

### **Early Clinical Experience with the SIGN Hip Construct**

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**Purpose:** As the population ages, the developing world industrializes and more urban centers emerge, the burden of orthopaedic trauma will steadily increase. SIGN (Surgical Implant Generation Network) Fracture Care International has developed a unique intramedullary device for fixation of hip fractures in low-resource settings lacking fluoroscopy. We report the safety profile and complication rate for an early consecutive series of patients with hip fractures managed using this implant.

**Methods:** A database with prospectively collected data, maintained by the implant manufacturer, was used to retrospectively review the first 170 patients treated with the SIGN Hip Construct (SHC) for a proximal femur fracture from 2009 to 2014. Patients who sustained a proximal femur fracture with follow-up >12 weeks and adequate radiographs were included. Data recorded include patient demographics, time to surgery, union rate, AO/OTA classification, complications, neck-shaft angle, and clinical outcomes including painless weight bearing and knee flexion greater than 90°.

**Results:** Of the 170 patients managed with the SHC, 71 patients (42%) met the inclusion criteria with mean a follow-up of 39 weeks (range, 21-64). The mean patient age was 49.5 years (range, 12-91) consisting of 48 men (67%) and 23 women (33%). In terms of World Health Organization (WHO) region, 27 (38%) were from Africa, 21 (29.6%) from Eastern Mediterranean, 17 (23.9%) from Western Pacific, and 3(4.2%) each from Americas and Southeast Asia. Fractures treated included 55 (77.5%) intertrochanteric, 7 (9.9%) subtrochanteric, 4 (5.6%) femoral neck, and 5 (7%) combined type. Reduction quality was good in 35 (49%), acceptable in 19 (27%), and poor in 17 (24%). Major complications consisted of varus collapse in 6 (8.5%), nonunion or delayed union in 3 (4.2%), intra-articular screw placement in 5(7%), and infection in 3 (4.2%). The average initial postoperative neck-shaft angle was 126° (±7.3°) postoperatively and 119.3° (±11°) at final follow-up.

**Conclusion:** This is the first comprehensive report of a novel implant for hip fractures specifically designed for low-resource settings. The early clinical data and outcomes suggest that the SHC can be safely inserted in the absence of fluoroscopy, and facilitates early mobilization while maintaining acceptable reduction until union.