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SURGICAL TECHNIQUE

One-stage dynamic graciloplasty for anal incontinence

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KEYWORDS

Dynamic graciloplasty;
Anal incontinence;
Sphincter injury;
Obstetric injury

Introduction

Anal incontinence is common, about 5% of the overall population, and can alter the quality of life. After failure of medical treatments, there are several surgical options according to the injury assessment, such as sphincterorraphy, vascularized muscle transposition (gracilis or gluteus maximus), artificial sphincter, sacral nerve stimulation, injection of bulking agents and colostomy.

Graciloplasty was initially described by Pickrell et al. in 1952 [1], to treat children with anal incontinence secondary to neurological disorders. However, a degradation of functional results was frequently observed over time. These poor results were mainly due to large proportion of fast twitch muscle fibers in gracilis muscle (57%), whereas the internal sphincter contains more frequently slow twitch fibers (80%) [2]. For this reason, Salmons and Henriksson [3] showed that low-frequency stimulation of striated muscles increased the proportion of slow twitch fibers. The first cases of dynamic graciloplasty were thus reported in 1991 by Baeten et al. [4]. Since then, dynamic graciloplasty has been associated with good or very good results in 67 to 85% of cases with severe anal incontinence [5–7].

Nowadays, this technique is limited to some tertiary referral centers, because of important postoperative morbidity [8]. Dynamic graciloplasty is indicated in case of failure of other techniques, mainly after injury (obstetrical, perineal and surgical) or anorectal malformations (spina bifida or anal imperforation). Muscular dystrophy is an obvious contraindication [7].

The gracilis muscle has anatomical characteristics favorable to its perineal transposition: its length allows to encircle the anal canal and its proximal vasculonervous pedicle allows the full mobilization of the muscle with conservation of its vascularization [9].

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1. Anatomy of the gracilis muscle

Insertion: on the ischiopubic branch.

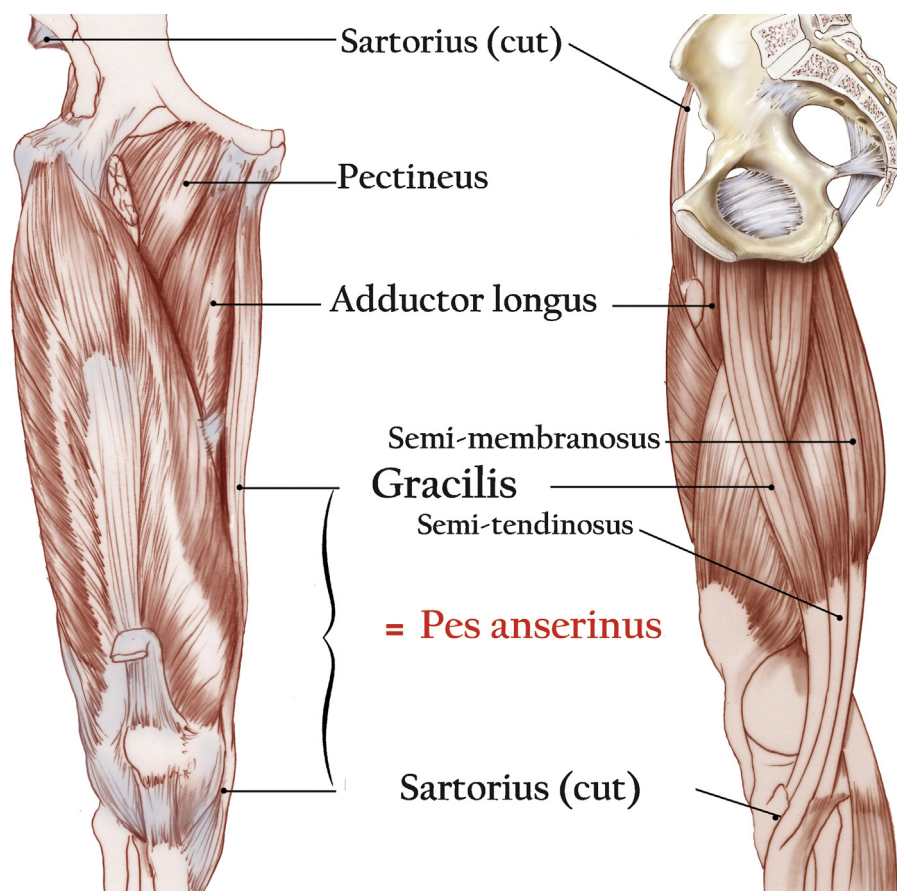
Trajectory: vertically into the medial space of the thigh, the tendon rounds the internal femoral condyle and then goes forward.

Termination: on the inner surface of the tibia, upper epiphysis at the level of the pes anserinus.

Action: to adduct the thigh and to flex and rotate the leg medially at the knee.

Vascularisation: the main pedicle comes from deep femoral artery and/or medial circonflex artery. Additional pedicles come from superficial femoral artery.

Innervation: obturator nerve



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