

# Optimal Energy Delivery of Auryon Laser to Disrupt Medial Calcification in The Tibial Arteries: A Cadaveric Study.

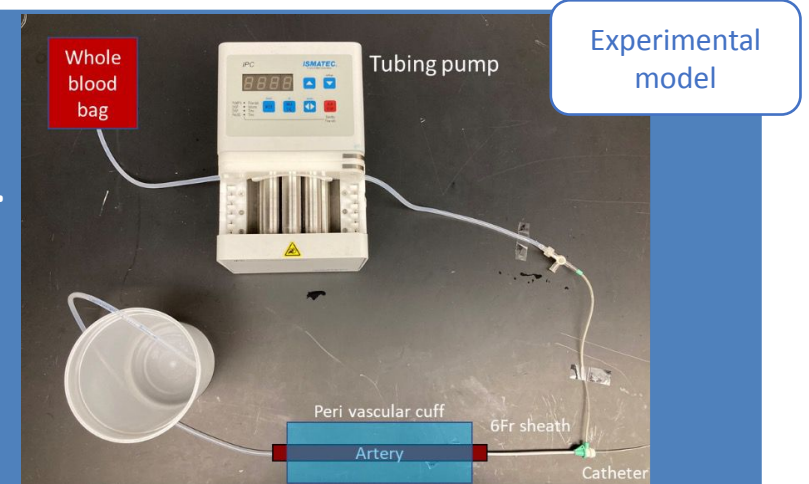
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## Purpose:

Evaluate the impact of the Auryon Laser Atherectomy system in heavily calcified human cadaver peripheral arteries using microCT.

## Design and Methods:

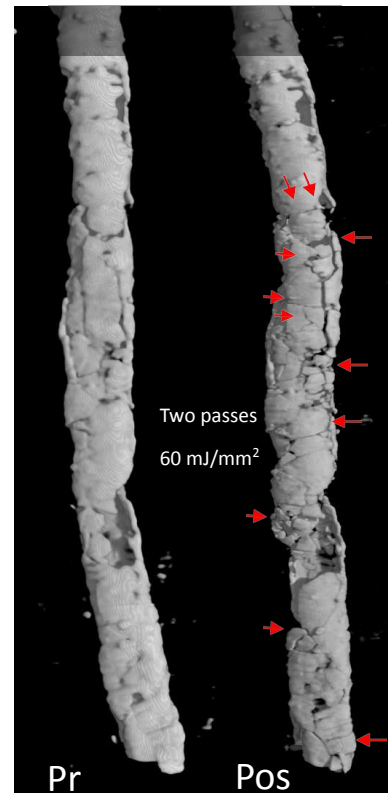
- Four human limbs that were screen angiographically for stenotic and heavily calcified lesions had the arteries dissected for experimentation.
- Different laser parameters were used and decided before treatment to explore different treatment effects based on number of passes and laser energy.
- Vessel segments were imaged using microCT at baseline and post-treatment to observe effects



**Table 1.** Details of treatment procedure with Auryon laser atherectomy and POBA

Case	Vessel	Laser size	2 passes				1 pass	
			50/50 mJ	50/60 mJ	50/60 mJ with POBA	60/60 mJ	50mJ	60 mJ
1	Post Tib A	0.9	Distal (5mm)	Mid-proximal (4mm)	Mid-distal (4mm)	-	-	-
2	Post Tib A	1.5	-	-	-	Distal (5mm)	Proximal (5mm)	Mid (5mm)
	ATA	1.5	Distal (5mm)	Mid-distal (5mm)	Mid-proximal (4mm)	-	-	-

## Results



CTA of reference segment distal anterior tibial artery. Red arrows show multiple transverse and longitudinal fractures of medial calcium after Auryon laser atherectomy

**Table 2.** Micro-CT measurement in segments treated with Auryon laser

	All sections	Sections with MAC fracture	Sections without fracture	P-value
Number of analyzed micro-CT sections (n)	36	18	18	NS
Calcium Burden (mm <sup>2</sup> )	3.3 [2.1-4.3]	3.4 [2.8-3.9]	2.8 [1.3-4.6]	0.47
Calcium Arc, degree	337.6 [278.7-360]	360 [323.7-360]	312.8 [247.3-341.2]	0.01
Pre-Treatment Lumen Area (mm <sup>2</sup> )	1.3 [0.6-4.7]	4.6 [2.7-5.1]	0.6 [0.3-0.9]	<0.0001
Post-Treatment Lumen Area (mm <sup>2</sup> )	3 [1.6-5.1]	5.0 [2.5-5.5]	2.0 [1.3-3.6]	0.0023
Lumen Gain (mm <sup>2</sup> )	0.8 [0.1-1.7]	0.25 [-0.3-1.0]	1.2 [0.4-2.3]	0.0045
Percent lumen Gain (%)	22.5 [-0.8-151]	0.1 [-0.2-0.2]	1.9 [0.4-3.1]	0.0013

**Conclusion:** The Auryon laser atherectomy system effectively fractures medial calcification. Effects are most pronounced using higher fluence (60 mJ/mm<sup>2</sup>) and in circumferential (higher arc) calcium patterns