**Removal of Implants After Open Reduction and Internal Fixation of Tibial Plateau Fractures Improves Clinical Outcomes**

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**Purpose:** Tibial plateau fractures are common injuries often treated with open reduction and internal fixation. Anecdotally, we have noted improved patient satisfaction following hardware removal for these patients. The purpose of this study was to objectively assess the effect of the removal of surgical implants after union on patient reported outcomes.

**Methods:** Since 2009 all patients at our Level I trauma center undergoing open reduction and internal fixation by the senior surgeon (D.G.L.) are enrolled into a prospective registry and have outcomes recorded routinely at follow-up (Knee Outcomes Survey [KOS] and Lower Extremity Functional Scale [LEFS]). Visual analog scale (VAS) pain was also recorded. This registry was divided into two cohorts: those who had undergone removal of their surgical implants and those who had not. The decision to remove implants was based upon patient preference. Outcome scores were compared between the two study populations using a two-tailed Student *t*-test.



**Results:** A total of 80 patients were identified as having completed outcome scores: 33 had retained implants and 47 had implants removed. Results can be seen in Table 1. Outcomes were significantly better in patients who had implants removed compared to those who did not ($P = 0.002$ for KOS, $P = 0.002$ for LEFS). There was no significant difference seen in VAS pain scores (1.59 vs. 1.56, $P = 0.94$).

**Conclusion:** The results of this study indicate that patients who have removal of their surgical implants after open reduction and internal fixation of a tibial plateau fracture have significantly better outcomes than those who have retained implants. Patients who are unhappy with their clinical result should be counseled that removal of the implant may improve function, but may not improve pain.

Table 1. Follow-up and Outcome Scores for Patients with and without Retained Implants.

| | **Retained** | **Removed** | ***P* Value** |
|---|---|---|---|
| **Follow-up (mos)*** | 8.2 (2.9-30.1) | 6.1 (0.3-20.4) | 0.094 |
| **KOS (avg.)** | 52.7 (14-72) | 63.4 (31-80) | 0.002 |
| **LEFS (avg.)** | 44.7 (5-80) | 61.7 (19-80) | 0.0002 |
| **VAS** | 1.59 (0-5.8) | 1.56 (0-7.4) | 0.94 |

*Indicates months after most recent surgery