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Original Research Article

Modified ligation of intersphincteric fistula tract versus fistulectomy with primary sphincteroplasty in complex anorectal fistulas

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ABSTRACT

Background: Anorectal fistulas are a common condition with an incidence of 8.6%. The goal of treatment is to control sepsis, preserve continence, and prevent recurrence. The treatment is surgical and there are various surgical techniques.
Methods: A retrospective cohort study was conducted. Patients with complex anorectal fistulas were grouped based in surgical procedure, modified ligation of intersphincteric fistula tract (LIFT) (group A) versus fistulectomy with primary sphincteroplasty (group B) at a tertiary care center from 2021 to 2024. Statistical analysis was described with percentages and measures of central tendency, and comparisons between groups were performed with chi-square test, using perfect statistical professional presented (PSPP) 25.
Results: Of the 70 patients studied, 30 underwent group A and 40 in group B. The mean age was 45 years, higher incidence in men (71.40%), with risk factors of diabetes (30%), smoking and a history of anorectal surgery (8.60%). Group A had a lower success rate and higher recurrence (76.66% versus 80%, and 20% versus 15%), however, group A had shorter hospital stays (1.6 days versus 2 days, $p<0.000$), a higher percentage of asymptomatic patients postoperatively (20% versus 15%, $p<0.000$), shorter healing times (60.33 days versus 65.05 days), and greater fecal continence (93.30% versus 87.5%, $p<0.000$).
Conclusions: Fistulectomy with primary sphincteroplasty is a good surgical option. However, the modified LIFT procedure showed similar success and recurrence rates, with shorter hospital stays, better pain management, shorter healing times, and greater fecal continence, improves patients' quality of life.

Keywords: Anal fistula, Anal incontinence, LIFT procedure, Fistulectomy, Colorectal surgery

INTRODUCTION

Anorectal fistulas have been described since 4000 BC and are defined as an epithelialized communication between the anorectal canal and the skin. Approximately 95% occur due to anal gland infection, which turned out to be an anorectal abscess, persisting as a fistula in up to 30-35% of cases.[1-3]

The pathophysiology is unclear; the inflammatory pattern may be different in the proximal and distal portions of the tract, and it is believed that the epithelial-to-mesenchymal transition and cytokines, especially interleukins, viz., IL-1-1 beta and IL-8, may play a role.[4]

The incidence in the Americas is 8.6 per 100,000 inhabitants, between 30 and 50 years of age, and is higher in men.[3] In Mexico, it represents 7% of first-time coloproctology consultations.[5] Risk factors include diabetes, obesity, hyperlipidemia, previous anorectal surgery, excessive salt intake, and smoking.[2]

There are different classifications, such as the Parks classification based on the degree of involvement, and the St. James University classification based on magnetic resonance imaging (MRI) images. However, these classifications do not include fistulas.[6,7]

Complex fistulas are those that involve more than 30% of the external sphincter (high transsphincteric, suprasphincteric, extrasphincteric), anterior location in women, multiple tracts, recurrent fistula, horseshoe fistula, preexisting incontinence, local radiation, and Crohn's disease.[2,3]

The diagnosis is clinical in up to 93% of cases. They present with pain during defecation, itching, discharge, irritation of the perianal skin, and may indicate a previous abscess.[2,3]

Physical examination may reveal the external orifice(s) in the perianal skin with or without drainage. Digital rectal examination or anoscopy may reveal the internal orifice and palpation of the tract.[4]

Imaging studies are required if a non-cryptoglandular cause is suspected, such as fistulography, computed tomography, magnetic resonance imaging, or endoanal ultrasound, with magnetic resonance being the gold standard.[2,3,8]

The goal of treatment is to control sepsis, preserve continence, and cure without recurrence. The treatment of choice is surgery; the guidelines do not mention a standard procedure, so it must be individualized according to the location, its characteristics, the patient, and the surgeon.[1,2]

Among these are sphincter-preserving and non-sphincter-preserving techniques, fistulectomy, fistulotomy, reconstruction with primary sphincteroplasty, intersphincteric ligation of the fistulous tract (LIFT), Hanley procedure, drainage or cutting seton, endorectal advancement flap, fibrin glue, plug, laser, video-assisted, stem cell therapies, and endoscope clips, some of which are still pending studies to define their success rate, incontinence, and recurrence. Among those that stand out for their success rates are fistulectomy with primary sphincteroplasty and the LIFT procedure.[2-5]

Fistulectomy with sphincteroplasty is the complete resection of the tract, with division of the sphincter muscles and sphincter reconstruction, with success rates of 91% to 96% and incontinence rates of 2% to 13%. It is usually used for transsphincteric or high suprasphincteric fistulas.[9,10]

The LIFT procedure consists of ligation of the tract through the intersphincteric groove while preserving the sphincter muscles. It has a success rate of 76% to 94.4%, a 0% incontinence rate, and a 14% recurrence rate. In cases of recurrence, a simple fistulotomy is performed, as it often recurs as an intersphincteric fistula.[11-13]

Generally, a fistula heals within 12 weeks after the surgical procedure. The prognosis is variable; the success rates for complex fistulas are 60% to 90%. Therefore, it is important to choose the surgical procedure that improves the patient's quality of life.[14,15]

For this reason, we present a work with the objective of determining the effectiveness of modified LIFT versus fistulectomy with primary sphincteroplasty in complex anorectal fistulas at a tertiary care center.

METHODS

This was a retrospective cohort study, in single-center. Cases of patients with complex anorectal fistulas from a tertiary care hospital center, High Specialty Medical Unit (UMAE) No. 25 of the Mexican Social Security Institute (IMSS), Monterrey, Nuevo León, were included from January 2021 to December 2024. The inclusion criteria were individuals over 18 years of age, of any gender, diagnosed with complex anorectal fistulas, who received treatment with a modified LIFT procedure or fistulectomy with primary sphincteroplasty. Cases of patients with inflammatory bowel disease, neoplasia, who had received radiotherapy to the pelvis, with preexisting incontinence, and with a known non-cryptoglandular cause were excluded. Cases of patients with incomplete medical records were eliminated.

Groups

The cases of patients were grouped based in surgical procedure, modified LIFT (group A) vs fistulectomy with primary sphincteroplasty (group B).

Surgical technique

All surgical procedures were performed by a coloproctologist surgeon. The patient is placed in the prone position using a jackknife or high lithotomy. The fistula is identified by digital rectal examination under anesthesia and an anoscope is used to palpate the internal opening. If the internal or external orifice is not identified, hydrogen peroxide is instilled to identify the tract. In group A, a 3- to 4-cm incision is made over the tract and dissected down to the intersphincteric space. The tract is divided and ligated at both ends, preserving the integrity of the sphincter muscles. The internal and external wounds are debrided and left open to drain. In group B, a complete resection of the tract is performed from the external to the internal opening, with section of the external and internal sphincter muscles below the sphincteric tract. The sphincter is reconstructed, approximating it end-to-end with absorbable sutures.

Follow-up

Patients were evaluated in the outpatient clinic after surgery until the fistula healed or in the presence of recurrence. The variables studied were age, sex, fistula

type, risk factors, hospital stay, postoperative pain, healing time, continence, recurrence, and success. The success rate was considered in postoperative patients who achieved healing of the pathology within 12 weeks after surgery. Recurrence was considered in patients whose pathology recurred after a period of remission with a healed wound. Patient continence was assessed using the Wexner incontinence scale. Postoperative pain was measured using the visual analog pain scale.

Outcomes

The primary objective of the study was to compare the effectiveness of the modified LIFT procedure versus fistulectomy with primary sphincteroplasty in complex anorectal fistulas by calculating the success rate, recurrence rate, and continence rate for each procedure, as well as other variables such as hospital stay, postoperative pain, and healing time.

Analysis

Statistical analysis was described with percentages (%) for categorical variables and measures of central tendency (mean) and standard deviation (SD±) for continuous variables. The comparisons between groups were performed with chi-square test, using perfect statistical professional presented (PSPP), version 25. A p value of less than 0.05 was considered statistically significant. The research is being conducted in compliance with the ethical guidelines of the research committee and the institution's local ethics committee, and approval was awaited before data collection can begin.

RESULTS

Of the 70 cases studied with complex anorectal fistulas, the mean age was 45 years (SD±13.75), with an age range of 22 to 79 years. The gender distribution was 28.60% (20) women and 71.40% (50) men (Table 1).

The risk factors present were diabetes in 30% (21), followed by smoking in 8.60% (6), and a history of anorectal surgery in 8.60% (6). The types of complex anorectal fistulas were high transsphincteric fistulas (27.10%) (19), fistulas with multiple tracts (25.70%) (18), intersphincteric fistulas with involvement of more than 30% of the external sphincter (22.90%) (16), extrasphincteric fistulas (11.50%) (8), suprasphincteric fistulas (5.70%) (4), recurrent fistulas (5.70%) (4), and horseshoe fistulas (1.40%) (1).

Both groups were analyzed using a comparative table and the Chi-square test to determine the association between the variables of the two surgical procedures performed. Thirty patients were included in group A and 40 patients in group B (Table 2).

Table 1: Age and gender of patients with complex anorectal fistulas.

Variables	Frequency (N)	Percentage
Gender		
Men	50	28.60
Women	20	71.40
Age (years)	45±13.75	

SD: Standard deviation

In group A, the mean hospital stay was 1.60 days (SD±1), and 76.70% (23) of patients reported mild postoperative pain. The mean healing time was 60.33 days. Fecal continence was achieved in 93.30% (28) of patients, with 2 cases of mild incontinence (6.70%), for which appropriate treatment was provided. The recurrence rate was 20% (6). The success rate was 76.66% (23).

In group B, the mean hospital stay was 2 days (SD±2.41), and 75% (30) of patients reported mild postoperative pain. The mean healing time was 65.05 days. Fecal continence was achieved in 87.50% (35) of patients, with 2 cases of mild incontinence (5%) and 3 cases of moderate incontinence (7.5%). The recurrence rate was 15% (6). The success rate was 77.5% (31).

Table 2: Characteristics of patients with complex anorectal fistulas after modified LIFT versus fistulectomy with primary sphincteroplasty.

Variable	Modified LIFT (group A), % (N) n=30	Fistulectomy with primary sphincte-roplasty (group B), % (N) n=40	P value*
Age			
Years	44.73±12.11	45.20±15.02	0.847
Range (years)	23 to 71	22 to 79	
Gender			
Men	80 (24)	65 (26)	0.000
Women	20 (6)	35 (14)	
Risk factors			
Diabetes	40 (12)	22.5 (9)	0.001
Smoking	6.70 (2)	10 (4)	
Previous anorectal surgery	13.30 (4)	5 (2)	

Continued.

Variable	Modified LIFT (group A), % (N) n=30	Fistulectomy with primary sphincte-roplasty (group B), % (N) n=40	P value*
Anorectal fistulas			
High transsphincteric	30 (9)	25 (10)	0.000
Multiple tracts	26.70 (8)	25 (10)	
Intersphincteric	20 (6)	25 (10)	
Extrasphincteric	13.30 (4)	10 (4)	
Suprasphincteric	6.70 (2)	5 (2)	
Recurrent	3.30 (1)	7.5 (3)	
Horseshoe	0	2.50 (1)	
Hospital stay			
Days	1.6±1	2±2.41	0.000
Range (days)	1 to 5	1 to 16	
Posoperative pain			
Asymptomatic	20.00 (6)	15 (6)	0.000
Mild	76.70 (23)	75 (30)	
Moderate	0	10 (4)	
Severe	3.30 (1)	0	
Healing time			
Days	60.33±57.35	65.05±68.56	0.983
Range (days)	5 to 300	14 to 400	
Fecal continence	93.30 (28)	87.50 (35)	0.000
Recurrence	20 (6)	15 (6)	0.000
Success rate	76.66 (23)	77.5 (31)	-

SD: Standard deviation, n: number of cases, %: percentage, *: Chi-square test

The variables with statistical significance for comparing both surgical procedures were gender (p<0.000), risk factors (p<0.001), type of anorectal fistula (p<0.000), hospital stay (p<0.000), postoperative pain (p<0.000), continence (p<0.000), and recurrence (p<0.000). There was no statistical significance between the variables of age (p<0.847) and healing time (p<0.983).

DISCUSSION

This study aimed to determine the effectiveness of modified LIFT versus fistulectomy with primary sphincteroplasty in complex anorectal fistulas. This study is based on the fact that various surgical procedures can be offered to patients, with varying success rates and quality of life.

When evaluating our population, we found demographic data similar to those reported internationally, such as a mean age of 45 years compared to the 30-50 age range reported in various studies, and the male gender continues to be the most common gender in Latin America.[2,3]

The results demonstrate that although the modified LIFT procedure has a lower success rate and higher recurrence rate than fistulectomy with primary sphincteroplasty (76.66% versus 80%, and 20% versus 15%), the results are similar. The LIFT procedure stands out with shorter hospital stays (1.6 days versus 2 days), a higher percentage of asymptomatic patients postoperatively (20% versus 15%), similar percentages of mild postoperative pain (76.70% versus 75%), shorter healing times (60.33 days versus 65.05 days), and greater fecal continence (93.30% versus 87.5%). This may be because the modified LIFT procedure preserves the sphincter complex, unlike fistulectomy, and although sphincter reconstruction is performed with sphincteroplasty, the postoperative results are better in group A cases.

Therefore, this study demonstrates that the modified LIFT is a very good surgical option for treating these types of pathologies, with good postoperative results, especially statistically significant fecal continence, a variable known to represent good quality of life, as have other studies that continue the work of Rojanasakul et al, which have reached similar conclusions.[2,3,11-13]

Limitations

Our study has the limitation of being a retrospective, single-center study; however, the follow-up and data collection period was four years, a considerable amount of time for its implementation. In the future, a prospective, multicenter study will be conducted with a larger population in each study group (A versus B) in a randomized manner to observe whether similar results are found.

CONCLUSION

Fistulectomy with primary sphincteroplasty is a good surgical option for the treatment of complex anorectal fistulas, with a success rate of 80% and a recurrence rate of 15%. However, the modified LIFT procedure shows

similar success rates and recurrence rates, 76.66% and 20% respectively, with fewer hospital stays, better pain management, shorter healing times, and greater fecal continence. This is an effective technique that improves patients' quality of life due to its favorable postoperative results.

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