Comparison of Posterior Long Arm Splint versus Long Arm Cast After Surgical Treatment of Pediatric Supracondylar Humerus Fractures

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Purpose: Displaced supracondylar humerus fractures are typically managed with closed reduction and percutaneous pinning followed by long arm cast immobilization. The use of a cast frequently results in an additional postoperative visit for a cast overwrap, incurring direct and indirect costs to the health-care system and the patient. The objective of this study was to determine if a long arm splint provides equivalent postoperative stabilization compared to a long arm cast with decreased postoperative care requirements.

Methods: A retrospective chart review was performed of operatively managed supracondylar humerus fractures treated at a single Level I pediatric trauma center over a 4-year period. Patients were separated based on postoperative immobilization, either a long arm splint or a long arm fiberglass cast. Polytrauma patients and those presenting more than 2 weeks after injury were excluded. Primary outcome measurement was reoperation. Secondary outcome measurements included infection, loss of reduction, and number of postoperative clinic visits. Infection was determined by prescription of oral antibiotics. Loss of reduction was assessed by comparing the intraoperative fluoroscopy and 4-week postoperative images for a random sample of 15 patients from each group. Loss of reduction was defined as >10° change in Baumann's angle or lateral capitellar humeral angle. Bivariate analysis was conducted using SAS.

Results: The study included 595 patients. Of these, 118 patients (20%) received immobilization in a long arm splint. Four patients underwent reoperation, all in the cast group. No reoperations were required in those receiving splint immobilization postoperatively. There was no significant difference in reoperation rate, infection rate, or loss of reduction between the 2 groups. The splint cohort attended an average of 2.4 clinic visits compared to 3.4 clinic visits for the cast group ($P < 0.001$).

Conclusion: Immobilization in a long arm splint after closed reduction ad percutaneous pinning of supracondylar humerus fractures did not lead to an increase in reoperation, infection, or loss of reduction. The long arm splint group needed significantly fewer postoperative clinic visits than the long arm cast group. This can allow for less missed school and work days as well as decreased clinical requirements.