

# Endovascular Treatment of Calcified, Stenotic Iliac Arteries

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## BACKGROUND

- Percutaneous treatment of calcified, stenotic, iliac arteries is associated with high rates of complications including dissection, and vessel rupture which require urgent percutaneous or surgical intervention. Additionally, iliofemoral occlusive disease is common in patients with AAA and frequently results in access site complications during EVAR which increase morbidity and mortality.<sup>2,3</sup>

## PURPOSE

- We sought to assess the safety and performance of the Peripheral Intravascular Lithotripsy Catheter System (Shockwave Medical, Fremont CA), for the treatment of calcified, stenotic, iliac arteries for symptomatic disease or to enable access for EVAR.
- Intravascular lithotripsy (IVL) technology delivers pulsatile sonic pressure waves locally to effectively modify vascular calcium. It is the only technology that cracks both intimal and medial calcium and it does so while minimizing vessel injury. It accomplishes this by leveraging the physics of lithotripsy, which selectively differentiates calcium from soft tissue, in order to effectively modify calcium while avoiding damage to surrounding vessel tissue. IVL was created on a standard catheter-based platform to provide optimal energy transfer to the vascular calcium.

## METHODS

- Patients underwent procedural angiography and intravascular ultrasound imaging at baseline and followed by treatment with IVL. Effectiveness of therapy was evaluated by assessing final percent residual stenosis of the target lesion. Safety was evaluated by acute angiographic complications including dissection, abrupt closure, no-reflow, distal embolization, perforation or vessel rupture.

## RESULTS

- Three patients were included in this complex case series. Two patients had symptomatic, bilateral iliac disease and the third patient had unilateral iliac stenosis and planned AAA endovascular repair. A total of 5 Iliac lesions were treated in 3 patients.

	Baseline Angiography N = 5
MLD – mean (range)	3.4 mm (3.1–5.0 mm)
Median Calcium Grade (range)	4 (3–4)
% Stenosis – mean (range)	64% (60–70%)

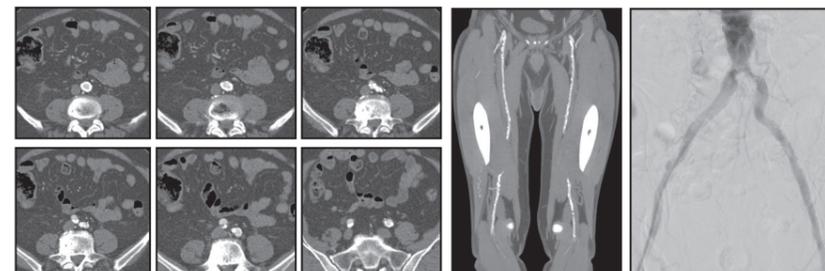
	Post IVL Results N = 5
% Residual Stenosis – mean (range)	20% (5–35%)
Adjunctive Therapy – DCB	80%
Non Flow Limiting Dissections	2
Flow Limiting Dissections	0
Perforation	0
Distal Embolization	0
Provisional Stent	0

### Case Example:

PMH: 71yr old with history of hypertension, heavy smoker, hypercholesterolemia with previous (1 year) left CIA stenting for severe stenosis (90%)

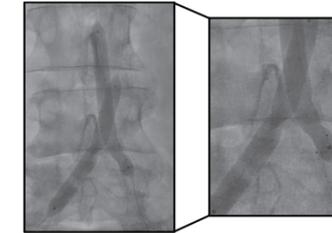
Presented with bilateral buttock claudication and left leg pain

### Pre Procedure

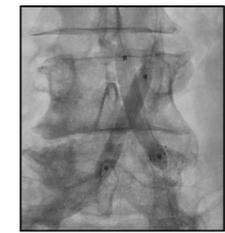


CTA and angiography demonstrated significant calcified stenosis in bilateral, common iliac arteries

### Procedure



Bilateral retrograde CFA access with a 0.035"/180cm angled hydrophilic guidewire through a 6Fr/45cm "Destination" introducer

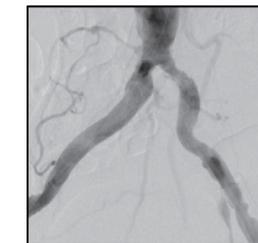


Intravascular Lithotripsy was followed by DCB: 8.0 x 40 mm In.Pact Admiral was utilized in each vessel and inflated for 3 min @ 8 atm

Bilateral "kissing" 7.0 mm IVL Catheters were placed. Pulses were delivered in an alternating pattern: 60 pulses @ 4 atm followed by 30 pulses @ 6 atm

### Results & Follow-up

Final results demonstrated 15% residual stenosis, no dissection  
ABI: right 0.85 and left 0.85



At 6 months patient was still pain free with right ABI 0.80 and left 0.85

## CONCLUSIONS

Endovascular treatment with IVL was able to be performed safely and effectively in these calcified, stenotic iliac arteries. A significant reduction of stenosis was achieved, with minimal complications.

## REFERENCES

1. Brewster DC, et al. *N Engl J Med*. 1975;292:822-825.
2. Gabrielli L, et al. *Acta chir belg*, 2004, 104, 519-526.
3. Hinchliffe RJ, et al. *J Endovasc Ther*. 2007;14:630-633.