Comparative Outcomes of Non-Weightbearing Versus Protected Weightbearing Postoperative Protocols Following Major Tendon Transfer in the Neuropathic Population

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INTRODUCTION

Peripheral neuropathy affects around 50% of patients with diabetes. It can drastically reduce the quality of life due to pain, gait-instability, and fall related injuries. Major tendon transfers of the foot and ankle generally requires a period of non-weight bearing, however, maintaining non-weight bearing may be hazardous in this population. This study sought to compare postoperative outcomes of protected weight bearing (PWB) with non-weight bearing (NWB) protocols following major tendon transfer in a neuropathic population.

METHODS

A retrospective review of consecutive posterior tibial (PT) and anterior tibial (AT) tendon transfers performed by a single surgeon was conducted. Post-operative outcomes were reviewed and analyzed, comparing PWB versus NWB in postoperative protocols for a neuropathic population. Post-operative outcomes and complications were reviewed using a Student's t-test to determine significant differences (p-value <0.05) between the PWB and NWB groups. Post-operative complications were defined as either minor or major. Minor complications included reported fall, hematoma/seroma, dehiscence, and abscess / infection. Major complications included tendon failure, fixation failure, recurrence of deformity/wound, osteomyelitis, acute charcot, and amputations.

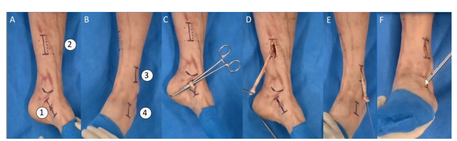

Figure 1: Technique of Posterior tibial tendon transfer on cadaver

Figure 2: Technique of Anterior tibial tendon transfer on cadaver

RESULTS

A total of 39 patients were recruited, in which 85% were male and 15% were female. The average age of the patients was 56 years. Of the 39 patients, 23 patients underwent AT tendon transfers and 16 patients underwent PT tendon transfers. 13 patients were non-weight bearing (NWB) and 26 patients were protected weight bearing (PWB) for 6-8 weeks postoperatively. All patients had an average 20.1 month follow up. All patients had peripheral neuropathy and diabetes mellitus.

Of the total 39 patients, 17.50% had minor complications and 7.69% had major complications. There were no minor complications in the NWB group as compared to 26.92% of minor complications in the PWB group, which was statistically significant (p-value = 0.0318). Of these minor complications in the PWB group, there was a 3.85% reported fall rate, 11.54% hematoma rate, 7.69% dehiscence rate, and 3.85% infection rate. In the NWB group, there was no reported falls, hematomas, dehiscence, or infections. Major complications occurred in 15.8% of the NWB group as compared to 3.85% in the PWB group. The only major complication in the PWB group was an acute charcot even which was reported in 3.85% of the group. The only major complication in the NWB group was amputation which was reported in 15.38% of the group.

Figure 3A-3D: s/p PT tendon transfer/PWB developed wound dehiscence. Wound was debrided and closed in OR. Sutures removed in clinic with a well healed incision.

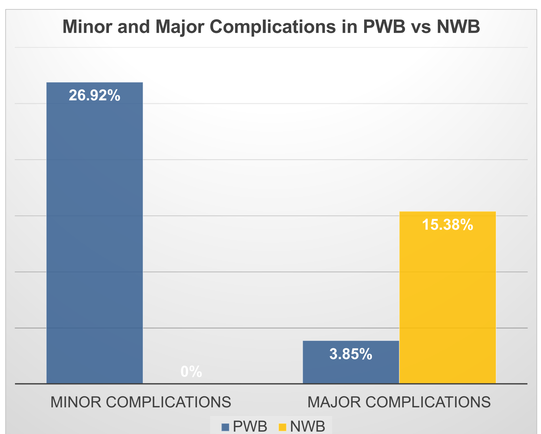

Figure 4: Bar graph demonstrating percentages of minor and major complications in the PWB group versus NWB group.

DISCUSSION

Of the 26 patients in the protected weight bearing group, there was a higher rate of minor complications when compared to the 13 patients in the non-weight bearing group. However, there was no significant difference in rates of major complications between the PWB and NWB groups.

In this cohort, all of the patients were diagnosed with peripheral neuropathy and diabetes mellitus. For patients who have multiple comorbidities it may not be feasible to tolerate prolonged periods of NWB following major tendon transfer. This research shows that patients may instead utilize PWB as a means of viable postoperative protocol. It is crucial for physicians to investigate the social backgrounds of patients to determine the best post-operative course. Further studies should aim to determine the timeline of when patients may go from NWB to PWB in comorbid populations.

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