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## Fistulotomy versus fistulectomy for simple fistula in ano: a retrospective cohort study

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### Abstract

**Objective:** To compare fistulotomy with fistulectomy for wound healing, duration of surgery, post-operative pain, incontinence and recurrence in patients with fistula in ano.

**Methods:** This retrospective cohort study was conducted at the Aga Khan University Hospital, Karachi, and comprised data of adults who had undergone fistulotomy/fistulectomy for simple fistula in ano from January 2007 to August 2012. Data collection was done in August 2013 using questionnaire and telephonic interviews. Outcome variables like duration of wound healing, recurrence, incontinence, duration of surgery and post-operative pain were compared in both the groups. SPSS 19 was used for data analysis.

**Results:** Of the 192 cases, there were 96(50%) in each group. The mean age was 40.51 years (range: 21-72 years) in the fistulotomy group and 41.14 years (range: 21-66 years) in the fistulectomy group ( $p=0.66$ ). Both groups were comparable for baseline demographic variables. The median duration of wound healing was shorter in the fistulotomy group 15 days (Interquartile range: 7-20 days) compared to the fistulectomy group 30 days (Interquartile range: 15-42 days) ( $p<0.001$ ). The incidence of recurrence was comparable in fistulotomy vs. fistulectomy (3[3.12%] vs. 4[4.16%];  $p=0.70$ ). The incidence of incontinence was higher in fistulotomy compared to fistulectomy (5[5.3%] vs. 12[12.5%];  $p=0.07$ ). The severity of incontinence was also compared but the difference was insignificant ( $p=0.06$ ). The median duration of surgery was significantly shorter in fistulotomy group 17 minutes (Interquartile range: 12-25 minutes) compared to fistulectomy group 25 minutes Interquartile range: 20-35 minutes ( $p<0.001$ ). The median post-operative pain in the surgical day care unit and at the first follow-up in clinic was zero for both groups.

**Conclusion:** Fistulotomy yielded better results than fistulectomy since it significantly decreased the duration of wound healing and duration of surgery without increasing the incidence of recurrence, incontinence and post-operative pain.

**Keywords:** Fistula in ano, Fistulotomy, Fistulectomy, Incontinence, Recurrence. (JPMA 67: 339; 2017)

### Introduction

Fistula in ano is a common surgical ailment and its most common explanation is Park's cryptoglandular theory.<sup>1</sup> There are different classifications for fistula in ano but Park's classification is widely accepted.<sup>2</sup> Surgery is the mainstay of treatment and its aim is to cure fistula while preserving the sphincter mechanism and prevent recurrence.<sup>3</sup> Success of surgery is usually determined by identification of primary openings (both internal and external) and dividing the least amount of muscle possible.<sup>4</sup> Fistulotomy and fistulectomy are the two conventional surgical options for simple fistula in ano.<sup>5</sup> Fistulotomy lays the fistulous tract open, thus leaving smaller wounds and leading to early healing.<sup>5-7</sup> Surgeons performing fistulotomy argue that sphincter fibres transected are less than fistulectomy and hence less incontinence. Fistulectomy involves the excision of the entire fistulous tract around the probe. Surgeons performing frequent fistulectomy argue that it removes

entire tract and hence reduces chances of recurrence, provides specimen for histopathology to rule out malignancy or chronic inflammatory conditions like Crohn's disease and tuberculosis and a careful excision of tract does involve cutting of some extra sphincter but insignificant as far as incontinence is concerned. It, however, increases wound size and prolongs healing times<sup>5-7</sup> (Figure-1).

In 2005, Kronborg et al.<sup>5</sup> reported that healing times are significantly shorter in fistulotomy than in fistulectomy (34 days vs. 41 days), whereas the recurrence rates at the follow-up of 12 months were comparable i.e. 3/24 (12.5%) vs. 2/21 (9.5%). Another randomised controlled trial (RCT) conducted by Kumar Jain et al.<sup>6</sup> in 2012 reported that fistulotomy yielded significantly lower post-operative wound healing time than fistulectomy ( $4.85\pm 1.39$  weeks vs.  $6.75\pm 1.83$  weeks); however, wound size, post-operative pain score, incontinence and lifestyle changes were not significantly different between two groups at the follow-up of 12 weeks. Moreover, to our knowledge only one regional study i.e. by Bhatti et al.,<sup>8</sup> has also substantiated the former results. Limitations observed in previous

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studies that preclude surgeons from reaching a consensus are inadequate sample size, inappropriate/unidentified tool for assessment of outcomes and subject selection. Therefore, in order to test the veracity of arguments of both school of thoughts, the current study was planned to compare the post-operative wound healing time between both the surgical procedures in patients with primary simple fistula in ano, and to compare post-operative pain scores, recurrence of fistula, incontinence and duration of surgery.

## Materials and Methods

This retrospective cohort study was conducted in August 2013 at the Aga Khan University Hospital (AKUH), Karachi, and comprised data of adult patients aged 18 years or above who had undergone fistulotomy or/and fistulectomy for simple fistula in ano from January 2007 to August 2012. Those with recurrent fistula, set on placement, concurrent other surgery and lost to follow-up (contacts not available or expired) were excluded.

At our institute, simple fistula in ano is managed either by fistulotomy or fistulectomy as per surgeons' preference as a day care procedure. Surgery is performed either by a senior resident or consultant. Simple fistula in ano is defined as the one which has single external and internal opening and a palpable tract.<sup>6</sup> Fistula tract is delineated by fistula probe that is inserted via external opening to find out the internal opening. In fistulotomy group, the tract is laid open by diathermy over the probe, whereas in fistulectomy group the entire tract is excised with diathermy around the probe. Wounds are left open to heal by secondary intention in both groups.

The sample size of each group was calculated using the World Health Organisation's (WHO) software, keeping power of 80% and significance of 5% using the statistics of Kumar's RCT.<sup>6</sup> The institutional review committee approved the study. Data was collected on a questionnaire, filled by reviewing medical records and interviewing patients via telephone. Verbal consent was obtained from all the patients. Duration of wound healing was assessed by inquiring the patients via telephonic interviews about duration of dressings (indirect marker for duration of wound healing). Recurrence was assessed from medical records till last follow-up and by interviewing the patients regarding re-appearance of symptoms of fistula in ano at any time after surgery. Incontinence was ascertained by interviewing the patients and severity of incontinence was assessed using Wexner's score<sup>9</sup> on a scale of 0-20 (0 being normal continence and 20 being maximum incontinence with severe effect on daily life). Duration of surgery was

assessed from perioperative records and was taken from incision time to dressing time. Severity of pain according to visual analogue scale, at the time of discharge and first follow-up was ascertained by reviewing the medical records.

Data was analysed using SPSS 19. Continuous variables with normal distribution were presented as means with standard deviation (SD) and Student's t-test was applied. Discrete variables and continuous variables with skewed distribution were presented as medians with inter-quartile range and Mann-Whitney U-test was applied. Categorical variables were analysed as proportions and chi-square test was applied.  $P > 0.05$  was considered significant.

## Results

Of the 475 files reviewed, 192(40.4%) were selected. Of them, there were 96(50%) cases in each group. The mean age was  $40.51 \pm 10.9$  years (range: 21-72 years) in the fistulotomy group and  $41.14 \pm 11.3$  years (range: 21-66 years) in the fistulectomy group ( $p=0.66$ ). There were 81(84.4%) men and 15(15.6%) women in the former group compared to 92(95.85%) men and 4(4.20%) women in the latter group ( $p=0.007$ ). Moreover, 46(47.9%) patients in the fistulotomy group and 35(36.5%) patients in the fistulectomy group had no co-morbidity, whereas 23(24.0%) and 33(34.4%) had diabetes, 11(11.5%) and 15(15.6%) had hypertension, while 16(16.7%) and 13(13.5%) had multiple co-morbidities, respectively ( $p=0.318$ ). The mean BMI was  $28.44 \pm 4.90$  and  $28.61 \pm 5.93$  in the two groups ( $p=0.97$ ) (Table-1).

The median duration of wound healing was shorter in the fistulotomy group 15 days (Interquartile range: 7-20 days) compared to the fistulectomy group 30 days (Interquartile

**Table-1:** Baseline demographic variables.

Variable	Fistulotomy (N=96)	Fistulectomy (N=96)	p-value
Age mean (SD) in years	$40.51 \pm 10.9$	$41.14 \pm 11.3$	0.66*
Sex			
Male	81(84.4%)	92(95.85)	0.007**
Female	15(15.6%)	04(4.20%)	
Co-morbidis			
None	46(47.9%)	35(36.5%)	0.318*
D.M	23(24.0%)	33(34.4%)	
HTN	11(11.5%)	15(15.6%)	
Multiple	16(16.7%)	13(13.5%)	
Body Mass Index (BMI) as mean (SD)	$28.44 \pm 4.90$	$28.61 \pm 5.93$	0.97*

\*Students t-test, \*\*Chi-Square test

DM: Diabetes mellitus

HTN: Hypertension

SD: Standard Deviation.

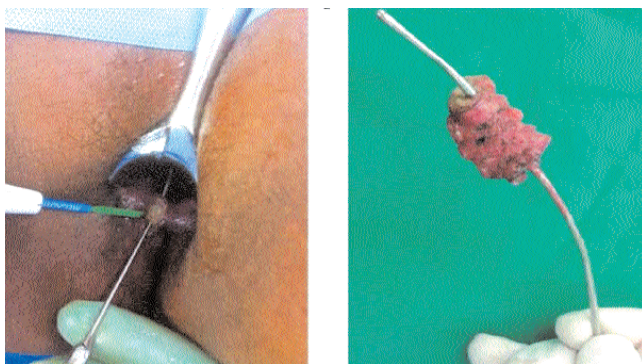
**Table-2:** Comparison of fistulotomy vs. fistulectomy groups regarding outcomes.

Variable	Fistulotomy (N=96)	Fistulectomy (N=96)	p-value
Median duration of wound healing† (days)	15(7-20)	30(15-42)	<0.001*
Recurrence	3.12%	4.16%	0.70**
Incontinence	5.3%	12.5%	0.07**
Median duration of surgery† (minutes)	17(12-25)	25(20-35)	<0.007*
Pain score at SDC1	0(0)	0(0)	0.95*
Pain score at first follow up†	0(0-2)	0(0)	0.09*

†Median (Interquartile ranges)

\*Mann-Whitney U test, \*\*Chi-square test

SDC: Surgical day care.

**Figure-1:** (a) shows fistulotomy where the tract is probed and being transected (b) shows the entire fistula tract is excised over probe in a fistulectomy procedure.

range [IQR]: 15-42 days) ( $p < 0.001$ ). The incidence of recurrence was comparable in fistulotomy vs. fistulectomy (3[3.12%] vs. 4[4.16%];  $p = 0.70$ ). The incidence of incontinence was higher in fistulotomy compared to fistulectomy (5[5.3%] vs. 12[12.5%];  $p = 0.07$ ). The severity of incontinence was also compared but the difference was insignificant ( $p = 0.06$ ). The median duration of surgery was significantly shorter in fistulotomy group 17 minutes (Interquartile range: 12-25 minutes) compared to fistulectomy group 25 minutes (Interquartile range: 20-35 minutes) ( $p < 0.001$ ). The median post-operative pain in the surgical day care unit and at the first follow-up in clinic was zero for both groups (Table-2).

## Discussion

This retrospective cohort study compares fistulotomy and fistulectomy for simple fistula in ano. We found that duration of wound healing and operative times were significantly shorter in fistulotomy than fistulectomy group, whereas the rest of outcome variables did not reach statistical significance. These findings are similar to those reported by Jain BK et al. and Kronborg et al.<sup>5,6</sup>

Duration of surgery was significantly shorter for the

fistulotomy group as compared to the fistulectomy group. This can be explained by more effort required to remove the whole tract in fistulectomy patients as compared to less time-consuming laying open of tract. But this is in contrast to the finding of Jain BK et al.<sup>6</sup> who failed to show any significant difference in operating time between the two groups. This is possibly because they had performed marsupialisation along with fistulotomy which was not performed in our patients and this procedure is known to take longer time as reported by Ho et al.<sup>10</sup> Though incontinence was more in the fistulectomy group vs. fistulotomy group (12.5% vs. 5.3%), it did not reach statistical significance. This may be due to limitation of sample size and power to detect this small difference between these two procedures. Kronborg et al.<sup>5</sup> found that damage to sphincter mechanism was more in the fistulectomy group than the fistulotomy group. In our study, recurrence and post-operative pain were comparable between the two groups. These findings are similar to those reported by Jain BK et al.<sup>6</sup>

Limitations of the current study included inherent drawbacks of retrospective studies. The wound healing time and incontinence suffer from recall bias as it was inquired from patients over the telephone. Similarly, the best way to determine wound healing and recurrence is clinical examination, which was not available in our case. Therefore, the duration for which patients kept a dressing/pad was taken as surrogate marker for wound healing. Operative time may be affected by the level of operator i.e. consultant or resident; however, it does not drift the results to one procedure since both are done by operators of variable levels.

Strengths of the study included adequate sample size for assessing duration of wound healing and follow-up of at least 6 months for all the patients. We included only primary and simple fistula in ano to avoid confounding effect of different fistula types. In patients who reported having incontinence, the severity of incontinence was also inquired according to Wexner's score,<sup>11</sup> which is a validated tool for its assessment.

## Conclusion

Fistulotomy yielded better results than fistulectomy since it significantly decreased the duration of wound healing and duration of surgery without increasing the incidence of recurrence, incontinence and post-operative pain. To validate these findings, a prospective randomised study of large sample preferably multicentre should be conducted in which multiple outcome variables should be evaluated simultaneously in different types of fistulae to reach a consensus.

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**Conflict of Interest:** None.

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