

An 8 year old little boy fell from his bike while riding down a flight of stairs. He was wearing a helmet but fell to the concrete his hand outstretched and with his arm in complete extension. He suffered no head injury but holds his R arm by his side in a flexed position.

On exam, the boy has significant soft tissue swelling and a prominent olecranon. Radial pulses are strong, capillary refill is normal, and the forearm is not tense. Sensation is intact and the boy can extend his fingers and wrist, however, when asked to make the “OK sign” the patient makes a triangular shape and pincer strength is weak (photo below).



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(<http://www.sciencedirect.com/science/article/pii/S0263931913000161>)

Which of the following complications has this patient most likely suffered from his supracondylar fracture:

- a) Ischemic contracture
- b) Anterior interosseous nerve injury (median nerve) from a posterolateral displacement
- c) Median nerve injury from a posteromedial displacement
- d) Ulnar nerve injury from an anterior displacement
- e) Radial nerve injury from a posteromedial displacement

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B is the correct answer. Neurologic complication from a supracondylar fracture has an incidence of 7%. In this case, a prominent olecranon suggests a posterior displaced fracture. Sensation is intact but flexion of the index finger and thumb DIP joints are impaired. Unlike the median, ulnar, or radial nerves, the anterior interosseous nerve has no sensory component and has one of the highest rates of complication. The mechanism is usually traction or contusion of the nerve.

A is incorrect. Volkmann ischemic contracture is a result of compartment syndrome of the forearm and is a serious, if rare, complication. In this case, the patient's radial pulses and capillary refill are intact and the forearm is not tense to palpation. Therefore, compartment syndrome is less likely.

C is incorrect. Median nerve injuries occur with posterolateral displacement of the fracture. Such an injury would be expected to cause a sensory deficit of the lateral palmar 3.5 digits in addition to the motor deficits of an anterior interosseous nerve injury.

D is incorrect. Ulnar nerve injuries are uncommon in supracondylar fractures and usually occur as a result of pin placement. An ulnar nerve injury might cause decreased sensation in the medial 1.5 digits (both ventral and dorsal) and cause weakness in flexion of the wrist and adduction of the digits (cannot cross digits).

E is incorrect. Radial nerve injuries occur from posteromedial displacement of a supracondylar fracture. Such an injury would be expected to cause weakness in extension of the wrist and digits. Sensation in the dorsal radial 3.5 digits runs with the superficial radial nerve which bifurcates at the elbow and therefore may or may not be affected.

Reference

- Bredenkamp JH, Jokhy BP, Uehara DT. Chapter 267. Injuries to the Elbow and Forearm. In: Tintinalli JE, Stapczynski JS, Cline DM, Ma OJ, Cydulka RK, Meckler GD, eds. Tintinalli's Emergency Medicine: A Comprehensive Study Guide. 7th ed. New York: McGraw-Hill; 2011. <http://www.accessmedicine.com/medlib.med.miami.edu/content.aspx?aID=6391224>. Accessed July 16, 2013.