Tension Band Wiring is Associated with the Best Outcomes in Patella Fracture Fixation

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Multiple methods exist to operatively repair patella fractures depending upon the fracture pattern. The purpose of this study is to determine which method of fixation, if any is associated with the best outcomes. METHODS:

Between 2012 and 2023, 248 patients who sustained a displaced patella fracture (OTA types 34A1-2 and 34C1-C3) and underwent operative repair were identified. Patients with less than 6 months of post-operative follow up were excluded. Four methods of fixation were identified: wire tension band construct (68%), dorsal plate (10%), suture only fixation (16%), and mini-screw/suture tension banding fixation (6%). Data was collected at regular follow up intervals. Outcomes included range of motion of the injured knee, fracture healing, radiographic time to union, reoperation rates, and complications including fracture related infection (FRI).

RESULTS: The cohort consisted of 160 females and 88 males with an average age of 59.73 ± 15.8 . Between the four groups, there was no difference in fracture healing. However, patients treated with dorsal plates had the highest rate of infection (8%, p<0.001) and patients treated with tension bands and sutures having the lowest rate of infection (0%). Additionally, patients treated with a dorsal plate had the highest rate of reoperation, including removal of painful hardware, manipulation under anesthesia, and irrigation and debridement (28%). Patients fixed with sutures only displayed the highest frequency of radiographic gapping (fixation failure) at the fracture site at 6 months (15%). Multivariate analysis revealed that radiographic gapping at 6 months was independently associated with 34-C1 (complete articular transverse) fracture patterns and fixation by sutures only (p = 0.004).

DISCUSSION AND CONCLUSION:

While clinical outcomes were similar between cohorts, patients fixed with a dorsal plate had a higher rate of reoperation and FRI and suture fixation had a greater incidence of fixation failure than the other three groups. Tension band wiring provides the most reliable fixation for most patella fracture patterns.