

Best Interventional Practice of Reconstruction of the Common Femoral Artery: What Have we Learned so far?

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Disclosures

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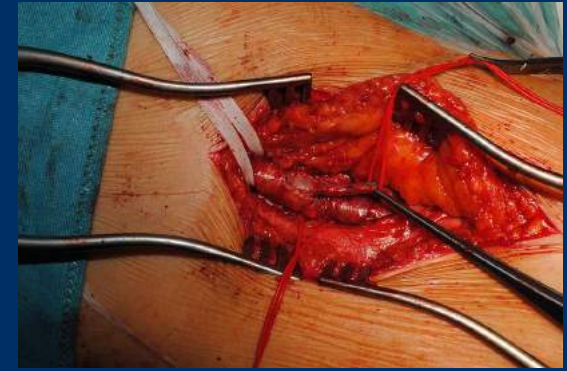
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Endarterectomy Results

- **Technical success rate:** 92% to 98%
- **Primary Patency at 1-3 year:** 85% to 95%

But....

- **Mortality at 30 days:** up to 3.4%
Predictors (age, dialysis, sepsis, emergency)
- **Major complications at 30 days:**
 - Return to the operating room up to 10%
 - Transfusion >4 units up to 2.8%
 - Wound infection (deep) up to 2%
 - Wound dehiscence up to 0.8%
- **Minor complications:** up to 20%
 - Incl. seromas, wound infection (superficial)

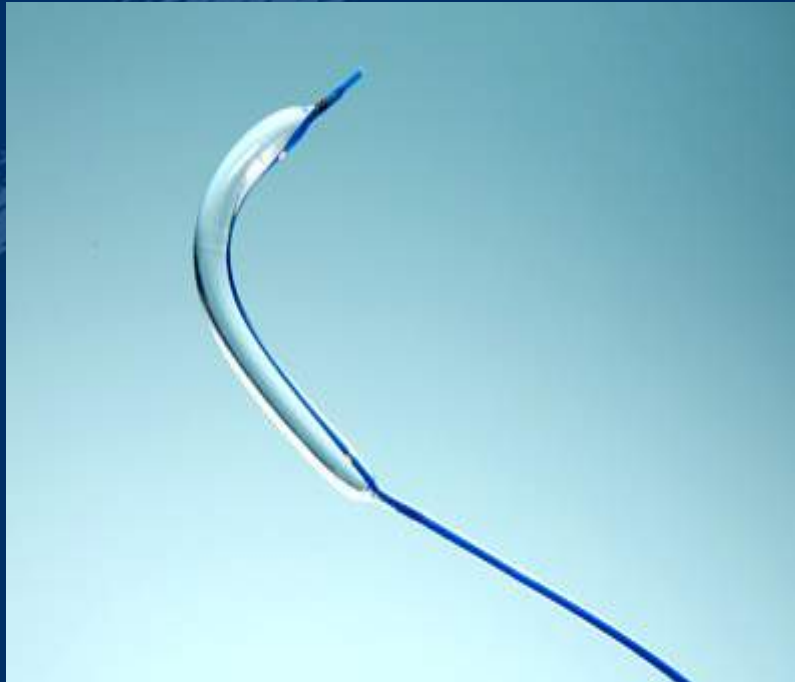


Wieker CM, et al. J Vasc Surg 2016
Nguyen BN, et al. J Vasc Surg 2015
Kang JL, et al., J Vasc Surg 2008
Kechagias A, et al. World J Surg 2008

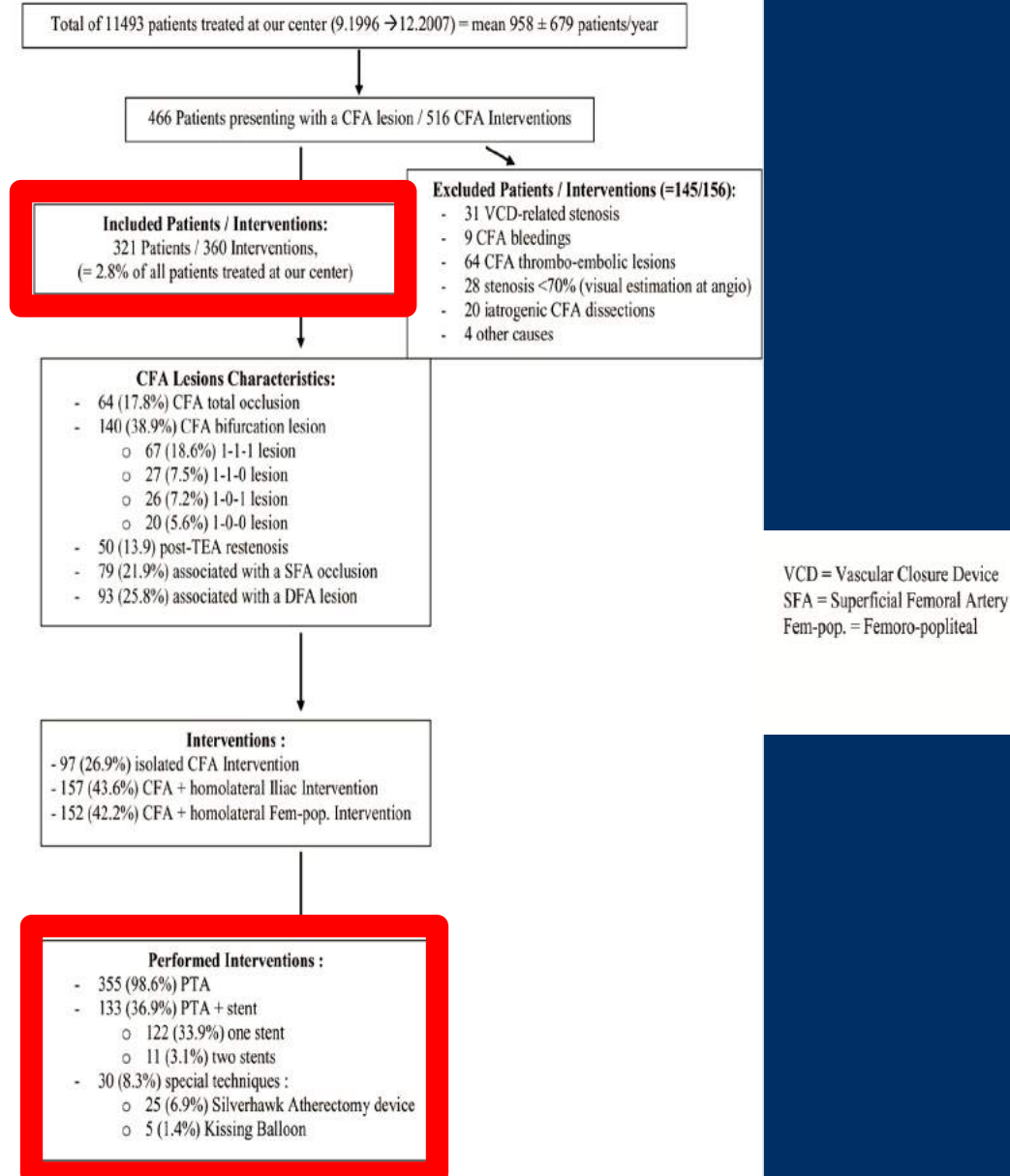


Which endovascular alternatives exist?

Ballonangioplastie (PTA) -- Stent

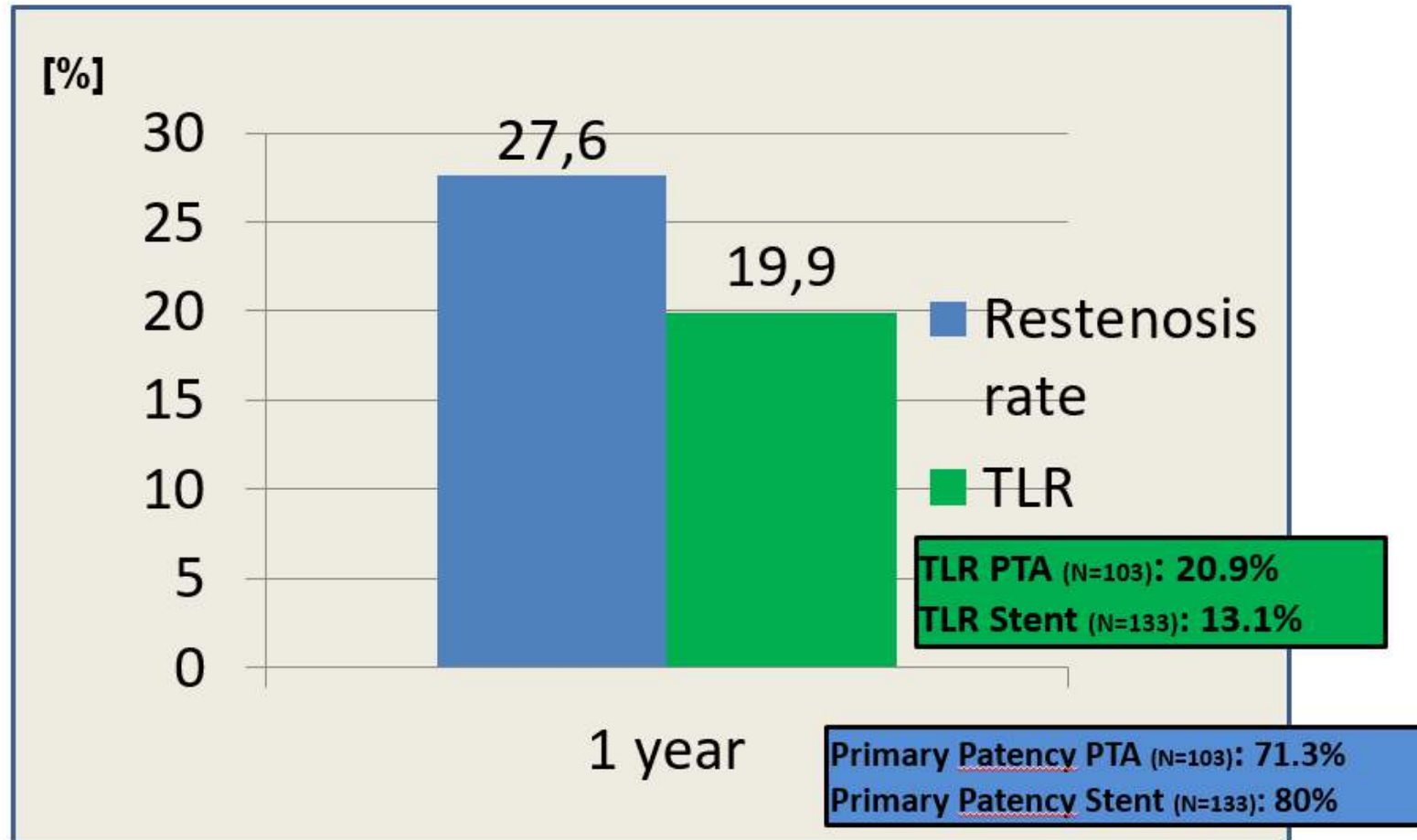


Patients / Lesion Flow-Chart



CFA- Endovascular Therapy

1-year Technical Outcomes



A pooled analysis of common femoral and profunda femoris endovascular interventions

Jonathan Bath¹ and Efthymios Avgerinos²

Vascular

2016, Vol. 24(4) 404–413

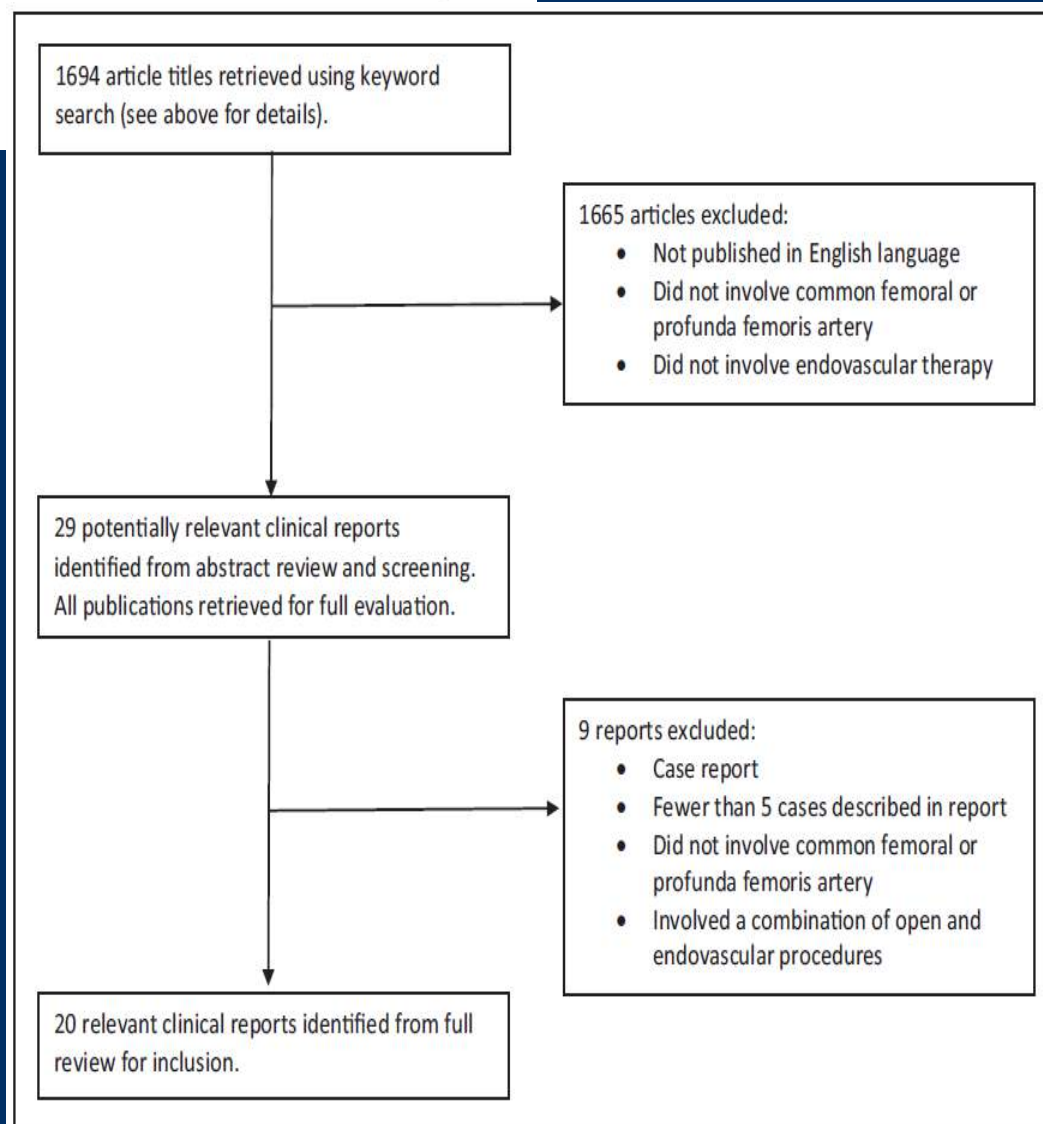
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Demographics

Patients/limbs	836/897
Technical success \pm SD (%)	95.2 \pm 5.0
Mean age (years)	70.5 \pm 4.3
Mean length of follow-up (months)	22
Indications for procedure	
- Claudication	58.5%
- Critical limb ischemia	39.6%
- Other	1.9%
Route of percutaneous access	
- Contralateral femoral artery	65.5%
- Ipsilateral femoral artery	17%
- Brachial artery	7.1%
- Other (e.g. pedal)	10.4%
Overall access complications	2.4%

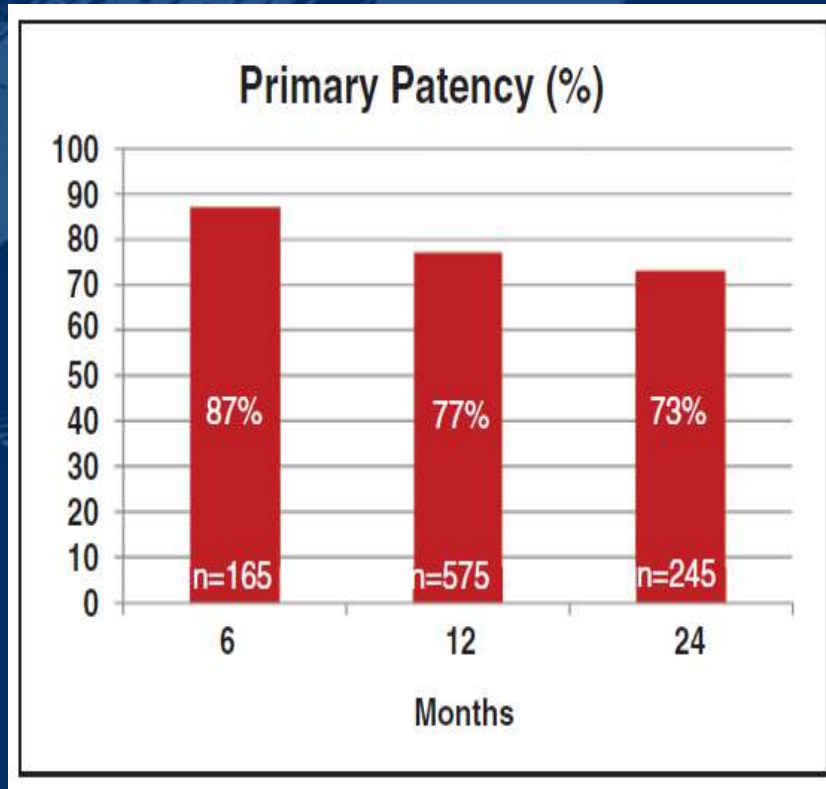
ABI: ankle-brachial index; P0: primary patency; PA: primary assisted patency; F/U: follow-up.

Major Adverse Limb Events

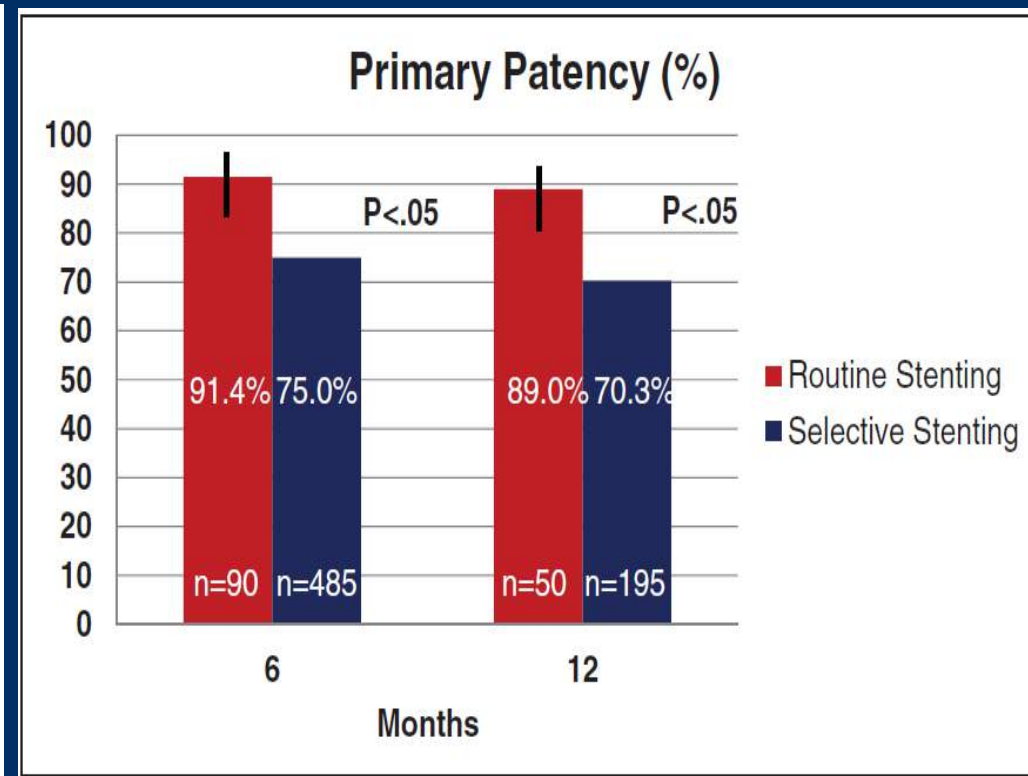
Limbs	897
Mean follow-up (months)	21.6
MALE overall	13.4%
Amputation	1.9%
Endovascular re-interventions	4.6%
Open re-interventions	6.9%

SD: standard deviation; MALE: Major Adverse Limb Events.

Primary patency (PP)



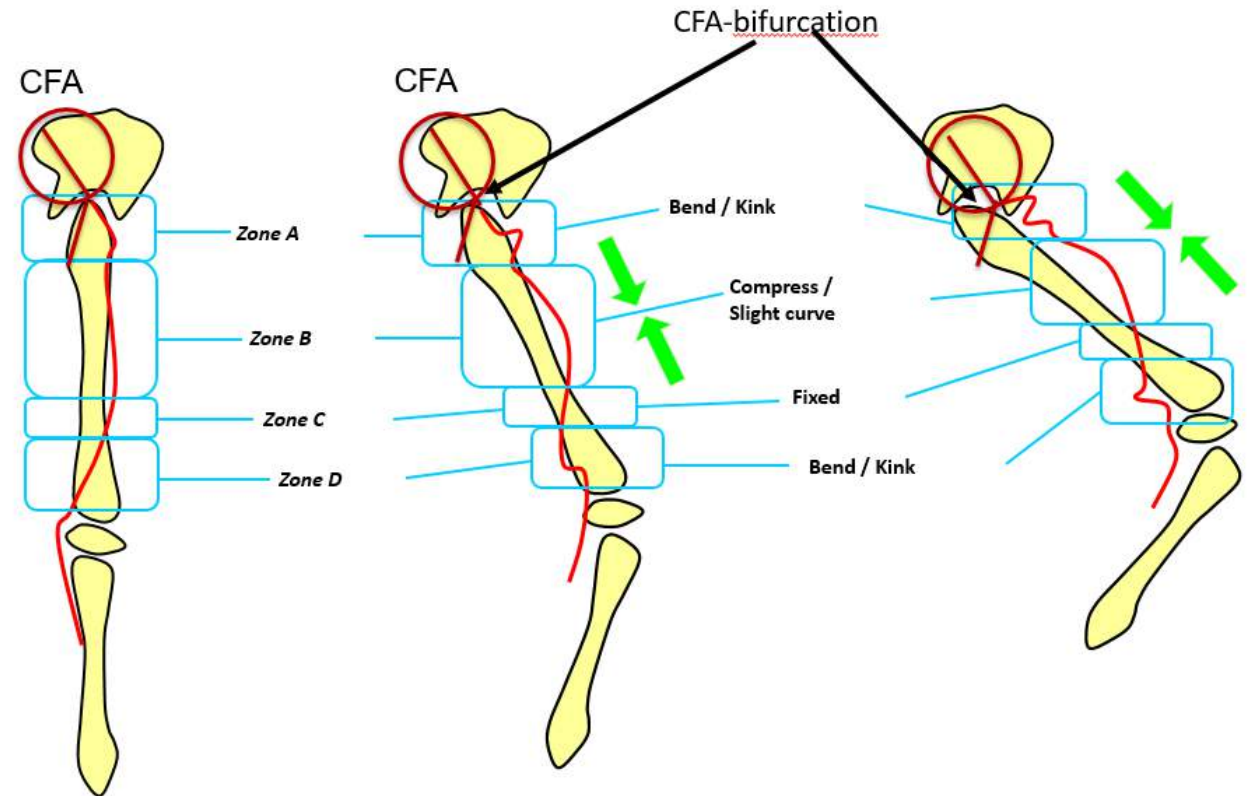
Primary Stenting vs. Bailout Stenting



The Fairy Tale of the “No Stenting Zone”



Femoro-popliteal Artery - Biomechanics

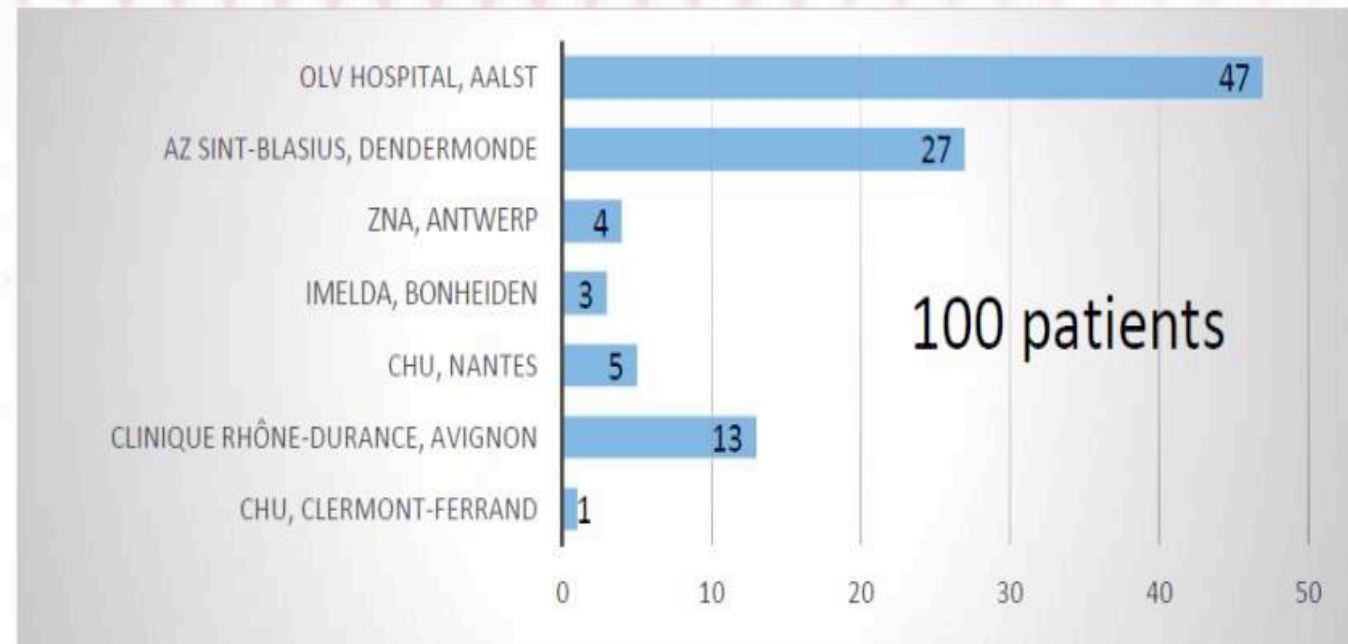


Modified according to Lansky, A; Angiographic Analysis of Strut Fractures in the SIROCCO Trial. TCT 2004

VMI-CFA trial

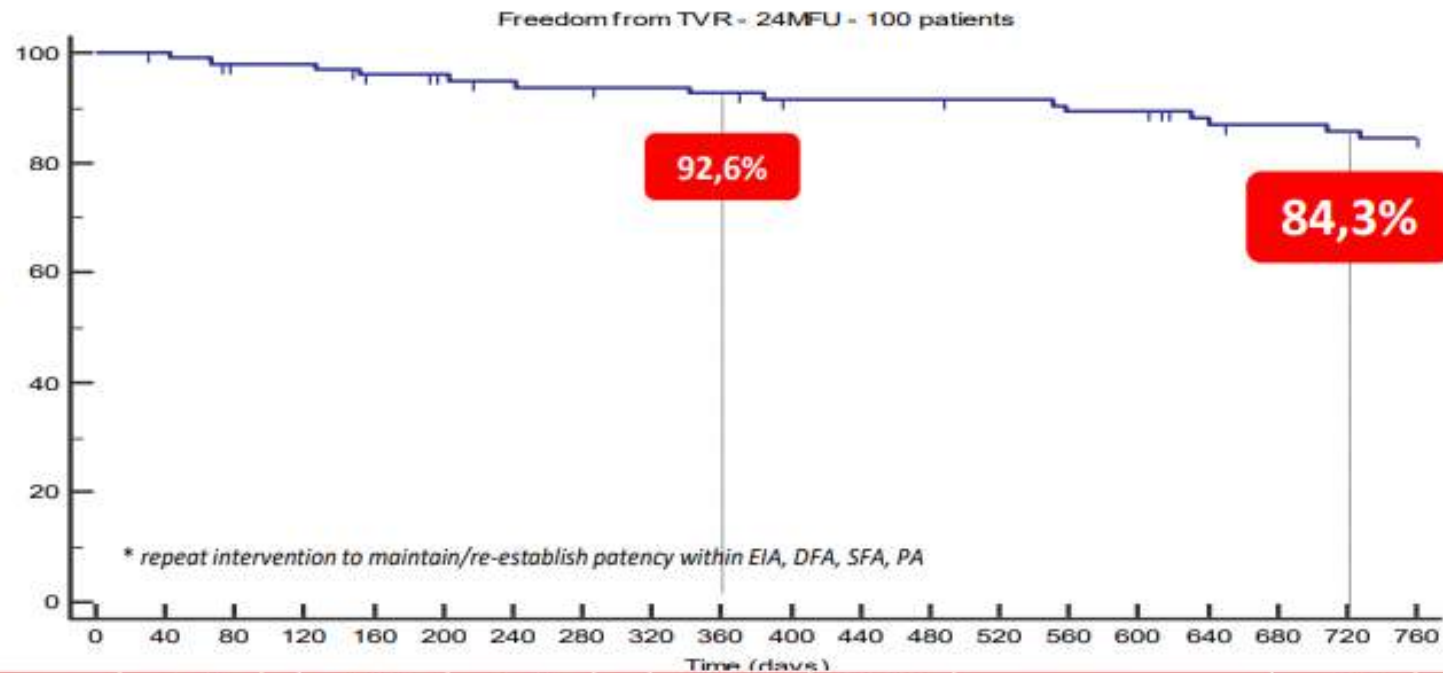


Prospective, multicenter, single arm trial to evaluate the Supera Peripheral Vascular Mimetic Implant Device (Abbott Vascular) for symptomatic (RB 2-4) CFA disease treatment





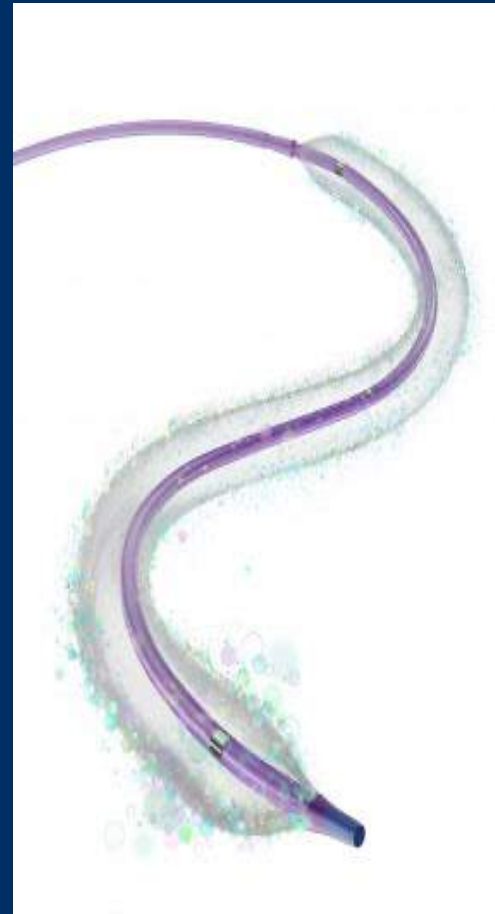
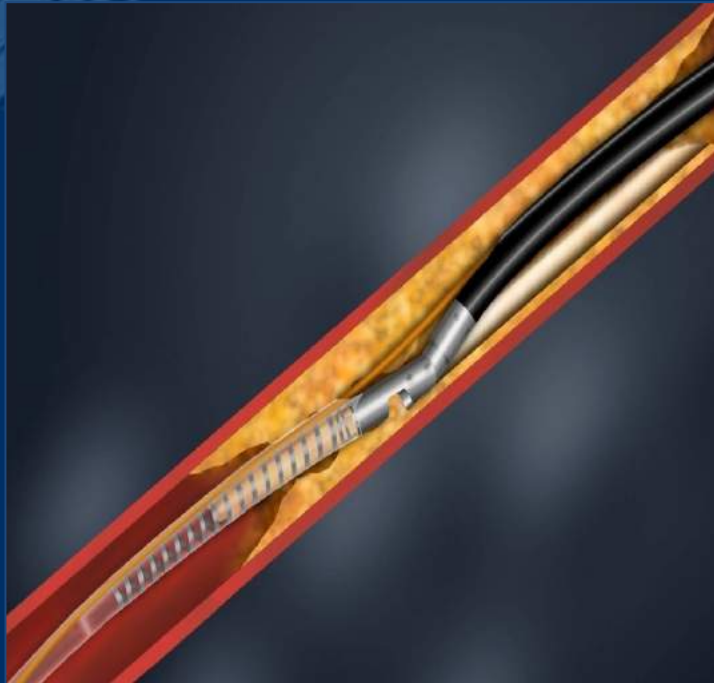
VMI-CFA trial : 2 year freedom from TVR*



time	baseline	1MFU (30 days)	6MFU (180 days)	6MFU (210 days)	12MFU (365 days)	12MFU (395 days)	24MFU (730 days)	24MFU (760 days)
at risk	100	99	91	88	84	83	69	22
%	100	100	95,9	94,8	92,6	91,5	84,3	84,3



Atherectomy with / without DCB



Directional Atherectomy Is Associated with Better Long-Term Efficiency Compared with Angioplasty for Common Femoral Artery Occlusive Disease in Rutherford 2–4 Patients

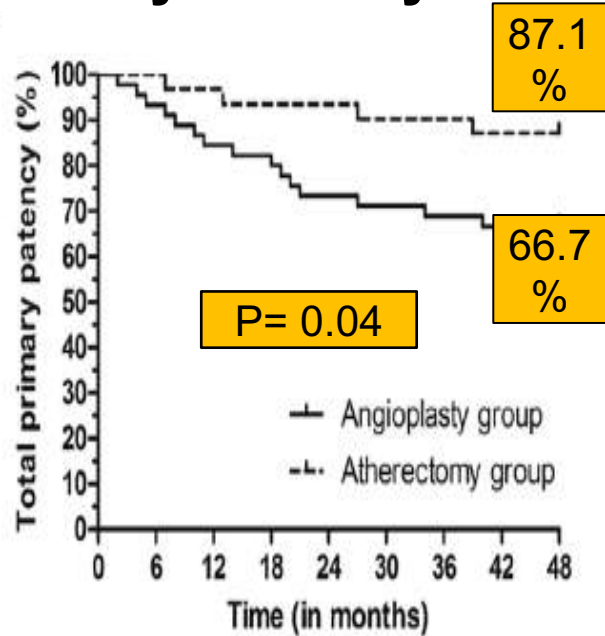
Group	Angioplasty (N = 45)	Atherectomy (N = 31)	P value
	N (%)	N (%)	
Male	29 (64.4)	19 (61.3)	0.779
Age (mean ± SD)	69.3 ± 5.3	67.4 ± 3.8	0.091
Smoking	23 (51.1)	18 (58.1)	0.550
Hypertension	15 (33.3)	10 (32.3)	0.922
CAD	12 (26.7)	6 (19.4)	0.461
Diabetes	30 (66.7)	20 (64.5)	0.846
Insulin-dependent	13 (28.9)	8 (25.8)	0.768
Hyperlipidemia	17 (37.8)	14 (45.2)	0.520
Stroke	4 (8.9)	4 (12.9)	0.575
CRI	4 (8.9)	2 (6.5)	0.699
Dialysis	1 (2.2)	0	0.403
CLI	9 (20.0)	5 (16.1)	0.669
Statin	14 (31.1)	12 (38.7)	0.493
Antiplatelet medicine	11 (24.4)	9 (29.0)	0.655
Creatinine (μmol/L)	75.0 ± 27.4	79.2 ± 20.6	0.472
Albumin (g/L)	41.2 ± 8.2	37.8 ± 10.7	0.121
ABI	0.64 ± 0.12	0.68 ± 0.10	0.131
Walking distance (m)	47.5 ± 10.6	43.5 ± 14.4	0.167

CAD, coronary artery disease; CRI, chronic renal insufficiency; CLI, critical limb ischemia.



RESULTS: BALLON-ANGIOPLASTY VS. ATHERECTOMY

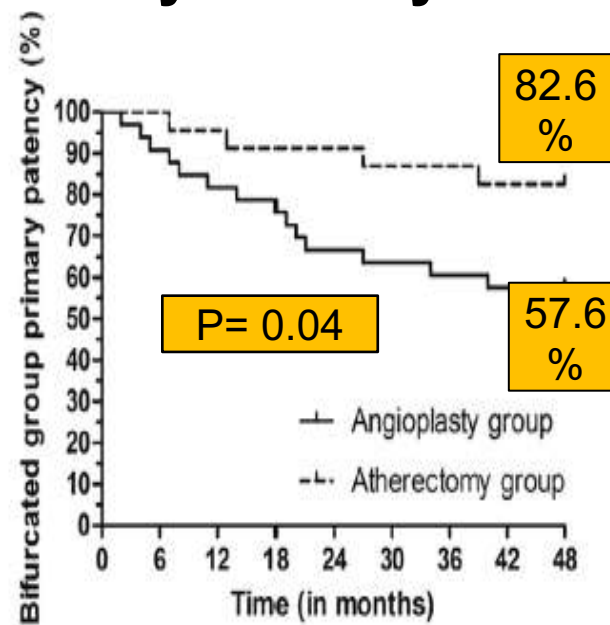
Primary Patency



Number at risk

Group: Angioplasty	45	39	34	32	30
Group: Atherectomy	31	31	30	29	27

Primary Patency Bifurcations



Number at risk

Group: Angioplasty	45	39	34	32	30
Group: Atherectomy	31	31	30	29	27

CFA-ATHERECTOMY: BAD KROZINGEN EXPERIENCE

BASELINE CHARACTERISTICS	n=263 (%)
Age, yrs	70 ± 9
Male sex	180 (68.4)
Hypertension	238 (90.5)
Diabetes mellitus	91 (34.6)
Hyperlipidemia	237 (90.1)
Smoker	180 (68.5)
Coronary heart disease	132 (50.2)
Myocardial infarction	48 (18.3)
Stroke	32 (12.2)
Cerebrovascular disease	69 (26.2)
COPD	30 (11.4)
Renal failure*	64 (24.4)
Claudication	224 (85.2)
Critical limb ischemia	39 (14.8)

COPD – chronic obstructive

pulmonary disease

* defined as clearance < 60 ml/min

Böhme T, Romano L, Macharzina RR, Noory E, Beschorner U, Jacques B, Bürgelin K, Flügel PC, Zeller T, Rastan A. Outcomes of directional atherectomy for common femoral artery disease. EuroIntervention. 2021 Jun 25;17(3):260-266.



CFA-ATHERECTOMY: PROCEDURAL COMPLICATIONS

	n (%)
Access site (pseudoaneurysm, bleeding)	7 (2.6)
Perforation	9 (3.4)
- Treatment: Endovasc.	9 (3.4)
- Treatment: Surgery	0
Distal Embolisation	6 (2.3)
- Procedure without protection	3 (1.2)
- Treatment: Endovasc.	6 (2.3)
- Treatment: Surgery	0
Aneurysm (TL)	2 (0.8)
- Treatment: Endovasc.	1 (0.4)
- Treatment: Surgery	1 (0.4)

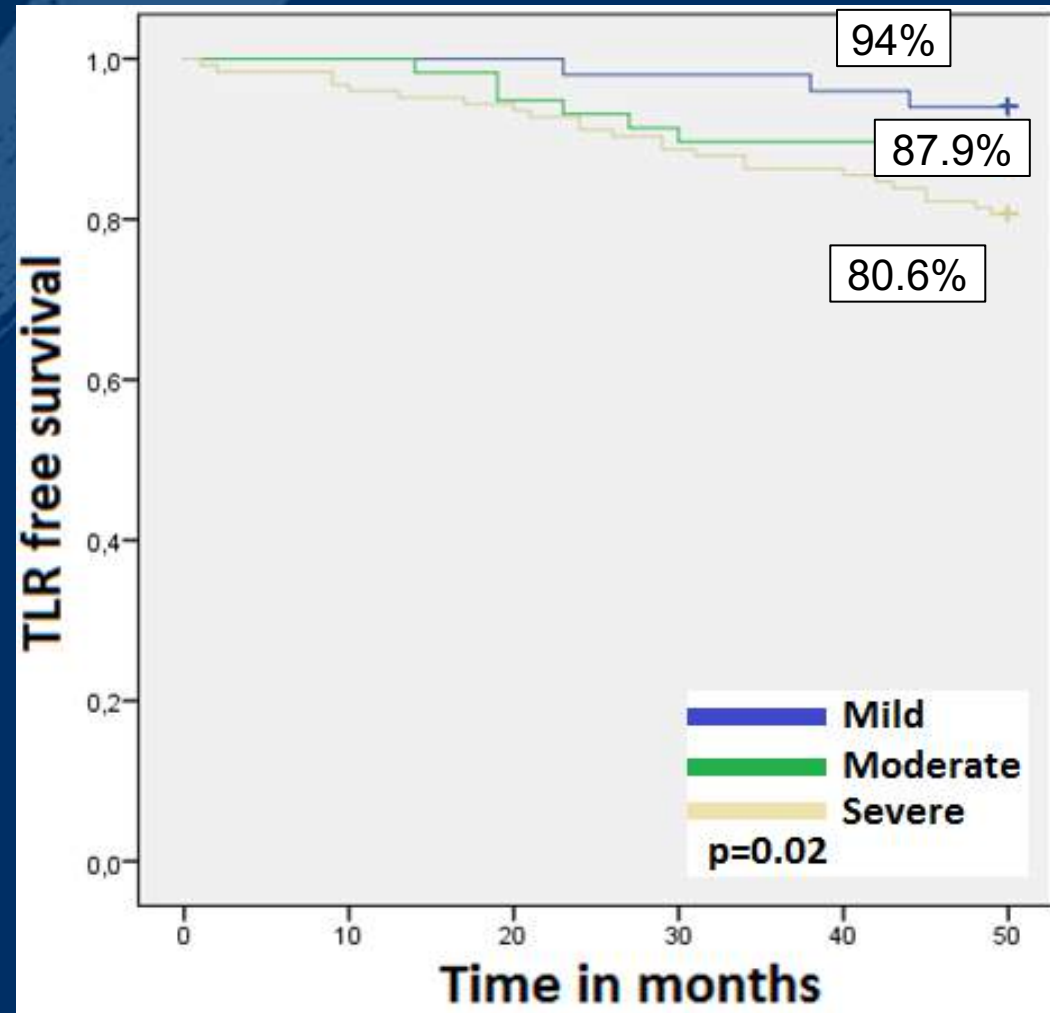
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CFA-ATHERECTOMY: RESULTS

FOLLOW-UP: 29.8 ±20 months	
CD-TLR	37 (15%)
- Endovascular	20 (8.1%)
- Surgery	17 (6.9%)
Rutherford-Becker Class	
- Baseline	3.1 (±0.7)
- Follow-up	2.0 (±0.6; P<0.001)
ABI	
- Baseline	0.46 (±0.23)
- Follow-up	0.79 (±0.21, P<0.001)

Böhme T, Romano L, Macharzina RR, Noory E, Beschorner U, Jacques B, Bürgelin K, Flügel PC, Zeller T, Rastan A. Outcomes of directional atherectomy for common femoral artery disease. EuroIntervention. 2021 Jun 25;17(3):260-266.

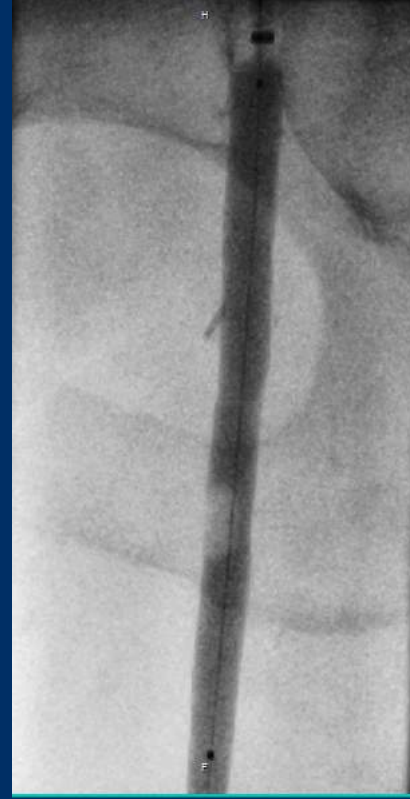
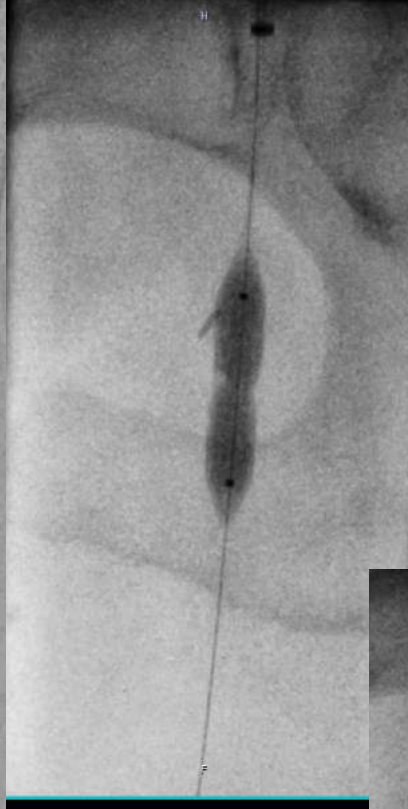
TLR-Free Survival: Target lesion calcification



Kaplan-Meier analysis of survival free from TLR depending on the degree of calcification
TLR – target lesion revascularization

Böhme T, Romano L, Macharzina RR, Noory E, Beschorner U, Jacques B, Bürgelin K, Flügel PC, Zeller T, Rastan A. Outcomes of directional atherectomy for common femoral artery disease. EuroIntervention. 2021 Jun 25;17(3):260-266.

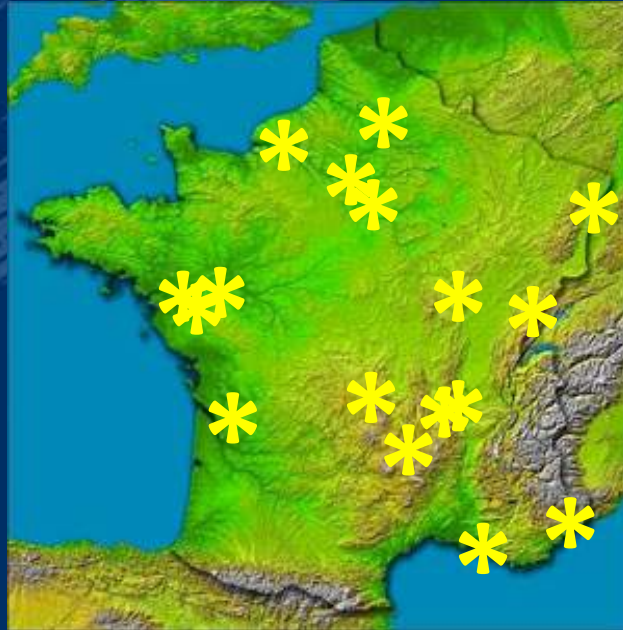
Vessel Prep Using Cutting Balloon



Intervention vs. Surgery

TECCO trial

French multicenter randomized trial comparing surgery versus stenting for the treatment of CFA atherosclerotic lesion



TECCO trial, NCT01353651

Sponsor Nantes University Hospital

PHRC 2010 DGOS 20-03

17 centers : CHU de Nantes (N°1), CHU de Amiens (N°2), CHU Besançon (N°3), CHU de Strasbourg (N°4), CHU de Dijon (N°5), CHU de Clermont-Ferrand (N°6), CHU de Nice (N°7), CHU de Marseille (La Timone) (N°8), CHU de Bordeaux (N°9), CHU de Lyon (N°10), CHU de St Etienne (N°11), CHU de Rouen (N°12), Clinique du Tonkin (N°13), Nouvelles Cliniques Nantaises (N°14), Clinique St Augustin (N°15), HEGP (N°16,) Hopital Henri Mondor (N°17)

TECCO primary endpoint

Morbidity-mortality rate at 1 month

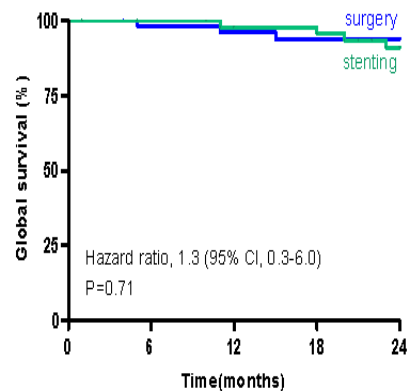
- **General complications:** *death, MACEs, major amputation*
- **Local complications** that required rehospitalization and/or reintervention: *hematoma, thrombosis, lymphorrhea, delayed wound healing, false aneurysm, AVF*
- **Paresthesia** that required drugs

TECCO - LOCAL COMPLICATIONS

	Surgery (N=61)	Stenting (N=56)
Hematoma	3 (5)	0 (0)
Thrombosis	0 (0)	1 (1.8)
<u>Lymphorrhoea</u>	2 (3.2)	0 (0)
Delayed wound healing	10 (16.4)	0 (0)
False aneurysm	0 (0)	0 (0)
<u>Arteriovenous fistula</u>	0 (0)	0 (0)
<u>Paresthesia</u>	4 (6.5)	0 (0)
Local infection	3 (5)	1 (1.8)
Vascular perforation	0 (0)	1 (1.8)

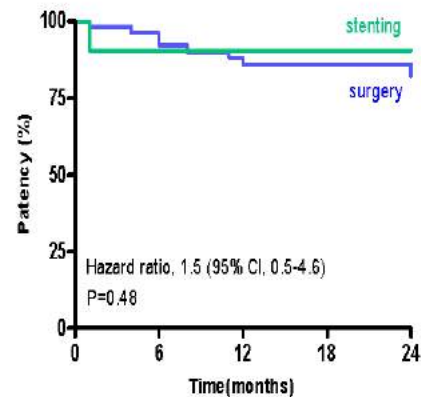
	Surgery (n=61)	Stenting (n=56)	p
Morbid-mortality rate @ 1 month, n (%)	16 (26)	7 (12.5)	0.05

Survival @ 24 months



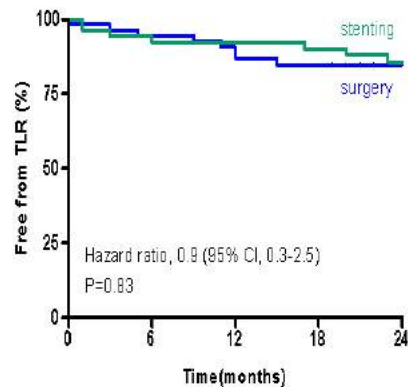
No. at Risk	0	6	12	18	24
Surgery	59	52	48	44	30
Stenting	55	55	46	45	31

Patency @ 24 months



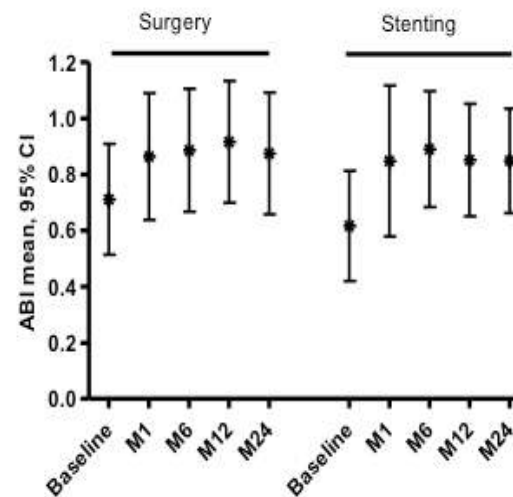
No. at Risk	0	6	12	18	24
Surgery	59	48	41	37	24
Stenting	55	48	36	35	22

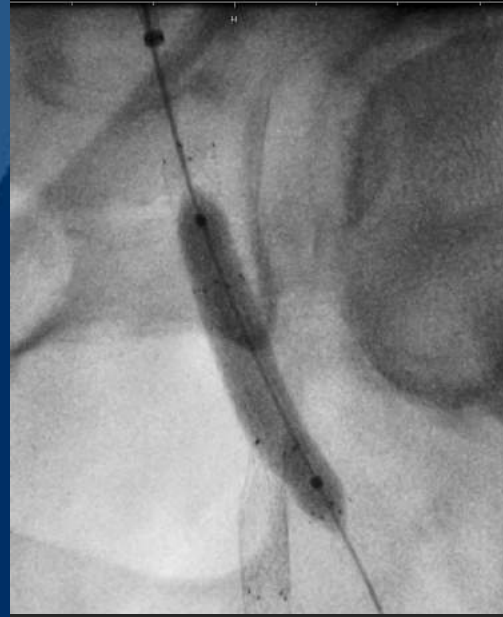
Freedom from TLR @ 24 months

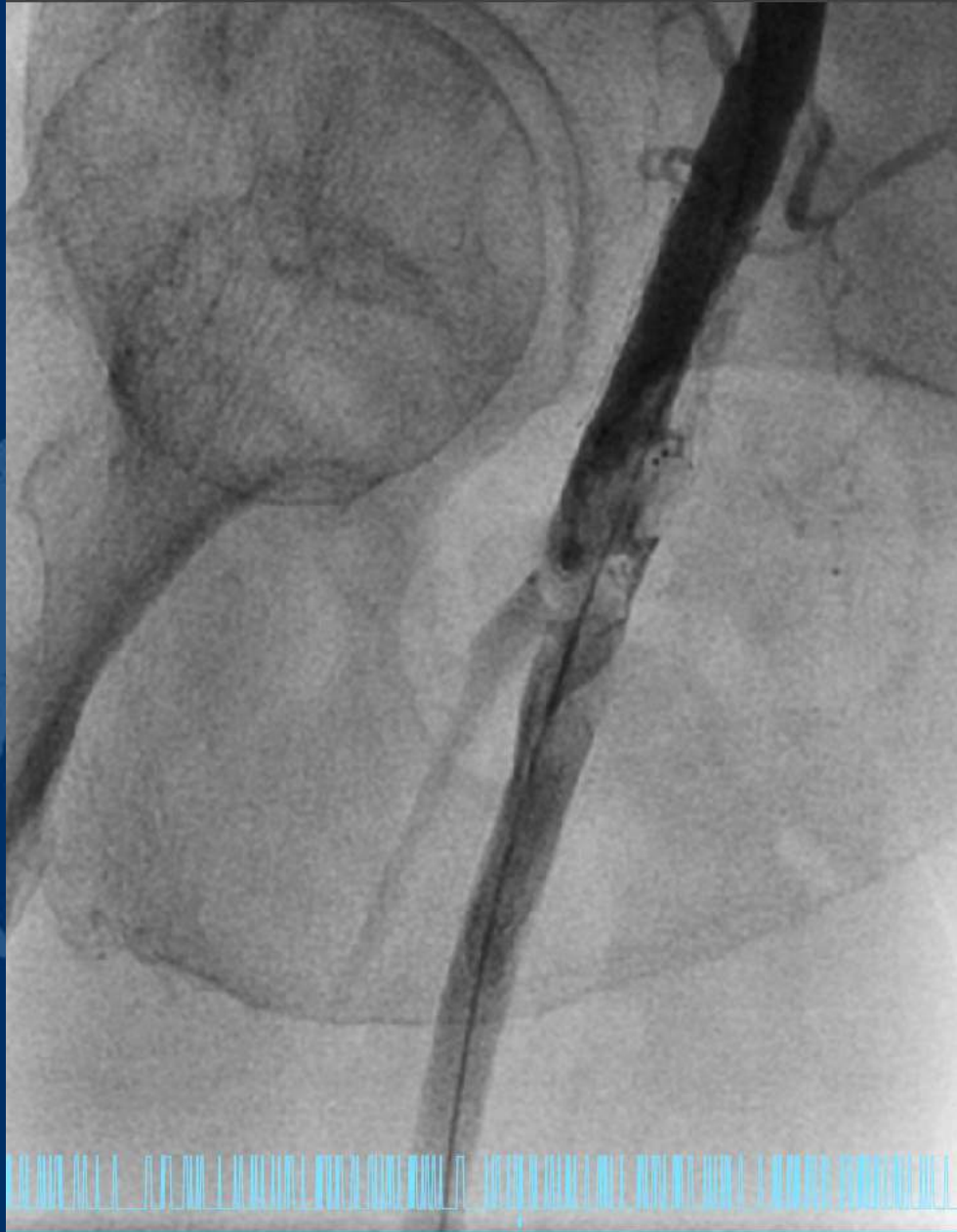


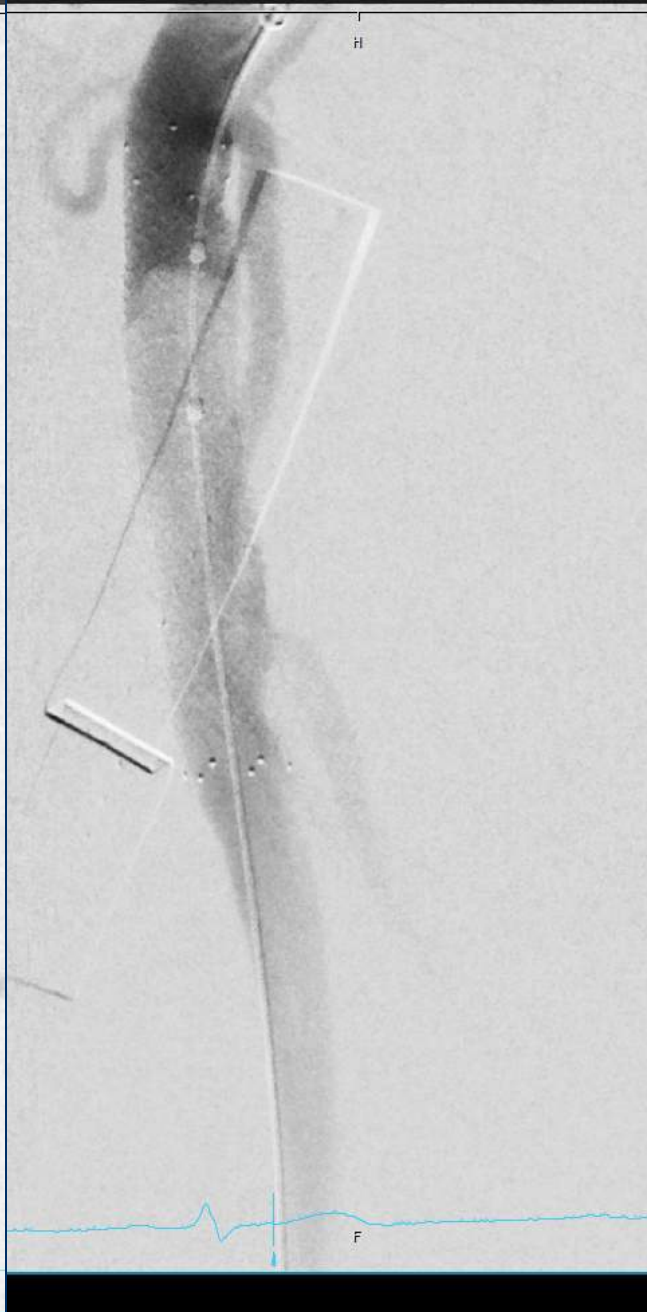
No. at Risk	0	6	12	18	24
Surgery	59	51	47	40	26
Stenting	55	48	46	42	27

Haemodynamic @ 24 months









Conclusion

- Surgery of CFA lesions is not as benign and effective as assumed
- Modern endovascular techniques such as DAART, lithotripsy and stenting have the potential to replace surgery in dedicated lesion morphologies
- Severe lesion calcification remains the main surgical indication



? NO