Postoperative Platelet-Rich Plasma Injection Does Not Accelerate Recovery After Achilles Tendon Repair: A Double-Blind Randomized Controlled Trial

Youichi Yasui, Wataru Miyamoto, Jun Sasahara, KEISUKE TSUKADA, MAYA KUBO, Asako Yamamoto, Hirotaka Kawano

INTRODUCTION: Platelet-rich plasma (PRP) has been widely explored as a biologic adjunct to accelerate soft tissue healing. However, few randomized controlled trials (RCTs) have investigated its efficacy in surgically treated Achilles tendon rupture (ATR), and results remain inconclusive. In particular, intraoperative PRP administration may be compromised by surgical bleeding. This study aimed to evaluate the clinical efficacy and safety of a single intra-tendinous PRP injection administered three weeks postoperatively in middle-aged male patients who underwent surgical repair of acute ATR.

METHODS:

This was a double-blind, randomized, placebo-controlled trial conducted between September 2018 and June 2021. Consecutive male patients with acute ATR who met the inclusion criteria underwent surgical repair using the side-locking loop technique. At three weeks postoperatively, patients were randomly assigned to receive either a PRP or saline injection at the suture site under ultrasound guidance. Follow-up assessments were performed at 6, 10, 12, 16, and 24 weeks, and at 1 and 2 years postoperatively. The primary outcome was the time required to achieve a bilateral heel raise. Secondary outcomes included time to single heel raise, time to perform 20 consecutive unilateral heel raises, patient-reported outcomes, time to initiate jogging, and MRI-based tendon assessment.

RESULTS:

Fourteen patients were enrolled and randomized (7 in the PRP group, 7 in the saline group). Baseline characteristics were similar between groups. No complications or adverse events were observed. By 6 weeks postoperatively, all patients achieved bilateral heel raise. The mean time to single heel raise was 12.3 ± 2.7 weeks in the PRP group and 15.7 ± 5.9 weeks in the saline group. Time to complete 20 unilateral heel raises was 14.3 ± 2.7 weeks in the PRP group and 17.7 ± 4.5 weeks in the saline group. Although numerical differences favored the PRP group, none reached statistical significance. No meaningful differences were observed in clinical scores, isokinetic strength, jogging resumption, or MRI findings including tendon thickness and signal intensity.

DISCUSSION AND CONCLUSION:

A single PRP injection administered three weeks after surgical repair of ATR did not significantly accelerate functional recovery or improve imaging outcomes compared to saline placebo. These findings suggest that delayed postoperative PRP injection may not provide added benefit in middle-aged male patients and warrant critical reappraisal of routine PRP use in ATR rehabilitation. Further studies with larger cohorts are needed to explore potential subgroups or alternative protocols that may benefit from biologic augmentation.