Technique, Indications, and Results of Proximal Medial Gastrocnemius Lengthening

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KEYWORDS

- Gastrocnemius • Equinus • Hallux valgus • Metatarsalgia
- Proximal gastrocnemius release

KEY POINTS

- Gastrocnemius proximal lengthening was first performed to correct spasticity in children, and was adapted for the patient with no neuromuscular condition in the late 1990s.
- Since that time, the proximal gastrocnemius release has become less invasive and has evolved to include only the fascia overlying the medial head of the gastrocnemius muscle.
- The indications for performing this procedure are a clinically demonstrable gastrocnemius contracture that influences a variety of clinical conditions in the forefoot, hindfoot, and ankle.
- Proximal gastrocnemius release is a safe and easy procedure that can be performed bilaterally simultaneously, and does not require immobilization of the ankle after surgery.
- Proximal gastrocnemius release can be performed either as an isolated procedure, or in conjunction with additional foot or ankle surgeries.

INTRODUCTION

When equinus is caused only by tightness of the gastrocnemius, lengthening only the gastrocnemius is logical. This procedure can be performed at 3 levels: proximal, intermediate, and distal. The distal open techniques are described in the article "Surgical Techniques of Gastrocnemius Lengthening" by Dr. DiGiovanni and colleagues in this issue. The intermediate-level technique was described by Bauman,[1–4] but is one with which the authors have no experience, and it involves a section of the anterior aponeurosis of the gastrocnemius.

Silfverskiold[5] was the first to describe proximal gastrocnemius lengthening in 1923 in cases of cerebral palsy. He cut the medial and lateral gastrocnemius at their insertion on the femoral condyle (**Fig. 1**). According to Gage,[6] spasticity first affects the

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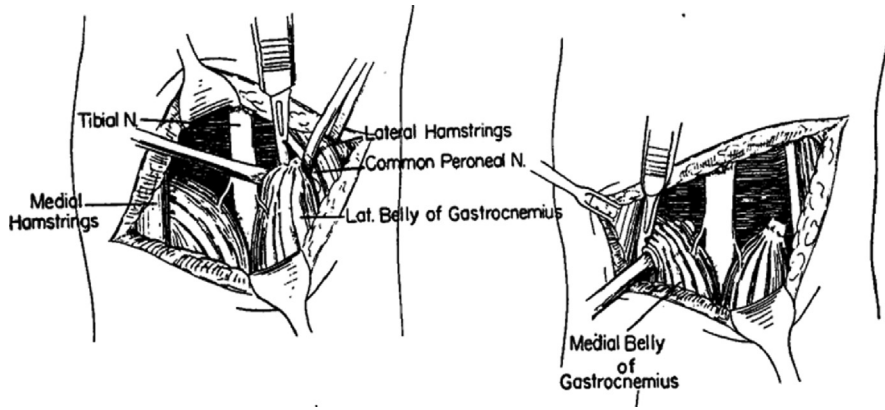

Fig. 1. Silfverskiold's technique. Lat, lateral; N, nerve. (*From* Silfverskiold N. Reduction of the uncrossed two-joints muscles of the leg to one-joint muscles in spastic conditions. Acta Chir Scand 1923;56:315–30.)

biarticular muscles, and the technique for this indication is still used and provides good results.[7]

The authors' technique of proximal release of the fascia of the medial gastrocnemius is derived from experience with the Silfverskiold's method. This procedure began with the work of Barouk[7] in 1970, when the original technique of Silfverskiold was used in cerebral palsy cases. From 1997 to 2005, the authors performed section of only the white fibers (aponeurosis), but of both the medial and lateral gastrocnemius (**Fig. 2**) in patients with static problems (as opposed to dynamic associated with neuromuscular conditions such as spasticity) mainly related to the forefoot.[8]

From 2005 to present, the authors have sectioned only the aponeurosis of the medial gastrocnemius (**Fig. 3**) for reasons that are explained later.

Indications for Proximal Gastrocnemius Release

In the authors' practice, indications for the procedure are based on the presence of gastrocnemius tightness (a positive Silfverskiold sign), particularly when this tightness has influenced the problem for which the patient has sought help. Additional symptoms will be relieved by the proximal release, including the presence of lumbar pain cramps in the calf, calf tension, or difficulty walking in bare feet or flat shoes.[9,10,11]

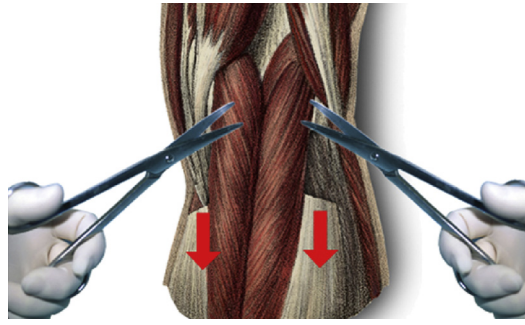

Fig. 2. Section of the white fibers (*red arrows*) of medial and lateral gastrocnemius. (*From* Barouk LS. Forefoot reconstruction. New York: Springer-Verlag; 2003; with permission.)