

## LETTER TO THE EDITOR

# Late Presentation of Paediatric Pink Pulseless Supracondylar Fracture of Humerus: A Case Report

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To the Editor,

I read with great interest the recent case reported by Kow *et al*<sup>1</sup> regarding a six-year-old child with a supracondylar humerus fracture with a pink, pulseless hand presenting on the sixteenth day post trauma. The authors proceeded with an open reduction via anterior approach to explore the brachial artery. This is an unusual presentation and the child fortunately benefited from the procedure with improved cosmetic and functional outcome and no Volkman's contracture complication. Being at sixteen days with radiographic evidence of callus in a very young child with a functional viable hand, it is interesting to deliberate on the need to explore the vessel?

There is little literature regarding guidelines for late presentation of supracondylar humerus fracture in children, so treatment remains controversial. The deformity may still be addressed later following union up till adolescence. This case is further compounded with the involvement of brachial artery injury which was partially transected and still in continuity but with good distal perfusion. This would have been a challenging dissection through callus and healing soft tissues.

Generally pulseless pink hands do not require exploration provided the distal limb remains well perfused after closed reduction and stabilization of supracondylar humerus fracture<sup>2</sup>. Exposed vessels run the risk of getting thrombosed, and there is the risk of compartment syndrome following vascular revascularization. Furthermore, exploration carries the risk of injury to collateral vessels which maintain a viable extremity<sup>3</sup>.

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## RESPONSE TO LETTER TO EDITOR

Dear Sir,

Thank you for your interest in this case. To our best knowledge, this is the first case of late presentation of paediatric pink pulseless supracondylar fracture of the humerus in the literature. A literature review by Venkatadass K suggests close observation for patients with pink, pulseless humeral supracondylar fractures when the following criteria are met: 1) intact Doppler signal of the radial artery; 2) oxygen saturation >95% on pulse oximeter; and 3) preserved median nerve function<sup>1</sup>. The combination of absent radial artery Doppler signal and reduction of oxygen saturation indicates poor perfusion and early exploration is indicated<sup>1</sup>.

In our patient, there is loss of radial artery Doppler signal but a good blood oxygen saturation is preserved on pulse oxymetry. This is possibly due to collateral vessels supplying distal parts of the upper limb after a brachial artery injury. As

the injury is 16-day-old, we deem that spontaneous recovery of the brachial injury is unlikely, as pulses are expected to return as late as 11 days after the injury<sup>2</sup>. As there is presence of callus at the fracture site, a trial of gentle traction is contraindicated in this case, as this might compromise collateral vessels. In this case, surgery is performed to reduce the fracture and for brachial artery exploration, bearing the possibility of arterial repair or grafting. By reducing the fracture, the patient will be benefitted from immediate pain relief as the sharp end of the proximal fracture fragment is impinging on the skin. Besides that, with early reduction of the fracture, we can prevent a poor functional outcome which necessitates an osteotomy later. On top of that, we can potentially prevent a dreaded complication such as Volkman's contracture, possibly due to spasm of collateral vessels secondary to manipulation by non-medical personnel (traditional massage)<sup>3</sup>.

Nevertheless, open exploration and fixation may still impose a risk of damaging or causing spasm of collateral vessels, leading to ischemia of the hand. Facing this dilemma in which both options may lead to a devastating outcome, a good communication between the treating surgeon and the patient's parents/guardian is of utmost importance. In this patient, we have performed an early open reduction and exploration after a family conference with her parents and they are aware of the possible sequelae of all options. Intra-operatively, the brachial artery is found to be partially

transected with no active bleeding due to intraluminal thrombosis. After removal of blood clot, thrombolysis and brachial artery repair, the distal pulses return and are confirmed by Doppler examination at both radial and ulnar sites. Doppler monitoring of the arterial supply is performed daily prior to discharge.

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