Endovascular Revascularization and Bypass Surgery for Chronic Limb Threatening Ischemia. A retrospective European Multicentre Study with Propensity Score Matching

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Disclosures

The authors have no conflicts of interest in relation to this study

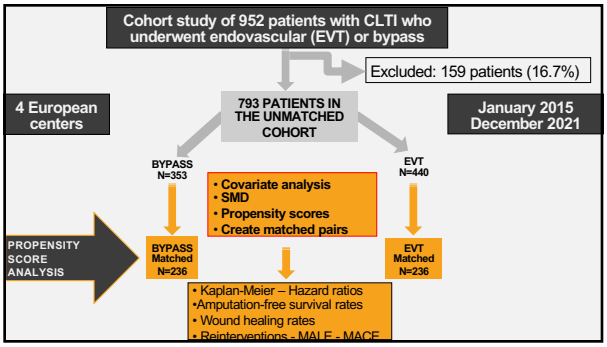
PRIMARY OUTCOME

Amputation-Free-Survival at 5 years in patients with CLTI after endovascular and bypass surgery

SECONDARY OUTCOME

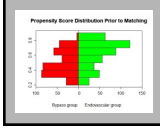
Prevalence of wound healing within each treatment group at 6 months

Retrospective assessment of WIfI and GLASS stages was made possible by centralization of data, including imaging, with analysis by independent experts



UNMATCHED COHORT

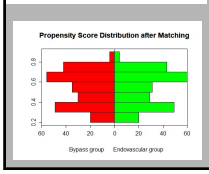
Distribution of critical covariates was significantly different between the two treatment groups.



UNMATCHED COHORT (n=793)				
Covariates	Bypass n=353	EVT n=440	Chi-square *p* values	SMD Standard Means Differences
Age ≥ 80	103 (29)	164 (37)	.017	0.17
GLASS stage 3 vs 1-2	263 (75)	288 (65)	.006	0.19
WIfI stages 3-4 vs 1-2	202 (57)	141 (32)	<.001	0.52
ASA Class 4 vs 3	146 (41)	147 (33)	.021	0.16
LVEF <40% vs ≥40%	190(54)	264 (60)	.081	0.12
CKD vs none	124 (35)	102 (23)	<.001	0.26
Diabetes vs none	193 (55)	189 (43)	.001	0.23

PROPENSITY SCORE

Following propensity score matching of 236 pairs, we obtained a balanced distribution of all covariates between the two groups with a SMD < 0.10



MATCHED COHORT				
Covariates	Bypass n=236	EVT n=236	Chi-Square *p value*	SMD
Age ≥ 80	73 (31)	82 (35)	.378	0.08
GLASS stage 3	171 (72)	175 (74)	.677	0.04
WIfI stages 3-4	109 (46)	108 (45)	.926	0.01
ASA Class 4	89 (38)	80 (34)	.388	0.08
LVEF <40%	120 (51)	120 (51)	.998	0.01
CKD	79 (33)	81 (34)	.846	0.02
Diabetes Mellitus	117 (50)	122 (52)	.645	0.04
Dyslipidaemia	85 (36)	90 (38)	.634	0.04
Hypertension	225 (95)	224 (94)	.831	0.02
Tobacco use	168 (71)	178 (75)	.298	0.09
Statin	167 (71)	159 (67)	.426	0.07
Non-Ambulatory	78 (33)	76 (32)	.844	0.02
Male	170 (72)	174 (74)	.679	0.04
COPD	112 (47)	113(48)	.927	0.08

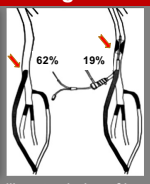
Maximum use of autogenous substitutes

Bypass N=236

190 (80.5%) of grafts were autogenous including 46 arm veins

46 (19.5%) prostheses

Systematic preoperative DUS of both saphenous veins and arm veins



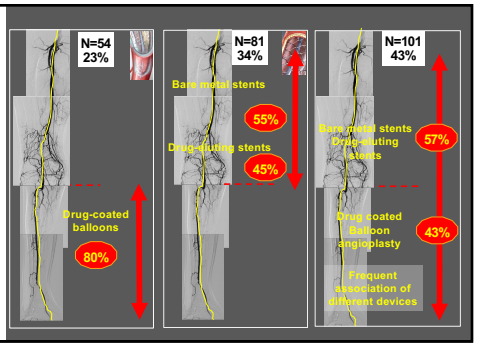
Deliberate choice of bypass inflow below the CFA in 62% of patients with combined SFA angioplasty in 19% allowing an autogenous grafting to a distal target

Outflow on tibial arteries and foot vessels in 151 patients (64%)

EVT group N=236

Target lesions

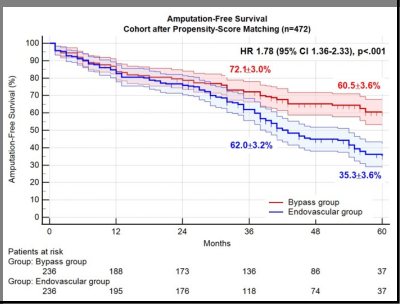
A drug coated balloon or a drug eluting stent was used in 61% of all EVT procedures



PRIMARY OUTCOME - AMPUTATION-FREE SURVIVAL

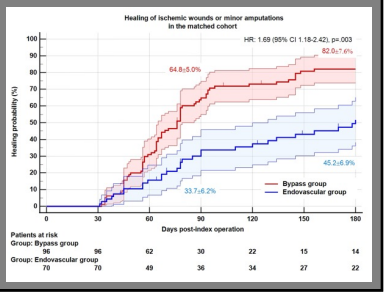
Propensity cohort of 472 patients

The bypass group was associated with a significantly higher probability of survival without amputation with 60.5% at 5 years compared to 35.3% in the EVT group (*p*<.001)

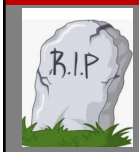


SECONDARY OUTCOME – HEALING AT 6 MONTHS

The bypass group was associated with a higher probability of healing at 6 months with 82% compared to 45% in the EVT group (*p*=.003)



ADVERSE EVENTS AT FIVE YEARS FOLLOW-UP



DEATH
22%: BYPASS
24.6: EVT
p= .59

MACE
43.2% BYPASS
43.6% EVT
p= .46

MAJOR AMPUTATION
BYPASS 26%
EVT 36%
***p*=.014**

MALE
BYPASS 43.6%
EVT 55.1%
***p*= .011**

URGENT REOPERATIONS
BYPASS 17%
EVT 18%
p= .808

All-type readmission
BYPASS 56%
EVT 67%
p=.162

All-type urgent readmission
BYPASS 22%
EVT 26%
p= .282

CONCLUSIONS

This study showed that lower extremity bypass provided a significantly higher probability of amputation-free survival and wound healing compared with EVT in patients with chronic limb-threatening ischemia.

Rates of urgent reinterventions and readmissions of all types remain high with both techniques.