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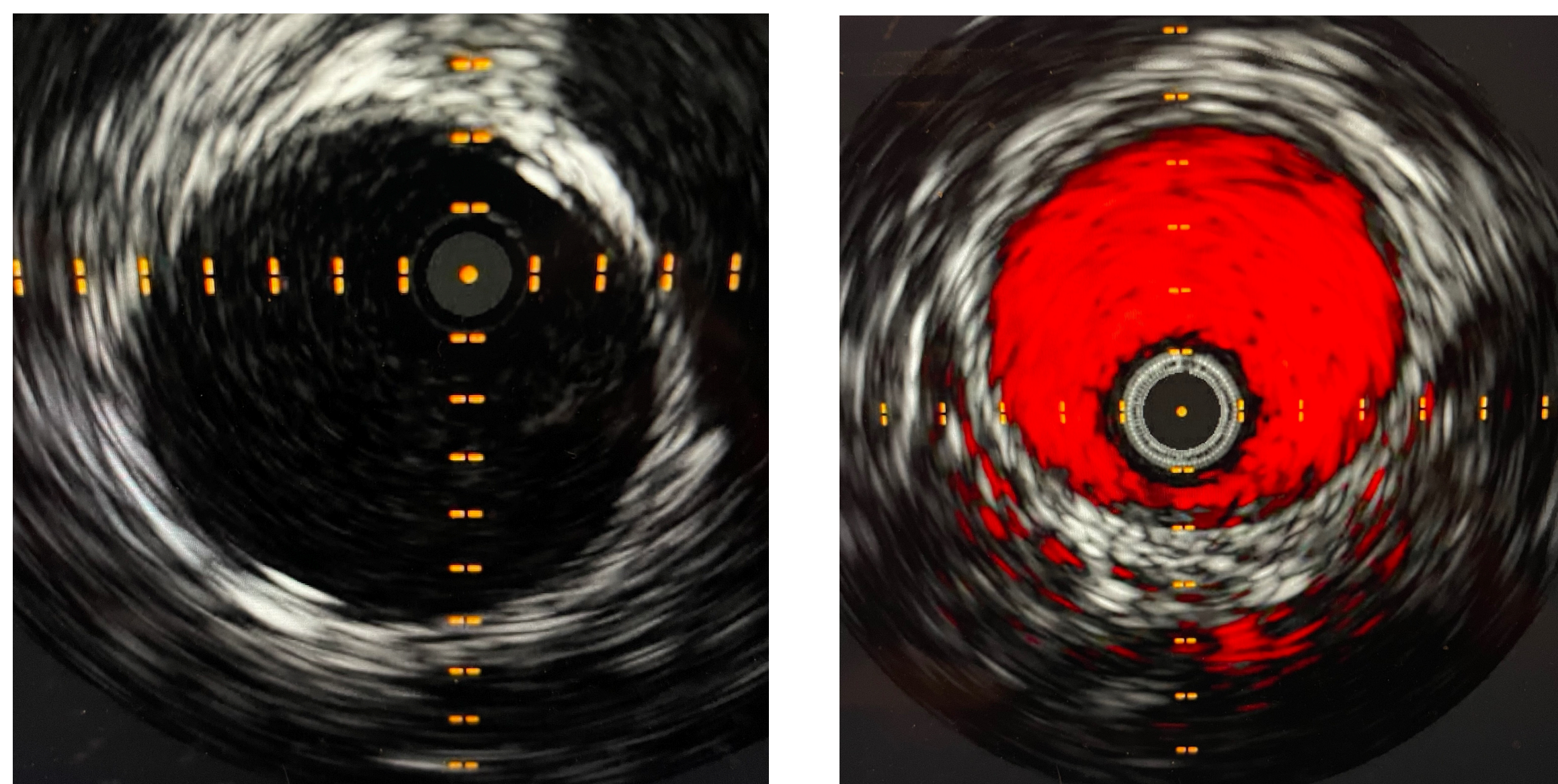
Introduction

- Endofibrosis is a rare and pathologic process whereby the lumen of the artery becomes progressively occluded due to arterial intima thickening.¹
- Exercise induced claudication is an uncommon condition in a healthy athlete and is often not seen by primary care physicians.¹
- Female athletes make up only 7% of reported cases.²
- Post-exercise ankle brachial index often confirms diagnosis of claudication.³
- With only subtle changes to arteries seen with traditional medical imaging, diagnosis is often delayed.⁴
- Functional imaging is completed to mimic clinical symptoms.⁵
- Various anatomical anomalies have been described that predispose to claudication of the anterior thigh: tortuous vessel, arterial stenosis, iliopsoas hypertrophy, atherosclerotic disease, and/or endofibrosis.¹
- Surgery is the best treatment option in individuals who want to continue their sporting lifestyle.³

Case Summary

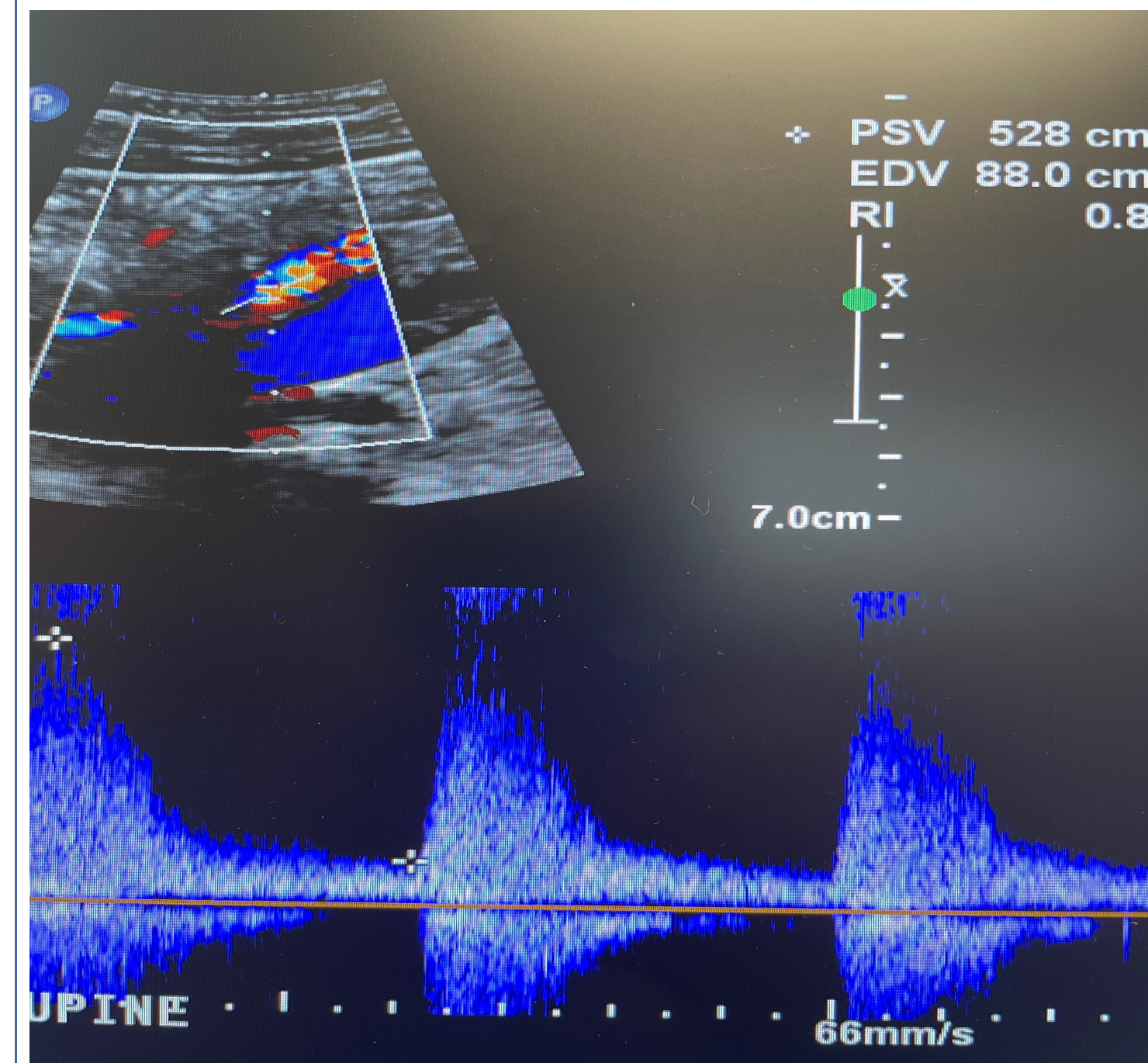
- 40-year-old female triathlete – initial evaluation 10/28/21.
- Anterior thigh pain at the beginning of her workouts that worsened with uphill activity and was relieved shortly after rest.
- Hip and quadriceps pain with weakness, loss of motion, stiffness, and radiation of pain down the anterior right leg.
- MSK ultrasound - no obvious changes to the quadriceps, IT band, TFL, or greater trochanteric bursa.
- Hip and lumbar plain films - non-specific.
- Intra-articular right hip corticosteroid injection did not provide relief of symptoms.
- MRI - no femoral avascular necrosis, fracture, or significant hip osteoarthritis with a right acetabular labral tear.
- ABIs following exercise - significant decrease in perfusion on the right.
- CTA - no definitive evidence of diffuse myointimal thickening to suggest endofibrosis and no hemodynamically significant stenosis.
- Conventional arteriography and interventional ultrasound were unrevealing to an expected iliac lesion. However, after 200mcg of nitroglycerin, spasm was appreciated in the right external iliac artery.
- Surgical intervention completed 11/22/22.

Intravascular Ultrasound



Pictures 1, 2 - No evidence of intimal thickening to suggest endofibrosis, doppler with normal flow.

Post-Exercise Duplex and ABI



Picture 3. Post-exercise Duplex – Significant elevation in peak systolic velocity following exercise.

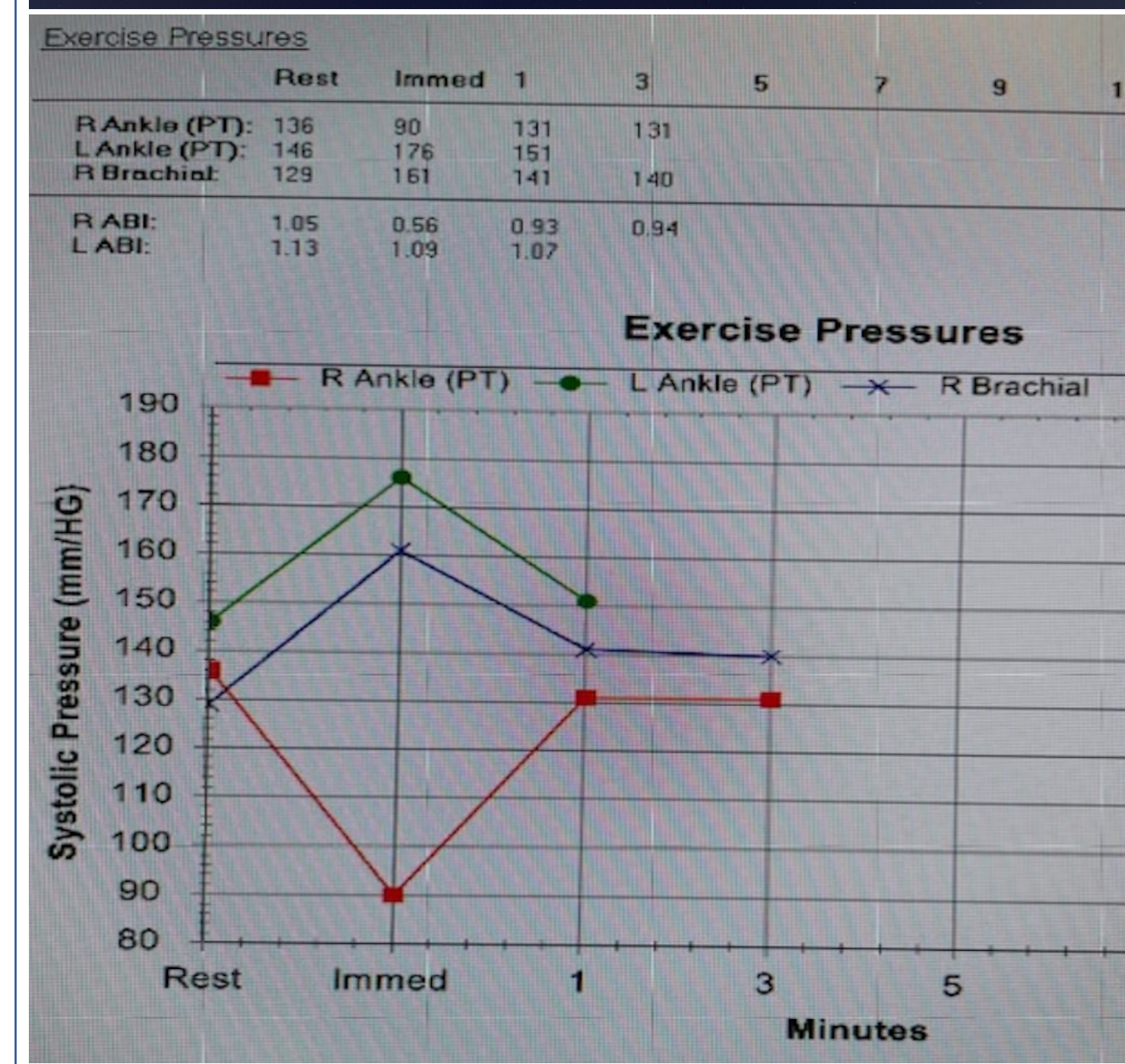


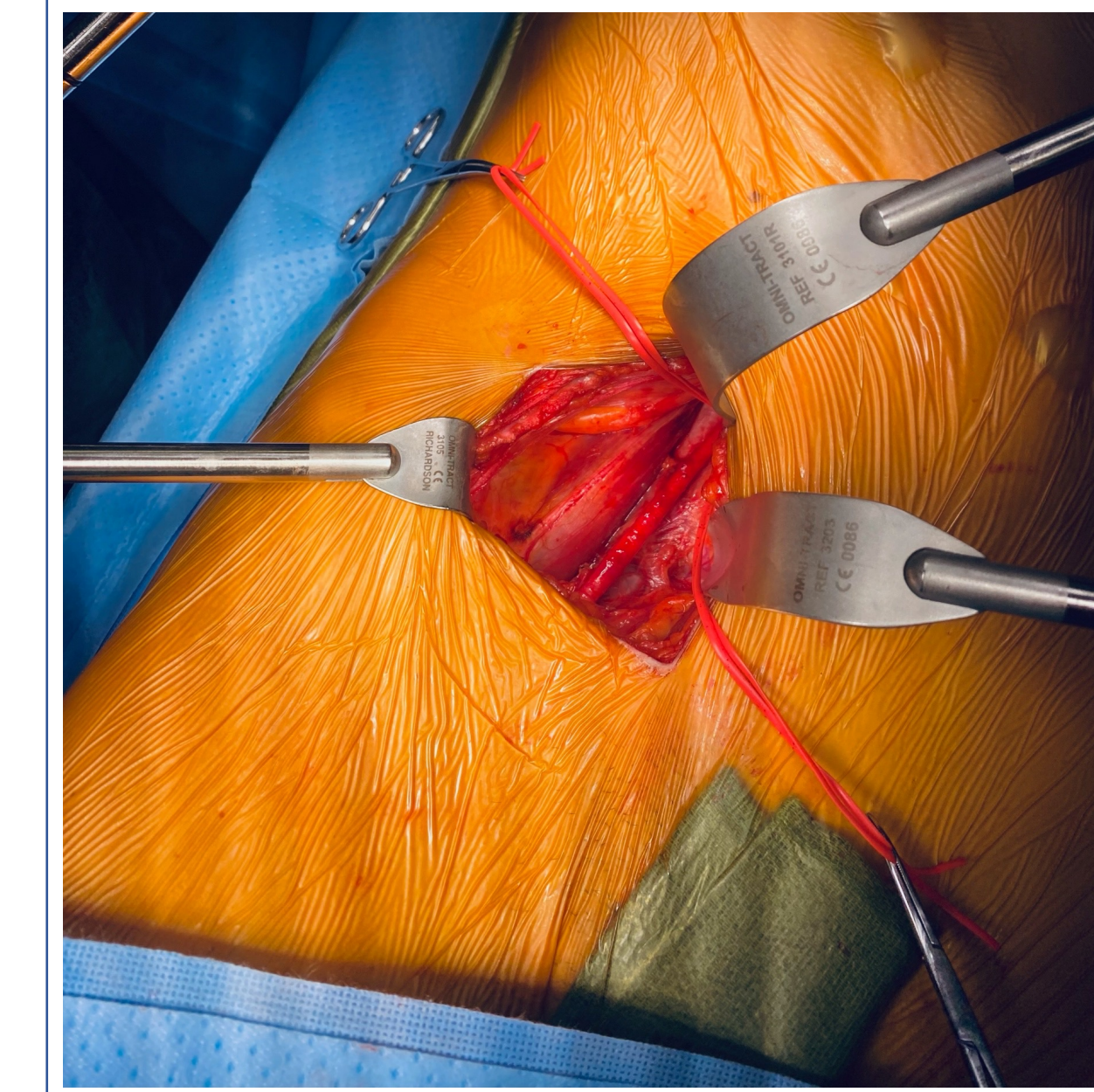
Figure 1. ABI - Severe drop in right ankle blood pressure following exercise.

Conventional Arteriography

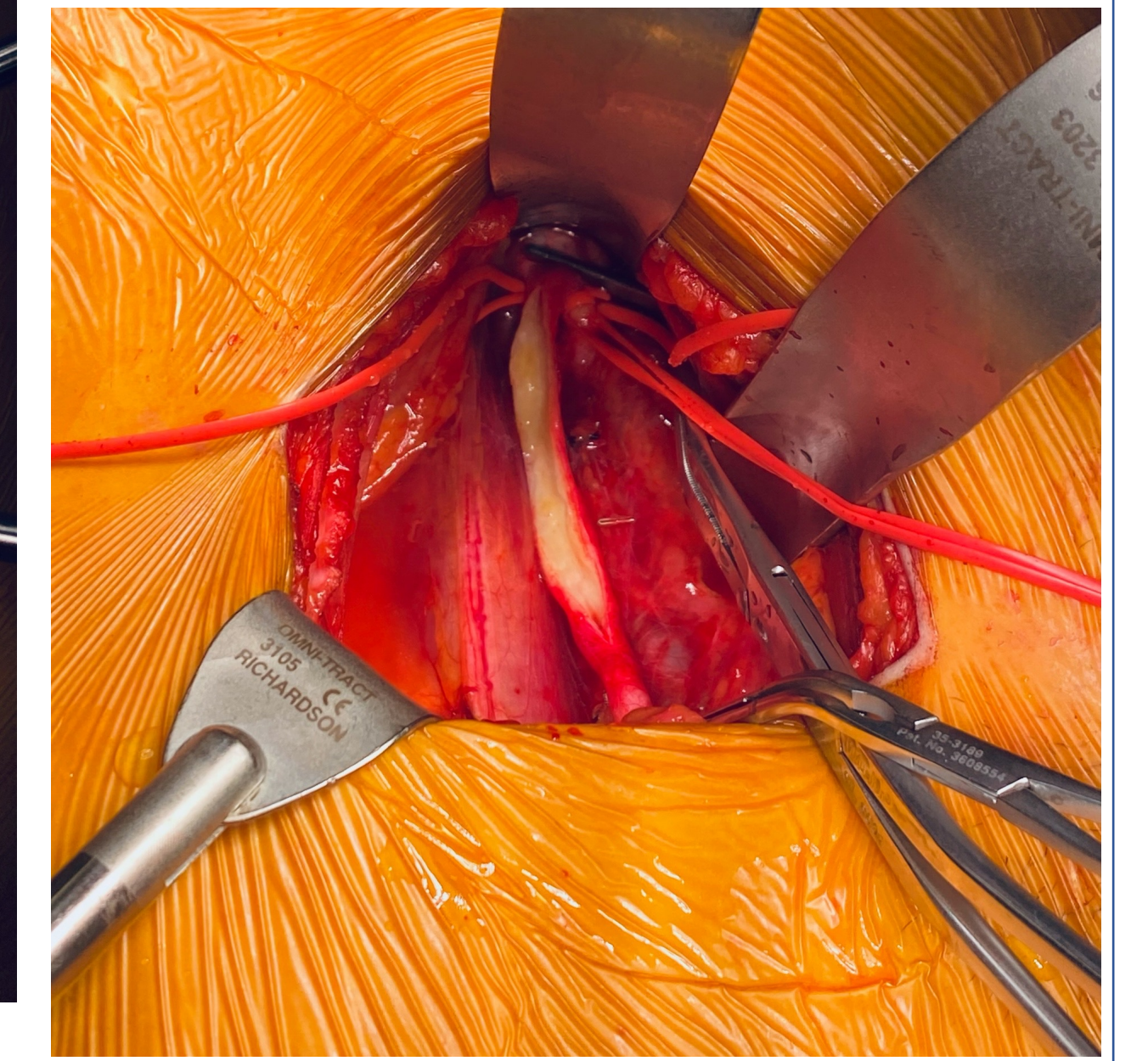


Pictures 4, 5 - Nitrous Oxide injected into the external iliac artery led to vasospasm and decreased flow through the vessel.

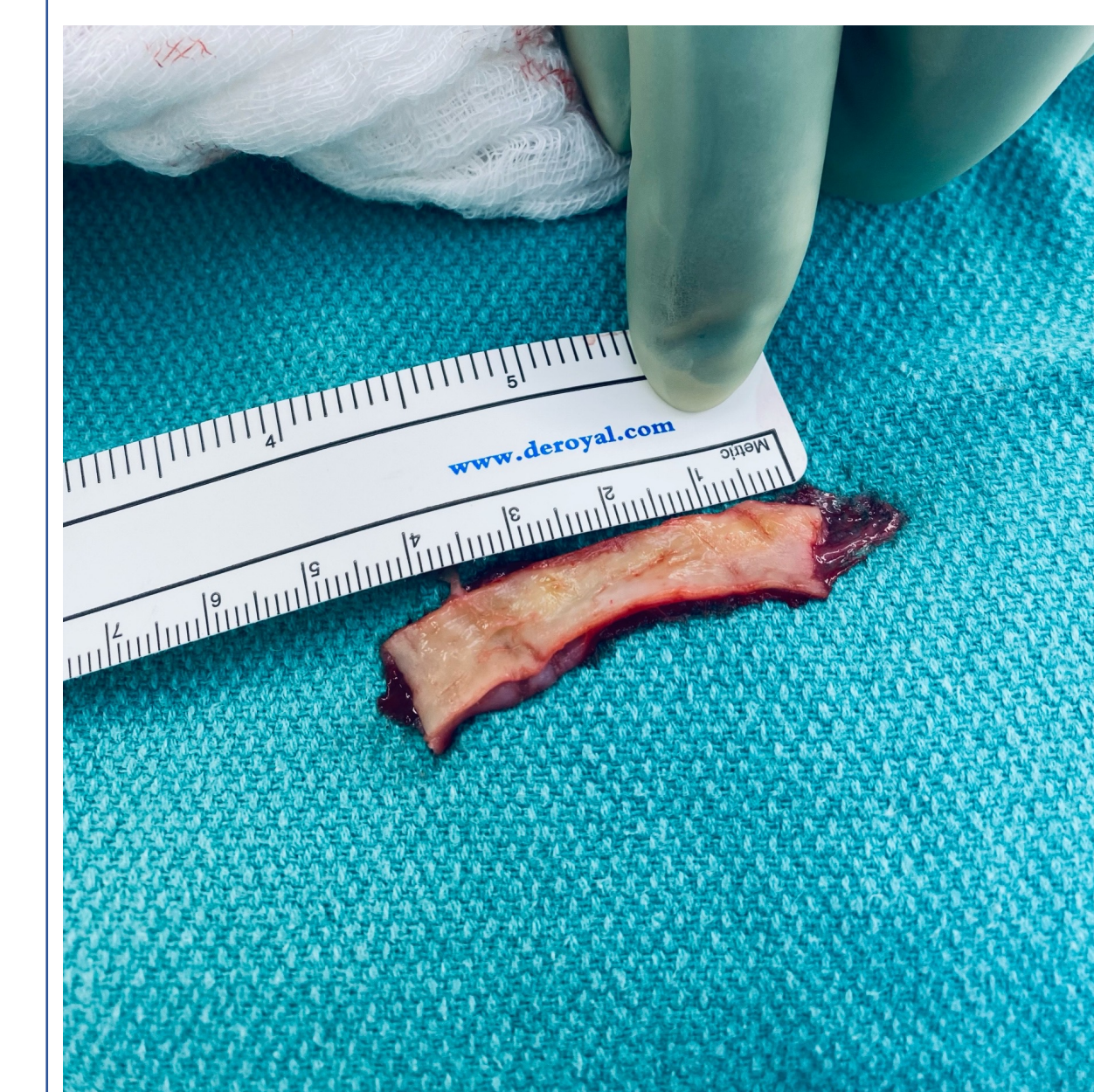
Surgical Evaluation



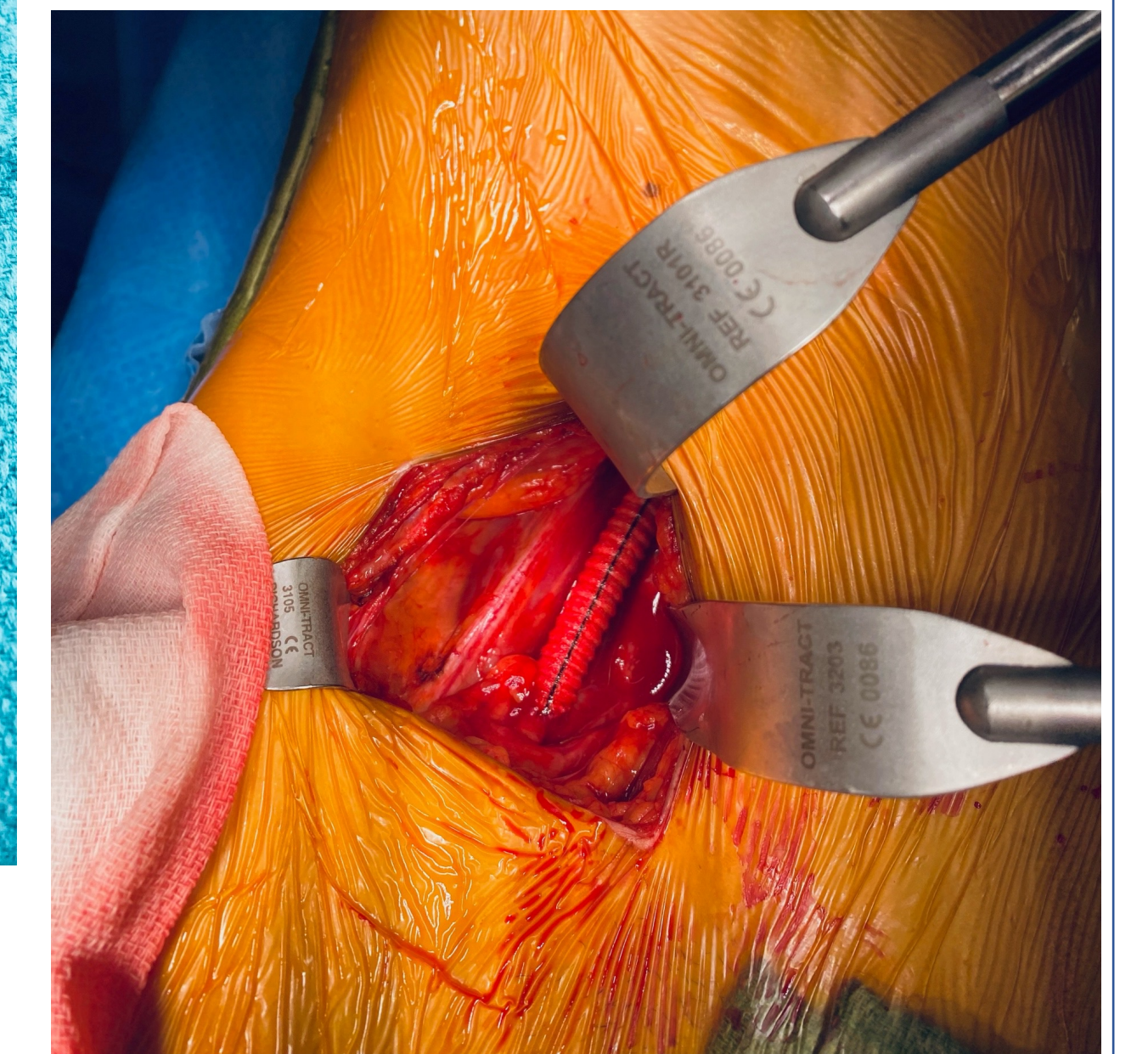
Above: Picture 6 - External iliac artery dissection.



Above: Picture 7 - Diffuse endofibrosis 1cm distal to common iliac bifurcation to 1cm proximal to the inguinal ligament.



Above: Picture 8 - Endofibrosed vessel.



Above: Picture 9 - External iliac artery interposition bypass with 8mm Dacron graft.

Discussion

- Surgical pathology showed variable thickening of the intimal layer consistent with endofibrosis.
- Endofibrosis often affects elite athletes due to repetitive motion – commonly seen in the iliac arteries in cyclists and runners.¹
- Physiological vasodilation during high energy exercise is limited due to fibrosis of the affected arteries, thus leading to exercise induced arterial insufficiency, or claudication.²
- Once the oxygen demand exceeds the supply during high energy exercise, symptoms surface.¹
- Long term outcomes of surgical interventions are unknown.⁵
- Subclinical endofibrosis is likely to be more prevalent than we know.
- No standard return-to-play protocol.

References

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