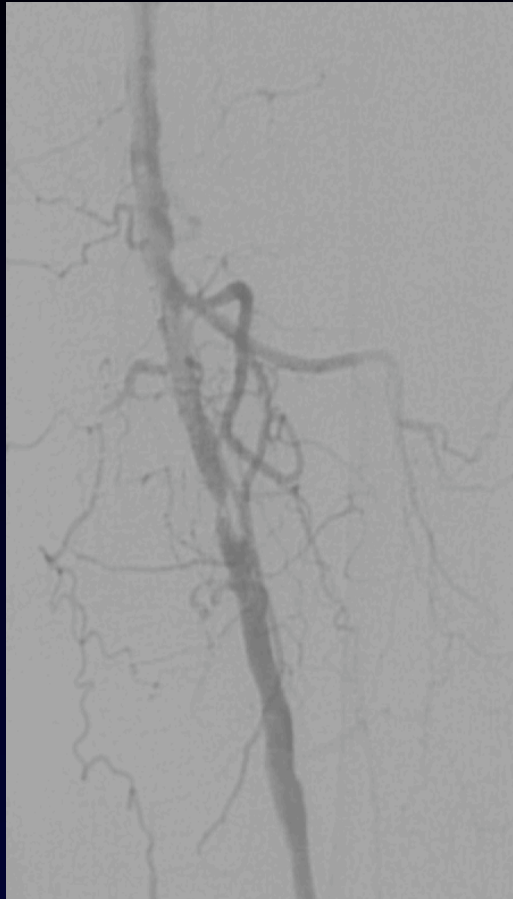
Ausgangsbefund



nach Atherektomie



Silverhawk



Two-year Results After Directional Atherectomy of Infrapopliteal Arteries With the Silverhawk Device

Thomas Zeller, MD¹; Sebastian Sixt, MD¹; Uwe Schwarzwälder, MD¹; Thomas Schwarz, MD¹; Ulrich Frank, MD¹; Karlheinz Bürgelin, MD¹; Volker Pochert, MD¹; Christian Müller, MD²; Elias Noory, MD¹; Hans Krankenberg, MD³; Kirsten Hauswald, MD¹; Franz-Josef Neumann, MD¹; and Aljoscha Rastan, MD¹

¹Department of Angiology, Heart Center Bad Krozingen, Germany

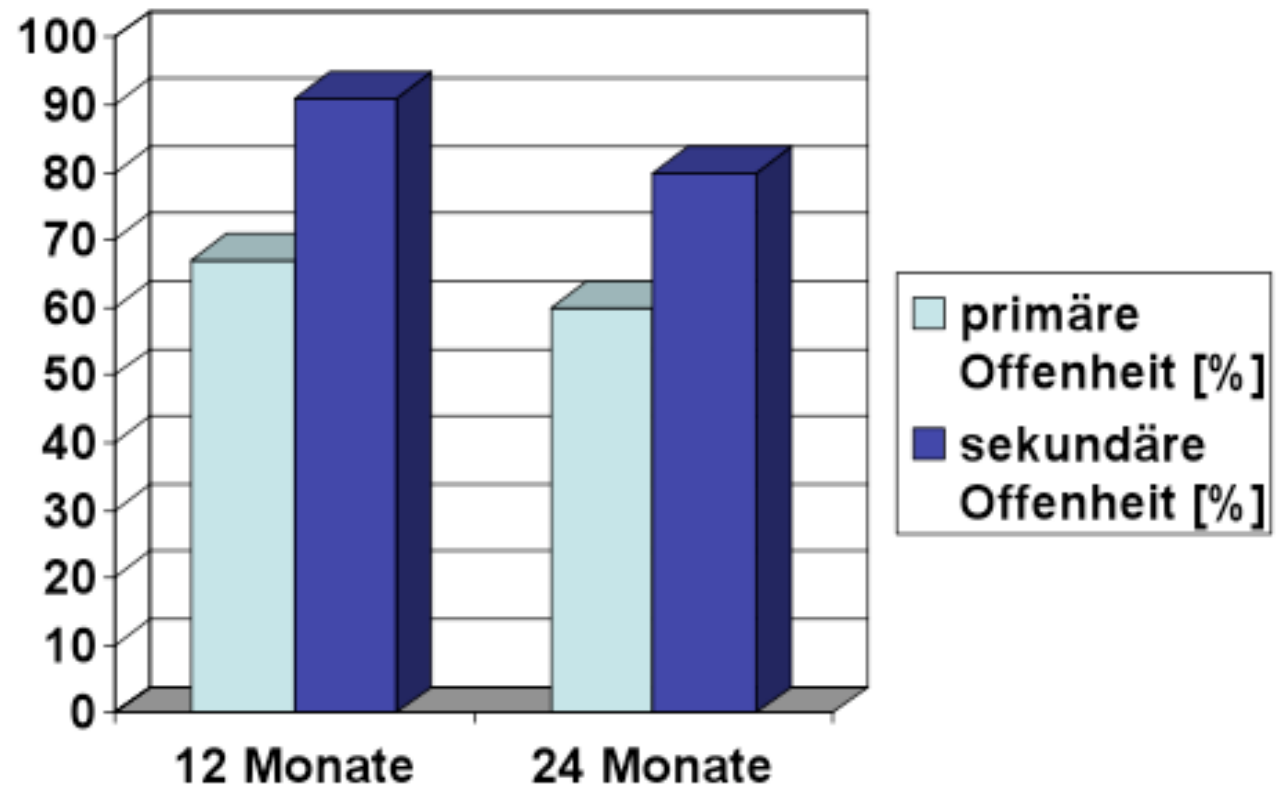
²Department of Internal Medicine, University Hospital Basel, Switzerland

³Heart Center Hamburg, Germany

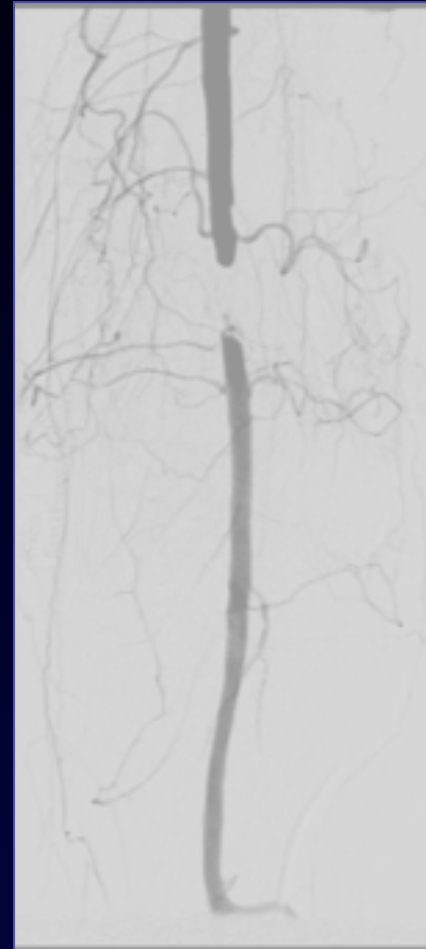
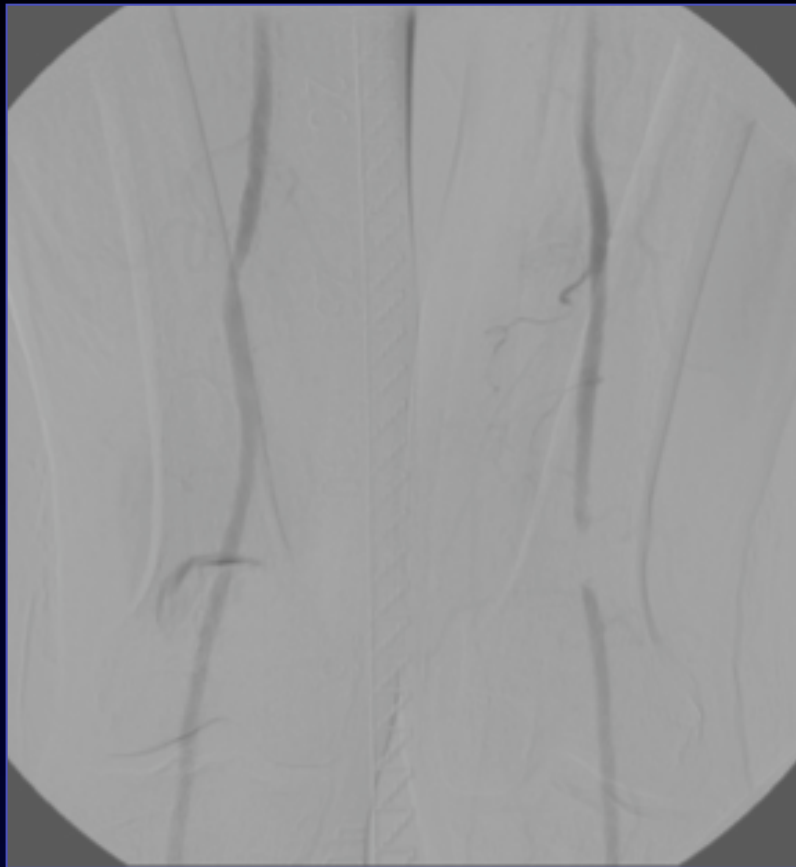
Register Studie

36 Patienten 49 Läsionen

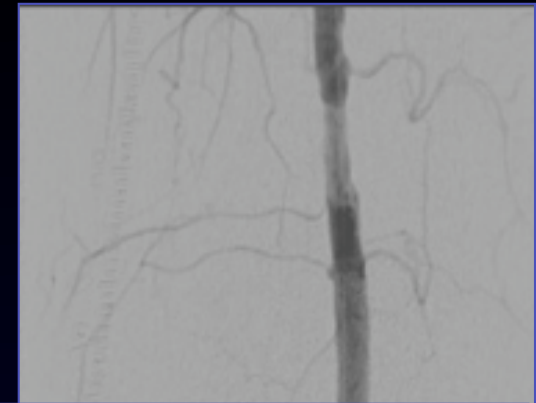
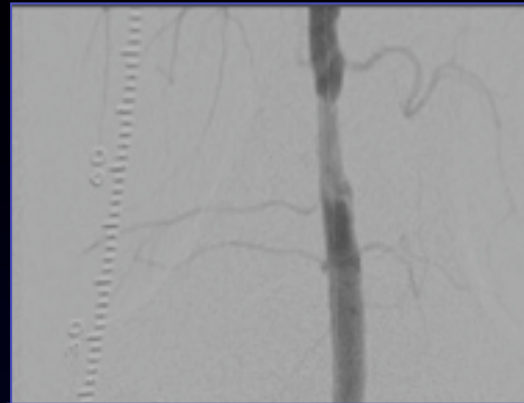
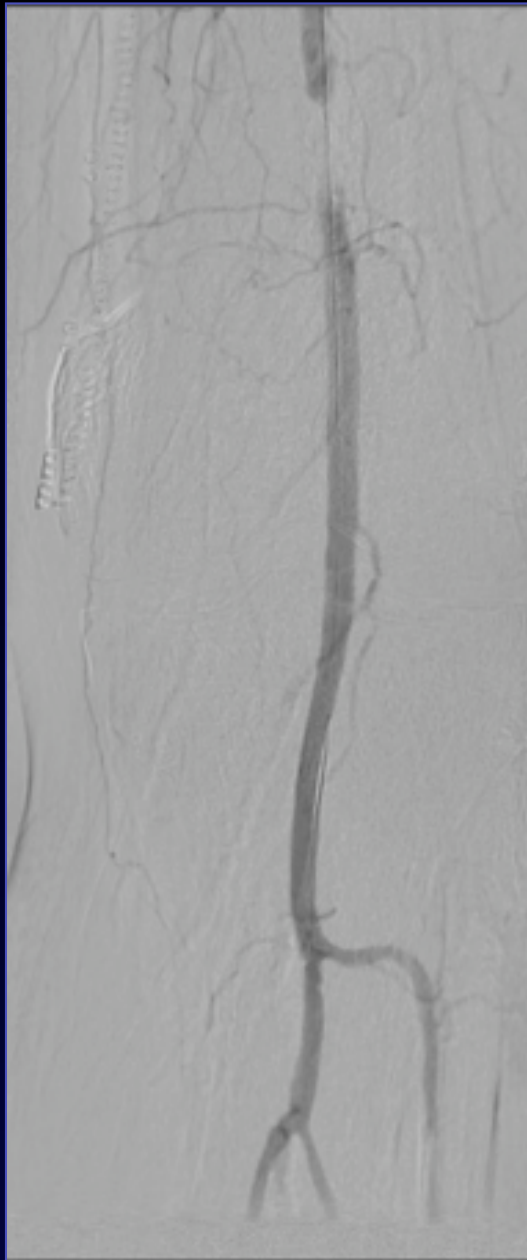
A. poplitea.:	6%
Tr. tibiofibularis:	26%
A. fibularis.:	10%
A. tib. ant.:	5%
A. tib. post.:	4%



Akuter Schmerz vor 9 Wochen und seither Schmerzen (79J)

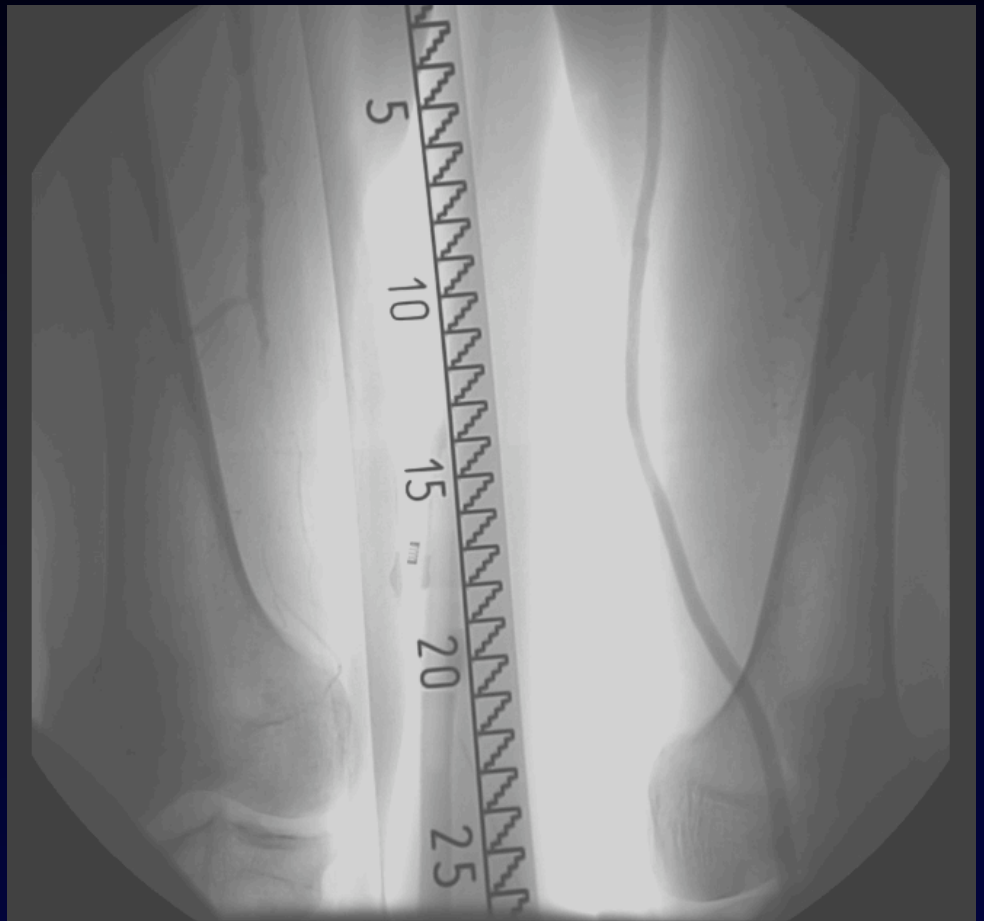


Stenose und subakute Thrombose



Langstreckige subakute Thrombose über 14 cm AFS/AP

58 J. Mann, postop. nach Lappenplastik li., vor 3 Wochen DSA
mittelgradige Stenose re., Bypass li. offen, Fontaine IV



Langstreckige subakute Thrombose über 14 cm AFS/AP

A. pop. distal 3 mm

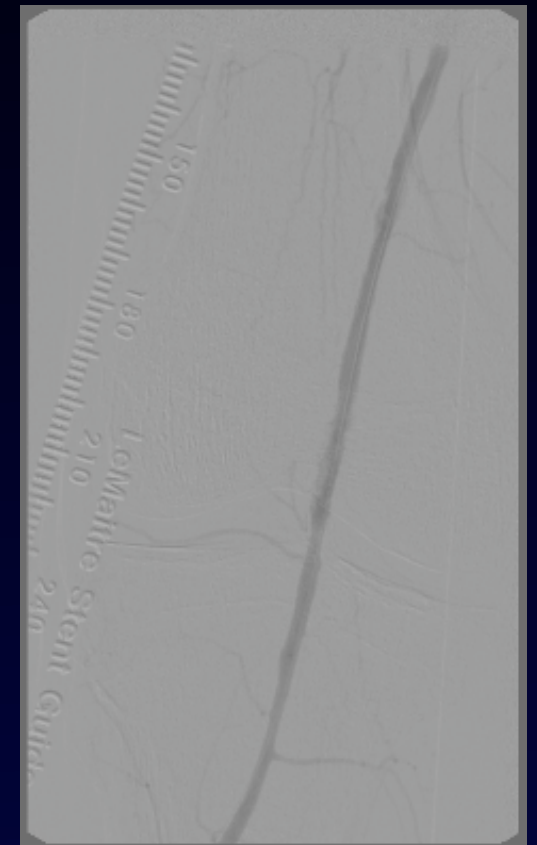
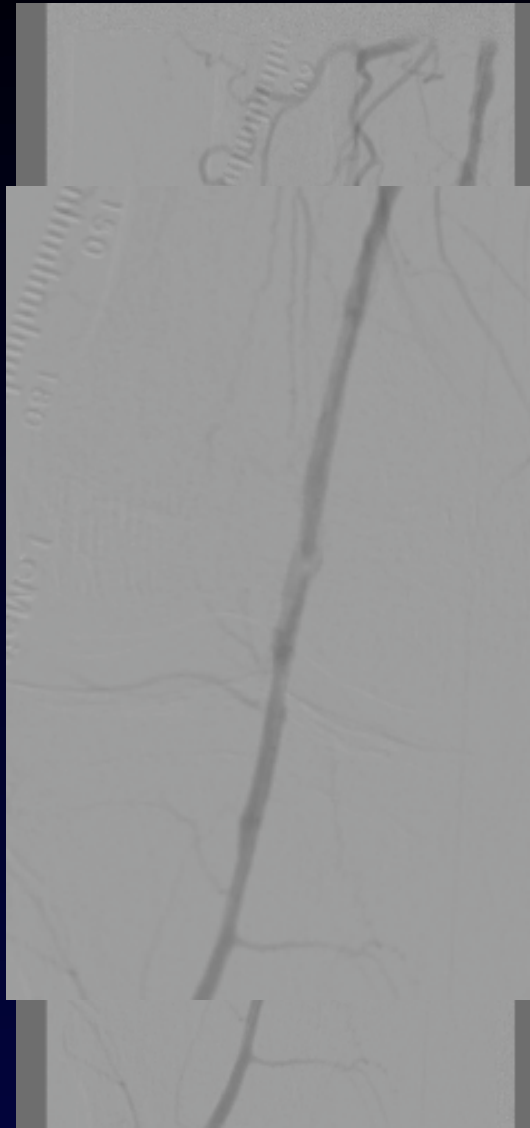


Einfache / weiche Rekanalisation

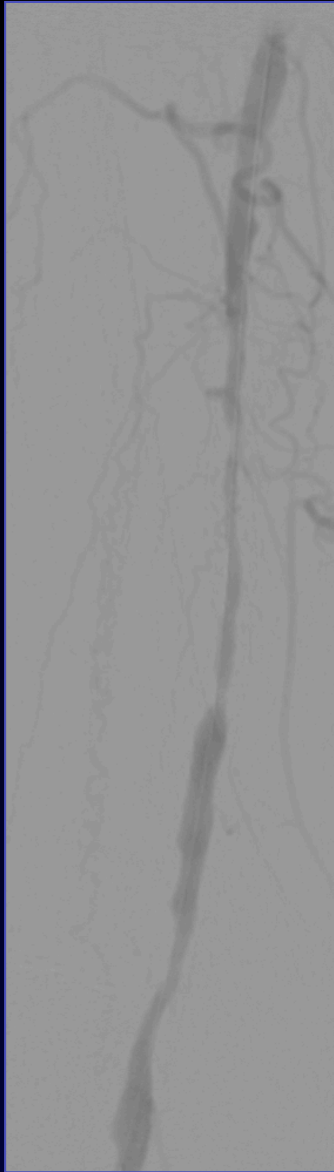


Langstreckige subakute Thrombose

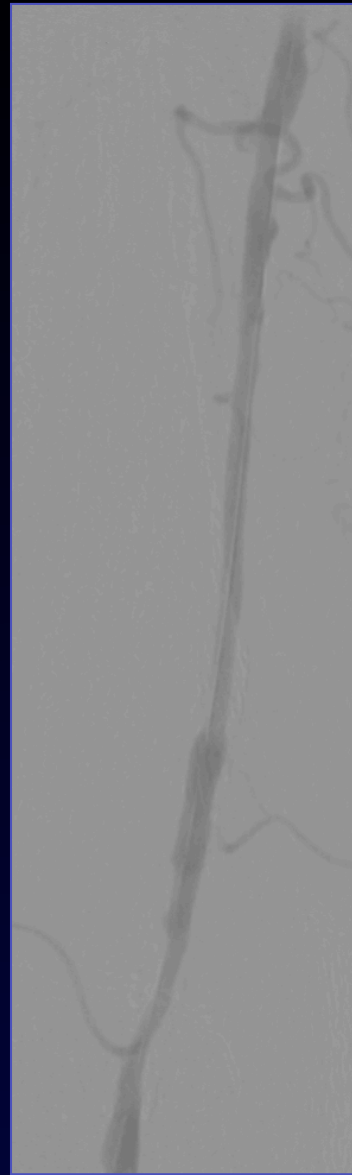
Atherektomien ->



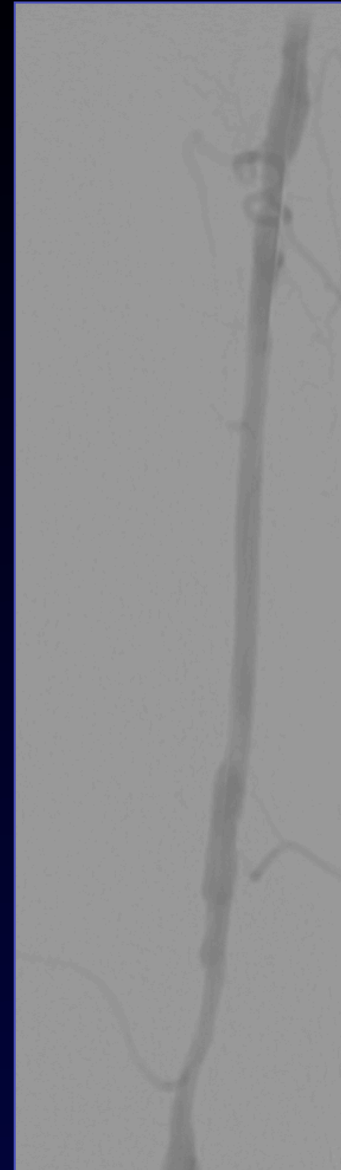
In Stent-Restenose



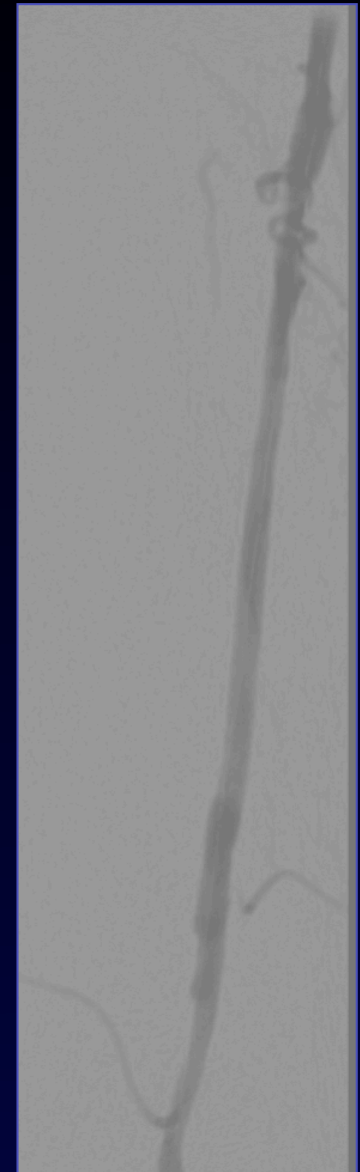
Ausgangsbefund



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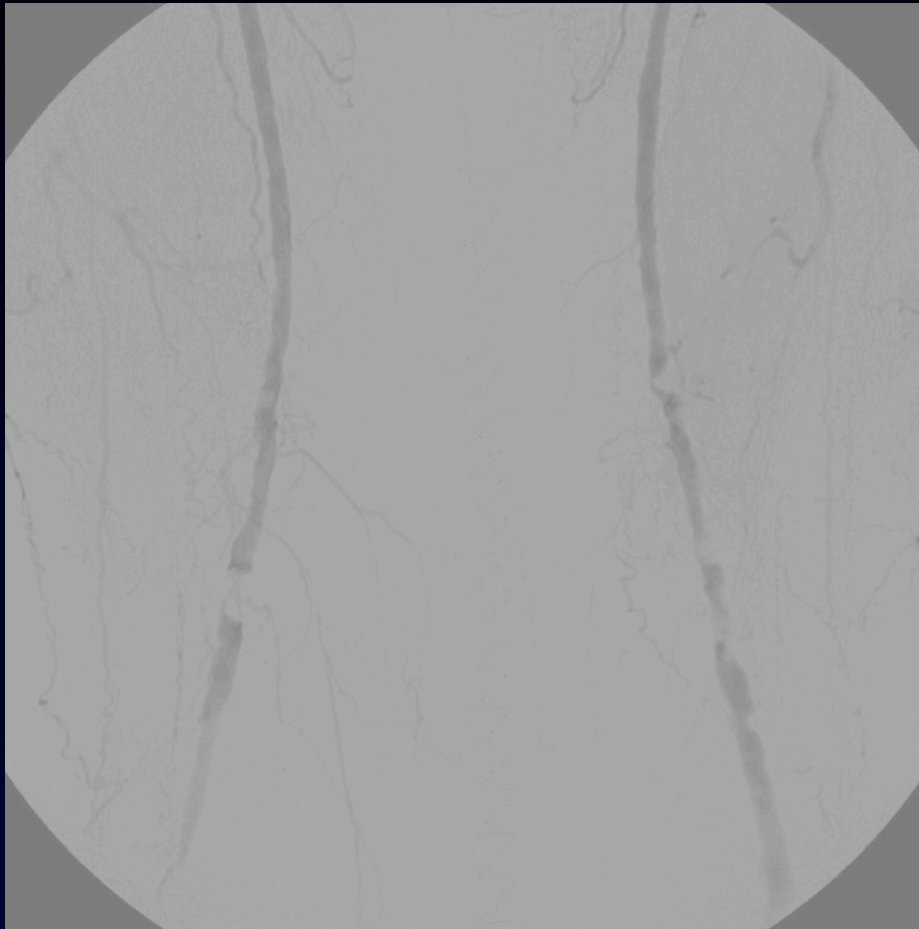


2. Passage



3. Passage

Ausgangsbefund - KALK

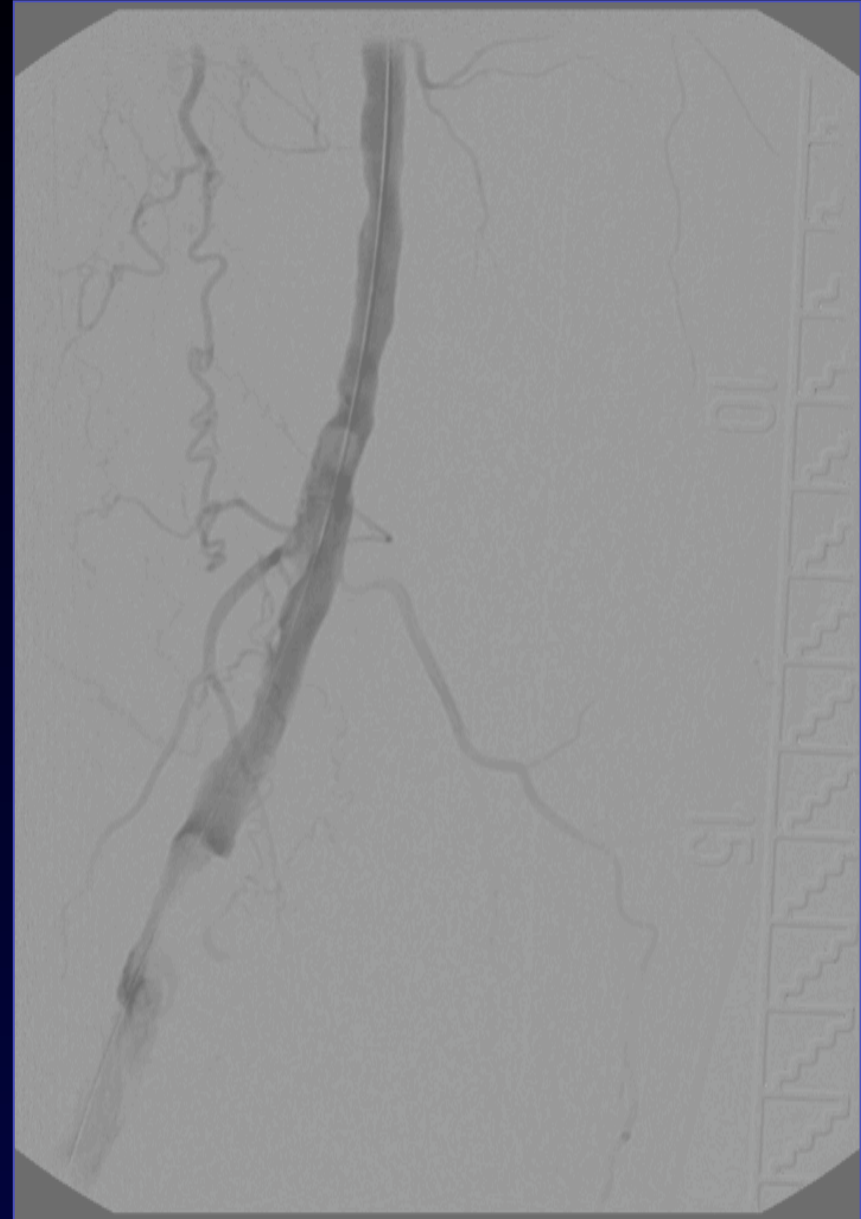
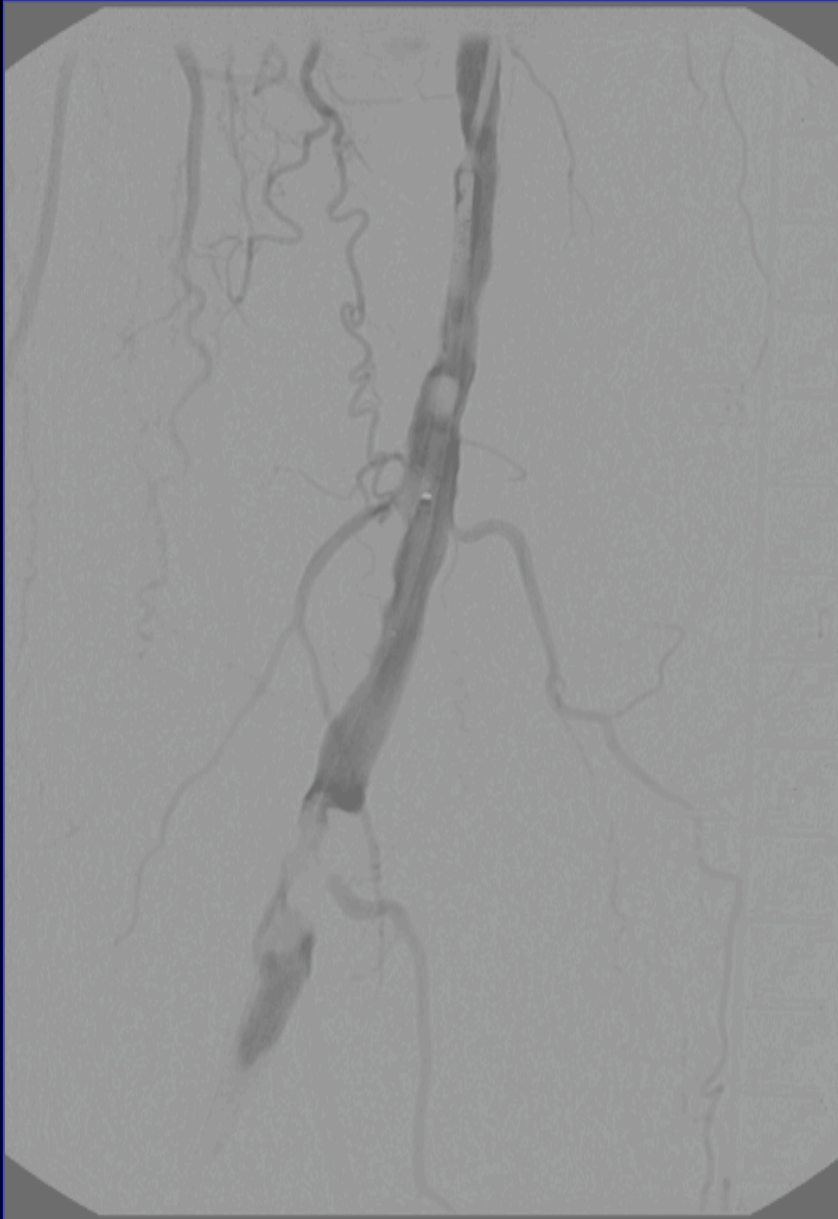


Exzentrische verkalkte Läsion

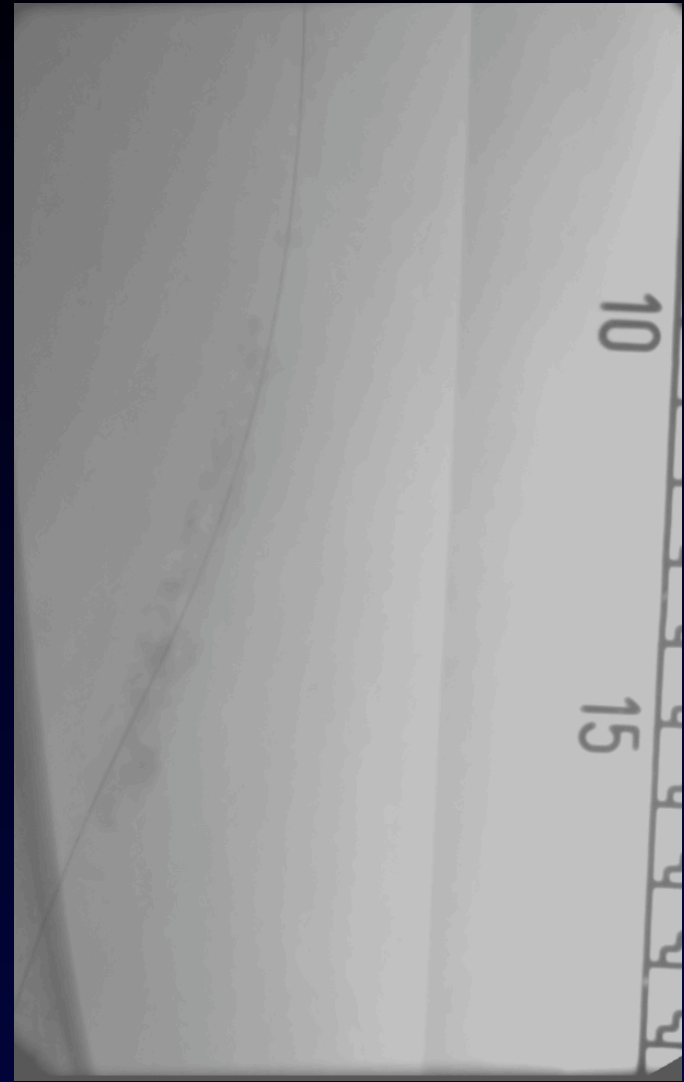
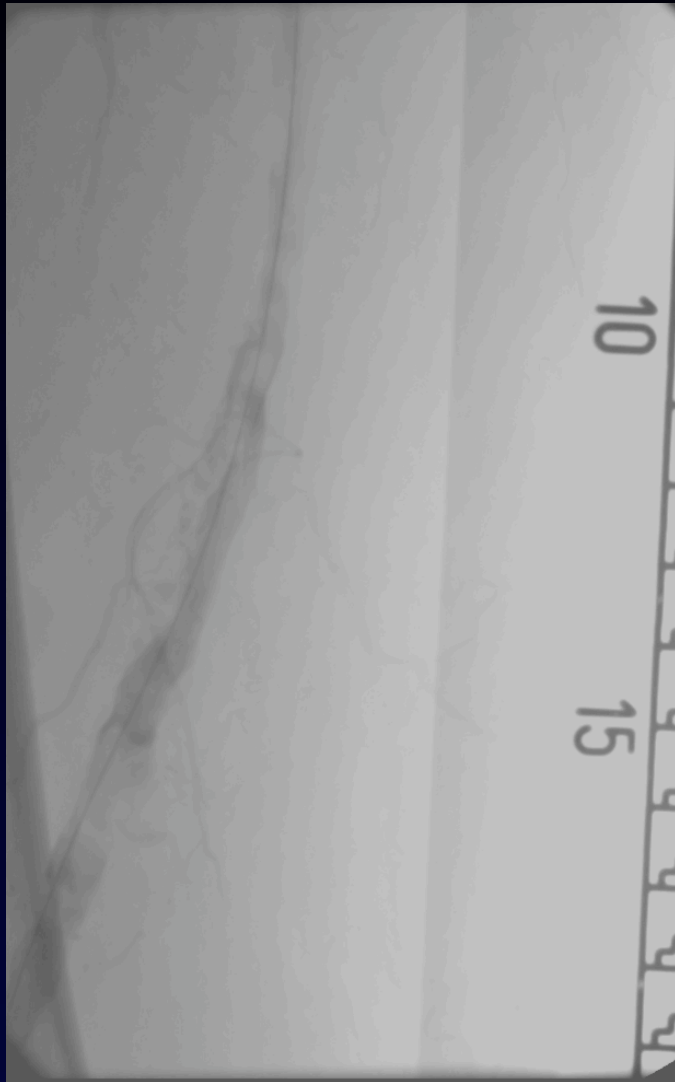
prae

Atherektomie

post



Ergebnis nach Atherektomie

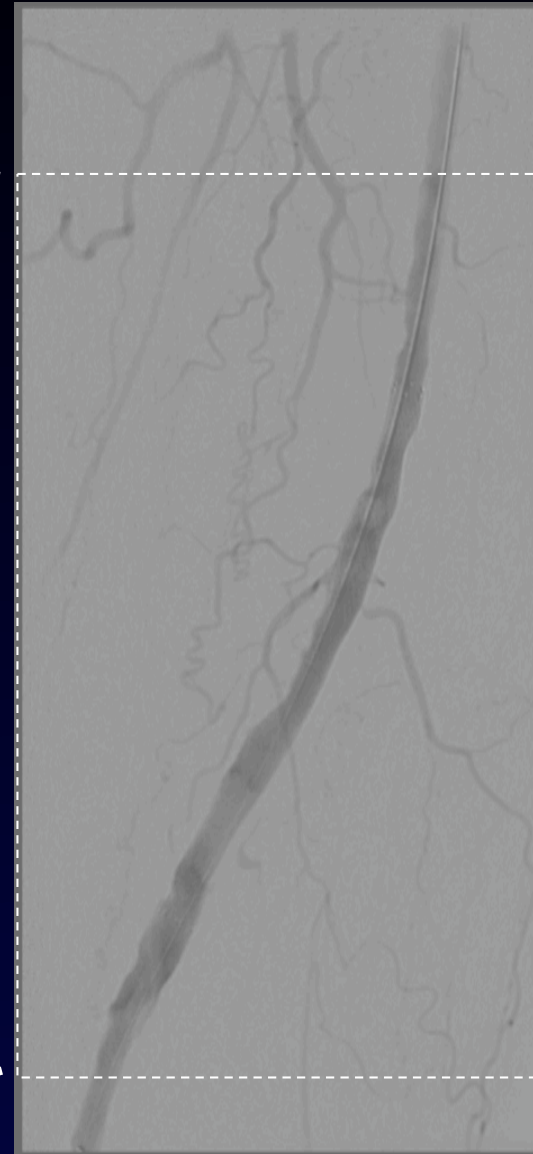
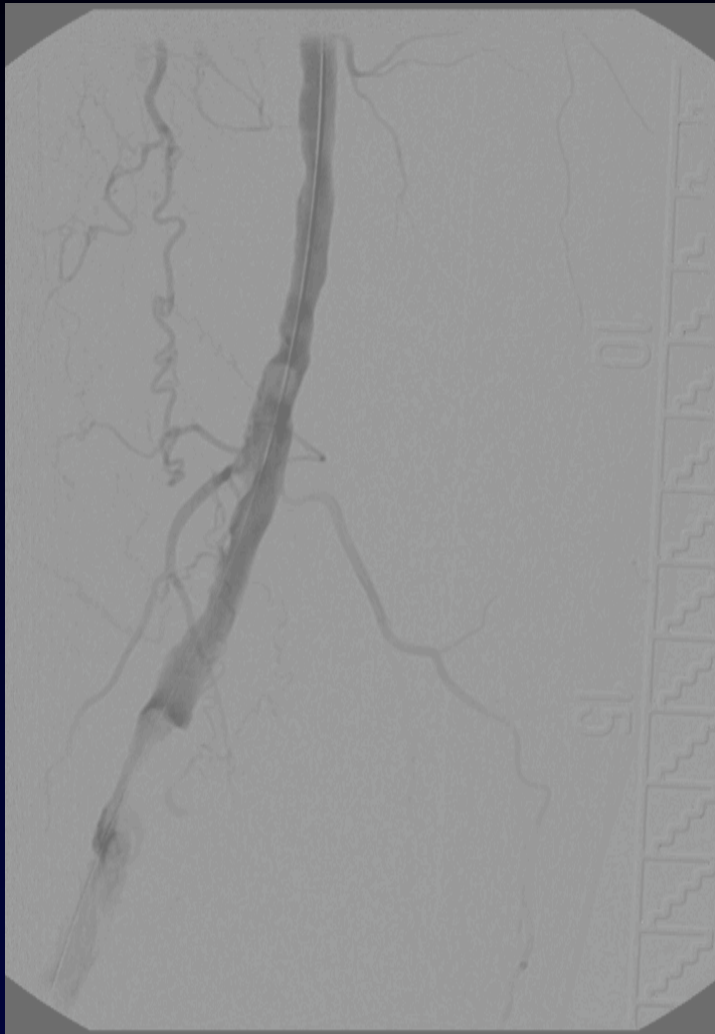


Ergebnis nach

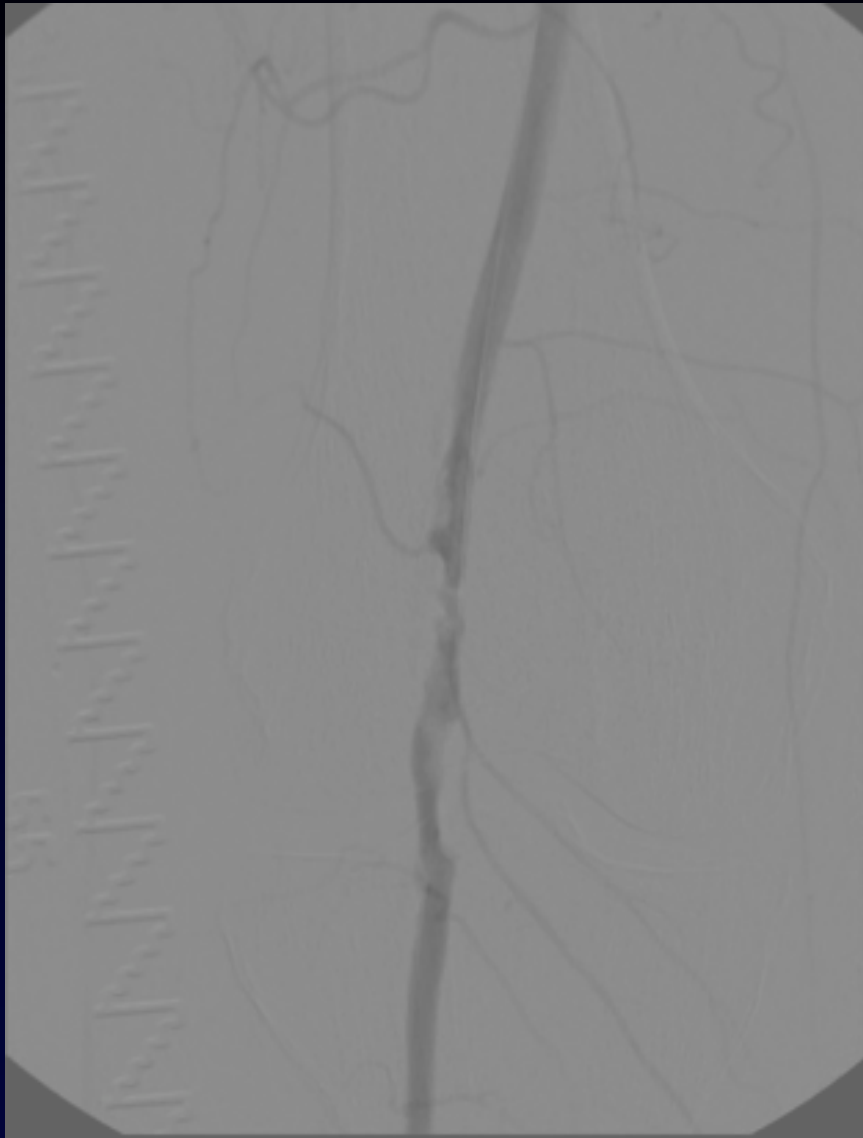
Stent PTA

+

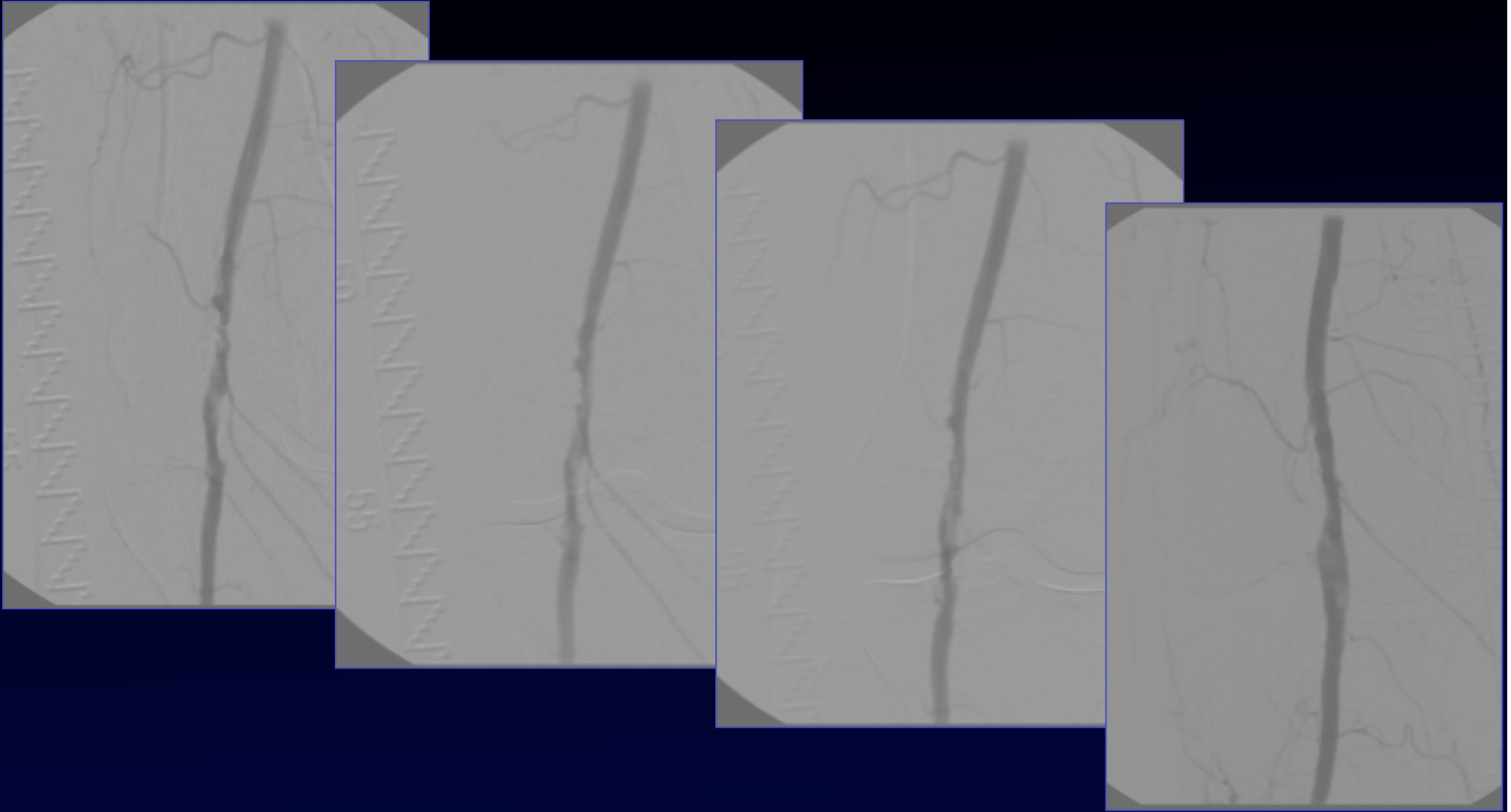
Atherektomie



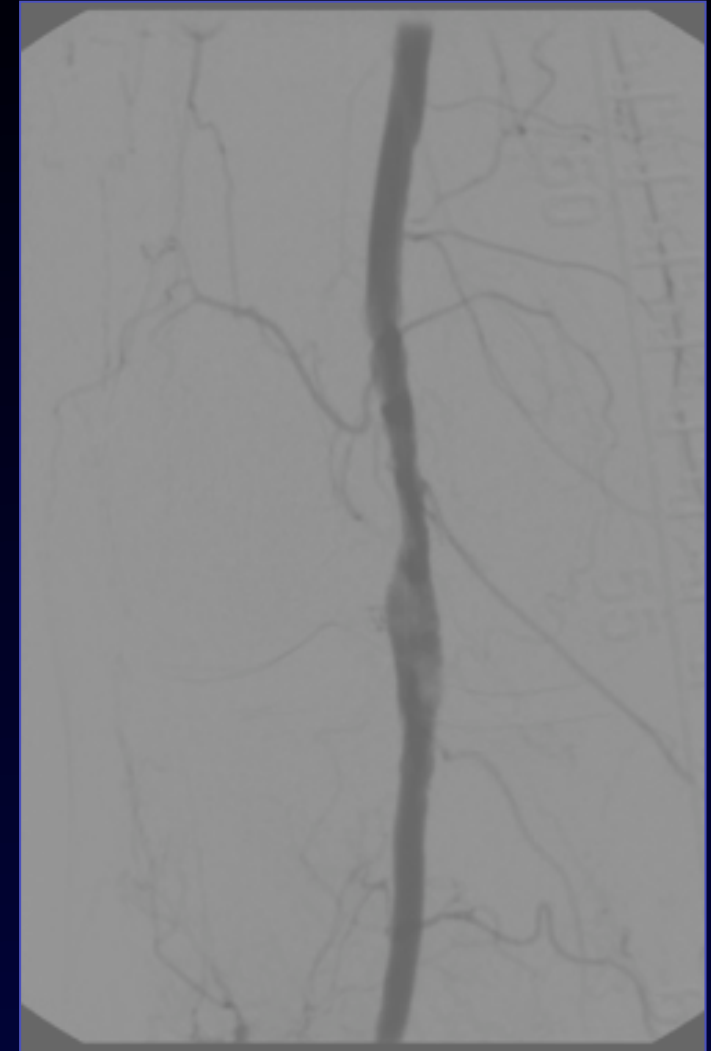
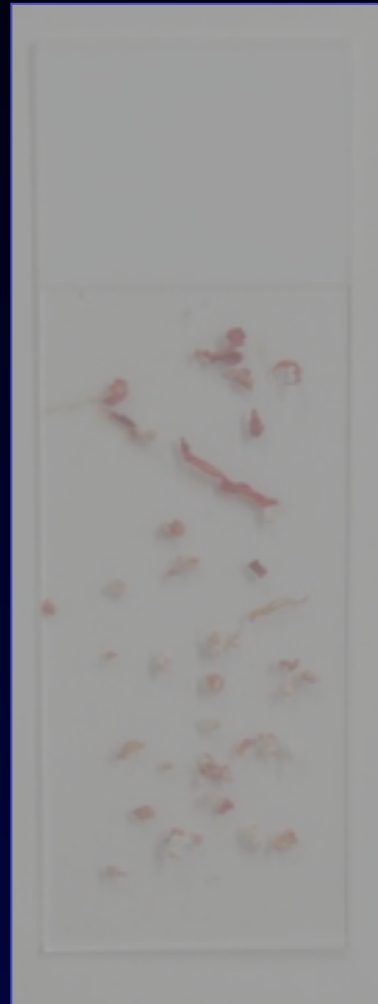
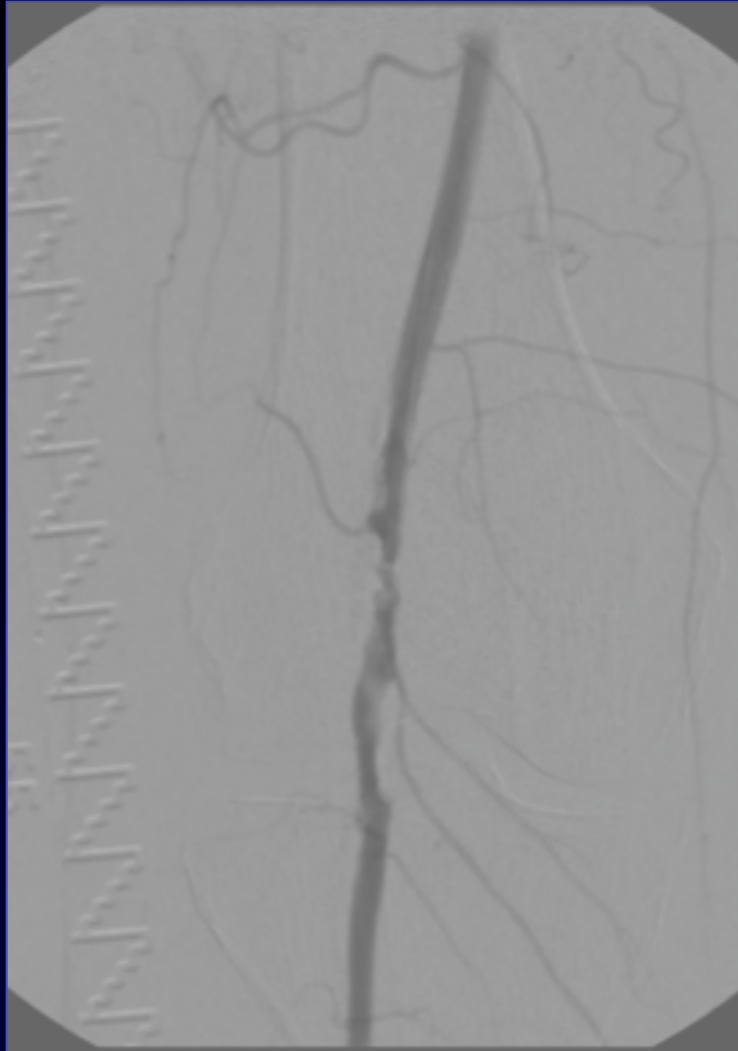
Ausgangsbefund: Kalk



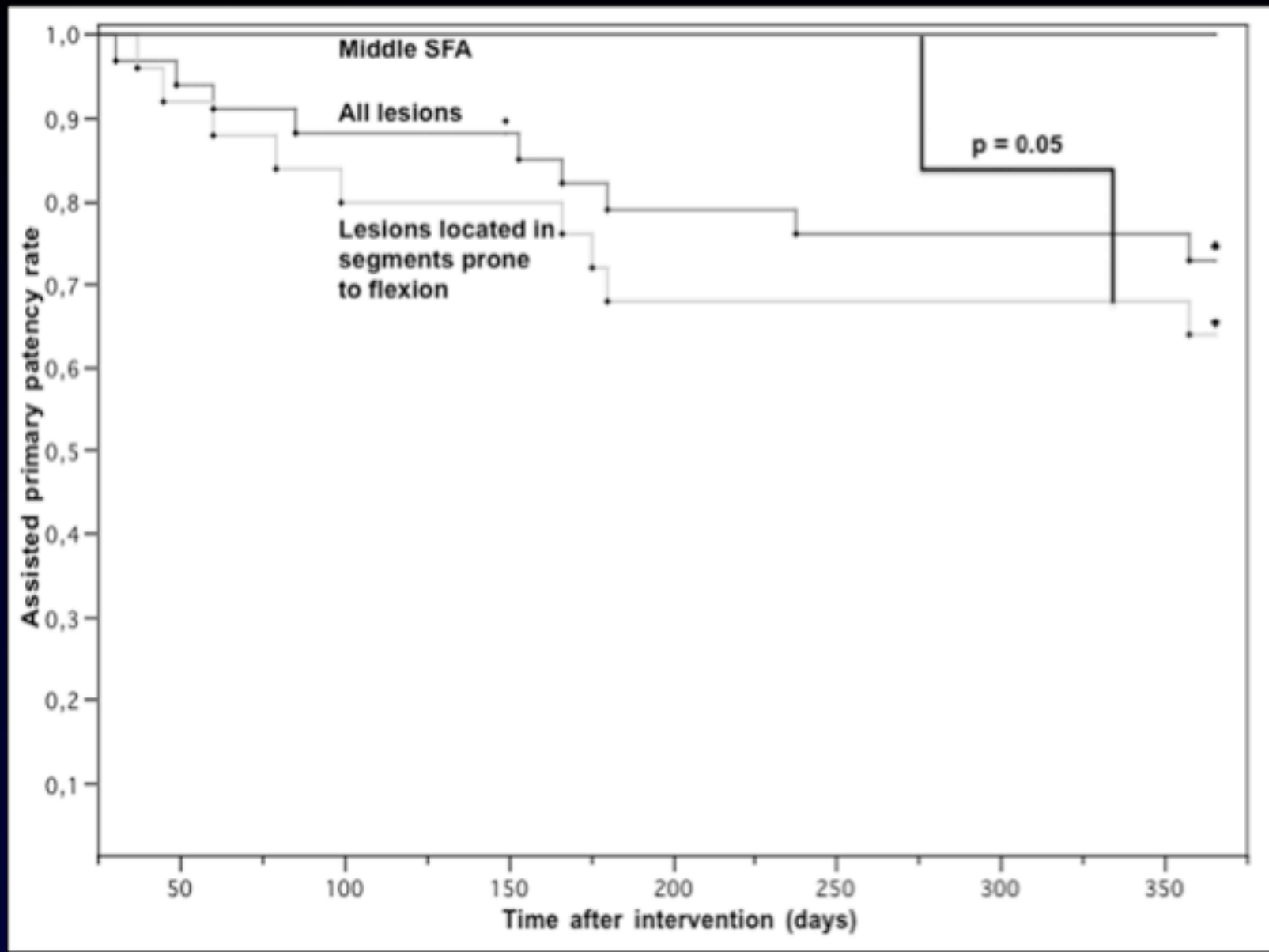
Silverhawk – A. poplitea Kalkplaque



Verkalkte Läsionen

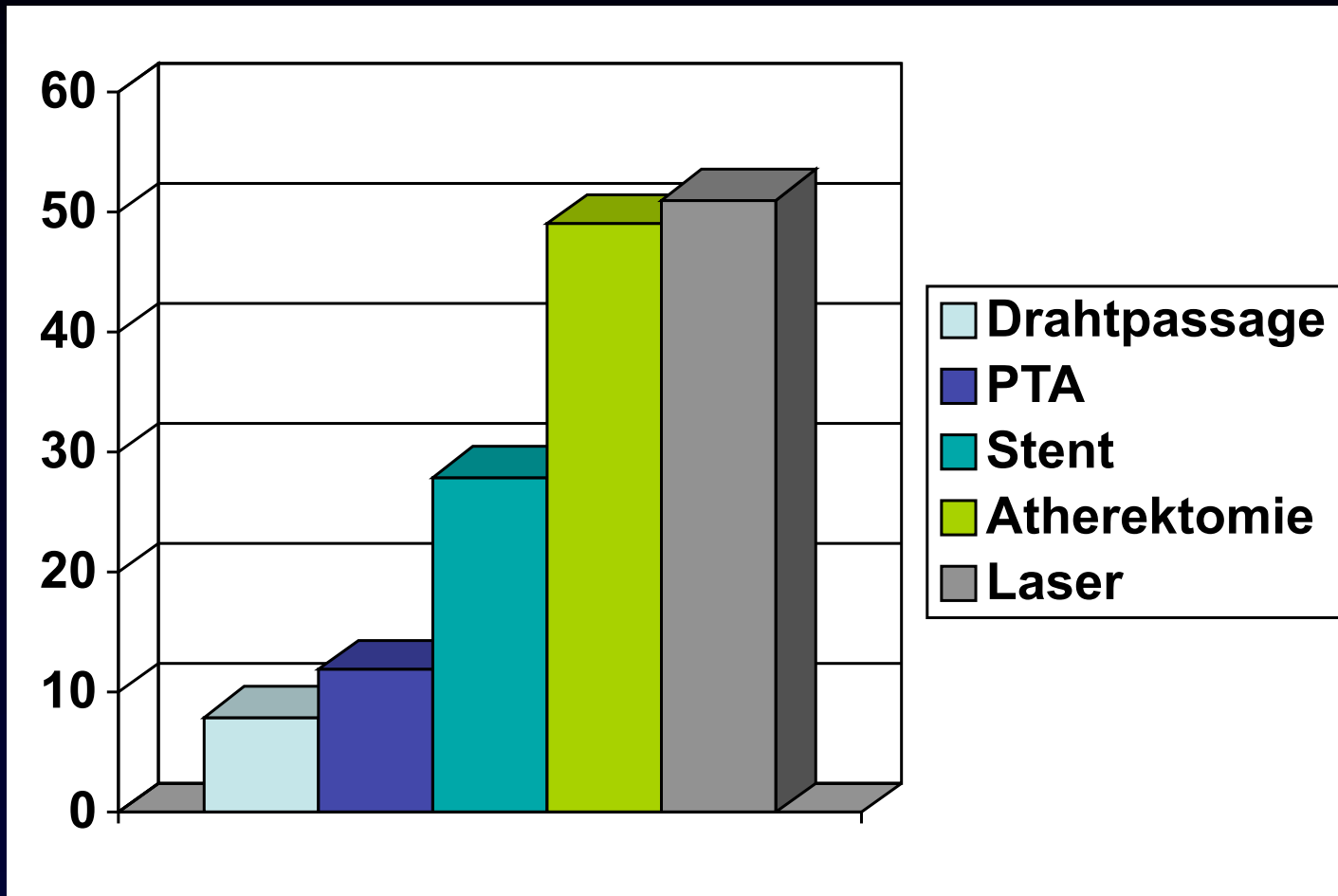


38 Patienten 42 Kalk-Läsionen

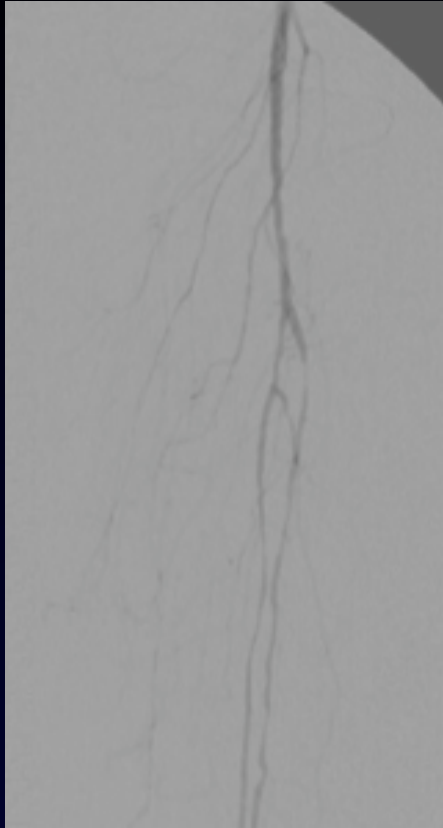


Embolisationsraten

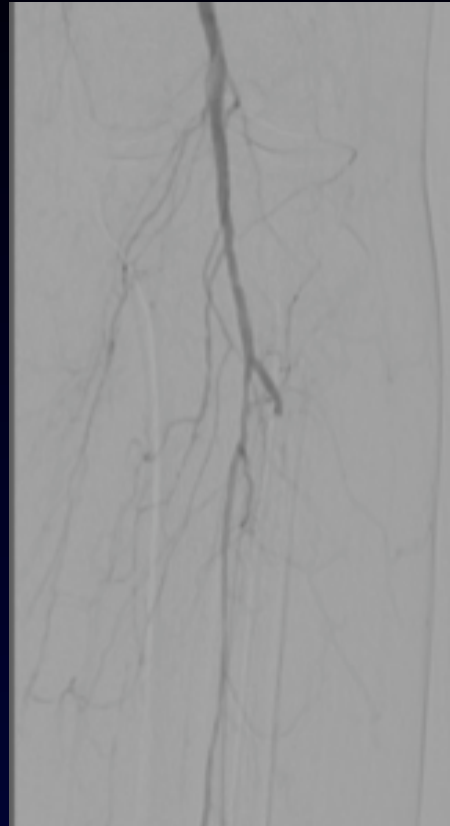
Gemessen mit 4 MHz Ultraschallsonde auf Höhe der A. pop.
während der Intervention



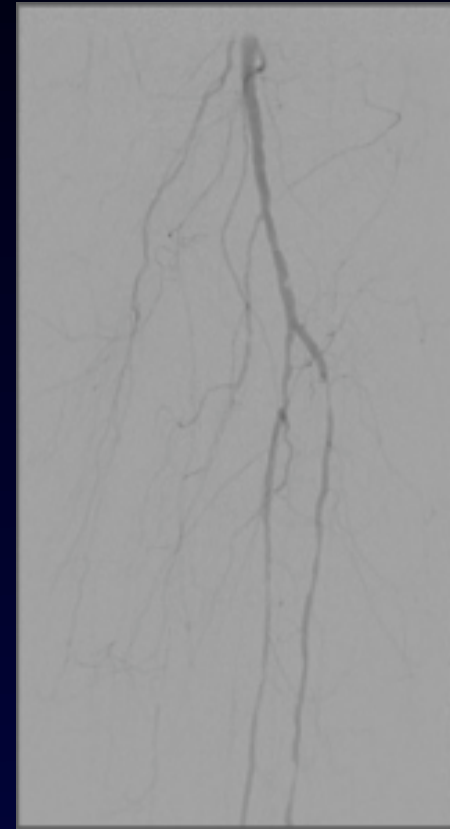
Atherektomie – Kalkplaque SFA



Ausgangsbefund



nach Athterektomie



nach Aspiration

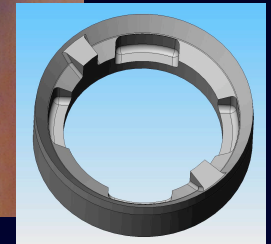
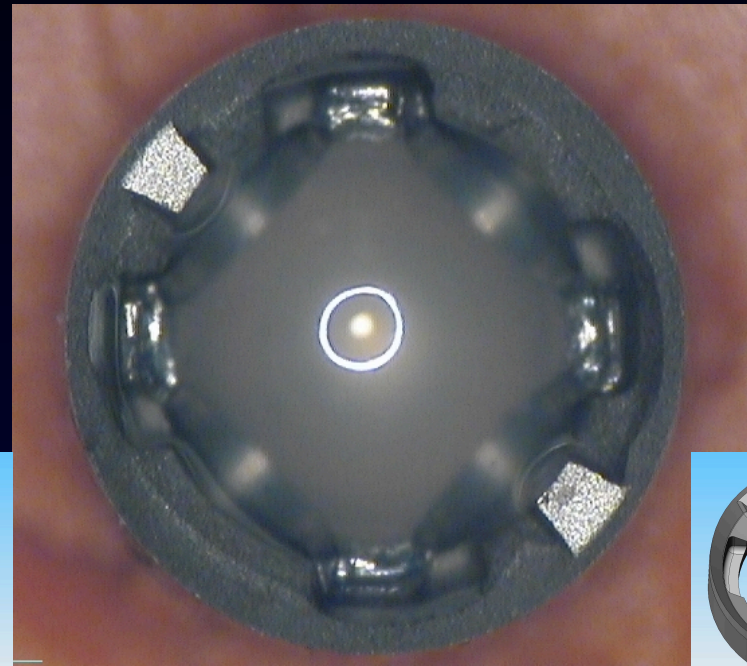
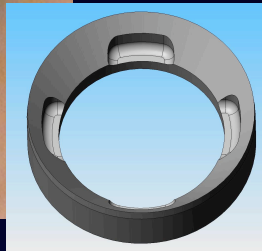
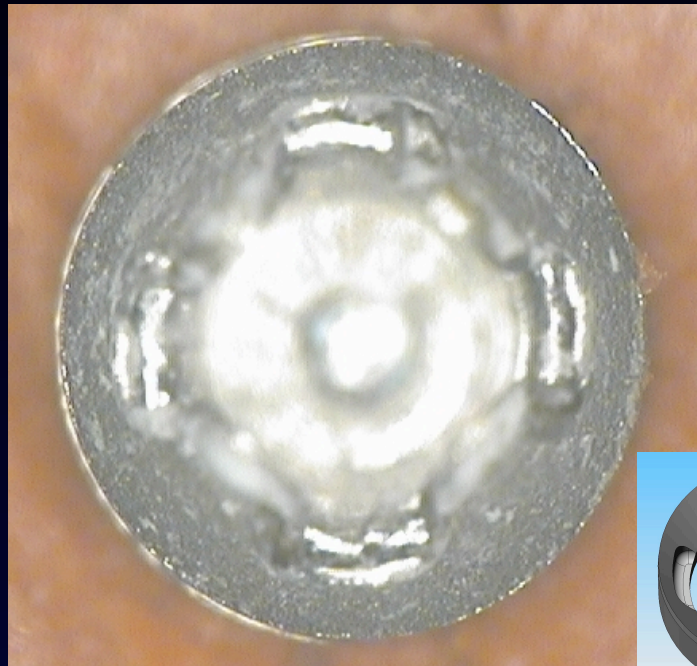
SilverHawk – RockHawk

Design zur
Behandlung harter
kalzifizierter
Läsionen



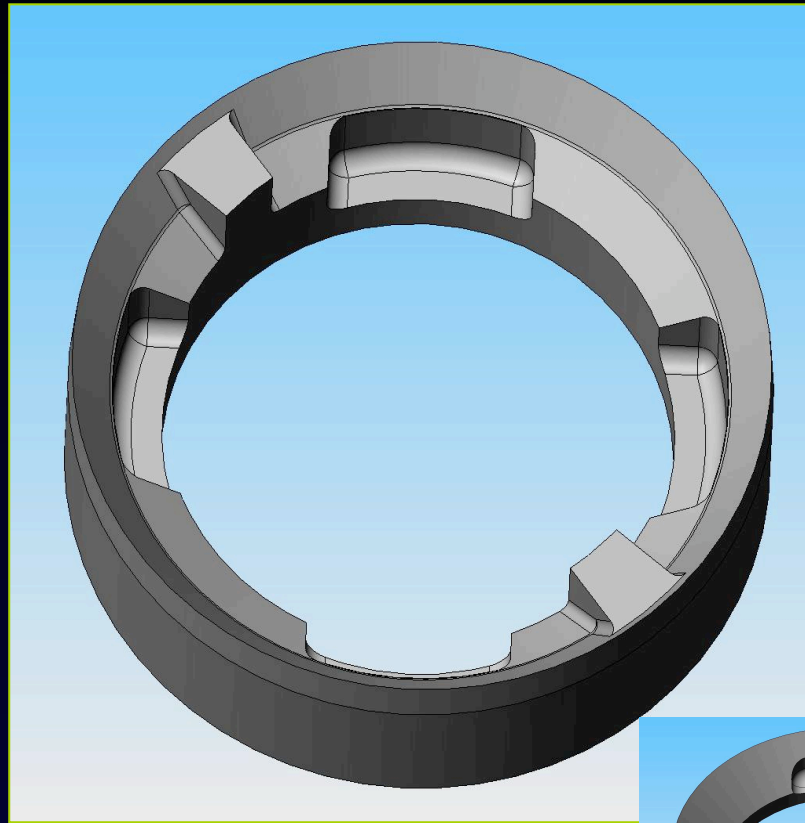
RockHawk

SilverHawk vs. RockHawk



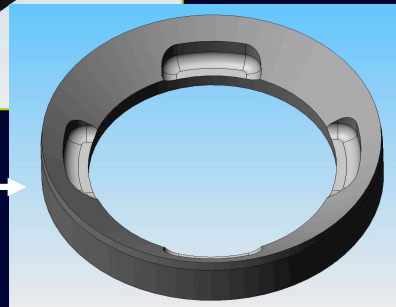
	Catalog Number	Vessel Diameter	Sheath Compatibility ¹	Crossing Profile	Working Length ²	Effective Length ³	Tip Length	Max Cut Length
LS-M	P4052	4.5mm to 7.0mm	7F / 8F	0.105 (2.7mm)	110cm	104cm	6.0cm	50mm
LS-C calcific lesions	P6014	4.5mm to 7.0mm	8F	0.105 (2.7mm)	107cm	101cm	6.0cm	50mm

Verbessertes Schneidebalt zur Behandlung kalzifizierter Läsionen

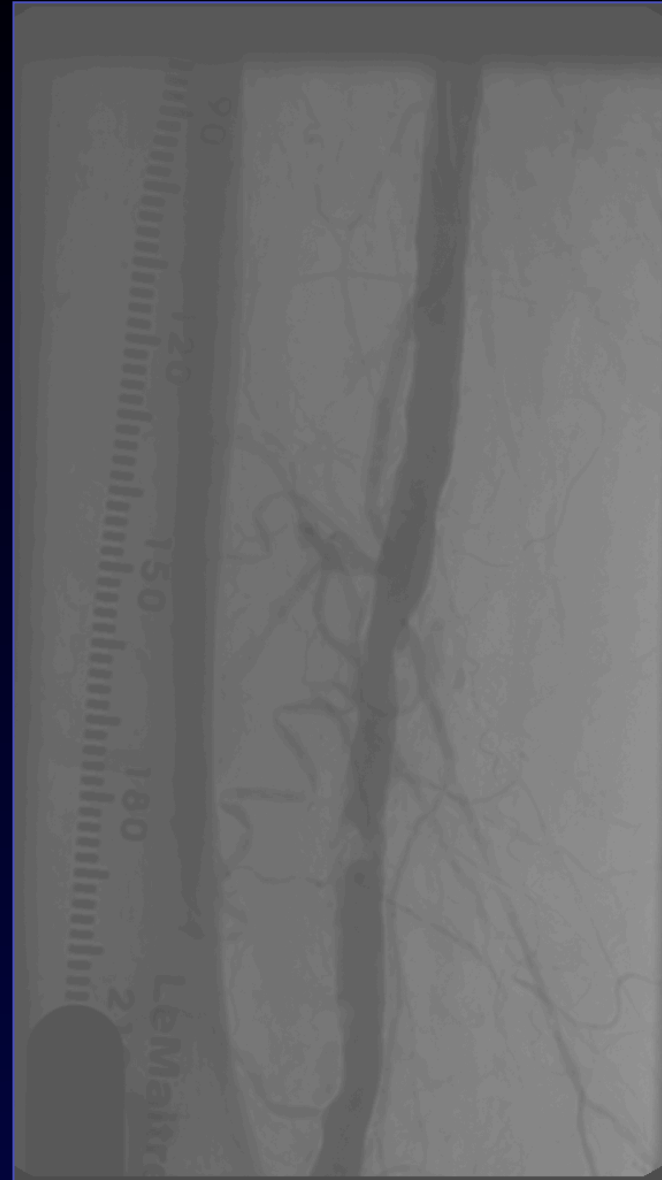


Klinische Ergebnisse
zur Effektivität und
zur Embolisationsrate
stehen noch aus

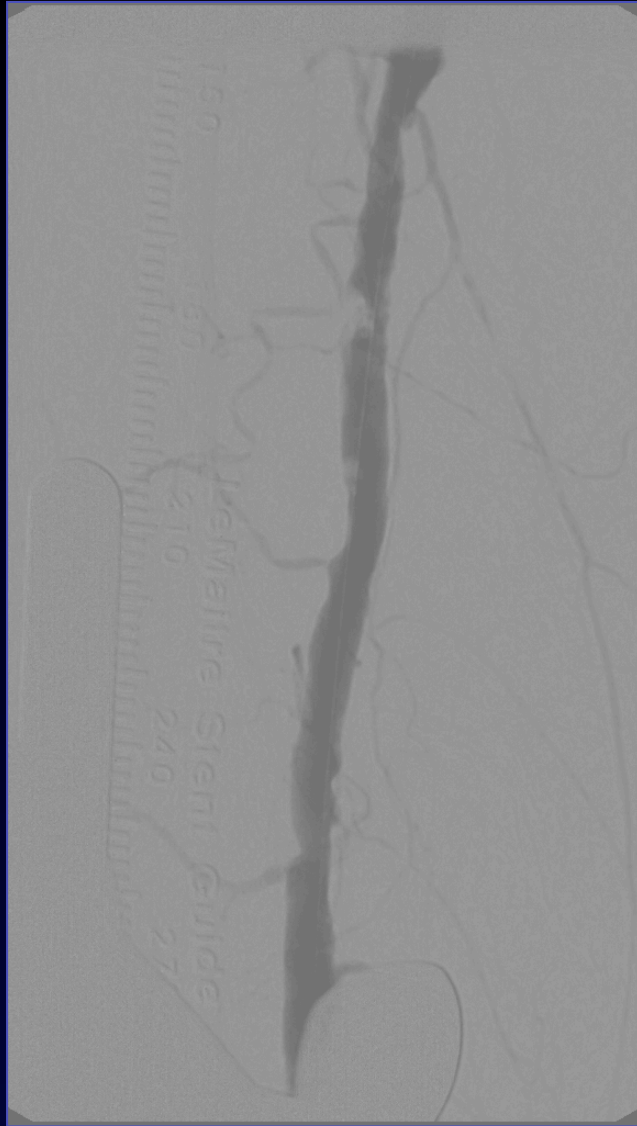
SilverHawk



Rockhawk



Rockhawk

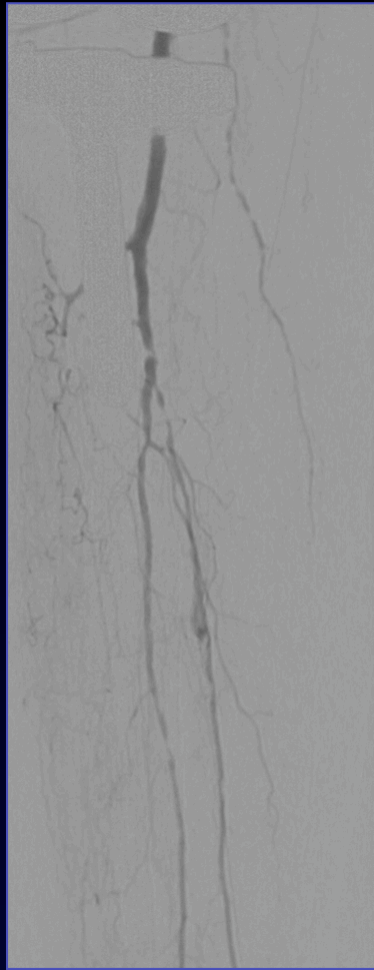


prae

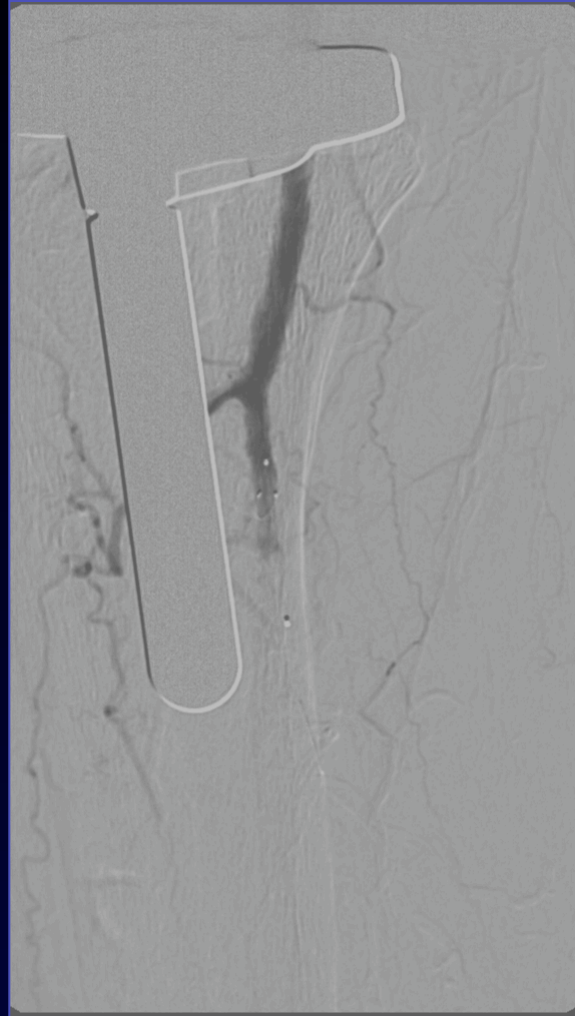


post

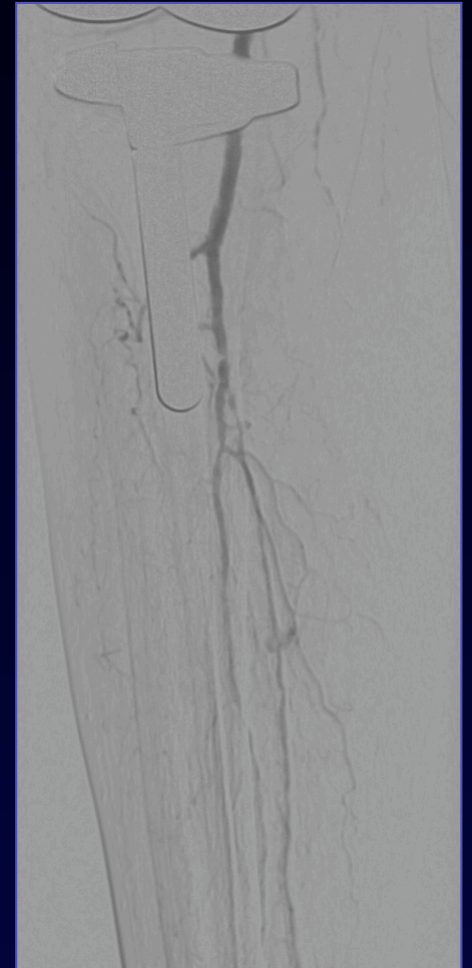
Rockhawk



prae



post

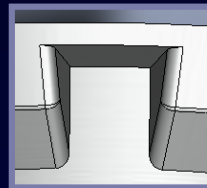
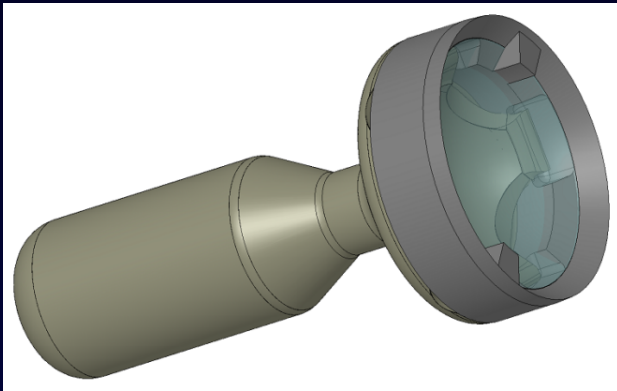


SilverHawk – RockHawk

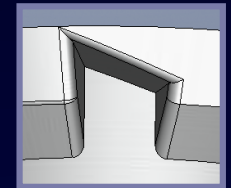
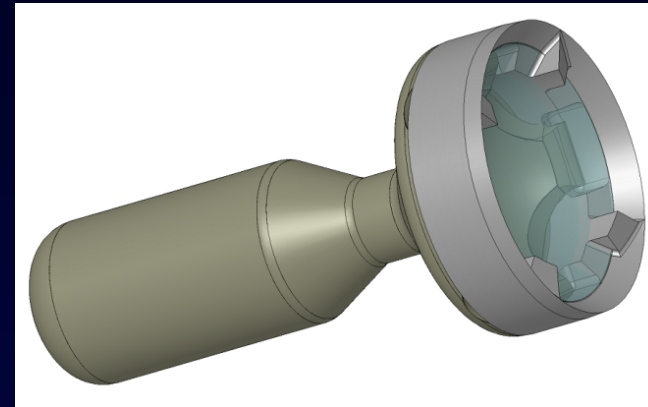
Design zur
Behandlung harter
kalzifizierter
Läsionen



TurboHawk



RockHawk Cutter



TurboHawk Cutter

TurboHawk - Theorie

Verbesserung

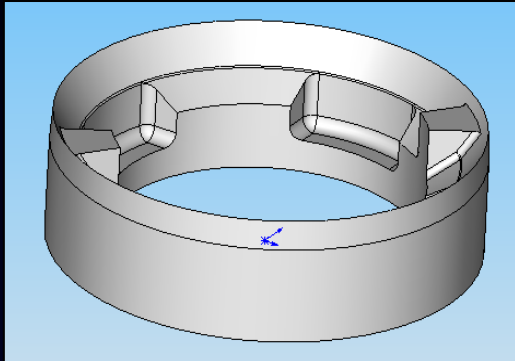
- Schnittblatt mit vier angulierten „Breakern“

Vorteile

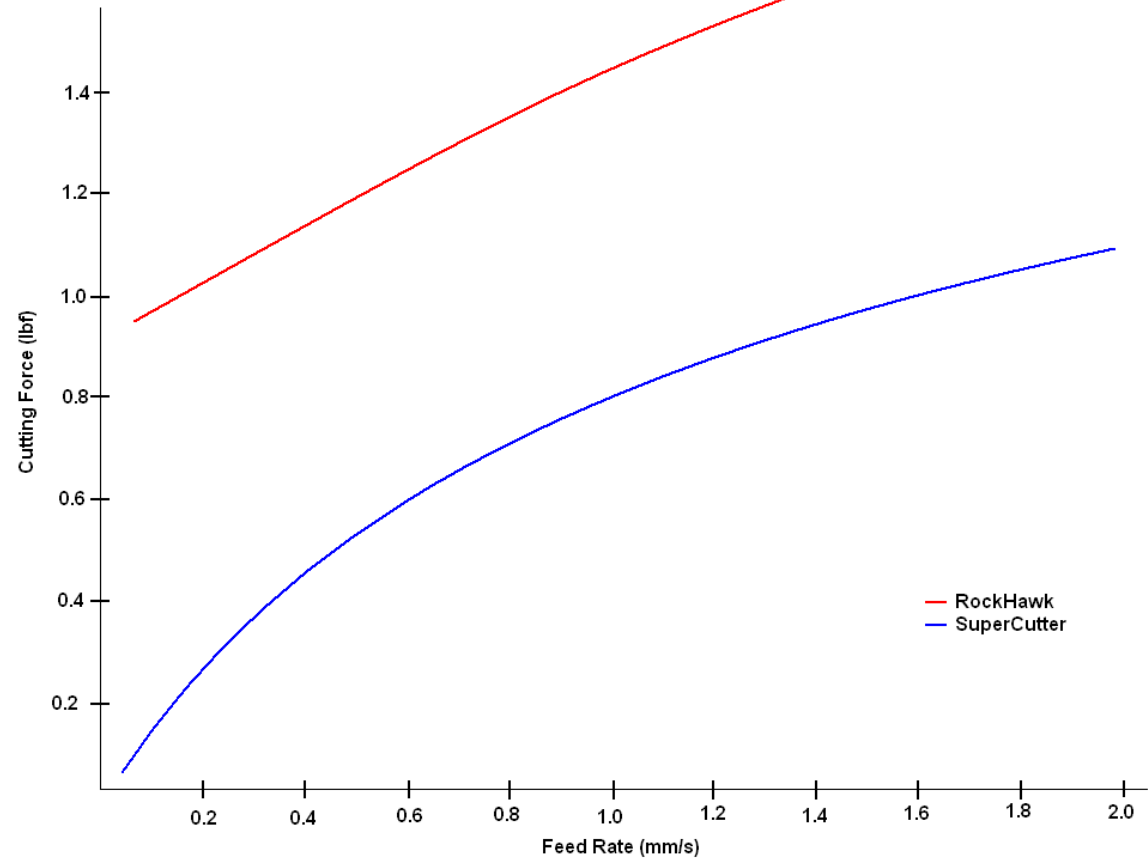
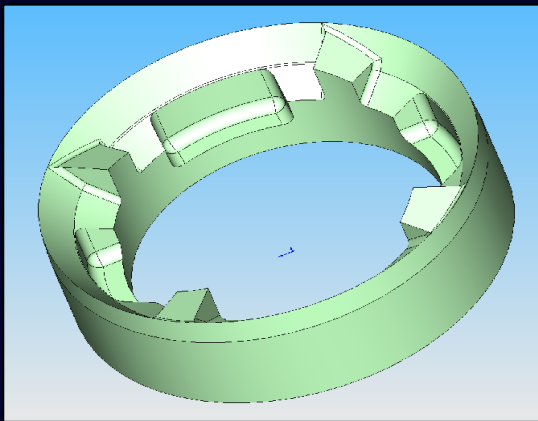
- Effizientere Entfernung von hartem und weichem Material
- insbesondere auch für kalzifizierte Läsionen
- weniger Zeitaufwand
- mehr Gewebe wird entfernt

TurboHawk - Daten von ev3

RockHawk



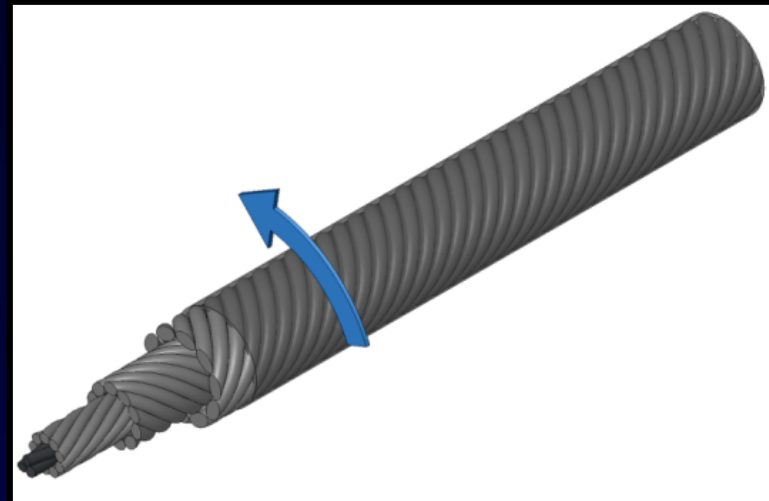
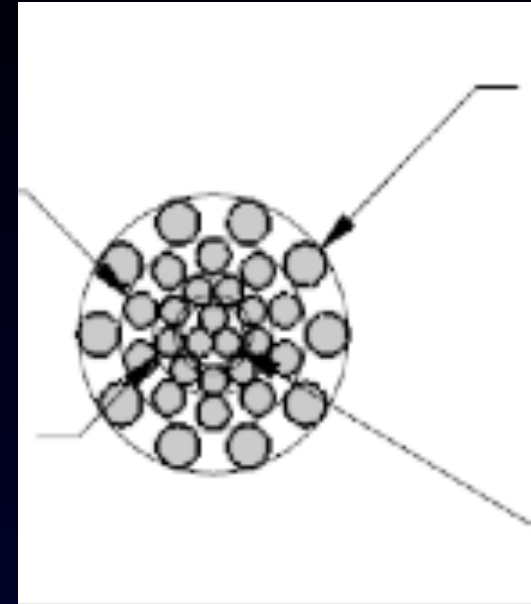
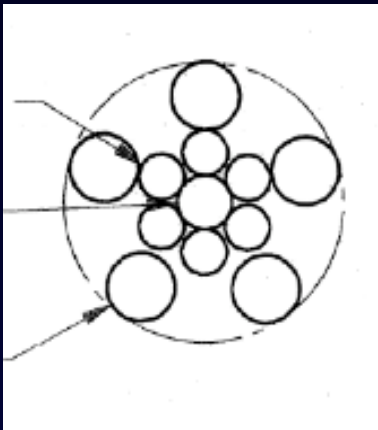
TurboHawk



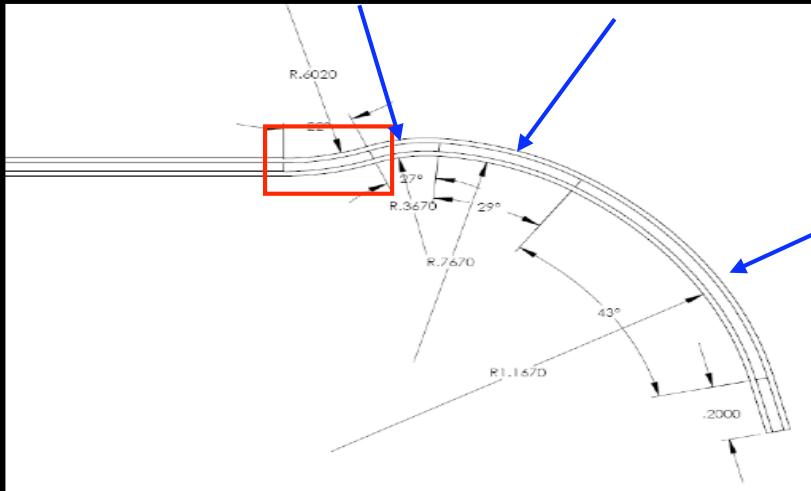
TurboHawk

- Bessere Kraftübertragung durch den Schaft

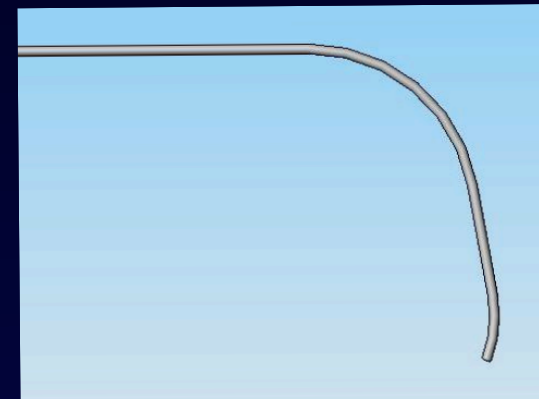
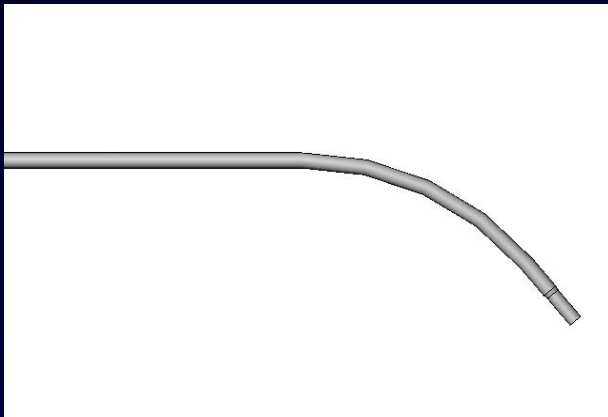
RockHawk



TurboHawk



Besserer Andruck auch bei
größeren Gefäßdurchmessern



TurboHawk

Mikroöffnungen in der Kammer

->

Besseres Füllen

der Kammer

Leichteres Säubern



TurboHawk: Unpublished Data ev3

PPT Phase

- 24 cases, 29 lesions
 - 4 sites in Germany over 4 weeks
- Use of a filter recommended
 - Spider FX filter used for 28/29 lesions
- Vessel diameter 4.5 to 7.0 mm, CFA to popliteal
- Mean lesion length 89 mm
- Lesion Composition: 72,4 % calcified, 52% severe calcifications
- Average atherectomy time 25 min

