

CONTROVERSES ET ACTUALITÉS EN CHIRURGIE VASCULAIRE  
CONTROVERSIES & UPDATES  
IN VASCULAR SURGERY



JANUARY 23-25 2014

MARRIOTT RIVE GAUCHE & CONFERENCE CENTER PARIS, FRANCE

# Why does EVH challenge endo repair of long lesion?

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## Disclosure

Daniel Danzer MD

- I have the following potential conflicts of interest to report:
- Former consulting for Maquet CV (2011-2012)
- Employment in industry
- Shareholder in a healthcare company
- Owner of a healthcare company
- Other(s)
- I do not have any potential conflict of interest

# Convince the audience

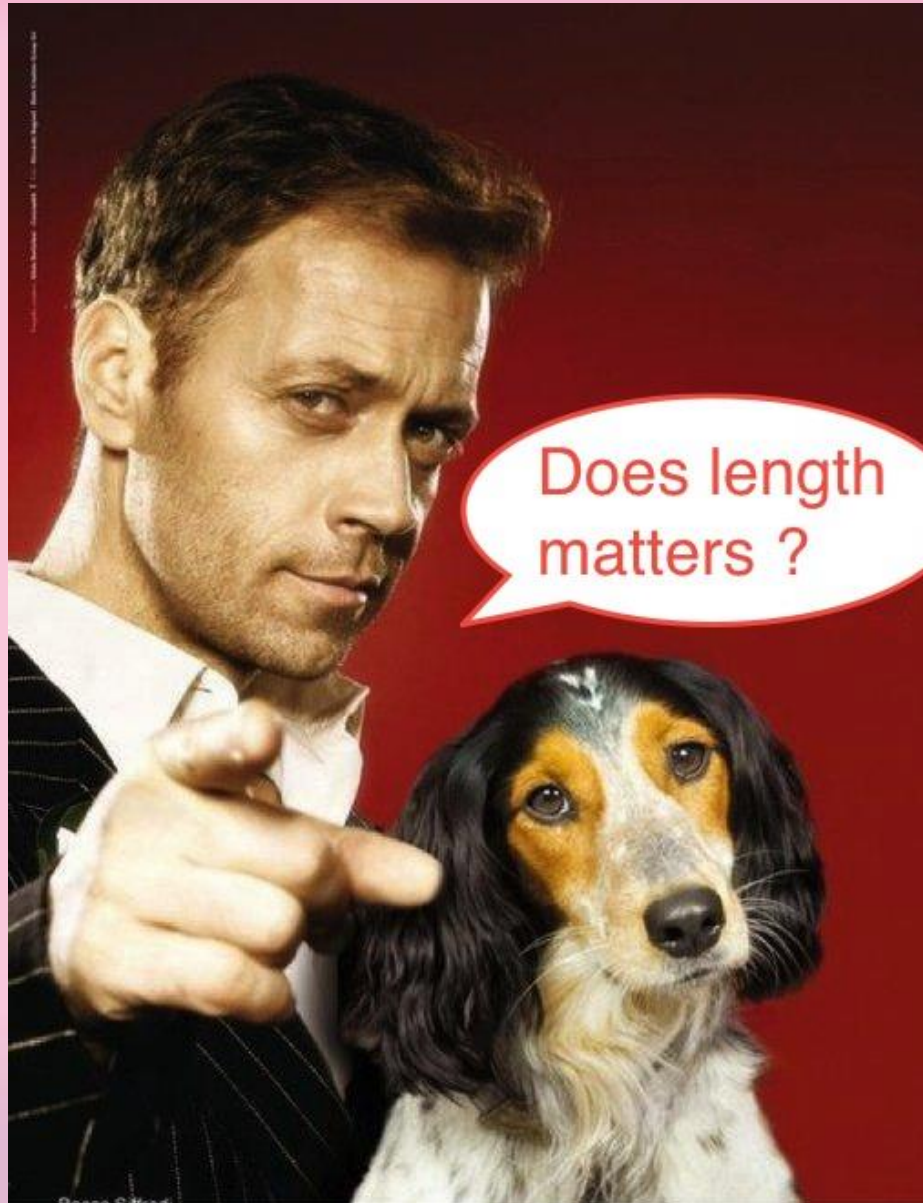
- 1. surgical bypass remains superior to endo repair for long SFA lesion
- 2. EVH is a significant progress in surgical bypass technique

# How do you define a LONG lesion?





# What is a LONG lesion?



- « ...lesion length being more than **10 cm**... » Wu et al, ScWJ dec 2013
- « ...The mean lesion length was approximately **65+/- 40 mm** in the randomized trial and **99.5 +/-82.1** mm in the single-arm study. ... » Zilver PTX JACC 2013
- «...complex degrees of FPA atheroma...Mean lesion length was **94 ± 60mm**... Post hoc subanalyses were performed for the comparison of **long (>100 mm)**...» DEBATE-SFA Randomized Trial, JACC dec 2013
- GORE VIABAHN Endoprosthesis versus Bare Nitinol Stent in the Treatment of Long Lesion (**>8 cm**) Superficial Femoral Artery Occlusive Disease. VIBRANT trial JVS 2013
- « ...Patients with lesions >4 cm and <18 cm were enrolled... lesion length measured by sites was **110 mm**... » DURABILITY II JVS 2013

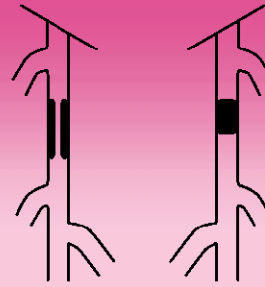
# Some hope?

- **Heparin-Bonded** Covered Stents Versus Bare-Metal Stents for Complex Femoropopliteal Artery Lesions: The Randomized VIASTAR Trial (Viabahn Endoprosthesis With PROPATEN Bioactive Surface [VIA] Versus Bare Nitinol Stent in the Treatment of Long Lesions in Superficial Femoral Artery Occlusive Disease).
  - stenosis or occlusion of the SFA and prox- imal popliteal artery **10 to 35** cm in length ...patients with long lesions >20 cm
  - Mean  $\pm$  SD lesion length was **19.0  $\pm$  6.3** cm in the Viabahn group and 17.3  $\pm$  6.6 cm in the BMS group
    - *Lammer et al, JACC 2013*

PP rate < 71% at one year 

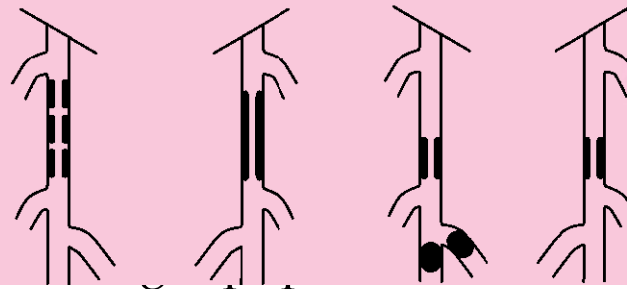
### Type A lesions

- Single stenosis  $\leq 10$  cm in length
- Single occlusion  $\leq 5$  cm in length



### Type B lesions:

- Multiple lesions (stenoses or occlusions), each  $\leq 5$  cm
- Single stenosis or occlusion  $\leq 15$  cm not involving the infrageniculate popliteal artery
- Single or multiple lesions in the absence of continuous tibial vessels to improve inflow for a distal bypass
- Heavily calcified occlusion  $\leq 5$  cm in length
- Single popliteal stenosis



## Type C lesions

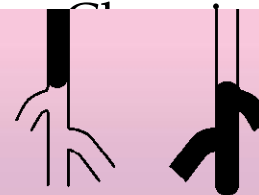
- Multiple stenoses or occlusions totaling  $>15$  cm with or without heavy calcification



## Type D lesions

- Chronic total occlusions of CFA or SFA ( $>20$  cm, involving the popliteal artery)

- Chronic total occlusion of popliteal artery and proximal trifurcation vessels





# Is it TASC classification that matters?

- TASC II C and D ?
- At least 20-30% of A and B in the above mentioned studies!
- If not TASC I classification!!
- **No consensus on lesion length reporting**

# How do you measure the length

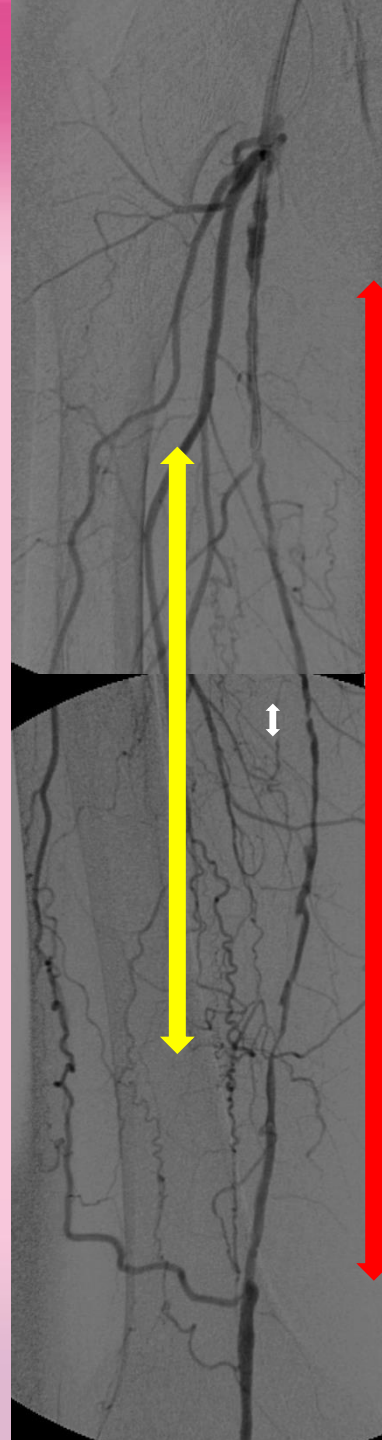
Clinical sites :“normal-to-normal”  
measuring from healthy tissue to  
healthy tissue,



angiographic core laboratory : “20-  
to-20” lesion length, between the  
proximal and distal points at which  
the lesion was 20% stenosed

Matsumura et al JVS July 2012

- Which length?!



# Bypass length classification

- Anatomic classification
- Distal landing zone as complexity factor:
  - Over the knee (SFA length 25-35cm)
  - Below the knee (+ 12-20cm)
  - Tibial (+...)
  - Pedal (+.....)
  - Not dependant of patient size!
  - « Always » correspond to **very** long lesion

# Long lesion

- Physician appreciation that his endovascular repair could be difficult or short lasting result!



≠





# Long lesions are difficult

- Angioplasty...
- + Eluting drug ... to decrease neointimal hyperplasia
- + Atherectomy ... to reduce residual stenosis
- + Stenting ... to reduce recoil and restenosis
- + dual antiplatelet therapy ... to decrease early thrombosis
- + adjunctive medication infusion...to stabilize the lesion
- ...



➤ Many adjunctive therapies  
to improve a fallible technique

# Is Endo cost effective?

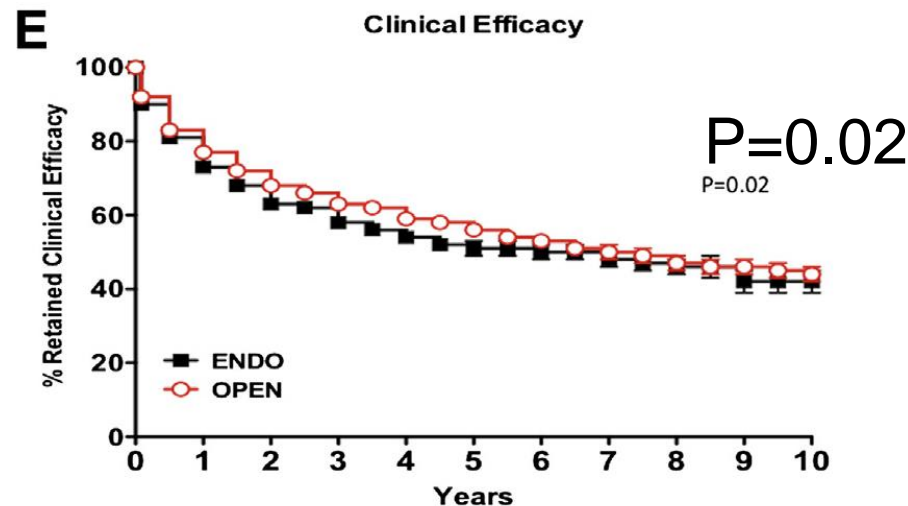
- New expensive techniques evaluation?
- What if DRG reimbursement was extended from 30days since beginning of treatment to 1year?

# Long term results of surgery vs Endo

- « Bypass had a higher freedom from restenosis when compared to PTA/S (73% vs 42% at 3 years; hazard ratio [HR], 0.4; 95% CI...Bypass patients were more likely to remain free from claudication symptom recurrence at 3 years (70% vs 36% at 3 years)... » *Siracuse et al, JVS 2012*
- PP 76% at one year *Personal data*

# Current efficacy of open and endovascular interventions for advanced superficial femoral artery occlusive disease

Christopher J. Smolock, MD, Javier E. Anaya-Ayala, MD, Yoav Kaufman, MD, Charudatta S. Bavare, MD, Mitul S. Patel, MD, Hosam F. El-Sayed, MD, Alan B. Lumsden, MD, and Mark G. Davies, MD, PhD, MBA, *Houston, Tex*



# at Risk	0	1	2	3	4	5	6	7	8	9	10
Endo	962	629	502	410	299	215	169	117	74	46	32
Open	1381	939	767	667	555	474	404	344	282	234	184

A total of 2593 limbs

Smolock et al JVS 2013



# Bypass early morbi/mortality

- No difference in mortality between open surgery and PTA
- Less morbidity in PTA group in terms of:
  - **Wound infection 3x**
  - Non fatal myocardial infarction/chest infection

BASIL Trial, Lancet 2005

# Endo beats surgery...

- Lower long term patency but:
- LOS (during first procedure)
- Patient comfort
- Less complications

# What is Bypass with EVH

- Surgical bypass: high technical success
- Best available conduit: Saphenous vein
- Minimal surgical trauma: skin incision limited to arterial exposure sites



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# Is EVH as safe as traditional open harvest?

- Current literature debatable.
- Many retrospective study with the same bias:  
“...choice of the technique was base upon surgeon preference...”



# Henri Mondor study

- Introduction of EVH as first line harvesting method since october 2010
- Exclusion if:
  - No GSV available
  - Urgent surgery (trauma)
  - Unavailability of trained surgeon or material

## Aim of the study:

Compare endoscopic venous  
harvesting of the great saphenous vein  
VS traditional harvesting

D. Danzer, L. Venturini, E. Audureau, JP. Becquemin

# Infra inguinal Bypasses

n = 295

230 Saphenous Venous

65 prosthetic

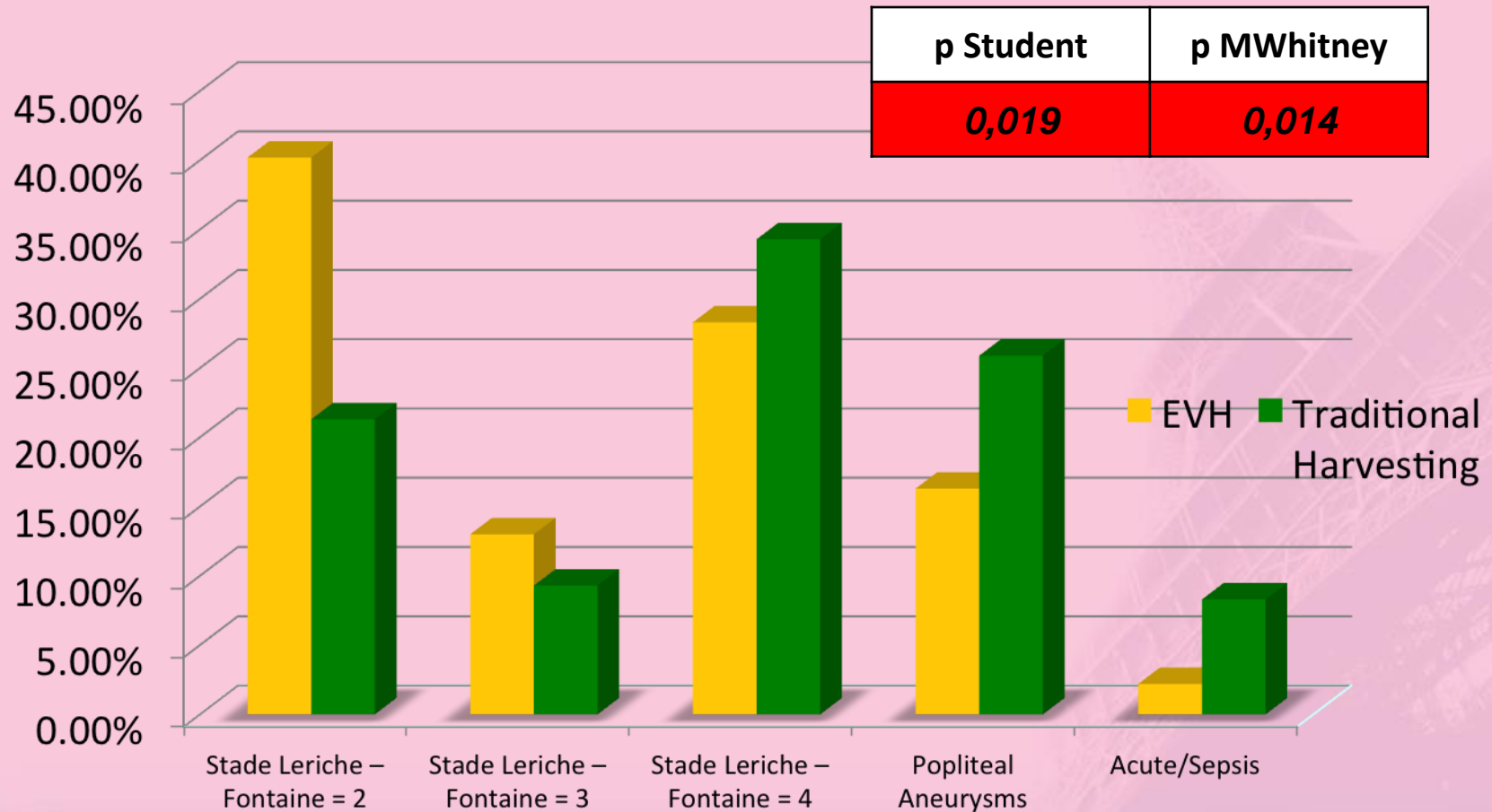
30 fem – fem

200 fem- pop / tibial

108 Traditional Harvesting (2008 – Oct 2010)

92 EVH ( Oct 2011 – Oct 2012)

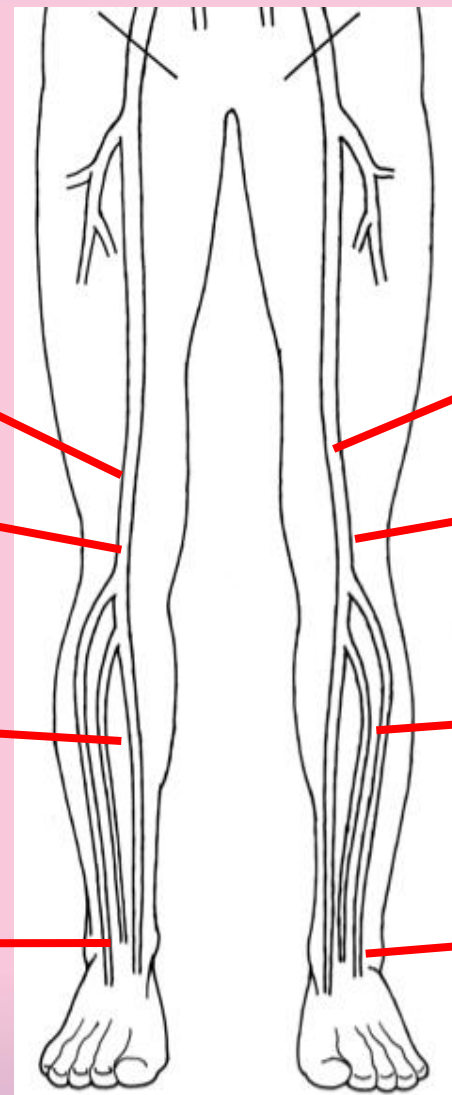
# Baseline characteristics



# Distal Anastomosis sites

**EVH n (%)**

**Traditional harv. n (%)**



29 (31,5%)

18 (16.7%)

40 (43,5%)

61 (56.5%)

23 (25,0%)

27 (25,0%)

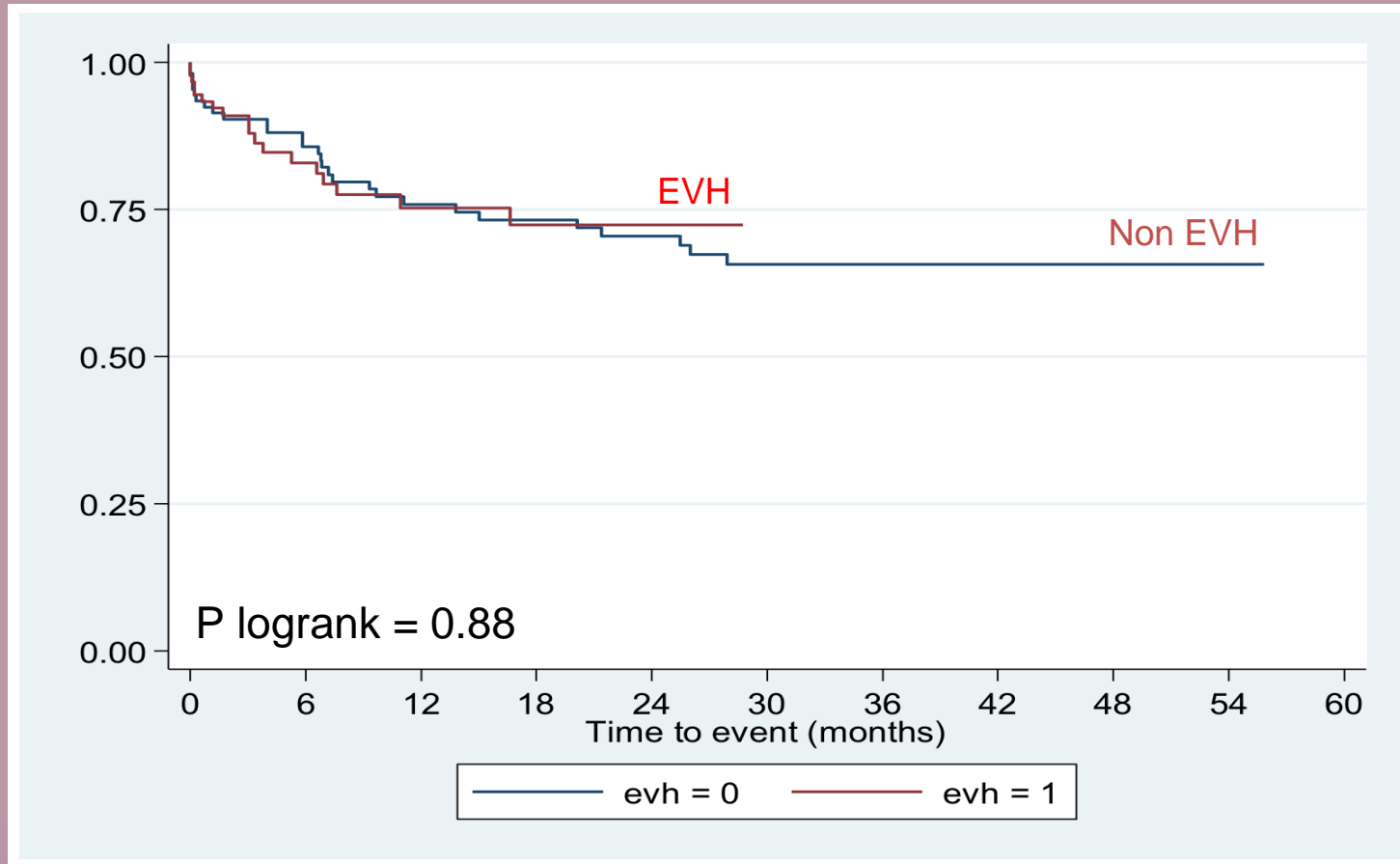
n= 0 (0%)

1 (1.9%)

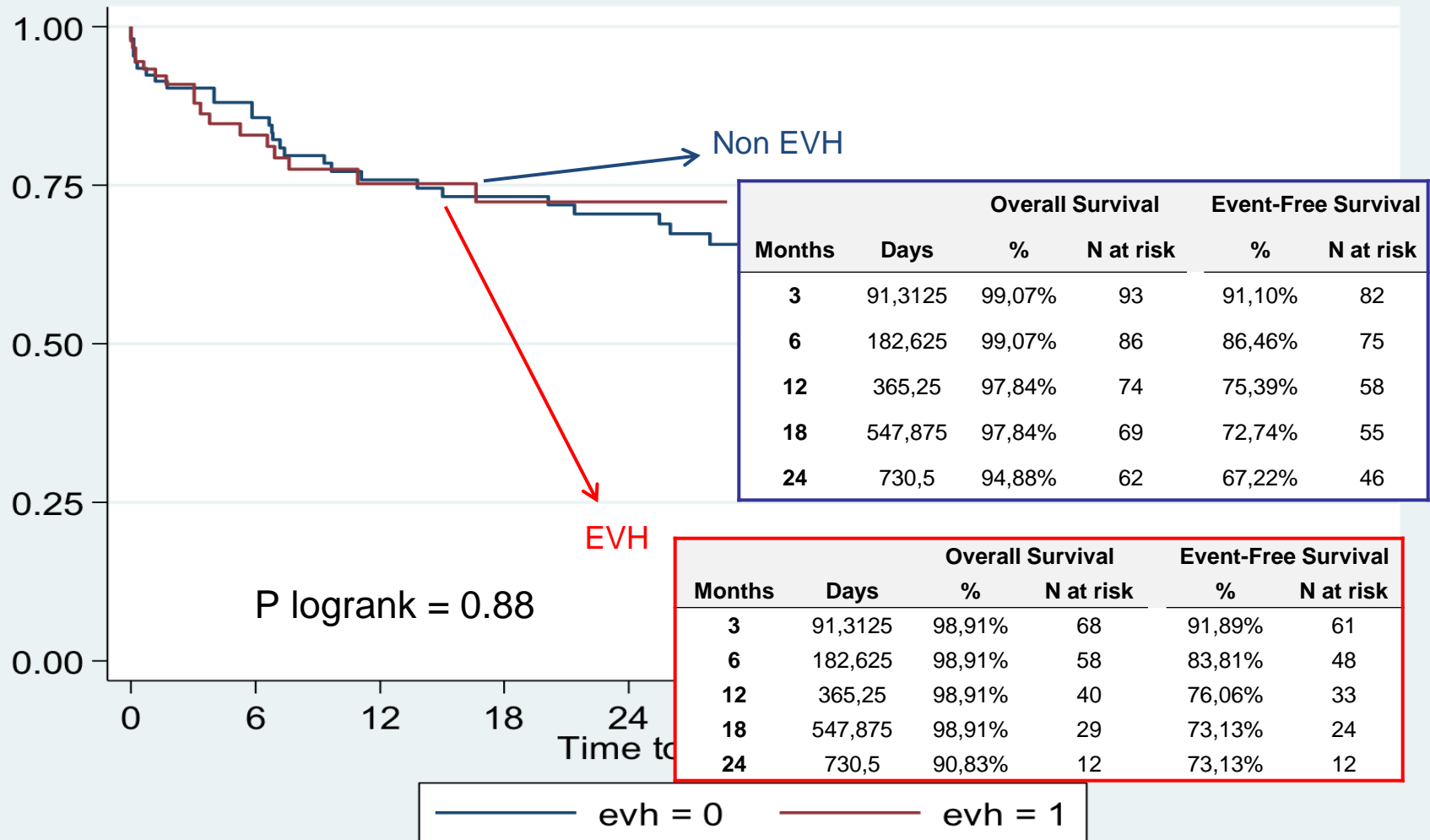
p Student	p MWhitney
0,071	<b>0,047</b>



# Comparison of primary patency



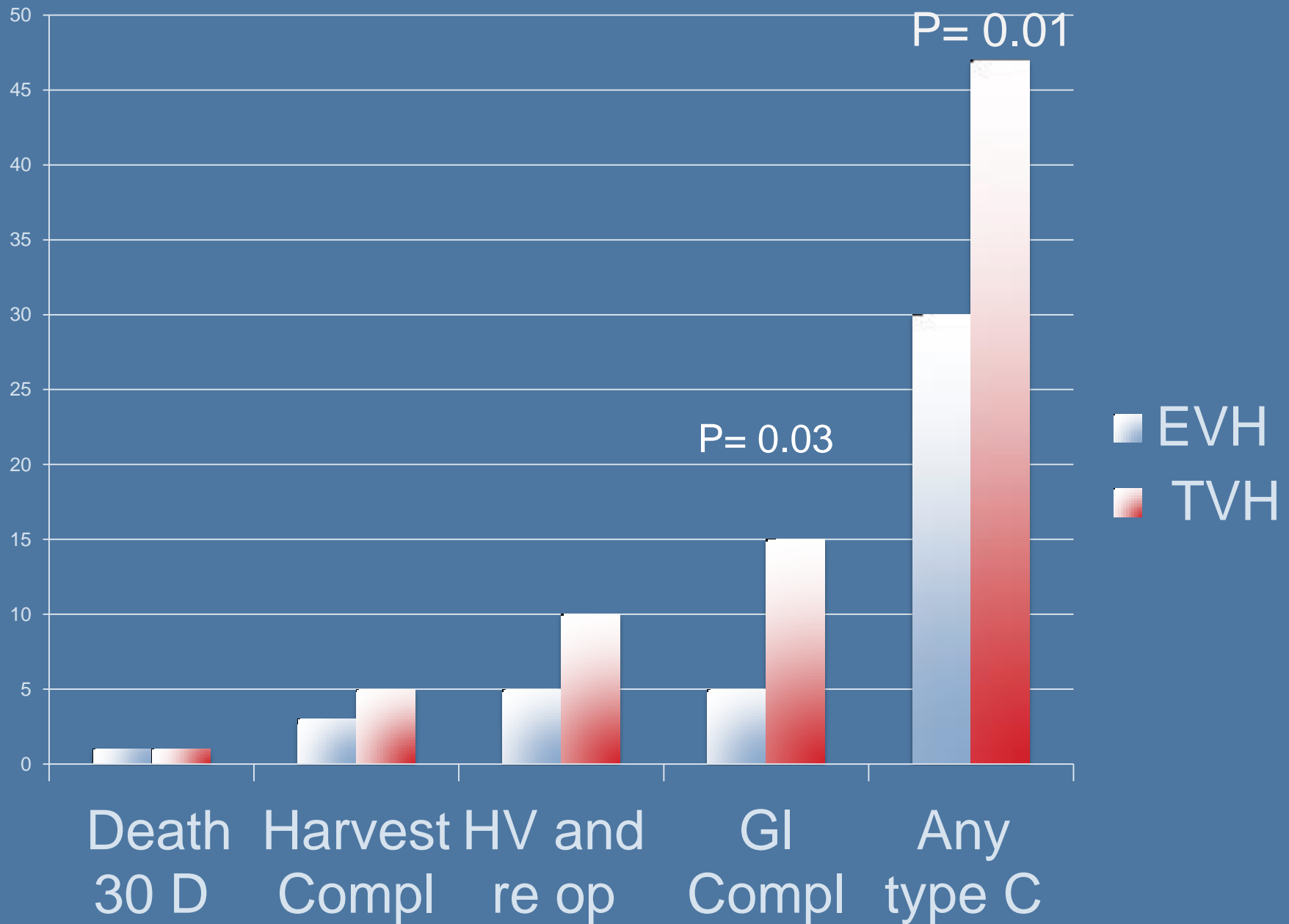
# Comparison of primary patency



# Confounding factors?

## Multivariate Cox analysis Adjusted Hazard Ratio

Cox Model		Haz. Ratio	p-value	CI95%	
EVH		1.29	0.464	0.65	2.56
Distal anastomosis location	OK	1 (ref)			
	BK	3.66	<b>0.010</b>	1.37	9.77
Controlateral harvest		2.38	<b>0.028</b>	1.10	5.13
Age		0.99	0.527	0.97	1.02
Woman Gender		2.47	<b>0.017</b>	1.18	5.20
Indication	POP An	1 (ref)			
	Acute/Sep				
	sis	0.87	0.898	0.10	7.52
	Fontaine				
	2	1.44	0.517	0.48	4.35
	3	2.76	0.144	0.71	10.76
	4	3.03	<b>0.022</b>	1.17	7.85
Tabacco		0.50	<b>0.035</b>	0.26	0.95
Coronarian Disease		0.91	0.811	0.44	1.90
Cardiac Insufficiency		2.33	0.066	0.95	5.73
Diabetis		1.01	0.971	0.49	2.11



# Operative time and LOS

	EVH (n= 92)				Traditional harvesting (n=108)					
Variables	N	Mean	SD	Median	N	Mean	SD	Median	p Student	p MWhitney
Operative Time (Mins)	83	221,7	75,6	200	95	217,5	90,9	180	0,737	0,398
LOS (Days)	91	7,65	4,07	7	100	10,82	7,30	8	<b>&lt;0,001</b>	<b>&lt;0,001</b>

# Endo beats surgery but EVH?

- Lower long term patency but:
- LOS (during first procedure) ↘
- Patient comfort ↗
- Less complications ↘



# Convince the audience

- 1. surgical bypass remains superior to endo repair for long SFA lesion ✓
- 2. EVH is a significant progress in surgical bypass technique ✓

# For long lesions

- Do it Endo...

...scopic