Case Report

Femoral artery necrosis due to parenteral intravascular drug misuse: A case report and literature review

Michael J Mullan, Hanna Magowan, Colin D Weir

Accepted 1 May 2008

Keywords: Femoral artery necrosis; Intravenous drug abuse; Intra-arterial injection.

ABSTRACT

Accidental intra-arterial injection as a consequence of drug misuse has been described in both the upper and lower limbs. We present a case in which a drug abuser injected heroin into his femoral artery. This resulted in necrosis of the femoral artery requiring an autologous graft. A life threatening haemorrhage necessitated ligation of the common femoral artery. His limb survived.

CASE REPORT

A thirty eight year old male presented with pain and swelling of his left groin. He was an intravenous drug user. Six days prior to presentation he had injected his groin with heroin. He had a low-grade pyrexia with tachycardia. There was a swelling in his left inguinal region with overlying skin erythema. Femoral and popliteal pulses were palpable, foot pulses were not. There was no audible Doppler ultrasound signal in the foot.

A diagnosis of an infected inguinal haematoma was made. The patient was commenced on prophylactic low molecular weight Heparin subcutaneously and given Metronidazole, Ciprofloxacin, and Benzylpenicillin intravenously. A Magnetic Resonance Angiogram showed a large collection with gas formation in the anterior and medial compartments of the thigh causing bowstringing of the femoral vessels (Figure 1). Evacuation of a putrefied haematoma was undertaken.

On the first postoperative day, the patient developed clinical signs of sepsis. There was mottling of his left flank and leg, and peritonism of his left lower abdomen. He returned to theatre where he was found to have extensive tissue necrosis distal to his inguinal ligament; this extended proximally into the left retroperitoneal space. The common femoral artery was necrotic. The area was debrided widely. As the long saphenous vein was occluded a vein graft was taken from the deep femoral vein in the left thigh. This was anastomosed from proximal common femoral artery to the superficial femoral artery. Good reperfusion occurred. The sartorius muscle was necrotic and completely debrided. The skin was approximated over the vessel and the patient transferred to the intensive care unit.

In the next four days the patient required antero-lateral and postero-medial fasciotomies of the leg, further debridement of the groin wound, and a rectus femoris muscle flap mobilised and placed over the graft (Fig 2). Six days after the original procedure, torrential bleeding required ligation of the proximal common femoral artery. At seven weeks the limb...
remains viable (Fig 3) with rapid secondary healing of the
groin wound and fasciotomies, using a closure (V.A.C.®)
device.

DISCUSSION

The femoral vein is frequently used to gain vascular access by
habitual drug abusers. The most common complications of
this form of drug abuse are cellulitis, abscess formation, acute
on chronic deep venous thrombosis, infected thrombi in the
vein and artery, arteriovenous fistulae, infective endocarditis,
and pseudoaneurysm formation1,2. This patient injected the
drug intra-arterially, extravasation of blood occurred, and
secondary infection ensued from the use of a contaminated
needle. This resulted in a large infected haematoma, causing
bow stringing of the femoral artery. In turn this resulted in
compression of the femoral artery, necrosis of the vessel wall,
and subsequent ischemia of the lower limb.

Intra-arterial injection to the femoral artery with other drugs3
has been described as presenting with an immediate burning
pain distal to the site associated with a hyperaemic flush4.
Often the pain is constant, and is exacerbated by movement4.
The affected limb then becomes cold and mottled, distal
pulses however are often palpable4,4. It can also cause swelling
which results in a compartment syndrome4.

There are relatively few articles in the literature concerning
lower limb accidental intra-arterial injection. Most cases have
favourable outcomes with limb amputation being avoided4.
There is no accepted treatment protocol. Most patients
respond to a combination of rest, elevation, analgesia and
heparinisation3. Regional nerve blocks, stellate ganglion
blocks, sympathectomies, intra-arterial and intravenous
vasodilators, and thrombolytic agents have all been
described1-4.

Our patient required revascularisation because there were
signs of limb threatening ischemia, this ultimately failed,
however his limb survived. In patients presenting with
a pseudoaneurysm of the femoral artery due to parental
drug abuse, some authors advocate excision without
revascularisation as a viable option. In one series of 18 patients
Padberg et al5 undertook debridment and primary ligation in
six patients, all had a Doppler ultrasound signal present at the
ankle post ligation, none required amputation. Two patients
did however return to theatre due to haemorrhage. In contrast,
of the 12 other patients in the series who were treated with
revascularisation, three ultimately required amputation and
there were 13 returns to theatre to deal with haemorrhage
and infection.

CONCLUSION

We suggest in this case that an autologous vein graft in
the presence of gross infection has a high risk of graft
disintegration, and that proximal ligation of the femoral artery
may offer the optimum primary surgical management.

The authors have no conflict of interest.

REFERENCES

1. Chan YC, Burnand KG. Management of septic groin complications
and infected femoral false aneurysms in intravenous drug abusers. Br
J Surg 2006;93(5);781-2.
2. Naqi SA, Khan HM, Akhtar S, Shah TA. Femoral pseudoaneurysm in
drug addicts - excision without revascularization is a viable option. Eur
J Vasc Endovasc Surg 2006;31(6);585-7.
3. Bhabra MS, Meshikhes AN, Thomson GJ, Craig P, Parrott NR. Intra-
arterial temazepam: an important cause of limb ischemia in intravenous
drug abusers. Eur J Vasc Surg 1994;8(2);240-2.
4. Coughlin PA, Mavor AI. Arterial consequences of recreational drug
use. Eur J Vasc Endovasc Surg 2006;32(4);389-96.
5. Padberg F Jr, Hobson R, Lee B, Anderson R, Manno J, Breitbart
G, et al, Femoral pseudoaneurysm from drugs of abuse: ligation or
reconstruction? J Vasc Surg 1992;15(4);642-8.