Unusual arterial injury following a fracture of forearm bones  V.S.Pai  MS(Orth), MCh(Orth). NEWZEALAND MEDICAL JOURNAL, 108:368,1995

Abstract

The author describes a case of a 10-year-old boy with fracture both bones forearm and a concomitant partial rupture of ulnar artery. The damage of ulnar artery was repaired at the time of fasciotomy with a good functional outcome.

INTRODUCTION

Injury of an artery following closed injury has been well described in the literature following fracture of the proximal long bones and dislocations of the elbow and knee. Traumatic rupture of the ulnar artery following a closed fracture of both bones forearm is rare. A patient who sustained a forearm fracture with a partially severed ulnar artery leading on to compartment syndrome is described.

Key Words: Ulnar artery tear, Fracture forearm, compartment syndrome

CASE REPORT

A ten year-old boy fell onto his outstretched left hand while skateboarding. Clinical and radiographic examination in the accident department revealed a fracture of both bones of his forearm with minimal displacement and the overall position was acceptable (Fig 1).
However, clinical examination showed a tense swelling in the proximal third of the forearm with a bluish discolouration about 4 cm by 4 cm over the anteromedial aspect of the forearm (Fig 2). Distal pulses and capillary return appeared to be adequate. There was no evidence of loss of sensation in the distribution of median nerve.

In view of this tense swelling, he was admitted for observation for compartment syndrome. His symptoms deteriorated within next four hours with the appearance of a tingling feeling in the fingers and stretch pain. On the same day, the forearm muscles were decompressed through an anterior incision. About 50 ml of clotted blood was removed. Bleeding appeared to be from a partially severed ulnar artery (Fig 3). This was repaired with 6’0’ nylon. The fracture radius was stabilized with a DCP plate and the fractured ulna appeared to be stable and well aligned so it was left without any fixation. There was no evidence of muscle necrosis. Postoperatively, a well padded black slab was applied. He was discharged 2 days after admission as he was totally asymptomatic and his finger movements and sensation were normal. The cast was removed at six weeks. At follow up after 24 months he had normal motion of the elbow with excellent hand function with intact neurology.

DISCUSSION

Damage to ulnar or radial artery in the forearm has been reported following laceration$^{1,4,8}$, gun shot wounds$^6$ and open fractures$^{2,5}$. However, vascular complications of closed fractures of the forearm are rare in contrast to elbow injury$^7$. The diagnosis of an isolated injury of the ulnar artery may not be easy as the injury may not result in
typical symptoms of acute ischaemia. When the diagnosis is missed it may present as a traumatic aneurysm of the ulnar artery or a compartment syndrome.

Damage to the ulnar artery in the forearm is very rare as it is separated from the ulna in the proximal two thirds by the bulk of the flexor digitorum profundus muscle. In the present case the author suspects direct puncture by a bony prominence as the cause for partial rupture of the artery. It is possible to speculate that when arteries are divided partially as in this case more bleeding may occur than if the artery is completely severed. Haematoma in the tight flexor compartment may cause impending or well established compartment syndrome. In this case, the presence of a tense localised swelling with discoloration of the overlying skin at the site of fracture, as well as worsening of stretch pain, led us to diagnose the severity of the injury promptly.

The management of isolated arterial injury in the forearm has been well described. These series suggest that in the absence of acute hand ischemia, simple ligation of a lacerated radial or ulnar artery is safe and cost-effective. As the reconstruction of a partially severed artery presents a minimal challenge, the author repaired the artery in the reported case.
REFERENCES


LEGENDS FOR ILLUSTRATION

Fig 1: X-ray showing a closed fracture both bones forearm with a significant soft tissue swelling.

Fig 2: A tense swelling in the proximal third of the forearm with a bluish discoloration in the region of fracture.
Fig 3: Intra-operative photograph showing partially severed ulnar artery in the middle third of the forearm.