

The advantages of using perfusion angiography during CLI procedures

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Disclosure

Speaker name:

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I have the following potential conflicts of interest to report:

Consulting for Philips IGT

CLI procedures

- Can be extremely challenging
- Demanding for patient and operator
- No clear objective endpoint for a successful revascularization procedure

CLI procedures

The angiosome and woundblush concept offer some guidance but are controversial

PRE

POST

CLI procedures

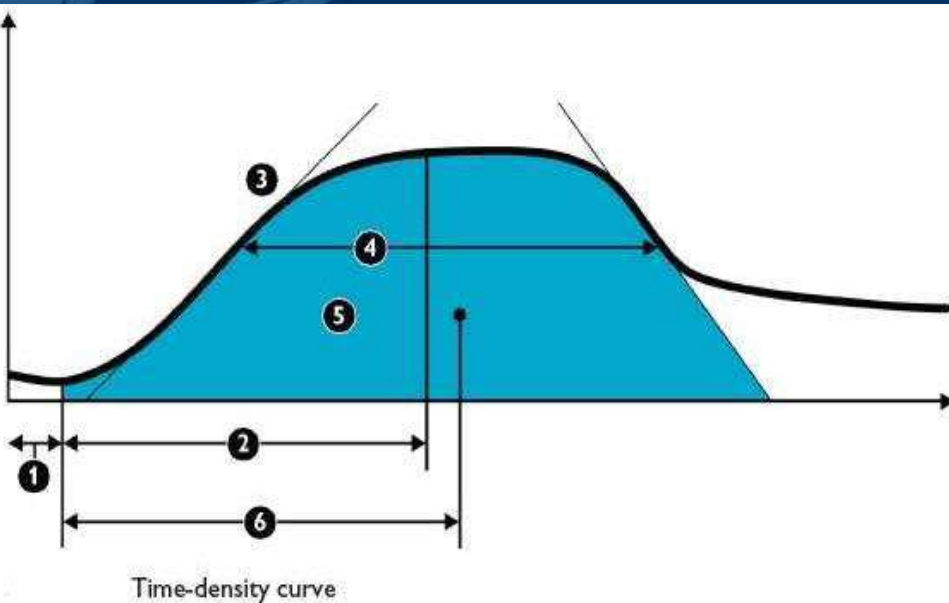
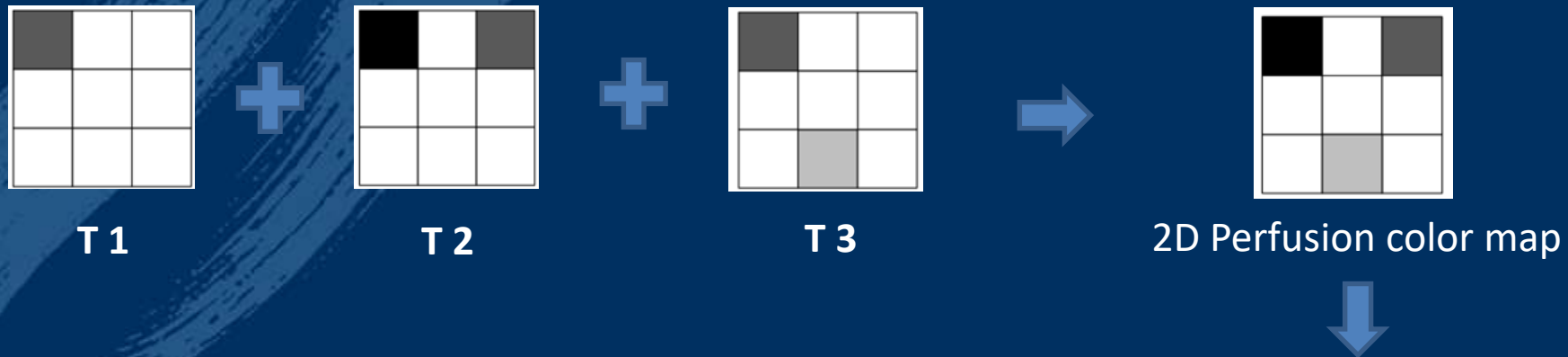
- Need for an objective endpoint to define optimal result of revascularization procedure
- Correlation with clinical outcome

Perfusion Angiography

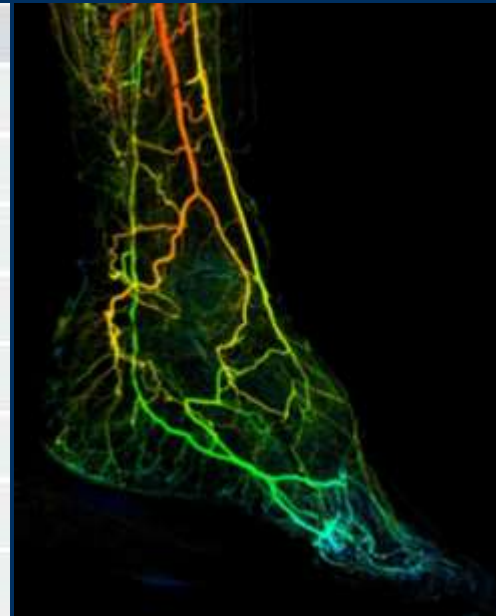
- Is based on standardized foot angiography
- Measures the total foot perfusion (TFP)
- Provides objective measurements
- Pre and post revascularization



Basics of Perfusion Angiography



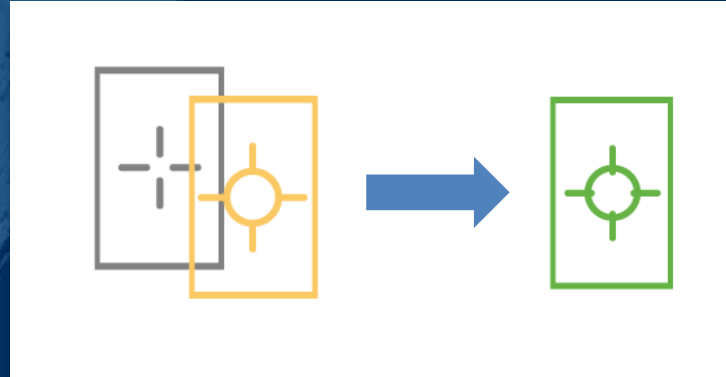
Legend	
Horizontal axis:	Time
Vertical axis:	Density
1	Arrival Time
2	Time to Peak
3	Wash-in Rate
4	Width
5	Area Under Curve
6	Mean Transit Time



Standardized Acquisition protocol

- Foot immobilized in dedicated foot rest
- Tip of sheath at P2 (55cm)
- Injector settings: 450 PSI, 9ml 3ml/sec
- High density contrast 320
- Pre and post revascularization runs in identical angulations

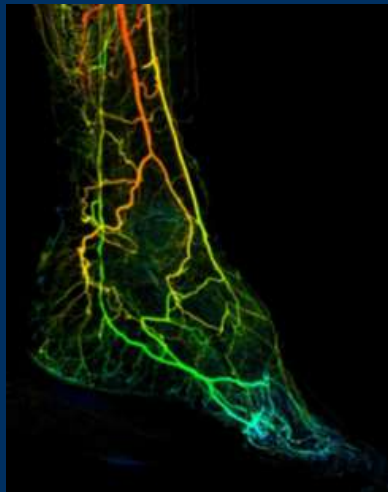
SmartPerfusion software



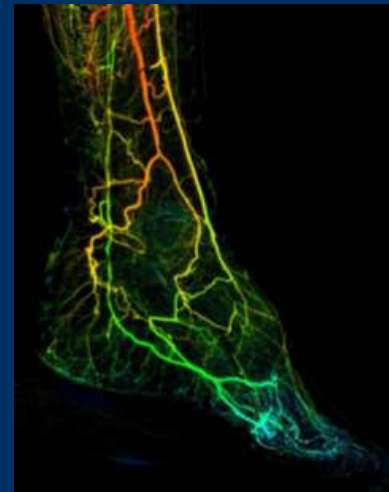
- The **smart alignment tool** helps to obtain the exact same angulations, table position and SID even after long procedures and foot movements
- Table side usage, instant results

Preliminary results REPEAT trial

Peak Density (PD), Time To Peak (TTP) and Mean Transit Time (MTT) are reproducible with less than 10 % variation



T0



T0 + 5 min

Preliminary results pilot study

- Inclusion criteria
 - RBC 4 and 5
 - Below the knee disease
 - Endovascular revascularization
- End point
 - Peak Density improvement defined as $> 20\%$
 - Clinical improvement at 3 months RBC > 2

Preliminary results pilot study

- Results
 - 41 patients
 - 17/41 ≥ 2 RBC scales at 3 months, 9 $> 20\%$ increase in PD
 - 24/41 < 2 RBC at 3 months, 16 $< 20\%$ increase in PD
- A threshold of $> 20\%$ increase in PD has an odds ratio of 2.25 for positive clinical outcome at 3 months

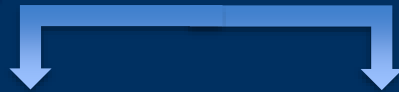
Possible algorithm in CLI

Baseline DSA including PA



Revascularization of 1st tibial

Repeat PA



Increase in PD >20%

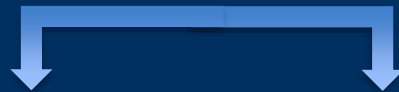
Increase in PD <20%



Revascularization of 2nd tibial

Consider end of procedure

Repeat PA



Increase in PD >20%

Increase in PD <20%

Conclusions

- PA provides objective and reproducible end points for CLI revascularizations
- A threshold of $> 20\%$ increase in PD has an odds ratio of 2.25 for positive clinical outcome at 3 months

Conclusions

- PA is a promising tool for defining a revascularization endpoint in CLI
- Further research is required to optimize the treatment algorithm

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