

## Angioseal related common femoral artery occlusion.

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**Section:** Interventional radiology

Case Type: Clinical Cases

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**Patient:** 51 years, male

### Clinical History:

A 51 year old man was referred to the emergency room because of an electrocardiogram (ECG) exercise test, done at his internal specialist on diabetes, which showed a significant downsloping ST segment.

### Imaging Findings:

A 51 year old male patient was referred to the emergency room because of a significant down sloping ST segment that was observed at an electrocardiogram (ECG) Exercise Test made by his internal specialist on diabetes.

The patient was referred to the internal department where the stress echocardiography was repeated (Fig. 1): significant down sloping ST segment in V4, V5, V6 precordial derivation was observed. The patient had several risk factors: diabetes mellitus type II, hypertension, hypercholesterolemia, smoking (20 cigarettes per day). For these reasons, he was submitted to a coronary arteriography that showed a moderate stenosis (40-50%) of the right coronary artery. Angio-Seal device (St. Jude Medical, Minnetonka, MN) was used to close the femoral access. The patient started to complain about intermittent claudication at 50 meters walk, he reported pain, weakness and cramping. The femoral pulse distally to the site of puncture, popliteal, dorsalis pedis and tibialis posterior pulses were absent.

Colour Doppler sonography showed an arterial thrombosis, after which arteriography was performed via a left transfemoral access.

Arteriography showed (Fig. 2) a complete obstruction of the common femoral artery under the inguinal ligament, and revascularization before its bifurcation. Stent deployment was not performed due to the obstruction of the anatomical site associated with a low rate of patency.

Surgical approach (Fig. 3) was the only solution to solve the leg impairment. Longitudinal arteriotomy showed the presence of the Angio-Seal device surrounded by a clot. A surgical bypass between the common femoral artery and its bifurcation was performed with an e-PTFE graft.

### Discussion:

The Angio-Seal vascular closure device (VCD) was Food and Drug Administration (FDA) approved in 1995 [1]. The Angio-Seal device (St. Jude Medical, Minnetonka, MN) sandwiches an intra-arterial absorbable anchor on the luminal side of the vessel and a thrombin plug on the surface of the artery using a self-cinching stitch [2]. The anchor is resorbed physically within 30 days and chemically within 90 days [3].

The contraindications for the use of an Angio-Seal device are: 1) heavily circumferential calcification, 2) >50% stenosis of the common femoral artery (CFA), 3) elective surgical intervention at the ipsilateral femoral artery scheduled less than 3 months after the percutaneous procedure, and 4) native CFA diameter < 4-5 mm [4].

The main advantages of VCD are patient comfort, reduction of time to mobilization, and shortening of inpatient stay due to reduction of time to hemostasis after sheath removal.

Several complications have been described for VCD: acute femoral occlusion, infection, surgical repair, transfusion,

femoral artery pseudo-aneurysm. Complication rate is still about 1% [5,6].

We want to underline how the use of these devices is safe but can lead to limb threatening complication or acute leg ischemia that must be treated with a surgical approach.

Peripheral vascular disease is the most common cause of complications while using these devices; for this reason an attentive pre-procedural evaluation of risk factor and anamnesis of the patient, and morphology of the vessel should be performed to reduce the incidence of complications.

**Differential Diagnosis List:** Angioseal related common femoral artery occlusion

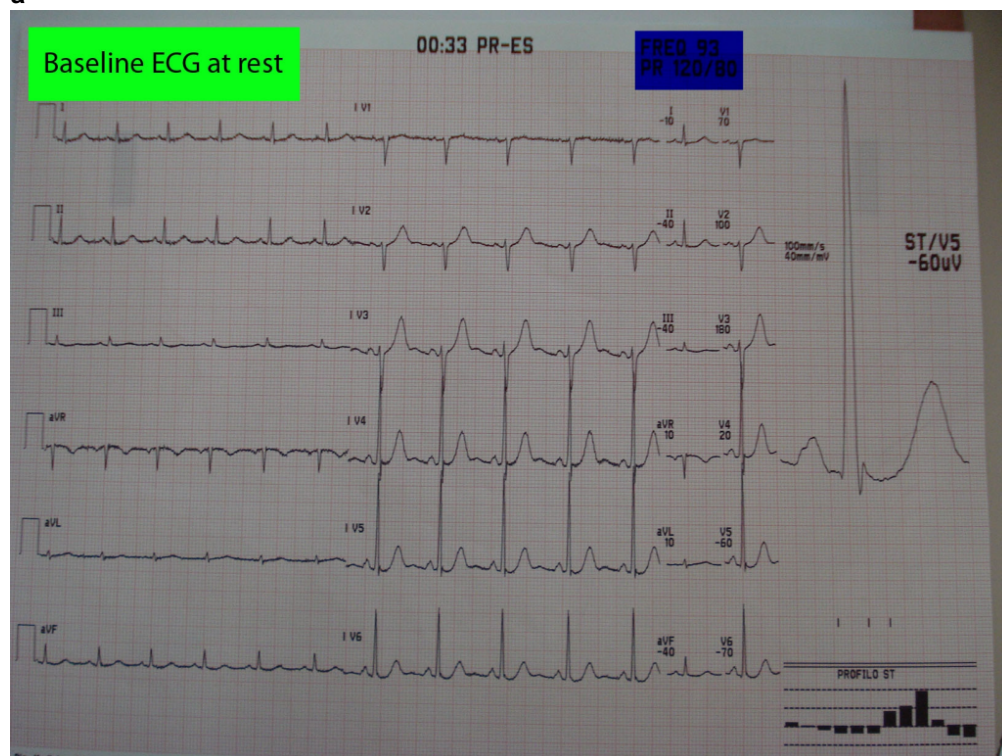
**Final Diagnosis:** Angioseal related common femoral artery occlusion

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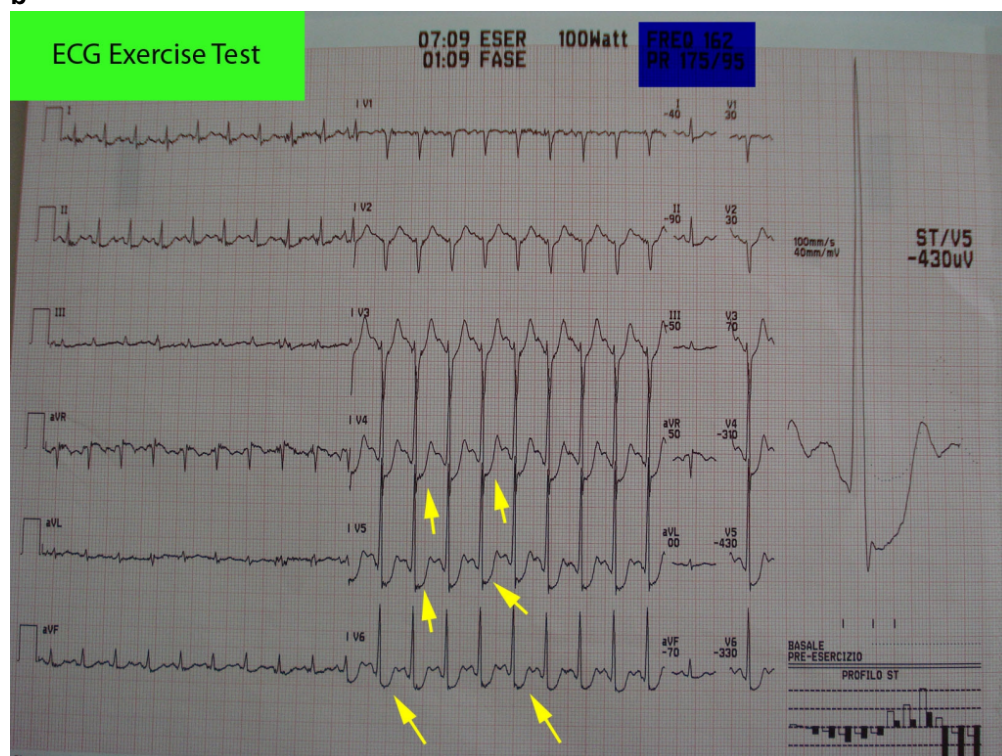
**Figure 1**

**a**



**Description:** Baseline ECG at rest: frequencies 92 bpm, arterial pressure 120/80 mmHg. **Origin:**

**b**



**Description:** ECG Exercise Test: significant downsloping ST segment in V4, V5, V6 precordial derivation.

**Origin:**

**Figure 2**

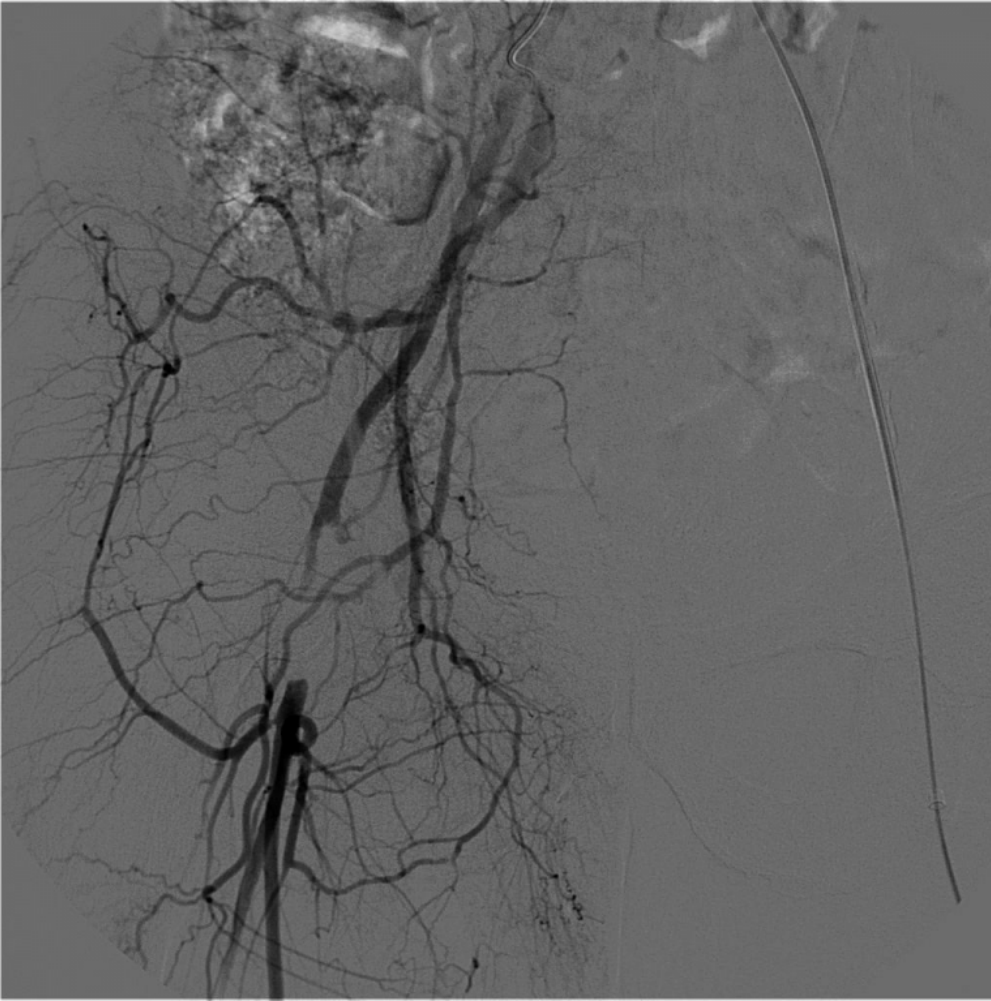
**a**



**Description:** DSA AP projection groin region. Contrast media injection demonstrate complete obstruction of common femoral artery. **Origin:**



**b**



**Description:** DSA AP projection groin region. Collateral vessel restore flow distally to the obstructed segment before arteries bifurcation. **Origin:**

**c**



**Description:** DSA AP projection thigh region. Distally to the obstructed segment flow is preserved.  
**Origin:**

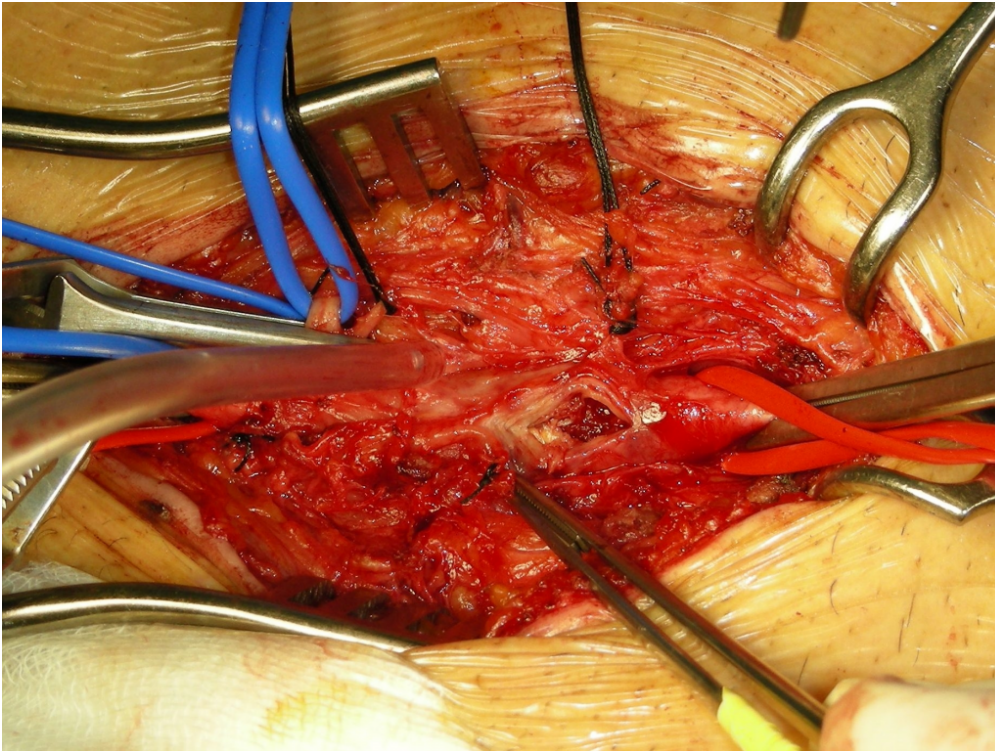
d



**Description:** DSA Right Oblique projection.

Complete obstruction is demonstrated. Because the obstructed segment was in the groin region, patient was not candidate for stenting. **Origin:**

e

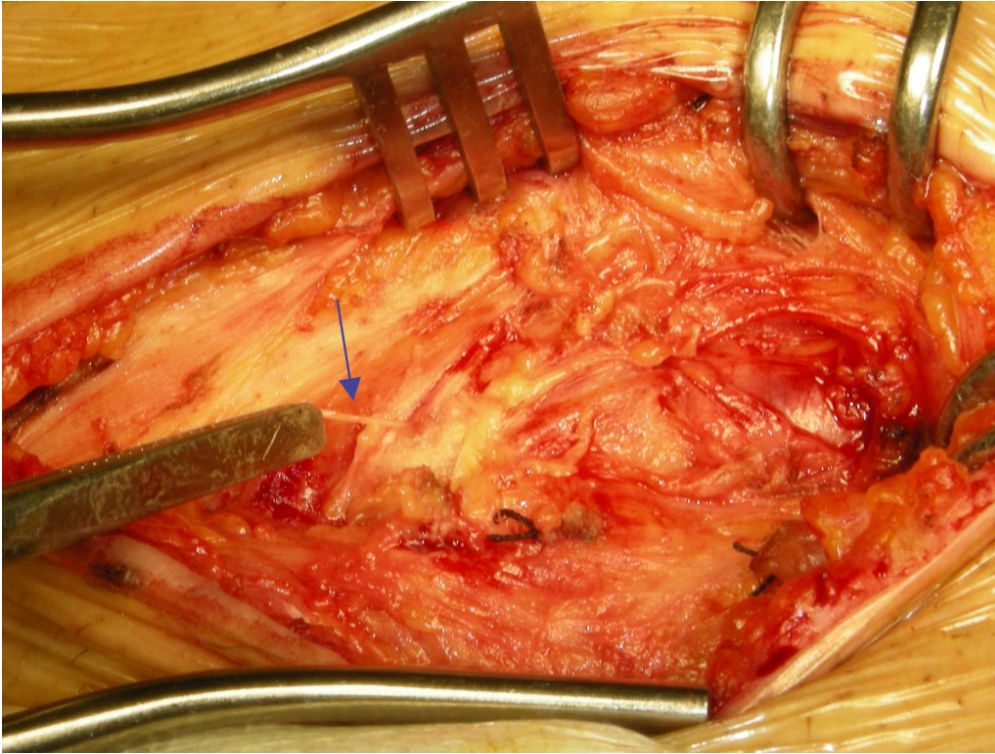


**Description:** DSA Right Oblique projection.  
Complete obstruction is demonstrated. **Origin:**



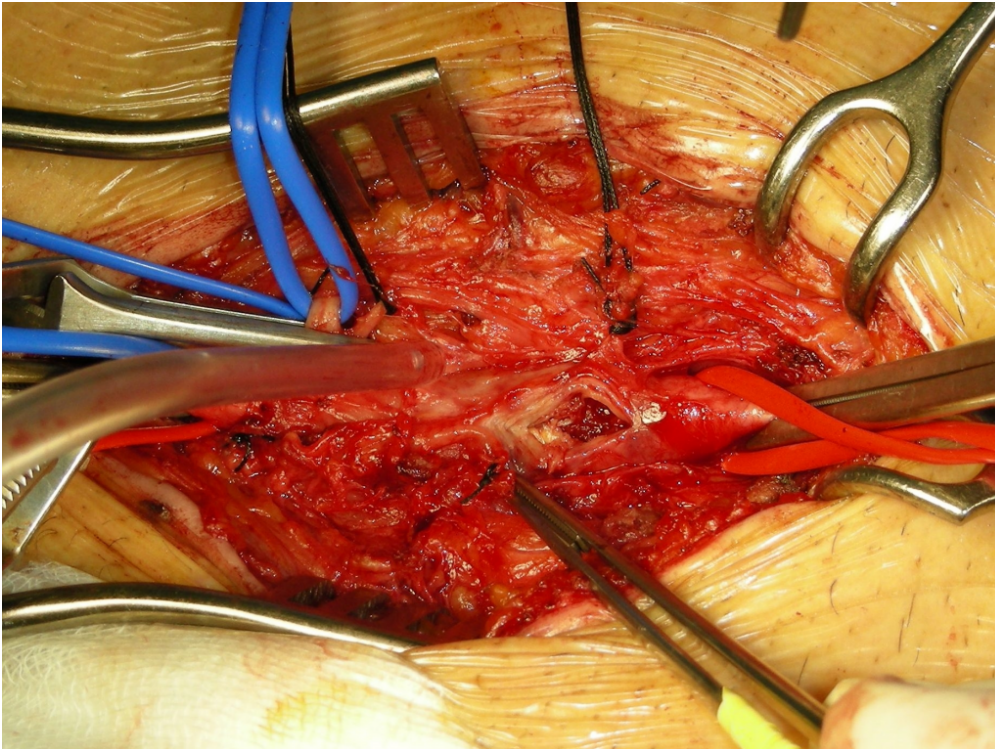
**Figure 3**

**a**



**Description:** Angioseal's thread coming out from the artery. **Origin:**

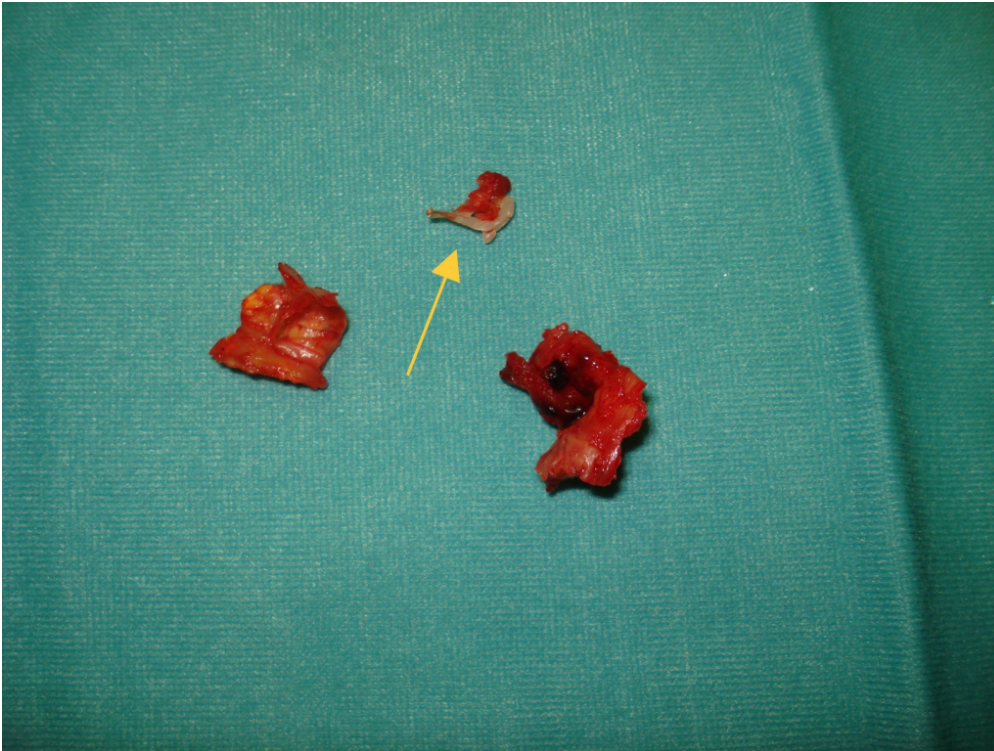
**b**



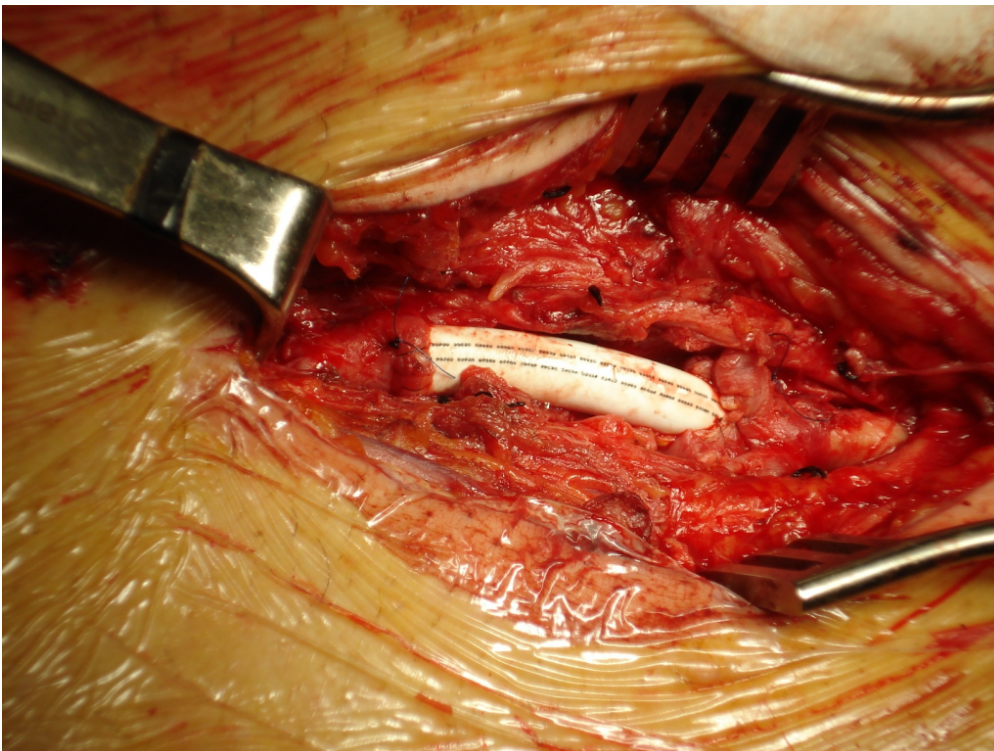
**Description:** Longitudinal arteriotomy. **Origin:**



c



**Description:** Asported material.  
Angioseal device it's appreciable surrounded by a clot. **Origin:**  
d



**Description:** e-PTFE stent graft deployed. **Origin:**