

Tissue perfusion assessment
drives and predicts
clinical success in severe CLI:
experience from a 330 patient study

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DISCLOSURES

Speaker name:

Efrem Gómez Jabalera

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

INTRODUCTION

END POINTS

in endovascular treatment
of critical limb threatening ischemia.

IDEALLY SHOULD BE:

Non-invasive

Objective

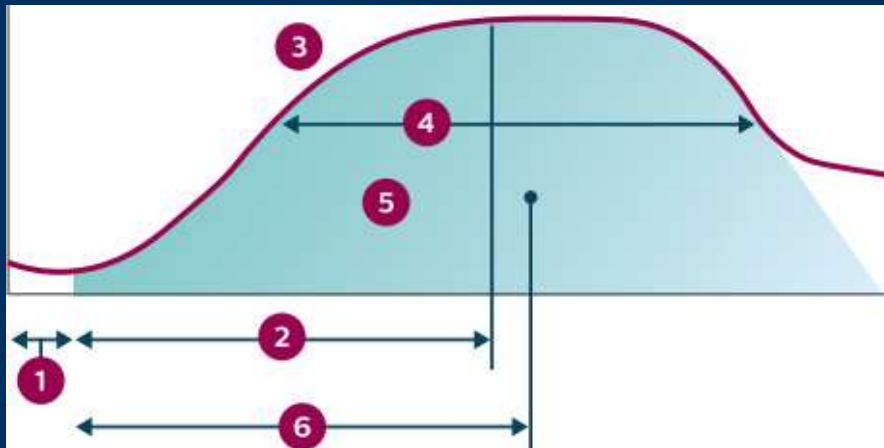
Periprocedural

INTRODUCTION

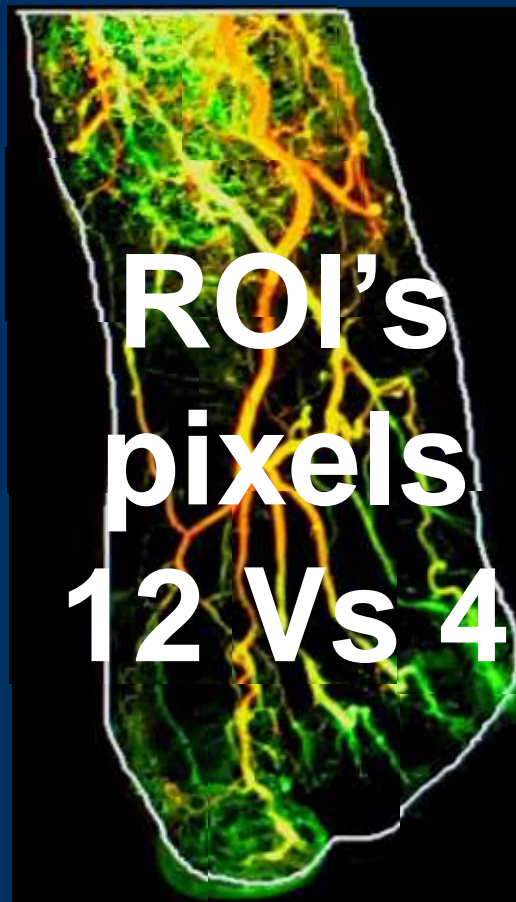
Perfusion Angiography is an image-processing software.

Analysis of density/pixel through time

Average value in a ROI \rightarrow Curve \rightarrow Parameters



- 1: Arrival Time
- 2: Peak Time
- 3: Wash-in Rate
- 4: Width
- 5: Area Under Curve
- 6: Mean Transit Time



METHODS

Consecutive patients undergoing EVT for CLI (2 IR)

Only 1 explorer did the PA measures

Inclusion criteria: PA before and after EVT

Exclusion criteria:

Not meeting the thorough protocol for PA

Poor PA image quality

No ulcer (Rutherford 4)

Death or loss during follow-up

Demographic and clinical data recorded

Clinical follow-up at 1 and 6 months

METHODS

Endpoint: time to heal (TTH) of the ulcers.

	Follow-up at 1 month (N=293)	Follow-up at 6 months (N=293)
Ulcer healing rate	160 (54.6%)	197 (70.6%)
TLR	23 (7.9%)	57 (20.6%)
AFS	293 (100%)	283 (96.6%)

Groups for analysis:

TTH < 30 days (group A)

TTH > 30 days (group B)

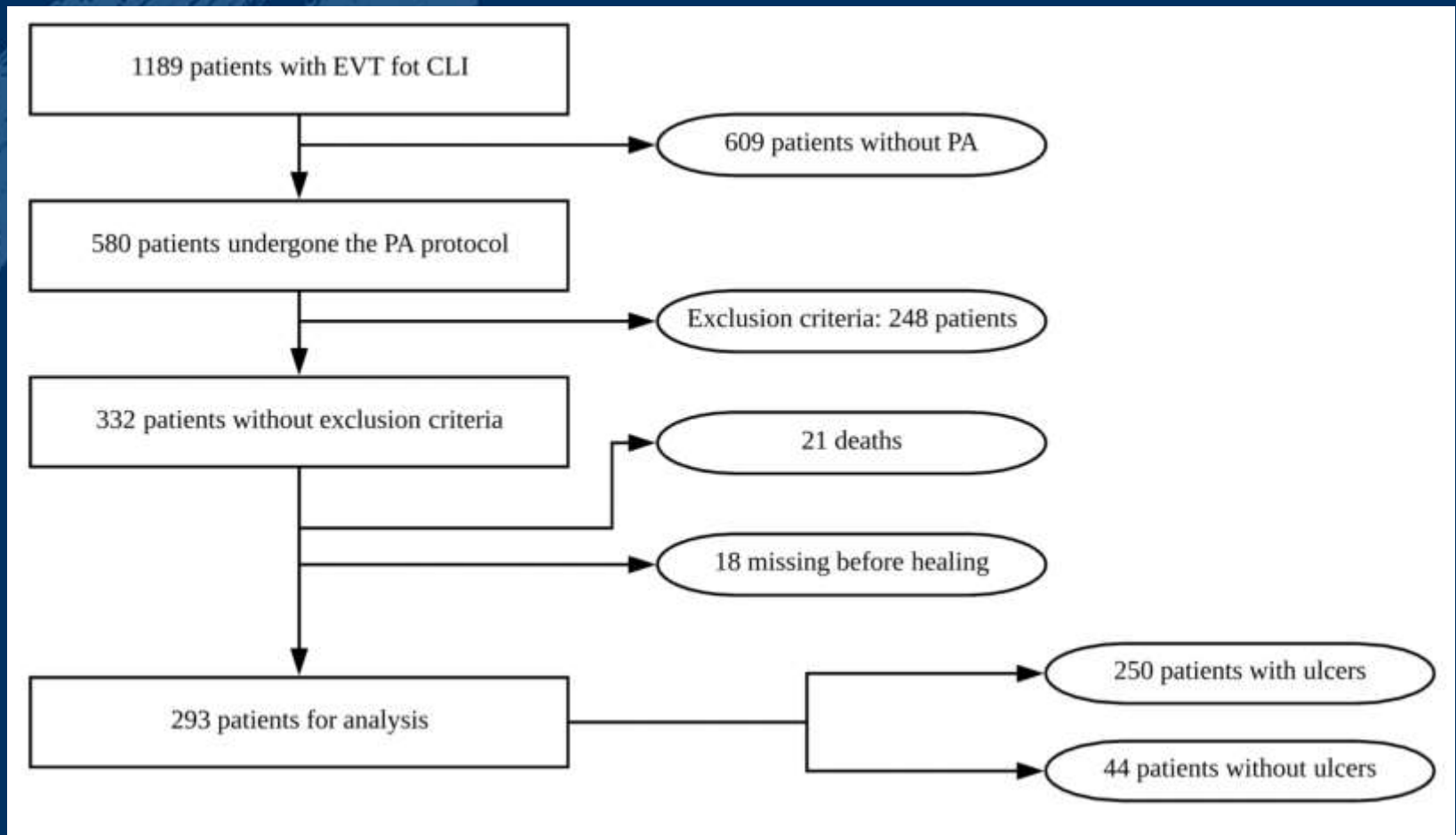
Analysis:

Student-t test: changes before and after EVT

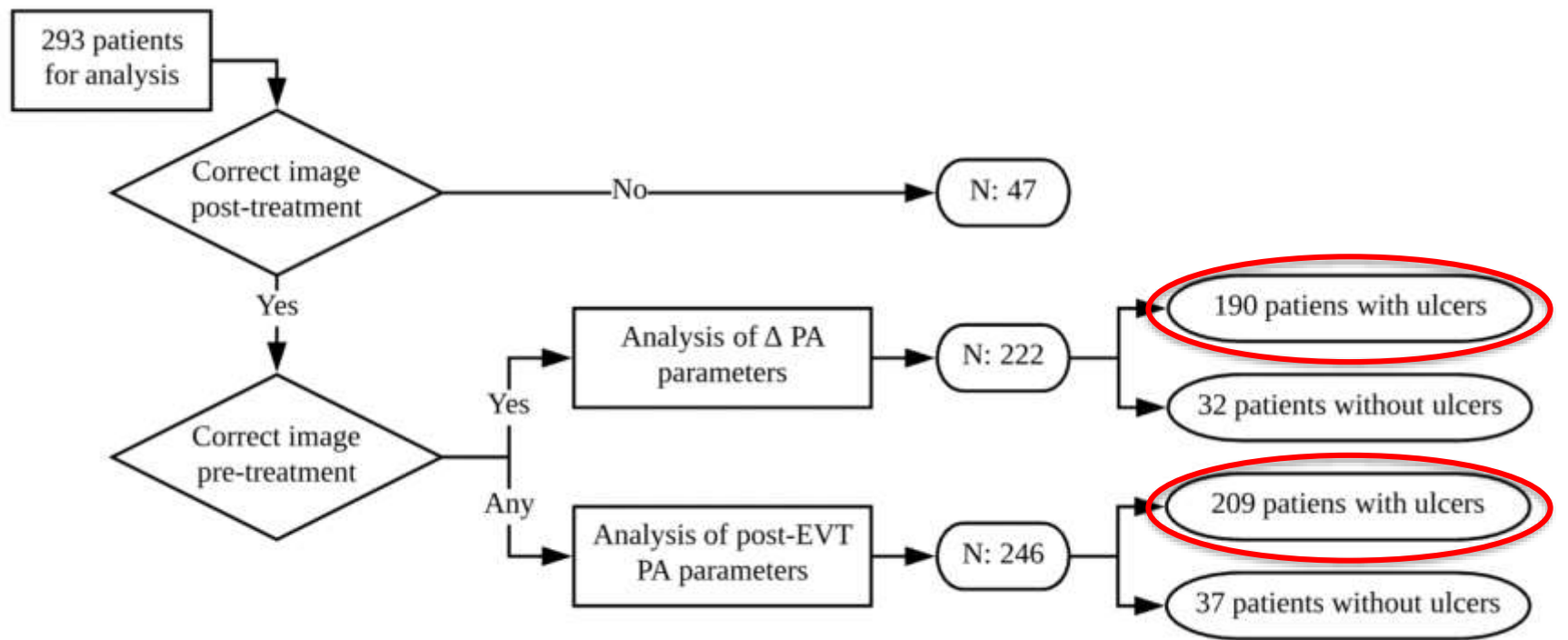
Retrieve of best **cut-off points** from ROC

Chi square crosstabs

RESULTS



RESULTS



RESULTS

Age 72.2 ± 10.4 yo

Male 68.6%

BMI (Kg/m²) 27.2 ± 4.5

Smokers 35.8%

Former smokers 52.2%

DM 92.8%

Hypertension 95.6%

Atrial fibrillation 20.1%

Chronic kidney disease 50.2%

End-stage renal disease 9.2%

Ischemic cardiomyopathy 39.6%

Cerebrovascular disease 27.6%

Autoimmune disease 6.1%

Rutherford 5: 133

Rutherford 6: 76

*No differences between groups
(p=0.094)*

Wifl stage (risk of amputation)

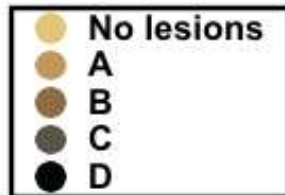
Low and Moderate: 54

High: 155

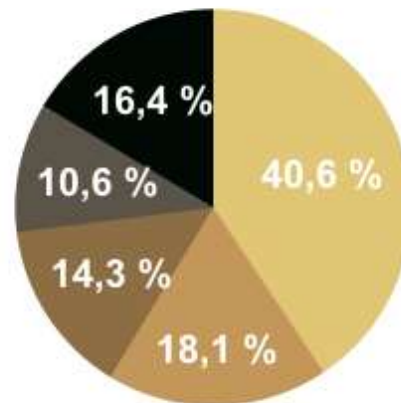
*No differences between groups
(p=0.478)*

RESULTS

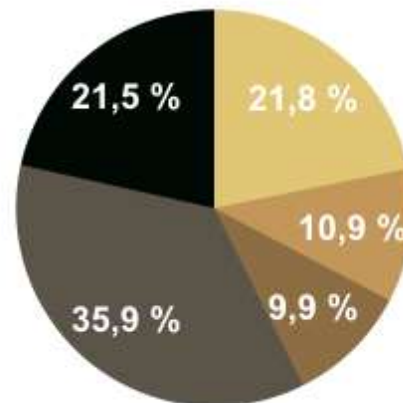
TASC classifications



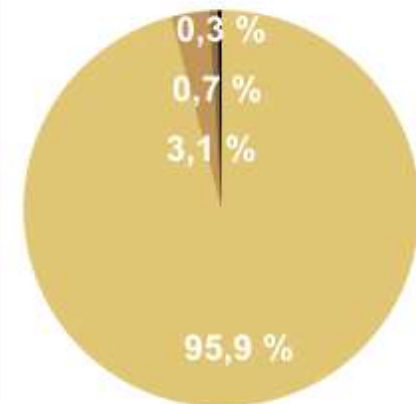
FP before EVT



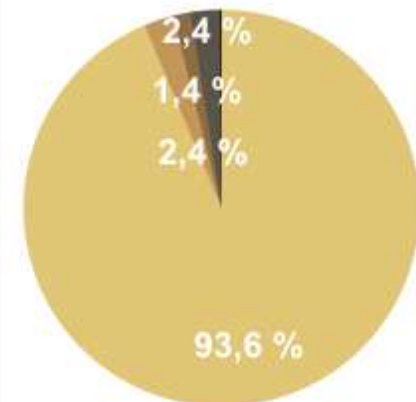
BTK before EVT



FP after EVT

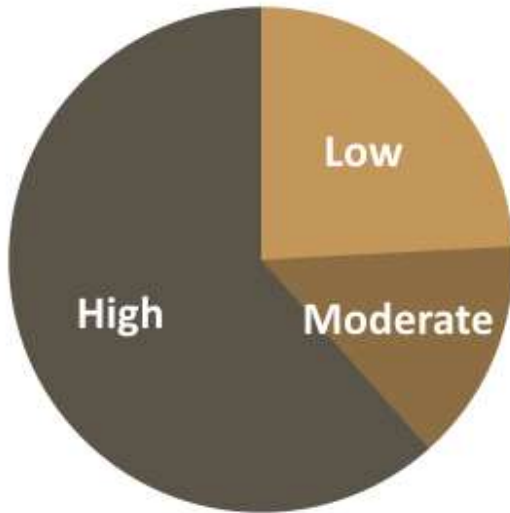


BTK after EVT

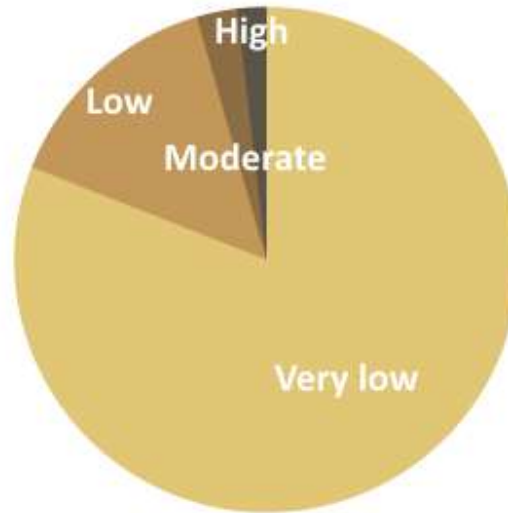


RESULTS

preoperative Wifl



Wifl at 1 month



Wifl at 6 month



RESULTS

Student-t test for postEVT parameters and Mann-Whitney for Δ parameters.

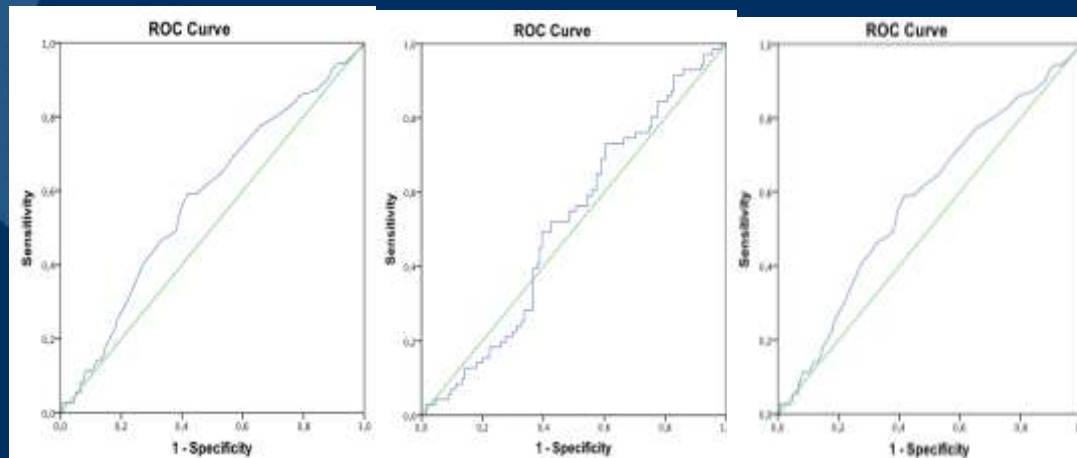
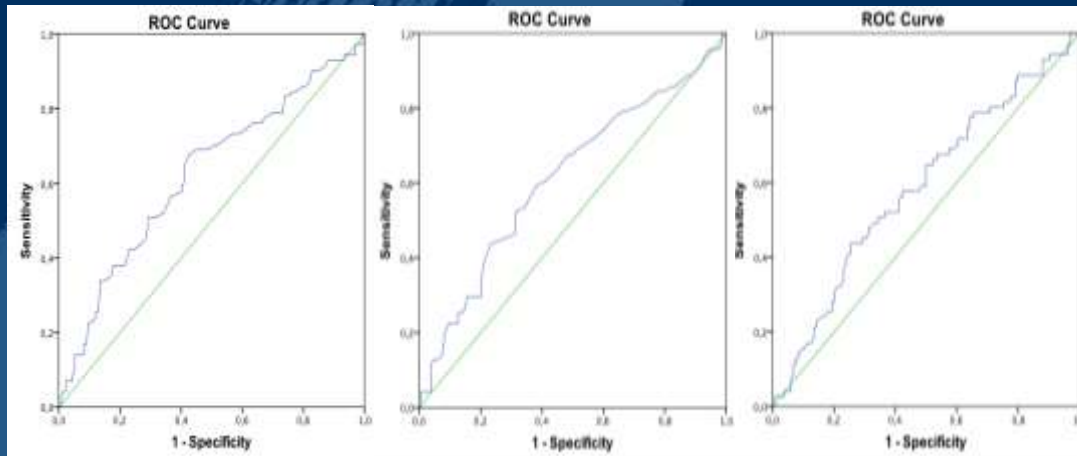
	TTH > 30 days Mean \pm SD	TTH < 30 days Mean \pm SD	<i>p value</i>
AT	6.1 \pm 2.6	7.3 \pm 3.1	0.004
PT	4.6 \pm 1.5	5.1 \pm 1.7	0.014
WS	36.9 \pm 31.2	31.3 \pm 36.2	0.197
W	3.7 \pm 1.1	3.9 \pm 1.1	0.128
AUC	6210.2 \pm 6549.3	5724.1 \pm 4815.5	0.582
MTT	4.9 \pm 1.5	5.4 \pm 1.7	0.022
AUC/s	0.54 \pm 0.59	0.43 \pm 0.36	0.113
Δ AT	-2,8 \pm 2,7	-2,7 \pm 3,5	0,714
Δ PT	0,13 \pm 4,5	1,14 \pm 1,9	0,009
Δ WS	8,7 \pm 22,2	6,6 \pm 22,1	0,112
Δ W	0,47 \pm 1,2	0,78 \pm 1,36	0,037
Δ AUC	3059,2 \pm 6222,2	2973,7 \pm 4517,5	0,862
Δ MTT	0,6 \pm 1,7	1,23 \pm 1,9	0,01
Δ AUC/s	0,3 \pm 0,51	0,25 \pm 0,32	0,756

RESULTS

Statistically significant variables

	TTH > 30 days Mean \pm SD	TTH < 30 days Mean \pm SD	<i>p value</i>
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RESULTS



Cut-off points from ROC curves

Arrival Time > 6 s

Peak Time > 5.2 s

Mean Transit Time > 4.1 s

Wash-in Speed > 20*

Width > 3.6 s*

Δ Peak Time > 1.5 s*

Δ Width > 0.6 s*

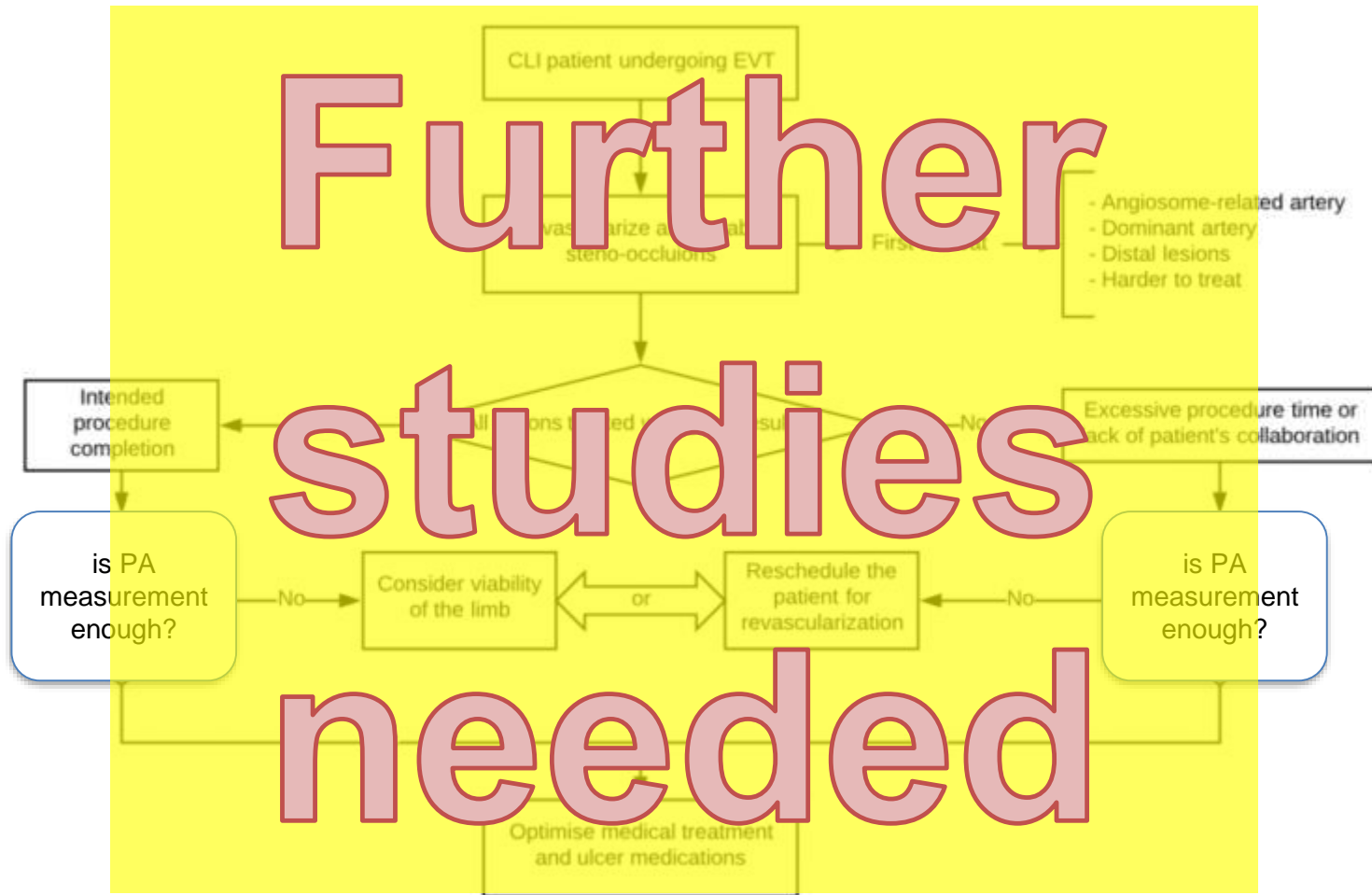
Δ Mean Transit Time > 1.7s*

*Mann-Whitney test was used for these parameters.

CONCLUSIONS

Perfusion angiography can identify
objectives measurements
to **predict wound healing** in CLTI
in less than 30 days.

CONCLUSIONS

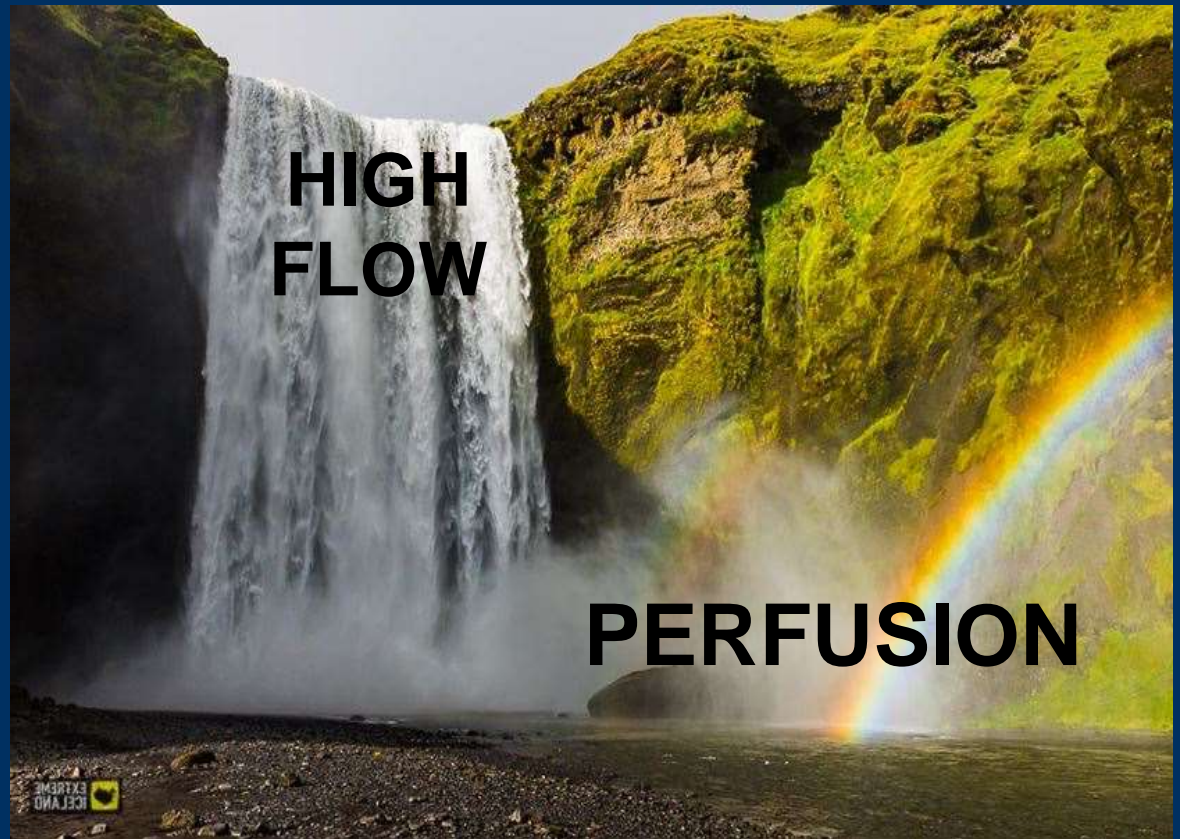


TAKE HOME MESSAGE: What is perfusion?

Perfusion is not
about the vessel,

it is about
the tissue.

It could lead to a
paradigm shift.



Thank you!

