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Surgery

FISTULECTOMY V/S FISTULOTOMY WITH MARSUPIALIZATION: A COMPARATIVE STUDY BETWEEN THE TWO IN MANAGEMENT OF SIMPLE ANAL FISTULA.

KEY WORDS:

Fistula in ano, Fistulectomy, Fistulotomy

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ABSTRACT

Background: A fistula in ano is a pathway, lined by granulation tissue that joins deeply in the anal canal or rectum and superficially on the skin around the anus. It is one of the most common benign ano rectal condition encountered on routine practice. The different treatment modalities available for the management of anal fistula include fistulotomy, fistulectomy, LIFT, seton placement, advancement flaps and use of biological agents like fibrin glue. Low anal fistulae have been mainly treated by fistulotomy with good results. In this prospective clinical study, we have noted the outcomes after fistulectomy & fistulotomy with marsupialization in patients with simple low-lying fistula. **Methods:** Total 90 patients with simple low-lying fistula were randomized into two groups- A (Fistulectomy-50) & B (Fistulotomy with marsupialization-40). The intraoperative and postoperative findings noted, and the results were compared. **Results:** Postoperative wound healing was earlier in group B (4.30+0.64 weeks) than in group A (7.38 +1.83 weeks). This difference in healing time reached statistical significance with a p value of 0.0003. Postoperative wounds ceased to ooze earlier in group B than in group A (2.23 wk + 0.65 vs 4.81 weeks + 0.79) p value: 0.0002. No difference in the operating times was noted between the two groups. Wound size was smaller in Group B (1.96 cm²+ 0.52) than Group A (3.38 cm²± 0.46). No difference in pain score was noted in both the groups. No infection was noted in both the groups. **Conclusions:** In comparison to a fistulectomy, a fistulotomy with marsupialization results in faster healing and a shorter duration of wound discharge without increasing the operating time.

INTRODUCTION

Fistula-in-ano is one of the most common benign anal conditions in daily surgical practice. The fistulas may be simple or complex. Fistulas are mainly caused by chronic infection arising in anal glands that communicates with anal crypts.¹ These anal glands lies between the internal and external anal sphincters. The anal fistulas are classified according to the Park's classification (according to their relationship to the anal sphincters) as intersphincteric fistulae (45%), trans-sphincteric (40%), suprasphincteric and extrasphincteric fistulae.² The patients with fistula in ano presents with intermittent purulent or feculent discharge associated with pain. There is often a previous episode of acute anorectal sepsis. Though fistula is clinical diagnosis, MR fistulogram is considered as gold standard investigation. The different treatment modalities available for the management of anal fistula include fistulotomy, fistulectomy, ligation of intersphincteric fistula tract (LIFT), seton placement, advancement flaps and use of biological agents like fibrin glue.³ A fistulectomy involves complete excision of the fistulous tract, thereby eliminating the risk of missing secondary tracts and providing complete tissue for histopathological examination. A fistulotomy lays open the fistulous tract, thus leaving smaller unepithelized wounds, which hastens the wound healing. Marsupialization of the fistulotomy wounds can reduce the healing time further.⁴ The present study was a randomized controlled trial that aimed to compare the fistulectomy to the fistulotomy with marsupialization in the management of simple anal fistula.

METHODS

This randomized controlled pilot study was conducted at SMS Medical Hospital, Jaipur from 1st May 2016 to 30th April 2017. A total of 90 patients admitted in SMS Medical Hospital with a clinical diagnosis of a simple anal fistula were included in the study. Simple anal fistula is clinically defined as one that had one internal opening, one external opening, a completely palpable tract, and no palpable abnormality in the upper anal canal or the lower rectum. Patients between age group 18-70 years in either sex with symptomatic simple anal fistulas, low trans-sphincteric (fistula tract involving less than the lower

third of the anal sphincter), inter sphincteric fistula, and subcutaneous fistula with the absence of a secondary tract were included in the study. Patients with high fistula in ano, recurrent fistula, associated co-morbid conditions (Chron's disease, malignancy, anal fissure, hemorrhoids, chronic colitis), HIV+ and immunocompromised patients were excluded from the study. All patients included in the study were interviewed to ascertain their clinical histories including presenting symptoms; duration of symptoms; and history of anorectal sepsis, previous surgery, and chronic illness. All patients underwent detailed clinical examination to assess general health, presence of systemic disease, and anorectal pathology. The examination included perineal inspection, palpation, digital rectal examination, and proctoscopic evaluation. The distance of the external opening from the anal verge was measured using a plastic scale at the time of clinical examination. Informed consent was obtained from patients for participation in the study. Ethical clearance was obtained from the institutional ethical board. The patients were divided randomly with the help of computer-generated random numbers into two groups with respect to operative procedure: the group that underwent a fistulectomy- 50 (group A) and the group that underwent a fistulotomy with marsupialization- 40 (group B).

Methodology

The patients were operated under regional or general anesthesia. Under anesthesia, an anorectal examination was performed to verify the findings of the clinical examination. A dye study of the fistula tract was performed by placing moist gauze in the anal canal and injecting about 2 ml of methylene blue through the external opening. Staining of the gauze piece denoted patency of the fistula tract. A probe was gently passed into the fistulous tract through the external opening. In the fistulotomy with marsupialization, the fistula tract was laid open over the probe placed in the tract. After the fistula tract had been laid open, the tract was curetted and examined for secondary extensions. Wound edges were sutured with the edge of fistula tract by using interrupted 3-0 chromic catgut sutures to marsupialize the operative wound from distal to proximal. In the fistulectomy, a keyhole skin incision was

made over the fistulous tract and encircled the external opening. The incision was deepened through the subcutaneous tissue, and the tract was removed from surrounding tissues. Towards the anal verge, fibers of the anal sphincters overlying the tract were divided. The patients were discharged on the first postoperative day. The initial postoperative assessment was undertaken at twenty four hours following surgery. Development of incontinence was assessed using the three-point Lickert scale (0, never; 1, sometimes; 2, always) according to inability to distinguish between gas and stool, difficulty in holding gas, and soiling of undergarments. All patients were followed up for a total duration of twelve weeks during the postoperative period. Patients were followed up at weekly intervals for the initial 6 weeks and at 2-week intervals for another 6 weeks. The intraoperative and postoperative findings like duration of surgery, healing of the wound, postoperative incontinence, pain and recurrence were noted. The patients were asked to follow-up upto 6 months after surgery to check for recurrence and anal incontinence. The results were compared using student's t test and chi square test and analysed. The patients were observed for recurrence of the fistula during the follow-up period.

RESULTS

Ninety patients, 79 males and 11 females clinically diagnosed to be suffering from a simple anal fistula were enrolled in this study. The age of the patient varied from 18-70 years. Majority of the patients were between 26 and 45 years of age. Both groups were comparable in terms of age distribution. Mean of age distribution was non-significant in both the groups. The mean age of the patients in group A was (37.22 + 12.62) years with a male-to-female ratio of 44/6 while the mean age of the patients in group B was (34.98+ 10.76) years with a male to-female ratio of 35/5. There were 17 cases of subcutaneous fistula, 30 cases of intersphincteric fistula, 3 cases of low transphincteric fistula in group A and 16 cases of subcutaneous fistula, 22 cases of intersphincteric fistula, 2 cases of low trans-sphincteric fistula in group B. In majority of cases in our study, the major cause for fistula-in-ano were anorectal abscess, inadequately drained abscess (I&D) or Tuberculosis. (Table 1)

Table 1: Causes for fistula-in-ano

Groups	Fistulectomy	Fistulotomy with marsupialisation	Total
Anorectal abscess	20(60%)	32(80%)	62(68.8%)
Inadequate Drainage	16(32%)	6(15%)	22(24.4%)
Tuberculosis	4(8%)	2(5%)	6(6.8%)

The main presenting symptoms in our study were discharge, swelling and pain. In group A, 40 patients had discharge, 20 had swelling, & 16 had pain. While in group B, 36 patients had discharge, 20 had swelling, & 12 had pain. Postoperative wound healing was earlier in group B (4.30+0.64 weeks) than in group A (7.38 +1.83 weeks). This difference in healing time reached statistical significance with p value of 0.0003. Postoperative wounds ceased to ooze earlier in group B than in group A (2.23 wk + 0.65 vs 4.81 weeks + 0.79, p value: 0.0002) No difference in the operating times was noted between the two groups. Group A (29.74+ 3.64) Group B (29.33 + 3.28) p value of 0.576 Wound size was smaller in group B (1.96 cm²+ 0.52) than group A (3.38 cm²± 0.46). This reached to a statistical significance, p value 0.0004. Pain was accessed at 24 hrs and 12 weeks after surgery. No difference in pain score was noted in both the groups. Group A (4.00+ 0.78), Group B (4.20 + 0.72) p value of 0.216. No infection was noted in both the groups. One patient in group A developed anal incontinence whereas no patient developed anal incontinence in group B. No differences in the extents of adverse effects of surgery on the physical, social and sexual

lives of the patients in the two groups was seen.

DISCUSSION

The classical treatment of anal fistulas is to surgically lay-open the fistula (fistulotomy) or fistulectomy. In modern colorectal surgery the main objective in treatment of anal fistulas is healing of the fistula without diminished faecal continence. Recent findings even indicate that for most patients it is more important to minimize their risk of diminished fecal continence than to have a highly successful treatment for their fistula⁵. Over time several sphincter preserving procedure have been developed for anal fistulas, such as transanal advancement flap repair (TAFR) and ligation of the intersphincteric fistula tract (LIFT). Although these sphincters preserving procedures are effective in preventing diminished faecal continence after surgery, they seem less effective for healing of anal fistulas than fistulotomy or fistulectomy. The healing rate after TAFR varies between 60 and 70% and the healing rate after LIFT varies between 50 and 70%⁶⁻¹⁰. The reason for these rather disappointing results remains unclear and predictors of outcome have not been defined.

Anal fistulas have always been considered a surgical challenge and most studies have been conducted to optimize surgical treatment by evaluating and developing new techniques. However, healing rates remained disappointing and it seemed unlikely that surgical treatment will ever lead to fistula healing in all patients. The patient satisfaction after surgical treatment depends upon factors like postoperative hospital stay, postoperative pain, return to normal activity, wound healing time and most importantly the recurrence of the disease. The principles of management are drainage of infection and eradication of fistulous tract with preservation of sphincter function. In our study 90 cases of simple anal fistula were studied, out of which 50 cases were treated with open fistulectomy and 40 cases were treated with fistulotomy with marsupialization.

Jain BK et al¹¹ studied in 40 patients out of which 34 were males and 6 were females. In our study total 90 cases were taken, 79 were males and 11 were females. They were randomly assigned in both the groups to make comparable in terms of male:female ratio.

In the study of Jain BK et al¹¹, the mean age of the patients in fistulectomy group was 34.55±1.96 years and in fistulotomy with marsupialization group 34.30±3.03. In our study mean age of the patients in group A was 37.22±12.62 years and in group B was 34.98±10.78 years with p value of 0.373 which signifies that both groups were comparable in terms of age.

In our study of 90 cases, the cases were anorectal abscess (68.8%), inadequate drainage (24.4%) and tuberculosis (6.8%). This clearly proves that in our place the major cause was anorectal abscess owing to poor hygiene of the patients, as most of these are from poor socio-economic group.

In Jain B.K. et al.¹¹, 15 patients were having subcutaneous fistula, 23 were intersphincteric and 2 were trans-sphincteric fistula. In our study, 33 patients were having subcutaneous fistula, 52 were inter-sphincteric and 5 were trans-sphincteric fistula.

In our study both group were comparable with respect to age, sex ratio, type of fistula, causes of fistula, and the predominant symptom was discharge.

The difference in the operating times for the two groups were not significant (29.33 mins ± 3.28 in group B vs 29.33±3.28 mins in group A, p value 0.576). The fistulectomy operation requires dissection of the fistula tract from the surrounding tissues, followed by coagulation of bleeding to control homeostasis. During a fistulotomy with marsupialization, the

fistula tract is laid open, so dissection of the fistula tract is not required, but several minutes are required to suture the edges of the laid open fistula tract to the skin incision. Thus, both procedures are likely to require almost similar times. In study of Jain BK et al.11 operating times were also insignificant (28.00 ± 6.35 minutes v/s 28.20 ± 6.07 minutes, p value 0.092). In a study of 103 patients with anal fistula who underwent a fistulotomy or a fistulotomy with marsupialization, HoYN et al4 concluded that a longer operative time was required for fistulotomy with marsupialization (8.0 ± 0.6 minutes v/s 10.0 ± 6.7 minutes, $p < 0.05$) In our study, statistically significant difference in healing times were noted between the two groups, the mean healing time was longer in group A (7.38 ± 0.92 weeks) than in group B (4.30 ± 0.64 weeks). The difference in healing rate was found to be statistically significant. Also, in the study B.K.Jain et al11 healing time were statistically significant (6.75 ± 1.83 weeks v/s 4.85 ± 1.39 weeks, p value 0.003) in Group A & Group B respectively.

In the cases of fistulotomy with marsupialization the fistula tract, which could have been epithelized to varying extent, formed the floor of the wound. These facts explain earlier healing of the wound in the group B in comparison to group A. A study conducted by Kronborg12 showed a medium healing time of 5.85 weeks fistulectomy wounds in comparison to 4.55 weeks for fistulotomy wounds ($p < 0.002$). In a study conducted by HoYN et al4 marsupialization wounds had significantly faster healing than non-marsupialization wound (6.0 ± 0.4 weeks v/s 10.0 ± 0.5 weeks, $p < 0.001$) Postoperative wound size was measured after completion of surgery. In our study, wound size of group B was $1.96 \text{ cm}^2 \pm 0.52$ compare to group A, 3.38 ± 0.46 which was significantly smaller with p value of 0.0004. In the study by Jain BK et al11 wound size were smaller in fistulotomy with marsupialization group than fistulectomy group ($1.23 \pm 0.87 \text{ cm}^2$ v/s $2.06 \pm 1.90 \text{ cm}^2$) but did not reach the statistical significance. In a study done by Pescatori et al13, the mean wound size was $1.17 \pm 0.31 \text{ cm}^2$ in patients who underwent either a laying open or excision of the fistula in comparison to $0.81 \pm 0.38 \text{ cm}^2$ in the case of marsupialization wound.

Persistent wound discharge was observed in group A for a mean period of 4.81 ± 0.79 weeks and in group B for 2.23 ± 0.65 . This difference on statistical analysis was found to be significant. ($p = 0.0002$, students 't' test) and in study conducted by Jain BK et al11 found continues to ooze in fistulectomy group for 4.10 ± 1.91 weeks and in fistulotomy with marsupialization group for 2.75 ± 1.71 weeks which was also significant.

Though the mean post-operative VAS score was higher for the fistulotomy with marsupialization, on statistics analysis, no difference in the pain score was noted between the groups. Pain scores at 24 hours after operation and at 12 weeks were compared. At 24 hour mean VAS score in fistulotomy with marsupialization group was 4.2 ± 0.72 as compare to fistulectomy group 4 ± 0.78 , which was statistically insignificant (p value 0.216). And at 12 weeks, no patient had pain in both the groups. According to Pescatori et al13 who found that the mean pain score at 12 hours post operatively was 3.4 ± 1.6 and 3.5 ± 1.5 is the non marsupialized group and the marsupialized group, respectively. However, the difference between the two group was statistically insignificant ($p > 0.05$). Even in the study by Jain BK et al11, no significant statistically difference was seen between both the group in terms of postoperative pain. In both group, subsidence of pain was noted at about 3 weeks.

Anal incontinence was noticed in one patient of group A which was for liquids. But no anal incontinence was noticed in group B. This is logical as all the internal opening were located in the lower canal in our patients. No patient developed incontinence in study of Jain BK et al.11 A study conducted by Kronborg12 to compare fistulectomy with the fistulotomy

demonstrate development of anal incontinence in 3 of 17 patients after the fistulectomy in comparison to 1 of 20 patients after the fistulotomy. They included all patients after the fistulotomy. They included all patients with a single tract anal fistula below the anorectal in their study. HoYN et al4 observed temporary anal incontinence in one patient (2%) in the marsupialized group compared with 6 (12%) in the non marsupialized group.

None of the patients reported fever or increasing pain during the post-operative period in our study. Pescatori et al13 demonstrated a 14% post-operative sepsis rate in the marsupialized group in comparison to 21% in the non marsupialized group. No recurrence was reported in any patient in either group for a follow up period of 12 weeks in our study. Kronberg12 reported that the recurrence rates follow a fistulotomy were 9.52% and 12.5% respectively during a follow up part of 12 months. So, from above observation we can say that fistulotomy with marsupialization is a safe procedure in terms of recurrence, sepsis and anal incontinence. The most important criteria in fistulotomy with marsupialization is careful selection of patients. It also depends on the individual, the experience of the surgeon and the techniques adopted by the surgeon.

CONCLUSION

Fistulotomy with marsupialisation of cavity is a safe and effective method for the management of fistula in ano. This study demonstrated shorter wound healing time and shorter duration of postoperative wound discharge following a fistulotomy with marsupialization in comparison to a fistulectomy. Keeping in view the faster recovery, less duration of wound discharge, shorter wound healing time, smaller wound size and lower complications, it can be concluded that fistulotomy with marsupialisation is much safer and cost effective than the fistulectomy for the management of fistula in ano. However, studies on larger population and longer period of follow-up are required to establish fistulotomy with marsupialisation as standard surgical procedure for the treatment of low fistula-in-ano.

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