



Gracilis Muscle Transposition for Complex Perineal Fistulas and Sinuses: A Systematic Literature Review of Surgical Outcomes

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Complex perineal fistulas (CPF) such as rectovaginal, rectourethral, pouch-vaginal, and pouch-urethral are among the most challenging problems in colorectal practice. The etiologies of these complex fistulas include iatrogenic, obstetric, and Crohn's disease (CD). In addition, iatrogenic fistulas may occur after radiotherapy and pelvic surgery for the treatment of prostate or colorectal cancer.¹ Various surgical procedures have been suggested for the repair of CPF including direct repair, fistulotomy, fibrin glue instillation, endorectal or vaginal advancement flaps, abdominal procedures with colorectal or coloanal anastomosis, fecal diversion, and epiplooplasty.²⁻⁵ Effective treatment of CPF may require tissue interposition methods evaluated, which places normal healthy tissue between the suture lines.^{3,6,7} Previous studies have reported the use of various tissue sources for transposition such as the gracilis, rectus abdominis, omentum and dartos, gluteus maximus, and latissimus dorsi muscles.⁸⁻¹² The gracilis muscle has proven to be an excellent choice for creation of a perineal interposition flap due to a very proximal single pedicle permitting convenient perineal transposition and a versatile source of well-vascularized tissue for perineal reconstruction.¹³⁻¹⁶ Hechenbleikner and colleagues⁸ reported that the gracilis muscle was the most common tissue used to treat rectourethral fistula (RUF). Lefevre and associates³ reported the use of a gracilis muscle transplant as one of the various

options proposed for failed previous rectovaginal fistula (RVF) repair.

Perianal CD has a wide spectrum of manifestations, of which CPF and persistent nonhealing sinus after proctocolectomy are among the most troublesome. The gracilis muscle has been used in the treatment of perineal sinuses, such as postoperative unhealed wounds and wounds associated with CD. Several published studies have reported outcomes of gracilis muscle transposition for CPF and sinuses. However, authors have used different definitions of success when reporting their results. The purpose of this systematic review was to assess outcomes of gracilis muscle transposition for CPF and sinuses.

METHODS

Search strategy and sources

MEDLINE (PubMed and Ovid) and Cochrane library were searched using the keywords *fistula (fistulas) or sinus (sinuses) and gracilis or graciloplasty* from January 1980 to February 2013. These terms were then narrowed using "English," "humans," and "all adults." Pertinent references were searched manually. Two reviewers (ST, MB) screened records by title and abstract, and then reviewed eligible studies. The studies selected for full text review were evaluated based on pre-established inclusion and exclusion criteria.

Exclusion criteria

The following study types were excluded: case series consisting of fewer than 4 patients; animal studies; fetal diagnosis of fistula or sinus; studies reporting technique aspects, mechanism, or cost-effectiveness; review and seminar studies not reporting repairs and outcomes at the authors' institution; editorial letters/comments; presentation abstracts; poor documentation of techniques or outcomes; literature written in languages other than English. In case of multiple reports of the same group of patients, the most up-to-date and complete report was selected.

RESULTS

Study selection

As shown in the algorithm for study selection (Fig. 1), the PubMed, Ovid, and Cochrane Library searches generated

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Abbreviations and Acronyms

BT	= brachytherapy
CD	= Crohn's disease
CPF	= complex perineal fistula
GMT	= gracilis muscle transposition
IBD	= inflammatory bowel disease
RUF	= rectourethral fistula
RVF	= rectovaginal fistula

130 studies (excluding duplicates). These were then narrowed down using previously described limits, leaving 25 studies for full review; 4 were excluded because they were multiple reports from the same group of patients. One study was added from the manual reference search. Therefore, a total of 22 studies were included in this review.

Overview

Overall patient-specific data are reported in [Table 1](#). The studies included a total of 278 patients with a mean or median age ranging from 33 to 63 years, who underwent gracilis muscle transposition (GMT) for perineal fistula or unhealed sinus. Seventy-seven of the 278 patients (27.7%) had RVF, including anovaginal and pouch vaginal fistulas, 73 (26.6%) had RUF, and 7 (2.5%) had vesicovaginal fistula. Four studies reported the mean duration of the fistula from 24 to 48 months. Five studies reported mean operative times from 125 to 282 minutes. Fifteen studies reported failed previous surgery for fistula or sinus in which 161 of 233 patients (69.1%) had 1 or more failed previous operations. The mean or median follow-up period of the included studies ranged from 2.5 to 64 months. Five studies defined follow-up as the period after stoma closure. Thirteen

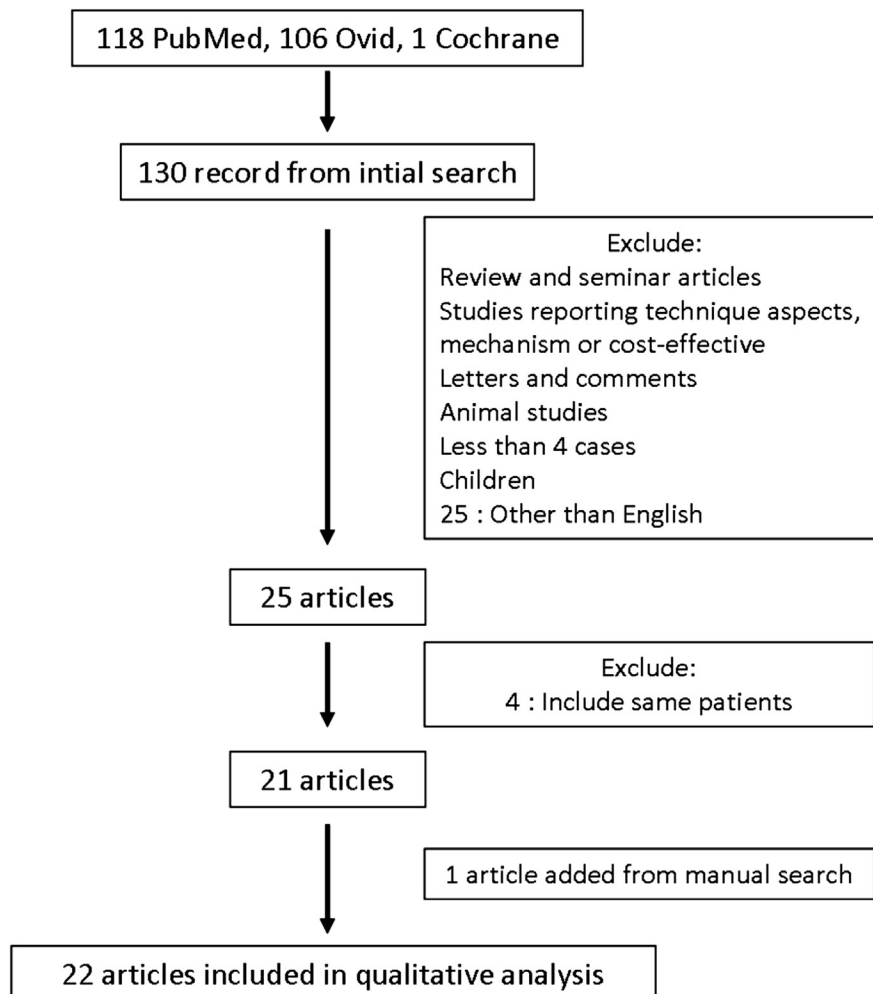


Figure 1. Flow diagram for included and excluded studies.

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