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Predictive factors for recurrence of high transsphincteric anal fistula after placement of seton

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ABSTRACT

Background: The optimal surgical treatment for high transsphincteric fistula-in-ano (FIA) should attain complete eradication of the fistulous track and, in the same time, not compromising the anal sphincters. The present study aimed to investigate the predictive factors for recurrence of high transsphincteric FIA after placement of draining seton and to evaluate the efficacy and complications of seton treatment for high cryptoglandular anal fistula.

Materials and methods: This is a retrospective case–control study of patients with high transsphincteric FIA who were treated with seton placement. Variables analyzed were the characteristics of FIA, incidence of recurrence, postoperative complications including fecal incontinence (FI), and the predictive factors for recurrence.

Results: A total of 251 patients (232 males) with high transsphincteric FIA were treated with loose seton placement. Patients were followed for a median period of 16 mo. Recurrence of FIA was recorded in 26 of patients (10.3%) after a mean duration of 12.2 ± 3.9 mo of seton removal. Previously recurrent fistula (odds ratio [OR] = 2.81, $P = 0.02$), supralevator extension (OR = 3.19, $P = 0.01$) and anterior fistula (OR = 3.36, $P = 0.004$), and horseshoe fistula (OR = 5.66, $P = 0.009$) were the most significant predictors of recurrence. FI was detected in eight patients (3.2%). Female gender (OR = 15.2, $P = 0.0003$) and horseshoe fistula (OR = 8.66, $P = 0.01$) were the significant risk factors for FI after the procedure.

Conclusions: Significant risk factors for recurrence of FIA were previous fistula surgery, anterior anal fistula, and presence of secondary tracks or branches as supralevator extension, and horseshoe fistula.

Introduction

Anal fistula is a hollow track that connects an internal opening inside the anal canal to one or more external openings in the perianal skin. Most fistula-in-ano (FIA) in adults are explained by the cryptoglandular theory where a perianal abscess constitutes the acute inflammatory event and FIA represents the chronic stage of the process. In addition, FIA can arise secondary to a variety of conditions such as anal fissure, inflammatory bowel diseases, tuberculosis, malignancy, and radiation therapy.

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Surgical treatment remains the gold standard for the management of anal fistula in adults as it achieves adequate drainage of infection and complete eradication of the fistulous track.[1] In contrast to pediatric FIA which can resolve spontaneously with conservative treatment,[2] medical treatment does not have a role in adult FIA with exception to FIA secondary to Crohn's disease which responds to infliximab therapy.[3]

The surgical treatment of FIA varies according to the type of fistula; for simple fistulas, lay open of the track is usually sufficient reaching a success rate of around 90%.[4] Complete excision of the track or fistulectomy is another option for the treatment of simple FIA; however, the larger wound of fistulectomy takes longer to heal and does not provide distinct advantages over fistulotomy regarding the incidence of recurrence of fistula.[4,5]

For the more complicated types of FIA that involves parts of the anal sphincter complex, other modalities of surgical management were advocated. These surgical modalities include single or two-stage seton, advancement flap techniques,[6] ligation of intersphincteric fistula tract (LIFT),[7] fistula plug,[8] Permacol collagen paste,[9] Fistula-tract Laser Closure,[10] and video-assisted anal fistula treatment.[11] All these modalities aim to preserve the anal sphincter muscles while ensuring complete eradication of the fistulous track and adequate drainage of associated infection.

The treatment of anal fistula with seton has been used for a long time and is still being currently used. Seton can be either tight (cutting) or loose (drainage), the former serves to induce fibrosis while slowly dividing the remaining track and the sphincter muscles which prevents retraction of the sphincter ends, whereas the latter promotes adequate drainage of infection.[12]

Despite the remarkable evolution in the treatment of FIA with the introduction of new technologies, the placement of seton still has its role in the cases of complex FIA as it achieves satisfactory results with an added benefit of being inexpensive, unlike other modalities as video-assisted anal fistula treatment, fibrin glue, and anal plug whose cost might be prohibitive for resource-challenged communities. The present study aimed to investigate the predictive factors for recurrence of high transsphincteric FIA after placement of draining seton and to evaluate the efficacy and complications of seton treatment for anal fistula.

Patients and methods

Study design and setting

After the approval of the Institutional Review Board of Mansoura Faculty of Medicine, we began a retrospective unmatched case–control study involving patients with high transsphincteric anal fistula who were treated with seton placement in the Colorectal Surgery Unit of Mansoura University Hospitals. Data collection involved the period between January 2009 and March 2016. The study was registered at www.researchregistry.com with the unique identifying number: *researchregistry1936*.

Cases and controls

Cases were defined as patients with high transsphincteric FIA who developed recurrence after treatment with draining seton as detected by clinical examination during follow-up. Controls were defined as patients with high transsphincteric FIA who achieved complete healing with no evidence of recurrence after removal of seton on follow-up.

Eligibility criteria

We included adult patients aged >18 years who were diagnosed with primary or recurrent cryptoglandular high transsphincteric anal fistula and were treated with the placement of draining seton. The diagnosis of high transsphincteric FIA was made by endorectal ultrasonography (ERUS), magnetic resource imaging (MRI), or examination under anesthesia (EUA).

Patients who had intersphincteric, extrasphincteric, or low transsphincteric FIA, patients with FIA secondary to inflammatory bowel diseases, tuberculosis, malignancy, and other conditions as proven by histopathologic examination and patients who were surgically treated with methods other than seton placement were excluded. Patients with recurrent FIA associated with fecal incontinence (FI) after previous fistula surgery were also excluded from the study.

Surgical technique

All procedures were performed by consultants of colorectal surgery. Informed consents about the nature and possible complications of the procedure were obtained from all patients. One gram of cefotaxime was given on induction. Patients were placed in the modified lithotomy position with careful padding of the lower extremities.

The procedure started by EUA using the operating proctoscope to detect the internal opening of the fistula and to exclude any associated anal or rectal pathology. Hydrogen peroxide was injected through the external opening of the fistula to locate the internal opening. A malleable metallic probe was inserted through the external opening and directed gently until its end came out through the internal opening of the fistula.

Using electrocautery, coring of fistulous track around the external opening was conducted until the point where the track passed beneath the external anal sphincter muscles. The superficial part of the track was excised and sent for histopathologic examination. Silk No.1 thread was attached to the end of the metallic probe then withdrawn from the external opening along with the probe. The silk thread was loosely tied around the remaining part of the track and the anal sphincter muscles. Any branches from the primary track were sought and excised with electrocautery, supralevator extension and cavity were carefully curetted with metallic curette then irrigated with normal saline. Hemostasis was ensured then the wound was covered with a sterile compression dressing.

Follow-up

Seton was removed after 3 mo on complete healing of the superficial wound, and when there were no signs of perianal discharge, in cases of delayed healing or development of