

INTRODUCTION:

The aim of this review is to report on outcomes, complications, techniques, & surgical highlights of endoscopic gastrocnemius recession. The gastrocnemius recession is performed to treat equinus contracture of the ankle, which can lead to a multitude of foot & ankle pathologies.^(2,3,5-11)

Open approaches such as the Silverskiold, Strayer, and Vulpius procedures result in satisfactory correction, but require larger incisions, may lead to poor cosmesis, sural nerve injury, wound complications, or increased OR time for closure.^(2,3,6,7,11,13,15,16)

The endoscopic approach includes uniportal & dual portal and allows for direct visualization of the gastrocnemius aponeurosis through an endoscope (Figure 1).

Advantages: smaller incision, quicker recovery, faster transition to functional rehab.^(11,13)

Challenges: sural nerve dysesthesias, superficial vascular injury, & increased learning curve.^(6,7,9,11,12)

METHODS:

A systematic review of electronic databases was performed and data such as: general patient demographics, outcomes, qualitative scoring measures, complications, & surgical technique were collected from retrospective and prospective patient studies. Articles that were cadaveric or anatomic studies, review articles, written in a non-English language, or technique paper, case reports or a sample size of three or less, and studies in which endoscopic gastrocnemius recession was not performed or inadequate data was able to be extracted, were excluded. Statistical analysis of the pooled data included the weighted mean. Complication was defined as surgical wound complications, infection, deep venous thrombosis, neuritis, & plantarflexion weakness. Guidelines from PRISMA were used to design the review of literature.⁽¹⁻⁴⁾

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RESULTS:

Table 1: Outcome Measures

Authors	Year	Feet/leg (n)	Pre-Op Ankle ROM	Post-Op Ankle ROM
DiDomenico	2005	31	-9.00 (-18 to 0)	9.00 (0 to 22)
Grady	2010	40	-4.48	12.03
Harris	2018	39	NA	NA
Phisitkul	2014	294	-0.80 ± 5.40; (-5 to 10)	Immediate: 14.70 ± 6.70; (0 to 30); ~13 month post-op: 11.00 ± 6.60; (-10 to 30)
Roukis	2010	23	NA	NA
Saxena	2004	18	-8.70 ± 3.50	6.20 ± 2.60 at 3 mo; 3.60 ± 1.80 at 6 mo
Schroeder	2012	60	-2.90 ± 1.90	12.80 ± 1.70
Tallerico	2015	7	NA	NA
Thevendran	2015	56	NA	NA
Trevino	2005	31	NA	NA
Ying	2016	48	NA	NA
			Weighted Mean Pre-Op Ankle ROM	Weighted mean Post-Op Ankle ROM
Mean			-2.30	10.90

Table 2: Complication Rate

Author	Year	Sural neuritis/ numbness	Wound complications	Infection (superficial/deep)	Weakness
DiDomenico	2005	NA	1	NA	NA
Grady	2010	0	0	0	NA
Harris	2018	0	1	0	0
Phisitkul	2014	10	0	0	11
Roukis	2010	0	3	NA	NA
Saxena	2004	2	0	NA	1
Schroeder	2012	3	NA	NA	1
Tallerico	2015	2	0	0	NA
Thevendran	2015	3	0	0	5
Trevino	2005	0	1	NA	NA
Ying	2016	NA	NA	NA	NA
Total		20	6	0	18
		666	589	0	517
Incidence		3.00%	1.00%	0%	3.50%

Figure 1: Direct visualization during endoscopic gastrocnemius recession



RESULTS CONT.

- 697 feet in 627 patients included with the weighted mean age of 45.3 years and weighted mean follow-up of 18.4 months (Table 1).
- Weighted mean pre-op ankle ROM was -2.3° & post-op ankle ROM was 10.9°. (Table 1)
- Most common complications included ankle plantarflexion weakness (3.5%), sural nerve injury (3.0%), & wound complications with no deep infection (1.0%) (Table 2)

DISCUSSION:

The endoscopic gastrocnemius recession appears to be a safe and effective surgical technique in the treatment of ankle equinus with satisfactory outcomes including low incidence of plantarflexion weakness and sural neuritis. Wound complications appear to be less common in the endoscopic approach due to limited incision length, dissection, and reduced need for traction on the wound for visualization. The overall complication rate was found to be 7.5%. Limitations of the review were that only English language articles were included, a publication bias existed, and there was heterogeneity of reported outcome measures. Strengths of the review were that it consists of a unanimous agreement among the authors, the use of PRISMA, and this review is the first to address outcomes and complication rates for endoscopic gastrocnemius recession. Prospective clinical trials comparing open and endoscopic techniques are warranted.

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