Compression of the ulnar nerve by an aneurysm.

A case of late complication after a supracondylar fracture

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A 26-year-old man with a history of a supracondylar fracture of the left humerus 10 years ago had weakness and tingling of the fourth and fifth fingers of the left hand due to ulnar-nerve entrapment confirmed by electromyography. Angiography revealed complete obstruction of the brachial artery at the elbow and an aneurysm in the ulnar collateral artery at the medial epicondyle of the humerus. After reconstruction of the brachial artery and resection of the aneurysm, recovery was uneventful. Electromyography 6 months postoperatively was normal.

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Submitted 91-10-05. Accepted 91-10-24

Case report

A 24-year-old, left-handed, glasshouse farmer was referred with a 3-month history of dull aching of his left elbow and weakness and tingling of the fourth and fifth fingers of his left hand. Ten years previously, he had been treated with closed reduction and plaster-cast immobilization for a supracondylar fracture of the humerus, which healed uneventfully.

A pulsatile mass was palpable at the medial epicondyle of the humerus. The radial pulse was present, but he had flexional weakness of his fourth and fifth fingers and atrophy of the interossei muscles. A radiographic examination of the elbow was normal. Electromyographic and nerve-conduction studies demonstrated an ulnar-nerve entrapment at the elbow.

An angiographic examination revealed complete obstruction of the brachial artery at the elbow over a length of 8 cm, but with good circulation via the radial and the ulnar collateral arteries. An aneurysm of 1-cm diameter was seen in the ulnar collateral artery at the medial epicondyle of the humerus (Figure 1). The aneurysm was resected, and the brachial artery was reconstructed using a vein graft; a neurolysis of the ulnar nerve was performed. The pathologic examination was consistent with an arterial rupture. The recovery was uneventful, with normal clinical and electromyographic findings at 6 and 12 months postoperatively.

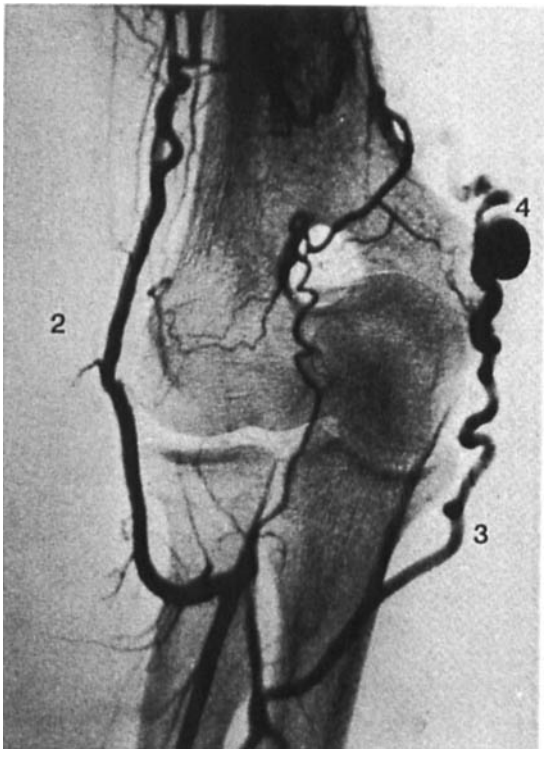

Figure 1. Collateral blood circulation, aneurysm in the ulnar collateral artery, and obstruction of the brachial artery seen on an angiogram.
1. Brachial artery.
2. Radial collateral artery.
3. Ulnar collateral artery.
4. Aneurysm in the ulnar collateral artery.

Discussion

Vascular injury occurs in up to 20 percent of grade 3 (Felsenreich 1931) supracondylar displaced fractures of the humerus (Jahna 1958, Marck et al. 1986). However, late vascular complications have not been described earlier. Capillary refill does not prove that the brachial artery is intact. Absence of the radial pulse is rarely caused by spasm. When pulselessness persists after reduction of the fracture, brachial artery injury has to be ruled out. Exploration of the vessel should be considered after open reduction and Kirschner-wire fixation of the fracture (Laurent and Accary 1981, Lefort et al. 1986).

References

Felsenreich F. Kindliche supracondylare Fractures und posttraumatische Deformitten des Ellebogengelenkes. *Arch Orthop Unfallchr* 1931; 29: 555–72.

Jahna H. Erfahrungen mit einer ungefahrlichen konservativen Behandlungsmethode bei 73 stark verschobenen kondlichen supracondylaren Oberarmbruchen. *Arch Orthop Unfallchr* 1958; 50: 537–43.

Laurent D, Accary D. Complication vasculaire d'une fracture supra condylienne de l'humerus. Arteriographie trompeuse. *Rev Chir Orthop* 1981; 67 (4): 495–7.

Lefort G, De Miscault G, Gillier P, Coppeaux J, Daoud S. Lesions arterielles au cours des fractures supracondyliennes de l'humerus chez l'enfant. A propos de six cas. *Chir Pediatr* 1986; 27 (2): 100–2.

Marck K W, Kooiman A M, Binnendijk B. Brachial artery rupture following supracondylar fracture of the humerus. *Neth J Surg* 1986; 38 (3): 81–4.