Proximity of the Saphenous Nerve and the Hamstring Tendons during Hamstring Graft Harvest: A Cadaveric Study

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INTRODUCTION:

Hamstring tendon grafts are commonly utilized tendon autografts; however, the harvesting procedure can result in saphenous nerve injury. The mechanism of injury to the main branch of the saphenous nerve is not well understood. One hypothesis is blunt trauma during the proximal advancement of the tendon stripper. This study aimed to identify the anatomic position of the saphenous nerve relative to the gracilis and semitendinosus tendon and its relationship to the tendon stripper.

METHODS:

In this cadaveric study, 6 hip-to-toe specimens were obtained. Using an incision posterior to the medial epicondyle, blunt dissection was performed to identify the saphenous nerve, semitendinosus tendon, and gracilis tendon. Measurements of the anatomic position of the saphenous nerve relative to the tendons used for autografts were recorded with the knee in full extension and the Figure-4 position.

RESULTS:

At the medial epicondyle, the saphenous nerve shares a close relationship with the semitendinosus and gracilis tendons, and the saphenous nerve comes in direct contact with both the gracilis and semitendinosus tendon (Table 1, Figure 1). Overall, the Figure-4 position increases the distance between the saphenous nerve and these tendons. In a subset of the sample population (n=4), the saphenous nerve at the level of the medial epicondyle was found to be an average of 8 mm from the gracilis tendon and 13 mm from the semitendinosus tendon in the extended position. Similarly, the saphenous was found to be 14 mm from the gracilis tendon and 21 mm from the semitendinosus tendon in the Figure-4 position. Evaluation of proximal advancement of the tendon stripper demonstrated greater risk of saphenous nerve injury with medial (Figure 2) and anterior (Figure 3) trajectories of the tendon stripper. Additionally, the distal aspect of the tendon stripper path presents a greater risk of saphenous nerve injury, as the nerve is in closer proximity to both the gracilis and semitendinosus tendons distal to medial epicondyle than proximally (Figure 4).

DISCUSSION AND CONCLUSION:

These results highlight and emphasize the proximity of the saphenous nerve to the semitendinosus and gracilis tendons. The Figure-4 increases the distance between the saphenous nerve and both the gracilis and semitendinosus tendons. In the Figure-4 position, the saphenous nerve is closest to the tendons 3.8 cm distal the medial epicondyle. A lateral and posterior trajectory of the tendon stripper may be considered a relative "safe zone." During graft harvesting, soft tissue should be mobilized and gently retracted away from the tendons at this area and the trajectory of the tendon stripper should be considered to minimize risk of saphenous injury.









