

**Hardware Removal After Lisfranc ORIF Results in Immediate Improvement in Physical Function**

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**Purpose:** Hardware removal (HWR) after Lisfranc open reduction and internal fixation (ORIF) is often standard following successful treatment. The purpose of this study was to investigate whether HWR after Lisfranc ORIF resulted in immediate, measurable impact via Patient-Reported Outcomes Measurement Information System (PROMIS) physical function (PF) and pain interference (PI) scores.

**Methods:** A retrospective review of all adult patients with surgically treated, isolated Lisfranc injuries at one tertiary Level I trauma center between 2002-2023 was performed. Demographic data and patient-reported outcomes (PROs) were recorded. Patients were excluded if they received index treatment other than ORIF, underwent secondary surgical intervention for their Lisfranc injury other than HWR, or if HWR did not occur in the standard 3-6 month interval following ORIF. Patients who underwent HWR and had PROMIS scores collected at their postoperative visit were compared to those with retained hardware by 6 months. The primary outcome was patient-reported measures of PROMIS PF and PI. The Wilcoxon signed-rank test compared differences between PRO scores within the HWR removal group and the Wilcoxon ranked-sum test compared differences between HWR and no-HWR groups. Distributive minimal clinically important difference (MCID) was calculated using the 0.5 SD (standard deviation) method.

**Results:** We identified 482 patients (489 feet) with isolated Lisfranc injuries. Of these, 77 feet underwent ORIF followed by HWR. 30 feet had ORIF but did not have HWR. HWR occurred an average of 132 days (4.5 months) after ORIF. Patients who underwent HWR had a statistically significant increase in average PF scores in the immediate postoperative period, reaching the calculated MCID of 3.3 (40.2 to 45.6,  $P < 0.001$ ). HWR patients also had a nonsignificant decrease in average PI scores (55.9 to 54.2,  $P = 0.103$ ). Compared to those who did not undergo HWR, the HWR group demonstrated a statistically significant net improvement in PF scores from surgery, with an average improvement of 4.7 postoperatively ( $P = 0.003$ ).

**Conclusion:** Patients experienced immediate and significant improvement in PROMIS PF scores after HWR for Lisfranc ORIF. HWR patients also had a nonsignificant decrease in average PROMIS PI scores.