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Original Article

OUTCOME OF COMBINED TAILORED LATERAL INTERNAL SPHINCTEROTOMY WITH ADVANCEMENT FLAP & LATERAL INTERNAL SPHINCTEROTOMY ALONE IN TREATMENT OF CHRONIC ANAL FISSURE

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Abstract:

Background: *Anal fissure is a linear tear in the distal anal canal with spasm of internal anal sphincter. Lateral internal sphincterotomy (LIS) is the surgical treatment of choice for chronic anal fissure (CAF). Recently anal advancement flap (AAF) combined with tailored LIS gained popularity as there is rapid healing and relief of pain. In this study, we tried to evaluate the early outcome of combined tailored LIS with AAF and LIS alone in terms of patient's morbidity.*

Methods: *It was a randomized controlled trial (RCT), carried out in the Department of surgery, SSMCMH, Dhaka over a period of 8 months from February 2018 to September 2018. 30 patients of CAF had been chosen purposively and randomized into 2 groups. Control group (A) had 15 patients who underwent LIS alone and Experimental group (B) had 15 patients who underwent combined tailored LIS with AAF. Patients were followed up 3 months after operation*

Results: *Post-operative pain was more Group A 6.53 ± 0.64 compared to 4.87 ± 0.63 in Group B with a* p *value* <0.001. *Post-operative bleeding was observed in 8 (53.30%) patients in Group A whereas no patient in Group B, with a significant p value,* p <0.001. *Post-operative hospital stay was less in Group A, 1.00 ± 0.00 days and 7.47 ± 0.64 days in Group B where p value was also significant,* p <0.001. *Minor pattern of incontinence was more in Group A 4 (26.70%) in comparison with 0 (0.00%) in Group B,* p=0.032 *which was statistically significant. Duration of wound healing was more 35.7 ± 3.31 days in Group A and 7.36 ± 0.49 days in Group B with a significant p value,* p <0.001.

Conclusions: *Combined tailored LIS with AAF appears to produce the rapid healing, improvement of post-operative pain & bleeding, reducing risk of minor pattern of incontinence with few complications.*

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Keywords:
AAF = Anal Advancement Flap, CAF = Chronic Anal Fissure, LIS = Lateral Internal Sphincterotomy, RCT=Randomized Controlled Trial.

Introduction:

An anal fissure (AF) is a longitudinal split in the anoderm of the distal anal canal, which extends from the anal verge proximally towards, but not beyond the dentate line.[1] AF occurs equally in men and women, 75% of anal fissure are located in the posterior midline. If the fissure is in an atypical location or there are multiple fissures, other

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complicated diseases such as Crohn's disease, trauma, tuberculosis, syphilis, HIV/AIDS, or anal carcinoma should be investigated.[2]

Acute AF is a simple tear or linear ulcers in the anoderm, which occur just distal to dentate line, characterized by severe pain before and after defecation and passage of bright red blood, usually heals within 6 weeks with conservative managements. Chronic anal fissure (CAF) is defined by symptoms present for more than 6 to 8 weeks, can be further characterized by the presence of an anal tag or "sentinel pile" at the distal end of the fissure and a hypertrophied anal papilla at the proximal end near the dentate line.[3]

The main underlying pathology, however, appears to be a high resting anal pressure caused by increased internal anal sphincter tone. Spasm of this muscle reduces the blood flow and the oxygen tension in the skin of the anal canal. The underlying principle of treating AF is to reduce the internal anal sphincter tone. It can be achieved by medical therapy or surgical interventions. Conventional pharmacological treatment uses muscle relaxants, commonly topical drugs. These drugs include nitrates (glyceryltrinitrate), calcium channel blockers, botulinum toxin, alpha-adrenoreceptor antagonists, beta-adrenoreceptor agonists, and muscarinic agonists.[4]

CAF not responding to conservative management, lateral internal sphincterotomy (LIS) may be the better treatment and perhaps the preferable surgical technique.[5] The latest American guidelines are supported by level 1a evidence for LIS due to its high efficiency compared with other therapies, particularly medical treatment.[6] However, the debate on postoperative fecal incontinence remains.

The anal advancement flap (AAF) is an effective method for healing of anal fissure as a primary line of management, it is considered as a good choice for those cases having recurrent AF. In a study reported that outcome of AAF is significantly better when compared with LIS in treatment of CAF in term of less infection and anal continence.[7]

The AAF technique is performed by making a V-shaped incision from the edges of the fissure extending about 4 cm from the anal verge and away from the midline. The V-shaped flap formed of skin and subcutaneous fat was mobilized sufficiently to allow advancement into the anal canal to cover the fissure defect. The base of flap was sutured to the lower anal mucosa.[7] An anal advancement flap is effective in healing an anal fissure as primary line of treatment, also is a good choice for those who have recurrent anal fissures post LIS and is followed by minor complications. Various flaps have been described, such as rotational or V-Y flap.[8] This study is designed to evaluate the results of AAF combined with tailored LIS in comparison with LIS alone in treatment of CAF at our setting.

Methodology

This randomized controlled trial (RCT) was conducted in the department of surgery, Sir Salimullah Medical College Mitford Hospital (SSMCMH), Dhaka from February 2018 to September, 2018, over 8 months. Our study was approved by the institutional review board (IRB), SSMCMH, Dhaka.

30 diagnosed patients of CAF, above legal age of giving their own consent (18 years) were included in the study, purposively and scheduled for surgical management. We excluded the patients with diabetes mellitus, chronic renal failure, pre-existing cardiac problems.

Two group of patients, 15 in each group were allocated by card sampling. The group-A patients underwent LIS and group-B patients underwent combined tailored LIS with AAF. Healing of the wound, hematoma, post-operative bleeding, incontinence, recurrence, severity of pain of both groups was recorded.

All the events of the procedure were recorded by an independent observer. In all cases, patient's data such as age, sex, clinical presentation, postoperative outcome etc. were noted. Patients were followed up 3 months after operation. All the collected data, questionnaire were checked very carefully to minimize errors in collecting data.

Results

In our Study, the mean age of the patients in Group A was 35.13±3.83 years and in Group B was 35.07±4.51years. We found 11 (73.30%) patients of Group A & 13 (86.70%) patients of Group B were male. Four (26.70%) patients of Group A & Two (13.30%) patients of Group B were female. Mean post-operative pain score of the patients as per NPRS which was 6.53 ± 0.64 in Group A & 4.87 ± 0.63 in Group B with a significant p value, $p < 0.05$. Seven (46.70%) patients of Group A & Fifteen (100.00%) patients of Group B didn't suffer from any post-operative bleeding with a

significant p value, $p < 0.05$. One (6.70%) patient of each group had non healed ulcer. 11 (73.30%) patients of Group A & Fifteen (100.00%) in Group B had not experienced any post-operative minor pattern incontinence with a p value 0.032. Mean duration of hospital stay was 1.0 ± 0.0 days in Group A & 7.47 ± 0.64 days in Group B with a p value <0.05. Duration of wound healing was 35.7 ± 3.31 days in Group A & 7.36 ± 0.49 days in Group B, p value was < 0.05.

Table-I

Distribution of the patients according to age and sex

Particulars		Group A	Group B	Total	P value
Age (years)	20-30	2 (13.30)	3 (20.00)	5 (33.30)	
	31-40	11 (73.30)	11 (73.30)	22 (146.60)	
	41-50	2 (13.30)	1 (6.70)	3 (10.0)	0.966[c]
	Total	15 (100.00)	15 (100.00)	30 (100)	
	Mean±SD	35.13 ± 3.83	35.07 ± 4.51	35.28 ± 8.12	
	Male	11 (73.30)	13 (86.70)	24 (80.00)	0.361[a]
Sex	Female	4 (26.70)	2 (13.30)	6 (20.00)	
	Total	15 (100)	15 (100)	30 (100)	

[c]Unpaired t test was done to measure the level of significant.
[a]Chi-square test was done to measure the level of significant.
Figure within parentheses indicates in percentage.

Table-II

Mean ± SD of the patients according to post-operative pain score (NPRS) by groups

Post-operative pain score as per NPRS	Group A	Group B	P value
Mean ± SD	6.53 ± 0.64	4.87 ± 0.63	<0.001[c]

[c]Unpaired t test was done to measure the level of significant.
Data was expressed as Mean ± SD.

Table-III

Distribution of the study subject according to post-operative bleeding by groups

Post-operative bleeding	Group A	Group B	P value
Present	8 (53.30)	0 (0.00)	0.001[a]
Absent	7 (46.70)	15 (100.00)	
Total	15(100.00)	15(100.00)	

[a]Chi-square test was done to measure the level of significant.
Figure within parentheses indicates in percentage.

Table-IV

Distribution of healing status between two groups

Healing status	Group A	Group B	P value
Non healing	1 (6.70)	1 (6.70)	1.000[a]
Healing	14 (93.30)	14 (93.30)	
Total	15 (100.00)	15 (100.00)	

[a]Chi-square test was done to measure the level of significant.
Figure within parentheses indicates in percentage.

Table-V

Distribution of the patients according to post-operative minor pattern incontinence to liquid & flatus

Incontinence	Group A	Group B	P value
Present	4 (26.70)	0 (0.00)	0.032[a]
Absent	11 (73.30)	15 (100.00)	
Total	15 (100.00)	15(100.00)	

[a]Chi-square test was done to measure the level of significant.
Figure within parentheses indicates in percentage.

Table-VI

Mean ± SD of the patients according to duration of hospital stay by groups

Duration of hospital stay in days	Group A	Group B	P value
Mean ± SD	1.0 ± 0.0	7.47 ± 0.64	<0.001[c]

[c]Unpaired t test was done to measure the level of significant.
Data was expressed as Mean ± SD.

Table-VII

Mean ± SD of the patients according to duration of wound healing by groups & recurrence with in short time (3 months) follow up

Duration of wound healing in days	Group A	Group B	P value
Mean ± SD	35.7 ± 3.31	7.36 ± 0.49	<0.001[c]
Recurrence	Group A	Group B	P value
	0 (0.00)	0 (0.00)	-

[c]Unpaired t test was done to measure the level of significant.
Data was expressed as Mean ± SD.

Discussion

A chronic anal fissure (CAF) is one of the most frequent, benign, proctological disorders in the world and may sometimes affect the patient's quality of life. Recent studies have suggested that decreased blood flow and resulting ischemia of the mucosa are important in the pathogenesis of CAF. The principle aim of treatment of CAF is to reduce the tone of the internal anal sphincter.[4]

Our study design raises a number of important methodological issues, including patient selection, sample size and the prospective evaluation of safety and effectiveness of combined tailored LIS with AAF in CAF patients, all of which may exert a powerful influence on the results. These issues may be particularly relevant for comparative studies that use complication rates as an outcome measure, in which sources of bias may be sufficiently large to either obscure a real difference in rates or create an apparent one. Using our results and previous studies as examples, we shall address these issues in turn.

In this study, patients underwent operation either by combined tailored LIS with AAF or LIS alone mostly belongs to middle age group. This was comparable with the mean age reported in other studies, which range from 30 to 45 years.[4]

Male outnumbered female, male to female ratio was 4:1 in this study. It was consistent with the results observed in other study, male to female ratio of 3.1:1.[9] While other found a less male to female ratio of 1.47:1.[9] In our country female patients were less in number as they are reluctant to seek health care for their problems especially in private parts due to social culture. In our study, we found that most of the patients

of CAF were from lower class & middle-class family.

The mean pain score after operation in Group A was more, 6.53 ± 0.64 than that of Group B, 4.87 ± 0.63 as per NPRS with a statistically significant *p* value, $p<0.05$. Pain was more in Group A. Ulcer remain uncovered after operation in Group A but in Group B all fibrous tissue was excised and ulcer was covered by flap, internal anal sphincter hypertonicity was released in both the techniques. In other study they also found that patients treated with tailored LIS combined with V-Y advancement anal flap didn't suffer from severe pain so less doses for analgesia was required.[8]

We found that post-operative bleeding occurred more in Group A, 8 (53.30%) patients whereas none of the patient of Group B had post-operative bleeding. *P* value was <0.05 which was statistically significant. Post-operative bleeding was more in Group A as after LIS, blood supply in perianal area increased due to relaxation of spasm of internal anal sphincter & the ulcer remained uncovered with an incised wound over the intersphincteric groove.

In our study, difference regarding healing status in both the study groups was found non-significant & result was almost similar. 14 (93.30%) patients of each group achieved complete healing and 1 (6.70%) patient failed to heal the wound within the expected time. Finding was similar to other studies with a healing rate of 100% of all cases in both groups after 6 weeks follow up.[10] There is no difference in unhealed fissure between the two techniques.[11]

Post-operative minor pattern of incontinence to liquid & flatus was more in Group A. 4 (26.70%) patients of Group A complained of incontinence in contrary to 0 (0.00%) patient of Group B with a statistically significant *p* value, $p=0.032$. Findings consistent with result of other study. In a meta-analysis demonstrated that AAF was associated with a lower rate of anal incontinence compared to LIS.[11]

On comparison of hospital stay between two groups revealed that, mean duration of hospital stay was shorted in group A patients 1.0 ± 0.0 days but in case of group B mean duration of hospital stay was higher 7.47 ± 0.64 days. So, operation of CAFs by LIS alone (Group A) is better than combined tailored LIS with AAF (Group B) in the means of post-operative hospital stay. Most of the patients after combined tailored LIS with AAF needed monitoring & care of the wound up to complete healing that was the cause of longer hospital stay.

Mean duration of healing was shorter in group B patients 7.36 ± 0.49 days than in Group A 35.7 ± 3.31 days. In combined tailored LIS with AAF (Group B) wound was healed by primary intention and LIS alone (Group A) ulcer was left there aimed at healing by secondary intention.

In a meta-analysis demonstrates that AAF was associated with a lower rate of anal incontinence compared to LIS, but that there is no difference in unhealed fissure or wound complication rates between the two techniques.[11]

LIS is often claimed to be the gold standard therapy for chronic anal fissures.[12] The latest American guidelines are supported by level 1a evidence for LIS due to its high efficiency compared with other therapies, particularly medical treatment.[6] However, the debate on postoperative fecal incontinence remains. A recent meta-analysis of 22 randomized controlled trials (RCTs) analyzed long term disturbances in continence after LIS and found an overall incontinence rate as high as 14%.[13]

We found some differences between these two methods in our study, some of them were statistically significant but regarding clinical perspective all of them are not significant.

Conclusion:

Combined tailored lateral internal anal sphincterotomy (LIS) with anal advancement flap (AAF) appears to produce the rapid healing, improvement of post-operative pain & bleeding, reducing risk of minor pattern of incontinence with few complications. Present study shows that combined tailored LIS with AAF is associated with similar wound complications as well as a similar rate of unhealed fissures compared to LIS alone.

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Conflict of Interest

None to disclose

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