Standard or Fin SIGN Nail? Which Option Is More Practical for the Treatment of Femoral Fractures Using Retrograde Nailing Approach?

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Purpose: Femoral fractures are common in Low- and Middle-Income Countries (LMICs) and are mainly caused by high-energy mechanisms. The Surgical Implant Generation Network (SIGN) program offers intramedullary nails in LMICs with the advantage that they can be used without an image intensifier free of charge for the patients. These nails have 2 options: the SIGN standard nail (SSN) and the SIGN fin nail (SFN). This study aimed to compare the results in terms of the duration of surgery, type of reduction, and complications in patients treated using SSNs compared to those managed with SFNs for middle and distal shaft femoral fractures using a retrograde nailing approach.

Methods: This retrospective, descriptive, and nonexperimental study, done at Emergency NGO Surgical Centre, Sierra Leone, included patients with mid and distal femur shaft fractures who underwent surgical management with retrograde SSNs or SFNs between January 2017 and May 2022. Follow-up data were recorded at 6, 12, 26 and 52 weeks. This study was reviewed and approved by the IRB of Emergency NGO.

Results: The mean operative time decreased from 104.3 minutes with SSN to 78 minutes with SFN ($P<0.001$). Open reduction of the fracture was necessary in 10 patients (16.7%) with SSN and in 12 (19.4%) with SFN ($P = 0.69$). During follow-up, 7 patients (11.7%) with SSN and 12 (19.4%) with SFN had complications without statistically significant differences between the 2 groups ($P = 0.24$). The most common complication reported was knee pain on full weightbearing in 3 patients (5%) in the SSN nail group and 8 (12.9%) in the SFN group, with no significant difference.

Conclusion: Both SSN and SFN are effective in managing femoral shaft fractures using a retrograde approach in low-resource settings. However, SSN may provide better stability in patients with complex fractures while SFN may be preferable for cases of polytrauma as it requires less surgical time without compromising the outcome.