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Review Article

FISTULOTOMY FOR THE SURGICAL TREATMENT OF PERIANAL FISTULA OF CRYPTOGLANDULAR ORIGIN

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Abstract. *Perianal fistula usually results from a non-specific infection of the cryptic glands located at the anal dentate line. Identification of the exact course of a perianal fistula and the extent of anal sphincteric complex involvement are of paramount importance, in order to design the therapeutic and interventional approach and achieve the best results without impairment of the anorectal function. Several interventional methods are in use for the surgical treatment of CPF, including fistulotomy, insertion of cutting "seton", core fistulectomy, ligation of the intersphincteric fistulous track (LIFT), rectal advancement flap, injection of fibrin glue at the fistulous track, insertion of fistulous plug, and obliteration of the fistulous track with the use of Laser. In clinical practice a combination of the aforementioned methods can be used, in particular for the complex-high or recurrent fistulae.*

Key words: *perianal fistula, fistulotomy, anal sphincter*.

Introduction

Perianal fistula usually results from a non-specific infection of the cryptic glands located at the anal dentate line. Other less common causes are infection from unusual bacteria, inflammatory bowel disease – mostly Crohn's, malignancy, trauma and radiation of the perianal area [1–4]. According to the course through the anal and perineal musculature to their origin at the dentate line, Parks et al. [5] classified perianal fistulas as subcutaneous-superficial, intersphincteric (coursing between internal and external sphincter), transphincteric (coursing through the external sphincter and internal sphincters), suprasphincteric (coursing over the puborectalis) and extrasphincteric, the latter usually different to cryptoglandular sepsis etiology. More recently, perianal fistulae are classified as low (involvement of the distal third of the sphincteric complex) and high (involvement of the middle or/and the upper third of the sphincteric complex) (Fig. 1). In addition, low and high perianal fistulae are classified as simple and branching [6].

Diagnostic Methods

Identification of the exact course of a perianal fistula and the extent of anal sphincteric complex involvement are of paramount importance, in order to design the therapeutic and interventional approach and achieve the best results without impairment of the anorectal function. Magnetic resonance imaging (MRI) is considered the gold standard diagnostic tool for the assessment of cryptoglandular perianal fistulae (CPF), in particular the high ones, with accuracy rates above 90% [7–10]. Also, valuable information for high, complex and recurrent CPF can be obtained with the use of three-dimensional endosonography. Accuracy rate of this modality ranges from 50% to 100%, depending on the examiner's expertise [10–15]. Combination of both modalities increases accuracy [10].

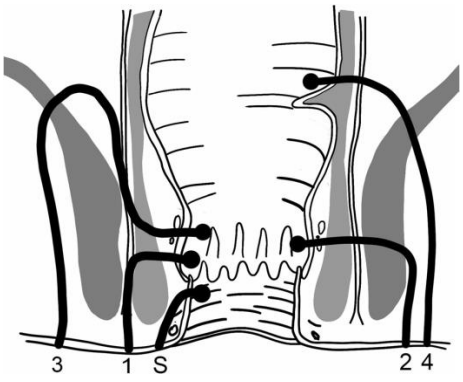

Fig. 1 Diagrammatic representation of the Park's classification of perianal fistula. S: sabcutaneous-superficial; 1: intersphincteric; 2: transsphincteric; 3: suprasphincteric; 4: extrasphincteric [5].

Treatment

Several interventional methods are in use for the surgical treatment of CPF, including fistulotomy [16–18], insertion of cutting "*seton*" [19–21] or loose "*seton*" [21–23], core fistulectomy [24], ligation of the intersphincteric fistulous track (LIFT) [25], rectal advancement flap [26–30], injection of fibrin glue at the fistulous track [23,31,32], insertion of fistulous plug [33,34], and obliteration of the fistulous track with the use of Laser [35–37]. In clinical practice a combination

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of the aforementioned methods can be used, in particular for the complex-high or recurrent fistulae.

Fistulotomy for the Low CPF

Despite some discrepancies in the indications among several guidelines [10], fistulotomy (FT) is the most common method for the surgical treatment of CPF. The main indications of FT are the superficial-subcutaneous, intersphincteric and low transsphincteric (involving less than 30% of the anal sphincter complex) CRF [9,10, 14,38]. Relative contraindications of FT for intersphincteric and low transsphincteric CPF are i) preoperative impairment of continence, ii) multiparous female with marginal fecal continence, iii) previous surgery, iv) recurrent CRF after fistulotomy, and v) Crohn's disease. Absolute contraindications of FT as the sole treatment are high transsphincteric, suprasphincteric and extrasphincteric CPF [10,39–41].

As regards the operative technique, under general anesthesia and the guidance of preoperative imaging assessment, i) the external opening is visualized, ii) the internal opening at the dentate line is identified with the injection of methylene blue through the external opening, iii) any branching of the fistula is also sought and identified, iv) a probe is gently inserted from the external opening, through the fistulous track to the internal opening at the dentate line, and v) the FT is carried out in a lay-open fashion with the use of a scalpel or electrocautery.

FT for the simple and low CPF is associated with high success rate, ranging from 80% to 100%, at the immediate follow-up [41–44]. Garces-Albir et al [13] report no recurrence after FT for simple and low CPF at one-year postoperatively, provided the extent of fistulotomy had been quantified preoperatively with three-dimensional endosonography. Cariati [45] reports 100% healing rate after FT for low CPF involving ≤10% of the distal external anal sphincter, at 6 months. Interestingly, van der Hagen et al [46] report that success rate of FT for low CRF decreases by time; from 93% at 12-month postoperatively to 74% and 61% at 48- and 72-month postoperatively. It is stated that recurrence can be either the result of treatment failure because of overlooked fistula branching or recurrent patient disease, as fistula recurrence occurs at different location in 54% of the cases. Patient predisposition may explain the latter observation, as it has been shown that there is an increased expression of pro-inflammatory cytokines and epithelial-to-mesenchymal cell transition in CPF. Therefore, molecular mechanisms may also interfere in pathogenesis and also persistence of CPF [47].

Some degree of incontinence, usually in the form of mucous discharge, is reported by more than 30% of the patients after FT [41,43,48]. Incontinence is minimal when FT is limited to the distal anal sphincter complex, and increases in parallel to the length of the external anal sphincter division [13]. Impairment of continence after FT is also related to preoperative functional status [41,43].

Complementary FT for High CPF

FT may be part of the surgical treatment of high and complex CRF. Chatterjee et al [49] combined partial FT (from the external opening to the level of the dentate line) with cutting "seton" passing through the deep fistulous track in 16 patients with high CPF. They observed one recurrence and incontinence to flatus in one patient. A similar surgical approach was applied by Durgun et al [50] in 10 patients with high CPF, with no recurrence and only two patients complaining of incontinence to flatus.

Fung et al [51] performed partial FT of the subcutaneous part of the fistulous track and placed a loose seton through the fistulous track involving the sphincter complex in 46 patients with high CPF. They report a healing rate of 86% and a recurrence rate of 19%, at a median follow-up of 42 months. Finally, Schultze and Ho [52], treated 75 patients with high and complex CPF with a staged approach: at the first stage they performed FT involving the subcutaneous part of the fistulous track and placed a loose "seton" through the fistulous track involving the sphincter complex and, at the second stage four months later, they performed a LIFT procedure. They observed a recurrence rate of 12%, mostly attributed to incomplete identification and drainage of the fistulous track branching, and minor incontinence in one patient.

Conclusions

Prior to surgical intervention for the treatment of CPF, image identification of the fistulous track by MRI is mandatory. FT is the commonest procedure performed for the treatment of the low CPF, namely the subcutaneous, the intersphincteric and the low transsphincteric fistula that involves less than 30% of the external sphincter mass. Relative contraindications of the procedure are Crohn's disease and pre-existing impaired continence. Initial healing rate is very high, but there is a tendency of increased recurrence by time, as a result of either incomplete identification of fistulous track branching or patient's predisposition. Incontinence after FT is of low incidence and minor severity. Partial FT can be combined with other techniques, such as "seton" placement or LIFT for the surgical treatment of the high transsphinteric, suprasphincteric and extrasphincteric fistulae.

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