CASE REPORT

Brachial artery transection following lateral elbow dislocation: Is the presence of a supracondylar process important?

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Case report

We present a 23-year-old right-handed male patient who presented to the Accident & Emergency department having fallen onto his outstretched left arm whilst intoxicated. The patient had a painful and deformed left elbow with significant swelling around the elbow and the forearm. The hand was cool, pale and there was no radial or ulnar pulse present. Initial radiographs revealed a dislocation of the elbow (Fig. 1).

Further clinical examination revealed that the elbow was dislocated laterally.

The elbow was immediately reduced under sedation and satisfactory reduction confirmed on radiographs (Fig. 2).

Further assessment revealed that the distal pulses remained absent. A reliable neurological examination was not possible due to the alcohol intoxication and the sedative medication.

A doppler ultrasound probe confirmed the absence of radial and ulnar pulses.

An arteriogram was arranged but the vascular surgeons advised exploration of the brachial artery without the wait for further imaging.

The antecubital fossa, approached through a lazy S incision, contained a large haematoma. The brachial artery was identified proximally and secured proximal to the elbow joint. The distal end of the artery was identified in the forearm. The brachial artery had suffered a complete traumatic disruption with the ends of the vessel lying approximately 6 cm apart. During the exploration a Ligament of Struthers was identified and this had been avulsed from its proximal attachment. The anterior capsule had been damaged as well as the medial collateral ligaments. The median nerve was intact.

A saphenous vein graft was harvested from the groin. Anastomosis was then performed with the reversed long saphenous vein graft to ensure a tension free repair.

After vascular repair good pulses were present and the hand was well perfused.

Further assessment of the elbow revealed that it was stable; however, there was significant valgus laxity due to injury involving the medial ligaments.

Post-operative assessment revealed a well perfused hand with intact radial and median nerve function. There was an ulnar nerve palsy as
expected with the lateral dislocation and disruption to the medial structures.

At follow up the patient is regaining good elbow movement and the ulnar nerve palsy is recovering well.

Discussion

Dislocation of the elbow is relatively common. In the majority of cases the elbow is easily reduced and there are no associated complications. There are several reports of posterior dislocation of the elbow

and injury to the brachial artery. Indeed two papers in 1978 and 1991 give a summary of previously reported cases, management and outcomes. This case demonstrates a brachial artery transection with a lateral dislocation. It also raises the issue of the importance of the presence of a supracondylar process and the Ligament of Struthers.

The supracondylar process was first described by Sir John Struthers in 1854. He also described a fibrous band from this process to the medial epicondyle, this is known as the Ligament of Struthers (Fig. 3).

Under the ligament may pass the median nerve, brachial artery or both. The supracondylar process is present in less than 1% of the human population. There have been reports in the literature of median nerve compression as a result of the supracondylar process.

We believe that the presence of the supracondylar process as demonstrated on Fig. 1 and the Ligament of Struthers in our patient was essential to cause the transection of the brachial artery with the associated lateral dislocation.

In conclusion, brachial artery injury is very unusual with a closed dislocation of the elbow. All reported cases of vascular injury have reported posterior dislocations and in these cases arteriography followed by vascular repair has been recommended.

A lateral dislocation is an unusual direction of displacement to be associated with a brachial artery injury. However, the presence of a supracondylar process on the radiograph should raise the suspicion of brachial artery transection in these patients.

References


