

# **Humeral Lengthening with Monolateral External Fixation: Functional Outcome**

*Abhijit Pawar, MD; Austin T. Fragomen, MD; S. Robert Rozbruch, MD; Hiriklia Bazhani, MD;*  
Limb Lengthening and Complex Reconstruction Service  
Hospital for Special Surgery  
535 East 70<sup>th</sup> Street, New York 10021  
drabhijitpawar@gmail.com

## **What was the question?**

While there have been few reports there is no study in the literature on humerus lengthening and assessment of functional outcome with monolateral external fixation.

- I. What is the functional outcome of humeral lengthening with the monolateral external fixation?
- II. How does lengthening with a monolateral frame compare with lengthening with a circular external fixator?

## **How did you answer the question?**

We retrospectively reviewed 15 patients who underwent humerus lengthening using monolateral fixation. Clinical and radiographic data was collected including time in frame, external fixation index (EFI), percentage of lengthening, and shoulder and elbow range of motion (ROM). Preoperative and postoperative DASH scores were obtained.

## **What are the results?**

Fifteen patients with the age of 23.7 yr (range 13.7–36.7 yr) had humeral lengthening of 7.43 cm (range 6.1–8.7 cm). This was a 40.3% lengthening (range 28–52.28%). Eight patients with preoperative deformity were fully corrected. Time in frame was 7.3 months (range 4.7–9.9 mths) and the EFI was 32.3 days (range 25.2–39.4 days). Elbow and shoulder ROM motion were obtained or improved. DASH scores were obtained in 9 patients. Average postoperative disability score was 8.7 as compared to average preoperative disability score which was 15.07. Complications included transient radial nerve paresis in 2 patients, refracture treated with plating in 2 patients, and superficial pin tract infections in 2 patients.

## **What are your conclusions?**

This is the first study to report series of humerus lengthening with monolateral external fixation and to assess functional outcome. The functional outcome was very good and the complication rate was comparable to historical controls. The frame is less bulky and more comfortable to the patients.