Factors Affecting Early Single Heel Raise after Repair of Achilles Tendon Rupture
Moses Lee, MD, Jin Soo Suh, MD, PhD, Myung Jin Shin, MD

Category: Sports

Keywords: Achilles tendon rupture, single heel raise test

Introduction/Purpose: No physical exam or clinical test can clearly predict a final course of acute Achilles tendon rupture after surgical treatment. But, in recent studies, ability to perform single-heel-raise during the early postoperative period was considered as a significant prognostic factor. Therefore, analysis of the relationship between preoperative factors and timing of the single heel raise might help to predict the prognosis and aid to establish an individualized rehabilitation plan. The purpose of this study was to analyze the factors affecting early single heel raise after surgical treatment of acute Achilles tendon rupture.

Methods: From January 2012 to August 2015, a retrospective analysis was performed for 68 patients who met the inclusion criteria among 98 cases of surgically treated acute Achilles tendon rupture. Operative technique and rehabilitation protocol were same in all cases. The patients who were able to perform a single heel raise within 3 months postoperatively were classified into the study group and the rest was determined as the control group. During periodic outpatient observation, we evaluated Achilles tendon total rupture score (ATRS), Visual Analog Scale (VAS), and timing capable of a single heel raise. We also preoperatively measured defect size and distance between calcaneal osteotendinous junction and rupture site by ultrasound image in all cases.

Results: No difference was found in demographic factors between the study group (23 cases) and the control group (45 cases) who performed a single heel raise later than 3 months postoperatively. There were no significant difference in defect size and distance between calcaneal osteotendinous junction to the rupture site (P=0.38, P=0.63). However, when the rupture site was divided into hypovascular zone (from calcaneal osteotendinous junction to the rupture site: 4~7cm) and hypervascular zone, the study group showed a significantly low hypovascular zone rupture rate. (14/23, 41/45, P=0.003). Also, in the logistic regression analysis that included age, BMI, smoking, hypovascular zone rupture, defect size, and operation delay, patients with hypervascular region rupture showed odds ratio of 5.3 (P=0.017) in performing a single heel raise within postoperative 3 month. ATRS score at postoperative 3 months and last f/u were significantly higher in the study group. (p<0.01)

Conclusion: Achilles tendon rupture at hypovascular zone is a poor prognostic factor for the early single heel raise and might significantly affect the prognosis after acute Achilles tendon rupture operation.