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A Comparative Study of Fistulotomy and Fistulectomy in the Management of Low Lying Fistula in Ano in Patients Presenting to Tertiary Care Centre

Dr. Abhinav Tarun Sharma[1], Dr. Sanjay Kumar Mishra[2], Dr. Atul Shishodia[3]

Post Graduate Resident, Department of General Surgery, Saraswathi Institute of Medical Sciences, Hapur

Professor, Department of General Surgery, Saraswathi Institute of Medical Sciences, Hapur

Assistant Professor, Department of General Surgery, Saraswathi Institute of Medical Sciences, Hapur

Abstract: ***Background and Objectives: Fistula - in - ano (FIA) is an abnormal connection between the anal canal and perineal skin. Its treatment is controversial, typically involving either fistulotomy or fistulectomy. This study aims to compare these two procedures in managing low anal fistulas, focusing on procedure duration, postoperative pain (VAS scale), complete healing time, and recurrence. Methods: A prospective comparative study was conducted at Saraswathi Institute Of Medical Sciences, Hapur, UP from August 2022 to July 2024. Patients with low FIA were divided into two groups: Fistulectomy (fx) and Fistulotomy (fo). Procedure duration was recorded for both groups. Postoperative pain was assessed using the Visual Analog Scale (VAS) on Days 1, 3, and 7. Patients were monitored for complete wound healing time and recurrence at 3 months post - surgery. Results: The mean procedure duration was 7.36 minutes for fistulectomy and 3.80 minutes for fistulotomy, a statistically significant difference ($p<0.001$). Mean postoperative VAS scores for fistulectomy were 7.36 (Day 1), 5.76 (Day 3), and 4.60 (Day 7), while for fistulotomy, they were 6.24, 4.72, and 3.68, respectively, all significant ($p<0.001$). Complete healing time was 5.62 weeks for fistulectomy and 4.78 weeks for fistulotomy ($p=0.006$). No recurrence was noted in fistulectomy group and 3 recurrent cases in fistulotomy group within 3 months. Conclusions: No single procedure is definitively superior for low anal fistulas. Fistulotomy is quicker and simpler, with less postoperative pain and faster healing. However, fistulectomy shows a lower recurrence rate, suggesting the need for larger studies to confirm these findings.***

Keywords: Fistula in Ano, Perianal Abscess, Fistulotomy, Fistulectomy

1. Introduction

Fistula - in - ano is a chronic abnormal connection between the anorectal lumen ("internal opening") and an external opening on the perineal or gluteal skin, typically lined with granulation tissue. Derived from the Latin term for reed or pipe, it is a common, treatable benign condition of the rectum and anal canal, with 90% of cases stemming from cryptoglandular infections. This condition marks the chronic phase of anorectal sepsis, presenting with persistent purulent discharge or cyclical pain due to abscess reaccumulation and intermittent drainage.

Lifestyle changes, including an increase in diabetes, sedentary habits, and diets low in fiber but high in meat, have contributed to the rising prevalence of anorectal diseases. Though not life - threatening, these conditions lead to long - term discomfort and morbidity. Poor surgical choices or inadequate postoperative care often result in recurrence. Hence, the primary goal of fistula surgery is its eradication with minimal impact on anal sphincter function.

Surgical management of fistula - in - ano has a rich history. The widely used fistulotomy was first described by John of Arderne in 1370, although its roots trace back to ancient practices. Techniques such as the use of setons date to 1000 BCE, as recorded in Sushruta's procedures. More recent approaches, like the advancement flap technique and fibrin glue sealing, reflect adaptations of older methods.

This study evaluates the effectiveness of two key surgical methods—**Fistulotomy (Lay Opening)** and **Fistulectomy (Complete Excision)** —based on operative and postoperative outcomes for this challenging yet manageable condition.

Aim:
To Compare Fistulotomy and Fistulectomy In The Management Of Low Lying Fistula In Ano in Patients Presenting To Tertiary Care Centre.

Objectives:
A. To evaluate the effect of Fistulotomy in terms of following indicators.
1) Duration of the procedure
2) Post - Operative pain (Visual Analogue Scale)
3) Healing time
4) Recurrence Rate

B. To evaluate the effect of Fistulectomy in terms of following indicators.
1) Duration of the procedure
2) Post - Operative pain (Visual Analogue Scale)
3) Healing time
4) Recurrence Rate

To compare the effect of Fistulotomy and Fistulectomy

2. Subjects and Method

- **Study Area:** The study was conducted in Post Graduate Department of General Surgery, Saraswathi Institute of Medical Sciences, Hapur (U. P.).
- **Type of study:** Prospective Study
- **Study Duration:** 2 years (July 2022 - June 2024)
- **Source of data:** Data was collected from patients who came to SARASWATHI INSTITUTE OF MEDICAL SCIENCE, HAPUR, with primary diagnosis of Fistula In Ano.

Sample Size Calculation:
Consecutive type of non - probability sampling was used for the selection of study subjects. A total of 50 cases were divided in two groups of 25 each. Fistulectomy and Fistulotomy group.

Method of collection of data:

- **Sampling procedure**: The patients selected for this study were those who got admitted with primary diagnosis of Low lying Fistula In Ano.
- Based on detailed history, thorough clinical examination including Per Rectal Examination and Proctoscopy, the diagnosis of Fistula in Ano was made. These patients were subjected to the required preoperative investigations to render him fit for surgery.
- Trans Anal Ultrasonography, Fistulogram and Culture and Senstivity of fistula discharge were done only in few applicable cases. Specific investigations like Chest X ray, USG Abdomen and Pelvis, and MRI anorectum were done in selected cases only to rule out secondary causes. Patients with isolated primary single low fistula in ano were alternately taken up for Fistulectomy and Fistulotomy.
- Duration of the procedure was calculated from the time of the skin incision to the complete excision of the tract (Fistulectomy) and the time of the skin incision to the lay opening of the complete tract (Fistulotomy). Data was collected in minutes.
- Post operative pain was assessed based on Visual Analog Scale (VAS) on Day· 1, 3 and 7.

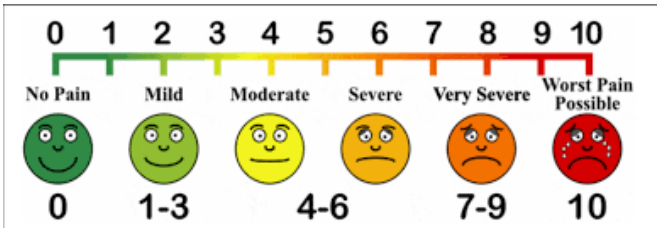

Figure: Visual Analog Scale (VAS)

- Each patient was followed up in the outpatient department after discharge with regard to time duration taken for complete wound healing after the surgery.
- Each patient was followed up in the outpatient department after discharge at 3 months after surgery with regard to recurrence. Non reporting of the healed cases to the Outpatient department will be considered as "No recurrence" by default.
- Assessment of Complete Healing was done by a different unit of Surgeons.
- The outcomes were documented using proforma and followed up for a period of 3 months.

Inclusion criteria:

- Both male and female patients with Low Anal Fistula.
- Age group· > 20 yrs and < 60 yrs.
- Primary Fistula in Ano
- Single Fistula

Exclusion criteria:

- High Anal Fistula.
- Age group: < 20 yrs and > 60 yrs.
- Recurrent Fistula In Ano.
- Multiple Fistula.
- Fistula associated with other anorectal conditions

Figure: Post Painting and Draping

Figure: Fistulotomy: Step 1 – Probe Insertion

Figure: Fistulotomy: Step 2 – Laying Open the Tract

Figure: Post Fistulotomy Wound

Figure: Fistulectomy: Step 1 – Excision of the Tract

Figure – Post Fistulectomy Wound

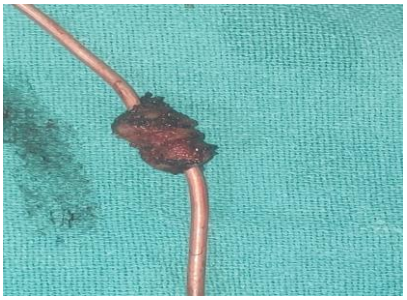

Figure: Excised Fistulous Tract Specimen

Figure: Post Fistulectomy Wound at 2nd Week

Figure: Fistulectomy Wound at 3rd Week

Figure: Complete Healing of Fistulectomy Wound

Figure: Recurrence at 3rd Month (Diabetic PT)

3. Data Analysis and Interpretation

Data was entered into Microsoft Excel (Windows 7; Version 2007) and analyses were done using the Statistical Package for Social Sciences (SPSS) for Windows software (version 20.0; SPSS Inc, Chicago). Descriptive statistics such as mean and standard deviation (SD) for continuous variables, frequencies and percentages were calculated for categorical Variables were determined. Comparison between Fistulectomy and Fistulotomy for categorical Variables like Gender were analysed using chi - square test. Comparison of mean of various quantitative variables like Age were analysed using Unpaired t test. Bar charts were used for visual representation of the analysed data. Level of significance was set at p value of 0.05.

4. Results

This study aimed to compare **fistulectomy** and **fistulotomy**, two primary procedures for treating fistula - in - ano. The evaluation was based on various parameters, including age and sex distribution, medical comorbidities, duration of the procedure, postoperative pain, healing time, and recurrence. The sample consisted of 50 patients, evenly divided between the two groups (n=25 each).

1) Age Distribution

The age distribution revealed that most patients in both groups belonged to the middle - aged category (31–40 years). This reflects the inclusion criteria and the typical age profile for this condition. Specifically, 36% of patients in the fistulectomy group and 40% in the fistulotomy group fell within this age range. Younger patients (<30 years) accounted for 36% of the fistulectomy group but only 20% of the fistulotomy group. Conversely, older patients (41–50 years) were more frequent in the fistulotomy group (28%) than in the fistulectomy group (16%). The mean age for fistulectomy patients was 37.16 years, while the mean for fistulotomy patients was slightly higher at 38.44 years. The overall mean age across both groups was 37.8 years. Despite these slight variations, the age distributions between the groups were not statistically significant, indicating comparability in this demographic characteristic.

2) Sex Distribution

The study demonstrated a clear male predominance, with 82% of cases being male (41 out of 50). Of these, 21 patients underwent fistulectomy and 20 underwent fistulotomy. Females constituted 18% (9 cases), with 4 undergoing fistulectomy and 5 undergoing fistulotomy. This male - to - female ratio aligns with the epidemiological trends of fistula - in - ano, which are more common in males. The similarity in gender distribution between the two groups eliminates potential bias related to this variable.

3) Medical Comorbidities

Medical conditions played a significant role in postoperative outcomes, particularly in wound healing. The fistulectomy group had a higher proportion of patients with comorbidities (52%) compared to the fistulotomy group (28%). Diabetes mellitus (DM) was the most prevalent comorbidity, affecting 36% of the fistulectomy group compared to 16% of the fistulotomy group. Hypertension was present in 12% of patients in both groups, while bronchial asthma was reported in one patient from the fistulectomy group. Notably, 72% of fistulotomy patients had no comorbidities, compared to 48% in the fistulectomy group.

The presence of diabetes and other conditions likely impacted healing rates. Wounds in diabetic patients generally heal slower due to compromised immune responses and vascular issues. This might partially explain differences in healing times between the two groups.

4) Duration of the Procedure

The mean duration of the procedure was significantly shorter for fistulotomy (3.80 minutes) compared to fistulectomy (7.36 minutes). The range for fistulotomy was 2.58 to 8 minutes, while fistulectomy ranged from 5.2 to 10.32 minutes. The difference of 3.16 minutes between the two groups was highly statistically significant ($p < 0.001$).

The shorter duration of fistulotomy is a notable advantage, particularly in settings where operative time is a critical factor. Reduced time under anesthesia also decreases the risk of anesthesia - related complications and improves overall patient outcomes.

5) Postoperative Pain

Postoperative pain was measured using the Visual Analog Scale (VAS) on Days 1, 3, and 7. Across all time points, fistulotomy patients reported significantly lower pain levels compared to fistulectomy patients.

- **Day 1:** Fistulectomy patients reported a mean VAS score of 7.36, compared to 6.24 in the fistulotomy group.
- **Day 3:** The mean VAS score was 5.76 for fistulectomy and 4.72 for fistulotomy.
- **Day 7:** Fistulectomy patients had a mean score of 4.60, while fistulotomy patients reported 3.68.

The differences were statistically significant at all intervals ($p < 0.001$). The reduced pain in fistulotomy patients can be attributed to the less invasive nature of the procedure, which involves minimal tissue disruption.

6) Healing Time

Healing rates were assessed weekly for four weeks, showing consistent advantages for fistulotomy in all intervals.

- **Week 1:** Fistulotomy wounds showed 60.12% healing compared to 54.40% for fistulectomy ($p = 0.033$).
- **Week 2:** Healing rates were 73.32% for fistulotomy and 66.72% for fistulectomy ($p = 0.030$).
- **Week 3:** Fistulotomy achieved 85.16% healing versus 78.80% for fistulectomy ($p = 0.017$).
- **Week 4:** Fistulotomy demonstrated 94.36% healing compared to 88.16% for fistulectomy ($p = 0.004$).

The higher healing rates for fistulotomy suggest that it is less traumatic to surrounding tissues, facilitating faster recovery. This difference remained statistically significant throughout the study.

7) Duration for Complete Healing

The average time for complete healing was 4.78 weeks for fistulotomy and 5.62 weeks for fistulectomy. The range for fistulotomy was 3.95 to 5.61 weeks, whereas fistulectomy required 4.41 to 6.83 weeks. The shorter healing time for fistulotomy was statistically significant ($p = 0.006$).

These findings highlight fistulotomy's advantage in minimizing the duration of patient morbidity and facilitating a quicker return to normal activities.

8) Recurrence

At the three - month follow - up, recurrence rates were assessed. The fistulectomy group had no recurrences (0%), while the fistulotomy group reported a 12% recurrence rate (3 cases). Although the recurrence difference was notable, it was not statistically significant ($p = 0.074$). This suggests that while fistulotomy is faster and less painful, it may carry a slightly higher risk of recurrence compared to fistulectomy, potentially due to incomplete tract removal.

5. Discussion

In our study, fifty cases of fistula in ano requiring surgical intervention were included and were alternatively assigned for fistulotomy and fistulectomy groups. This study had two groups, Fistulectomy and fistulotomy comprising of 25 cases in each group. Each group was evaluated and compared with respect to Duration of the procedure, Postoperative pain, severity assessed according to Visual Analogue Scale, Complete Healing time and Reccurrence Rate. The results of our study is compared with similar studies done worldwide.

Duration of the procedure

Table 10: Inter - Study Comparison of Mean Duration

	Mean Duration (In Minutes)				
	Current Study	Zuhair Bashir Kamal[50]	Sharma et al[51]	Osama Abu Series[53]	Shrikantaiah Chandra Rakesh et al.5[4]
Fistulectomy Group	7.36	33	15.9	8.4	31.32
Fistulotomy Group	3.80	17.3	13.9	4.7	21.96

In our study, mean duration of the procedure was 7.36 minutes for fistulectomy and 3.80 minutes for fistulotomy. Whereas in Zuhair Bashir Kamal series [50], it was 33 minutes for fistulectomy and 17.3 minutes for fistulotomy. In Sharma et al, [51] mean duration is 15.9 minutes for fistulectomy and 13.9 minutes for fistulotomy. In Osama Abu Sreies[53], it was 8.4 minutes for fistulectomy and 4.7 minutes for fistulotomy. In Shrikantaiah Chandra Rakesh et al.5[4] it was 31.32 minutes for fistulectomy and 21.96 minutes for fistulotomy. The results are comparable and conclusions are similar with other studies.

Postoperative Pain

Table – Inter - Study Comparison of Postoperative Pain (VAS Scale)

	Mean Postoperative Pain (VAS Scale)				
	Current Study	Irfan Ali Sheikh[52]	Sharma et al[51]	Osama Abu Series[53]	Shrikantaiah Chandra Rakesh et al.5[4]
Fistulectomy Group	5.76	6.24	4.34	5.2	7.24
Fistulotomy Group	4.72	5.27	4.10	3.68	6.12

In our study, mean postoperative pain in terms of VAS Scale was 5.76 after fistulectomy and 4.72 after fistulotomy. Irfan Ali Sheikh study[52] revealed 6.24 for fistulectomy and 5.27 for fistulotomy. Sharma et al[51] concluded no significant change in VAS pain scoring as it was 4.34 post fistulectomy and 4.10 post fistulotomy. In Osama Abu Series, [53] it was 5.2 after fistulectomy and 3.68 after fistulotomy. In Shrikantaiah Chandra Rakesh et al.[54] it was 7.24 for fistulectomy and 6.12 minutes for fistulotomy the results are comparable and there is no significant difference between the results from other studies.

Complete Healing Time

Table - Inter - Study Comparison of Mean Complete Healing Time (In Weeks)

	Mean Complete Healing Time (In Weeks)				
	Current Study	Zuhair Bashir Kamal[50]	Irfan Ali Sheikh[52]	Osama Abu Series[53]	Shrikantaiah Chandra Rakesh et al.5[4]
Fistulectomy Group	5.62	5.52	4.57	6.46	4.43
Fistulotomy Group	4.78	3.76	4.04	5.74	3.35

In our study, the mean healing time for fistulectomy wound was 5.62 weeks and it was 4.78 weeks for fistulotomy wound. In Zuhair Bashir Kamal study[50], it was 5.52 weeks for fistulectomy wound and 3.76 weeks for fistulotomy wound. In Irfan Ali Sheikh series, [52] it was 4.57 weeks for fistulectomy wound and 4.04 weeks for fistulotomy wound. In Osama Abu Series, [53] it revealed 6.46 weeks as mean healing time for fistulectomy and it was 5.74 weeks for fistulotomy wound. In Shrikantaiah Chandra Rakesh et al.[54] was 4.43 weeks for fistulectomy wound and 3.35 weeks for fistulotomy wound. Even though many individual factors play a very important role in the healing of the wound, the results of other similar studies are comparable.

Recurrence Rate

Table- Inter - Study Comparison of Recurrence Rate

	Recurrence Rate (in Percentage)			
	Current Study	Zuhair Bashir Kamal	Sharma et al.,	Osama Abu Series
Fistulectomy group	0%	6.82%	0%	16%
Fistulotomy group	12%	6.25%	8.3%	12%

In our study, Overall recurrence rate was 0% after fistulectomy and 12% after fistulotomy. In Zuhair Bashir Kamal study, [50] it was 6.82% after fistulectomy and 6.25% after fistulotomy. In Sharma et al[51], there was no recurrence noted after fistulectomy whereas after fistulotomy, 8.3% recurrence was recorded. In Osama Abu Series, [53] 16% of the cases who had undergone fistulectomy had recurrence whereas only 12% recurrence rate was noted after fistulotomy. Keeping in mind the practical difficulties and tagging “failed to follow up cases” as no - recurrence in some of the studies, varying results were recorded and contrasting conclusions in similar other studies as quoted. This study indicator requires a larger, systematic and specific further more studies with uniform follow up protocol so that results can be tabulated and made closer to the actual facts.

6. Conclusion

Based on the results obtained in the present study, following conclusions can be drawn:

- Duration required to perform fistulotomy is significantly lesser when compared to fistulectomy.
- Postoperative pain after Fistulotomy is significantly lesser when compared to Fistuloectomy.
- Complete Healing time of the fistulotomy wound is significantly lesser when compared to Fistulectomy wound.
- There is no significant difference in the recurrence rate after fistulectomy when compared to fistulotomy even though no recurrence was reported after fistulectomy in our study.

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