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Research Article

Marsupialization for simple fistula in ano

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Abstract: Fistula in ano is a common surgical problem. Conventional surgical options for a simple fistula in ano include a fistulotomy and fistulectomy. Lay open of the fistula tract is a commonly used procedure in the management of fistula-in-ano. It can cure the fistula but this may involve prolong wound healing, and compromise of anal continence. The wound edges may be marsupialized to the laid open fistula tract leaving less raw unepithelialized tissue to heal over. There are inadequate data comparing fistulotomy with or without marsupialization.To compare marsupialization (MS) versus lay open (LO) technique in management of simple fistula in ano (FIA) in terms of healing time as a primary outcome and postoperative complications as a secondary outcomes(postoperative bleeding, postoperative pain, wound infection, anal incontinence and recurrence). A prospective interventional study was conducted in Omdurman teaching hospital, department of general surgery, in the period from 2014 July to 2015 July. All patients who presented with simple anal fistula were included. Patients with associated co-morbid conditions and patients refused consent for the procedure were excluded. A predesigned, pretested questionnaire was used as a data collection tool. A computer program, Statistical package for social sciences (SPSS) version 20 was used .A Total number of 80 patients with simple FIA were studied. Forty patients were involved in each group. The mean operative time in LO group was 7.5 ± 1.2 minutes, whereas in MS group was 10.3 ± 1.2 minutes. The difference between the two groups with respect to the mean operating time was statistically significant (P value 0.000). Post-operative pain had no statistically significant difference in first 24 hour (P value 0.330) and second post-operative day (P value 0.120). The mean healing time was longer in LO group than in MS group (8.4 ± 1.3 versus 5.9 ± 1.1weeks). This difference in healing time reached statistical significance with a P value of <0.001. There was no significant difference in post-operative complications including pain, bleeding and infection. There was no recurrence of the fistula and none of the patients developed anal incontinence after the surgery in short term follow up of three months.Anal fistula marsupialization had significant faster post-operative healing time in comparison with lay open Fistulotomy. Apart from a longer operative time required for marsupialization, there was no significant difference in post-operative complications including pain, bleeding, and infection. Neither incontinence nor recurrence were encountered in either group.
Keywords: Fistula-in-ano, Fistulotomy, Lay open, Marsupialization

INTRODUCTION

Fistula in ano (FIA) is a common surgical problem. Conventional surgical options for a simple FIA 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 unepitheliazed wound, which hastens the wound healing [2].

Both fistulectomy and fistulotomy leave a raw unepitheliazed 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 is to compare the postoperative course and the outcome of marsupialized and open wounds in patients who underwent fistulotomy for simple FIA.

PATIENT AND METHODS

This is a prospective interventional**,** Hospital-based study, conducted at Omdurman Teaching Hospital. Carried out over a period of one year, from 2014 July-2015 July. All patients who presented with simple anal fistula were included. Excluded were patients with associated co-morbid conditions (anal

fissure, haemorrhoids, chronic colitis, recurrent fistula, bleeding tendencies) and patients refused consent for the procedure. A predesigned, pretested questionnaire was used. Variables includes; general demographical data, clinical presentation, type of surgery (lay open or marsupialization), duration of operation, healing time and postoperative complications. A computer program, Statistical package for social sciences (SPSS) version 20 was used. Descriptive statistics and tests of significance or differences were used when appropriate. The P value was considered significant if < 0.05. Ethical clearance was obtained.

RESULTS

A total of 80 patients who met the inclusion criteria were included in the study. Forty patients (50%) underwent open Fistulotomy (LO group), and forty (50%) underwent marsupialization (MS group).

Demographical data of patients with simple FIA

The mean age was 36.4 ± 12.0 years. The mean age in LO group was 37.3 ± 13.4 years while it was 35.5 ± 10.6 years in MS group. There was no significant difference between the two groups with respect to age P value 0.410.

Males were predominant in this study, constituting 69 (86.2%) and females 11 (13.8%) with M: F ratio of 6.3:1. There was no difference in gender distribution of the two groups in the study. LO group consist of 35 males and 5 females (M: F ratio of 7: 1), whereas MS group comprised of 34 males and 6 females (M: F ratio of 5.7: 1), P value 0.750.

Patients came from different states, but the bulk 83.7% were from Khartoum state (Omdurman, 71.3%; Khartoum, 10.0%; and Bahri, 2.5%). Only 16.3% presented from other parts of the country. Occupations of the patients were varied. The hand workers form the majority (43.8%) of the patients and they included drivers, farmers, laborer, carpenter, and shoes maker.

Symptoms of patient with simple FIA among the study groups

The common symptoms were discharge and pain in 97.5%, and 80.0% respectively. The least symptoms were swelling, itching and bleeding which were seen in 22.5%, 13.8%, and 8.8% respectively.

Duration of symptoms in patients with simple FIA in LO vs. MS group

The duration of symptom was 4.5 ± 1.0 weeks, the majority of our patient (71.3%), had duration of 4 – 5 weeks. The mean duration of symptoms in LO group and MS group, were 4.6 ± 1.1 and 4.5 ± 0.9 weeks respectively, P value 0.660.

Types of simple fistula in ano

Inter-sphincteric FIA was the most common type in 55 (68.8%) patients. Low trans-sphincteric and subcutaneous FIA were documented in 13 (16.3%) and 12 (15.0%) patients, respectively (Table 1). There was no significant statistical difference between the two groups with respect to the type of fistula P value 0.360.

Table-1: Types of simple fistula in ano in the study (n=80)

Type	LO	MS	Total
Subcutaneous	08(10.0%)	04(05.0%)	12(15.0%)
Intersphincteric	27 33.8%)	28(35.0%)	55(68.8%)
Transsphincteric	05(06.3%)	08(10.0%)	13(16.3%)
Total	40(50.0%)	40(50.0%)	80(100%)

P value 0.360

Type of operation

Spinal anaesthesia was used in all patients. Equal number of patients forty (50%), were operated in each group LO and MS.

Duration of operation among the two groups

The mean duration of operation was 8.9 ± 1.9 minutes. The majority of LO operation's duration was 6 – 8 minutes representing 43.8% of the patients. The majority of MS operation's duration was 9 – 11 minutes representing 42.5% (Table 2).The mean operating time in LO group was 7.5 ± 1.2 minutes, whereas in MS group it was 10.3 ± 1.2 minutes. The difference between the two groups with respect to the mean operating time was statistically significant, P value < 0.001.

Table-2: Operative time taken for the procedure of LO vs. MS

Duration(mins)	Type of surgery		Total
	LO	*MS*	
6 – 8	35(43.8%)	01(01.3%)	36(45.0%)
9 – 11	04(05.0%)	34(42.5%)	38(47.5%)
12 – 14	01(01.3%)	05(06.3%)	06(07.5%)
Total	**40(50%)**	**40(50%)**	**80(100%)**

P value <0.570

Hospital stay

All patients of both groups were discharged one day after the surgical operation.

Post-operative complications in LO and MS groups

The mean postoperative visual analogue scale score (VAS) for pain in the first 24 hour in LO group and MS group were 7.0 ± 0.6 and 6.8 ± 0.5 respectively. While in 48 hour, it was 4.9 ± 0.5 and 4.7 ± 0.6 in LO and MS groups respectively. There was no significant statistical difference between the two groups (P value was 0.330 in the first 24 hour and 0.120 in 48 hour).

Bleeding was recorded in 5 patients giving an overall bleeding rate of 6.3%, of which 3.8% in LO group and 2.5% in MS group. The difference between the two groups in terms of post-operative bleeding was not significant statistically, P value 0.640.

Surgical site infection was recorded in 3 (3.8%) patients, 2 (2.5%) of them in LO group and 1 (1.3%) in MS group. This difference is not statistically significant, P value 0.570 (Table 3).

None of the patient in either group had recurrence or was found to have incontinence.

Table-3: Post-operative complications among the two groups

Complication	Type of surgery		Total	P value
	LO	*MS*		
Bleeding	03(03.8%)	02(02.5%)	05(06.3%)	0.640
Infection	02(02.5%)	01(01.3%)	03(03.8%)	0.570

Postoperative healing time in patients with simple FIA operated with LO vs. MS

The mean healing time was longer in LO group than in MS group (8.4 ± 1.3 versus 5.9 ± 1.1weeks). This difference in healing time reached statistical significance with a P value < 0.001.

Forty five percent of the patients, 05.0% in LO and 40.0% in MS, achieved healing of their FIA in 4 – 6 weeks (Table 4).

Table-4: Postoperative healing time in patients with simple FIA operated with LO vs. MS

Duration (weeks)	LO	MS	Total
4 – 6	04(05.0%)	32(40.0%)	36(45.0%)
7 – 9	28(35.0%)	07(08.8%)	35(43.8%)
10 – 12	08(10.0%)	01(01.3%)	35(43.8%)
Total	40(50%)	40(50%)	80(100 %)

P value< 0.00

DISCUSSION

The fistula-in-ano has been a common surgical ailment reported since the time of Hippocrates. Various surgical treatments, including a fistulotomy, a fistulectomy, a seton and more complex sphincter-preserving procedures such as fibrin glue injection and fistula plug insertion, are currently been used depending on the type of fistula and the patient's continence [3,5].

Traditionally, fistulectomy and fistulotomy had commonly been used in the treatment of low fistula-in-ano [6]. Recent studies have postulated that marsupialization after fistulotomy leaves less raw unepithelialised tissue in the fistulotomy wound, thereby resulting in less postoperative blood loss and faster wound healing [2,3,5,7]. Marsupialization is not regarded as an essential procedure and many surgeons are reluctant to perform it even though it can facilitate faster wound healing [5]. Therefore, whether to implement marsupialization over a fistulotomy depends on the surgeon's preference. The patient satisfaction after surgical treatment for anal fistula depends on factors like period of hospitalization, postoperative pain and bleeding, return to routine activity, wound care, wound healing time, interference with the anal continence and the recurrence of the disease [2,7].

Several randomized clinical trials have compared the efficacy of lay open fistulotomy versus fistulotomy with marsupialization in the treatment of low fistula-in-ano [2,3,7].

Operative time taken for the procedure of LO vs. MS

This study has demonstrated significant difference in the operating times for the LO and MS groups (P value < 0.001). Fistulotomy with marsupialization took longer intraoperative time than fistulotomy alone and this was accepted as marsupialization of the wound added slightly to the operative time (several minutes were needed to suture the edges of the laid-open fistula tract to the skin incision). This is in keeping with a study done by Ho, et al of 103 patients with anal fistulae who underwent a fistulotomy or a fistulotomy with marsupialization, who concluded that a longer operating time was required for marsupialization (8.0 ± 0.5 minutes vs.. 10.0 ± 0.7 minutes, P value < 0.050).This in contrast with other clinical trials which compared fistulectomy versus fistulotomy with marsupialization [2,3].

Postoperative complications

Postoperative pain

In keeping with other randomized clinical trials, the present study showed no significant difference between the two groups in the mean postoperative VAS score at various follow-up times [2,3]. This observation is at variant with Bhatti, et al. who reported more postoperative pain in LO group than in MS group [7].

Postoperative bleeding

This study showed no statistically significant difference in postoperative bleeding between the two groups. The results of this study are in contrast with that of Jain, et al. which compared fistulectomy and fistulotomy with marsupialization in the treatment of simple anal fistulae and also in contrast with that reported by Pescatori, *et al.* [2,3].

Postoperative infection

The present study showed no statistically significant differences in the rates of postoperative wound infection between the two groups which is consistent with other trials [2,8].

Postoperative incontinence

Most randomized clinical trials have demonstrated the development of anal incontinence after fistulectomy and fistulotomy with marsupialization in the treatment of low fistula-in-ano [4,6,8]. None of the patients in either group was found to have anal incontinence during the follow-up period. This observation is logical as all the internal openings were located in the lower anal canal in our patients.

Postoperative recurrence

In a randomized clinical trial by Kronborg, the recurrence rates following fistulectomy and fistulotomy were reported to be 9.52% and 12.5%, respectively, during a follow-up period of 12 months [6]. Leong, *et al*., reported recurrence rates of 2% after marsupialization and 4% after lay open techniques [9]. Garcia, *et al*., reported recurrence in 4% of intersphincteric fistulas, 7% of trans-sphincteric fistulas and 7% after lay open and Marsupialization [10]. They stated that recurrence after surgical treatment of fistula-in-ano increased with the complexity of fistula [10]. In our series, no recurrence was reported in any patient in either group for a follow-up period of 12 weeks. This may be due to the relatively brief follow-up period together with the exclusion of complex fistulas with multiple openings, hoarse-shoe tracts, and suprasphincteric and extrasphincteric fistulas as well as recurrent fistulas. However, the duration of observation in the present study was not sufficient to draw any definite correlation with respect to recurrence.

Postoperative healing time in patients with simple FIA operated with LO vs. MS

In the present study, statistically significant difference in healing times was noted between the two groups, the mean healing time was longer in LO group (5.9 ± 1.1weeks) than in MS group (5.9 ± 1.1weeks). The difference in healing rates was found to be statistically significant (P value<0.001), which similar to findings from other randomized clinical trials [2,3].

Limitation of the study

Due to small sample size and short period of follow up, the findings of the present study, although informative and statistically significant, need to be substantiated further with randomized studies involving larger sample sizes and longer period of follow-up.

CONCLUSION

Anal fistula marsupialization had significant faster post-operative healing time in comparison with lay open Fistulotomy. Apart from a longer operative time required for marsupialization, there was no significant difference in post-operative complications including pain, bleeding, and infection. Neither incontinence nor recurrence was encountered in either group.

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