

Marsupialization for Simple Fistula in Ano

Anu Sandhya, Shahid Rasool, Sughra Parveen

ABSTRACT

- Objective** To compare the post-operative course and the outcome of marsupialized and open wounds in the patients who underwent either fistulotomy or fistulectomy for simple fistula in ano.
- Study design** Comparative study.
- Place & Duration of study** Department of General Surgery Jinnah Postgraduate Medical Center Karachi, from December 2011 to May 2012.
- Methodology** Fifty patients with simple anal fistula were included in this study. They were divided into two groups. Fistulous tracts were managed by using a fistulectomy or fistulotomy alone (group A) while a fistulectomy or fistulotomy with marsupialization was performed in group B. The primary outcome measure was wound healing time while secondary outcome measures were postoperative bleeding, postoperative pain, wound infection, anal incontinence and recurrence.
- Results** Postoperative wounds in group B healed earlier in comparison to group A wounds (4.85 ± 1.39 weeks vs. 6.75 ± 1.83 weeks, $p = 0.035$). No significant differences existed between the operating times (28.00 ± 6.35 minutes vs. 28.20 ± 6.57 minutes, $p = 0.925$) and Visual Analogue Scale scores for postoperative pain was 3.3 ± 1.4 in group A and 3.2 ± 1.5 in group B. Post operative bleeding was observed for a significantly longer duration in group A than in group B (4.10 ± 1.91 weeks vs. 2.75 ± 1.71 weeks, $p = 0.035$). No patient developed anal incontinence or recurrence during the follow-up period of twelve weeks.
- Conclusions** Marsupialization of the wound after either fistulectomy or fistulotomy for simple fistula in ano results in faster healing, less bleeding without lengthening the operative time and without increasing the infection.
- Key words** Fistulectomy, Fistulotomy, Anal fistula.

INTRODUCTION:

Fistula in ano is a common surgical problem. Conventional surgical options for a simple fistula in ano include a fistulotomy and fistulectomy.¹ 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 unepithelialized wound, which hastens the wound healing.² Both fistulectomy and fistulotomy leave a

raw unepithelialized endo and peri-anal tissue to heal over, which may require hospitalization for irrigation and dressing, risk of bleeding and recurrent sepsis.^{1,3} Marsupialization of fistula is a technique that reduces wound size, shortens healing time and improves continence by minimizing anal deformity without increasing hospital time.⁴

The aim of this study was to compare the post-operative course and the outcome of marsupialized and open wounds in patients who underwent either fistulotomy or fistulectomy for simple fistula in ano.

Correspondence:

Dr. Anu Sandhya
Department of General Surgery
Jinnah Postgraduate Medical Center Karachi
E-mail: anu_sandhya@hotmail.com

METHODOLOGY:

Fifty patients who were diagnosed as simple fistula in ano, from December 2011 to May 2012 were admitted at Jinnah Postgraduate Medical Centre

Surgical ward. They were included in a comparative study after taking written and informed consent. Simple fistula in ano was defined as the fistula that had single external opening and single internal opening, a completely palpable tract and no abnormality in upper anal canal or lower rectum.

Inclusion criteria was low trans-sphincteric (fistula tract involving less than the lower third of the anal sphincter), inter-sphincteric fistula, and subcutaneous fistula, a single internal and a single external opening and the absence of secondary tract. Exclusion criteria were recurrent fistula, patients with associated comorbid conditions like anal fissure, haemorrhoids, chronic colitis, etc, bleeding tendencies and patients refusing consent for the procedure. Inquiries were made to assess anal continence in each patient.^{5,6} The examination included perineal inspection, palpation, digital rectal examination and proctoscopic evaluation

Ethical clearance was obtained from the institutional ethical board. Patients were divided randomly into two groups with respect to operative procedure: the group that underwent a fistulectomy or fisulotomy (group A) alone and the group that underwent a fistulectomy or fistulotomy with marsupialization (group B).

The patients were operated under spinal or general anaesthesia in lithotomy position. Anorectal examination was performed to verify the findings of the clinical examination. Two ml of hydrogen peroxide was injected through the external opening to find out the fistula tract.^{7,8} The tract was palpated and probed through the external opening. In the fistulotomy with marsupialization procedure, the fistula tract was laid open over the probe placed in the tract. After the fistula tract had been laid open, the tract was curretted and examined for secondary extensions. Wound edges were sutured by using locking continuous 3-0 chromic catgut sutures to marsupialize the operative wound from distal to proximal ends.⁸ Haemostasis was then secured.

In the fistulectomy procedure, 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. While the tract was being removed, attention paid to identifying secondary tracts, if any. Wound edges were sutured by using locking continuous 3-0 chromic catgut sutures to marsupialize the operative wound from distal to proximal ends. In

group A patients marsupialization was not done and in group B patients marsupialization was performed.

The operating time for the procedure was calculated from the start of the hydrogen peroxide test to the beginning of dressing of the postoperative wound. Patients in both groups were administered ciprofloxacin and metronidazole perioperatively for a total duration of three days. Diclofenac sodium (50 mg twice a day) was prescribed as an analgesic for a total duration of 3 days. The patients were discharged on the first postoperative day and advised regarding oral medication, maintenance of local hygiene, sitz bath after defaecation, dressings, and regular follow-ups.

The diameter of postoperative wound was measured postoperatively and at 4 weeks. The severity of postoperative pain was assessed on a scale of 0 to 10 with the help of the Visual Analogue Scale (VAS). Patients were asked about anal incontinence. 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. During each follow-up visit, the patient was assessed for postoperative pain, wound size, wound infection, bleeding and anal incontinence. Wound infection was defined as the presence of erythema, induration surrounding the wound or constitutional symptoms such as fever. Time required for complete healing of the postoperative wound, which was defined as the time for complete healing to take place with no area with an unepithelialized surface, was noted. The patients were observed for recurrence of the fistula during the follow-up period. No patient was lost to follow-up.

For purpose of comparison, healing time was the primary outcome measure while size of the operative wound, operating time, postoperative bleeding, postoperative pain, postoperative incontinence and recurrence were secondary outcomes. Analyses were performed using the SPSS ver. 17.0 (SPSS Inc., Chicago, IL, USA). Qualitative data from the two groups were compared using the Chi square test while quantitative data were compared using the t-test.

RESULTS:

Total of 50 patients were included in this study, 25

were randomized in group A and 25 in group B. There was no significant difference in age, gender, follow up duration and fistula type in two groups (table I). The mean age of patients in group A was 34.55 ± 1.96 year with male/female ratio of 20:5, while the mean age of patients in group B was 34.55 ± 3.03 year with the male/female ratio of 21:4.

Wound healing was earlier in group B (4.85 ± 1.39 days) than in group A (6.75 ± 1.83 days) with p-value of 0.003. Post operative bleeding from wound stopped earlier in group B than group A (2.75 ± 1.71 weeks vs 4.10 ± 1.91 weeks with p-value of 0.035). There was no significant difference in operating time between the 2 groups (28.00 ± 6.35 minutes vs 28.20 ± 6.57 minutes, $p=0.92$). None of the marsupialized wound broke down in group B. No difference in pain score was noted between the two groups, the VAS being 3.3 ± 1.4 in group A and 3.2 ± 1.5 in group B. None of the patients in either group had recurrence in 3 months follow up time nor was found to have incontinence. The postoperative infection rate was 14% in group A (n=3) and 23% in group B (n=5). The results are given in table II.

DISCUSSION:

The difference in the operating times for the two groups was not significant. The fistulectomy operation requires dissection of the fistula tract from the surrounding tissues, followed by coagulation of bleeding to control haemostasis. During a fistulotomy with marsupialization, the fistula tract is laid open, so dissection of the fistula tract is not required, but several minutes are needed to suture the edges of the laid-open fistula tract to the skin incision. Thus, both procedures are likely to needed almost similar time.

Though the mean postoperative VAS score was higher for the fistulotomy with marsupialization, on statistical analysis, no difference in the pain score was noted between the groups. Pain scores at various follow-up times were evaluated and compared for any statistical significant difference. No significant statistical difference was seen between the two groups. In both the groups, subsidence of pain (VAS score < 1) was noted at about three weeks. Similar results have been reported by Pescatori et al, who found that the mean pain score at 12 hours postoperatively was 3.4 ± 1.6 and 3.5 ± 1.5 in the non-marsupialized group and the marsupialized group, respectively; however, the difference between the two groups was statistically insignificant ($p > 0.05$).

Anal incontinence was not noticed in any of the patients in either group.^{9,10} This is logical as all the internal openings were located in the lower anal canal in our patients. A study conducted by Kronborg to compare the fistulectomy with the fistulotomy demonstrated 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 with a single-tract anal fistula below the anorectal ring in their study.¹¹

In the present study, statistically significant difference in healing times was noted between the two groups. The mean healing time was longer in group A than in group B. The difference in healing rates was found to be statistically significant ($p = 0.003$).

The fistulotomy with marsupialization wounds were smaller than the fistulectomy wounds (1.23 ± 0.87 cm² vs. $2.06 \pm 0.1.90$ cm²), though this difference

Table I: Preoperative Characteristics of Two Groups

Groups	Mean age	M/F ratio	Follow up (months)	Subcutaneous	Trans-sphincteric	Inter-sphincteric
Open wound (n=25) A	34.55 ± 1.96	20/5	12	11	08	06
Marsupialized (n=25) B	34.55 ± 3.03	21/4	12	12	05	08

Table II: Outcome of Postoperative Pain, Wound Healing Time, Wound Infection, Bleeding and Anal Incontinence

	Post op pain (VAS)	Wound healing time (weeks)	Infection Rate	Bleeding (weeks)	Anal Incontinence
Open wound (n=25) A	3.3 ± 1.4	6.75 ± 1.83	14% (n=3)	4.10 ± 1.91	None
Marsupialized (n=25) B	3.2 ± 1.5	4.85 ± 1.39	23% (n=5)	2.75 ± 1.71	None
p-value	n.s	0.003	n.s	0.035	

did not reach statistical significance. Further in the case of the fistulotomy with marsupialization, the fistula tract, which could have been epithelialized to varying extent, formed the floor of the wound. These facts explain earlier healing of the wound in the fistulotomy-with-marsupialization group in comparison to the fistulectomy group. A study conducted by Kronborg showed a median healing time of 5.85 weeks of fistulectomy wounds in comparison to 4.55 weeks for fistulotomy wounds ($p < 0.02$).¹¹ In a study conducted by Ho et al marsupialized wounds had significantly faster healing than non-marsupialized wounds (6.0 ± 0.4 weeks vs. 10.0 ± 0.5 weeks, $p < 0.001$).⁴

No recurrence or anal incontinence was reported in any patient in either group for a follow-up period of 12 weeks in our study. However, the duration of observation in the present study was not sufficient to draw any definite association with respect to recurrence. Kronborg reported that the recurrence rates following a fistulectomy and a fistulotomy were 9.52% and 12.5%, respectively, during a follow-up period of 12 months.¹¹

As far as recurrent infections are concerned, one may argue that the superficial marsupialization of a post-fistulectomy wound may favour a premature skin healing leaving behind a non-healed deeper cavity at risk of infection, but it is a matter of fact that infection rate was not increased in group B in our series, thus suggesting that the suture itself was not an adverse prognostic factor for this particular complication. The risk of wound bleeding was significantly reduced by marsupialization, and the locking continuous suture used, being more haemostatic than interrupted stitches, might have contributed to this positive outcome.

The small sample size is one of the limitations of this study. Another limitation is the large number of low fistulae in both groups of patients because surgical treatment of a low fistula is unlikely to compromise continence and recurrence as recurrence is more common in high fistula.¹² This may be the reason for the better functional outcome seen in our patients in both groups.

CONCLUSION:

Marsupialization of the wound after either fistulectomy or fistulotomy for simple fistula in ano results in faster healing, less bleeding without increasing the operative time and without increasing the infections.

REFERENCES:

1. Sahakitrungruang C, Pattana-arun J, Khomvilai S, Tantiphlachiva K, Atittharnsakul P, Rojanasakul A. Marsupialization for simple fistula in ano: A randomized control trial. *J Med Assoc Thai.* 2011;94:699-703.
2. Jain BK, Vaibhav K, Garg PK, Gupta S, Mohanty D, Comparison of fistulectomy and a fistulotomy with marsupialization in the management of simple anal fistula: A randomized controlled pilot trial. *J Korean Soc Coloproctol.* 2012;28:78-82.
3. Pescatori M, Ayabaca SM, Cafaro D, Iannello A, Magrini S. Marsupialization of fistulotomy and fistulectomy wounds improves healing and decrease bleeding: a randomized control trial. *Colorectal Dis.* 2006;8:11-4.
4. Ho YH, Tan M, Leong FPK, Seow-Choen F. Marsupialization of fistulotomy wound improves healing: a randomized control trial. *Br J Surg.* 1998;85:105-7.
5. Shahbaz CM, Ghazanfar A, Goraya AR. Comparative study of fistulectomy and fistulectomy with primary repair for low fistula-in-ano. *Ann King Edward Med Uni.* 2002;8:87-9.
6. Garcia Aguilar J, Belmonte C, Wong WD, Goldberg SM, Madoff RD. Anal fistula surgery: Factors associated with recurrence and incontinence. *Dis Colon Rectum.* 1996;39:723-9.
7. Farquahsan M. Surgery of Anus and Perineum: Surgery of Anal Fistula. In: Rintoul HF; editor. *Text book of operative surgery.* 9th ed. Basingstoke, UK: North Hamsphire Hosp. 2007: pp 446-9.
8. Erefej S, Lestar B, Hornok L, Ritter L, Kiss J. Treatment of anal fistulas. *Magy Seb.* 2000;53:263-6
9. Bhatti Y, Fatima S, Shaikh GS, Shaikh S. . *Rawal Med J.* 2011;36:284-6.
10. Lindsey I, Smilgin-Humphreys MM, Cunningham C, Mortensen NJ, George BD. A randomized controlled trial of fibrin glue vs conventional treatment for anal fistula. *Dis Colon Rectum.* 2002;45:1608-15.

11. Kronborg O. To lay open or excise a fistula in ano: A randomized trial. *Br J Surg.* 1985;72:970.
12. Qureshi KH, Kamal M, Shah MHA, Tariq NA, Tipu SA. Management of fistula-in-ano, Multan. *J Coll Physicians Surg Pak.* 2002;12:361-3.