

## Comparative Study of Fistula in ANO Management by Primary Closure and Open Wound Method

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### Abstract

*Introduction:* Fistula in ano is one of the most common benign anorectal disorder associated with appreciable morbidity and inconvenience to the patient. The chronicity of its symptoms makes an otherwise healthy and active person lose their earning capacity, with lowered self-confidence. These are difficult to treat as there is no satisfactory treatment procedure available which can manage these fistulas with a high success rate and minimal risk of incontinence. Open Fistulectomy, though considered as the standard treatment for fistula in ano, fistulectomy with primary closure has the merits of short hospital stay for patients, early wound healing, lowers costs and is a safe procedure. *Aim and Objectives:* To study the outcome of wound closure over nonclosure of wound after fistulectomy in cases of fistula in ano and to compare the pain, wound healing, postoperative hospital stay, and recurrence.

*Material and Methods:* The present study was a randomized prospective study of 41 cases of fistula in ano presenting at surgical OPD of the tertiary care center. Out of 41 cases, 28 cases were managed by fistulectomy and 13 cases by fistulectomy primary closure during the period of Dec 2012 to June 2015. *Results:* In the present study, the male 31(75.60%) to female 10(24.39%) ratio was 3:1. In majority of the cases 17(41.45%) the cause of fistula was spontaneous rupture or inadequately drained or treated perianal abscess. The main presenting symptoms were

discharge, swelling and pain. In the present study, patients those who had undergone fistulectomy with primary closure had a mean pain score of 4.3 on day one and 9.8 in patients with lying open of wound. In primary closure group all the 13 patients were discharged from hospital in less than 10 days. The time taken for complete wound healing by fistulectomy with primary closure in 13 cases was less than 3 weeks. *Conclusion:* It was concluded that primary closure is a better alternative in the surgical management of fistula in ano, considering the benefits of less postoperative pain, early healing, early discharge, early return to normal activity, cost effective and less recurrence above the nonclosure method.

**Keywords:** Fistula; Ppen wound; Primary closure; Fistulectomy; Anorectal.

### Introduction

A fistula is the Latin word which means pipe, reed or flute. Fistula in ano is the most common benign anorectal disorder. It is associated with appreciable morbidity and inconvenience to the patient. A fistula is defined as track lined by granulation tissue between two epithelial surfaces. Anal fistula (plural fistulae), or fistula-in-ano, is a chronic abnormal communication between the epithelialised surface of the anal canal and (usually) the perianal skin. An anal fistula can be described as a narrow tunnel with its internal opening in the anal canal and its external opening in the skin near the anus. Anal fistulae commonly occur in people with a history of anal abscesses. They can form when anal abscesses do not heal properly. Anal fistulae originate from the anal glands, which are located between

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the internal and external anal sphincter and drain into the anal canal [1]. If the outlet of these glands becomes blocked, an abscess can form which can eventually extend to the skin surface. The tract formed by this process is a fistula [2].

The location of the diseased part makes the patient refrain from the early consultation. The common pathogenesis is the bursting open of an acute or inadequately treated anorectal abscess into the perianal skin. The cause for the delay in treating the patients with perianal suppurations are the shy patients themselves who come to the surgeon late. The more important second factor is that a significant percent of these diseases persist or recur when the right modality of surgery is not adopted or when the post-operative care is inadequate. Anal fistula represents one of the most frequent anorectal diseases 1. The prevalence in men is 12.3 cases per 100,000 population while in women; it is 5.6 cases per 100,000 population. The mean age of patients is 38.3 years [3].

The chronicity of its annoying symptoms like soiling of the undergarments, itching, repeated abscess formation, makes an otherwise healthy and active person lose their earning capacity, with lowered self-confidence. The categorization of fistula in ano is dependent on its location relative to anal sphincter muscles according to Parks classification intersphincteric, transsphincteric, suprasphincteric or extra sphincteric. The main principle of management of anal fistula are closure of internal opening of fistula tract, drainage of infection or necrotic tissue, eradication of fistulous tract with preservation of sphincter function [4].

These are difficult to treat as there is no satisfactory treatment procedure available which can manage these fistulas with a high success rate and minimal risk of incontinence. Conventionally adequate drainage followed by either a primary fistulotomy or a two stage fistulotomy using a Seton fistula-in-ano was recommended. There had been great enthusiasm for ligation of intersphincteric tract (LIFT) and even BioLIFT procedures, but recently the results have been disappointing [5].

Open Fistulectomy, though considered as the standard treatment for fistula in ano, fistulectomy with primary closure has the merits of short hospital stay for patients, early wound healing, lowers costs and is a safe procedure. Different surgical techniques have been described in literature from time to time, these includes Park's fistulotomy, two-stage-fistulotomy, primary fistulectomy with occlusion of the internal ostium, fistulotomy with primary repair of the sphincter, endorectal advancement flaps,

anocutaneous advancement flap, repair of fistula using fibrin adhesive glue and re-routing the fistula [4].

#### *Aim and Objectives*

To study the outcome of wound closure over nonclosure of wound after fistulectomy in cases of fistula in ano and to compare the pain, wound healing, postoperative hospital stay, and recurrence.

#### **Material and Methods**

The present study was a randomized prospective study of 41 cases of fistula in ano presenting at surgical OPD of the tertiary care center. Out of 41 cases, 28 cases were managed by fistulectomy and 13 cases by fistulectomy primary closure during the period of Dec 2012 to June 2015. Clinical history and clinical examination including per rectal examination were done in all cases of fistula in ano. All the patients were assessed by routine investigations; chest X-ray etc prior to surgery fistulogram, CT Scan and MRI was done as per requirement.

#### *Exclusion Criteria*

Patients of fistula in ano having carcinoma, irradiation, complicated high fistulae, Chron's disease, active sepsis and patient not willing to enter the study.

1. *Fistulogram*: Lipiodol dye was injected into the fistulous tract and x-ray was taken to delineate the fistulous tract. Methylene blue was used instead of lipiodol at the time of surgery, to delineate the tract. HPR exam was done in all the cases treated with fistulectomy.

#### *Technique of Fistulectomy*

After written informed consent of patient and relative, the patient was taken to operation theater. Under spinal anaesthesia patient was put in the lithotomy position. The site of the external opening of the fistula and its distance from the anal verge was recorded. Then the position of the internal opening was determined in relation to anal verge and anorectal ring. With the help of malleable probe, probing of the fistulous tract was carried out from external opening to determine the extent and direction of the tract and its termination. Its other end was then brought through the anus and then by applying a gentle traction on the U-Shaped angulated probe with

the left hand and cutting close to the probe on either side, the whole of the fistulous tract was excised out and sent for HPR examination. Haemostasis achieved and the raw area was then packed with the wet gauze.

#### *Fistulectomy with Primary Closure*

Under spinal anaesthesia patient was put in the lithotomy position. The site of the external opening of the fistula and its distance from the anal verge was recorded. Then the position of the internal opening was determined in relation to anal verge and anorectal ring. With the help of malleable probe, probing of the fistulous tract was carried out from external opening to determine the extent and direction of the tract and its termination. Its other end was then brought through the anus. Then by applying a gentle traction on the U-Shaped angulated probe with the left hand and cutting close to the probe on either side, the hole of the fistulous tract was excised out and sent for

HPR examination. Suturing was done with Vicryl (polyglycolic acid) by several layers of interrupted sutures. The deepest layer consisted of several mattress sutures into the individual parts of the sphincter muscles and subsequent layers opposing the subcutaneous fat and skin. The wound was then dressed. The skin sutures were removed on the tenth day.

## Results

The 41 patients admitted for the study were divided into two groups. Patients subjected to fistulectomy with laying open of wound were classified under Group-I and those who underwent fistulectomy with primary closure were classified as Group-II. The patient's characteristics of the groups were all matched as given in the table below.

**Table 1:** Distribution of cases according to age distribution

Age in Years	Laying open	Primary Closure	Total
11 - 30	3 (10.71%)	8 (61.53%)	11 (26.82%)
31 - 50	18 (64.28%)	5 (38.46%)	23 (56.09%)
51 - 70	7 (25.0%)	0	7 (17.07%)
Total	28 (68.29%)	13 (31.70%)	41

**Table 2:** Distribution of cases according to their gender

	Laying Open	Primary Closure	Total
Males	22 (78.57%)	09 (69.23%)	31 (75.60%)
Females	06 (21.42%)	04 (30.76%)	10 (24.39%)
Total	28 (68.29%)	13 (31.70%)	41

**Table 3:** Distribution of cases according to the history of cause of fistula formation

Previous History	Laying Open	Primary Closure	Total
Ano rectal abscess	8 (72.72%)	3 (27.27%)	11 (26.82%)
Incision and Drainage	4 (66.66%)	2 (33.33%)	6 (14.63%)
Previous surgery	2 (100%)	0	2 (4.8%)

**Table 4:** Distribution of cases according to their presenting symptoms

Symptoms	Laying Open	Primary Closure	Total
Discharge	25 (60.97%)	11 (30.55%)	36 (87.80%)
Swelling	17 (68.0%)	8 (32.0%)	25 (60.97%)
Pain	20 (68.96%)	9 (31.03%)	29 (70.73%)
Total	28 (68.29%)	13 (31.70%)	

The main presenting symptoms were discharge, swelling and pain

**Table 5:** Distribution of cases according to the post operative pain index

Type of procedure	No. of patients	Pain index Post op day -1	Pain index Post op day -7	Pain index Post op day -14
Laying Open	28 (68.29%)	9.8	8.0	7.2
Primary Closure	13 (31.70%)	4.3	2.7	2.1

**Table 6:** Distribution of cases according to the duration of hospital stay:

Duration Group	0 – 5 days	6 – 10 days	11 – 15 days	Total
Laying Open	4 (14.28%)	10 (35.71%)	14 (50.0%)	28 (68.29%)
Primary Closure	0	13 (100.0%)	0	13 (31.70%)
Total	4 (9.7%)	23 (56.09%)	14 (34.14%)	41

$\chi^2$ - 11.24 , p- 0.003

**Table 7:** Distribution of cases according to the wound healing time:

Group	1 wk	2 wks	3 wks	4wks	5 wks	6wks	Total
Laying Open	0	0	3 (10.71%)	7 (25.0%)	11 (39.28%)	7 (25.0%)	28 (68.29%)
Primary Closure	9 (69.23%)	3 (23.07%)	1 (7.6%)	0	0	0	13 (31.70%)
Total	9 (21.95%)	3 (7.3%)	4 (9.7%)	7 (17.07%)	11 (26.82%)	7 (17.07%)	41

$\chi^2$ - 27.76 , p- 0.00

In the present study, the age of patient ranged from 20 – 70 years. Majority of patients 18 (64.28%) were between 31 - 50 years of age in laying open method and 11 – 30 in primary closure 8(61.53%).

In the present study the male 31(75.60%) to female 10(24.39%) ratio was 3:1.

In majority of the cases 17(41.45%) the cause of fistula was spontaneous rupture or inadequately drained or treated perianal abscess.

In the present study majority 36(87.80 %) of the patients complained of discharge while, 25(60.97%) patients had complain of perianal swelling and 29(70.73%) had pain during defecation.

In the present study, patients those who had undergone fistulectomy with primary closure had a mean pain score of 4.3 on day one, 2.7 at the first week and 2.1 at the second week. While patients who had undergone fistulectomy with lying open of wound had a mean pain score of 9.8 on day one, 8.0 at the first week and 7.2 at the second week.

In the present study in group I, out of 28 patients majority of the patients 14 (50.0%) stayed in the hospital for more than 10 days while in primary closure group all the 13 patients were discharged from hospital in less than 10 days. The difference was statistically significant.

In the present study, out of 28 cases of fistula treated by the traditional method, the complete healing occurred by 3-6 weeks. While time taken for complete wound healing by fistulectomy with primary closure in 13 cases was less than 3 weeks. The difference was statistically significant.

## Discussion

In the present study, 41 cases of fistula in ano were

studied, out of which 28 cases were treated by fistulectomy with laying open of wound and 13 cases were treated by fistulectomy with primary closure. In our study, the peak incidence of anal fistula was seen in 21-30 years of age and male to female ratio was 3:1, while in Chaudhary MS et al (2002) [8] study peak incidence was in 21-40years age group and male to female ratio was 4:1. When compared to Ramanujam et al (1984) [9] series which was about 2:1 and in our study it was 3:1. The low incidence of fistulas in females in comparison with other series is probably because female patients in this part of the country are shy to undergo clinical examination even though they are actually suffering from the disease.

In the present study, the predominant symptom was discharge and other associated symptoms were swelling and pain. In a study by Vasilevsky and Gorden series(1985)10 perianal discharge was predominant symptom. In a study by Muhammad Shahid (2017) 3 perianal discharge was seen in all 30 (100%) patients and the perianal pain was seen in 9 (30%) patients. Out of 30 patients, 14 (46.67%) had purulent discharge and 16 (53.33%) had seropurulent discharge from external opening.

In the present study, the previous anorectal abscess was found to be the commonest cause of fistula i.e. 11 (26.82%) and other causes were I & D 6 (14.63%) and previous anorectal surgery 2 (4.8%).

In the present study, those patients who had undergone fistulectomy with primary closure had a mean pain score of 4.3 on day one, 2.7 at the first week and 2.1 at the second week. While patients who had undergone open fistulectomy had a mean pain score of 9.8 on day one, 8.0 at the first week and 7.2 at the second week. In Sushil Damor et al (2013) [11] study mean pain score was 2.77 days in closure group and in open fistulectomy was 4.42 days so, less analgesia was required in the closure group as

compared to open group.

In the present study in group I, out of 28 patients majority of the patients 14 (50.0%) stayed in the hospital for more than 10 days while in primary closure group all the 13 patients were discharged from hospital in less than 10 days. The difference was statistically significant. In Sushil Damor et al(2013) [11] study mean hospital stay was 3.1 days. In Toccaceli S et al(1997) [12] study, mean hospital stay was 3.1 days in primary closure group. In Satyprakash et al(1985) [13] study mean hospital stay in primary closure was 5.2 days while in open group was 4-5 weeks. The less hospital stay of the patient will lead to less use of antibiotics, less expenditure, early recovery to work and in cost wise it saves the number of working days lost and this lessens the workload on doctor and hospital staff.

In the present study, out of 28 cases of fistula treated by the traditional method, the complete healing occurred by 3-6 weeks. While time taken for complete wound healing by fistulectomy with primary closure in 13 cases was less than 3 weeks. The difference was statistically significant.

Gordon [10] says that the healing time required in fistula depends upon the complexity of the fistula. The process of healing after fistula surgery is designedly slow. Patient need not be detained in hospital for all this time, for if satisfactory plans can be made for his dressings at home or in the outpatient department and he attend the rectal clinic for weekly review.

The period of hospital stay is directly proportional to the average period of wound healing. Sometimes sutures may get infected; this leads to delayed wound healing. Anyone treating patients with fistula in ano realizes that in certain instances recurrences will occur despite the most careful operative dissection. The most common cause of recurrence of an anal fistula is the failure to identify and treat the primary internal orifice. The result is that the causative infected anal gland in the intersphincteric orifice is not eradicated. In a study by Muhammad Shahid (2017) [3] assessment of healing experienced at 02 weeks showed the non-significant difference in both groups ( $p$ -value>0.05) whereas at the 04-week healing of the wound in both groups showed a significant difference ( $p$ -value <0.05) with more favorable results in Group B. At 06 weeks difference in wound healing was not statistically significant ( $p$ -value >0.05).

In our study, only one case of recurrence is observed in open group while no recurrence was seen in

primary closure group. In a study by Starr [6], treated fistula in ano by primary suturing under antibiotic cover before and after the operation and claimed almost 100% result in securing successful and uneventful unions. While in a study Goligher [7] performed fistulectomy with primary closure in 20 cases of low anal fistula, 12 secured uneventful wound healing but in remaining 8 cases sepsis occurred, necessitating re-opening and refunctioning of the wound which was followed by satisfactory healing by granulation.

In Sushil Damor et al (2013) [11] study found to have 100% success rate in fistulectomy with primary closure. In a study by Chaphekar et al (2016) [14] the mean time to complete postoperative wound healing was 82.1 days in group B; whereas it was 118.7 days in group A. This difference in healing time was statistically significant ( $P < 0.001$ ). The pain scores in both groups were similar with no statistically significant difference in scores recorded at various times between the two groups. Similarly, in a study by Sundar Prakash et al (2014) [4] the average healing period for open fistulectomy cases was 4-5 weeks and for closure group, it was 1-3 weeks. This is again in favour of primary closure of fistulectomy wound.

## Summary

The primary closure method of fistulectomy is safe, feasible and equally effective in the management of fistula in ano. In fistulectomy with primary closure of the wound, the mean postoperative pain score was 3.3 days while mean postoperative pain score in laying open group was 9.8 days which is 60 %less, it means less analgesia is required in closure group with better patients compliance.

In cases of fistulectomy with wound kept open it takes average 3-6 weeks to heal and in primary closure group it takes average 1-3 weeks to heal, which is 30% less, early healing reduces the number of hospital visits for dressings and less consumption of antibiotics. Hence, it reduces the expenditure and also less working days were lost by the patient.

The recurrence was seen in only one patient in laying open group but no recurrence was noted in closure group. But the follow-up period of 6 months may be too short to comment on recurrence and one more thing is our sample size which was small on this subject but comparing the benefits at this level, the primary closure may be a better alternative in the surgical management of fistula in ano.

## Conclusion

Primary closure is a better alternative in the surgical management of fistula in ano, considering the benefits of less postoperative pain, early healing, early discharge, early return to normal activity, cost effective and less recurrence above the nonclosure method.

## References

1. H.J. Mappes and E.H. Farthmann. Anal abscess and fistula. Holzheimer RG, Mannick JA, editors. Surgical Treatment: Evidence-Based and Problem-Oriented. Munich: Zuckschwerdt; 2001. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK6943>.
2. Inceoglu R, Gencosmanoglu R. Fistulotomy and drainage of deep postanal space abscess in the treatment of posterior horseshoe fistula. BMC Surgery 2003; 3: 10.
3. Muhammad Shahid, Zulfiqar Ahmed, Shazar Malik. Management of low anal fistula: Fistulectomy alone versus Fistulectomy with primary closure. Pak Armed Forces Med J 2017;67(2):203-06.
4. Sundar Prakash S, Saravanan PS, Chandra Prabha J. A comparative study of laying open of wound vs primary closure in fistula in ano. IOSR Journal of Dental and Medical Sciences. Sep. 2014;13(9):39-45.
5. Pankaj Garg. PERFECT procedure to treat supralevator fistula-in-ano: A novel single stage sphincter-sparing procedure. World J Gastrointest Surg. 2016 Apr 27;8(4):326-334.
6. Starr W. Primary closure in proctology; 1953;14:365.
7. Goligher J, Duthie H, Nixon H. Hemorrhoids or piles. In: Goligher J, Duthie H, Nixon H, editors. Surgery of the Anus, Rectum, and Colon. 5th ed. London, UK: Baillière Tindall; 1984:98-149. In. eds.
8. Chaudhary.M.Shahbaz, A. Ghazanfar and A.R.Goraya; Comparative Study of Fistulectomy and Fistulectomy with Primary Repair for low Fistula-in- Ano. Ann King Edward Med Uni. 2002 Apr-Jun;8(2):87-9. Department of Surgery, Mayo Hospital, Lahore.
9. Ramanujam P S, Prasad M L, Abcarian H, Tan A B. Perianal abscesses, and fistulas. A study of 1023 patients. Dis Colon Rectum. 1984;27(9):593-597.
10. Vasilevisky CA and Gordon PH. Results of treatment of fistulae in- ano. Dis Colon Rectum. 1985 Apr; 28(4):225-31.
11. Sushil Damor, Anis Vohra, Hiten Patel, Praveen Kumar, Jalpa Balat and Hemangi Balat. A comparative study between primary closure method versus open method of fistulectomy for fistula in ano. Int J Res Med. 2013;2(1):33-37.
12. Toccaceli S, Minervini S, Salvio A, Zarba ME, Mazzocchi P, Lepian P, et al. Fistulectomy with closure by the first intention in the treatment of perianal fistulae. Minerva Chir. 1997 Apr;52(4): 377-81.
13. Parkash S, Lakshmiratan V, Gajendran V. Fistula-in-ano: treatment by fistulectomy, primary closure, and reconstitution. Aust N Z J Surg. 1985 Feb;55(1):23-7.
14. Chaphekar AP, Jayaswal S, Nawalkar PR, Sutar SA, Arjun U, Chilbule PG. Efficacy of Partial Suturing of Wound after Fistulectomy for Fistula- In- Ano. International Journal of Contemporary Medical Research. 2016 October;3(10):2875-2877.