HOSPITAL FOR **SPECIAL SURGERY**

Lengthening and then nailing (LATN) of the lower extremity

LIMB LENGTHENING.COM

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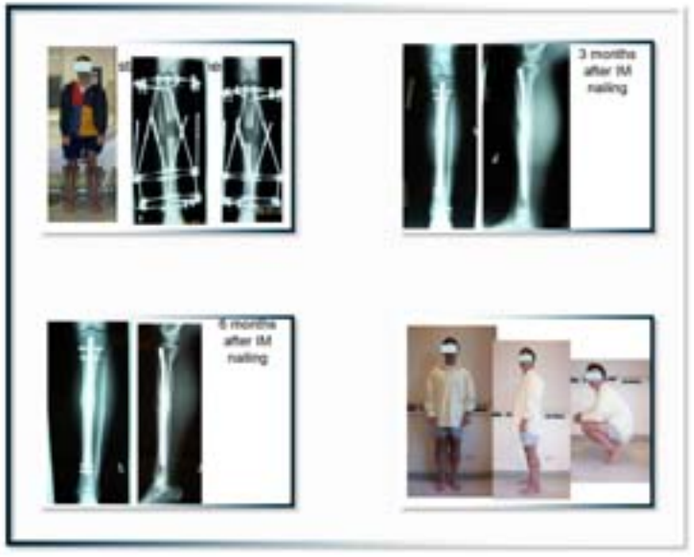
INTRODUCTION

Techniques for lengthening and growing bone (distraction osteogenesis), namely the classic Ilizarov method, often require the long-term application of an external fixator. This extended time in a frame is associated with several complications, including increased risk for pin tract infection and joint stiffness, as well as psychosocial issues like frustration and discomfort. Alternative methods, including lengthening over a nail (LON) and the use of available internal lengthening nails, decrease the time spent in a frame yet bear additional limitations. Lengthening and then nailing (LATN) is introduced to address deformity correction while minimizing the time needed in a frame.



METHODS

LATN was used to treat 32 limbs, 28 tibiae and 4 femora, in 21 patients. The reason for treatment was leg length discrepancy (LLD) from malunion in 5, fibrous dysplasia in 2, nonunion in 2, polio in 1, as well as for stature lengthening in 11 patients. Ilizarov Taylor Spatial or EBI monolateral frames were used for the distraction phase along with pin/wire placement to allow for subsequent intramedullary nailing. At the end of distraction, reamed intramedullary nails were inserted and frames were removed.

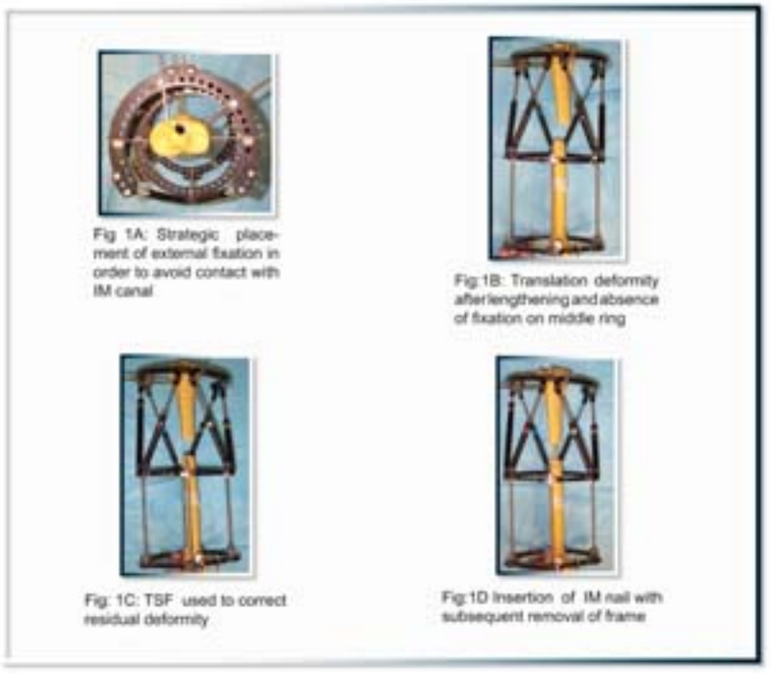


Fig 1A: Strategic placement of external fixation in order to avoid contact with IM canal

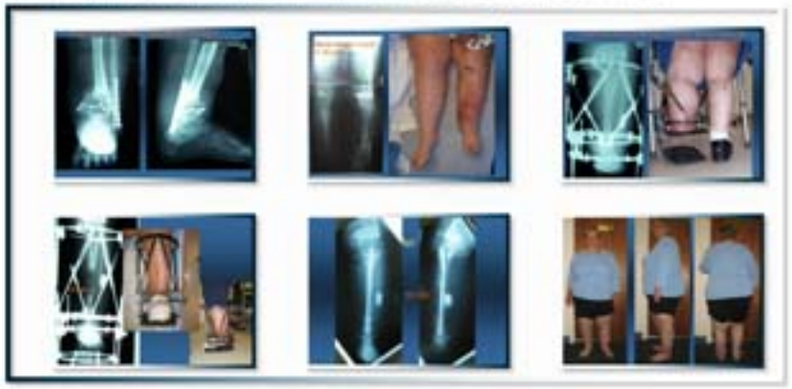
Fig:1B: Translation deformity after lengthening and absence of fixation on middle ring

Fig: 1C: TSF used to correct residual deformity

Fig:1D Insertion of IM nail with subsequent removal of frame

RESULTS

Time in frame averaged only 13 weeks (range, 3-27). Delay between the end of distraction and nailing was an average of 12.7 days (range, 0-112). Full weight bearing was tolerated 7 weeks (range, 6-11) after nailing and was considered the time of bony healing. Bone healing index was an average of 0.8 months/cm (range, 0.8-1.4). Clinically, ankle and knee ROM did not change with treatment. Radiographically, lengthening accomplished was 5.7 cm (range, 2.5-10) and MAD, LDFA, and MPTA measurements remained within their normal ranges. Complications included skin breakdown over a prominent interlocking screw and deep infection in one patient, which was treated and resolved.



CONCLUSION

LATN seems to be a safe and effective procedure for limb lengthening and deformity correction. It reduces time spent in an external fixator and there may be several advantages over LON, including the ability to insert a full length large diameter nail for more stability, avoidance of concomitant use of internal and external fixation and thus lower risk of infection, ability to gradually correct diaphyseal deformity and lengthen prior to nail insertion thus expanding the indications, and reaming through the regenerate which appears to enhance and quicken bone healing.