

# TRAUMATIC ANEURYSM OF THE PERFORATING PERONEAL ARTERY FOLLOWING ANKLE FRACTURE.

V.S.Pai MS(Orth), MCh(Orth). J FOOT & ANKLE SURG 36: 417-420,1999

## ABSTRACT

This report describes a case of traumatic aneurysm of the perforating peroneal artery following an open reduction and internal fixation of ankle fracture.

**Key words:** Pseudo aneurysms, Ankle fracture, Perforating branch of peroneal artery

## INTRODUCTON

Aneurysms are classified according to structure into true or pseudo aneurysms. True aneurysm is dilatation of an artery more than twice normal size, with stretching and thinning of all vessel wall layers. In contrast, a pseudoaneurysm is not confined by the vessel wall layers but instead by a fibrous capsule.

The largest collected series in the recent literature is that of Rich (1), who reviewed the 558 arterio-venous fistulas and false aneurysms which represented 7% of the vascular injuries in American casualties seen during the Vietnam conflict. The mortality rate was 1.8% and the morbidity associated with the vascular injury was 6.3 percent. However, false aneurysms are uncommonly seen in a civilian setting.

Pseudoaneurysm around the ankle and foot is rare. It has been reported following an ankle arthroscopy<sup>2</sup>, ankle sprain<sup>3,4</sup>, subcutaneous lengthening of tendoachillis<sup>5</sup>, release of plantar fascia<sup>6</sup>, removal of tibial plate<sup>7</sup> and insertion of an indwelling arterial cannula<sup>8</sup>. False as well as true aneurysms of the perforating peroneal artery are very uncommon. The author reports a case of a middle aged woman who sustained an unstable fracture

dislocation of ankle which was treated by an open reduction and internal fixation. The fracture dislocation was complicated by the development of pseudoaneurysm of the perforating branch of the peroneal artery.

## **CASE REPORT**

A 51 year-old woman fell and twisted her left ankle and was admitted with an unstable fracture dislocation of the left ankle. There was gross swelling around the ankle. Clinically there were no neuro-vascular abnormalities. An X-ray (Fig 1) revealed a type B fracture of the lateral malleolus with a chip fracture of the posterior malleolus. There was significant talar shift. The fracture was reduced openly and fixed with a plate and screws. The ankle was immobilized in a below knee cast for six weeks.

Three weeks after the cast was removed, the patient complained of swelling and discomfort around the ankle. A pulsating mass, three by three centimeters was discovered three centimeters, proximal to the ankle, just anterior to the fibula. Auscultation revealed a bruit.. The dorsalis pedis and posterior tibial artery pulses were normal compared to uninjured leg. The capillary return in the foot was good. Ultrasound confirmed an aneurysm with an arterial flow. An arteriogram revealed a false aneurysm of the perforating branch of the peroneal artery (Fig 2). Good collateral circulation from the dorsalis pedis and posterior tibial arteries was demonstrated.

At operation, through a vertical incision over the aneurysm, the sac was opened and hematoma was evacuated. The arterial defect was identified in the medial wall of the sac. This was repaired with a transverse suture line with 5/0 proline and the sac was excised. The findings were consistent with the classical type of post traumatic aneurysm. The patient was discharged on the second postoperative day. Twelve months later, she remained almost asymptomatic and there was no evidence of recurrence of the aneurysm.

## **DISCUSSION**

Ankle fracture is a common type of ankle injury and surgical treatment is indicated for an unstable ankle fractures. However, a review of the literature revealed rarity of false aneurysms associated with the fractures of the ankle and to author's knowledge false aneurysm of perforating Peroneal artery following ankle is not been reported.

Missed major arterial injuries are not uncommon and can result in serious delayed complications, months or even years after the injury<sup>9</sup>. Some of these complications like pseudo aneurysms and arterio-venous fistula can occur even in injuries of distal vessels of the extremities. However, they rarely cause ischaemia.

The perforating branch arises from the peroneal artery above the tibiofibular syndesmosis. It pierces the interosseous membrane of the leg, about 5 cm above the lateral malleolus and reaches the front of the leg where it anastomosis with the lateral tarsal artery. The origin of pseudoaneurysm appeared to have resulted from trauma due to the drilling at surgery or damage to artery at the time trauma by the fracture fragment. The author speculates that the tear of the outer layers of the perforating branch caused the haematoma. Eventually, the central portion of the hematoma underwent recanalization and the cavity subsequently lined with endothelium.. This cavity was is in direct continuity with the lumen of the vessel. Since the wall of the pseudo aneurysm was not arterial wall and did not contain elastic fibres led to increasing size over time<sup>10</sup>.

The aneurysm was totally asymptomatic until removal of the cast. It was unlikely this swelling would have been detected acutely in the presence of swelling of the ankle related to injury and surgery. The diagnosis was made only when patient localized her discomfort to a fluctuating swelling.

Although few aneurysms close spontaneously, their natural history is to enlarge and to produce local symptoms from compression, embolization or hemorrhage. Surgical repair at the earliest convenience is advised<sup>10,11</sup>. Matas<sup>12</sup> was the first to describe endo-aneurysmorhapy, a method of intrascaccular suturing which obliterated the arterial inflow and outflow from a false aneurysm.

Approximately 5% of the untreated asymptomatic femoral artery aneurysms cause limb threatening complications over a 2-year period. The rate of complications does not appear to be closely related to the size of the aneurysm.



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