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Inter-sphincteric ligation of fistulous tract as treatment of complex anorectal fistula

Ligadura interesfintérica de trayecto fistuloso como tratamiento de fístula anorrectal compleja

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Keywords:
Anal fistula, complex anal fistula, high trans-sphincteric fistula, ligation of inter-sphincteric fistula tract, fecal incontinence.

Palabras clave:
Fístula anal, fístula anal compleja, fístula transesfintérica alta, ligadura interesfintérica del trayecto fistuloso, incontinencia fecal.

ABSTRACT

Objective: To demonstrate that one of the effective treatments for the resolution of complex high trans-sphincteric anal fistulas is the technique of ligation of the inter-sphincteric tract, since it is one of the procedures that has shown adequate results for the resolution of the fistula, as well as for preserving both the anal sphincter and anal continence. **Material and methods:** We conducted a prospective and observational study of patients who underwent surgery with the technique of ligation of the inter-sphincteric tract for complex anal fistula (high trans-sphincteric), of cryptoglandular origin during the period from January 2016 to August 2018 in the Coloproctology Service of the General Hospital of Mexico "Dr. Eduardo Liceaga" in Mexico City, Mexico. Clinical features, surgical technique and outcome were analyzed. **Results:** A total of 23 patients with high trans-sphincteric fistula were included and underwent ligation of the inter-sphincteric tract. Only one patient presented recurrence of the fistula. In the postoperative follow-up, one month after surgery, three patients presented perianal abscess at the incision site (13.04%). No patient presented fecal incontinence after the surgical procedure. The median Wexner score was 0. **Conclusion:** In our experience, the technique of ligation of the inter-sphincteric tract was a safe, reproducible surgery, with low morbidity and no fecal incontinence, with a success rate of around 90%, so it could be considered the first line of surgical treatment in high trans-sphincteric complex anal fistulas.

RESUMEN

Objetivo: *Demostrar que uno de los tratamientos efectivos para la resolución de fístulas anales complejas transesfintéricas altas es la técnica de ligadura del trayecto interesfintérico, ya que es uno de los procedimientos que ha demostrado adecuados resultados para la resolución de la fístula, así como la preservación del esfínter anal y la continencia.* ***Material y métodos:*** *Se realizó un estudio prospectivo y observacional de pacientes intervenidos quirúrgicamente con la técnica de ligadura del trayecto interesfintérico por fístula anal compleja (transesfintérica alta), de origen criptoglandular durante el periodo comprendido entre enero del 2016 y agosto del 2018 en el Servicio de Coloproctología del Hospital General de México "Dr. Eduardo Liceaga" de la Ciudad de México. Se analizaron las características clínicas, la técnica quirúrgica y su resultado.* ***Resultados:*** *Fueron incluidos un total de 23 pacientes con fístula transesfintérica alta, a los cuales se les realizó técnica de ligadura del trayecto interesfintérico. Sólo uno de los pacientes presentó recurrencia de la fístula. En el seguimiento postoperatorio, un mes después de la cirugía, tres pacientes presentaron absceso perianal en el sitio de la incisión (13.04%). Ningún paciente presentó incontinencia fecal posterior a procedimiento quirúrgico, la mediana del score de Wexner fue 0.* ***Conclusión:*** *En nuestra experiencia, la técnica de ligadura del trayecto interesfintérico resultó una cirugía segura, reproducible, con escasa morbilidad y nula incontinencia fecal, con un porcentaje de éxito alrededor de 90%, por lo que podría considerarse la primera línea de tratamiento quirúrgico en fístula anal compleja transesfintérica alta.*

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INTRODUCTION

After undergoing drainage of an anorectal abscess, approximately one-third of patients will develop an anal fistula, which is an abnormal connection between the anal canal and the perianal skin. Fistulas manifest with persistent or intermittent pain, swelling, and purulent drainage. The most common origin of these fistulas is a cryptoglandular infection.[1-3]

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Fistulas are classified as simple or complex, the latter including high trans-sphincteric tracts that involve more than 30% of the anal sphincter, supra-sphincteric fistulas, extra-sphincteric fistulas, recurrent fistulas, fistulas with multiple tracts, and all fistulas of anterior location in women, among others.[4-6]

The fundamental goals in the treatment of anal fistulas are to eradicate sepsis, close the fistulous tract, prevent recurrence and, most importantly, preserve anal continence.[7]

One of these anal sphincter-preserving techniques for the treatment of complex fistulas is the ligation of the inter-sphincteric tract (LIFT) technique, first described by Rojanasakul et al. in 2007, primarily for the treatment of high trans-sphincteric fistulas.[8-12]

These authors proposed closure of the primary (internal) orifice to prevent particles of fecal matter from entering the fistula tract and ligation of the inter-sphincteric tract, thus eliminating the septic focus. Contraindications to perform this technique include anorectal abscesses associated with the tract, active inflammatory bowel disease and fistulas related to malignancy. Multiple reports in the literature report a success rate ranging from 47-95%.[13-17]

Some authors consider that a drainage seton should be placed eight weeks prior to performing a LIFT technique, since they consider that this measure eliminates the septic focus and promotes fibrosis of the fistulous tract, facilitating later dissection of the inter-sphincteric space and ligation of the tract.[18-25]

The aim of this paper is to describe the experience of a same surgical team with the LIFT technique in high (complex) trans-sphincteric anal fistulas, and to describe the modifications we have made to this technique.

Table 1: Clinical features of the series patients.

Parameter	N = 23
Age (years)	23-70
Gender	
Male	20
Female	3
Smoking history	
Positive	1
Negative	22
Diabetes mellitus	
Positive	1
Negative	22
High blood pressure	
Positive	2
Negative	21
Obesity (BMI)	
> 25	7
< 25	16
Evolution time (months)	4-24
Previous surgery	
Yes	10
No	13
Previous seton	
Yes	9
No	14

BMI = body mass index.

Table 2: Fistula characteristics and surgical technique.

Parameter	N = 23
Fistula type	
High trans-sphincteric	23
Location	
Anterior	14
Posterior	9
LIFT technique	
Ligation only	23
Fistulous path	
< 3 cm	4
> 3 cm	19

MATERIAL AND METHODS

From January 2016 through August 2018, a prospective, observational, and longitudinal study of patients who underwent surgery with a LIFT technique for complex anal fistulas (high trans-sphincteric) of cryptoglandular origin in the Coloproctology Service of the General Hospital of Mexico "Dr. Eduardo Liceaga" in Mexico City, was performed by the same surgical team. The mean postoperative follow-up of the patients was 12 months. Patients with high

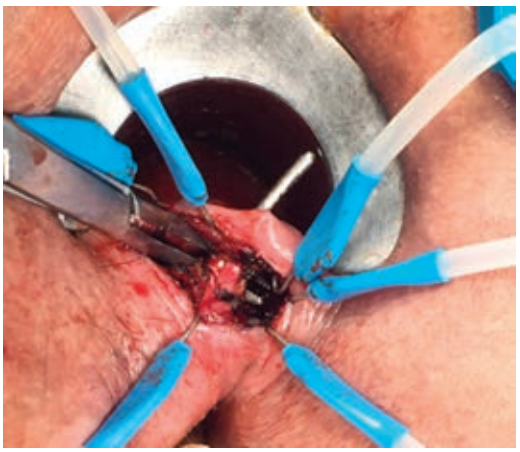

Figure 1: *Dissected fistulous tract.*

trans-sphincteric fistulas, clinically evidenced and confirmed by endoanal ultrasound were considered *(Tables 1 and 2)*.

Inclusion criteria were as follows: complex anal fistulas of cryptoglandular origin with high trans-sphincteric trajectory, with or without previous surgeries, with or without drainage seton placement, and with a single primary orifice. Antibiotic prophylaxis with metronidazole 500 mg in a single dose one hour prior to the surgical procedure was used in all patients. All patients underwent surgery with mixed anesthetic block and placed in the Sevillian knife position.

The fundamental steps of the procedure are: rectal examination and complete anoscopy procedure, identification, and canalization of the fistulous tract with a stylet, previous removal of the seton in the cases in which it was present, an incision of approximately 2 cm transversely in the inter-sphincteric space, and dissection until the fistulous tract is identified. The stylet is removed, and the fistulous tract is curetted, and two 2-0 Vicryl® trans-fixed stitches are placed at each end, the closest possible to the internal anal sphincter and the external anal sphincter *(Figure 1)*.

Both silk thread references are tied, and the fistulous tract is sectioned with a scalpel; 1 ml of hydrogen peroxide is injected through the secondary orifice, ensuring that there is no leakage into the inter-sphincteric space. In cases where leakage was present, a new ligation was performed with a Vicryl® 2-0 thread and checked again with hydrogen peroxide. The surgical wound was approached with simple stitches of Vicryl® 3-0, leaving enough space in the center of the wound to facilitate drainage *(Figure 2)*.

The original technique recommends the complete dissection of the fistulous tract. However, we consider that it is better not to thin the tract, as this prevents the tearing of the fistulous tract.

The postoperative period was managed with intravenous analgesics such as ketorolac 30 mg every 12 hours, paracetamol 500 mg every eight hours and antibiotics such as intravenous metronidazole 500 mg every eight hours, which was continued orally for 10 days. All patients were discharged from the hospital 24 hours after the surgical procedure. Postoperative evaluation was performed in the outpatient clinic at 10 days, 30 days, three months, six months and one year after the surgical procedure, and in some patients, up to 24 months later. Follow-up examination consisted only of clinical evaluation.

Healing was defined as closure of the wound and the secondary fistulous orifice, as well as the absence of symptoms. Continence was assessed using the Wexner scale.

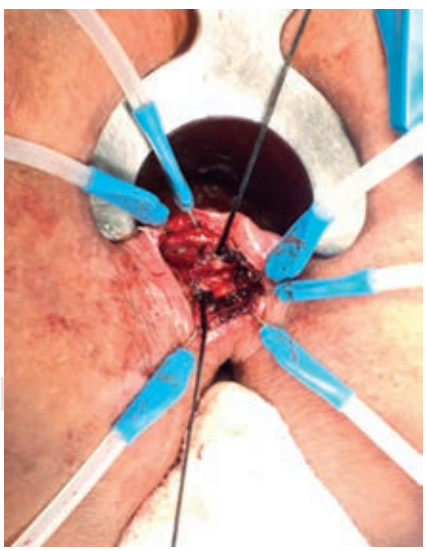

Figure 2: *Fistulous tract referred with silk thread and sectioned.*

RESULTS

During the study period, 23 patients were included, 20 male (87%) and three females. The median age was 46 years. Only three of the patients had comorbidities such as type 2 diabetes and high blood pressure (13.04%). One patient had a history of smoking. Seven of the patients were obese (30.4%) and nine (39.13%) had a drainage set in place. However, this did not mean any advantage for the subsequent performance of the LIFT technique. All subjects had high trans-sphincteric fistulas, 82.6% had a fistulous tract longer than 3 cm, the longest measuring 8 cm. The length of the fistulous tract did not influence the outcome. A LIFT technique was performed in all patients; one patient (4.3%) presented recurrence after nine months and a low anterior trans-sphincteric fistula. The mean follow-up was 12 months, with the shortest being eight months and the longest 24 months; no patient was lost to follow-up. Despite being considered complex fistulas, recurrence was only evidenced in one patient who was scheduled for fistulotomy, with resolution of the condition.

In the postoperative follow-up period, three patients presented perianal abscess one month later (13.04%) that required drainage and antibiotic use based on metronidazole 500 mg orally every eight hours for 10 days, with subsequent resolution of the infection. Four patients (17.39%) presented outflow of seropurulent non-fetid seropurulent fluid through a secondary orifice, which was managed with metronidazole 500 mg orally every eight hours for 10 days, with subsequent resolution of the condition. The wounds that presented serous or sero-hematic fluid leakage after the surgical procedure closed between 6-8 weeks later. In some cases, metronidazole was administered 500 mg orally every eight hours for 10 days. No individual presented fecal incontinence after the surgical procedure. The median Wexner score was 0.

DISCUSSION

The management of anal fistula is a challenge for the colorectal surgeon, and the literature shows variable outcomes. The ideal surgical management should include closure of the fistula, a low recurrence rate and preservation of the anal sphincter.

The concept of the inter-sphincteric approach was first published by the St. Marks group in 1993, with a series of 13 patients with drainage of the inter-sphincteric space, closure of the fistulous orifices and wound closure. However, the fecal continence-preserving LIFT technique in complex fistulas was first described in 2007 by Rojanasakul et al. for complex anal fistulas as a sphincter-preserving technique, with a success rate ranging from 40-95%. According to what has been reported in the literature, this technique can be performed in low inter-sphincteric or trans-sphincteric fistulas; however, high recurrence rates have been reported and it is considered that a fistulotomy can be performed in most of these cases. Only one patient in our series reported recurrence as a simple fistula and it resolved with the performance of a fistulotomy.

The impact on continence is usually scarce or null, as was seen in our case series, so it represents an important consideration of the technique since this does not occur with most of the existing techniques to treat complex anal fistulas.

In our experience, the placement of a drainage seton prior to the LIFT technique does not offer any advantage since the patients who did not have a previous placement of such seton presented the same results in the short- and medium-term. It is known that the presence of a low fibrous tract hinders or prevents the performance of this technique. However, the previous placement of the seton does not guarantee a much more fibrous tract.

The LIFT technique is a particularly good option for the resolution of complex fistulas. In our series we had a success rate higher than 90%, considering the adequate selection of the patients and that the fistulas were of cryptoglandular origin with a high trans-sphincteric trajectory. Regarding the surgical technique, we consider that the fundamental step to avoid fistula recurrence is not to significantly thin the fistulous tract, as well as to verify that there is no leakage with the use of hydrogen peroxide irrigation. In case

of recurrence, we recommend reinforcement stitches with Vicryl® thread.

CONCLUSIONS

In our experience, the LIFT technique proved to be a safe, reproducible surgery, with low morbidity and no fecal incontinence, with a success rate of 95%, so it could be considered the first line of surgical treatment for high trans-sphincteric complex anal fistulas.

It can be used after the placement of a seton or the performance of some other surgical procedure that had not achieved resolution of the anal fistula. Even if the LIFT technique fails, the fistula can be treated with fistulotomy or with a new LIFT procedure.

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