Clinical History:

An 84-year-old male presented with a painful swelling in the right popliteal fossa with mildly limited extension and flexion of the right knee. He underwent an ultrasound of the right popliteal fossa and a CTA of the lower extremities.

Imaging Findings:

An 84-year-old male presented with a painful swelling in the right popliteal fossa, which he had noticed a few days before. His past medical history included coronary artery disease for which he had undergone a coronary artery bypass grafting procedure. Eleven years prior he received open surgical repair for a ruptured abdominal aortic aneurysm.

Physical examination revealed a large non-pulsatile swelling extending from the medial side of the thigh to the right popliteal fossa and mildly limited extension and flexion of the right knee. Pedal pulses were normal.

On the lateral right knee radiograph (Fig. 1) anterior displacement of a markedly calcified politeal artery was seen. Sonography (Fig. 2) showed a large popliteal artery aneurysm with thick mural thrombus and no signs of deep venous thrombosis. A CTA of the lower extremities (Figures 3, 4, 5) revealed a right-sided unruptured giant saccular popliteal artery aneurysm of 8.5x8.6x16.8 cm with significant mural thrombus. Also a small left-sided popliteal aneurysm was present. On a subsequent thoracoabdominal CTA, an infrarenal aortic aneurysm of 3.4x3.8 cm and a right common iliac artery aneurysm of 6.2 cm were seen.

A femoropopliteal bypass (FP3) / ligation procedure was performed with placement of a polytetrafluoroethylene interposition graft. Surgery on the abdominal aneurysms was refrained from considering the patient's age and cardiac history.

Following surgery, the patient developed a foot drop and steppage gait, caused by a lesion to the nervus peroneus. The patient recovered quickly and was discharged 10 days after surgery with an ankle foot orthosis.

Discussion:

A popliteal artery aneurysm is a focal dilatation of the popliteal artery of more than 2 cm or 150% of its normal calibre. It is the most common peripheral aneurysm and 90% occur in older men (prevalence of 1% in men aged 65 to 80) [1,2]. Popliteal artery aneurysms are often bilateral and commonly associated with abdominal aneurysms. Most popliteal aneurysms are fusiform and associated with atherosclerosis. To our knowledge, this case report presents the largest non-ruptured saccular popliteal aneurysm reported to date.

Complications of popliteal artery aneurysms are acute ischemia of the lower limb due to thrombosis of, or embolization from the aneurysm; rupture; compression of adjacent structures like popliteal vein, medial popliteal, distal sciatic and common peroneal nerves [3]. Therefore the following symptoms may occur: intermittent claudication, rest pain, symptoms related to popliteal vein thrombosis and foot drop. In a prospective study by Galland et al aneurysms producing ischaemia and acute thrombosis had a median diameter of 3 cm, significantly larger than asymptomatic aneurysms (2 cm). Aneurysms producing compression within the popliteal fossa had a
mean diameter of 3.45cm [4]. The most common treatment of popliteal artery aneurysms today is femoropopliteal bypass surgery using either vein or synthetic graft, with exclusion suture ligation proximally and distally. Two approaches exist: the medial approach being the usual method. The posterior approach is first choice if a short bypass is sufficient [2]. The possibility of endovascular treatment depends on adequate popliteal artery anatomy, aneurysmal degeneration and tibial run-off. Thrombolysis can be used per-operatively to clear run-off. Complication rates of femoropopliteal bypass surgery are low: 30 day mortality and limb loss of less than 1% each. 1% of patients are left with residual symptoms. 5 year graft patency is 70-94% [5]. Risk factors for amputation are a poor run-off, use of a synthetic graft, emergency treatment and old age [2].

**Differential Diagnosis List:** Giant non-ruptured saccular popliteal aneurysm.

**Final Diagnosis:** Giant non-ruptured saccular popliteal aneurysm.

**References:**


Description: Anterior displacement of a markedly calcified politeal artery is seen. Origin:
Description: A large popliteal artery aneurysm with thick mural thrombus is seen in the right popliteal fossa. Origin:
Description: Axial slice through the giant saccular popliteal artery aneurysm at the level of the femoral condyles. Origin:
Description: Axial slice through the thrombosed part of the giant saccular popliteal artery aneurysm, the popliteal artery lying anterior to the aneurysmal sac. Origin:
Description: Coronal MPR of the knees: right-sided giant popliteal artery aneurysm. Origin:
Description: Sagittal MPR of the right knee: giant saccular popliteal artery aneurysm.

Origin:
Description: 3D reconstruction Origin:
Description: 3D reconstruction after subtraction of musculoskeletal structures. Origin: