Dissection repair BTK: evidence review from TOBA II BTK

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Disclosure

Speaker name:

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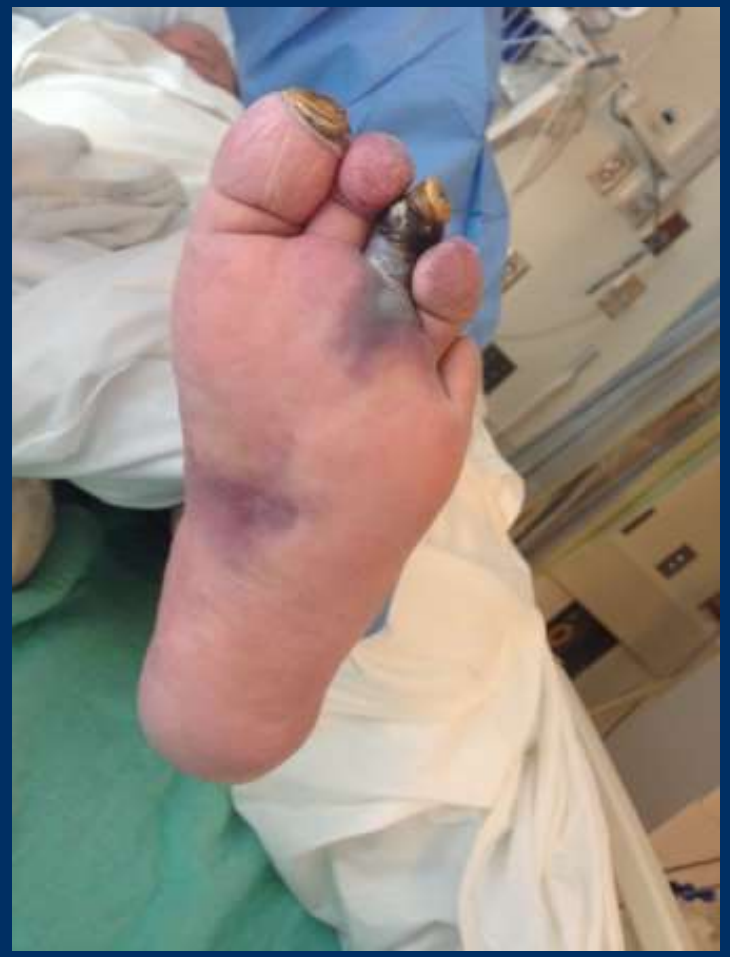
I have the following potential conflicts of interest to report:

- [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

Chronic Limb-Threatening Ischemia (CLTI)



- Afflicts 2-3.4 million people in the US[1]
- Treatment of BTK arteries for CLTI remains based on angioplasty
  - Dissection is frequent and is a predictor for restenosis[2]

[1]Yost, The SAGE Group 2016
[2]Schillinger, Radiology 2002

Tack Endovascular System (4F)

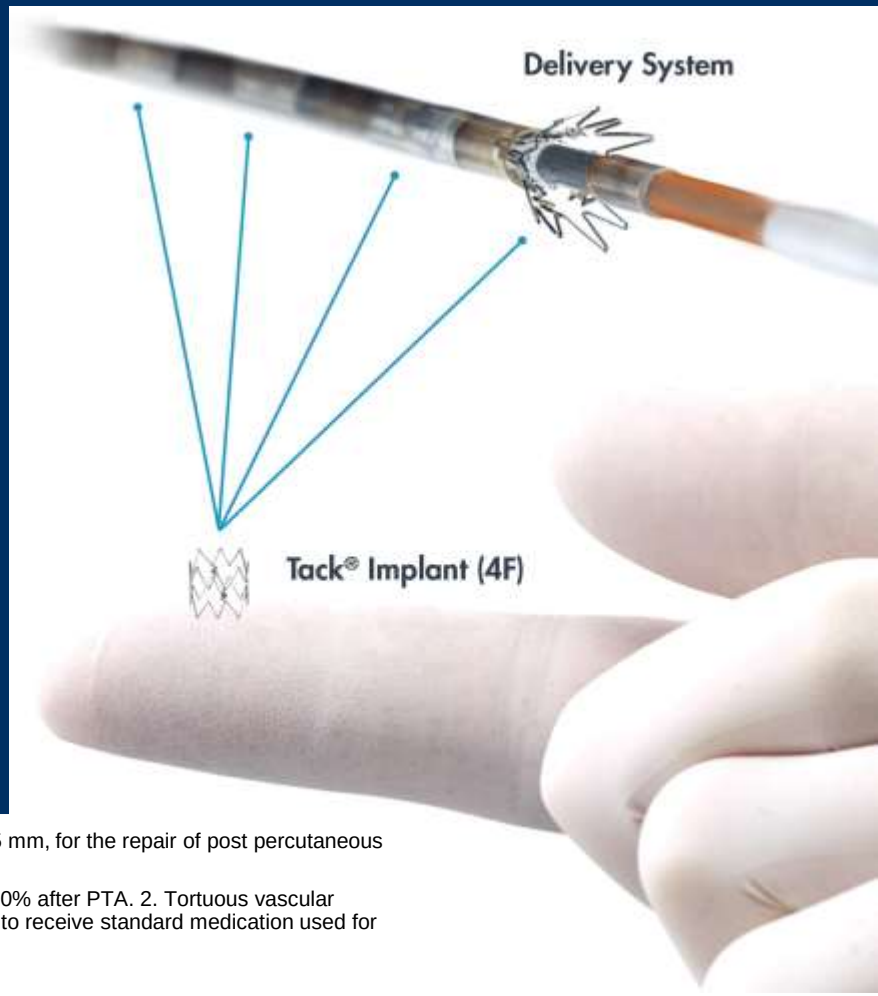
Multi-implant, minimal-metal focal dissection repair for tapering vessels from knee to ankle

Tack® Implants

- Four pre-loaded nitinol implants
- 6mm deployed length
- Each implant self-sizes to tapering BTK anatomy
  - 1.5 – 4.5mm RVD

OTW Delivery System

- 4F / .014”
- 150cm working length
- Accurate (≤1mm) deployment



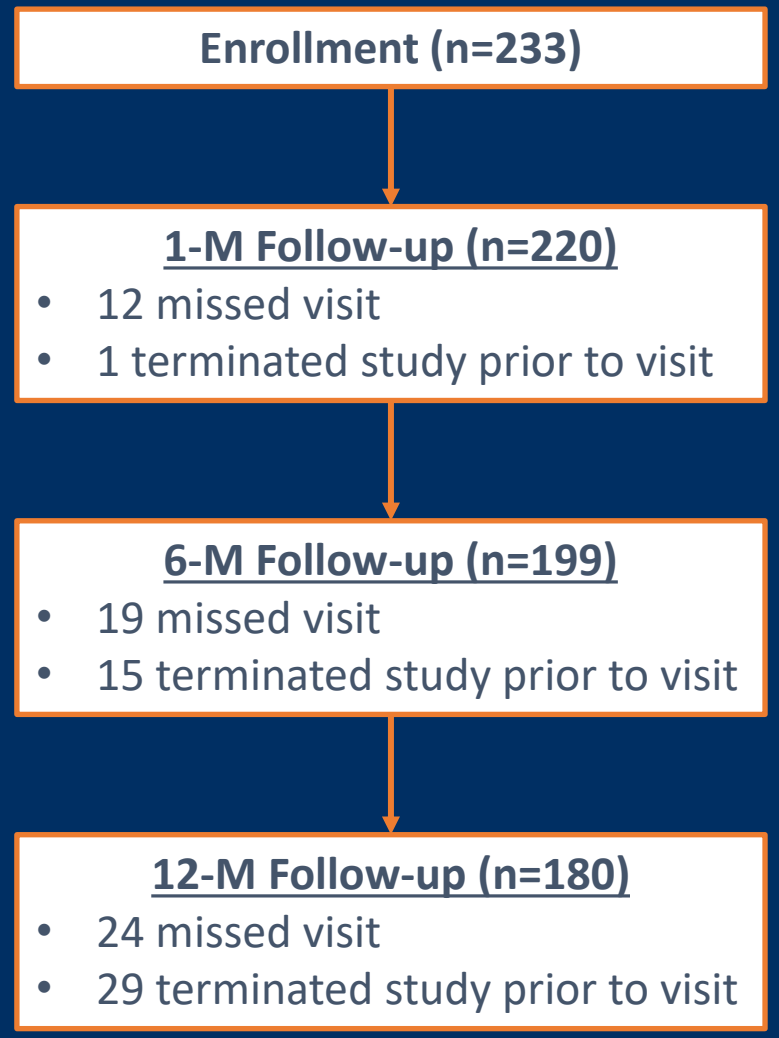
INTENDED USE: The Tack Endovascular System (4F, 1.5-4.5mm) is intended for use in mid/distal popliteal, tibial and peroneal arteries, ranging in diameter from 1.5 mm to 4.5 mm, for the repair of post percutaneous transluminal balloon angioplasty (PTA) dissection(s).

CONTRAINDICATIONS: The Tack Endovascular System is contraindicated for the following: 1. Patients with residual stenosis in the treated segment equal to or greater than 30% after PTA. 2. Tortuous vascular anatomy significant enough to prevent safe introduction and passage of the device. 3. Patients with a known hypersensitivity to nickel-titanium alloy (Nitinol). 4. Patients unable to receive standard medication used for interventional procedures such as anticoagulants, contrast agents and antiplatelet therapy.

The Tack Endovascular System is CE Mark authorized under EC Directive 93/42/EEC.

Study Design and Follow-Up

Prospective, single-arm pivotal IDE study	
Population	Patients with CLI and angiographic evidence of a **dissection post-PTA requiring repair** in the mid/distal popliteal, tibial and/or peroneal arteries
Enrollment	**233** patients at 41 US, international sites
Primary Endpoints	▪ Safety: MALE + POD at 30d ▪ Efficacy: freedom from MALE at 6m + POD at 30d
Secondary Endpoints	▪ Tacked segment patency at 6 months (DUS flow/no flow) ▪ Target limb salvage at 6 months
Key Observational Endpoints	▪ Dissection resolution ▪ Freedom from CD-TLR ▪ Target lesion patency ▪ Amputation-free survival ▪ Changes from baseline: -Rutherford -Wound status -Quality of life



MALE + POD: composite of all-cause death, above-ankle target limb amputation, or major re-intervention to the target lesion(s), defined as new bypass graft, jump/interposition graft revision, or thrombectomy/thrombolysis

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Duplex Ultrasound Core Lab: VasCore (Boston, MA)

Baseline Patient/Lesion Characteristics

Patient Characteristics		Mean ± SD (N) or % (n/N)
Age (y)		74.4 ± 10.0 (233)
Male Gender		67.4% (157/233)
Rutherford	3	16.3% (38/233)
	4	**33.5% (78/233)**
	5	**50.2% (117/233)**
TBI target limb		0.43 ± 0.23 (118)
Smoking History		62.2% (145/233)
Diabetes mellitus		**65.7% (153/233)**
Arterial hypertension		93.6% (218/233)
Coronary artery disease		56.1% (129/230)
	MI	22.0% (51/232)
	PCI / CABG	43.9% (101/230)
Chronic renal insufficiency		**24.6% (57/232)**

Lesion Characteristics (core lab adjudicated)		Mean ± SD (N) or % (n/N)
RVD (mm)*	Proximal	3.5 ± 1.0 (248)
	Distal	2.6 ± 0.7 (248)
Lesion length (mm)†	Baseline	80 ± 49 (248)
	PTA Treatment	**154 ± 110 (238)**
Pre-PTA DS%		85 ± 17 (248)
Total Occlusion		**47.6% (118/248)**
Calcium (PARC)	None/mild	64.1% (159/248)
	Moderate	18.1% (45/248)
	Severe	17.7% (44/248)
Distal Target Vessel	P2/P3	5.2% (13/248)
	TP Trunk	10.1% (25/248)
	Anterior tibial	41.5% (103/248)
	Posterior tibial	22.2% (55/248)
	Peroneal	21.4% (53/248)

*Protocol specified balloon-to-vessel ratio of 1:1 (visual estimate)
†Site-reported baseline lesion length: 116 ± 100 (277)

Distal Delivery With No Fracture

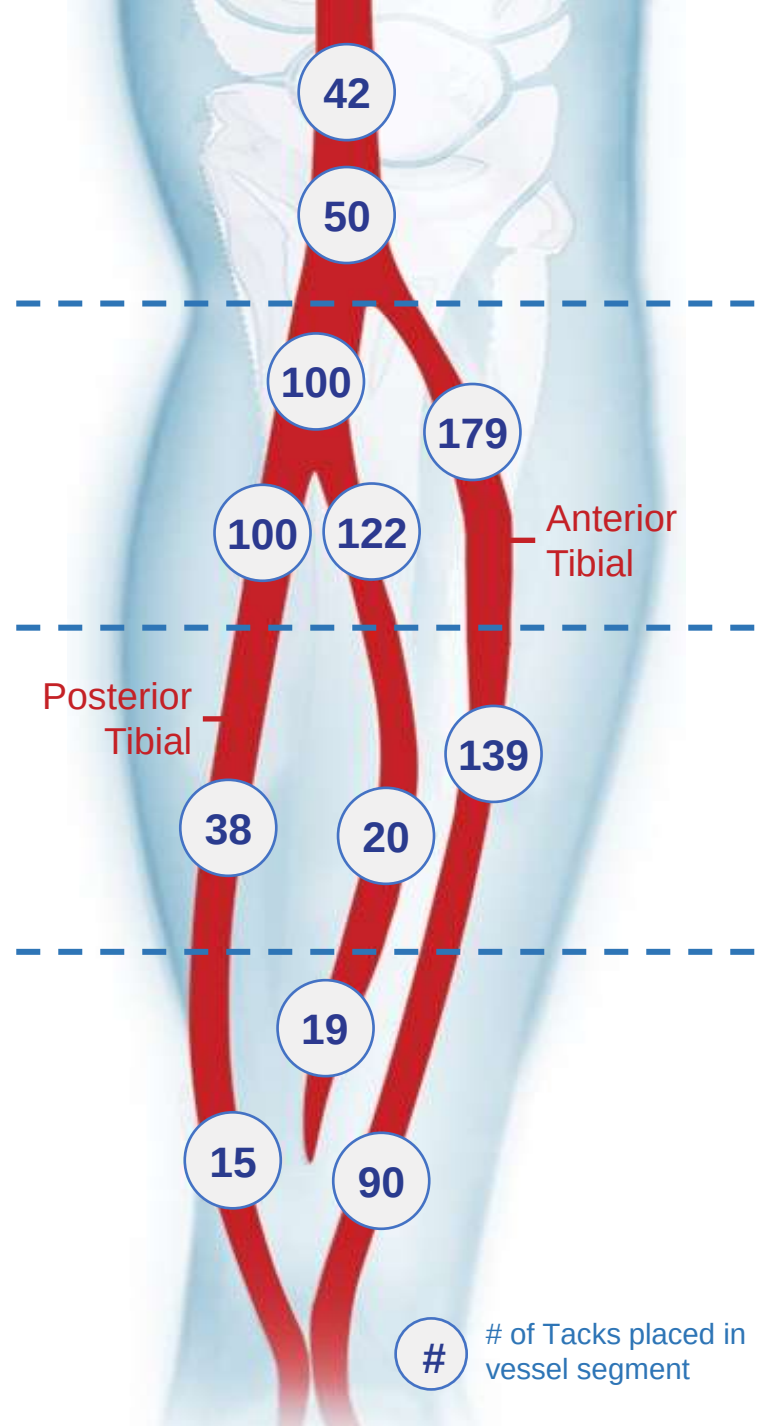
(ITT population; core lab adjudicated)

Index Procedure Details		Mean ± SD or % (n/N)
Dissections per patient		1.4 ± 0.6 (229)
Dissection length (mm)		24 ± 18 (341)
Post-PTA NHLBI Dissection Grade (Pre-Tack)	A	21.4% (49/229)
	B	39.3% (90/229)
	C	11.8% (27/229)
	D	26.6% (61/229)
	E	0.9% (2/229)
Device success		**96.5%** (303/314)
Bail out stent		1.3% (3/233)
To Tacked segment		**0.4%** (1/233)
Total # of Tacks deployed		918
Tacks per patient		4.0 ± 2.8 (230)

100% dissection resolution per core lab

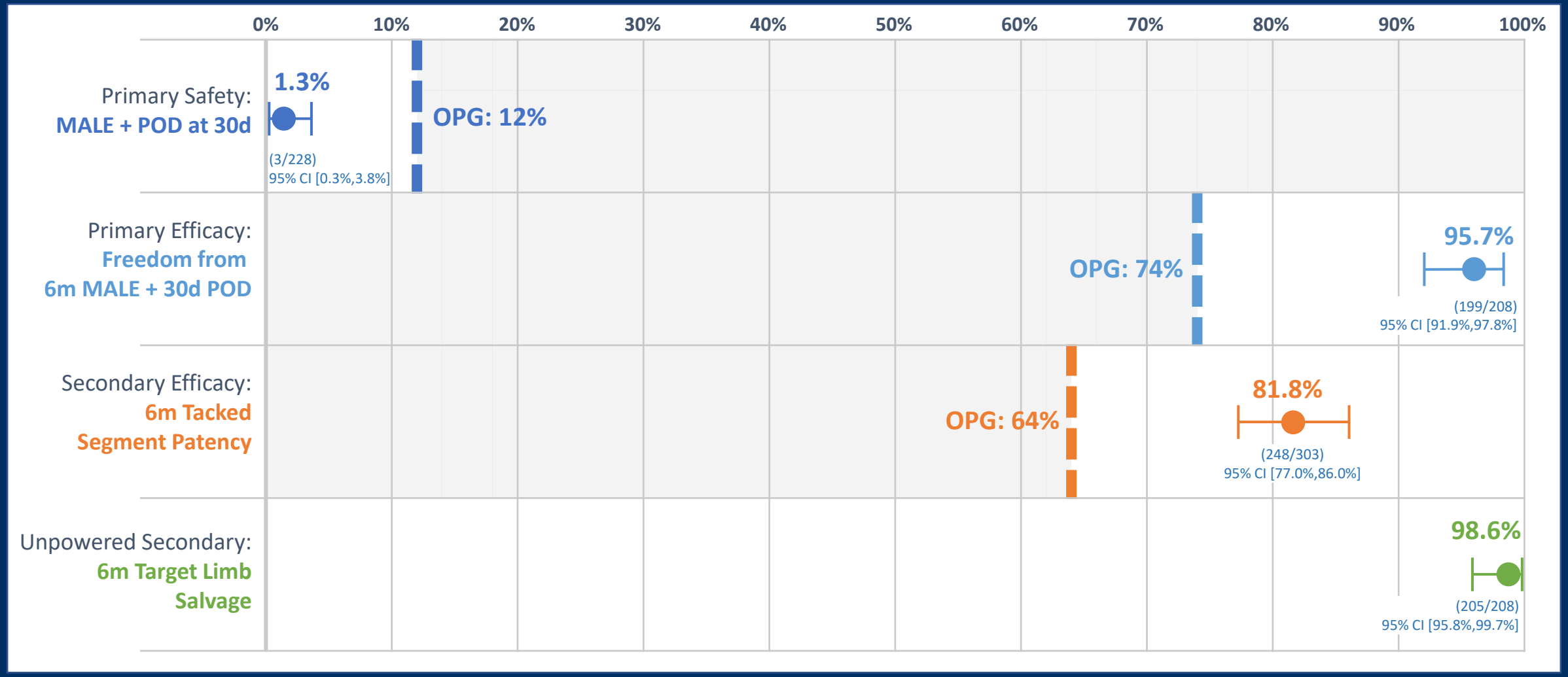
35% of Tack implants were deployed in the **mid and distal tibials**

12 Month X-ray of Tack Implant(s)	% (n/N)
Fracture	**0%** (0/146)
Migration	**0%** (0/146)
Embolization	**0%** (0/146)



Met All Primary and Secondary Endpoints

(ITT population; core lab adjudicated)



12M Tacked Segment, Target Lesion Patency

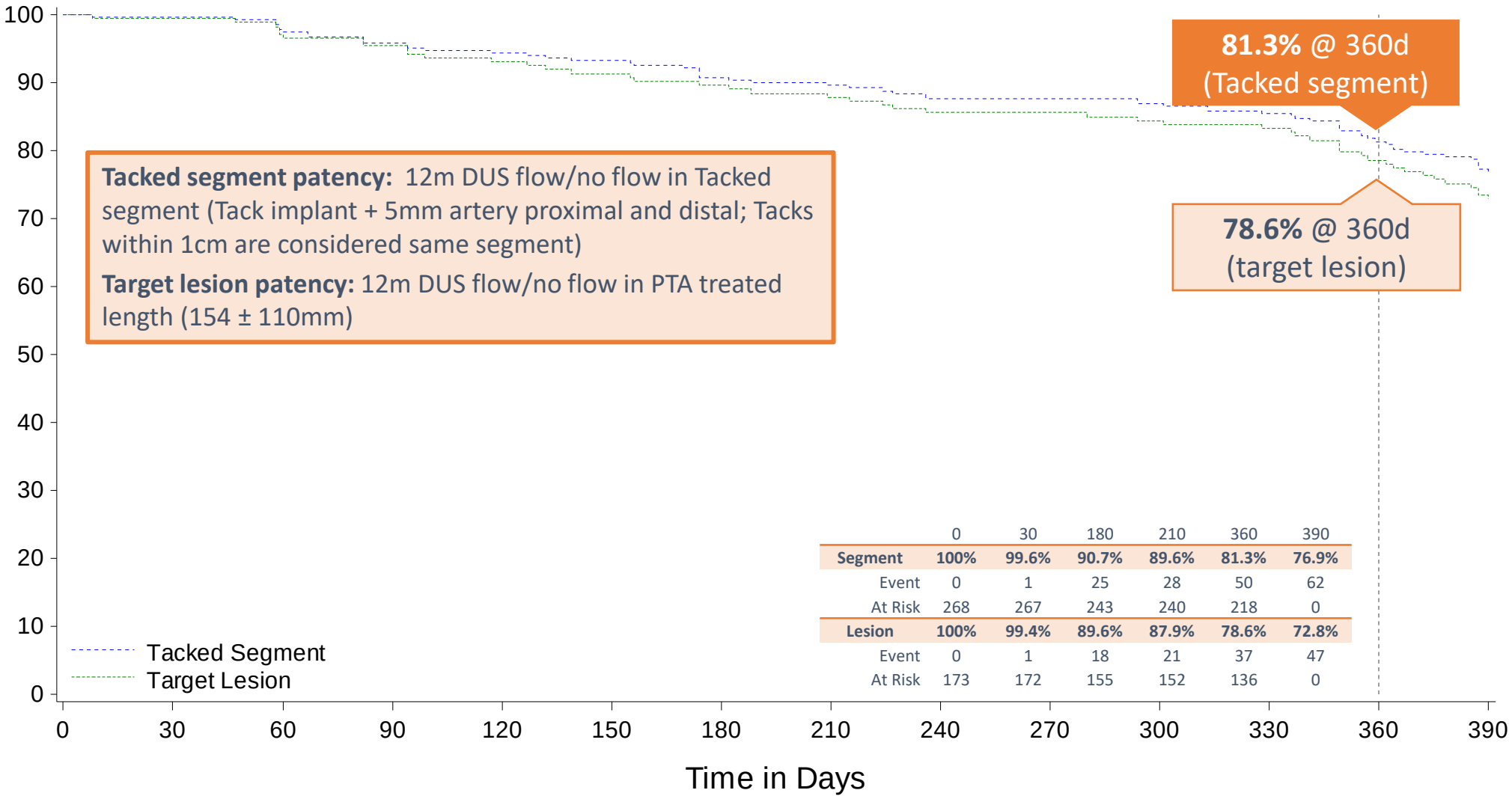
(ITT population; core lab adjudicated)

Tacked segment patency: 12m DUS flow/no flow in Tacked segment (Tack implant + 5mm artery proximal and distal; Tacks within 1cm are considered same segment)

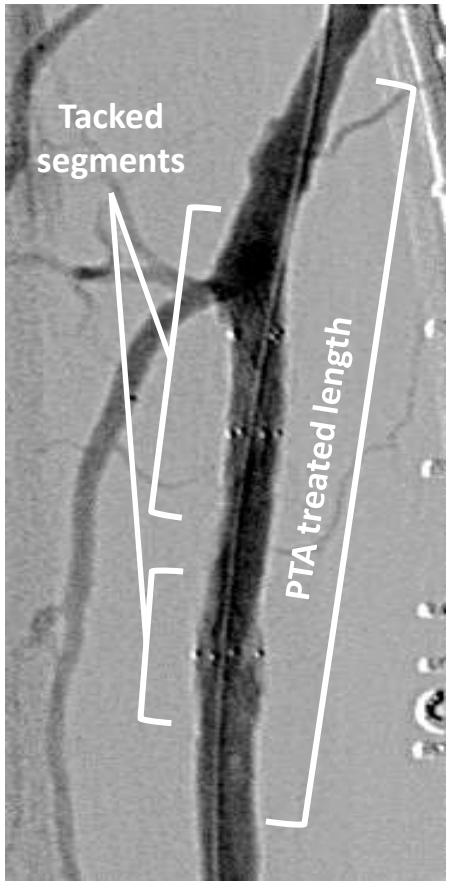
Target lesion patency: 12m DUS flow/no flow in PTA treated length (154 ± 110mm)

81.3% @ 360d (Tacked segment)

78.6% @ 360d (target lesion)

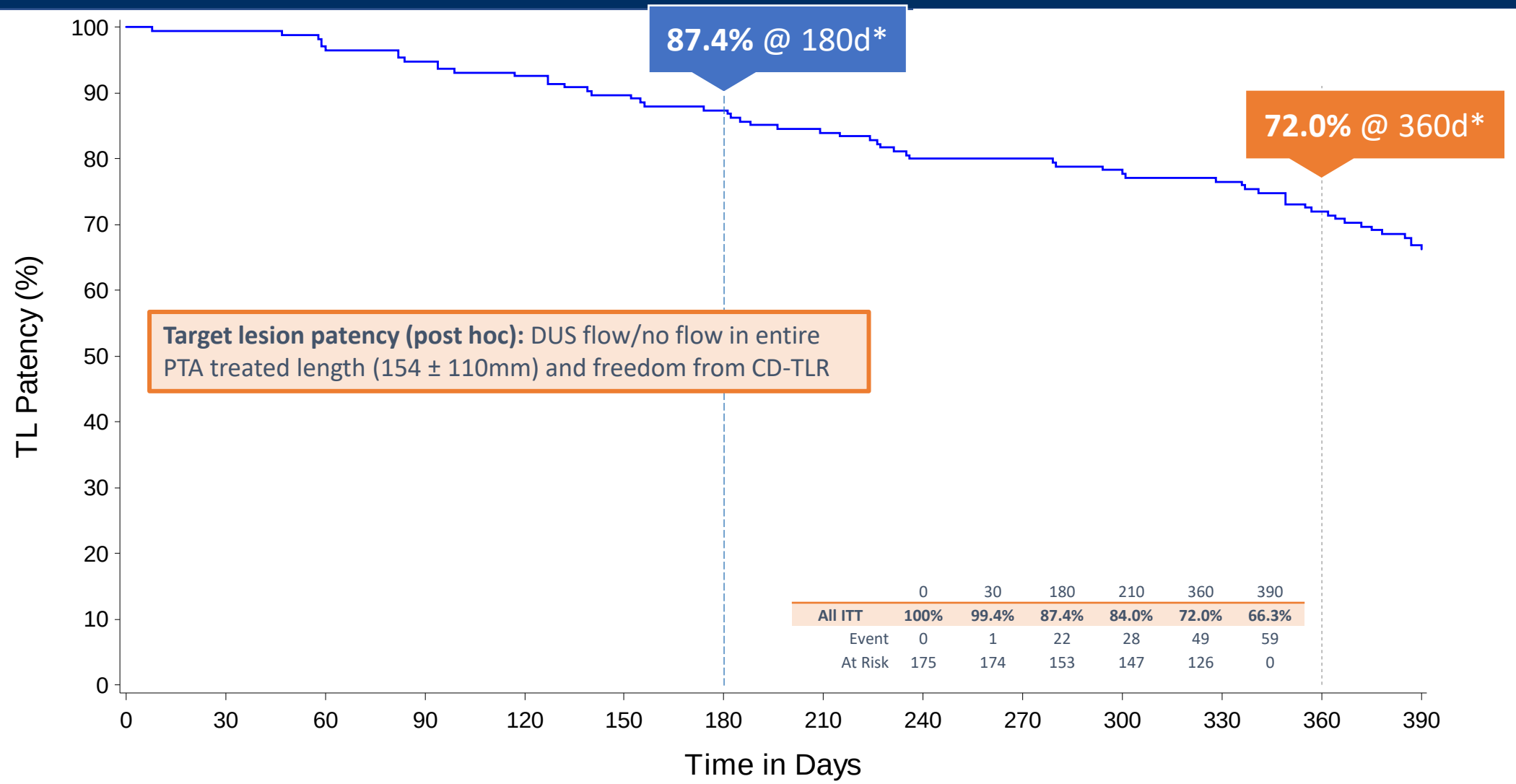


	0	30	180	210	360	390
Segment	**100%**	**99.6%**	**90.7%**	**89.6%**	**81.3%**	**76.9%**
Event	0	1	25	28	50	62
At Risk	268	267	243	240	218	0
Lesion	**100%**	**99.4%**	**89.6%**	**87.9%**	**78.6%**	**72.8%**
Event	0	1	18	21	37	47
At Risk	173	172	155	152	136	0



Freedom from Loss of Patency and CD-TLR*

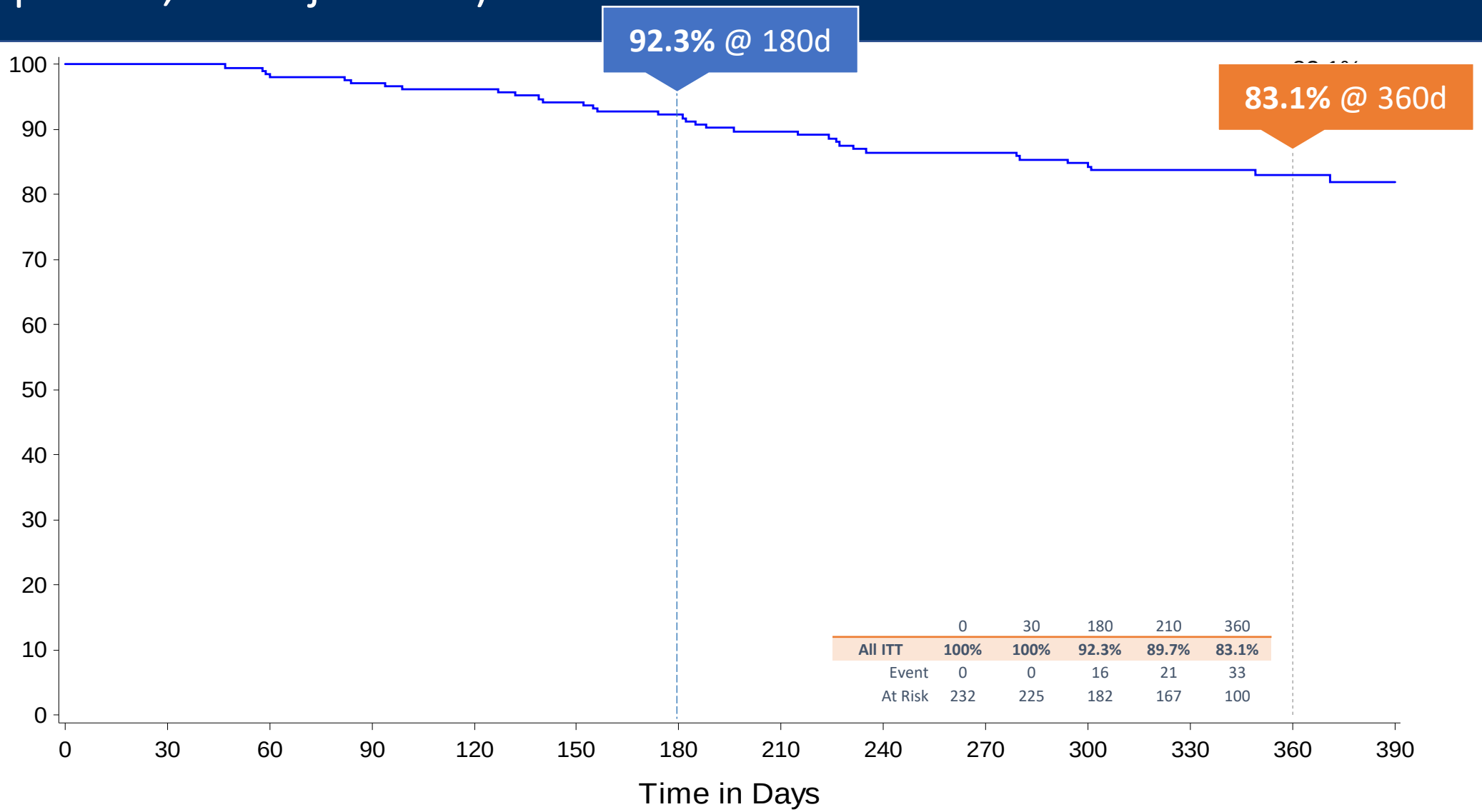
(ITT population; core lab, CEC adjudicated)



*Post hoc analysis; has not been reviewed by US FDA

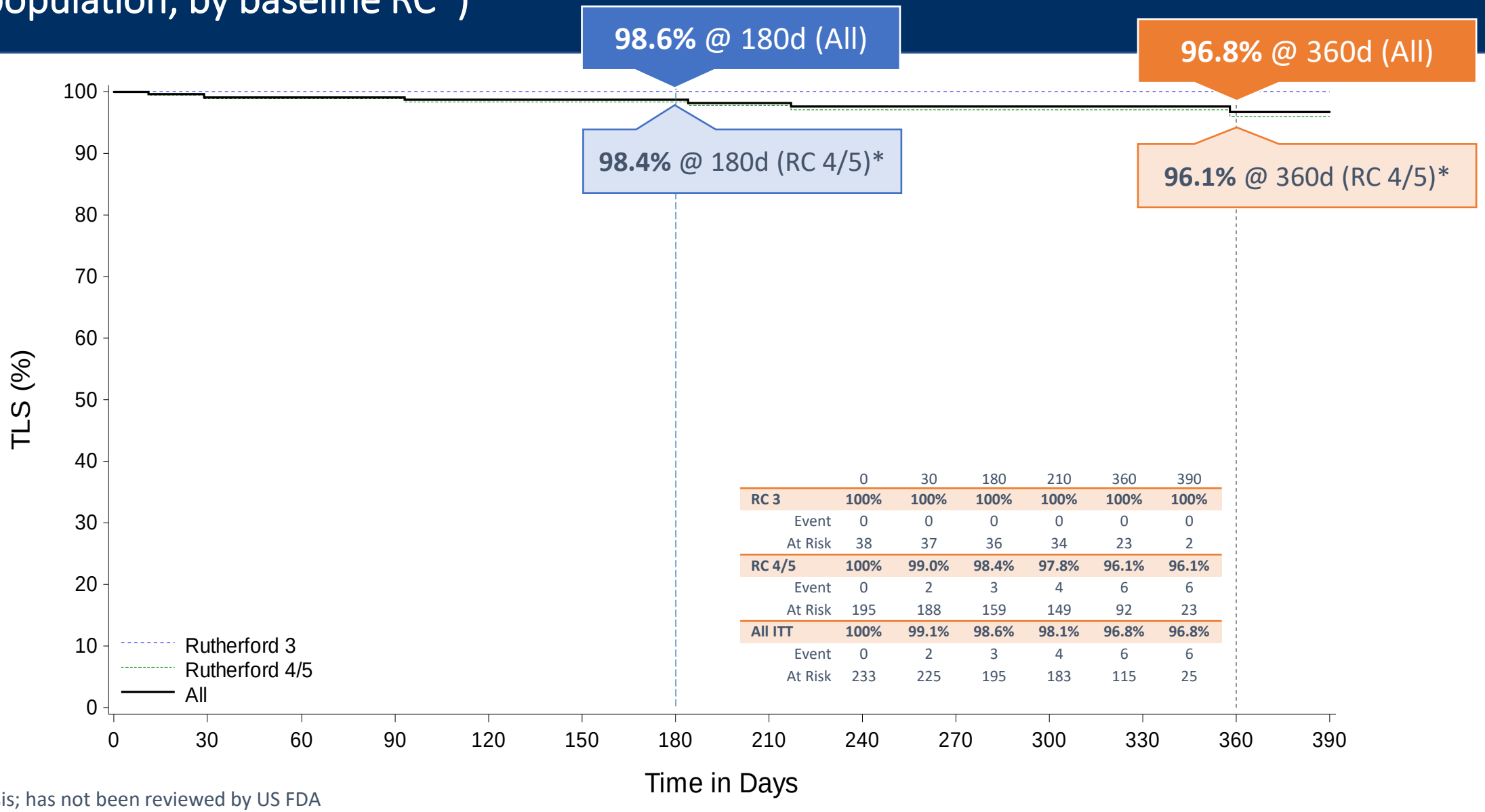
Freedom from CD-TLR

(ITT population; CEC adjudicated)



Target Limb Salvage

(ITT population; by baseline RC*)

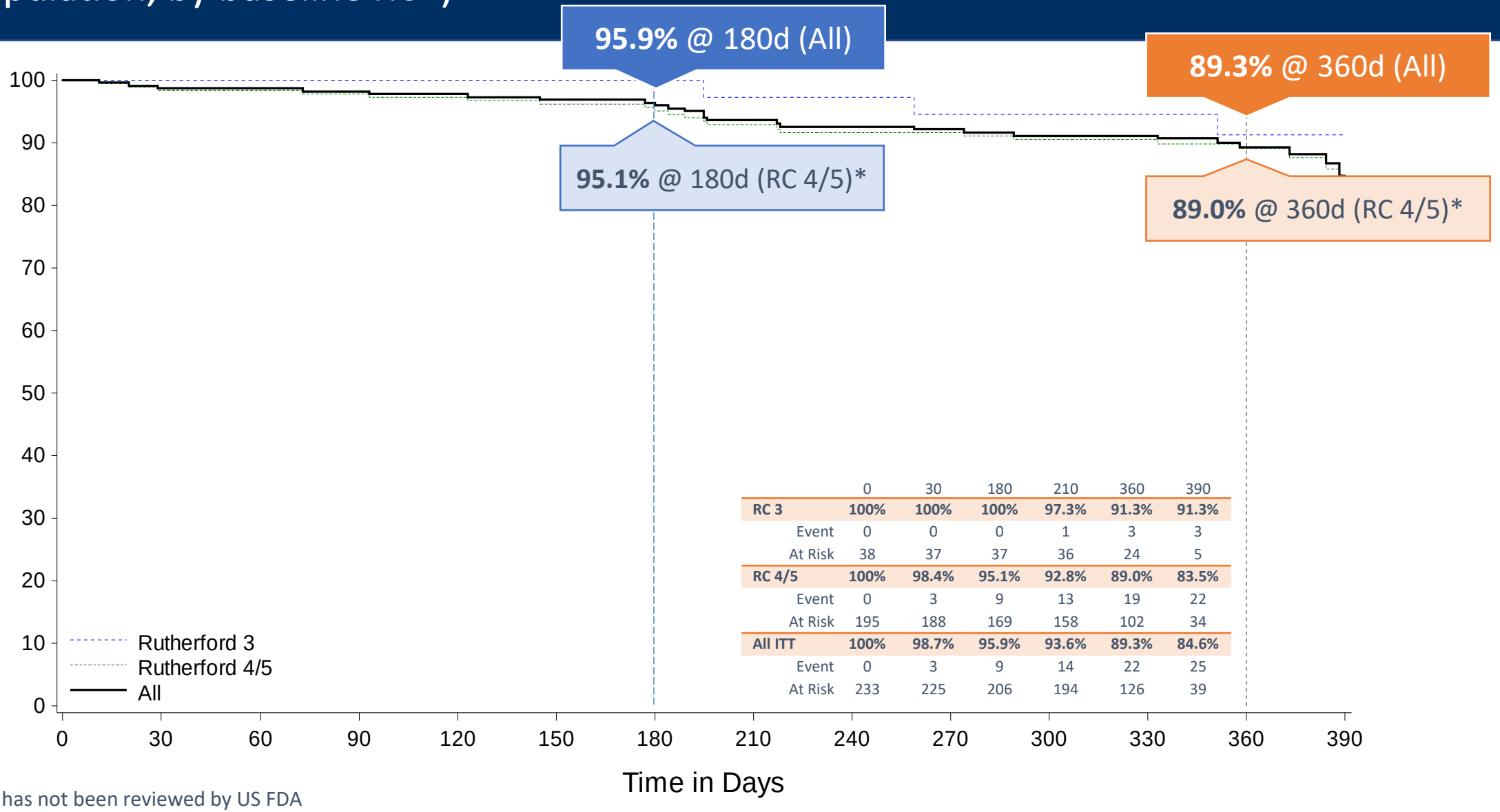


	0	30	180	210	360	390
RC 3	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Event	0	0	0	0	0	0
At Risk	38	37	36	34	23	2
RC 4/5	**100%**	**99.0%**	**98.4%**	**97.8%**	**96.1%**	**96.1%**
Event	0	2	3	4	6	6
At Risk	195	188	159	149	92	23
All ITT	**100%**	**99.1%**	**98.6%**	**98.1%**	**96.8%**	**96.8%**
Event	0	2	3	4	6	6
At Risk	233	225	195	183	115	25

*Post hoc analysis; has not been reviewed by US FDA

Amputation-Free Survival

(ITT population; by baseline RC*)



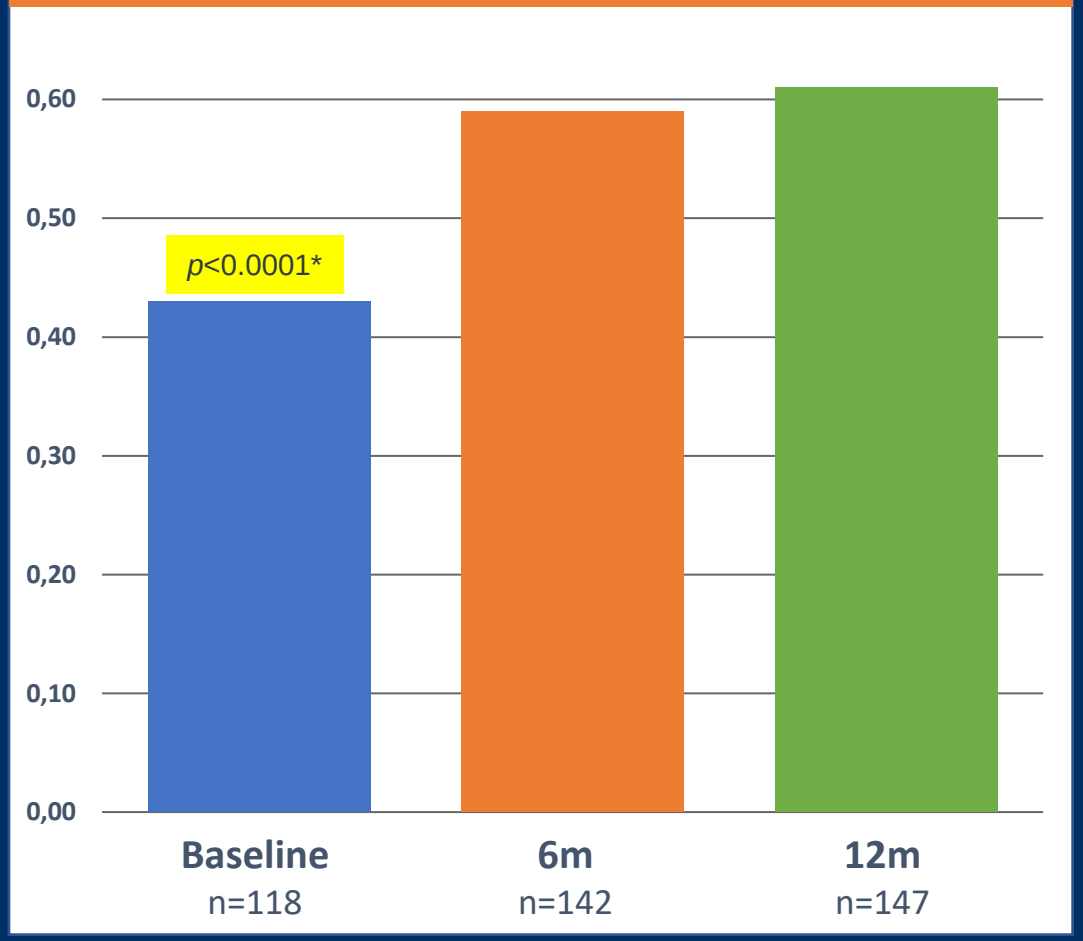
	0	30	180	210	360	390
RC 3	**100%**	**100%**	**100%**	**97.3%**	**91.3%**	**91.3%**
Event	0	0	0	1	3	3
At Risk	38	37	37	36	24	5
RC 4/5	**100%**	**98.4%**	**95.1%**	**92.8%**	**89.0%**	**83.5%**
Event	0	3	9	13	19	22
At Risk	195	188	169	158	102	34
All ITT	**100%**	**98.7%**	**95.9%**	**93.6%**	**89.3%**	**84.6%**
Event	0	3	9	14	22	25
At Risk	233	225	206	194	126	39

*Post hoc analysis; has not been reviewed by US FDA

Improvement in TBI and Baseline Wounds

(ITT population; site-reported)

Toe Brachial Index



Index Wound Status at 12m*	% (n/N)
Wound(s) Healed	**68.6%** (85/124)
with minor amputation†	**11.3%** (14/124)
with major amputation†	**2.4%** (3/124)
Wound(s) Improving	**4.0%** (5/124)
with minor amputation†	**0.8%** (1/124)
Wound(s) Unchanged	4.8% (6/124)
Wound(s) Worsening	2.4% (3/124)
Wound(s) amputated prior to 12m; missing 12m data†	5.7% (7/124)

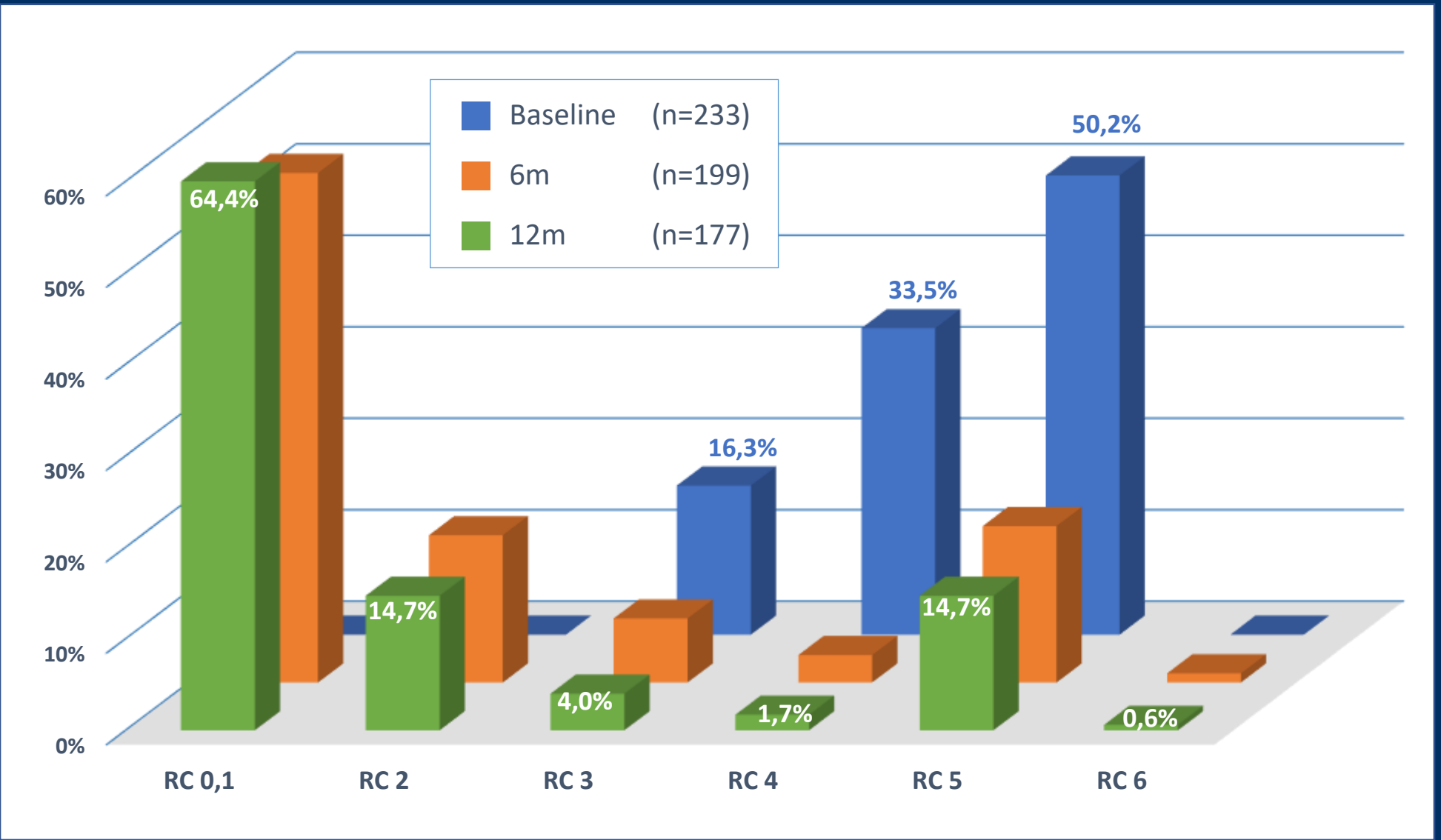
*Reported by wound

†Post-hoc analysis; has not been reviewed by FDA

*Wilcoxon Signed Rank test

Sustained Improvement in Rutherford

(ITT population)

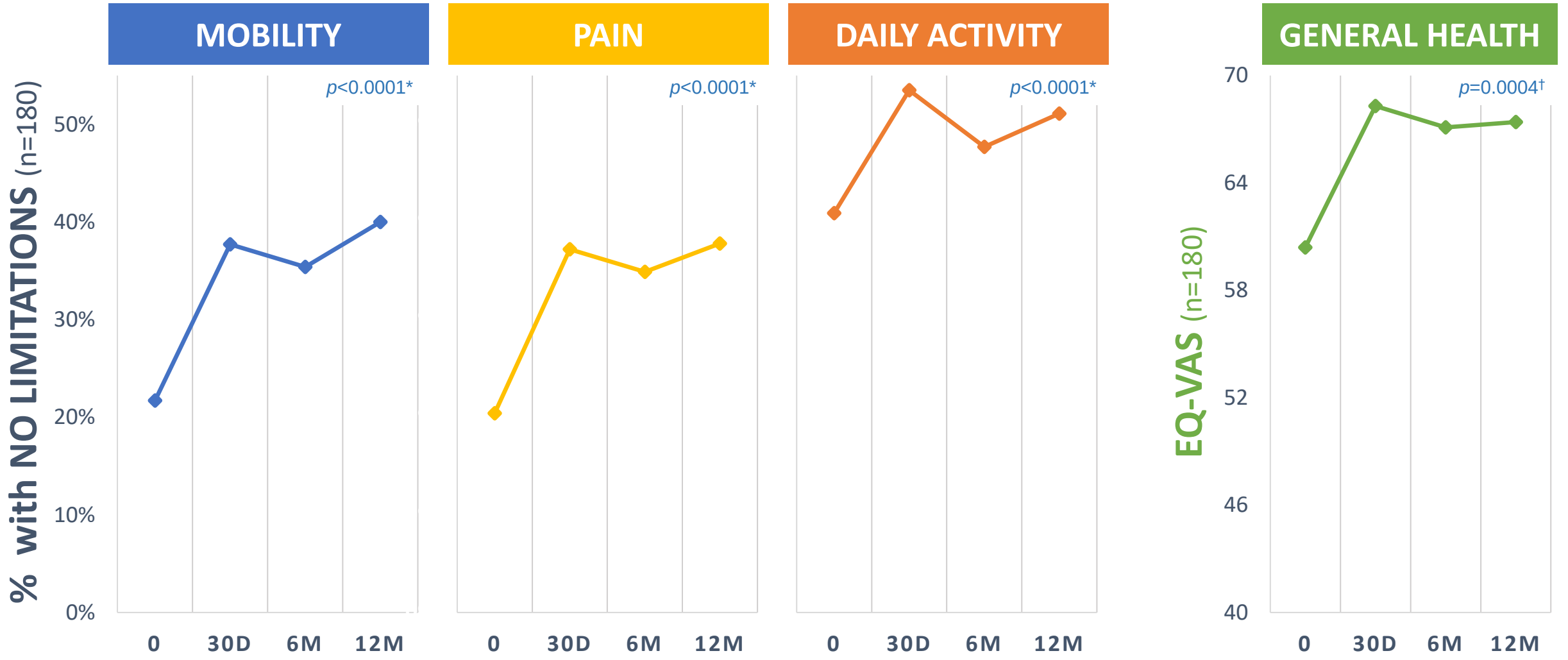


60.4%
of patients
improved
≥3 classes

79.1%
of patients
improved to
≤RC2

Sustained Quality of Life Improvement

(patient reported; ITT population)



*Generalized McNemar's test

†Wilcoxon Signed Rank test

Tack: A New Therapy for BTK Dissection Repair

First BTK vascular implant to achieve FDA approval

- Unique trial: first BTK IDE study to enroll **100% dissected vessels**
- Tack implant repaired **100%** of post-PTA dissections

12-month results:

- **No** fracture, migration or embolization
- **81.3%** K-M Tacked segment patency
- **83.1%** K-M freedom from CD-TLR
- **Sustained improvement** in Rutherford, TBI and QoL

CLTI (Rutherford 4 & 5) patient outcomes:*

- **96.1%** K-M target limb salvage
- **89.0%** amputation-free survival

*Post hoc analysis; has not been reviewed by US FDA