Traumatic brachial artery dissection following a supracondylar humerus fracture in a pediatric patient

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Background:

Supracondylar fractures are the most common humeral fractures in children, comprising 55-80% of all pediatric elbow fractures, with a higher incidence among 5 to 7-year-old boys. A typical mechanism of injury is a fall onto the outstretched hand with hyperextension at the elbow. Due to the humerus's proximity to the brachial artery and anterior interosseous nerve, neurovascular complications occur in 5-15% of cases.

Case presentation:

A 5-year-old male was admitted to the ER after a slip and a fall at a kindergarten , landing on his right arm. Clinical examination revealed redness, swelling and visible deformity in the distal upper arm with a complete absence of peripheral pulsations distal to the injury along with signs of ischaemia. Subsequent X-ray imaging unveiled a Gartland III supracondylar fracture, indicating the need for surgical intervention. Successful repositioning of the fractured fragments was carried out under the control of X-ray in general anesthesia. Following repositioning, stabilization was achieved through the percutaneous insertion of Kirschner wires. However, the arm remained cold and pale, prompting an exploration of the brachial artery. During surgery, a dissection of the brachial artery was identified, leading to a resection of the injured segment and reconstruction using a cephalic vein graft. Post-reconstruction assessment revealed palpable distal pulsations, indicating restoration of blood flow. Subsequent postoperative check-ups revealed ulnar nerve neuropraxia as a complication of the operation. Nevertheless, full recovery occurred three months after the injury.

Conclusion:

Vascular injuries are not uncommon with grade III supracondylar humeral fractures in children. The spectrum of injuries include thrombus formation, complete rupture, thrombosis, partial tear, and brachial artery entrapment, requiring varied treatments. A post-traumatic brachial artery dissection due to supracondylar fracture is an extremely rare cause of limb ischaemia with only a couple of reported cases . Early diagnosis and prompt intervention in cases of vascular complications are vital for ensuring optimal outcomes and preventing severe consequences, such as limb ischemia.

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