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**Research Article**
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# FACTORS INCREASING THE RISK OF RECURRENCE IN FISTULA IN ANO

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**ABSTRACT:**

**BACKGROUND:** An anal fistula, also known as a fistula in ano, is a passage that forms, connecting the anal canal or rectum to the skin surrounding the anus. The primary cause of anorectal fistulas is typically an infection in the anorectal region. The key elements of treating an anal fistula involve the closure of the internal opening of the fistula tract, the drainage of infection or necrotic tissue, and the surgical removal of the fistulous tract while ensuring the preservation of sphincter function.

**OBJECTIVE:** The objective of this research was to assess multiple facets, including intraoperative complications, postoperative complications, and various factors linked to the recurrence and treatment of anal fistulas. This assessment encompassed procedures such as fistulotomy, fistulectomy, the use of setons, and the application of an anal advancement flap.

**METHODOLOGY:** A retrospective cohort study was undertaken at Dr. Ziauddin Hospital in Karachi spanning the period from 2018 to 2022. The study determined the sample size, and a total of 130 individuals were enrolled for analysis. Data analysis was performed using SPSS, encompassing both quantitative and qualitative data.

**RESULT:** The average age at which individuals presented with fistula in ano was 38 years (with a standard deviation of ± 10.32), ranging from 18 to 60 years. Notably, there was a statistically significant correlation with recurrence, as indicated by a p-value of 0.022. Furthermore, the study had

a greater representation of males than females, but this gender difference did not yield any statistically significant association (p-value = 0.706).
The type of surgical procedure performed and the presence of comorbidities were found to be significantly linked to the recurrence of fistulas, with p-values of 0.00 and 0.01, respectively.

**CONCLUSION:** Fistulotomy and fistulectomy exhibited lower recurrence rates in comparison to the use of setons. Furthermore, the presence of comorbid conditions like diabetes and hypertension, as well as age, were identified as significant factors associated with the recurrence of fistulas.

## INTRODUCTION:

An anal fistula is a tunnel-like passage connecting an outer opening near the anus to an internal opening in the anal canal. In adults, these often result from infections starting in the intersphincteric space. Anal glands play a role in their formation, and there are usually six of them in the anal canal (1) (5).
Anal fistulas can be classified by location and complexity, with complex ones involving more anal sphincter tissue and posing challenges in treatment. If not properly managed, they can persist or recur, requiring specialized surgical care.
Wound healing processes are disrupted in chronic anal fistulas, leading to challenges in treatment. Gender differences exist in susceptibility, with males being more prone, though the reasons remain unclear.
Chronic anal fistulas exhibit elevated proinflammatory cytokine levels and complex histological features(4). Several procedures are commonly used for treatment as mentioned below:

## FISTULOTOMY:

Fistulotomy is an effective procedure for treating simple, low-lying anal fistulas, achieving a success rate of over 90% (11). In fistulotomy, the fistulous tract is opened or deroofed. The procedure involves inserting a blunt-ended probe through both the external and internal openings after retracting the anal canal. The tissue covering the probe is dissected, and the epithelial lining of the fistulous tract is scraped away. Any overhanging skin edges are also removed (1).

## FISTULECTOMY:

During the fistulotomy procedure, an elliptical incision is made and deepened around the external opening. Tissue on both sides of the fistulous tract is dissected. To aid in the procedure, a dye like methylene blue is injected into the tract, serving as a guide. If sphincter muscles are encountered during dissection, they are separated from the tract. Dissection continues until reaching the internal opening, and any mucosal defect is repaired using delayed absorbable suture material. In cases where the tract ends abruptly without an internal opening, dissection extends up to the point where the tract is stained with methylene blue, and the tract itself is removed (1).

**SETON:** Three types of setons (Cutting, Draining, and Medicated) are commonly used in the treatment of high anal fistulas. These setons, typically made of nonabsorbable materials, are introduced through the external opening, threaded through the fistula tract, and brought out through the anal canal. Cutting setons are gradually tightened to cut through the anal sphincter, while Draining setons are left in place for a few months to facilitate drainage and control infection.
In complicated anal fistula cases, an initial seton may be used to manage sepsis, followed by a subsequent definitive treatment to address the fistula. The success rates of these secondary treatments vary, ranging from 62% to 100%, depending on the specific treatment approach (23).

## ENDO ANAL ADVANCEMENT FLAP:

The endoanal advancement flap is a sphincter-preserving procedure that entails scraping the fistula tract, sealing the internal opening, and moving a healthy segment of anorectal mucosa, submucosa,

and muscle to cover the affected area. Studies indicate that this technique achieves healing in 66% to 87% of cryptoglandular fistulas after the initial procedure (23).

The objective of this study is to pinpoint and assess the factors linked to the recurrence of fistula in ano, aiming to offer valuable insights for the development of effective prevention and treatment approaches. The study also explores the influence of coexisting medical conditions, such as diabetes mellitus (DM), hypertension, and cardiovascular illness, as well as factors like gender, age, and the diverse treatment options available, on the likelihood of recurrence.

**DEFINITION OF RECCURRENCE:**

Anal fistula surgery success is defined as complete healing with no residual tract, openings, or discharge. Treatment failure includes persistence (incomplete healing for over six months), recurrence (fistula reappearing within a year of healing), and de-novo fistula (new fistula after healing). Risk factors include preoperative, intraoperative, and postoperative factors, along with histological, microbiological, and molecular factors (1) (2).

The location of the primary fistulous tract, especially the internal opening, is crucial, with certain types being more prone to recurrence. MRI is essential for understanding the anatomy and detecting additional extensions or abscesses. Imaging helps guide effective treatment strategies. (2)

**METHODOLOGY:**

A Retrospective Cohort study was conducted in Department of General Surgery Dr Ziauddin Hospital Karachi Pakistan. Data was collected from June 2018 till June 2022. Sample size for this study is calculated using the WHO calculator. A Pakistani study was searched and used for the sample size estimation with 90% confidence level. The total sample size of 130 patients were included in this study. Ghani F, Khan KH, Shahzad M, Ahmad K. Effectiveness of seton in anal fistula. J Surg Pakistan. 2019;24(1):8-12. Doi:10.21699/jsp.24.1.3.

All the Patients aged between 18-60 years were included in this study with fistula in ano undergoing for surgical management. Patients who were diagnosed case of Crohn's disease and Ulcerative colitis, patients who had prior preoperative anal incontinence and patients who had a history of recurrent anal fistulas were excluded from this study .Data was collected retrospectively via patients medical records through their EMR who had fistula in ano diagnosed clinically and on Magnetic Resonance Imaging of Pelvis .They underwent the surgical procedure details were filled according to the pre constructed questionnaire. Patients were asked for any post operative recurrence and its associated symptoms. Patients were tracked for up to six months and more via telephonic contact and their record of Opd follow up visits after surgery for the above mentioned symptoms.

**DATA ANALYSIS:**

The data analysis was conducted using Microsoft Excel 2016 and SPSS version 21.0. Qualitative data such as gender, residential/socio-economic status, certain co-morbid conditions, type of anal fistula, type of surgical procedure performed, outcome, and recurrence were presented as both the number and percentage (No & %).

Quantitative data, which included age, was represented as the mean and standard deviation (N ± SD). For both qualitative and quantitative data, frequency, mean, percentage, and standard deviation were calculated.

To assess the presence of an association between the type of procedure performed for different types of anal fistula and its surgical outcome, including recurrence, Pearson's coefficient was utilized. The strength of this association was evaluated using the Chi-square test. A significance level of $P \leq 0.05$ was considered statistically significant.

**RESULTS:**

In this study, 107 males (82%) and 17 females (17.7%) were included. The average age at which patients presented with fistula in ano was 38 years, with a standard deviation of 10.32, ranging from 20 to 60 years.

The most common surgical procedures performed were as follows: Fistulotomy in 49 patients (45.38%), Fistulectomy in 42 patients (32.31%), Seton in 25 patients (19.2%), and an advancement flap in 4 patients (3%). Recurrence of fistula in ano was observed in 30 patients (23%). Among the different procedures, recurrence was most frequently seen in patients treated with a seton (13 patients, 43.3%), followed by fistulectomy (16 patients, 36.7%), and fistulotomy (11 patients, 33%). No recurrence was observed in the advancement flap group. A statistically significant relationship between the type of surgical procedure and the risk of recurrence was found, with a p-value of 0.000.

The study also explored the correlation between recurrence and co-morbidities. It was noted that diabetic patients had a higher recurrence rate, with 9 individuals experiencing recurrence, and 3 individuals who were hypertensive also had recurrences. The Chi-square test indicated a statistically significant difference with a p-value of 0.01 for diabetic patients.

Additionally, comparative statistical analysis revealed that age was significantly associated with recurrence, with a p-value of 0.022, whereas gender did not show any significant statistical association, with a p-value of 0.706

**PROCEDURE * RECURRENCE**

Count

| | | RECURRENCE | | Total |
|---|---|---|---|---|
| | | none | yes | |
| PROCEDURE | advancement flap | 4 | 0 | 4 |
| | fistulectomy | 31 | 11 | 42 |
| | fistulotomy | 53 | 6 | 59 |
| | seton | 12 | 13 | 25 |
| Total | | 100 | 30 | 130 |

**GENDER**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Female | 23 | 17.7 | 17.7 | 17.7 |
| | Male | 107 | 82.3 | 82.3 | 100.0 |
| | Total | 130 | 100.0 | 100.0 | |

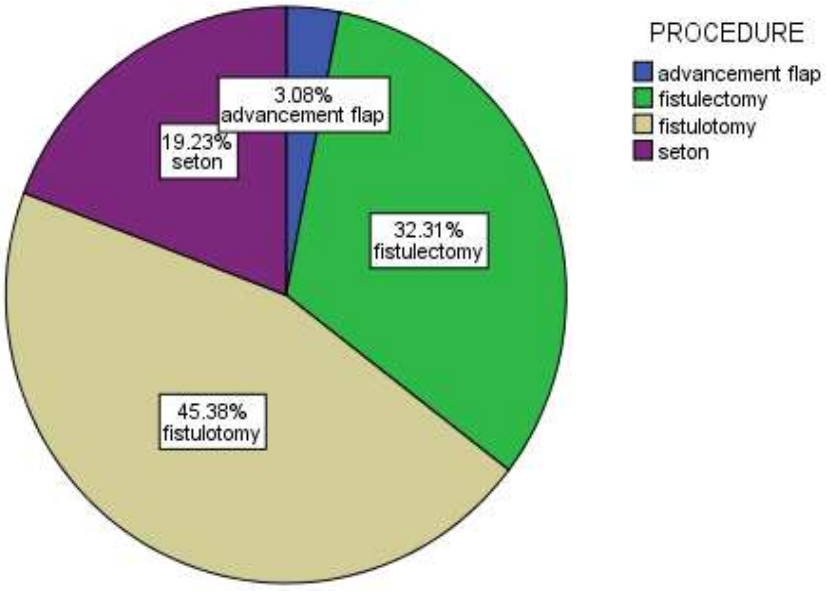
| | | COMORBIDS | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | dm | htn | ihd | multiple | Nkcm | |
| RECURRENCE | none | 5 | 6 | 1 | 4 | 84 | 100 |
| | yes | 9 | 3 | 0 | 3 | 15 | 30 |
| Total | | 14 | 9 | 1 | 7 | 99 | 130 |

**RECURRENCE**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | None | 100 | 76.9 | 76.9 | 76.9 |
| | Yes | 30 | 23.1 | 23.1 | 100.0 |
| | Total | 130 | 100.0 | 100.0 | |

## SUMMARY OF DESCRIPTIVE STATISTICS

| | | | | |
|---|---|---|---|---|
| **VARIABLE** | | **STATISTICS N (%)** | **P VALUE** | **RECURRENCE N (%)** |
| AGE GROUP | 18- 28 YEARS | 21 (16.1%) | 0.022 | |
| | 29-38 YEARS | 49 (37.6%) | | |
| | 39-48 YEARS | 31 (23.8%) | | |
| | 49-60 YEARS | 29 (17.7%) | | |
| | | | | |
| GENDER | MALE | 107 (82.3%) | 0.706 | 24 (18.4%) |
| | FEMALE | 23 (17.7%) | | 06 (4.6%) |
| | | | | |
| PROCEDURE | FISTULOTOMY | 49 (45.3%) | 0.000 | 06 (20%) |
| | FISTULECTOMY | 42 (32.31%) | | 11 (36.7%) |
| | SETON | 25 (19.2%) | | 13 (43.3%) |
| | ADVANCEMENT FLAP | 04 (3%) | | -- |
| | | | | |
| RECURRENCE | YES | 30 (23.1%) | - | |
| | NO | 100 (76.9%) | | |
| | | | | |
| COMORBIDS | DM | 14 (10.8%) | 0.001 | 09 (6.9%) |
| | HTN | 09 (6.9%) | | 03(2.3%) |
| | IHD | 01 (0.7%) | | -- |
| | MULTIPLE | 07 (5.4%) | | 03 (2.3%) |




## DISCUSSION:

Fistula in ano is a frequent surgical benign colorectal disease with significant risk of morbidity and recurrence that presents a significant therapeutic difficulty. Anal fistulas most commonly presents with complains of peri anal discharge and discomfort. Fistulectomy, Fistulotomy, Seton, advancement flap, etc and other therapies are now available. Fistulotomy is the most widely used procedure with a success rate of 87 to 94% (4). Because each operation has its own set of difficulties, this study compared the outcomes of various procedures and the risk factors associated with recurrence. (1). At the beginning of the surgery, the internal entrance of the anal fistula must be identified. Failure to do so may significantly increase the likelihood of recurrence. EAUS or MRI are used to locate the internal opening prior to surgery. MRI has a sensitivity and specificity of 96% and 90% for identifying interior openings, respectively. Preoperative MRI may help in the localization of the internal opening and should be used in all complex fistulas (2), (16).

In the current study Males affected with anal fistula were in majority who were admitted as compared to females with a mean age of 38 years, same findings were consistent with a prospective study conducted by Ramachandra ML et al with reported mean age of presentation 31-40 years of age and male to female ratio of 2.1:1. (1). These findings were also consistent with a retrospective study conducted by Abbas et al with mean age of 45 years and a predominance of Males over Females. (4)

The literature favors a varied range of recurrence rate. The recurrence rate of anal fistula was 23.1% which was reported according to our study which is also consistent with other study Ramachandra et al reported a recurrence rate of 25%. (1) Furthermore, one more study concluded the recurrence rate after fistulotomy and fistulectomy as 9.4% and 12.3 % respectively. (08). Ghani et al also concluded a recurrence rate of 20% treated by seton. (3)

The association of recurrence of this disease was compared and studied in relation to co morbid conditions present. However, it showed a statistical significant relation with a p value of 0.001. which is in line with other studies. A case control study showed association of certain medical conditions including Diabetes, Hypertension and Hyperlipidemias in the development of anal fistulas. (14). Another study conducted by Ho et al reported that in diabetic patients healing rate is slower (p=0.00). Similar was the observation in hypertensive patients (24).
A meta-analysis was done which signifies no statistically significant difference in the recurrence rate between the fistulectomy and fistulotomy procedures with many factors contributing to post operative results. (7).

Besides from the physical variables that cause recurrence a number of additional comorbidities raise the likelihood of anal fistula recurrence. Anal cancer, Crohn's disease, diabetes, smoking, obesity and an immunocompromised condition such as HIV are among these risk factors. (06), (13). Anal fistulas are variably epithelialized and surrounded by thick collagen tissue with pockets of inflammatory cells, according to histological investigations .Their growth and survival are most likely the result of a complex combination of histological, microbiological, and molecular variables. (21)

Novel strategies for treating this complicated disease are developing. Intersphincteric Fistula Tract Ligation LIFT stands for intersphincteric fistula tract ligation. Rectal Sleeve Advancement Flap , Anal fistula Plug, Mesenchymal stem cells, Anal fistula endoscopic therapy VAAFT and fistula laser closure, which have success rates of 86% and 69% respectively are emerging as a potential method for difficult anal fistula therapy, including recurring fistulas (2,19).

## CONCLUSION:

In our current study, we found several risk factors for the recurrence of fistula in ano, and these risk factors were statistically significant. Specifically, the choice of surgical method played a significant role in recurrence rates. Fistulectomy and Fistulotomy had lower recurrence rates compared to setons, which had the highest recurrence rate among the procedures studied.
Additionally, we observed that comorbidities such as diabetes and hypertension were strongly associated with an increased risk of fistula recurrence. Age was also identified as a significant factor influencing recurrence rates.
These findings highlight the importance of considering both the surgical approach and the patient's medical history when assessing the risk of fistula recurrence. Tailoring the treatment strategy to address these risk factors may improve the overall management and outcomes of patients with fistula in ano.

## LIMITATIONS:

However, the limitation of our study is that patients were followed for a shorter period of time of 6 months and non-randomization of the study.

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