Aim: The management of limb-length discrepancy secondary to traumatic bone loss poses an unique challenge for surgeons. The Ilizarov technique is popular, but is associated with long external fixator time and many complications. This retrospective study assessed outcomes of post-traumatic femoral defects managed by monorail external fixation over an intramedullary nail.

Method: Eight patients were included from over a four-year period with post-traumatic femoral defects, that underwent treatment with monorail fixator-assisted intramedullary nailing. Mean follow-up time was 232.83 weeks. Five were open fractures (Gustilo-Anderson type 3A:n=4, 3B:n=1), one had closed fracture. Average bone defect size was 8cm. Primary outcomes were lengthening index, consolidation time and index, external fixator index. Secondary outcomes were time to full weight bearing (FWB), time to union, complications. Patient reported outcome measures including EQ-5D-5L, SF-36, Oxford knee scores (OKS), Oxford hip scores (OHS) were recorded after recovery.

Results: Average consolidation time and index were 11.35 months and 20.2 days/cm and 23.88 days/cm, respectively. On average, patients achieved FWB and bone union 56.25 weeks and 68.83 weeks after bone transport initiation, respectively. Two patients had docking site non-union, treated by reamed intramedullary exchange nailing. Two patients had osteomyelitis. EQ-5D-5L and EQ-VAS scores were compared to UK population norms (p=0.104, p=0.238, respectively). Average OKS was 32.17 and OHS was 34.00.

Conclusions: Monorail external fixation over an intramedullary nail is an effective option for post-traumatic femoral defects, reducing external fixator time, lowering complication rate, returning patients’ quality of life to a level comparable with the normal population.