The ZILVERPASS study

a randomized study comparing ZILVER PTX stenting with Bypass in femoropopliteal lesions

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Disclosure

Speaker name:

Sven Bräunlich.....

I have the following potential conflicts of interest to report:

- [x] Consulting
- [ ] Employment in industry
- [ ] Stockholder of a healthcare company
- [ ] Owner of a healthcare company
- [ ] Other(s)

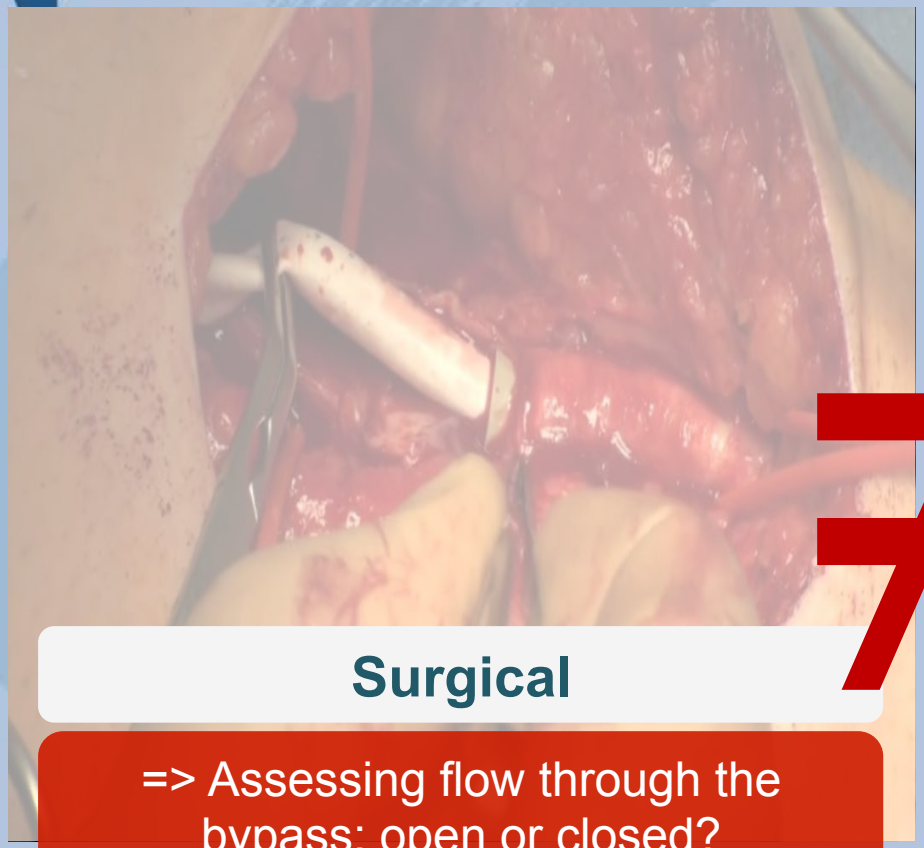
- [ ] I do not have any potential conflict of interest

Bypass is the golden standard

First Author/Yr	Type of Study	Study Population	Primary patency
Hines/2010	Retrospective	27 patients with TASC D lesions above- and below-knee venous FP bypass bypass	12 months: 73.2%
McQuade/2009	Prospective, randomized ePTFE/nitinol stent graft vs AK-popliteal bypass with synthetic material	86 patients/100 limbs	12-month: tent-graft: 72% ypass: 77%
Kedora/2007	Prosep Viabahı femoro-		month: t: 73.5% ss: 74.2%
Jensen/2007	Prospecti PTFE and L femoropop	suprageniculate	12-month: Dacron: ~78% PTFE: ~70%
Berglund/2005	Retrospective comparison: autologous saphenous vein grafts to PTFE grafts	499 patients undergoing bypassfor CLI or claudication: -139 with vein graft -360 with ePTFE	Vein, claudication: ~87% ePTFE, claudication: ~75%

Bypass PP @12M = +/-78%

Difference in Primary Patency definition



Surgical

=> Assessing flow through the bypass: open or closed?

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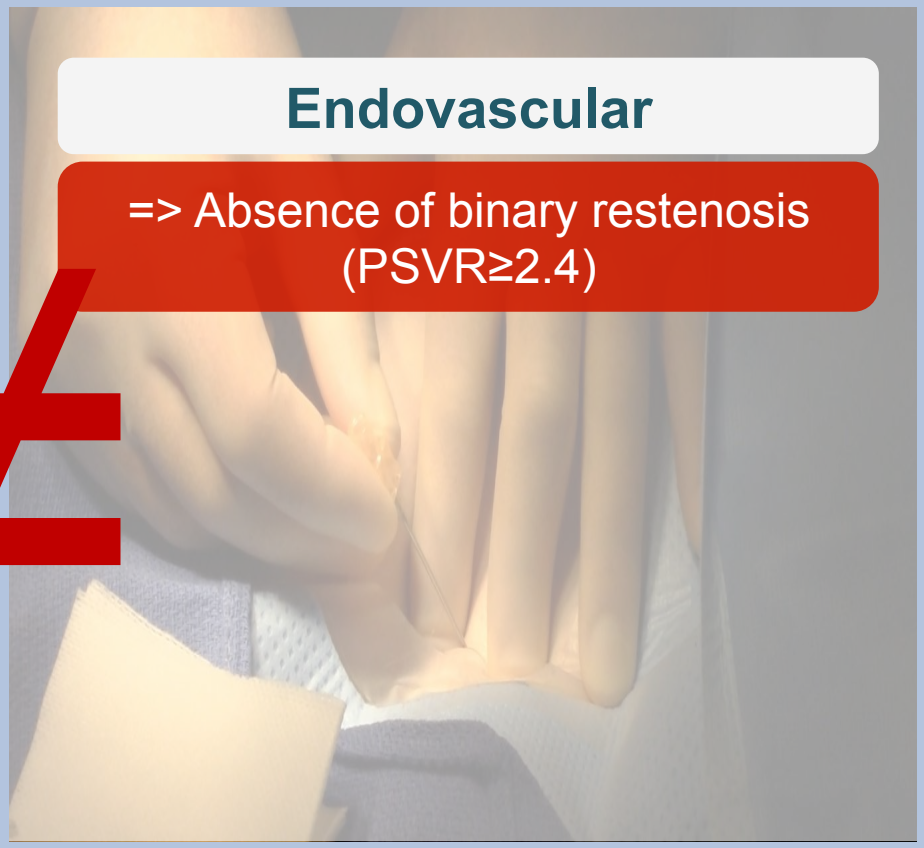


Endovascular

=> Absence of binary restenosis (PSVR≥2.4)

Analysis of PSVR in 100 surgical, primary patent bypasses

	Total (N=100)	Binary restenosis (N=11)
F-P1	37	3
F-P2	0	0
F-P3	47	6
F-tibial	16	2

100% surgical primary patent = 89% endo primary patent

Bypass PP @12M = +/-78% → **Bypass PP @12M = +/-70%**

Marc Bosiers, LINC 2018

DES : ZILVER PTX

- **ZILVER PTX – long lesions**

  Prospective, single-arm, multicenter study evaluating the Zilver PTX drug-eluting stent for treating patients with symptomatic lesions in the above-the-knee femoropopliteal artery

- Main inclusion criteria
  - 135 patients
  - Rutherford category > 1
  - de novo or restenotic lesion with >50% stenosis
  - TASC C & D lesions
  - at least one-vessel run-off to the foot

- Primary Patency at 12 months

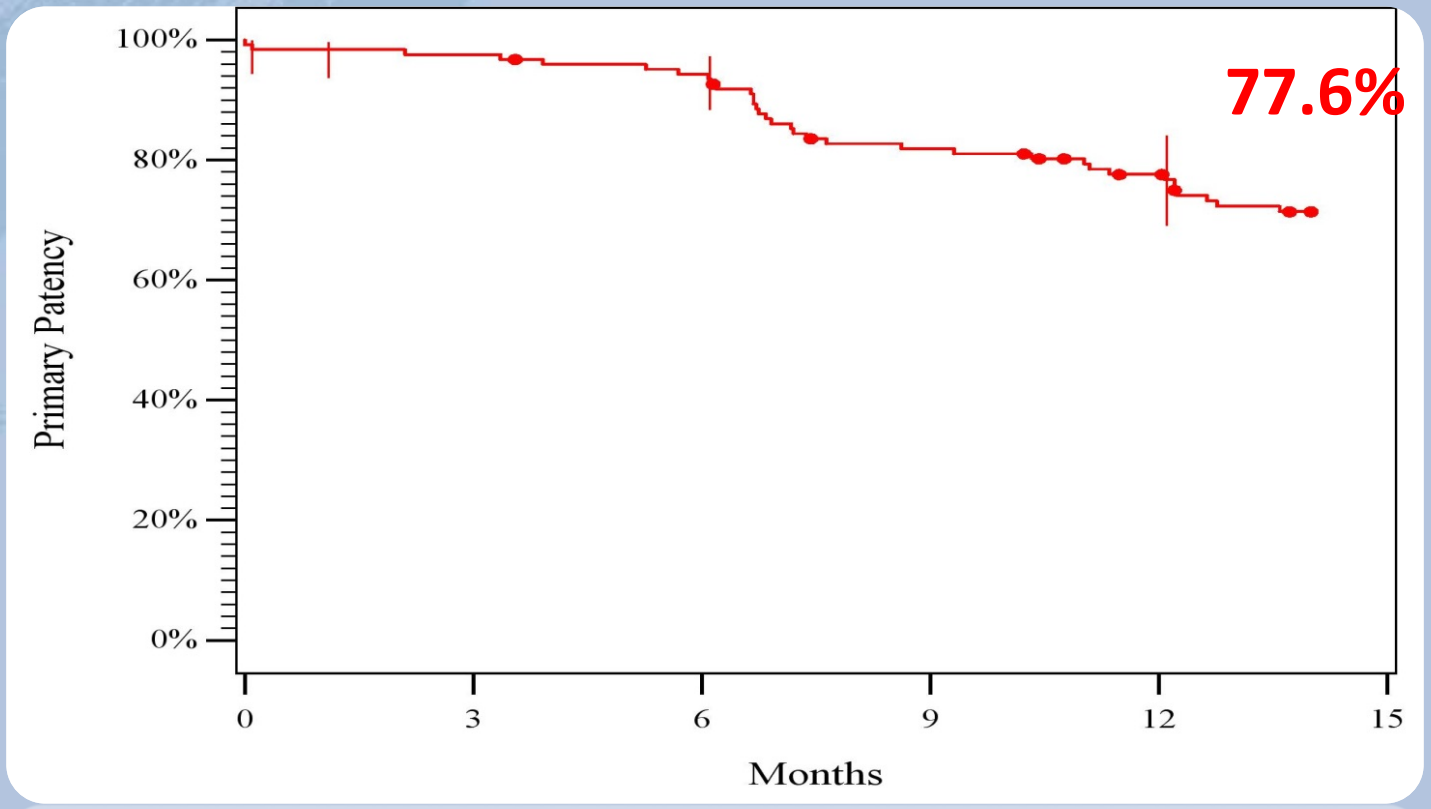
  Stent patency (<50% stenosis) was evaluated by **angiography or duplex ultrasound**; for this analysis, duplex treshold (<50% stenosis) was based on PSVR of 2.5

Bosiers M. et al, J Cardiovasc Surg, 2013;54(1):115-122

Baseline Lesion Characteristics

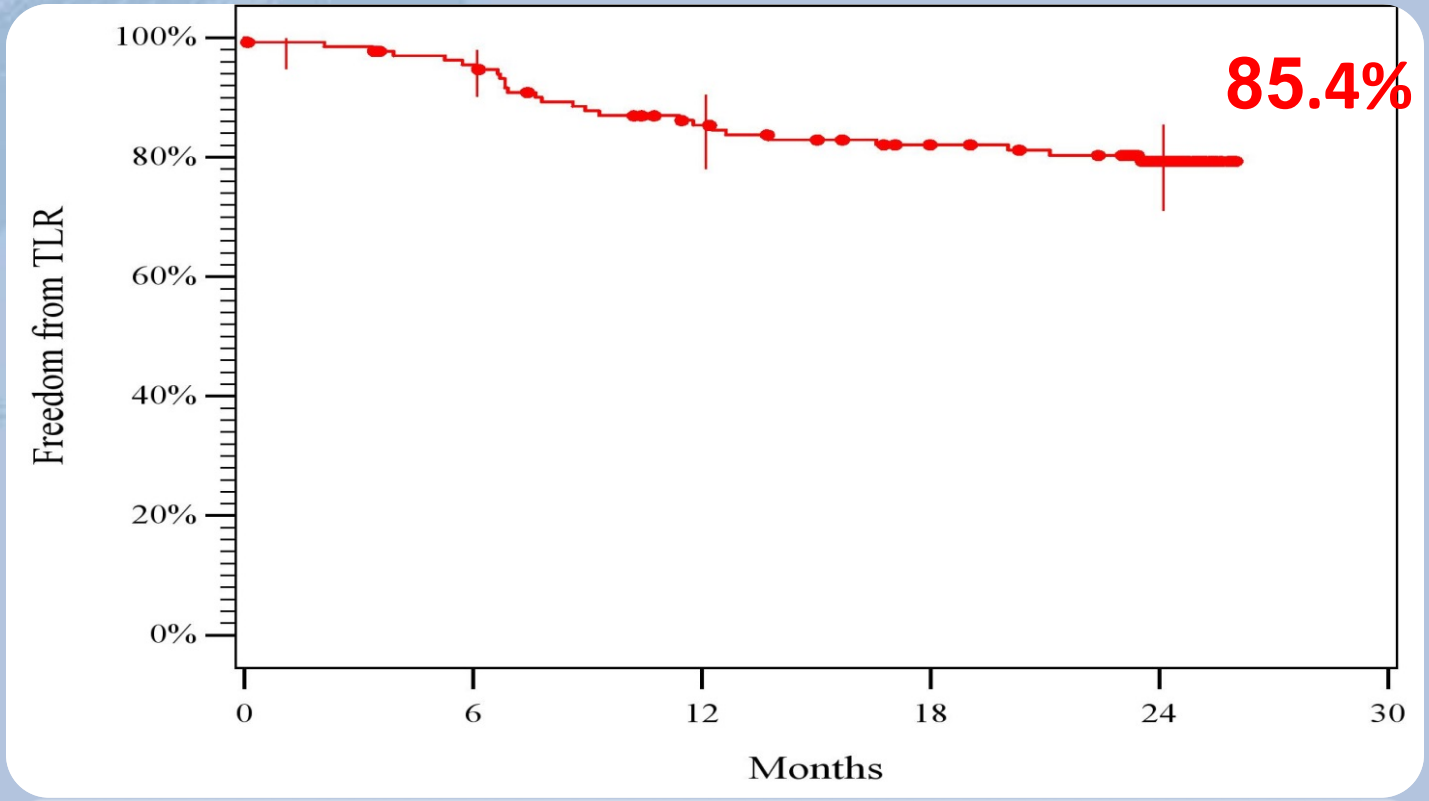
	Single-Arm Study: *de novo* long lesions
Lesions	135
Lesion length (mm)	**226 ± 44**
Diameter stenosis	97 ± 9%
Lesions > 15 cm	100%
Total occlusions	84%
Restenosis (all)	0%
In-stent restenosis (ISR)	0%

Zilver PTX in de novo long lesions (>15cm)
Primary Patency (PSVR <2.5)



Zilver PTX in de novo long lesions (>15cm)

Freedom from TLR



ZILVERPASS study

The Cook **Zil**ver PTX drug-eluting stent

versus

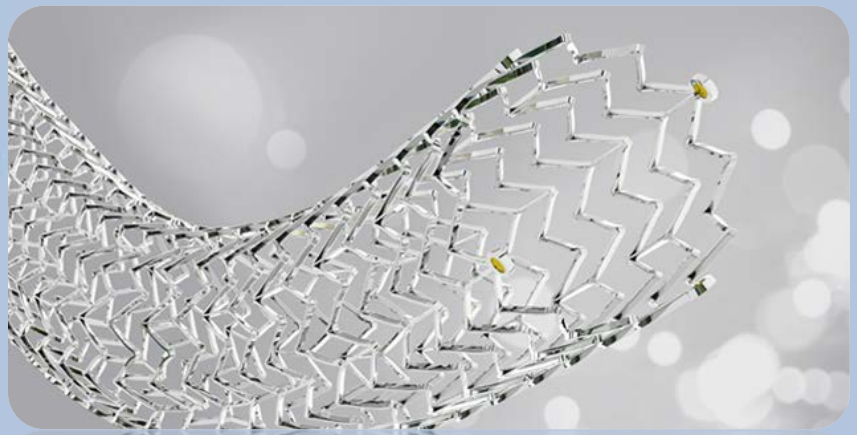
by**pass** surgery

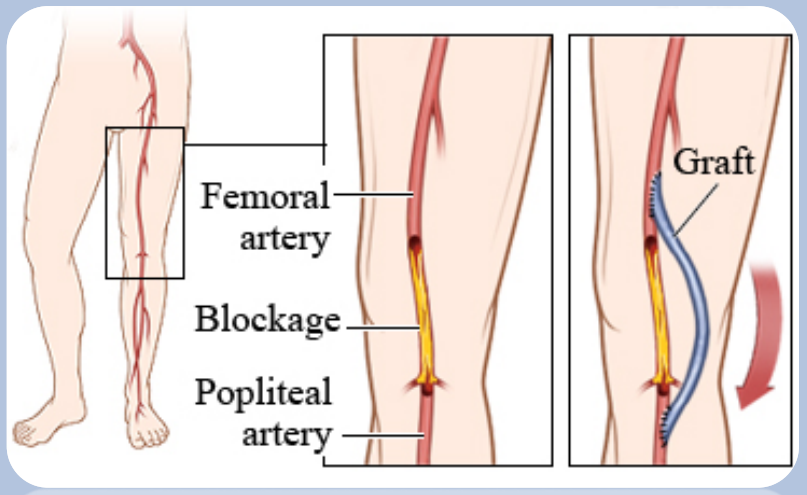
for the treatment of

femoropopliteal TASC C&D lesions.

Study Objectives

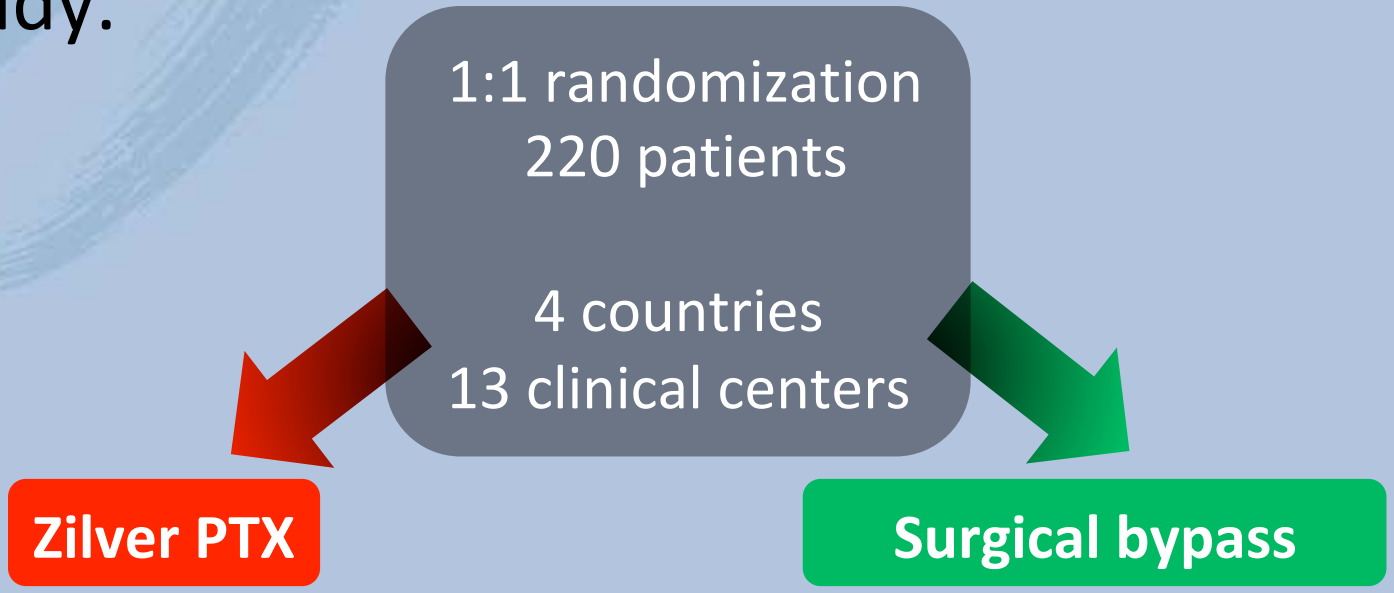
- To evaluate the performance of the Cook Zilver PTX paclitaxel-eluting stent compared to bypass surgery for the treatment of femoropopliteal
  TASC C & D lesions



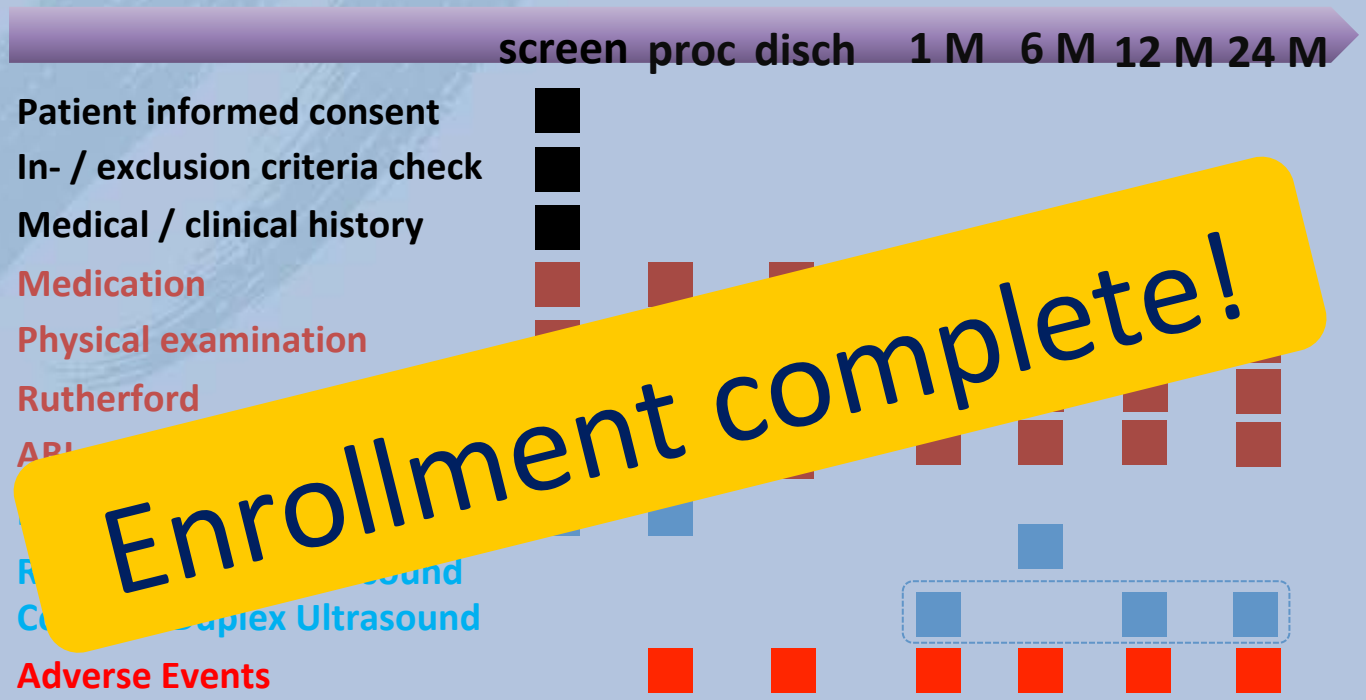


ZILVERPASS study

- A prospective, randomized, multi-center study.



Study Time Line



Enrollment complete!

Inclusion criteria

1. Patient presenting with lifestyle-limiting claudication, rest pain or minor tissue loss (**Rutherford Clinical Category 2 to 5**)

2. Stenotic or occlusive **de novo lesion** located in the **femoropopliteal arteries**, suitable for endovascular therapy and for bypass surgery.

3. Total target lesion length **is at least 150mm**.

Exclusion criteria

1. Any **previous surgery and/or endovascular procedure in the target vessel**.

2. **Perioperative unsuccessful ipsilateral** percutaneous vascular procedure to **treat inflow** disease just prior to enrollment

3. Any **planned surgical intervention/procedure within 30 days** of the study procedure.

4. Major distal amputation (above the transmetatarsal) in the study or non-study limb.

Primary Endpoints

- **Primary patency at 12 months, defined as:**

ZILVER PTX	BYPASS
Absence of binary restenosis or occlusion within treated lesion*	Absence of binary restenosis or occlusion at proximal and distal anastomoses and over the entire length of the bypass graft*
Without TLR within 12 months	Without clinically driven reintervention to restore flow in the bypass.

*** Based on CFDU measuring a PSV ratio <2,4**

Patient Demographics

Data on full cohort 220 pts

		Total N = 220	ZILVER PTX N = 113	BYPASS N = 107	Signific
Gender	Female	61 (27.73%)	35 (30.97%)	26 (24.30%)	P = 0.267
	Male	159 (72.27%)	78 (69.03%)	81 (75.70%)	
Rutherford Baseline	Claudication	139 (63.20%)	80 (70.80%)	59 (55.14%)	***P = 0.016***
	CLI	81 (36.80%)	***33 (29.20%)***	***48 (44.86%)***	
Age	(years)	68.63 ± 10.52	69.58 ± 10.84	67.63 10.12	P = 0.305

Risk Factors

Data on full cohort 220 pts

		Total N = 220	ZILVER PTX N = 113	BYPASS N = 107	Signific
Smoking history	Yes	164 (74.50%)	78 (69.03%)	86 (80.37%)	P = 0.053
	No	56 (25.50%)	35 (30.97%)	21 (19.63%)	
Hypertension	Yes	161 (73.20%)	***74 (65.49%)***	***87 (81.31%)***	***P = 0.008***
	No	59 (26.80%)	39 (34.51%)	20 (18.70%)	
Diabetes Mellitus	Yes	65 (29.50%)	31 (27.43%)	34 (31.78%)	P = 0.480
	No	155 (70.50%)	82 (72.57%)	73 (68.22%)	
Coronary Artery Disease	Yes	58 (26.40%)	26 (23.01%)	32 (29.91%)	P = 0.246
	No	162 (73.60%)	87 (76.99%)	75 (70.09%)	
Cerebrovascular Disease	Yes	14 (6.40%)	8 (7.08%)	6 (5.61%)	P = 0.655
	No	206 (93.60%)	105 (92.92%)	101 (94.39%)	
Renal Insufficiency	Yes	24 (10.90%)	11 (9.73%)	13 (12.15%)	P = 0.566
	No	196 (89.10%)	102 (90.27%)	94 (87.85%)	
Obesity	Yes	30 (13.60%)	***10 (8.85%)***	***20 (18.69%)***	***P = 0.033***
	No	190 (86.40%)	103 (91.15%)	87 (81.31%)	
Hypercholesterolemia	Yes	127 (57.70%)	***57 (50.44%)***	***70 (65.42%)***	***P = 0.025***
	No	93 (42.30%)	56 (49.56%)	37 (34.58%)	

Lesion Characteristics

Data on full cohort 220 pts

		Total N = 220	ZILVER PTX N = 113	BYPASS N = 107	Signific
Study Limb	Left	114 (51.80%)	61 (53.98%)	53 (49.53%)	P = 0.509
	Right	106 (48.20%)	52 (46.02%)	54 (50.47%)	
Lesion Type	Stenosis	12 (5.45%)	9 (7.96%)	3 (2.80%)	P = 0.092
	Occlusion	***208 (94.55%)***	***104 (92.04%)***	***104 (97.20%)***	
Lesion Length	***mm ± SD (min – max)***	***247.11 ± 69.26 (100* - 500)***	***241.67 ± 63.33 (120* – 500)***	***252.86 ± 74.89 (100* – 400)***	P = 0.104
Prox Ref Vessel Diameter	mm ± SD (min – max)	5.88 ± 0.73 (4.00 – 8.00)	5.72 ± 0.65 (4.40 – 8.00)	6.05 ± 0.77 (4.00 – 8.00)	P = 0.320

Very complex lesions:
94.55% were occluded and mean lesion length was 247.11mm

*6 PD's were seen with lesion length <150mm

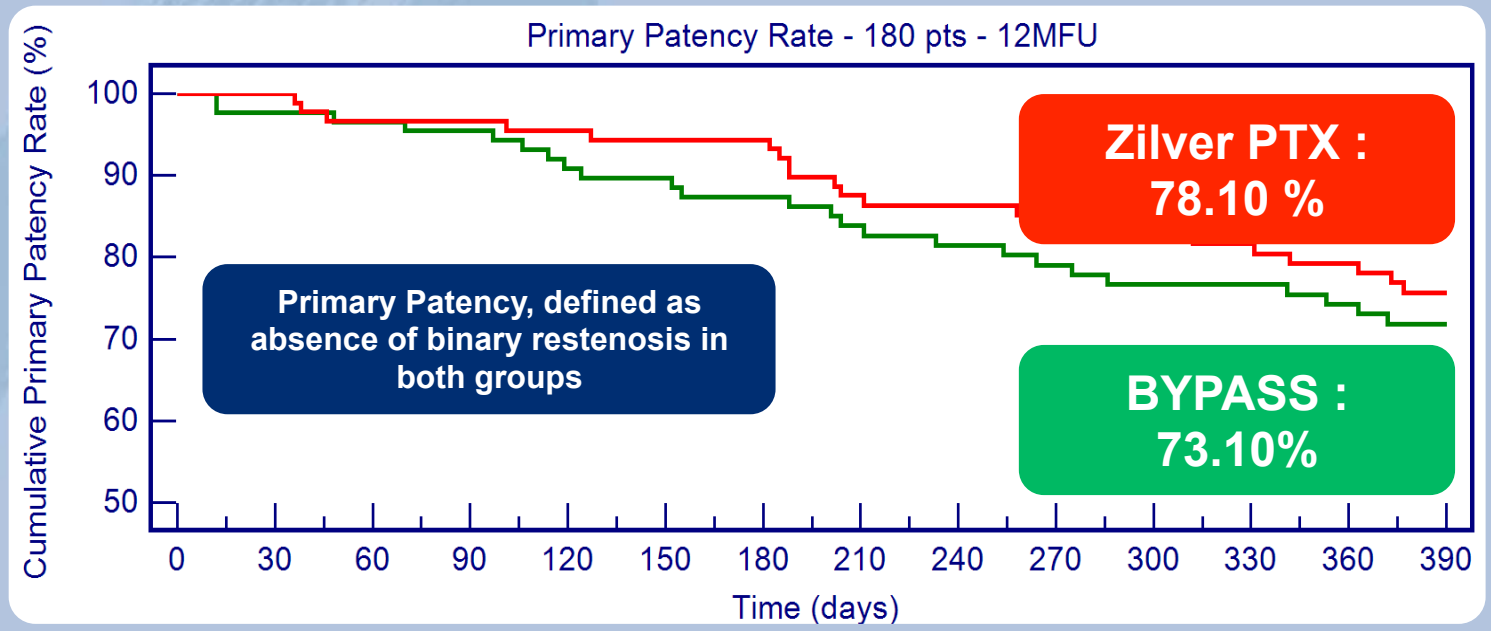
Procedure Characteristics

Data on full cohort 220 pts

		Total N = 220	ZILVER PTX N = 113	BYPASS N = 107	Signific
Procedure Time	minutes ± SD (min – max)	90.46 ± 44.77 (17 – 240)	***59.60 ± 22.65 (17 – 135)***	***123.05 ± 38.88 (53 – 240)***	***P < 0.001***
Cross-over performed	Yes		81 (71.68%)		
	No		32 (28.32%)		
Flouroscopy Time	minutes ± SD (min – max)		17.91 ± 15.71 (4.00 – 123.00)		
Contrast dose	mL ± SD (min – max)		107.24 ± 51.10 (12.00 – 290.00)		
Bypass material	Dacron			42 (39.25%)	
	PTFE			65 (60.75%)	
Hospital stay*	Nights (min – max)	5.26 ± 5.65 (0.00 – 34.00)	***2.52 ± 3.50 (0.00 – 20.00)***	***8.14 ± 6.03 (1.00 – 34.00)***	***P<0.001***

*Data on hospital stay for 219 patients. 1 Patient (ZILVER PTX group) died during hospital stay

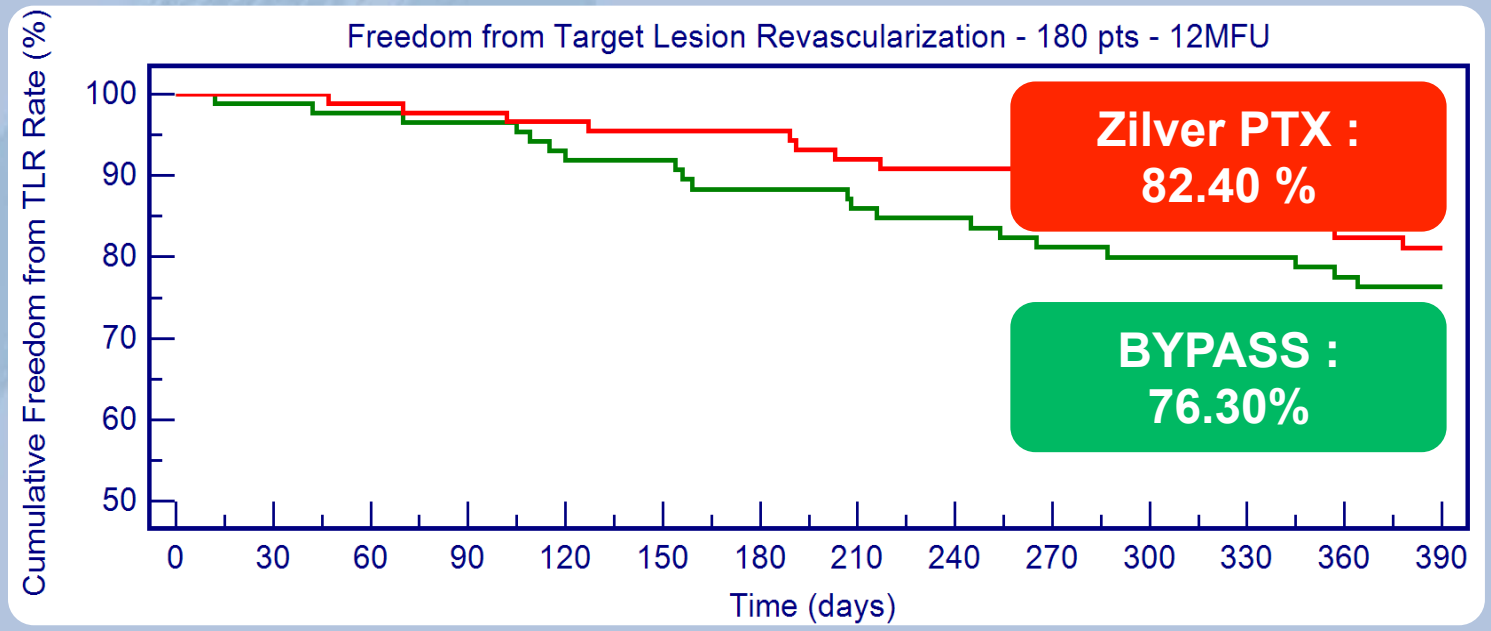
12-month Primary Patency [180 / 220 pts]



Preliminary 180 patients

		Baseline	30 days	6MFU	12MFU – D365	12MFU – D395
ZILVER PTX	Tar	91	89	83	66	63
	%	100	100	94.40	78.10	74.50
BYPASS	Tar	89	86	75	62	59
	%	100	97.70	87.30	73.10	70.60

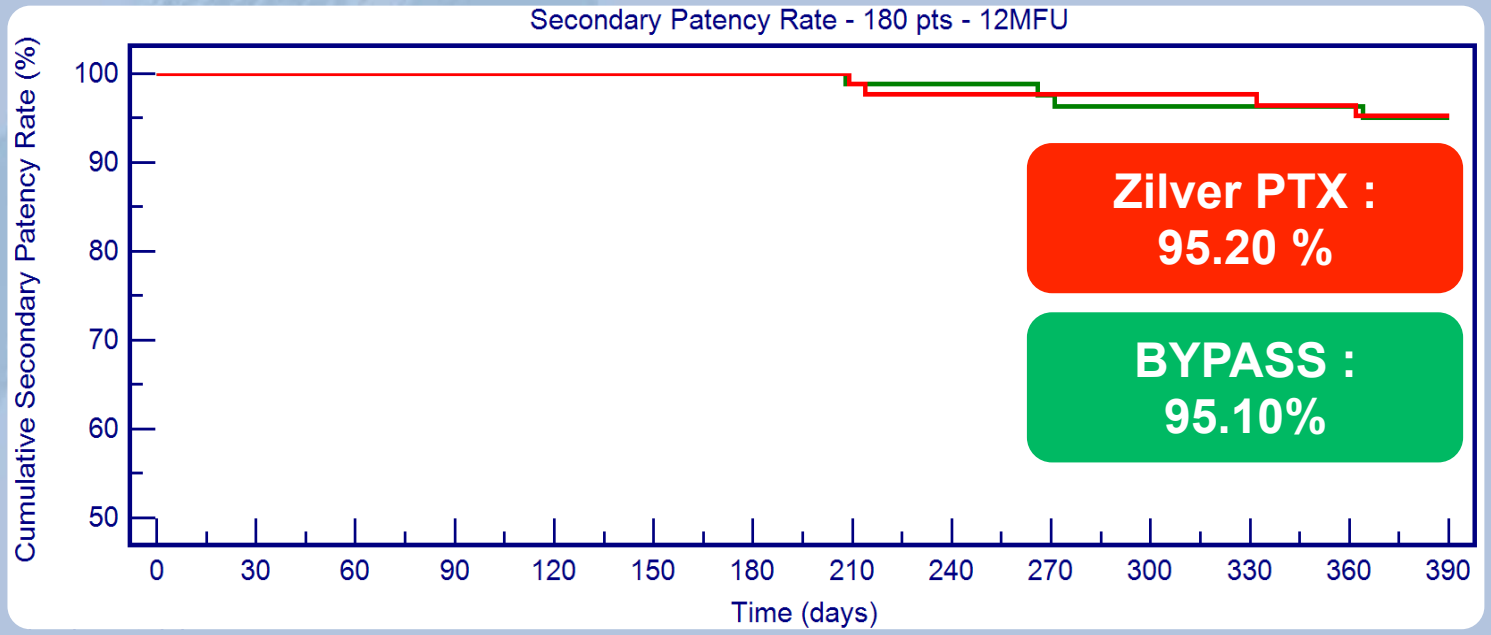
12-month freedom from TLR [180 / 220 pts]



Preliminary 180 patients

		Baseline	30 days	6MFU	12MFU – D365	12MFU – D395
ZILVER PTX	Tar	91	89	84	67	66
	%	100	100	95.00	82.40	81.10
BYPASS	Tar	89	87	75	64	62
	%	100	98.90	88.30	76.30	76.30

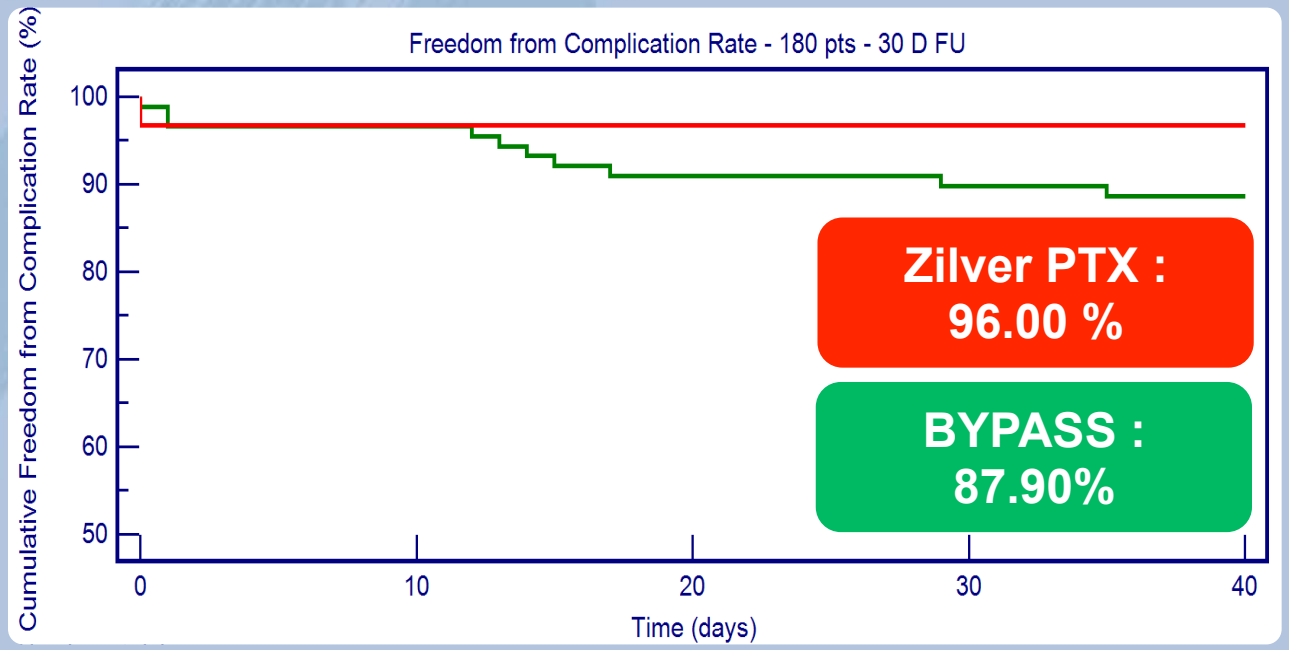
12-month Secondary Patency [180 / 220 pts]



Preliminary 180 patients

		Baseline	30 days	6MFU	12MFU – D365	12MFU – D395
ZILVER PTX	Tar	91	89	88	78	77
	%	100	100	100	95.20	95.20
BYPASS	Tar	89	88	83	78	76
	%	100	100	100	95.10	95.10

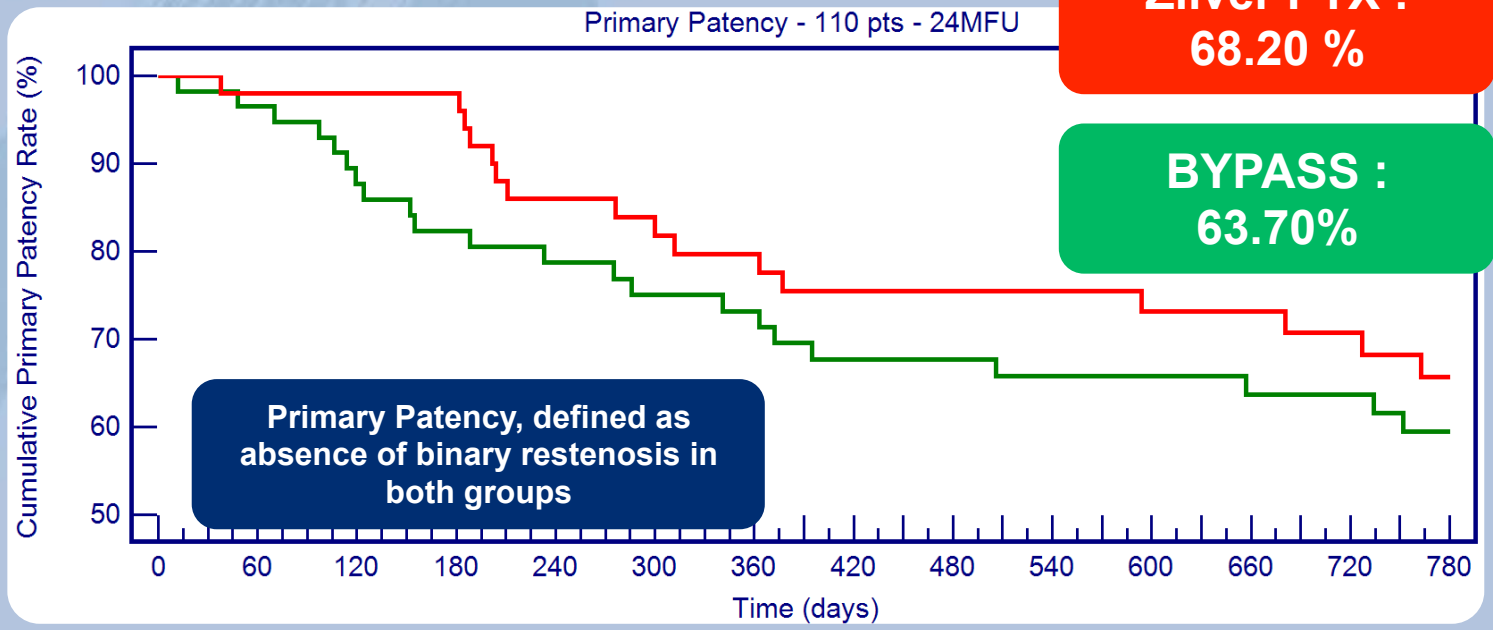
30-day Freedom from Complication rate [180 / 220 pts]



Preliminary 180 patients

		Baseline	10 days	20 days	30 days
ZILVER PTX	Tar	91	87	86	86
	%	100	96.70	96.70	96.70
BYPASS	Tar	89	85	80	79
	%	100	96.60	90.90	89.80

24-month Primary Patency [110 / 220 pts]



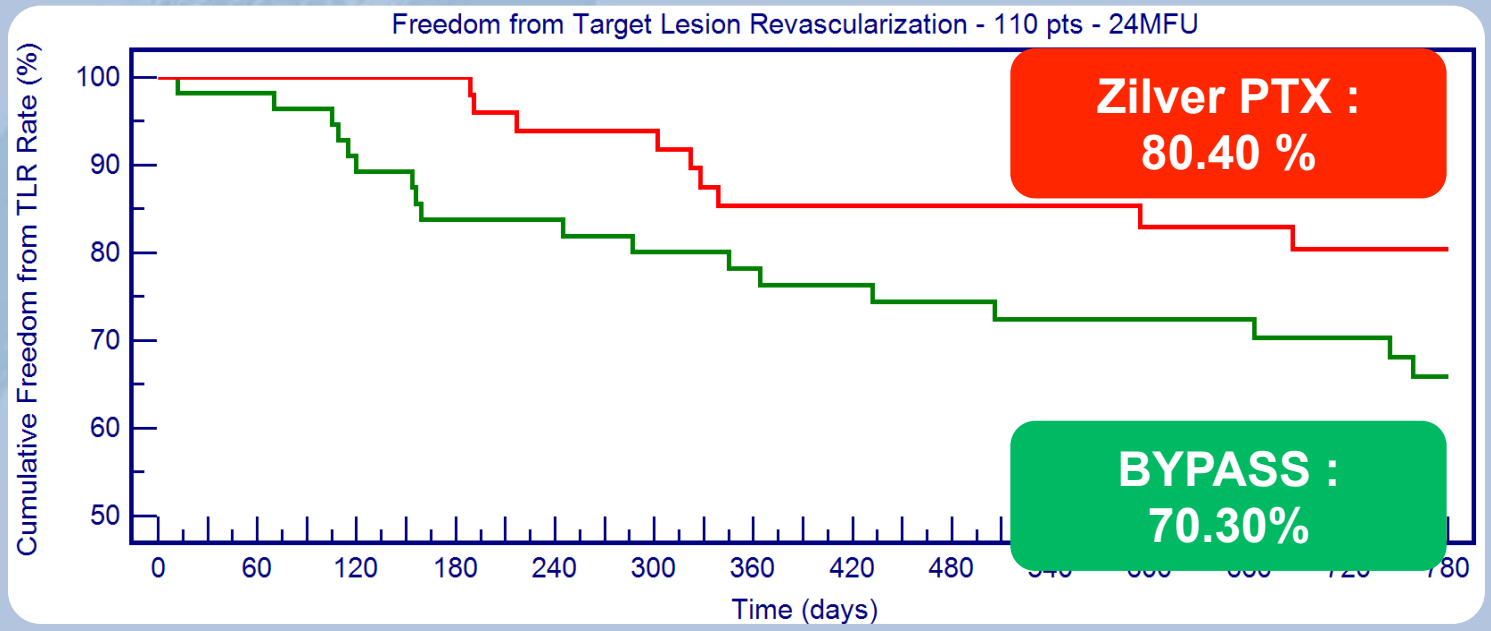
Zilver PTX : 68.20 %

BYPASS : 63.70%

Preliminary 110 patients

		Baseline	30 days	6MFU	12MFU	24MFU
ZILVER PTX	Tar	52	51	49	38	28
	%	100	100	98.00	77.60	68.20
BYPASS	Tar	58	56	46	40	30
	%	100	98.20	82.30	71.40	63.70

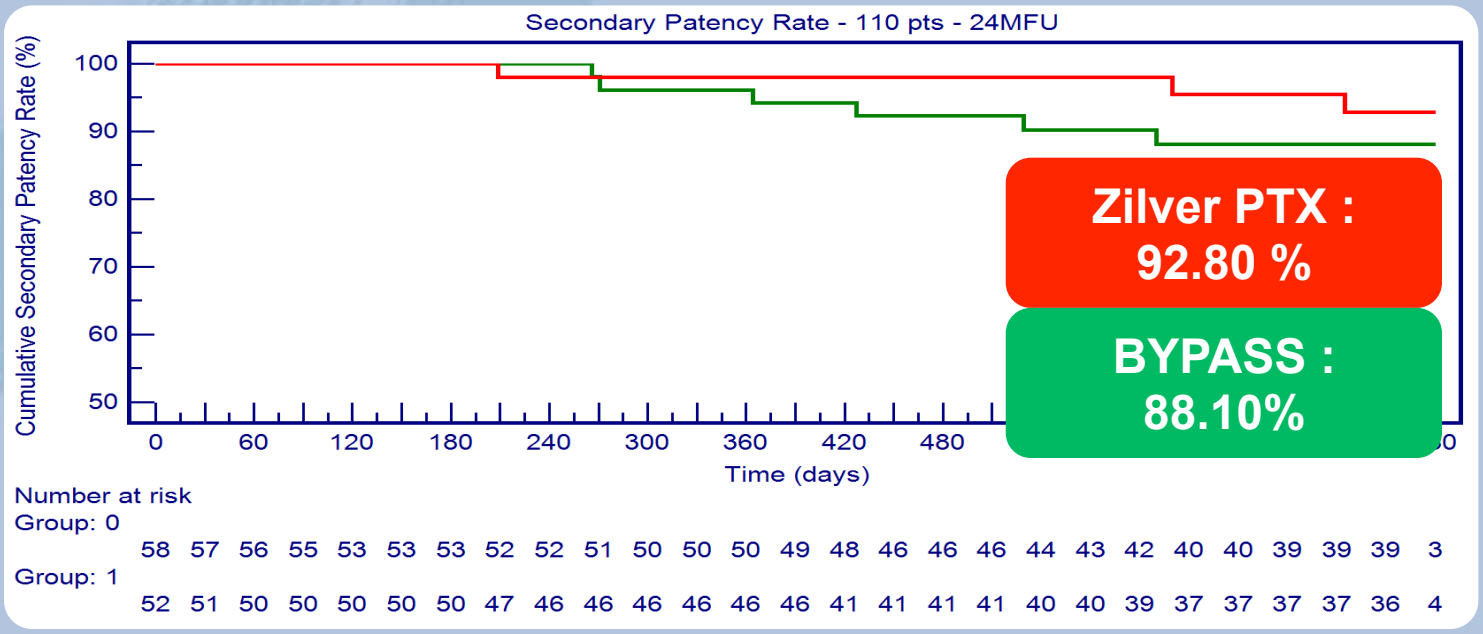
24-month freedom from TLR [110 / 220 pts]



Preliminary 110 patients

		Baseline	30 days	6MFU	12MFU	24MFU
ZILVER PTX	Tar	52	51	50	40	31
	%	100	100	100	85.40	80.40
BYPASS	Tar	58	56	46	42	32
	%	100	98.20	83.80	76.30	70.30

24-month Secondary Patency [110 / 220 pts]



Preliminary
110 patients

		Baseline	30 days	6MFU	12MFU	24MFU
ZILVER PTX	Tar	52	51	50	46	37
	%	100	100	100	98.00	92.80
BYPASS	Tar	58	57	53	50	39
	%	100	100	100	94.20	88.10

Conclusion

- Zilver PTX is obtaining outstanding primary patencies, also in long & more complex SFA lesions
- Patency analysis in these study cohorts are based on objective CFDU PSVR assessments
- Maybe Prosthetic Bypass results are not that great in terms of patency as always considered, especially when you use an "endovascular CFDU PSVR" based patency assessment
- **Preliminary results show at least a non-inferiority of Zilver PTX versus prosthetic bypass surgery ATK, with similar patency results and less complications**