

Immediate Sarmiento Bracing for the Treatment of Humeral Shaft Fractures

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Background/Purpose: We sought to compare the radiographic alignment of humeral shaft fractures treated with immediate Sarmiento bracing versus coaptation splinting. Coaptation splints require skillful application, are difficult to maintain, and are prone to skin complications. Our study evaluates if immediate application of a Sarmiento fracture brace produces equivalent radiographic alignment when compared with coaptation splinting.

Methods: This is a retrospective study of 38 patients treated for humeral shaft fractures between 2003 and 2008. 14 patients were initially treated with immediate Sarmiento bracing and 24 were initially treated with coaptation splinting. The alignment in the coronal and sagittal planes were measured on the pre- and postimmobilization radiographs. The same measurements were taken at the initial clinic visit and followed until fracture union. Demographic data were also collected.

Results: Of the 14 patients treated with immediate Sarmiento bracing, the average varus alignment after brace application was 9.38° compared to 10.96° in those treated with immediate coaptation splinting. The number of patients with acceptable alignment after reduction was 10 of 12 patients who had complete postreduction radiographs for the immediate Sarmiento group and 19 of 23 for the immediate coaptation group. The average change in varus alignment after initial reduction was 15.69° for the immediate Sarmiento group and 16.25° for the coaptation group. Four patients treated with coaptation splinting underwent a repeat reduction in the emergency department, whereas 0 patients in the Sarmiento group required repeat reduction. Patients in both groups were similar with regards to initial injury displacement, radial nerve palsy, conversion to operative fixation, loss to follow-up, and nonunion. In the Sarmiento group, 3 of 14 patients (21%) eventually failed conservative treatment and converted to ORIF (open reduction and internal fixation) compared to 7 of 24 patients (29%) in the coaptation group.

Conclusion: Postreduction alignment was similar following immediate application of the Sarmiento brace as compared with coaptation splinting. Equivalent proportions of patients had acceptable postreduction alignment and less likely to require a rereduction attempt. Given the difficult nature of coaptation splinting, these findings support immediate Sarmiento application as a more comfortable and effective initial treatment for those patients with a humeral shaft fracture.