

# CYSTIC DEGENERATION OF THE POPLITEAL ARTERY

## A Case Report

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### Summary

**Cystic degeneration of the popliteal artery is a rare condition, some forty cases having been described in the world literature. Another case is described here and the pathology, aetiology and management are discussed.**

### Case Report

A man, aged forty, was admitted as an emergency to the medical wards at Joyce Green Hospital, Dartford, Kent in November 1970 with a diagnosis of arterial embolism in the left leg. The history was that of sudden onset of pain in the left leg in a previously healthy man; the patient's foot had felt cold for a few minutes and he also complained of a sensation of 'pins and needles' in his left toes.

On examination immediately following admission, the patient was a healthy looking man, B.P. 140/75, pulse and heart both normal in rate and rhythm, lungs clear. The left foot was colder than the right and the popliteal and pedal pulses were absent on that side. X-ray chest, E.C.G., blood count and serum cholesterol were all normal. The patient was started on a heparin drip and the pain in his leg gradually disappeared over the next two hours.

The writer was asked to see the patient about twelve hours following admission to hospital, and the above history and

clinical findings were confirmed. Although the femoral pulse was readily palpable the popliteal and pedal pulses were still absent on the left side. However, the patient was free from pain, there was full sensation in the left lower limb and no appreciable difference in colour and temperature between the two legs. In the absence of cardiac arrhythmia or any other demonstrable cause for an arterial embolus and as there was no immediate indication for emergency surgery it was felt that further investigations were necessary. Auscultation with an ultrasound flow velocity meter revealed patency of the femoral artery up to the adductor canal; the popliteal artery was obviously occluded. A left femoral arteriogram showed a normal looking arterial tree up to the level of the popliteal artery which showed a smooth stenosis, about 2.5 cms. long, at the level of the knee joint.

The popliteal artery was explored the next day. The distal end of the artery was non-pulsatile and there was a peculiar swelling involving a segment about two inches long. A small arteriotomy was made in the dilated segment of the artery and on incising the adventitia clear gelatinous material extruded. A thin walled cyst, apparently attached to the adventitia, was present and was removed. There was no evidence of atherosclerosis. Following suture of the arteriotomy incision there was good pulsatile flow in the popliteal artery with return of the pedal pulses.

Post-operatively the patient did well but soon after discharge from hospital he returned to Surgical Out-Patients complaining of intermittent claudication at about 200 yards. Arteriography demonstrated a localised narrowing at the site of the arteriotomy. The popliteal artery was explored again, the affected segment resected and a reversed autogenous long saphenous vein graft was inserted. Post-operative course was uneventful and the graft was still open ten months later.

Histologically the specimen showed a cyst wall with areas of mucinous degeneration.

### Discussion

Cystic degeneration of the popliteal artery is a rare condition. It was first described by Ejrup and Hierton (1954). Since then about forty cases have been described in the world literature. Typically the lesion affects the popliteal artery of young males; very rarely it occurs in other arteries and in women and children.

The etiology of the lesion is obscure. The following theories have been proposed:

1) that it is due to degenerative changes occurring in an atherosclerotic artery. This is unlikely in view of the fact that this is a lesion often affecting young people and at operation most observers have noted that the rest of the arterial tree felt normal.

2) that this is an acquired lesion, repeated minor trauma to the popliteal artery causing a mucinous degeneration in the adventitial layer of the artery (Ishikawa *et al.*, 1961).

3) an interesting possibility is that this may be a developmental lesion, mucin-secreting cells from the endothelium of the knee joint having become included in the adventitia of the artery.

Histological examination shows no

evidence of haemorrhage, inflammation or neoplasia, the salient feature being myxomatous degeneration affecting primarily the adventitia of the artery; the media and intima may be involved secondarily by compression.

Harris and Jepson (1965) analysed the gel from the cyst and this revealed significant amounts of hydroxyproline. Hood (1957) also found that the main constituent is mucoprotein.

The usual presenting symptom is intermittent claudication, of gradual or sudden onset, in one leg and often accompanied by a cold white foot. A visible or palpable swelling is unusual. The condition can usually be recognised by the typical arteriographic appearance which shows a localised lesion at or above the level of the knee joint in an otherwise normal popliteal artery. The artery may be displaced backwards by the cyst.

Conservative surgical treatment by dissection of the cyst from the artery or opening the cyst and removal of the gel may restore blood flow and normal pulsation. Where complete occlusion is present, a better result is likely if the affected segment is resected with autogenous vein graft replacement.

The immediate results are usually very good with restoration of full pulsation in the distal arteries. The long-term results have also been satisfactory as only a few of the recorded cases have re-occluded. After the initial setback the case presented above is still fully patent and the patient is asymptomatic.

### References

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