

## Original Research Article

# A study on outcome of primary closure versus open fistulectomy in low level fistula in ano

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### ABSTRACT

**Background:** Fistula-in-ano is one of the common ano-rectal disorder which causes appreciable morbidity and inconvenience to the patient. Different surgical techniques have been described in literature from time to time. Open fistulectomy though considered as the standard treatment for fistula in-ano, fistulectomy with primary closure has its merits of short hospital stay, early wound healing and lower costs. The objectives of this study was to compare the period of stay, period of healing, time period to return to daily activities and cost factor between open fistulectomy and primary closure technique.

**Methods:** Patients admitted in all surgical units of NIMRA Hospital, were included in the study without bias on a serial basis. This is a study comprising 50 patients over a period of 12 months from February 2019 to January 2020.

**Results:** The patients were divided into two equal and comparable groups. Patients who underwent open fistulectomy were classified under Group I and those who underwent fistulectomy with primary closure were classified as Group II. The patient's characteristics of the two groups were well matched.

**Conclusions:** In patients treated by classical method because of long time taken to heal, number of hospital visits for dressings were more and more antibiotics were prescribed when compared to cases treated by excision of fistula tract and primary closure. From this study it can be concluded that fistulectomy with primary closure is ideal for low anal fistulae.

**Keywords:** Fistula in ano, Fistulectomy, Goodsall's rule

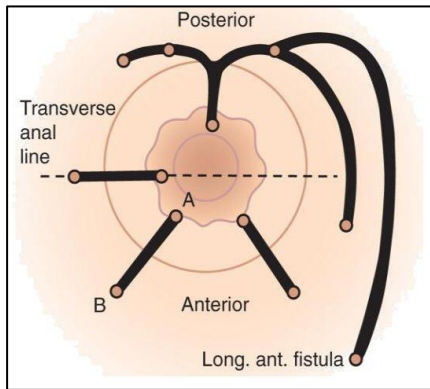
### INTRODUCTION

Fistula-in-ano is one of the common ano-rectal disorder which causes appreciable morbidity and inconvenience to the patient. Fistula is a Latin means pipe. It is a preventable disease provided the perianal or perirectal suppurations are treated on time and in a correct manner. The common pathogenesis is the bursting open of an acute or inadequately treated anorectal abscess. The location of the diseased part makes the patient refrain from early consultation. The more important second factor is that a significant percentage of these diseases persist or recur when the right modality of treatment is

not adopted or when the postoperative care is inadequate. The chronicity with its annoying symptoms like soiling of the undergarments and repeated abscess formation makes an otherwise healthy and active person lose his earning capacity with lowered self-confidence.

The categorization of fistula-in-ano is based on the location of the fistula in relation to the anal sphincters. According to Park's Classification it is intersphincteric, trans-sphincteric, supra-sphincteric or extra-sphincteric. The main principles of management (Figure 1) are closure of internal opening of the fistulous tract, drainage

of infection or necrotic tissue, removal of the tract and sphincter preservation.<sup>2</sup>



**Figure 1: Goodsall's rule.**

Different surgical techniques have been described in literature from time to time. Open fistulectomy though considered as the standard treatment for fistula in-ano, fistulectomy with primary closure has its merits of short hospital stay, early wound healing and lower costs. The objectives of this study was to compare the period of stay, period of healing, time period to return to daily activities and cost factor between open fistulectomy and primary closure technique.

## METHODS

Patients admitted in all surgical units of NIMRA Hospital, were included in the study without bias on a serial basis. This is a study comprising 50 patients over a period of 12 months from February 2019 to January 2020.

Intraoperative findings are collected from operating surgeon. Post operatively patients input are gathered and follow up evaluation done every week up to 4 weeks post-surgery.

### *Inclusion criteria*

Patients with low level fistula in ano

### *Exclusion criteria*

Patients with high level fistula in ano and recurrent fistula in ano.

### *Methodology*

#### *Pre-operative preparation*

All the patients were examined clinically and by investigation for fitness of surgery and fistulogram done in all cases (Figure 2). On the previous night patient was advised only liquid diet and kept nil orally after 10 P.M.

Enema was given on previous night and on the day of operation.



**Figure 2: X-ray fistulogram.**

#### *Post-operative*

On the day of operation, I.V. fluids, analgesics (diclofenac sodium) and antibiotics (Ciprofloxacin, cefotaxim) and metronidazole were given. Oral liquids given on the evening of operation. Next day low residue diet given for first 2 days, afterwards regular solid diet started.

The dressing or pack is removed after 24 hours of operation in lay open technique. The wound is reviewed and dressings changed. 5th post -operative day dilation was done.

Post operatively, Period of stay in hospital is compared by using the hospital records, Period of healing is compared by measuring the time taken for complete epithelialisation of the operated site in open fistulectomy cases and complete wound healing in fistulectomy with primary closure, Cost factor is compared on the basis of expenditure of surgical procedures, dressings, financial loss incurred due to absence from work etc. were evaluated. Patients are followed up once a month for the first three months.

#### *Statistical analysis*

Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean±SD (Min-Max) and results on categorical measurements are presented in number (%). Significance is assessed at 5 % level of significance. Chi-square/ Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups.

## RESULTS

The 50 patients of low level fistula in ano were divided into two equal and comparable groups. Patients who underwent open fistulectomy were classified under Group

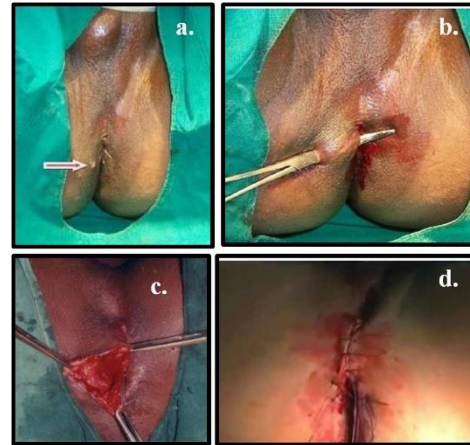
I and those who underwent fistulectomy with primary closure were classified as Group II (Table 1). The patient's characteristics of the two groups were well matched. In our study the incidence of fistula in ano was noticed more in 21-50 years. The incidence of fistula-in-ano in female is slightly less, in the present study it is 2:1. The low incidence of fistulas in females, is probably because female patients in this part of the country are shy to undergo clinical examination though they are actually suffering from the disease. Most of the patients are from low socioeconomic group and with poor personal hygiene.

**Table 1: Comparison between open fistulectomy vs fistulectomy with primary closure.**

| Variable                                | Group 1 | Group 2 |
|---|---------|---------|
| <b>No. of patients</b>                  | 25      | 25      |
| <b>Range of age (years)</b>             | 15 - 70 | 20 - 70 |
| <b>M:F</b>                              | 2:1     | 2:1     |
| <b>Symptoms and signs</b>               |         |         |
| Pain                                    | 23      | 17      |
| Discharge                               | 25      | 23      |
| Swelling                                | 20      | 14      |
| Pruritis                                | 2       | 6       |
| <b>Type of discharge</b>                |         |         |
| Purulent                                | 20      | 23      |
| Blood mixed                             | 1       | 2       |
| Serous                                  | 2       | 0       |
| <b>Type of fistula</b>                  |         |         |
| Anterior                                | 10      | 8       |
| Posterior                               | 15      | 17      |
| <b>Mean pain score</b>                  |         |         |
| Day 1                                   | 8.68    | 5.28    |
| Day 3                                   | 6.4     | 2.2     |
| <b>Retention of urine</b>               |         |         |
|   | 10      | 6       |
| <b>Duration of hospital stay (days)</b> |         |         |
|   | 13      | 7       |
| <b>Duration of wound healing (days)</b> |         |         |
|   | 31      | 8       |
| <b>Recurrence</b>                       |         |         |
|   | 1       | 0       |

The main presenting symptoms are discharge, pain and swelling. In present study 90% of patients with discharge had purulent discharge, 6% had blood mixed discharge, 4% had serous discharge. Both external (Figure 3a) and internal opening are demonstrated in all cases. 18 are Anterior low anal fistula and 32 are posterior anal fistula. Hypertension and diabetes were well controlled before operation as per the advice of physician and daily check up was made in hospital.

Fistulogram was not much useful in the study, as these cases studied were low anal fistula and could make out both internal and external openings clinically. All the fistulous tracts excised (Figure 3b, 3c, 3d) were subjected to histopathological examination and reported as non-specific.



**Figure 3: Low fistula in ano with primary closure.**

Pain scoring on a scale of 1-10; 1 being no pain and 10 being maximum bearable pain. In the present series, patients who had undergone fistulectomy with primary closure had a mean pain score of 5.28 while patients who had undergone open fistulectomy had a mean pain score of 8.68 on the first postoperative day. To relieve the post-operative pain injection diclofenac sodium and fort win are given in the first 24 hours and repeated 2-3 times in cases of severe pain. In present study 7 patients had retention of urine and were catheterized, and in 16 patients there was delay in passing urine but catheterization was not required.

In the present study any complications did not encountered like hemorrhage, stricture and incontinence of sphincter. One case of recurrence noted in fistulectomy with primary closure after 9 months in a diabetic patient. In this study, mean period of hospital stay in fistulectomy and primary closure is 7 days. The time required for complete healing even for a low level fistula following the traditional method of treatment is seldom less than 4 weeks. In our study of 25 cases of low level fistula treated by traditional method, the complete wound healing occurred by 3-6 weeks.

In present study (of 25 cases of low fistula in ano) treated by fistulectomy and primary closure, would healed completely by 8 -10 days. In the present series as only low level fistulae were selected, the anorectal ring was not damaged during surgery. Hence incontinence was not a sequel. In this study, one case of recurrence was noted in primary closure group who was a diabetic patient. This patient had inadequate preparation of rectum and anal canal preoperatively and has passed stools on the evening of immediate postoperative period. Most of the patients came for follow up for 2 months to one year. No recurrence was noticed in this period.

**DISCUSSION**

Perianal fistulas are a distressing condition for the patient and sometimes a challenge for the surgeon. The majority

of anal fistulae are of crypto-glandular origin, following anorectal abscess in 7-40% of cases. According to the cryptoglandular hypothesis, intersphincteric gland infection is the initiating event in the formation of perianal fistulas. The targets of surgical management are sepsis drainage and fistula tracts removal, preserving sphincter integrity whenever possible and avoiding recurrence of sepsis. A high success rate is generally reported in literature for low transsphincteric fistulas involving the lower 3rd of the external anal sphincter.<sup>3,4</sup>

Fistula in ano commonly occurs in adults, age ranging from 20-70 years. In Prakash et al study, majority of cases noted between 21 - 40 years.<sup>5</sup> In Shahbaz et al study, majority of cases noted between 21 - 40 years.<sup>6</sup> In present study, most of the cases noted between 21 - 50 years, lowest age is 19 years and highest age is 68 years. Sainio P et al reported that in a large study of 458 cases the mean age of incidence was 38.3 years.<sup>16</sup> Vasilevsky et al reported that most patients with fistula in ano present in third and fourth decade of life.<sup>8</sup>

Fistula in ano affects both males and females. In Prakash et al (52 cases), ratio of males and females is 4:1. In Shahbaz et al (50 cases), ratio of males and females is 4:1.<sup>5,6</sup> Ani et al reported male to female ratio of 8:1. In our study ratio of males and females is 2:1.<sup>9</sup> In present study of 50 cases, 16 were females in which 10 females underwent open fistulectomy and 6 females underwent fistulectomy and primary closure. In recent studies the incidence of fistula in ano is found to be increased in females, which may be due to increased literacy among the females in this part of the country.

Most common initiating factor for fistula in ano is cryptoglandular infection (90%) causing anorectal abscess. Spontaneous rupture and inadequate drainage of these anorectal abscesses by incision and drainage leads to development of fistula in ano. Incision and drainage of abscess cavity will result in complete resolution in 50-70% patients. Unfortunately, in the rest anal fistula will develop. Previous perineal surgeries like lateral sphincterotomy, haemorrhoidectomy, fistulotomy are found to be next common causes. In this study, causes of fistula formation - anorectal abscess in 35 cases, I and D in 12 cases, previous surgeries in 3 cases.

Majority of the patients are from rural areas and low socioeconomic group in all the previous studies in the literature. Poor sanitation and poor hygiene maintenance was found to be major causes for the anorectal abscesses and fistula formation. Illiteracy and ignorance leads to the chronicity of the condition. In a recent study by Chaturbhujia et al with 3719 patients, 42% were from rural, 22% from suburban and 35% from urban areas.<sup>10</sup> In the study, incidence of fistula in ano accounts in low socioeconomic patients accounts for 60%.

Most of the fistulas occur in posterior anal region as the crypt glands are more concentrated in posterior anal

canal. In Prakash et al study, 39 cases has posterior fistulas, 13 cases has anterior fistulas. In our study, 38 cases have posterior fistulas and 12 cases have anterior fistulas.<sup>5</sup>

Patients commonly present with complaints of perianal discharge causing constant soiling of the garments. Pain during defecation is the next common symptom. Swelling in the perineum and pruritus ani are the other common symptoms. In Vasilvesky et al series, most common symptom is perineal discharge followed by pain during defecation.<sup>8</sup> In Prakash et al study, most common symptom is perineal discharge followed by swelling in the perineum.<sup>5</sup> In the study, most common symptom is perineal discharge followed by pain during defecation.

In present study, purulent discharge is the common type of discharge. Blood mixed purulent discharge is the next common type. Serous discharge is found in the remaining patients. In open fistulectomy Damor et al, mean pain score on first postoperative day (D1) was 5.8.<sup>11</sup> In Prakash et al, mean pain score on D1 is 9.8.<sup>5</sup> In present study, mean pain score on D1 is 8.68. In primary closure Damor et al study, mean pain score on first postoperative day is 2.77.<sup>11</sup> In Prakash et al study, mean pain score on D1 is 3.3. In present study, mean pain score on D1 is 5.28. On applying "Mann Whitney U test" the calculated value is less than the table value at 99% confidence limit ( $p < 0.0001$ ), so we reject null hypothesis, so the data is statistically significant.<sup>5</sup> Indicating less pain score in primary closure group.

Immediate postoperative complications include retention of urine and haemorrhage from wound site. Late postoperative complications include anal stenosis, anal incontinence. Postoperative urine retention (POUR) 47: POUR has been shown to increase with age, with the risk increasing by 2.4 times in patients over 50 year of age. A higher incidence of POUR has been reported in men (4.7%) compared to women (2.9%). Possible reasons for such age and gender influences include age-related progressive neuronal degeneration leading to bladder dysfunction and gender-specific pathologies such as benign prostatic hypertrophy among others. The incidence of POUR varies according to the type of surgery. Injury to the pelvic nerves and pain evoked reflexive increase in the tone of the internal sphincter explains the high incidence of POUR in patients undergoing anorectal surgery. Concurrent neurologic diseases such as stroke, poliomyelitis, cerebral palsy, multiple sclerosis, spinal lesions, and diabetic and alcoholic neuropathy are predisposing factors to the development of urinary retention. All these perioperative risk factors for urine retention must be assessed beforehand to minimise the discomfort to the patient in the postoperative period. In Prakash et al study, urine retention was noted in 11 cases (22%) whereas in the present study urine retention with need for catheterization was noted in 7 cases (14%).<sup>5</sup>

To prevent bleeding, for the first few days, prop hips and legs up on pillows as much as possible. Advise the patient to avoid straining during bowel movements and avoid tight clothing that will cause friction in and around the wound. Manual anal dilatation is recommended at the end of the operative procedure. Patient should be educated about the need for manual anal dilatation in first few weeks of wound healing. Transient incontinence for stool passage is common in early postoperative period. As per previous studies, transient incontinence has been observed in 30-50% cases. This transient incontinence resolves spontaneously by promoting good nourishment. True fecal incontinence is diagnosed when the incontinence for stools persists beyond 3 weeks. Permanent fecal incontinence has been observed mainly in the patients who have undergone open fistulectomy because of the division of the anal sphincter in high anal fistulas. In recent study by Lasheen et al, it was concluded that, primary repair of the anal sphincter by using 'Lasheen sutures' helps prevent incontinence and promotes rapid wound healing.<sup>12</sup> In low anal fistulas, incontinence has been found to be rare after both open fistulectomy and fistulectomy with primary closure. In present study, there was no incidence of postoperative incontinence.

In open fistulectomy, Prakash et al study, mean hospital stay was 11.7 days.<sup>5</sup> In Singh et al study, mean hospital stay was 15 days. In present study, mean hospital stay is 13 days.<sup>13</sup> In fistulectomy with primary closure, Damor et al study, mean hospital stay was 3.1 days.<sup>11</sup> In Toccaceli et al study, mean hospital stay was 3.2 days.<sup>14</sup> In Satyaprakash et al study, mean hospital stay was 5.2 days.<sup>15</sup> In Prakash et al study, mean hospital stay was 5.3 days.<sup>5</sup> In Singh et al study, mean hospital stay was 8 days. In our study, mean hospital stay is 7 days.<sup>13</sup>

As the mean hospital stay is longer in cases of open fistulectomy, it is less cost effective considering charges with reference to Hospital stay, dressings etc. Also, the patient's inability to return to their work renders them incapable of receiving their daily income, keeping in mind that the majority of the patients are daily labourers and belong to a low socio economic status. In open fistulectomy, Damor et al study mean duration for wound healing is 3 weeks.<sup>11</sup> In Satyaprakash et al study, mean duration of wound healing is 5 weeks.<sup>15</sup> In Prakash et al study, mean duration of wound healing is 4.5 weeks.<sup>5</sup> In our study, mean duration of wound healing in open fistulectomy group is 5 weeks.

In Fistulectomy with primary closure, Damor et al study, mean duration of wound healing was 8.2 days.<sup>11</sup> In Satyaprakash et al study and Prakash et al study mean duration of wound healing was 14 days.<sup>5,15</sup> In present study, mean duration of wound healing is 8.4 days.

On applying "Mann Whitney U test" the calculated value is less than the table value at 99% confidence limit ( $p < 0.0001$ ), so the data is statistically significant. Indicating less time taken for wound healing in primary

closure group. Postoperative wound healing is influenced by both general condition of the patient and local wound care. Regular dressings and sitz bath will help in keeping the wound clean and decreases chances of wound infection. Dressing changes require clean but not necessarily sterile technique. Gently irrigate the wound with a physiologic saline solution until the patient is able to take sitz bath. Diet can be resumed 6-8 hrs after the surgery. Low fat, high fibre diet is recommended for the patients along with stool softeners, laxatives. Soft bowel movements will decrease the patient discomfort in the postoperative period.

Patient should be educated about the need for regular follow-up at the time of discharge. First follow-up advised based on the need for dressing of the wound. Later patients are advised for follow-up every 30 days for 3 months and then once in three months or whenever patient have any complaints. In this study, most of the patients came for follow up for 3 months to one and half year. Only one recurrence was noticed in this period. But 3months minimum follow up period is very short for detecting the recurrences.

#### **Recurrence**

Recurrence is less common with good surgical technique and good postoperative care. In present study, recurrence was noted in a diabetic patient 9 months after the primary closure.

#### **CONCLUSION**

In the cases treated by classical method because of long time taken to heal, number of hospital visits for dressings were more and more antibiotics were prescribed. Hence expenditure was more for patients and work burden increased for doctors and hospital staff. More working days were lost by the patients.

In cases treated by excision of fistula tract and primary closure: The numbers of days of hospital stay were less and hospital visits for dressing were once or twice. From this study we can conclude fistulectomy with primary closure is ideal for low anal fistula.

This saves number of days required for wound healing, hospital stay and results in less expenditure for patients, saves the number of working days lost. This lessens the work load on doctor and hospital staffs.

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