

LETTER TO THE EDITOR

Comment on: Clinical and Functional Outcomes of Ilizarov Bone Transport in Traumatic Tibial Bone Loss



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Dear editor,

We read with interest the recent article by Mohd-Yusof *et al*¹, which reported excellent union rates (95%) and high proportions of good-to-excellent ASAMI bone (90%) and functional (90%) outcomes in patients with traumatic tibial bone loss treated with Ilizarov bone transport, with 82.5% returning to work. The authors also demonstrated a strong correlation between functional outcomes and return-to-work rates, highlighting the socio-economic impact of successful reconstruction.

In our recent comparative study of cable-assisted bone transport (CAST) versus circular external fixator-assisted bone transport (CEFT) for tibial bone defects, both techniques achieved similar radiological consolidation and ASAMI functional outcomes². However, CAST was associated with significantly lower pain scores during distraction (VAS 4.81±0.98 vs 6.75±0.86 ; p=0.001) and a reduced incidence of pin-tract infections (50% vs 93.8% ; p=0.013) compared to CEFT. These findings suggest that less invasive constructs may enhance patient comfort and potentially reduce complication-related treatment interruptions.

When comparing the two reports, both our series and Mohd-Yusof *et al*'s¹ cohort achieved union rates exceeding 90% and similarly high functional scores, reaffirming the efficacy of distraction osteogenesis in large tibial defects. The notable difference lies in complication profiles: while pin-tract infection occurred in 30% of cases in the Ilizarov series, our CEFT group experienced 93.8%, and our CAST group 50%. Although differences in patient selection, defect size, and follow-up protocols limit direct comparison, these observations support continued investigation into transport techniques that minimise transosseous pin usage.

While Mohd-Yusof *et al*¹ did not stratify outcomes by defect size, previous studies have indicated that larger defects may be inversely correlated with functional recovery and return-

to-work potential. This dimension, alongside the choice of transport technique, could influence long-term rehabilitation and socio-economic reintegration, and therefore warrants further exploration in future multicentre studies.

We commend the authors for emphasising return-to-work as a meaningful outcome, a parameter often overlooked in reconstructive orthopaedics. Future prospective comparative trials directly evaluating Ilizarov, CAST, and hybrid methods, while considering defect size as a prognostic factor, may clarify whether the lower morbidity observed with CAST translates into improved long-term function and earlier reintegration into daily and occupational activities.

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AUTHORS' REPLY TO THE LETTER TO THE EDITOR

Dear editor,

We thank Alibakan and Sulek for their insightful commentary comparing our series of Ilizarov bone transport with their recent work on cable-assisted bone transport (CAST)¹. Their contribution highlights the ongoing evolution of distraction osteogenesis techniques aimed at improving patient comfort and reducing complications.

In our study, the Ilizarov method demonstrated union rates of 95% with good-to-excellent ASAMI bone and functional outcomes in 90% of cases, and importantly, 82.5% of patients successfully returned to work². We agree with the authors that while union and function are essential, the socio-economic dimension of return-to-work is an equally critical endpoint. The differences in complication profiles observed between CAST, CEFT, and Ilizarov techniques underscore the importance of tailoring constructs to optimise both biological success and patient tolerability.

We also acknowledge their point regarding defect size and long-term recovery. Stratification by defect length is indeed an important prognostic factor, and future multicentre comparative studies, including Ilizarov, CAST, and hybrid methods, will be instrumental in clarifying whether the lower morbidity associated with CAST translates into earlier socio-economic reintegration.

We read with interest their observation that CAST achieved similar consolidation and ASAMI functional outcomes compared with circular external fixators, while notably reporting lower pain scores and reduced rates of pin-tract infection (50% vs 93.8%)¹. It is an interesting point that underscores the potential of this technique to improve patient comfort without compromising biological success. In our series, the pin-site infection rate was 30%, which, while not negligible, remains within the commonly reported range for Ilizarov applications³. It is worth noting that infection rates in the literature vary widely³⁻⁵. Even within the same country, China has reported rates ranging from 21.3% in a large 282-patient cohort to 61.3% in a 199-patient study^{3,4}. Rates were even higher at 71.4% in a smaller Indian series⁵. Such variation likely reflects differences in study size, patient demographics, socioeconomic status, hygiene protocols, and definitions of minor versus major infection.

In our experience, the majority of infections were superficial and responded well to local care and oral antibiotics, without compromising union or functional outcomes. This observation is consistent with larger reports, where minor infections are often self-limiting, while major infections requiring unplanned surgical revision are relatively rare^{3,4}. Risk factors such as larger bone defects, multiple previous surgeries, and higher external fixation index (EFI) have been shown to predispose to infection⁴. Conversely, younger patients with smaller tibial defects appear to have lower risk, likely due to stronger immune response and better soft tissue compliance³.

Despite these complications, the Ilizarov method in our cohort achieved a 95% union rate, 90% good-to-excellent ASAMI outcomes, and 82.5% return-to-work². These results suggest that, while pin-site morbidity is a limitation, it rarely jeopardises the ultimate goals of union and functional restoration. At the same time, we concur that reducing hardware-related complications, either through techniques such as CAST or hybrid constructs, represents an important future direction.

We commend the authors for advancing this discussion. We believe that ongoing comparative work across centres and techniques strengthens the field by offering surgeons more refined strategies to balance union, function, complication avoidance, and patient quality of life.

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