Gastrocnemius Apneourosis Recession: A Modified Technique

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INTRODUCTION

Gastrocnemius recession is used to treat gastrocnemius tightness associated with several foot and ankle pathologies. It is commonly used in the treatment of equinus contractures, plantar fascitis, symptomatic flatfoot deformity, metatarsalgia and foot ulcers. Several techniques have been described including open and endoscopic approaches with satisfactory results.1,2,4–7 This article describes an alternative technique, introduced by the senior author (AJE), utilizing a limited open approach. Our technique utilizes a vaginal speculum to open the soleus gastrocnemius muscle interval as described by Roberts et al.3 This technique offers a simplified approach to gastrocnemius recession with minimal risk to neurovascular structures and gastrocnemius muscle fibers.

TECHNIQUE

The patient is laid supine on the operating table. After adequate anesthesia, the lower extremity is prepared and draped in normal sterile fashion. Exsanguination of the extremity with a thigh tourniquet is recommended to minimize blood loss.

A medial longitudinal incision at the gastrocnemius junction to the soleus is carried down to the subcutaneous tissues with blunt dissection. The incision is approximately 4-5 cm in length (Figure 1). Gastrocnemius fascia is identified and split sharply using the entire length of the incision taking care to avoid injury to the saphenous vein. Identification of the gastrocnemius/soleus junction is crucial, as it helps to guide the surgeon into the interval, by bluntly dissecting using the index finger starting proximally and
Fig. 3: Speculum is inserted and turned 90 degrees. Opening the speculum will provide full visualization of the gastrocnemius aponeurosis.

Fig. 4: The appearance of the gastrocnemius aponeurosis before release (A) and post-gastrocnemius release (B).

Moving distally to the level of gastrocnemius/soleus junction. Blunt dissection will ensure adequate visualization of the interval and will also help in breaking any fascial interconnections between the gastrocnemius and soleus. We utilize a vaginal speculum to open the gastrocnemius—soleus interval. Wetting the speculum with normal saline helps it to slide easily into the interval (Figure 2). Once the speculum is in the interval, the handle is turned 90 degrees, to be in line with the sagittal axis of the leg (Figure 3). When the speculum is opened, it provides good visualization of the gastrocnemius muscle aponeurosis posteriorly and the soleus muscle aponeurosis anteriorly. A long-handled 15 blade is used to sharply split the aponeurosis, starting at the lateral edge and working medially. Dissecting scissors can be used to transect remaining fascial connections (Figure 4). This technique involves cutting the aponeurosis then dorsiflexion of the foot causes the muscle fibers to elongate but remain intact. The sural nerve is protected by the muscle belly of the gastrocnemius. After the recession is completed, the speculum is removed and the ankle is dorsiflexed to stretch the gastrocnemius muscle and increase the degree of separation between the two ends of the aponeurosis. Copious irrigation is used and the wound is closed in layers. The two ends of the crural fascia are reapproximated using 2-0 Vicryl. This will prevent herniation of the underlying muscles. It is important to avoid including any muscle fibers to prevent adhesion. The skin closure is done in a standard fashion, closing the subcutaneous tissue with 4-0 Vicryl and the skin with 4-0 Nylon. A dressing is then applied to cover the wound.

DISCUSSION

Gastrocnemius recession performed by this technique releases the aponeurosis of the gastrocnemius muscle, without detaching the tendon. The amount of release obtained is substantial, allowing maximum dorsiflexion to be restored.
The rehabilitation program is adjusted according to underlying and associated pathologies. If the gastrocnemius recession is done in isolation, we recommend using a removable boot with the ankle in neutral and we allow the patient to fully bear weight for a period of 4 weeks followed by a physical therapy program. The rehabilitation for gastrocnemius recession done in conjunction with other procedures has to be modified accordingly. This method works especially well in those patients who have muscle fibers that run directly into the soleus aponeurosis where full transection causes significant bleeding. It also protects the sural nerve by keeping muscle between the blade and the nerve.

REFERENCES