

Iliac Stenosis In Professional Cyclists: How To Diagnose And Treat: ABIs Don't Help



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No Conflict of Interests



EIA Endofibrosis



This pathology develops in up to 15% of professional cyclists.

Endofibrosis & kinking of the Iliac arteries poses difficulties in diagnosis mainly because their occurrence in young otherwise healthy subjects with often normal arterial studies under routine “exertion tests” (when no atherosclerotic risk factors exist).

Clinical evaluation, Doppler studies and even Imaging might also be misleading many times.

High index of suspicion is the key for diagnosis.

As you will see in the next few minutes

Most describe a long history of complaints

Most are in very good shape

Most have normal palpable LL pulses

Most have “normal” Doppler studies

Most have normal CTA reports

YET

With proper history taking diagnosis is rather easy among competitive cyclists.

My 40 years of experience did not unveil this pathology until recently when I treated 5 such cases since 2020.

Pathophysiology is the development of non atherosclerotic thickening of the vessel intima (= endofibrosis) causing progressive luminal stenosis and /or kinking of the Ext. iliac artery.

Aetiology: Physical position (hip hyperflexion)
Psoas hypertrophy (causing external arterial compression)
Repetitive stretching & trauma
Arterial fixation causing extra kinking
Excessive vessel length
Endothelial dysfunction
Systemic factors

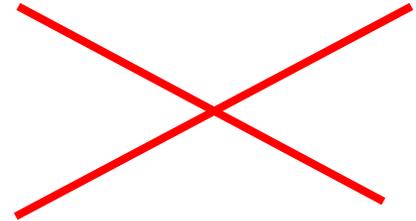
Diagnosis

The 3 principle investigations that are not standard should include:

- A. Doppler exercise test at rest and post **non standardized extreme exertion test**
- B. Duplex velocity studies of the external Iliac at rest and post exertion
- C. Aorto-Iliac CTA **with flexed hips** to best visualize elongation and kinking

Treatment Options

Stop competitive cycling
Change the riding position
Change the sport



EVT does not work
Bypass / interposition is optional
Arterial release

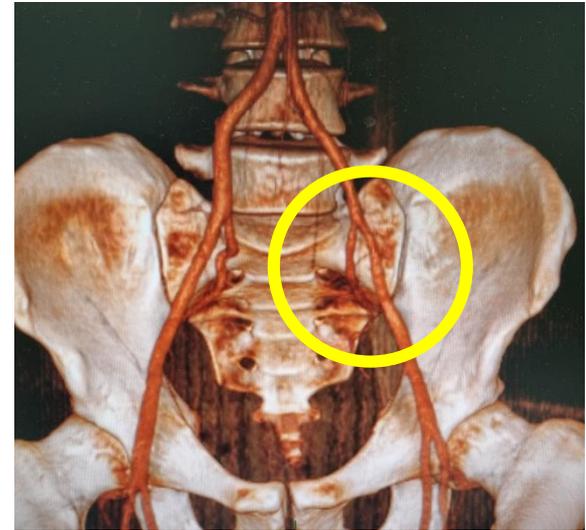
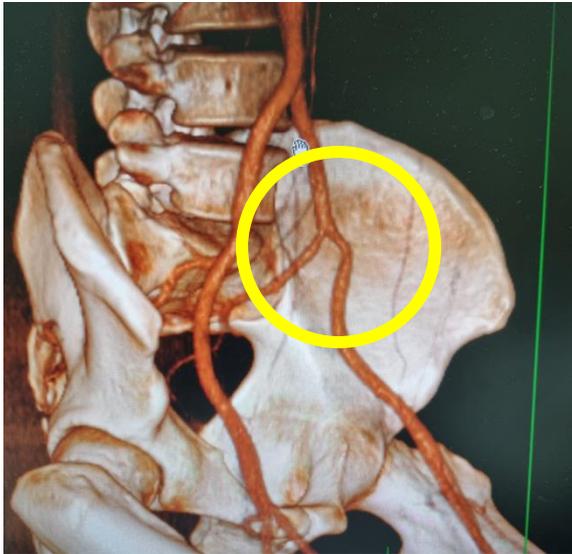


Best is Endofibrectomy of the whole EIA with vein
patch closure
Arterial shortening or elongation & kinking if present

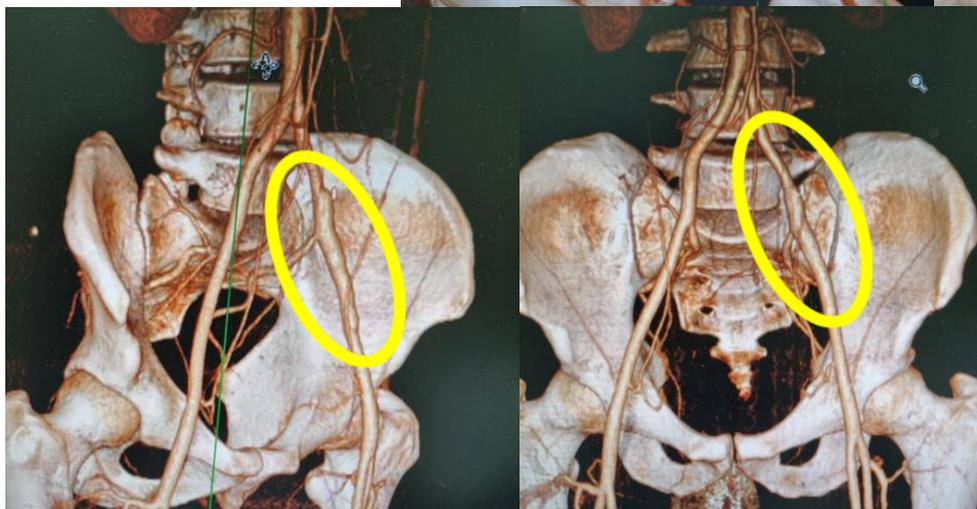
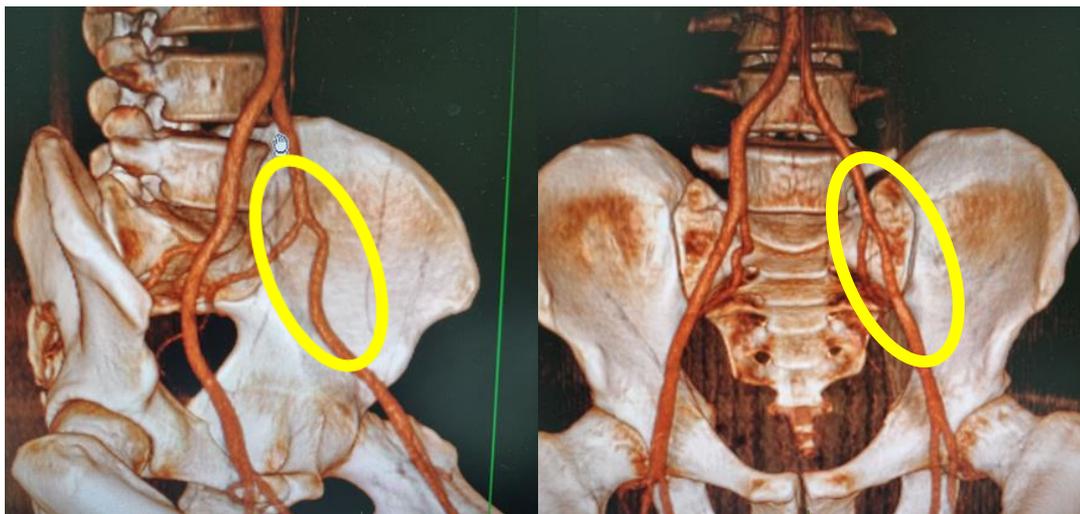


Some CTA Examples

One can see the diameter change of the EIA missed in the original report



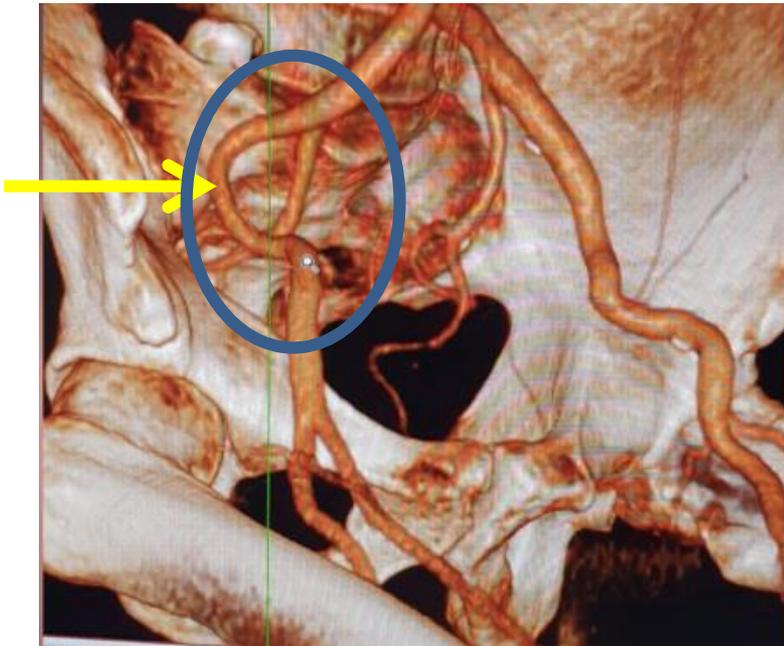
PREOP.
IMAGES



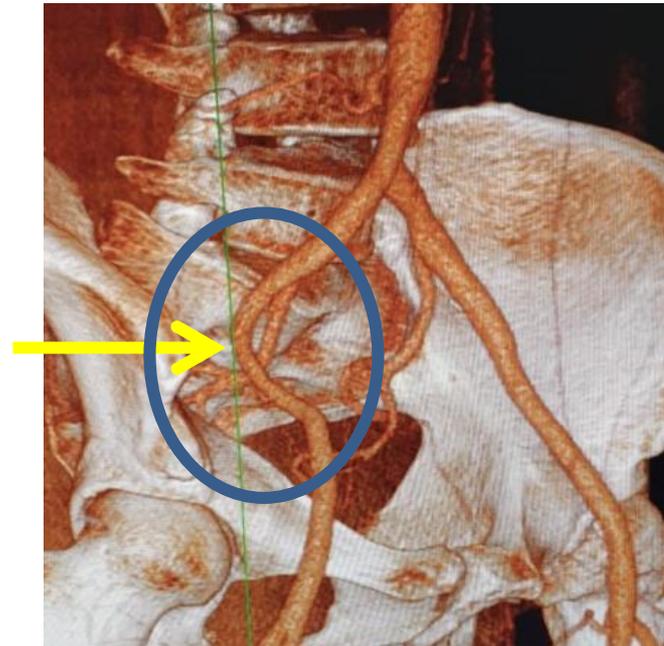
POSTOP.
IMAGES

Positional CTA

CTA WITH FLEXED HIPS



CTA WITH STRAIGHT LEGS



Doppler Studies

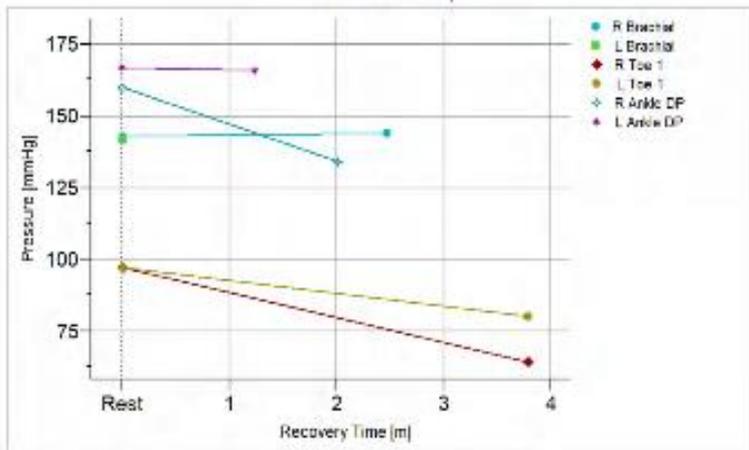
Standard Exercise Test

BP Stress

Exercise - Stress Table

Site	Time	R Ankle	Brachial	L Ankle
Rest	-	161 (1.13)	143	167 (1.17)
Ankle DP	01:14	-	-	167 (1.16)
Ankle DP	02:01	135 (0.94)	-	-
Brachial	02:28	-	144	-

Exercise - Stress Graph



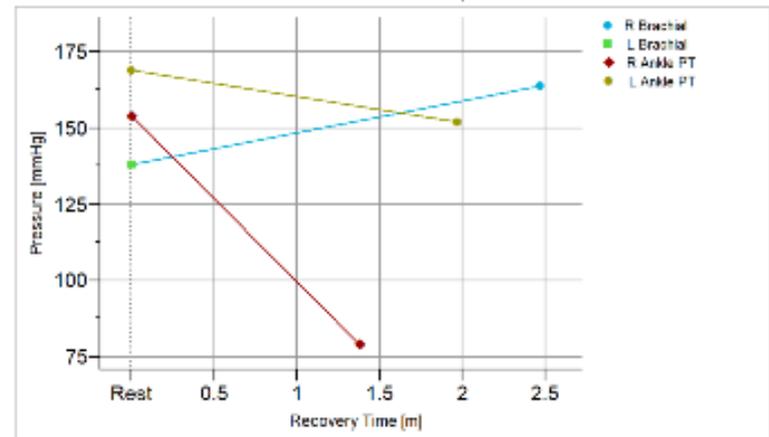
Extreme Exercise Test

BP Stress

Exercise - Stress Table

Site	Time	R Ankle	Brachial	L Ankle
Rest	-	165 (1.12)	138	169 (1.22)
Ankle PT	01:23	79 (0.48)	-	-
Ankle PT	01:59	-	-	153 (0.93)
Brachial	02:28	-	164	-

Exercise - Stress Graph



Doppler Studies

Extreme Exercise test

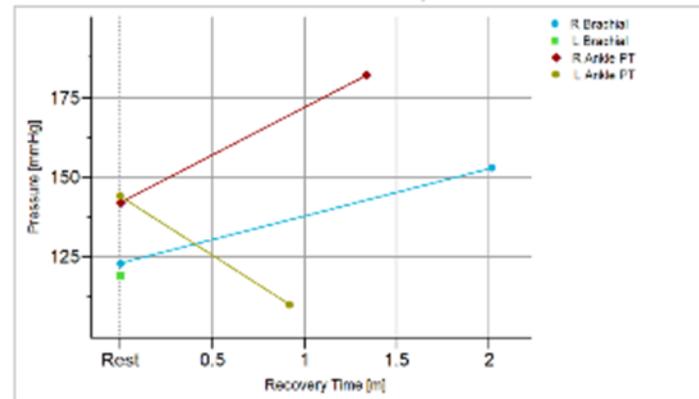


BP Stress

Exercise - Stress Table

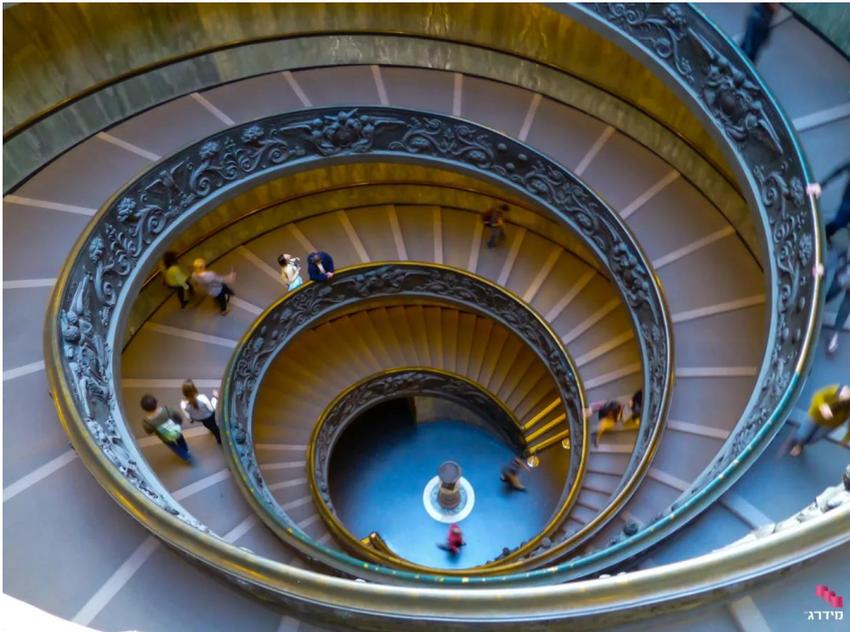
Site	Time	R Ankle	Brachial	L Ankle
Rest	-	143 (1.16)	123	144 (1.17)
Ankle PT	00:55	-	-	111 (0.72)
Ankle PT	01:20	182 (1.18)	-	-
Brachial	02:01	-	154	-

Exercise - Stress Graph



Doppler Studies

Extreme Exercise Test

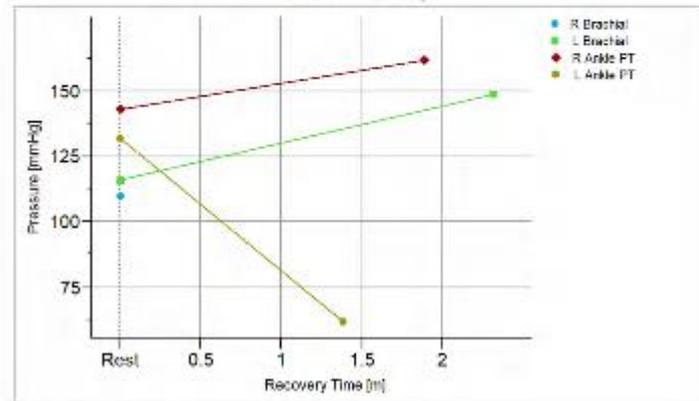


BP Stress

Exercise - Stress Table

Site	Time	R Ankle	Brachial	L Ankle
Rest	-	143 (1.23)	116	132 (1.14)
Ankle PT	01:23	-	-	62 (0.42)
Ankle PT	01:53	162 (1.09)	-	-
Brachial	02:19	-	148	-

Exercise - Stress Graph



Best Medical Therapy

Endofibrosis is distinct from atherosclerosis and the prevalence of conventional risk factors in this population is very low. Most don't smoke. Histopathology shows no evidence of atherosclerotic plaques or calcifications.

Therefore the issue of BMT especially of statins and antiplatelet drugs is still unclear.

Surgical Options

Arterial release

Shortening of the artery

Interposition graft with SVG

Endofibrectomy with vein patch angioplasty

The Surgery



The open cleaned artery



The endofibrectomy specimen



The patched artery

Pathologic Specimens



The chopped arterial segments



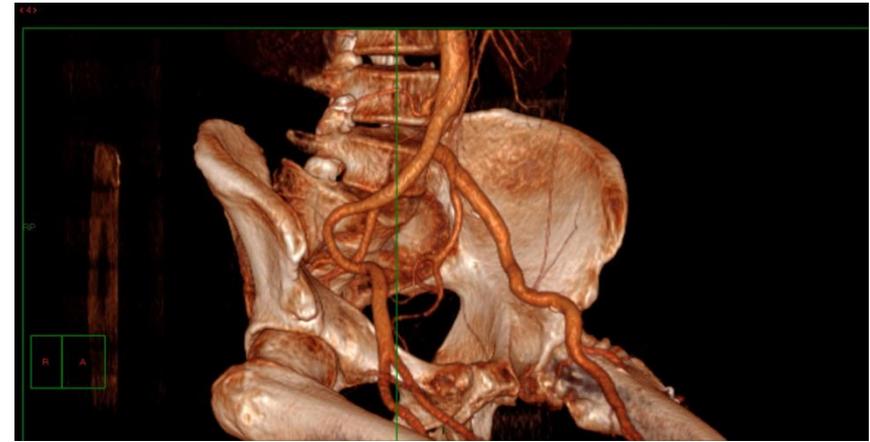
The endofibrectomy specimens

The Repair

Postoperative image



Preoperative image



Post endofibrectomy
@
Arterial shortening

Pathology Report

RIGHT ILIAC ENDARTERECTOMY:

Consistent with arterial endofibrosis.

The intima is expanded by the fibroblastic proliferation.

No evidence of atherosclerotic change.



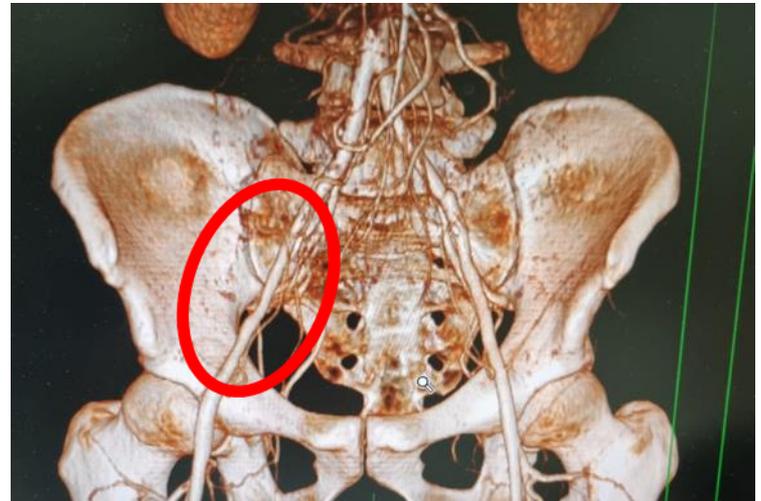
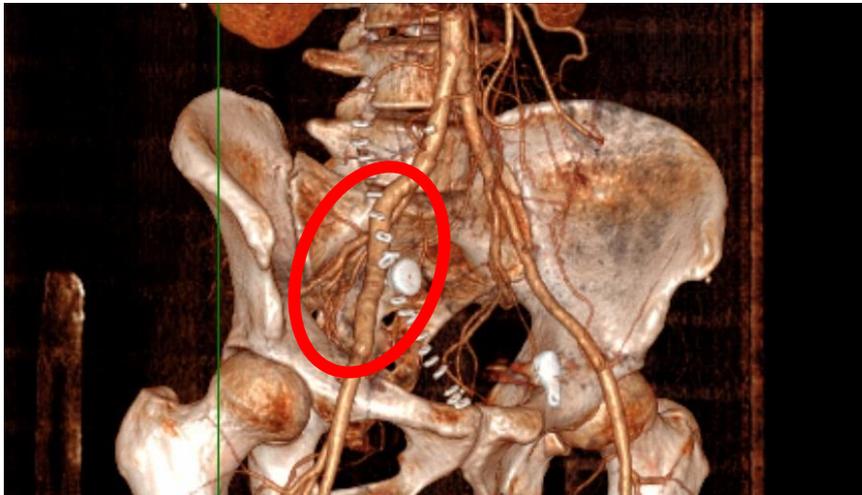
Take Home Message

The big challenge is proper diagnosis

The big debate is how to treat recurrent stenosis

Early Postop.

Late Postop.



Thank you for the privilege to give this overview.

Wish you all a less COVID and more VIVID year.