

BRIDGING THE GAP: MONORAIL EXTERNAL FIXATOR ACHIEVING OSTEOSYNTHESIS IN COMPLEX LONG SEGMENT DEFECT OF HUMERUS

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Introduction: The external fixator concept propagated during Hippocrates era, has now evolved into a wide array of metals and composite materials. The monorail external fixator is a modern type uniplanar fixation, still adhering to basic principles, are employed to reduce fractures and correct deformities, including upper limb.

Discussion: A 45 years old female, sustained an open comminuted fracture proximal third humerus of her dominant limb, complicated with surgical site infection. During stage one a radical debridement of bone (10cm in length) and soft tissue was undertaken with introduction of an antibiotic loaded cement spacer (Masquelet Technique). The fracture was stabilized with an 8 pin monorail external fixator. The second stage surgery comprised removal of the antibiotic loaded cement spacer with corticotomy performed at appropriate level. Post operatively, patient was compliant with distraction osteogenesis of 1mm/day, and transported bone was docked 3 months after surgery. Significant consolidation and osteosynthesis could be seen 6-9 months post-surgery. Monorail external fixator works on principle of distraction osteogenesis, whereby osteotomy acts as a signal for the formation of new bone when done at appropriate rate and frequency, thus filling the skeletal defect with bone.² There are other advantages which include less chance of neurovascular, chest wall injuries, pin breakage, less operative time and cosmetically appealing. This enables free will for clothes wear with early mobilization and therapy.

Conclusion: Despite a long segment bone defect of the upper extremity, the use of a monorail external fixator can still achieve osteosynthesis, at the same time providing just the right balance of construct stability and patient comfort.