

The Limb Lengthening and Reconstruction Society: ASAMI–North America

Sixteenth Annual Scientific Meeting Abstract Form

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Title: Femoral Reconstruction Using External Fixation

Presenting Author: S. Robert Rozbruch, MD; Hospital for Special Surgery, 535 East 70th Street, New York, NY 10021
(complete name, degree, institution, mailing address, telephone, facsimile, e-mail)
tel 212-606-1415; fax 212-774-2744, email RozbruchSR@hss.edu

Co-authors: 1) Yevgeniy Palatnik, BA, Albert Einstein College of Medicine, Yeshiva University
Include name, 2) Austin T. Fragomen, MD; Hospital for Special Surgery, Weill Medical College of Cornell University
degree, institution 3) Svetlana Ilizarov, MD; Hospital for Special Surgery, Weill Medical College of Cornell University

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- Trauma, Acute
- **Nonunions**
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March 15, 2006

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What was the question?

Can external fixation be used to accomplish femoral reconstruction for deformity, leg length discrepancy (LLD), nonunions, and bone defects?

How did you answer the question?

We retrospectively reviewed our experience using external fixation for femoral reconstruction in 47 consecutive femora in 43 patients. The primary goal was lengthening in 21, deformity correction in 12, and repair of nonunion/ bone defect in 10 patients. Deformities included varus (16), valgus (20), recurvatum (2), procurvatum (3), internal rotation (8), and external rotation (2). Average age was 31 (range, 9-89). Associated conditions included osteomyelitis (4), diabetes (2), rheumatoid arthritis (3), and neuropathy (5). Bone grafting was done in eleven patients. Quadricepsplasty was done in 10 patients for knee contracture. Additional tibial surgery was done in 13 patients. Three femora were treated with a planned IM nailing after distraction. Circular frames were used for 11 and monolateral frames were used for 36 femora. Clinical and radiographic data were analyzed.

What are the results?

Average follow-up was 42 months (range, 9-77). Average time in frame was 6 months (range, 1-18). Bone lengthening of 5 cm (range, 1-10) was performed in 31 femora and the external fixation index (EFI) for this subgroup was 2 months/ cm (range, 0.2-3.1). LLD improved from 4 cm (range, 0-17) to 1 cm (0-9). Varus deformity improved from a mechanical axis deviation (MAD) 36 mm medial (range, 6-100) to 9 mm medial (0-44). Valgus deformity improved from MAD 24 mm lateral (range, 7-57) to 8 mm lateral (range, 0-43). The range of LDFA improved from 89⁰ (SD 8.4) to 89⁰ (SD 4.6). Knee range of motion did not substantially change from 0⁰ (SD 7.9) – 118⁰ (SD 33.3) to -1⁰ (SD 2.8) – 106⁰ (SD 39.7). Complications of fracture were successfully managed with internal fixation in 3 and extension of the frame in one patient(s). Osteomyelitis occurred in 3 patients, 2 of which were successfully managed with debridement and intravenous antibiotics. One patient was successfully treated with transfemoral amputation. All other femora are healed and free of infection.

What are your conclusions?

Reconstruction of the femur with external fixation is a valuable technique for deformity correction, lengthening, and repair of nonunions/ bone defects. External fixation is particularly useful for minimally invasive deformity correction, lengthening, bone transport, and management of complex and infected nonunions. Additional procedures may be needed to manage obstacles and complications.

