Port resulting in predictable regenerate, minimal induced bone deformity and accurate docking.

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AO hybrid external fixation for periarticular tibial fractures
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Periarticular fractures of the tibia are some of the most difficult fractures to manage. Open reduction and internal fixation of the fractures is plagued with complications such as non-union, delayed union, infection and post-traumatic osteoarthritis.

We evaluated the results of 42 consecutive periarticular tibial fractures stabilised with the AO hybrid fixator using the Oxford Knee Score, American Orthopaedic Foot and Ankle Score (AOFAS) and X-rays of the tibia. There were 16 proximal and 26 distal tibial fractures. Three patients died of unrelated medical conditions and eight patients refused to take part in the study seven of who had distal tibial fractures.

The mean follow up was 34 months (range 12—58 months) and the mean age was 50 years. There were seven open fractures all of which were distal tibial fractures. The fixator was applied for an average of 12 weeks. The mean Oxford Knee Score was 20.8 (mild to moderate knee arthritis) and the mean AOFAS was 67.8/100. There was no significant malunion however 63% had developed radiological evidence of post-traumatic osteoarthritis. Sixty-nine percent of patients developed a complication and 29% required further surgery.

Evaluating the proximal and distal tibial fractures separately, the incidence of complication and further surgery was significantly higher in the distal fractures.

From our study, we feel that hybrid fixation of proximal tibial fractures is satisfactory however alternative means of fixation should be sought for distal periarticular fractures.

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Flap and frame—The treatment of grade 3 open fractures by tissue cover and the Ilizarov method
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Introduction: Our two units adhere strictly to BOA/BAPS guidelines for open fracture treatment. Use of the Ilizarov method gives smaller “footprint” of fixation device, preserving soft tissue attachments/blood supply; early weightbearing; and capacity to treat bone loss by distraction osteogenesis.

Methods: Open fractures identified prospectively. Followed beyond frame removal. After thorough debridement, including dead bone, a monolateral ex-fix was applied if access needed for wound closure. Definitive fixation with the Ilizarov method. Open fractures with bone loss similarly treated, with acute shortening or bone transport.

Results: 2002—2005, 75 open fractures in 70 patients (M:F 58:12). Mean age 42. Segment involved 70 tibias and 5 femurs. Bone loss (mean 5.7 cm, range 2—12) in 27 fractures.

Gustilo grade: 1/2/3A/3B/3C = 2/1/9/60/3.
Wound closure: 12/75 (16%) required free tissue transfer (FTT), most requiring local flap or split skin graft (SSG).
Time to union (days): (Without bone loss) Mean 178 (25 weeks), median 150, range 79—540. (With bone loss) Mean 374 (53 weeks), median 361, range 137—796; bone index 67 days/cm.

Followed beyond one year, 2 (2.7%) had clinical evidence of deep sepsis, 3 (4%) developed non-union, and 4 (5.3%) required amputation (the three grade 3C injuries and one deep sepsis). Complications: 3 malunions, 1 refracture, 1 docking site delayed union, and 1 overgranulation of SSG. One FTT failed in a grade 3C fracture, leading to early amputation (coupled with recognised vascular injury). 10/70 (14%) patients experienced superficial pinsite infection, all except one settling with oral antibiotics.

Conclusions: Grade 3 open fractures remain a significant treatment challenge, particularly those with bone loss, which require prolonged frame times. Patients must be counselled re primary amputation versus reconstruction.

Flap and frame is a very satisfactory method of treating open fractures, with low deep sepsis, high union rate, satisfactory union times, and reduced FTT requirement.

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