

## BOA Trauma Standard

# Supracondylar Fractures of the Humerus in Children

### Background and justification

Supracondylar fractures of the humerus are the most common elbow fractures seen in children. They may be difficult to manage and can be associated with significant complications including nerve injury, vascular compromise, malunion and compartment syndrome.

### Inclusions

Children with a displaced supracondylar fracture of the humerus. Fractures in adolescents may require adult treatment strategies.

### Standards for Practice

1. A documented assessment of the limb must be performed on presentation and immediately before surgical treatment. It should include the status of radial pulse, digital capillary refill time and the individual function of the radial, median (including anterior interosseous) and ulnar nerves.
2. Surgical management should be carried out on the day of injury. Night-time operating is not necessary unless there are indications for urgent surgery which should be documented.
3. Surgical management should be provided urgently when there is an absent radial pulse, clinical signs of impaired perfusion of the hand and digits, open injury or evidence of threatened skin viability.
4. The majority of vascular impairments associated with supracondylar fractures resolve with fracture reduction. A limb without clinical signs of ischaemia does not require brachial artery exploration whether or not the radial pulse is present.
5. Surgical stabilisation should be with at least two K wires that engage in the cortex proximal to the fracture. Crossed wires are associated with a lower risk of loss of fracture reduction, whereas divergent lateral wires reduce the risk of injury to the ulnar nerve.
6. When a medial wire is used, techniques to avoid ulnar nerve injury should be employed and recorded on the operation note.
7. 2mm diameter wires should be used, where possible, to achieve stability. Intraoperative assessment of satisfactory stability and clinical alignment should be performed and documented.
8. If the limb remains ischaemic after fracture reduction then exploration of the brachial artery is required with a surgeon competent to perform a small vessel vascular repair.
9. Monitoring of neurovascular status as described in 1 should continue post-operatively until the treating surgeon is confident there is no risk of vascular compromise or compartment syndrome. When there is concern over iatrogenic nerve injury then a documented assessment with consultant input is required for consideration of nerve exploration before discharge.
10. Suspicion of compartment syndrome or deterioration of perfusion should prompt immediate vascular reassessment and intervention if required.
11. The operating surgeon should determine and document the need for post-operative radiographs and anticipated time of wire removal.
12. Routine long-term follow up is not usually required. Any indications for further review should be documented.

### Evidence base

Randomised trials, prospective and retrospective case series, systematic reviews and an evolved professional consensus.