

Management of Humeral Diaphysis Fractures by SIGN Interlocking Nailing: A Report of 100 Cases

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Purpose: Humeral diaphysis fractures are mostly managed conservatively with very much acceptable results as the humerus is not a weightbearing bone. Nowadays the hazards of conservative treatment and time lost for confinement from activity has led the surgical management to popularity especially in the developed and developing world. The SIGN (Surgical Implant Generation Network) technique is easy in comparison to any other nails and it has a wonderful technique of finding distal slot with the slot finder, eliminating the necessity of use of a C-arm. This is the specialty of the SIGN system.

Methods: This prospective study was carried out at NITOR (National Institute of Traumatology and Orthopaedic Rehabilitation) and Mitford Hospital, Dhaka, Bangladesh from July 2003 to December 2020. We present a report of 100 cases. 41 of them had been fixed with SIGN FIN nail and the remaining 59 were fixed with SIGN standard nail having locking screws on each side. We have fixed fresh fractures, nonunions, and also difficult implant failures. Bone grafts were used for most of the nonunion cases. Reaming products were used the most.

Results: In this series cases were followed up an average of 19 months (range, 9 to 53 months). Most of the cases united with early recovery of shoulder range of motion. We repaired the rotator cuff carefully. There was minimum shoulder pain in 3 cases. One case suffered pain and stiffness due to impingement. We have revised the case with careful placement of nail and the patient is doing well. Two patients presented with nonunion but could manage daily activities with little pain. One patient had fixation failure and nonunion after antegrade nailing, which was again revised with retrograde approach. She came after 1 year with failure again and low-grade infection. We removed the nail and waited about 2 months for the wound to be healed, keeping her in a hospital bed. After clinical and biochemical evidence of wound healing, we fixed the bone with locking plate and autogenous cancellous bone grafting from iliac crest. For the assessment of functional recovery we followed the NITOR Richland criteria and full painless AER (abduction and extension range) is considered to be important criteria of complete functional recovery.

Conclusion: The SIGN Fin nail and standard nail can be very effective for managing fractures of the humeral diaphysis.