

Management of complex femoral and tibial non-unions using the Ilizarov technique and its cost implications

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We conducted a retrospective analysis of complex femoral and tibial non-unions treated with the Ilizarov frame.

Our aim was to assess the results of Ilizarov treatment in these patients with regards to time to union, functional outcome, number of days of hospital stay and cost of treatment.

Thirty seven (36 patients) complex femoral and tibial non-unions were treated at our institute using the Ilizarov fixator between January 1991 and December 2003. There were 5 femoral and 32 tibial nonunions. Twenty two were infected nonunions. The average number of operations prior to referral was 3.04 per patient (range 1–10). The mean delay between injury and Ilizarov treatment was 22.5 months.

Eighteen were treated with bifocal compression distraction technique, while the remaining underwent monofocal treatment. The mean time to union was 13.7 months. Two patients failed to unite and underwent a below knee amputation. 2 patients developed a refracture, 1 had a fracture of the regenerate and 2 had a poor regenerate.

All the patients with successful union were extremely satisfied with the outcome (96.9% on a visual analogue scale) despite having some functional restriction (SF36 physical capacity score = 36.4).

The expenses incurred from hospital stay (mean 48.7 days) and out patient follow up (mean 17.3 days) alone were £20,758 per patient. The total cost of treatment per patient was in excess of £32,000.

Complex non-unions of the femur and tibia can be successfully treated using the Ilizarov technique.

Though the treatment is prolonged and expensive, the end result is rewarding.

Early referral and optimal primary surgery could have possibly decreased the patient morbidity and the cost of treatment in some of our patients.

The referring trusts should take into account the cost implications when transferring patients.

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A preliminary report on the treatment of complex tibial diaphyseal fractures using the Ilizarov method

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Introduction: Complex diaphyseal tibial fractures are rare injuries and can present significant challenges to the surgeon. Successful fixation and subsequent union can be difficult to achieve due to the relatively poor blood supply of the tibia. This study describes our early experience of treating fifteen patients with these injuries by the Ilizarov method.

Methods: Patients were prospectively identified. Follow up was performed in the out-patient clinic and by notes review. Fractures were classified using the AO classification. Bony union was evaluated on both a clinical and radiological basis, which included remodelling bone trabeculae on two radiographs and ability to weight bear without discomfort or walking aids on a dynamised frame. The mean patient age was 38 years with a male:female ratio of 11:4. Of the 15 patients 5 had concomitant injuries.

Results: There were two 42-B3 type fractures, six 42-C1 and seven 42-C3. Nine were open (seven IIIB, two IIIA) and six closed. We identified three groups: closed fractures, open fractures and open fractures with bone loss. The mean time to union in the closed group was 147 days (21 weeks) and 193.5 days (27.6 weeks) in the open group. The patient with 8 cm bone loss had a frame on for 445 days (63.5 weeks) with distraction osteogenesis through the most proximal fracture site (bone index = 56 days/cm). Five patients had an episode of superficial pin site infection, all of which settled with oral antibiotic therapy. There was no deep sepsis. One fracture went on to hypertrophic non-union and required further surgery. One patient had a local allergic reaction to pin site cleaning fluid. No patients required bone grafting.

Conclusion: The Ilizarov method offers safe, reliable and rapid healing for both closed and open complex tibial diaphyseal fractures.

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Application of recombinant BMP-7 in the treatment of persistent upper and lower limb non-unions: Our institutional experience

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Purpose: The purpose of this study was to evaluate the efficacy of human recombinant osteogenic pro-