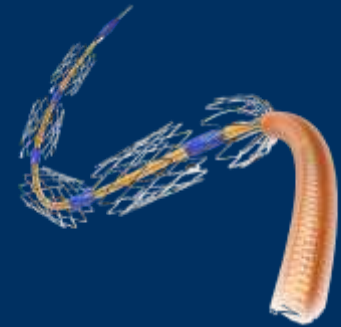


FIRST TIME DATA RELEASE: Final results from the *LOCOMOTIVE* registry using the **VascuFlex Multi-LOC** stent system in real-world lesions

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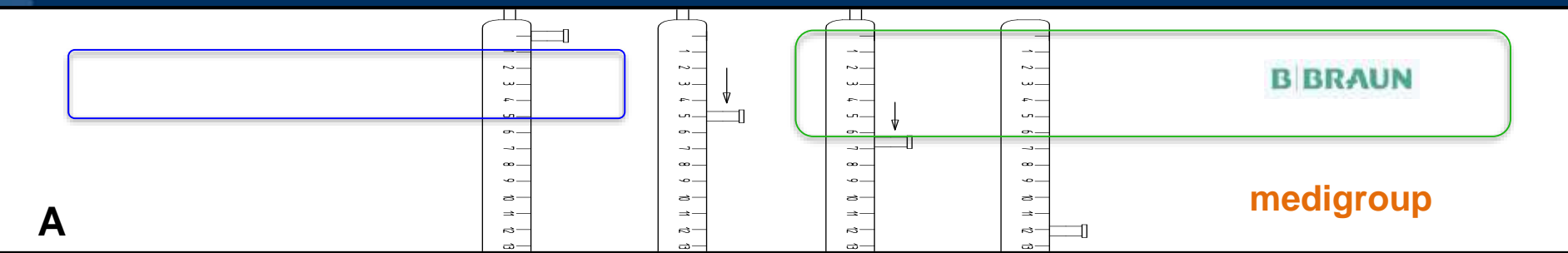
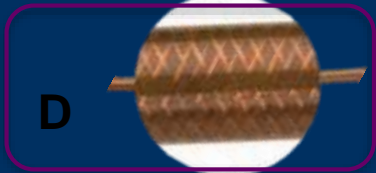
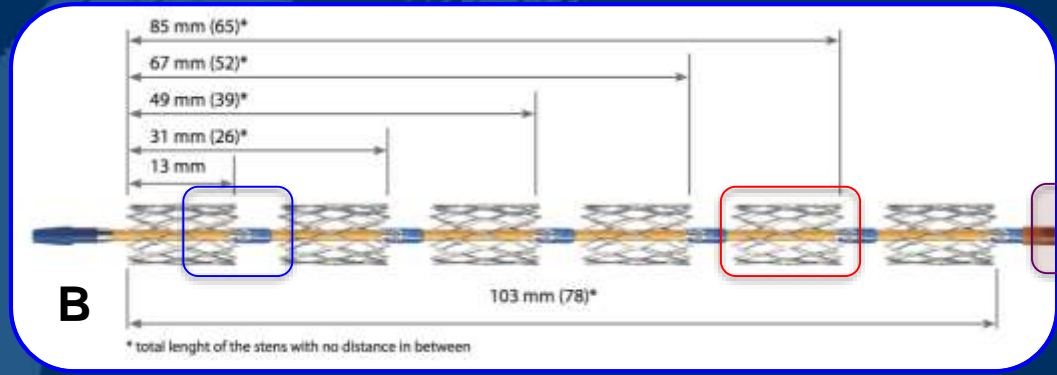
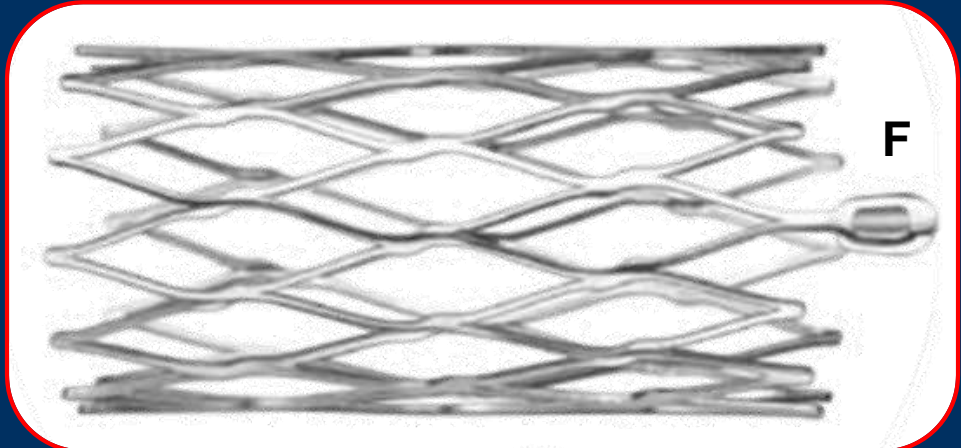
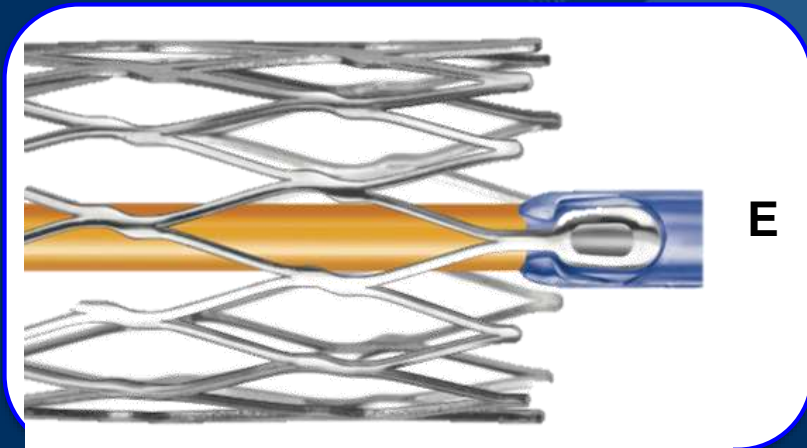


Disclosure

Speaker name: Dr. Klaus Amendt

I have the following potential conflicts of interest to report:

- Consulting: Bayer AB, B. Braun
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Owner of European and US-patent on Multiple Stent Delivery System



A: one-handed Multiple Stent Delivery System *MSDS*: lower part: before multi-LOC Stent delivery, upper part: 3 multi-LOC Stents delivered
B: dimensions of MSDS **C:** handle with thumb wheel to withdraw outer sheath **D:** braided outer sheath **E:** spacer with excavation to fix tantalum marker of the stent **F:** single multi-LOC stent with welded tantalum marker



LOCOMOTIVE: Closed registry

ClinicalTrials.gov Identifier: NCT02531230
24.08.2015 - 31.12.2016 (n= 75)
ClinicalTrials.gov Identifier: NCT02900274
End: 31.12.2018

Objective: to assess *safety and efficacy* of the *multi-LOC* peripheral stents system to treat de novo and restenotic lesions

Design: non randomized prospective, multi-center registry
common femoral to distal popliteal artery,
all comers registry: RCC 2-5, Fontaine II- IV

Intended Use: flow limiting dissections and recoil after POBA and DCB-dilatation.
„whenever stenting is indicated“

Primary endpoint: *6 month TLR- rate (LINC 2017, CX 2017)*

Additional variables: *12 month TLR rate (LINC 2018, CX 2018)*

@ 6 and **12 months:** walking distance (S1, S2)
ABI , CCD: patency- rate
RCC, amputation rate

Conclusions: results of the closed LOCOMOTIVE-Registry (n: 75) in 2018

ClinicalTrials.gov Identifier: NCT02531230
24.08.2015 - 31.12.2016

These data @ 6 and 12 months show that the MSDS strategy is safe and effective in patients with PAOD (RCC 2-5) with complex femoro-popliteal lesions:

- *High procedural success rate (100%) to release the individual stent segments also in morphologically challenging lesions.*
- *No stent-loss, no conversion to standard stenting*
- *half of the lesion length could be saved from stenting as compared to the “long stent” strategy.*
- *Ff TLR rates: @ 6 months: 94,7% (CLI: 95.0%, IC: 94.5%)
@ 12 months: 90.7% (CLI: 95.0%, IC: 89.9%)*
- *primary patency rate: @ 6 months: 90,7% (CLI: 95.0%, IC: 89.1%)
@ 12 months: 85.7% (CLI: 93.3%, IC: 83.3%)*
- *No stent fractures*
- *Sustained clinical benefit in CLI and IC (RFCCL, ABI)*

LOCOMOTIVE Registry

Extended registry

ClinicalTrials.gov Identifier: NCT02900274

End: 31.12.2018

N: 357



LOCOMOTIVE EXTENDED Registry

NCT number: NCT02900274

End: 31.12.2018

Patient demographics

	All patients	Critical limb ischemia	No critical limb ischemia	p-value
Patients	357	60 (16.8%)	297 (82.2%)	-
Age, years	71.2±9.7	75.9±8.8	70.3±9.6	<0.001
Male gender	228 (63.9%)	33 (55.0%)	195 (65.7%)	0.117
Rutherford				-
1	4 (1.1%)	0 (0.0%)	4 (1.3%)	
2	99 (27.7%)	0 (0.0%)	99 (33.3%)	
3	194 (54.4%)	0 (0.0%)	194 (65.4%)	
4	45 (12.6%)	45 (75.0%)	0 (0.0%)	
5	15 (4.2%)	15 (25.0%)	0 (0.0%)	
6	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Diabetes mellitus	175 (49.0%)	41 (68.3%)	134 (45.1%)	0.001
Hypertension	312 (87.4%)	51 (85.0%)	261 (87.9%)	0.540
Hypercholesteremia	257 (72.0%)	35 (58.3%)	222 (74.7%)	0.010
Renal insufficiency	67 (18.8%)	18 (30.0%)	49 (16.5%)	0.015
Dialysis dependent	10 (2.8%)	4 (6.7%)	6 (2.0%)	0.047
Coronary artery disease				
CAD	136 (38.1%)	25 (41.7%)	111 (37.4%)	0.466
no CAD	132 (37.0%)	18 (30.0%)	114 (38.4%)	
...unknown	89 (24.9%)	17 (28.3%)	72 (24.2%)	
Cerebrovascular disease	59 (16.5%)	9 (15.0%)	50 (16.8%)	0.727
Carotid artery disease	159 (44.5%)	26 (43.3%)	133 (44.8%)	0.837
CCC vascular disease	23 (6.4%)	5 (8.3%)	18 (6.1%)	0.513
History of smoking				
Current smoker	160 (44.8%)	25 (41.7%)	135 (45.5%)	0.829
Ex smoker	97 (27.2%)	18 (30.0%)	79 (26.6%)	
No smoker	100 (28.0%)	17 (28.3%)	83 (27.9%)	

All categorical variables were compared with the Pearson's Chi² test, continuous variables were analyzed with the unpaired student t-test

Lesion morphology

LOCOMOTIVE EXTENDED Registry

NCT number: NCT02900274

End: 31.12.2018

	All patients	Critical limb ischemia	No critical limb ischemia	p-value
Target lesions	448	81	367	
Treated leg, target lesions				0.772
left	196 (57.1%)	35 (59.3%)	161 (56.7%)	
right	145 (42.3%)	24 (40.7%)	121 (42.6%)	
both	2 (0.6%)	0 (0.0%)	2 (0.7%)	
missing	1 (TBD)	1 (TBD)		
Lower leg status per patient				0.001
no vessel	12 (3.5%)	5 (8.5%)	7 (2.5%)	
1	92 (26.7%)	24 (40.7%)	68 (23.8%)	
2	117 (34.0%)	19 (32.2%)	98 (34.4%)	
3	123 (35.8%)	11 (18.6%)	112 (39.3%)	
SFA I	176 (39.2%)	31 (37.8%)	145 (39.5%)	0.775
SFA II	235 (52.3%)	37 (45.1%)	198 (54.0%)	0.148
SFA III	263 (58.6%)	47 (57.3%)	216 (58.9%)	0.798
P1	140 (31.2%)	30 (36.6%)	110 (30.0%)	0.243
P2	74 (16.5%)	18 (22.0%)	56 (15.3%)	0.140
P3	14 (3.1%)	3 (3.7%)	11 (3.0%)	0.755
TASC II class target lesion				0.158
A	71 (15.8%)	8 (9.8%)	63 (17.2%)	
B	178 (39.7%)	29 (35.4%)	149 (40.6%)	
C	134 (29.8%)	30 (36.6%)	104 (28.3%)	
D	66 (14.7%)	15 (18.3%)	51 (13.9%)	
TASC C/D lesions	200 (44.5%)	45 (54.9%)	155 (42.2%)	0.037
Diffuse vessel disease	383 (85.3%)	71 (86.6%)	312 (85.0%)	0.716
Calcification	385 (85.7%)	67 (81.7%)	318 (86.6%)	0.247
Thrombus burden	42 (9.4%)	7 (8.5%)	35 (9.5%)	0.779
Total occlusion	141 (31.4%)	22 (26.8%)	119 (32.4%)	0.324
Reference vessel diameter (mm)	5.5±1.1	5.5±1.4	5.5±1.0	0.688
Total lesion length, cm (range)	16.0±9.7	16.2±9.1	16.0±9.8	0.926
Degree of stenosis, %	89.8±12.6	90.4±10.5	89.6±13.1	0.688

Procedural details and device characteristics

LOCOMOTIVE EXTENDED Registry

NCT number: NCT02900274

End: 31.12.2018

	All patients	Critical limb ischemia	No critical limb ischemia	p-value
Patients	357	60	297	-
Lesions	449	82	367	
Devices	376	65	312	-
Devices per patient				
1	337	55	282	0.337
2	20	5	15	
Type of device				
6F, 80 cm, 6-LOC	141 (37.4%)	24 (36.9%)	117 (37.5%)	0.930
6F, 130 cm, 6-LOC	236 (62.6%)	41 (63.1%)	195 (62.5%)	
Stent diameters per patient				
5 mm	130 (36.4%)	26 (43.3%)	104 (35.0%)	0.657
6 mm	186 (52.1%)	28 (46.7%)	158 (53.2%)	
7 mm	36 (10.1%)	5 (8.3%)	31 (10.4%)	
8 mm	5 (1.4%)	1 (1.7%)	4 (1.3%)	
Stent diameter, mm	5.8±0.7	5.7±0.7	5.8±0.7	0.278
Total number of released stent segments	1741	308	1433	-
N of released stent segments per patient	4.88±1.82	5.13±1.71	4.82±1.84	0.231
Total length of stent segments per lesion L	0.56±0.59	0.53±0.37	0.57±0.62	0.691
Lesion length saved from stenting	0.44±0.59	0.47±0.37	0.43±0.59	0.691
Released stent segments per patient				
1	7 (2.0%)	0 (0.0%)	7 (2.4%)	0.344
2	27 (7.6%)	3 (5.0%)	24 (8.1%)	
3	41 (11.5%)	5 (8.3%)	36 (12.1%)	
4	66 (18.5%)	11 (18.3%)	55 (18.5%)	
5	73 (20.3%)	18 (30.0%)	55 (18.5%)	
6	123 (34.5%)	18 (30.0%)	105 (35.4%)	
7	4 (1.1%)	2 (3.3%)	2 (0.7%)	
8	3 (0.8%)	0 (0.0%)	3 (1.0%)	
9	4 (1.1%)	1 (1.7%)	3 (1.0%)	
10	2 (0.6%)	1 (1.7%)	1 (0.3%)	
11	2 (0.6%)	0 (0.0%)	2 (0.7%)	
12	5 (1.4%)	1 (1.7%)	4 (1.3%)	
Reason for stenting				
dissection only	126 (28.1%)	23 (28.0%)	103 (28.1%)	0.690
recoil only	121 (26.9%)	25 (30.5%)	96 (26.2%)	
dissection & recoil	202 (45.0%)	34 (41.5%)	168 (45.8%)	
Predilatation target lesion				
DCB (with or w/o POBA)	202 (45.0%)	25 (30.5%)	177 (48.2%)	0.014
POBA	243 (54.1%)	56 (68.3%)	187 (51.0%)	
No predilatation	4 (0.9%)	1 (1.2%)	3 (0.8%)	
Predilatation balloon diameter, mm	5.3±0.7	5.2±0.7	5.4±0.7	0.114
Predilatation balloon length, mm	98.6±47.0	96.3±47.1	99.1±47.0	0.702
Pressure, atm	10.0±2.4	9.4±2.1	10.1±2.5	0.140
Procedural success per patient	351 (98.3%)	59 (98.3%)	292 (98.3%)	0.993

LOCOMOTIVE EXTENDED Registry

NCT number: NCT02900274

End: 31.12.2018

Clinical outcomes at 6 months

	All patients	Critical limb ischemia	No critical limb ischemia	p-value
Patients	357	60	297	-
Pre-procedure				
Walking distance, pain-free, m			74.8±72.2 n=88	
Walking distance, max, m			119.4±105.2 n=212	
Target leg ABI before procedure	0.58±0.31	0.46±0.28	0.59±0.30	0.026
Target leg ABI after procedure	0.90±0.24	0.81±0.27	0.91±0.24	0.105
6 months				
Number of follow-ups sonographic, clinical and by telephone relative to <i>mortality</i>	338 (94.7%)	57 (95.0%)	281 (94.6%)	0.903
Number of follow-ups sonographic, clinical and by telephone relative to <i>TLR, TVR</i>	337 (94.4%)	56 (93.3%)	281 (94.6%)	0.694
Follow-up duration, months (including time to event)	6.1±0.9	5.8±1.5	6.2±0.8	0.006
Primary <i>unassisted</i> patency of <i>target vessel</i> , diameter stenosis<70% and/or TLR	299 (88.7%)	50 (89.3%)	249 (88.6%)	0.884
All Target lesion revascularizations (Re-PTA, lysis, surgical)	15 (4.5%)	4 (7.1%)	11 (3.9%)	0.285
Target <i>vessel</i> revascularization (Re-PTA, lysis)	24 (7.1%) 15 + 9	6 (10.7%) 4 + 2	18 (6.4%) 11 + 7	0.252
Non-target vessel revascularization	14 (4.2%)	6 (10.7%)	8 (2.9%)	0.007
All <i>non</i> Target lesion revascularisation (n)	23 (6.8%)	8 (14.2%)	15 (5.3%)	
Target leg ABI	0.89±0.26	0.77±0.31	0.90±0.24	0.006
Rutherford shift pre vs. 6 months	1.8±1.3	2.6±1.7	1.6±1.2	<0.001
Major amputations, target and non-target leg	6 (1.8%)	5 (8.9%)	1 (0.4%)	<0.001
Death				
Not related to intervention	11 (3.3%)	5 (8.8%)	6 (2.1%)	<0.001
Possibly related to intervention	2 (0.6%)	1 (1.8%)	1 (0.4%)	
...cardiac death	2 (0.6%)	2 (3.5%)	0 (0.0%)	

LOCOMOTIVE EXTENDED Registry

NCT number: NCT02900274

End: 31.12.2018

Clinical outcomes at 12 months

	All patients	Critical limb ischemia	No critical limb ischemia	p-value
Patients	357	60	297	-
12 months				
Number of follow-ups sonographic, clinical and by telephone relative to <i>mortality</i>	305 (85.4%)	47 (78.3%)	258 (86.9%)	0.087
Number of follow-ups sonographic, clinical and by telephone relative to <i>TLR, TVR</i>	303 (84.9%)	47 (78.3%)	256 (86.2%)	0.121
Follow-up duration, months (including time to event)	11.8±3.2	10.8±4.0	12.0±3.0	0.012
Primary unassisted patency of <i>target vessel</i> , diameter stenosis<70% and/or TLR	248 (81.8%) N=303	38 (80.9%) N=47	210 (82.0%) N=256	0.847
All Target lesion revascularizations (Re-PTA, lysis, surgical)	35 (11.6%)	7 (14.9%)	28 (10.9%)	0.435
+ TLR vs 6 months (n)	+20 (+6.6%)	+3 (+6.3%)	+17 (+6.6%)	
Target <i>vessel</i> revascularization (Re-PTA, lysis)	43 (14.2%) 35 +8	9 (19.1%) 7 +2	34 (13.3%) 28 +6	0.289
Non-target vessel revascularization	23 (7.5%)	7 (14.3%)	16 (6.3%)	0.051
All non Target lesion revascularisation (n)	31 (10.2%)	9 (19.1%)	22 (8.6%)	
Target leg ABI	0.86±0.29	0.86±0.374	0.90±0.22	0.909
Rutherford shift pre vs. 12 months	1.8±1.3	2.6±2.0	1.7±1.2	<0.001
Difference in Rutherford shift 6 - 12 months ²	-0.09±1.17	0.03±1.66	-0.11±1.07	0.502
Major amputations, target and non-target leg	8 (2.6%) N=304	5 (10.6%) N=47	3 (1.2%) N=257	<0.001
Death				
Not related to intervention	17 (5.6%)	6 (12.8%)	11 (4.3%)	<0.001
Possibly related to intervention	2 (0.7%)	1 (2.1%)	1 (0.4%)	
...cardiac death	3 (1.0%)	3 (6.4%)	0 (0.0%)	

LOCOMOTIVE EXTENDED Registry

NCT number: NCT02900274

End: 31.12.2018

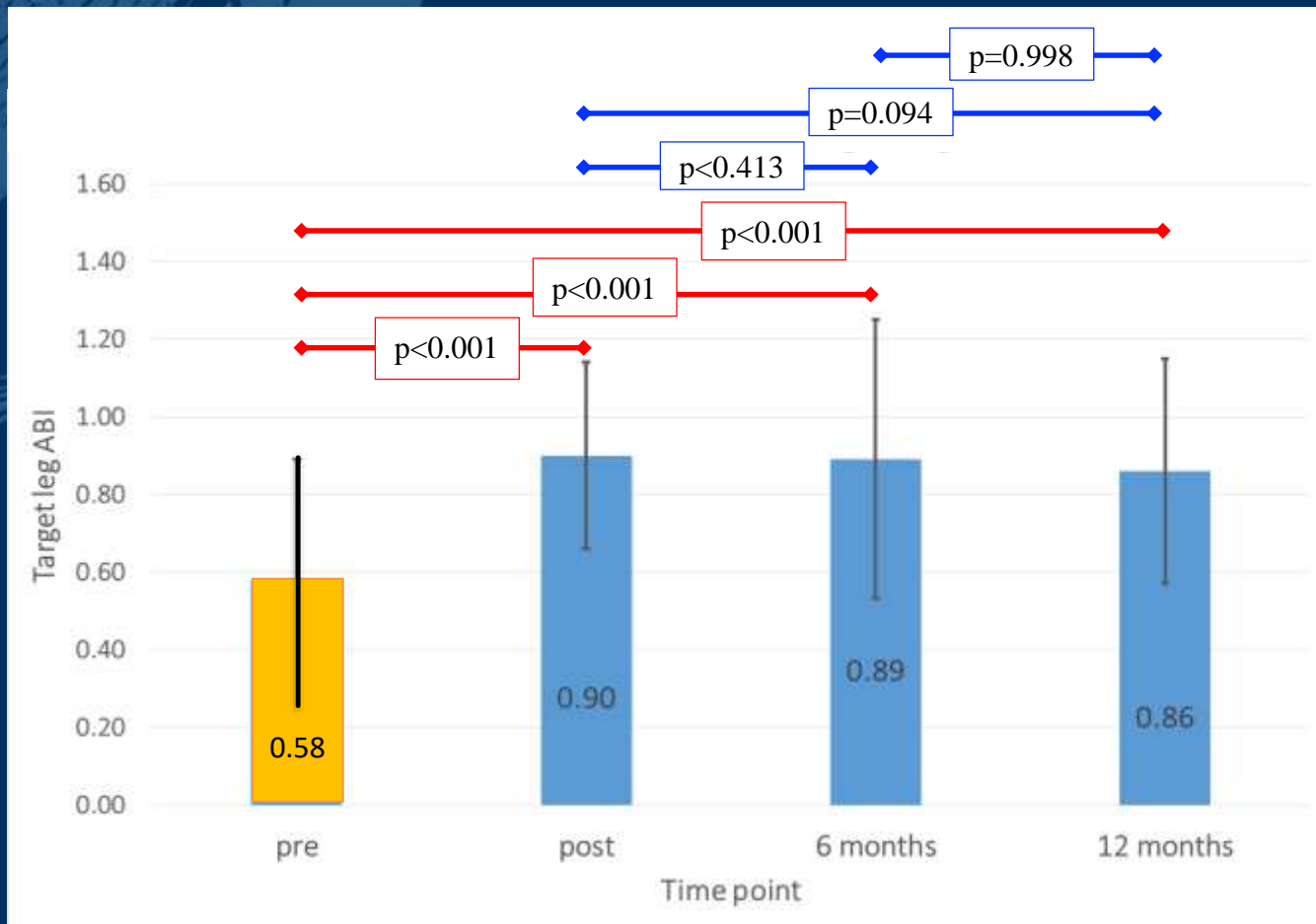
TLR and Patency at 6 and 12 months



LOCOMOTIVE EXTENDED Registry

NCT number: NCT02900274

End: 31.12.2018



LOCOMOTIVE EXTENDED Registry

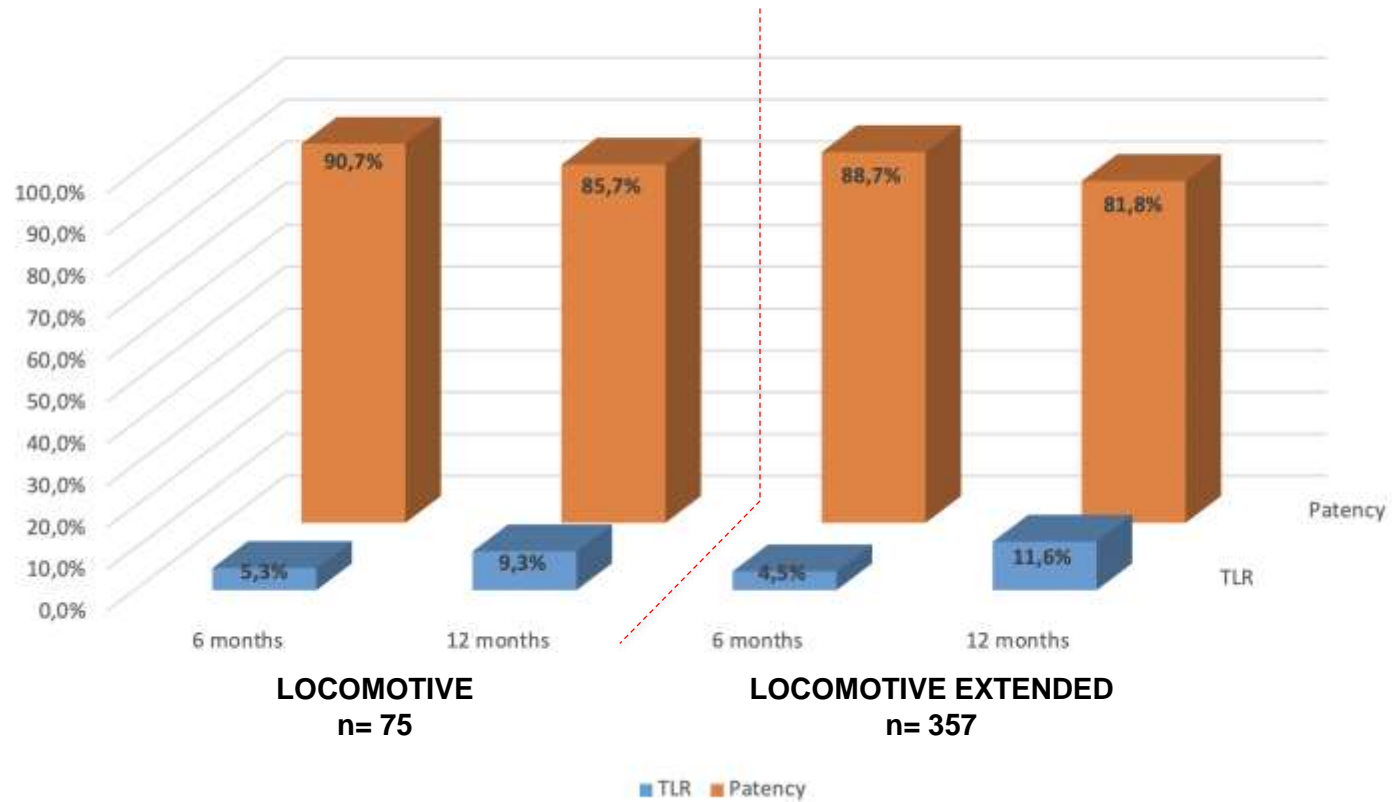
NCT number: NCT02900274

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LOCOMOTIVE Registry

TLR and Patency at 6 and 12 months



LOCOMOTIVE EXTENDED Registry

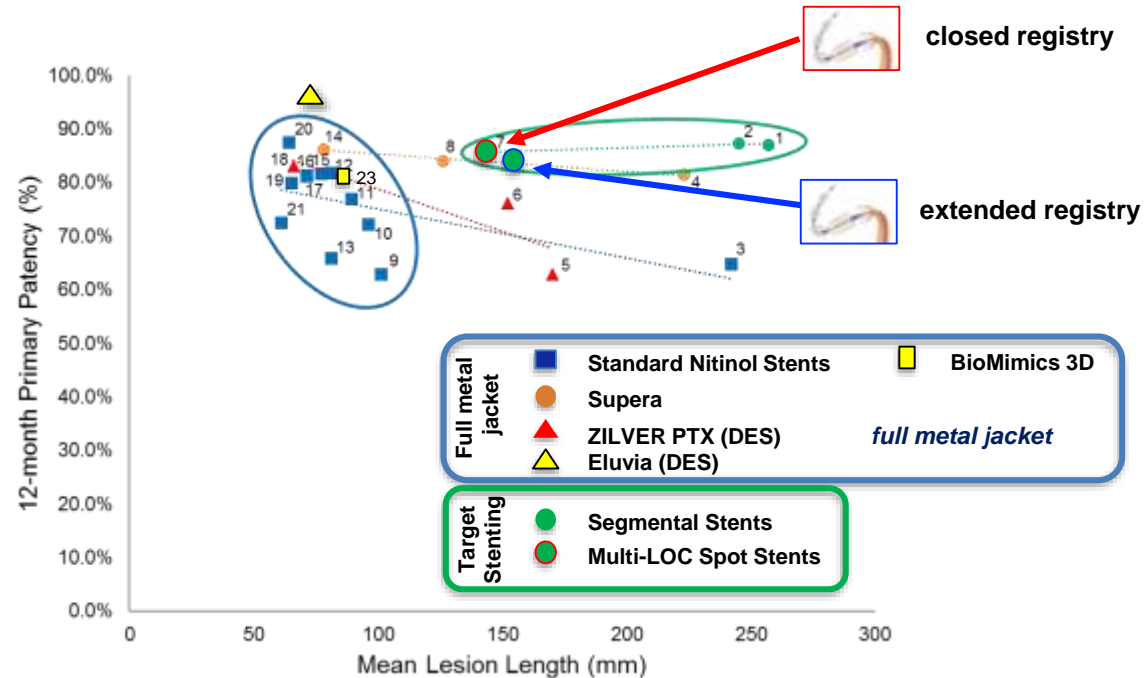
NCT number: NCT02900274

End: 31.12.2018

These data @ 6 and @ 12 months show that the MSDS strategy is safe and effective in patients with PAOD (RCC 2-5) with complex femoro-popliteal lesions:

- **High procedural success rate (98%)** to release the individual stent segments also in morphologically challenging lesions.
- **No stent-loss, no conversion** to standard stenting
- **half of the lesion length could be saved from stenting** as compared to the “long stent” strategy.
- **Ff TLR rates:** @ 6 months **95,5%** (CLI: 92.9%, IC: 96.1%)
@ 12 months **88.4%** (CLI: 85.1%, IC: 89.1%)
- **primary patency rate:** @ 6 months **88,7%** (CLI: 89.3%, IC: 88.6%)
of target **vessel** @ 12 months **81.8%** (CLI: 80.9%, IC: 82.0%)
- **No stent fractures**
- **Sustained clinical benefit in CLI and IC (RFCCL, ABI)**
- **Progression of disease within lesion and outside is comparable**

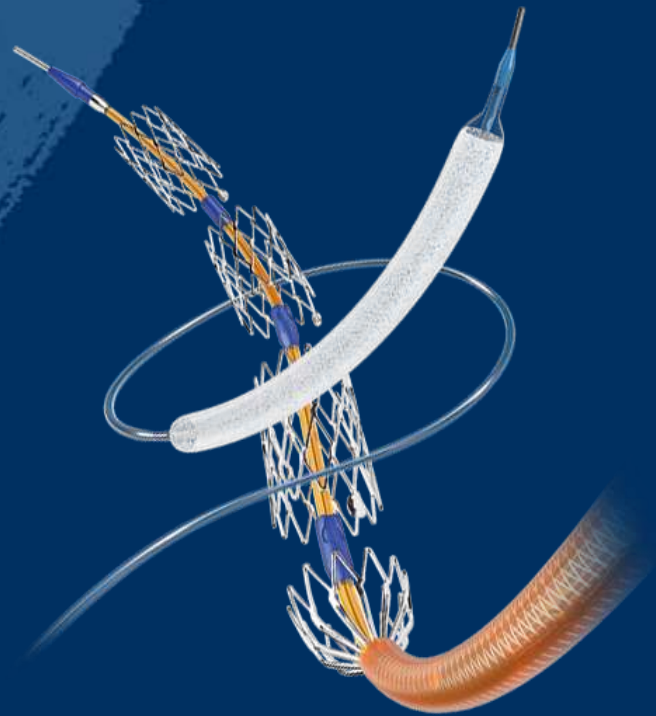
SFA stent performance related to lesion length RTCs and Registries



Note: Results from clinical trials are not directly comparable. This chart is for educational purposes only.

1 HONG SPOT: Hong S-J et al. J Am Coll Cardiol Interv 2015;8:472-80. 2 PARADE: Young-Guk K. 12-month results of PARADE trial. LINC 2018. 3 DURABILITY 200: Bosiers M et al. J Vasc Surg. 2011;54:1042-1050. 4 SUPERA 500 LL: Scheinert D. Results from the SUPERA-500 Registry. LINC 2013. 5 ZEPHYR: Iida O et al. JACC Cardiovasc Interv. 2015;8:1105-12. 6 REAL: Scheinert D 2-year results of the REAL PTX trial. Presented at LINC 2017. 7 LOCOMOTIVE: Amendt K. LOCOMOTIVE All comers study 12-month results. LINC 2018. 8 SUPERA 500: Scheinert D. Results from the SUPERA-500 Registry. LINC 2013. 9 ABSOLUTE: Schillinger M et al. N Engl J Med. 2006;354:1879-1888. 10 DURABILITY: Bosiers M et al. J Endovasc Ther. 2009;16:261-269. 11 DURABILITY II: Matsumura JS, Yamanouchi D, et al. J Vasc Surg. 2013 Jul;58(1):73-83. 12 MIMICS-2: Zeller T. MIMICS-2 Study: 1-Year Results. LINC 2018. 13 ASTRON: Dick P et al. Catheter Cardiovasc Interv. 2009;74:1090-1095. 14 SUPERB: Garcia L et al. Circ Cardiovasc Interv. 2015 May;8(5). 15 STROLL: William A et al. J Vasc Interv Radiol 2015;26:21-28. 16 RESILIENT: Laird JR et al. Circ Cardiovasc Interv. 2010;3:267-276. 17 4EVER: Bosiers M et al. J Endovasc Ther. 2013;20:746-756. 18 ZILVER PTX: Dake M et al. Circ Cardiovasc Interv. 2011;4:495-504. 19 MIMICS: Zeller T et al. Circ Cardiovasc Interv. 2016;9:e002930. 20 MISAGO 2: Schulte K et al. J Endovasc Ther. 2012;19:774-784. 21 COMPLETE SE: Laird JR et al. J Endovasc Ther. 2014;21:202-212. 22. Majestic Trial: Müller-Hülsbeck S et al. 2016; JEV 23(5):701-707. 23. MIMICS-2 Study Th. Zeller @LINC 2018.

Multi-LOC: future studies planned:



Controlled studies with combination of DEB and spot-stenting with the Multi-LOC

LOCOMOTIVE

Closed registry

ClinicalTrials.gov Identifier: NCT02531230

24.08.2015 - 31.12.2016

N: 75

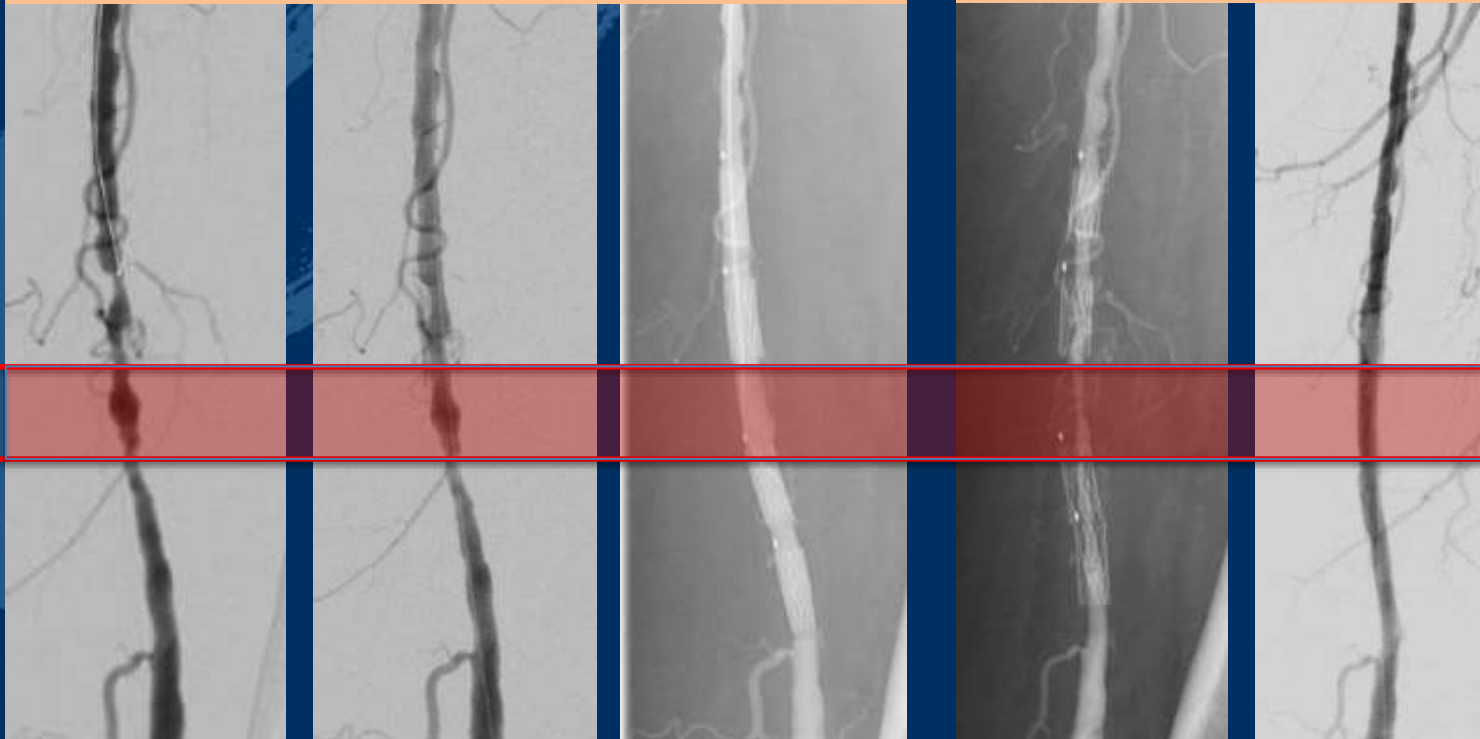
Index-procedure

10 mo.

TLR

36 mo.

FU



@36 mo FU

Clinical assesment:

- No claudication
- No TLR

ABI: 1.0

CCD: PVR 1,3

Index-lesion

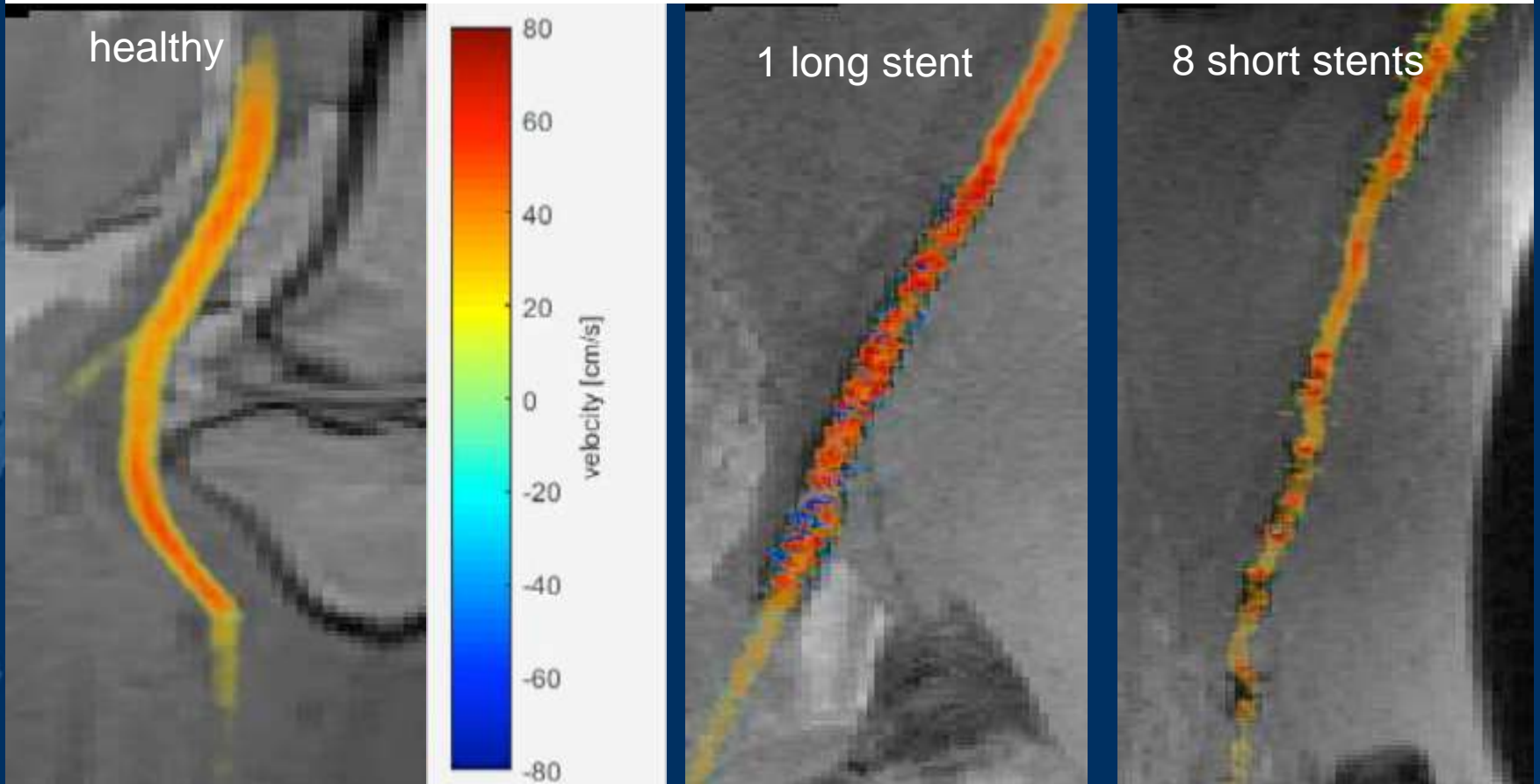
after POBA

4 ML-stents

Re-stenosis

after DEB

4D – flow MRI



Dr. Martin Sigl, Universitätsklinikum Mannheim, Dr. K. Amendt, Diakonissenkrankenhaus Mannheim

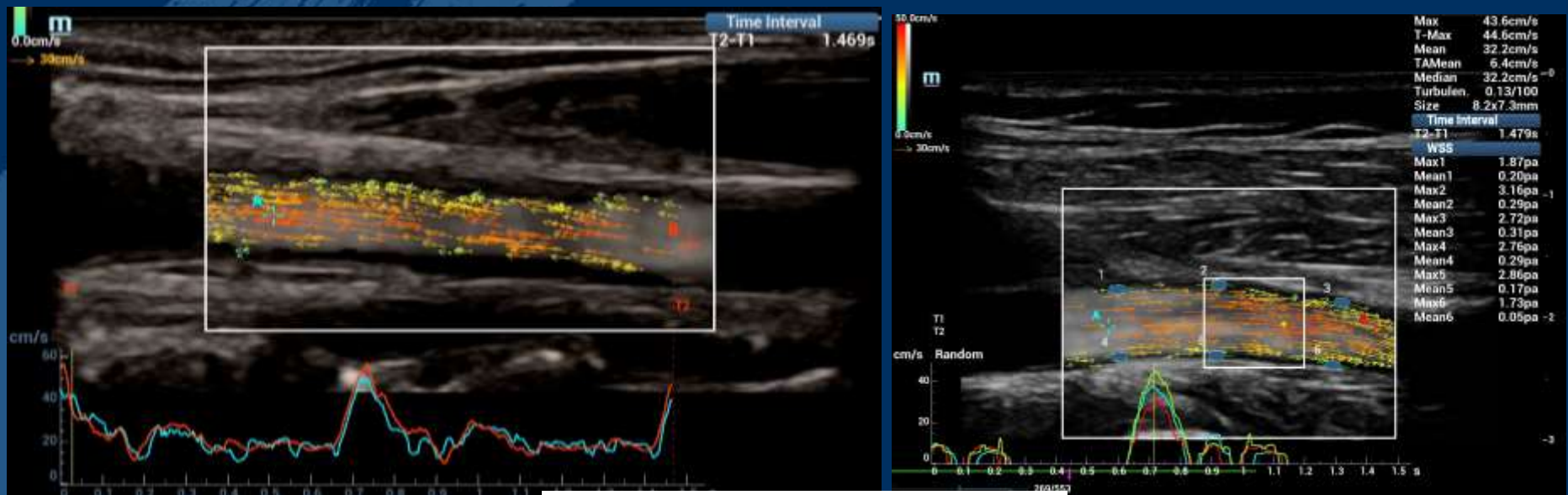


Medizinische Fakultät Mannheim
der Universität Heidelberg
Universitätsklinikum Mannheim



High frame rate ultrasound: Vector Flow Imaging

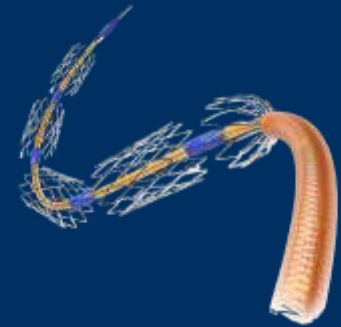
Estimating local PWV



Popliteal hemodynamics
in normal and diseased PA
in different Stent-types
= PV
= wall shear stress (WSS)

FIRST TIME DATA RELEASE: Final results from the *LOCOMOTIVE* registry using the **VascuFlex Multi-LOC** stent system in real-world lesions

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