

Taylor spatial frame in the treatment of upper extremity conditions.

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Source

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Abstract

BACKGROUND:

Taylor spatial frame (TSF) is a modern multiplanar external fixator that combines ease of application and computer accuracy; it provides the capability of 1 to 6 axes of deformity correction sequentially or simultaneously by adjusting 6 connecting struts between 2 circular rings. Previous reports have documented the effectiveness of the TSF in acute fracture care, nonunion treatment, and in bone lengthening and deformity correction in the lower extremity. To the authors' knowledge, no previous case series in the English literature have documented the use of the TSF in treating upper extremity conditions. Our experience with the use of this external fixator in the treatment of upper extremity length abnormality, angulation, and bone transport is summarized.

METHODS:

Over a period of 7 years, TSF was used in 12 patients with varying upper extremity pathologies that were collected from our prospective external fixator database. The classic TSF planning strategy was adopted and the TSF web-based program was used. All cases were followed for a minimum of 2 years. The database and radiographs were reviewed to obtain demographic data, malalignment parameters, final correction, time in the TSF, and complications.

RESULT:

Patients' ages ranged from 8 to 18 years. Eight humeral and 4 radial cases were identified. These included 4 cubitus varus and 1 cubitus valgus deformity, 1 neglected supracondylar fracture, 2 humeral nonunion, 2 radial malunion cases, and 1 radial shaft septic nonunion. Time in the TSF varied according to patient age and bone involved. Five patients had superficial pin site infections that resolved with oral antibiotics. Postoperatively mean final angulation on the anteroposterior radiograph was 1 degree (range, 0 to 5 degrees) and the mean final angulation on the lateral radiograph was 0.5 degrees (range, 0 to 2 degrees). Union of bone was achieved in all cases.

CONCLUSIONS:

The TSF is an external fixator that can be successfully used as a treatment alternative for the definitive treatment of upper extremity conditions involving a deformity and or shortening or bone transport in the pediatric and adolescent patient population