

SUPRACONDYLIC FRACTURES IN CHILDREN

PLEVA Leopold, *RICHTER Vladimír, PRUSENOVSKÝ Petr

Centre of Traumatology University Hospital Ostrava

**Department of Surgery University Hospital Ostrava*

SUMMARY

The authors in their communication deal with treatment of supracondylic fractures of humerus in children and they mention possibilities of treatment of these severe injuries and warn of possible complications that occurred in studied sample of 133 patients treated in traumatologic centre of teaching hospital with policlinic in Ostrava. The most severe traumatologic complication is the injury of art. brachialis, which they observed in 5.3 % of their studied sample and in 3 % they mention occurrence of reversible nerve injury. In treatment of instable supracondylic fractures of humerus they recommend acute miniinvasive osteosynthesis, which they performed in their hospital in 103 patients.

KEY WORDS: *Supracondylic fracture of humerus, miniinvasive osteosynthesis, art. brachialis injury.*

INTRODUCTION

Supracondylic fractures of humerus are one of the most frequent injuries in children that occur in most cases after fall on arm extended in elbow. It is the third most frequent fracture in children with average age above 6 years of age and in 97 % of cases these fractures are extension fractures and almost in 50 % of cases these fractures are dislocated [1], where early or later complications may occur. Early complications include arterial injuries in 1–2 % and nerve injuries in 3–16 % [2, 3].

CLINICAL POPULATION

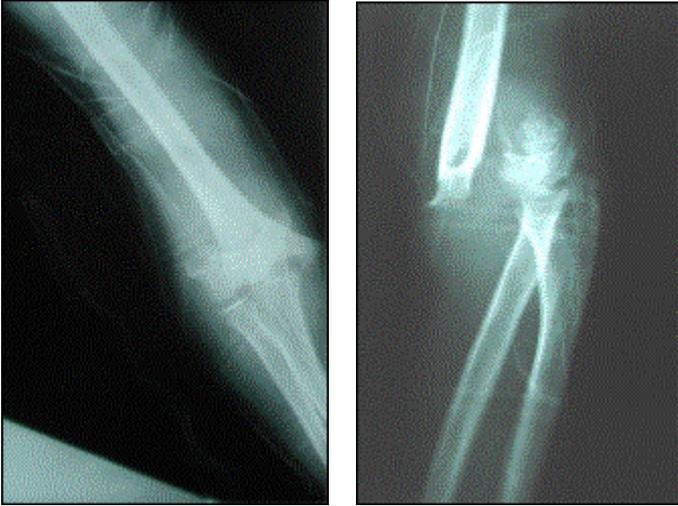
In the year 1996-2004 133 children with supracondylic fractures of humerus were treated in traumatologic centre of teaching hospital with policlinic in Ostrava (table 1).

Table 1

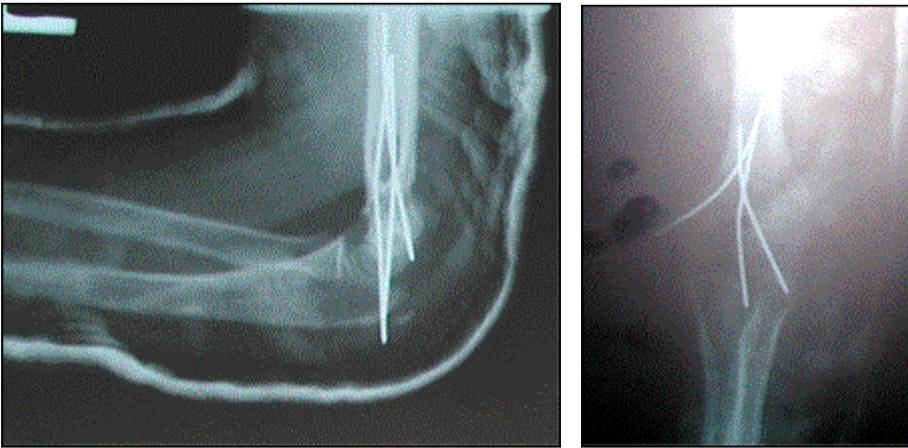
Clinical set

Gartland I	18 children
Gartland II	21 children
Gartland III	94 children

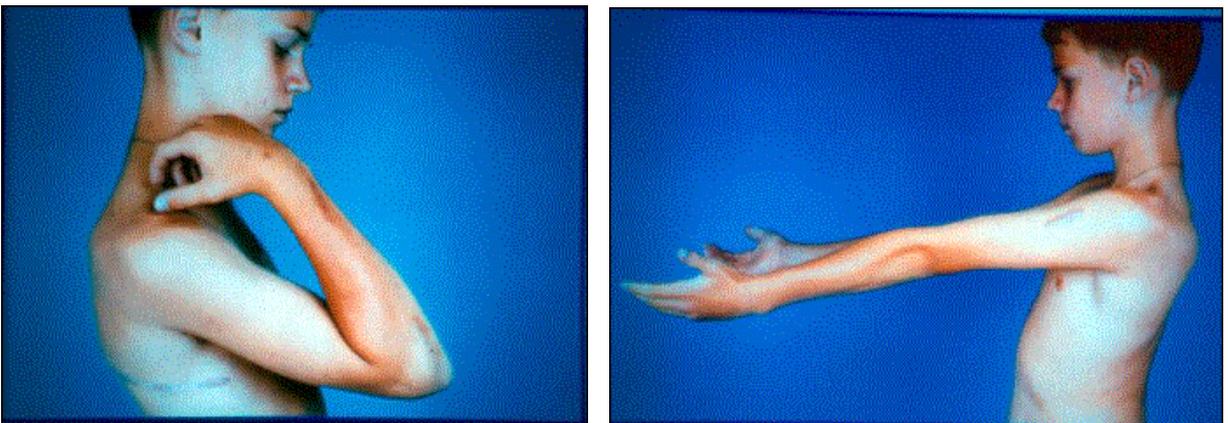
94 children were with dislocated fracture of Gartland III type with average age of 7.5 years. More than two thirds of these fractures occurred in males. In treatment of all cases of Garden I we proceeded in conservative way. In fractures of Garden II and III we used reposition with percutaneous osteosynthesis by crosswise inserted Kirschner's wires with shortening of their ends sub cutis (fig. 1, 2, 3). We treated all fractures within 6 hours from the reception of a child to our hospital. In three cases we observed traumatic injury of n. radialis of reversible nature. 7 times we diagnosed injury of arteries in the region of elbow joint with pulsation disappearance on art. radialis of the injured extremity, which reappeared after fracture reposition and transfixation. In one case during surgery revision we discovered elongation and spasmus of art. brachialis where after reposition of fracture fragments pulsation was reestablished and in one case of compound fracture we observed discission of art. brachialis, which was treated by replacement of the injured section by venous graft. We did not observe antebrachial compartment syndrome or Volkmann's contracture in any of the patients. When we take into consideration later complications, we observed limitation of movement in five children of our sample and one case of varus angle deformation of 20 degrees.



Pict. N. 1



Pict. N. 2



Pict. N. 3

DISCUSSION

Supracondylic fractures of humerus in children are a constant problem of traumatic surgery. Development of high energy injuries brings about increase in number of instable fractures with incidence of posttraumatic complications like vascular injury and neurological complications. Vascular complications include fortunately mostly contusions or spasms of arteria brachialis, less frequent injuries are those of adventitia or intima with subsequent thromboses or possibly arterial dissection or its rupture. The period of time from injury to clinical symptoms of ischemia of extremity may differ in these injuries from immediate symptoms of ischemia to its gradual progression from 12 to 14 hours, mostly caused by compression by hematoma or possibly by developing thrombosis (1–2 %) [4]. Therefore thorough clinical monitoring of perfusion of the injured extremity in the first days after injury is a fundamental prerequisite of a prompt diagnosis of vascular complications. Neurological complications in these cases occur more frequently in 6–16 % [1], but in most cases these fractures are of reversible nature and are usually caused by contusion or overstress of nerve trunk (neropraxis or axonotmesis) and their function is redeveloped within several weeks or months of active conservative treatment.

CONCLUSION

Dislocated and instable supracondylic fractures of humerus in children still remain extremely severe problem of traumatic surgery and require very responsible approach of a traumatic surgeon. Authors in their communication recommend treatment of these fractures in specialized hospitals of traumatic surgery with acute reposition and transcutaneous stabilization of crosswise Kirschner's wires. Concurrently they warn of the danger of early vascular complications that in case of a late diagnosis may result in ischemic damage of the injured extremity.

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doc. MUDr. Leopold Pleva, CSc.

Centre of Traumatology University Hospital Ostrava

leopold.pleva@fnspo.cz