

Angioplasty versus bypass for the treatment of simultaneous femoropopliteal and infrapopliteal complex (TASC C or D) arterial disease in patients with critical limb ischemia

Ivan B. Casella, MD, PhD et al.

Vascular Surgery Division

Clinics Hospital, São Paulo University, Brazil

2019

Disclosure

Speaker name:

Ivan B. Casella

I have the following potential conflicts of interest to report:

- 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

Critical Limb Ischemia (CLI)

- An increasing problem in a increasing age population¹
- Bypass graft with saphenous vein: still seen as gold standard²
- Endovascular therapy: the most used approach nowadays³
- **Long, complex, multisite lesions still seen as a limitation for endovascular therapy^{4,5}**

1. Aboyans V et al. Eur Heart J. 2018;39(9):763-816.
2. Adam DJ et al. Lancet. 2005;366(9501):1925-34.
3. Kudo T et al. J Vasc Surg. 2006;44(2):304-13.
4. Lo RC et al. J Vasc Surg. 2013;57(6):1455-63.
5. Casella IB et al. Vasc Endovascular Surg. 2010;44(8):625-32.

Can Angioplasty be as good as Bypass Surgery when treating long lesions?

Primary outcomes: limb salvage and survival

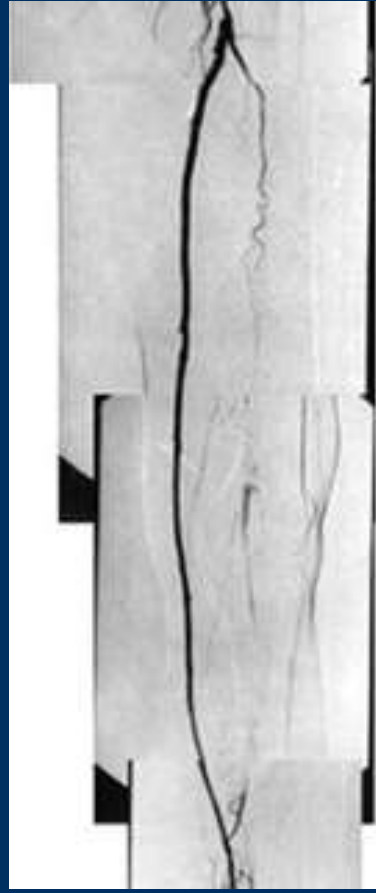
Angioplasty

Bypass

Fem-pop

Infrapop

“Double TASC C / D”



Retrospective
JAN 2011 to
OCT 2017

Critical Limb Ischemia: 668 pts

Excluded: non-atherosclerotic disease, iliofemoral concomitant disease, non-saphenous substitutes, planned major amputation

Concomitant Fem-pop + Infrapop disease: 153

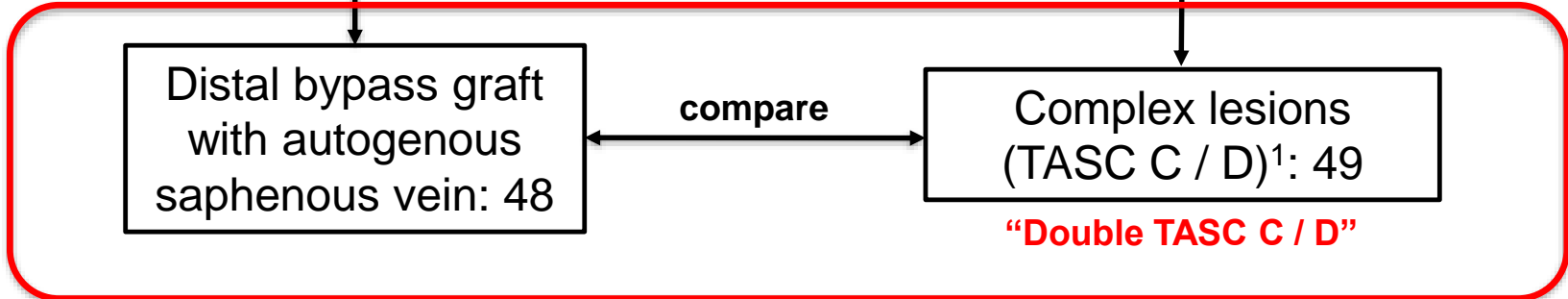
FemPop + Infrapop PTA / stenting: 105

Distal bypass graft with autogenous saphenous vein: 48

Complex lesions (TASC C / D)¹: 49

“Double TASC C / D”

compare



1. TASC Steering Committee. J EndovascTher. 2015;22(5):663-77.

Procedures - Technical Characteristics

- Bypass: ex-situ saphenous vein devalvulation, anastomosis under magnification optics, control angiography
- Angioplasty: Mostly ipsilateral antegrade approach. Distal retrograde accessory access when needed
 - Endoluminal angioplasty preferable
 - Focus on restoring a direct, quick flow to the podalic arch
 - Spot stenting (fem-pop only)
 - No DEB or DES, no reentry devices

Surgery - Technical Characteristics

Bypass graft surgery	
Proximal anastomosis site	
External iliac	4 (8.5)
Common femoral	24 (51.1)
Superficial femoral	16 (34.0)
Popliteal	3 (6.4)
Distal anastomosis site	
Anterior tibial	10 (21.3)
Posterior tibial	21 (44.7)
Peroneal	14(29.7)
Dorsalis pedis	1 (2.1)
Common plantar	1(2.1)

Endovascular - Technical Characteristics

Endovascular therapy	
Arteries treated	147
Superficial femoral	42 (85.1)
Popliteal	45 (91.8)
Anterior tibial	19 (38.7)
Posterior tibial	15 (30.6)
Peroneal	18 (36.7)
Tibioperoneal trunk	8 (16.3)
Femoropopliteal stents	22 (45.8)

Clinical Characteristics

	General	BGS (N=47)	PTA/S (N=49)	P
Age	66.6±11.1	64.0±11.1	69.0±10.6	.027
Females	48 (50.0)	18 (38.3)	30 (61.2)	.041
Hypertension	81 (85.3)	40 (87.0)	41 (83.7)	.87
Diabetes melitus	67 (70.5)	28 (60.9)	39 (79.6)	.076
Current / recent smoking	48 (50.5)	26 (56.5)	22 (44.9)	.35
Chronic renal disease	7 (7.3)	1 (2.1)	6 (12.2)	.13
Dislipidemia	29 (30.5)	11 (23.9)	18 (36.7)	.25
Tissue loss	96 (98.9)	48 (100)	48 (97.9)	.32

Endovascular group: 05 years older (mean), more females and a trend for more diabetes

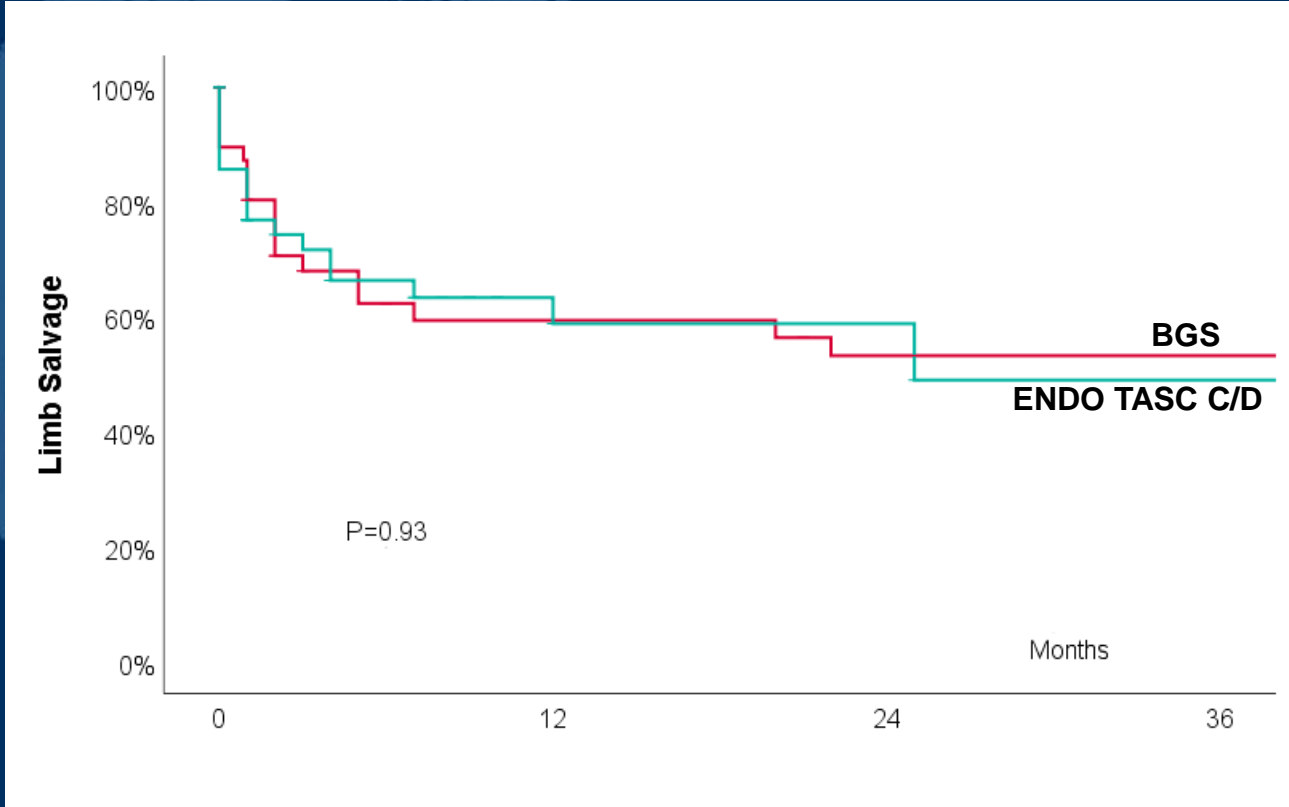
- Clinical and US-doppler follow-up
- Mean FU: 20.1 months

Reinterventions

Bypass group: 01 distal PTA

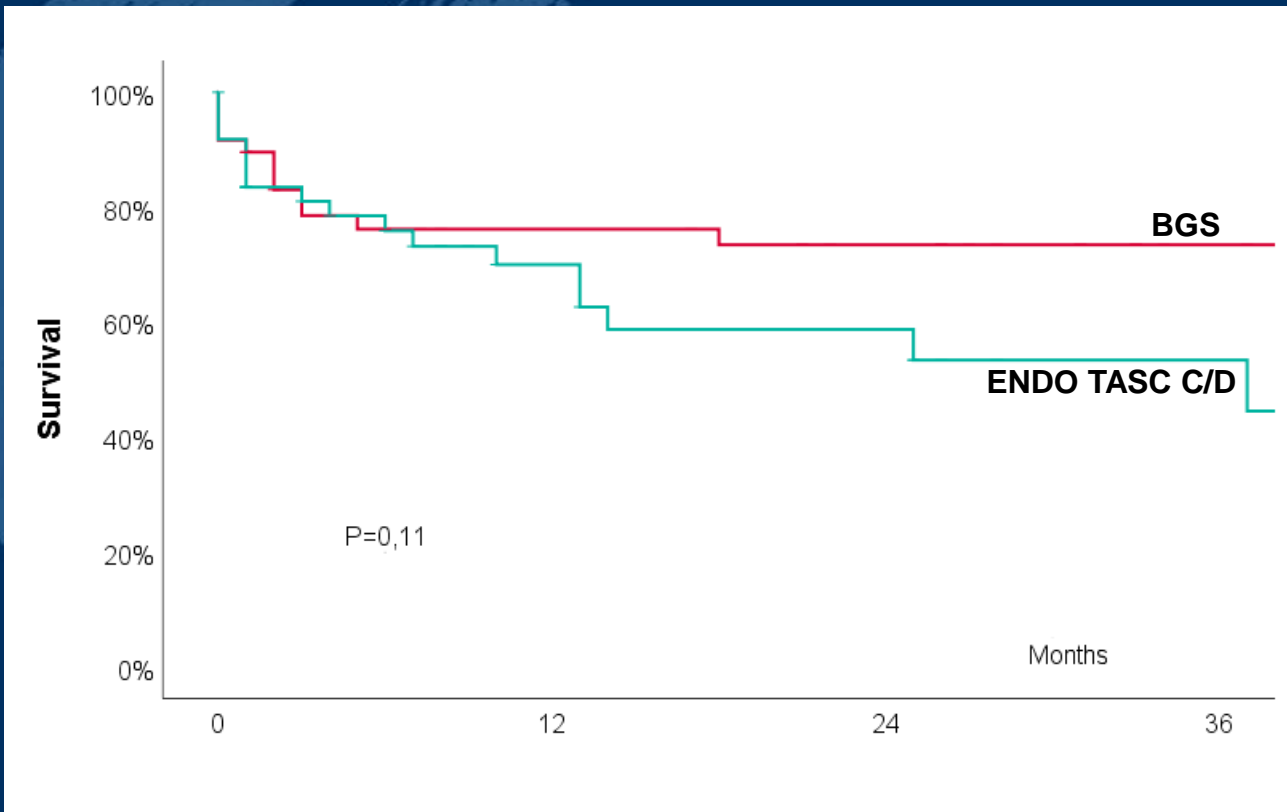
Endo group: 04 new PTAs

36-Month Limb Salvage – BGS versus fempop+infrapop PTA/S (TASC C/D only)



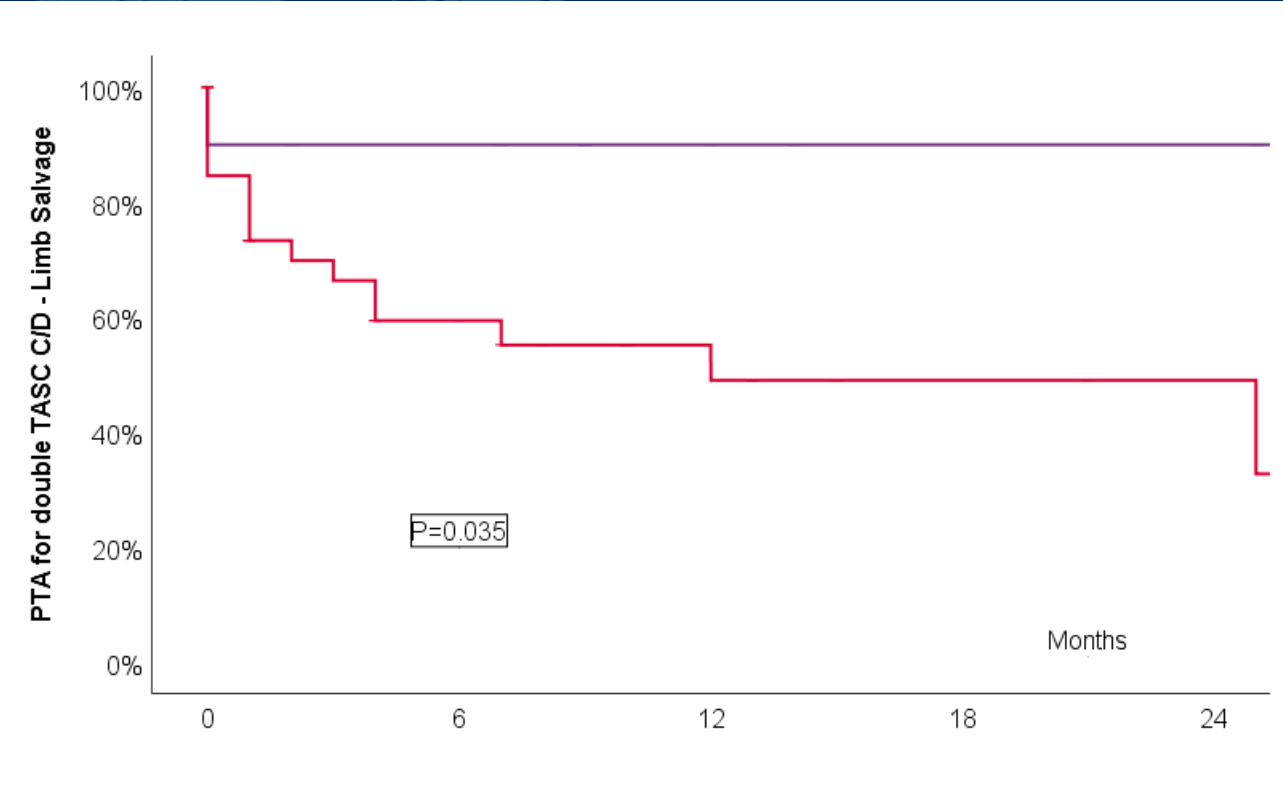
36 months
BGS: 53.3%
ENDO: 49.0%
p=0.93

36-Month Survival – BGS versus fempop+infrapop PTA/S (TASC C/D only)



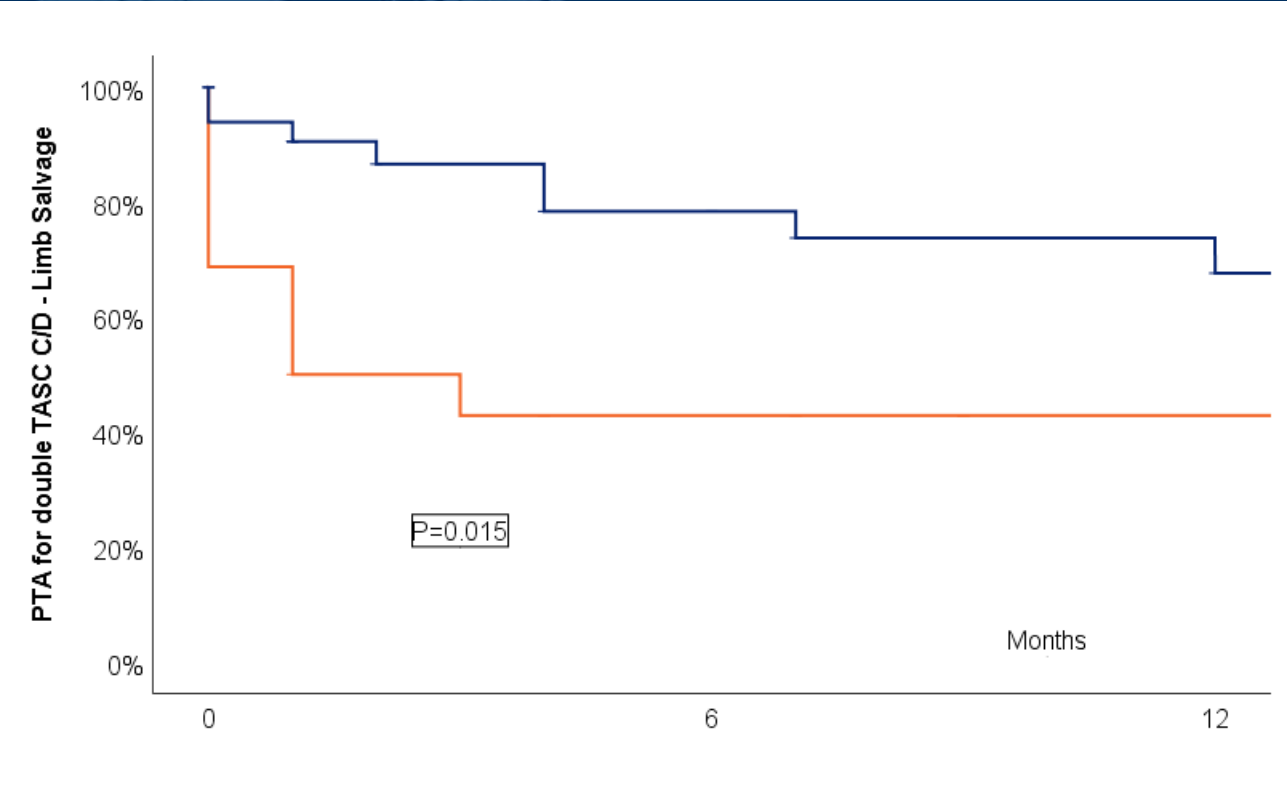
36 months
BGS: 73.4%
ENDO: 53.4%
p=0.11

Limb Salvage with angioplasty for double TASC C/D lesions
Univariate analysis for Diabetes



24 months
BGS
DM - : 90.0%
DM +: 49.1%
p=0.035

Limb Salvage with angioplasty for double TASC C/D lesions
Univariate analysis for **Poor Runoff**



12 months
 BGS
Good Runoff: 67.6%
Poor Runoff: 42.9%
 p=0.015

Multivariate cox regression analysis

	Angioplasty / Stenting			Bypass Graft surgery		
	Hazard Ratio	95.0% CI	P	Hazard Ratio	95.0% CI	P
Females	1.884	0.544 - 6.533	.31	2.515	0.595 - 10.643	.21
Age	.961	0.915 - 1.008	.10	0.957	0.909 - 1.008	.098
Hypertension	.488	0.102 - 2.330	.36	1.432	0.313 - 6.552	.64
Diabetes	5.648	0.688 - 46.358	.10	0.842	0.257 - 2.762	.77
Smoking	2.749	0.834 - 9.059	.09	3.740	1.041 - 13.439	.043
Renal insufficiency	.331	0.048 - 2.284	.26	2.263	0.246 - 20.785	.47
Hyperlipidemia	2.133	0.522 - 8.709	.29	1.476	0.394 - 5.526	.56
Hindfoot / leg lesion	2.715	0.810 - 9.103	.10	1.895	0.473 - 7.592	.36
Poor runoff	8.320	2.186 - 31.662	.002	1.950	0.709 - 5.361	.19
Fem-pop stents	1.177	1.177 - 4.294	.80	-	-	-

- Endovascular therapy:
 - Minimally invasive surgery and anesthesia
 - Very appealing for both surgeons and patients
 - An option for frail, elderly, high risk patients

- Limitations of this study
- Retrospective
- No patency data
- Small casuistics
- Subgroup analysis weakened by small subgroups

Concomitant endovascular therapy for Double TASC C / D lesions:

- Can provide similar results of limb salvage and survival when compared to bypass surgery;
- Diabetes and poor runoff status are RF for angioplasty failure.

ivan.c@hc.fm.usp.br

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