Case Report

Brachial Artery Disruption: Hyperextension of Elbow

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Abstract

Hyperextension injury to the elbow leading to major neurovascular damage is a rare event without any bony injury or dislocation. We report a case of young male with brachial artery disruption and median nerve paresis due to hyperextension of elbow after a fall while climbing staircase.

Key Words: Brachial artery disruption, hyperextension elbow injury, median nerve paresis

Introduction

Brachial artery rupture is a recognized complication of closed and open traumatic elbow dislocation, and there are many case reports and short series in literature. We describe the possible mechanism involved in this case of elbow hyperextension without fracture or dislocation leading to brachial artery rupture.

Case Report

A 34-year-old male after an accidental fall while claiming staircase under the influence of alcohol sustained an injury to the left elbow and forearm. In the emergency department, orthopedic surgeons examined the elbow joint clinically and radiologically and said that the joint was intact and no bony injury. When we examined the patient, he had swollen left elbow with bruises but intact skin. The distal arm and hand were cold. Radial and ulnar pulses were not palpable. The motor system examination revealed median nerve paresis and sensory system was intact for deep pain. Doppler study revealed complete brachial artery cutoff at the cubital fossa with no flow demonstrated in radial and ulnar artery. An acute brachial artery injury was the diagnosis and he was shifted to operating table immediately.

Through a lazy “S” incision across the antecubital fossa, the artery was approached. On deepening the incision into the deeper plane, hematoma over the cubital fossa was evacuated. Brachioradialis muscle was completely and biceps brachialis tendon was partially ruptured. The median nerve was bruised but intact. Brachial artery was completely disrupted and thrombosed just above the level of the elbow, with the loss of arterial segment length for about 4 cm. The distal end of the artery was found under the pronator muscle. Resection of the contused and thrombosed segments of the artery was done. Complete mobilizations of both ends of the artery were done. End-to-end anastomosis of the brachial artery was done using 6-0 prolene. Complete hemostasis achieved and muscular ruptures were approximated with 3-0 vicryl. The elbow joint had an anterior capsular tear without joint instability on extension and flexion, which was closed with 3-0 vicryl. Loosely stacking skin sutures were applied. Following this repair, the radial and ulnar arterial pulses were palpable. Postoperatively, the median nerve paresis improved completely after 3 days. Doppler examination revealed biphasic pulses in both radial and ulnar arterial pulses.

Figure 1: Image of the elbow at presentation

Figure 2: Image of the elbow at presentation

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ulnar arteries. The patient was discharged home on the 4th postoperative day. The patient was discharged with an elbow posterior splint in flexion for 3 weeks.

Discussion
The possible mechanism of hyperextension injury to the elbow without fracture or dislocation leading to brachial artery rupture in this patient could be arrived based on the following factors:

- Median nerve paresis improved completely after 3 days of rest
- Anterior capsular tear of the elbow joint
- Brachial artery disruption with loss of arterial segment and intimal damage with thrombosis.

Vascular injury is very rare in a closed dislocation without accompanying fracture. Early recognition of brachial artery rupture in cases with elbow dislocation is very important since it may lead to potentially devastating complications such as limb loss and Volkmann’s ischemic contracture. The force required to dislocate the elbow joint must be significant, and when gone through literature, we found a similar case report by Jeyaretna et al. with a complete brachial artery rupture due to hyperextension injury but without fracture or dislocation.[4] Hyperextension trauma to the elbow joint induced through the distal ulna or the distal radius produced the same pattern of injury as reported in hyperextension of the elbow with traction to the forearm when free rotation of the radius relative to the ulna was allowed.[2]

Conclusion
X-ray taken on arrival to the emergency department only gives the position of the joint at present and not the type stress at the time of injury. If the clinical findings are in out of proportion with the X-ray findings, the case should be dealt with further investigations.

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Conflicts of interest
There are no conflicts of interest.

References
1. Jeyaretna DS, Butler M, David HG, Walker AJ. A case of elbow hyperextension leading to complete brachial artery rupture. World J Emerg Surg 2007;2:6.
2. Tyrdal S, Olsen BS. Hyperextension trauma to the elbow joint induced through the distal ulna or the distal radius: Pathoanatomy and kinematics. An experimental study of the ligament injuries. Scand J Med Sci Sports 1998;8:177-82.