

Epidemiology and Outcomes of Supracondylar Humerus Fractures in Older versus Younger Patients

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Purpose: Supracondylar humerus (SCH; AO Pediatric 13-M) fractures are frequent pediatric injuries, common between ages 3 and 7 years. Closed reduction and pinning of displaced fractures is standard and results in reliable outcomes. Epidemiology and outcomes of SCH fractures in older children remain to be further studied. Our purpose was to compare fracture epidemiology and outcomes in older versus younger patients.

Methods: Retrospective review of SCH fractures surgically treated at a Level I pediatric hospital between 2010-2020 was performed. The average age of the 3344 patients treated during this period was 5 years. Older patients were those 8 years or older (2 standard deviations above average) and younger patients were those <8 years. Data on patient demographics, fracture characteristics, treatment methods, and complications were collected.

Results: Randomly chosen time matched cohorts of 481 patients >8 years and 302 patients <8 years were selected. Rates of open fractures (1.5% vs 0.3%, $P = 0.128$) and associated injuries (4.6% vs 1.7%, $P = 0.0673$) were similar. Older patients had higher energy mechanisms, eg, motor vehicle crash ($P < 0.0001$). Flexion type fractures were more common in older patients (7.3% vs 2.3%, $P < 0.0001$) and they had higher rates of preoperative nerve palsies (23.9% vs 7.8%, $P < 0.0001$). Older patients were more likely to require open reduction (11% vs 1.3%, $P < 0.001$) and have medial pins (25.4% vs 9.9%, $P < 0.0001$). Average time to pin pull was clinically similar, and older patients were more likely to be immobilized after ($P < 0.0001$). Despite more frequently completing therapy ($P < 0.0001$), older patients had increased rates of loss of functional motion ($P = 0.0029$; mean follow-up 90.3 days). There were no differences in rates of complications (5.3% vs 6%, $P = 0.684$).

Conclusion: SCH fractures in older children are often due to higher energy mechanisms and have higher rates of nerve palsies. Flexion type patterns and need for open reduction are also more prevalent. Loss of functional motion is more common in older patients, potentially secondary to increased rates of immobilization after pin pull. Rates of major complications were similar to younger children.