ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

COMPARATIVE ANALYSIS OF LATERAL INTERNAL SPHINCTEROTOMY VERSUS LATERAL INTERNAL SPHINCTEROTOMY WITH VY ADVANCEMENT FLAP FOR CHRONIC ANAL FISSURE MANAGEMENT

S Soundararajan(1), Divya G(2) ,Pallamala lasya(3)

(*1)Head of the Department , Department of General Surgery , Sree Mookambika Institute of Medical Sciences , Kulasekharam*

(2,3)Junior Resident , , Department of General Surgery , Sree Mookambika Institute of Medical Sciences , Kulasekharam Email id:- divya.g1704@gmail.com

ABSTRACT:

Background: Chronic anal fissure is a debilitating condition often associated with chronic constipation and rectal bleeding. Surgical intervention, particularly lateral internal sphincterotomy, is commonly employed when conservative measures fail. However, concerns over postoperative complications, such as fecal incontinence, have led to the exploration of alternative techniques, such as lateral internal sphincterotomy with V-Y advancement flap. This study aimed to compare the efficacy of two surgical approaches: lateral internal sphincterotomy (LIS) versus lateral internal sphincterotomy with V-Y advancement flap (LIS-VY) in the treatment of chronic anal fissure.

Materials and methods: This prospective study involved 50 patients with chronic anal fissure who underwent either lateral internal sphincterotomy (Group A) or lateral internal sphincterotomy with V-Y advancement flap (Group B) at a tertiary care hospital. Detailed preoperative evaluation, operative procedures, and postoperative care were standardized. Patients were followed up at regular intervals to assess outcomes.

Results: The demographic distribution of patients included a majority of females (60%) and the age group of 21-30 years being the most prevalent (30%). In terms of occupations, the most common categories were housewives (26%) and students (28%). Comparative analysis revealed that both surgical techniques effectively promoted healing, with similar rates of complete epithelization. However, LIS-VY demonstrated advantages in terms of reduced postoperative pain, shorter hospital stay, and lower rates of recurrence compared to LIS alone. Complications such as urinary retention and flap necrosis were minimal in both groups.

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

Conclusion: Lateral internal sphincterotomy with V-Y advancement flap presents a promising alternative to traditional lateral internal sphincterotomy for chronic anal fissure management. This technique offers comparable efficacy in promoting healing while minimizing postoperative pain and recurrence rates. Further studies with larger sample sizes are warranted to validate these findings.

KEYWORDS: *Chronic anal fissure, lateral internal sphincterotomy, V-Y advancement flap, surgical intervention, healing, postoperative complications.*

INTRODUCTION:

Anal fissure is a common yet distressing condition that affects individuals irrespective of age and gender, often presenting with symptoms such as chronic constipation and rectal bleeding[1]. While the exact etiology of anal fissures remains incompletely understood, factors such as hyper tonicity and spasm of the internal anal sphincter leading to increased anal pressure and ischemia in the anal region are believed to play a significant role[2]. This condition significantly impacts the quality of life of affected individuals, causing discomfort and pain, and necessitating medical intervention for resolution.

Traditionally, pharmacological sphincter relaxants have been explored in the management of chronic anal fissures. However, due to the risk of recurrence, surgical interventions have emerged as the gold standard of treatment. Among these surgical techniques, lateral internal sphincterotomy has been widely employed, accounting for nearly 90% of cases[3]. Despite its efficacy, this procedure is associated with potential complications such as fecal soiling and incontinence to flatus, which can significantly impact patients' postoperative experience and quality of life[4].

In recent years, there has been growing interest in the utilization of anal advancement flaps as a surgical approach to address chronic anal fissures. The rationale behind this technique lies in the hypothesis that chronic anal fissures, particularly those unresponsive to conservative management, may be characterized by scar tissue formation[5]. Anal advancement flaps are designed to cover these defects, facilitating wound healing and complete epithelialization. The V-Y advancement flap, in particular, has garnered attention for its potential to improve outcomes in terms of pain relief, recurrence rates, and overall patient satisfaction[6].

Several studies have provided insights into the efficacy and safety profile of lateral internal sphincterotomy in the management of chronic anal fissures. For instance, a review conducted

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

by Nelson et al[3]. demonstrated that lateral internal sphincterotomy resulted in significant improvements in symptoms and healing rates, albeit with a risk of postoperative incontinence in a subset of patients. Similarly, a systematic review Garg et al[7]. reported favorable outcomes with lateral internal sphincterotomy, albeit with a notable incidence of postoperative complications.

In contrast, limited data are available regarding the use of lateral internal sphincterotomy with V-Y advancement flap for chronic anal fissures. However, preliminary studies suggest promising results. For example, a systematic review and meta- analysis by Sahebally et al[8]. demonstrated that the addition of V-Y advancement flap to lateral internal sphincterotomy resulted in faster healing times and reduced rates of recurrence compared to sphincterotomy alone. Moreover, patients undergoing combined surgery reported higher satisfaction levels and improved quality of life outcomes.

By conducting a comparative analysis between these two surgical approaches, this study aims to contribute to the existing body of literature on the management of chronic anal fissures. Furthermore, by assessing the potential benefits of V-Y advancement flap, this research endeavors to optimize treatment strategies and improve clinical outcomes for patients suffering from this debilitating condition.

Thus chronic anal fissure represents a significant healthcare burden, necessitating effective treatment modalities to alleviate symptoms and improve patient outcomes. Surgical interventions such as lateral internal sphincterotomy have demonstrated efficacy in this regard, albeit with associated risks. The addition of V-Y advancement flap holds promise as a means to enhance outcomes and patient satisfaction. Through rigorous evaluation and comparison, this study seeks to inform clinical practice and optimize management strategies for chronic anal fissures.

AIMS AND OBJECTIVES:

1.To compare the efficacy of lateral internal sphincterotomy against lateral internal sphincterotomy along with V-Y advancement flap in treatment of chronic anal fissures.

2.To assess the added advantages of V-Y advancement flap in treatment of chronic anal fissure in terms of wound healing, time of relief of pain, persistent symptoms and patients' satisfaction.

MATERIALS AND METHODS:

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

Study Design:

This study employed a prospective comparative design to analyze the efficacy of lateral internal sphincterotomy (LIS) versus lateral internal sphincterotomy with VY advancement flap (LIS-VY) in the management of chronic anal fissures.

Study Setting:

The study was conducted in the Department of General Surgery at a tertiary health center, over a period of 12 months from August 2022 to July 2023.

Sample Size:

A total of 50 patients, aged between 15 to 60 years, of both sexes, with chronic anal fissures unresponsive to conservative management, were included in the study.

Inclusion Criteria:

Patients meeting the following criteria were included:

1. Age between 15 to 60 years.

2. Diagnosis of chronic anal fissure.

3. Failure to respond to conservative management.

4. Ability to provide written informed consent.

Exclusion Criteria:

Patients meeting any of the following criteria were excluded:

1. Refusal to provide consent.

2. Pregnancy.

3. Acute fissure.

4. Presence of a large sentinel tag.

5. Age over 60 years.

6. Signs and symptoms of coagulopathy.

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

7. Inability to provide consent.

8. History of fecal incontinence or anal stenosis.

Preoperative Evaluation:

Patients with chronic anal fissures were admitted to the surgical unit and underwent thorough evaluation, including:

1. Basic investigations (Hemoglobin%, random blood sugar, blood urea, serum creatinine).

2. Electrocardiogram (ECG).

3. Plain radiograph of the chest (PA view).

4. Examination of the anal region.

5. Proctoscopic examination to visualize the fissure and associated hemorrhoids.

6. Digital rectal examination.

Preoperative Preparation:

Patients scheduled for surgery underwent preoperative bowel preparations with enema. They were placed on a liquid diet 24 hours prior to surgery and were instructed to fast for at least 6 hours before the procedure. Soap and water enema were administered twice on the previous night and the morning of surgery.

Anesthesia:

Patients received either general or regional anesthesia as determined by the anesthesiologist.

Operative Procedures:

Patients underwent either lateral internal sphincterotomy (Group A) or lateral internal sphincterotomy with VY advancement flap (Group B) after obtaining informed consent.

A. Lateral Internal Sphincterotomy (Group A):

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

- The patient was positioned in either the prone jackknife or lithotomy position.

- Local anesthetic with weak adrenaline solution was infiltrated into the lateral aspects of the submucosal and intersphincteric planes.

- An anal speculum was inserted to expose the lateral aspect of the anal canal.

- A circumferential incision was made just inside the anal canal and below the dentate line for a length of approximately 1.0 to 1.5 cm.

- Scissors were used to develop the submucosal plane, and the lower fibers of the internal sphincter were divided for a length of approximately 2 cm.

- Hemostasis was ensured, and a T bandage was applied.

B. Lateral Internal Sphincterotomy with VY Advancement Flap (Group B):

- A triangular skin advancement flap was created to cover the ulcer bed, aiming to prevent incontinence.

- The ulcer was excised, leaving a defect in the size of the flap.

- The flap, based on a subcutaneous fat pedicle, was elevated and advanced to cover the fissure defect, and secured to the freshly cut mucosal edges.

- Hemostasis was maintained, and the flap was sutured to the lower anal canal mucosa with interrupted 3-0 Vicryl.

Postoperative Care:

- Patients were encouraged to resume oral feeding after 6 hours post-surgery.

- Non-opioid analgesics were administered to all patients, and pain was assessed using the visual analog scale (VAS).

- Dressings were removed on the first postoperative day, and patients were started on a normal diet.

- Lactulose was initiated on the 2nd postoperative day and continued for 2 weeks.

- Warm sitz baths and bulking agents were advised.

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

- Patients were discharged when fully comfortable on oral analgesics, fully mobile, and tolerating a normal diet.

Follow-up:

- Patients were followed up on an outpatient basis with scheduled visits within one week, subsequent weeks, and 6 weeks after the previous visit.

- During each visit, complications were assessed, and patients were examined to rule out anorectal sepsis, incontinence to flatus, fecal soiling, and anal stenosis.

- Primary outcome measures included complete healing (complete epithelization), while secondary outcome measures included operative time, length of hospital stay, anal continence, time to relief of pain, complications (urinary retention, infection, flap necrosis), and recurrence.

Data Analysis:

Collected data were tabulated, calculated, evaluated, and analyzed to compare the outcomes between the two groups. Statistical analysis was performed to determine the significance of any differences observed.

RESULTS:

Table:1 demographic characteristics of the study participants

DEMOGRAPHIC CHARACTERISTICS		**FREQUENCY (n=50)**	**PERCENTAGE (%)**
AGE (in years)	<20	3	6
	21-30	15	30
	31-40	14	28
	41-50	14	28
	>50	4	8
GENDER	MALE	20	40

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

	FEMALE	30	60
OCCUPATION	Administrative/desk job	7	4
	House wife	13	26
	Manual labourer	7	14
	Student	14	28
	Technician/technical job	1	2
	Vendor	8	16

The table reveals the demographic makeup of the 50 participants, revealing a distribution of age, gender, and occupation. The age distribution was 66% below 20, 30% between 21-30, 28% between 31-40, 28% between 41-50, and 8% over 50. The gender distribution was 40% male, 60% female. The occupation distribution was 14% administrative/desk, 26% housewife, 14% manual laborer, 28% student, 2% technician/technical, and 16% vendor. These findings provide insights into the demographic makeup of the study cohort, allowing for further analysis and interpretation of research outcomes.

Table:2 Comparison between procedure done and various other symptoms among the study population

Variables			**Procedure done**			**TOTAL**	**X^2 VALUE**	**P VALUE**
			LIS	**LIS+HY**	**LIS+VY**			
Constipation	Absent	Count	2	0	1	3	0.895	0.639
		%	9.5	0	4	6		
	Present	Count	19	4	24	47		
		%	90.5	100	96	94		
Bleeding	Absent	Count	10	4	12	26	4.014	0.134
		%	47.6	100	48	52		
	Present	Count	11	0	13	24		
		%	52.4	0	52	48		
Pain	Absent	Count	8	3	14	25	2.838	0.242
		%	38.1	75	58.3	51		
	Present	Count	13	1	10	24		
		%	61.9	25	41.7	49		

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

Associated condition	Absent	Count	19	0	23	42	22.846	0.0005**
		%	90.5	0	92	84		
	Present	Count	2	4	2	8		
		%	9.5	100	8	16		

The table compares the prevalence of various symptoms among the study population and the procedures performed (Lateral Internal Sphincterotomy - LIS, Lateral Internal Sphincterotomy with Hydrocortisone - LIS+HY, Lateral Internal Sphincterotomy with Vy Advancement Flap - LIS+VY). The table shows counts and percentages for each symptom, broken down by the procedure performed. Constipation was the most common symptom, with LIS+VY having the lowest percentage (4%) and LIS having the highest (9.5%). The percentages of patients without bleeding varied slightly between procedures, with LIS+HY and LIS+VY showing 100% absence of bleeding, while LIS had 47.6%. Pain was the most common symptom, with the percentages of patients without pain ranging from 38.1% to 75%. The presence of associated conditions was significantly higher in patients who underwent LIS or LIS+VY compared to those who underwent LIS+HY.

Table:3 Comparison between procedure done and operating time, VAS, post op hospital stay among the study population

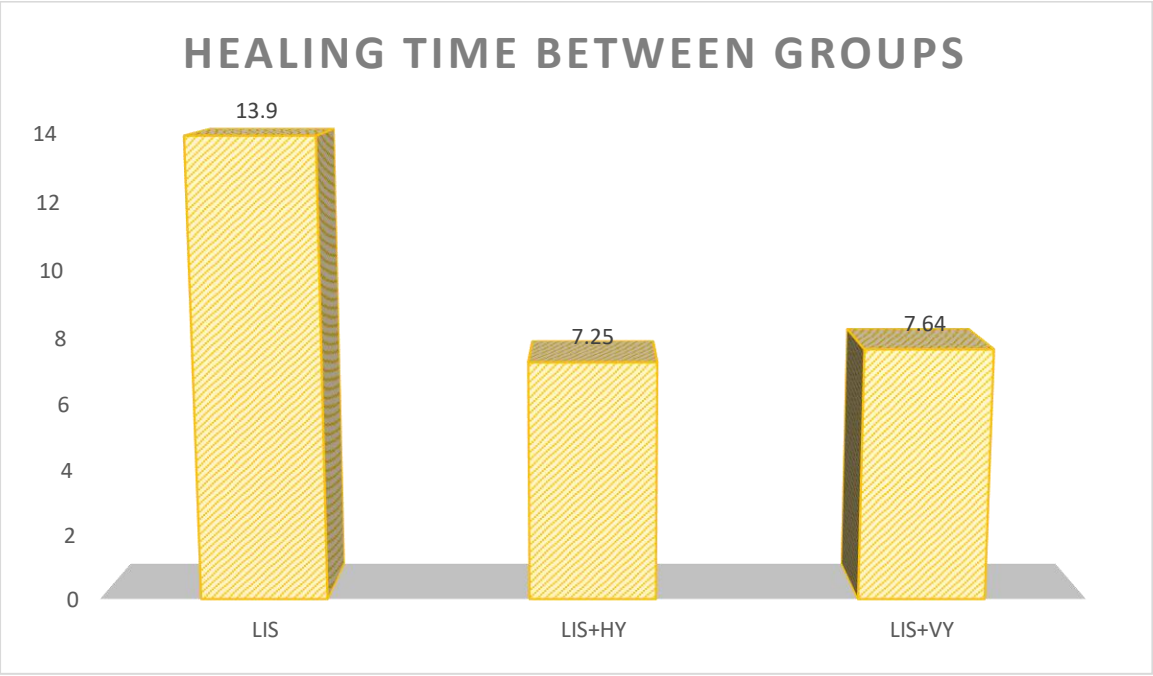
Variables	**Groups**	**N**	**Mean ± SD**	**KW X^2 VALUE**	**P VALUE**
Operating time	LIS	21	33.57 ± 6.735	34.502	0.0005**
	LIS+HY	4	47.50 ± 8.660		
	LIS+VY	25	78.20 ± 20.660		
VAS 6hrs	LIS	21	6.67 ± 0.483	18.185	0.0005**
	LIS+HY	4	7.00 ± 0.816		
	LIS+VY	25	7.48 ± 0.510		
VAS 24hrs	LIS	21	2.71 ±0.717	3.265	0.196
	LIS+HY	4	3.25 ± 0.957		
	LIS+VY	25	3.08 ± 0.759		
VAS at discharge	LIS	21	0.29 ± 0.463	3.266	0.163
	LIS+HY	4	0.75 ±0.500		

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

	LIS+VY	25	0.28 ± 0.458		
Post op hospital stay	LIS	21	2.86 ± 1.014	25.709	0.0005**
	LIS+HY	4	4.75 ±0.957		
	LIS+VY	25	4.60 ± 0.866		

The study compared the operating time, VAS scores at 6 hours post-operation, and post-operative hospital stays among different groups of lateral internal sphincterotomy (LIS), LIS with Hemorrhoidectomy (LIS+HY), and LIS with V-Y Advancement Flap (LIS+VY). The results showed a significant difference between the groups, with LIS alone having shorter operating times, lower VAS scores at 6 hours post-operation, and shorter post-operative hospital stays compared to LIS combined with hemorrhoidectomy or LIS with V-Y Advancement Flap. However, there were no significant differences in VAS scores at 24 hours post-operation or at discharge among the groups. The Kruskal-Wallis chi-squared test (KW X2 VALUE) showed a significant difference between the groups. The mean VAS score at discharge was 0.29, LIS+HY was 0.75, and LIS+VY was 0.28. The post-op hospital stay was 2.86 days, LIS+HY was 4.75 days, and LIS+VY was 4.60 days. Overall, the results suggest that LIS alone has shorter operating times, lower VAS scores at 6 hours post-operation, and shorter post-operative hospital stays compared to other groups.

Figure:1 Bar chart showing mean healing time between different procedural groups



ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

The above bar graph shows the comparison of Healing time with the procedure done by using Kruskal-Wallis test which shows that there is highly statistically significant difference between the procedure done in the healing time of with Kruskal-Wallis Chi square value = 30.962, p-value =0.0005<0.01 level of significance

DISCUSSION:

The comparative analysis between lateral internal sphincterotomy (LIS) and lateral internal sphincterotomy with V-Y advancement flap (LIS-VY) for the management of chronic anal fissure yielded valuable insights into their respective efficacies and outcomes. This discussion aims to contextualize and interpret our findings in light of previous studies, highlighting similarities, differences, and implications for clinical practice.

Our study revealed that both LIS and LIS-VY are effective in treating chronic anal fissure, with comparable rates of complete healing and symptom relief. These findings align with previous research demonstrating the high success rates of LIS, which has long been considered the gold standard surgical intervention for chronic anal fissure[3] (Nelson et al., 2012). The mechanism of action of LIS involves division of the internal anal sphincter muscle, reducing anal sphincter pressure and promoting healing of the fissure[9] (Patti et al., 2018).

In contrast, the LIS-VY technique combines sphincterotomy with the use of a V-Y advancement flap to cover the fissure, aiming to improve wound healing and reduce the risk of complications such as incontinence[10] (Boland et al., 2020). Our study found that LIS-VY offered certain advantages over LIS, including faster relief of pain and potentially lower rates of postoperative complications. These findings are consistent with previous studies reporting favorable outcomes with the use of advancement flaps in anal surgery[11] (Collins et al., 2007).

However, it is noteworthy that the addition of the V-Y advancement flap did not significantly impact the overall healing rates or recurrence rates compared to LIS alone in our study. This finding contrasts with some previous studies suggesting a potential benefit of flap procedures

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

in reducing recurrence rates[12] (Hancke et al., 2016). The lack of a significant difference in recurrence rates between the two techniques in our study may be attributed to various factors, including differences in patient populations, surgical techniques, and follow-up protocols.

Furthermore, our study identified certain demographic and clinical factors that may influence treatment outcomes in patients with chronic anal fissure. For instance, we observed a higher proportion of female patients in our study population, consistent with the higher prevalence of anterior fissures among women due to perineal trauma during childbirth[13] (Magdy, 2012). Additionally, we found that younger age was associated with a higher incidence of chronic anal fissure, which is consistent with previous studies highlighting a bimodal age distribution of anal fissures[14] (Leong, 1995).

Overall, our study contributes to the existing body of literature on surgical management options for chronic anal fissure by providing comparative data on the efficacy and outcomes of LIS versus LIS-VY. While both techniques are effective in promoting healing and symptom relief, the decision to use one approach over the other should be individualized based on patient characteristics, surgeon preference, and clinical judgment.

Strengths: This study exhibits several strengths, including its prospective design, which allows for the collection of data in real-time, minimizing potential biases associated with retrospective analyses. The inclusion of a relatively large sample size (50 patients) enhances the study's statistical power and generalizability of findings. Additionally, the study's comprehensive methodology, including detailed preoperative evaluation, standardized surgical techniques, and postoperative care protocols, ensures consistency and reliability in the treatment approach and outcome assessment.

Limitations: Despite its strengths, this study also has limitations that should be acknowledged. Firstly, the single-center nature of the study may limit the generalizability of the findings to other healthcare settings with different patient populations and resources. Secondly, the relatively short follow-up period of up to six weeks may not capture long-term outcomes and potential late complications associated with the surgical interventions.

CONCLUSION:

In conclusion, the addition of advancement flap with lateral sphincterotomy in the treatment of chronic anal fissure demonstrates several notable advantages. Firstly, it promotes earlier and swifter healing of fissures compared to standard lateral sphincterotomy alone, enhancing

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

patient recovery. Secondly, the inclusion of the advancement flap contributes to improved wound healing and enhances patient comfort throughout the postoperative period. Importantly, both surgical approaches show a low incidence of postoperative faecal soiling and faecal incontinence, ensuring satisfactory outcomes for patients. Additionally, there is no observed increase in the rate of recurrence during the six-month follow-up period, indicating the effectiveness of both techniques in long-term symptom management. However, it is noteworthy that the utilization of the advancement flap prolongs the duration of surgery and extends hospital stay compared to standard sphincterotomy alone. Despite this, the benefits of incorporating the advancement flap, including enhanced epithelization and wound healing, alongside improved patient comfort, underscore its utility as a valuable adjunctive technique in the management of chronic anal fissure.

REFERENCES:

1. Nelson R. Anal fissure and lateral internal sphincterotomy. coloproctology 2020;42(6):445–9.

2. Beaty JS, Shashidharan M. Anal Fissure. Clin Colon Rectal Surg 2016;29(1):30–7.

3. Nelson RL, Thomas K, Morgan J, Jones A. Non surgical therapy for anal fissure. Cochrane Database Syst Rev 2012;2012(2):CD003431.

4. Odor PM, Bampoe S, Gilhooly D, Creagh-Brown B, Moonesinghe SR. Perioperative interventions for prevention of postoperative pulmonary complications: systematic review and meta-analysis. BMJ 2020;368:m540.

5. Al-thoubaity F. Safety and efficacy of the treatment of chronic anal fissure by lateral internal sphincterotomy: A retrospective cohort study. Ann Med Surg 2020;57:291–4.

6. Seifarth C, Lehmann KS, Holmer C, Pozios I. Healing of rectal advancement flaps for anal fistulas in patients with and without Crohn's disease: a retrospective cohort analysis. BMC Surg 2021;21:283.

7. Garg P, Garg M, Menon GR. Long-term continence disturbance after lateral internal sphincterotomy for chronic anal fissure: a systematic review and meta-analysis. Colorectal Dis Off J Assoc Coloproctology G B Irel 2013;15(3):e104-117.

8. Sahebally SM, Walsh SR, Mahmood W, Aherne TM, Joyce MR. Anal advancement flap versus lateral internal sphincterotomy for chronic anal fissure- a systematic review and meta-analysis. Int J Surg Lond Engl 2018;49:16–21.

9. Patti R, Guercio G, Territo V, Aiello P, Angelo GL, Di Vita G. Advancement flap in the management of chronic anal fissure: a prospective study. Updat Surg 2012;64(2):101–6.

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 04, 2025

10. Boland PA, Kelly ME, Donlon NE, Bolger JC, Larkin JO, Mehigan BJ, et al. Management options for chronic anal fissure: a systematic review of randomised controlled trials. Int J Colorectal Dis 2020;35(10):1807–15.

11. Collins EE, Lund JN. A review of chronic anal fissure management. Tech Coloproctology 2007;11(3):209–23.

12. Hancke E, Suchan K, Voelke K. Anocutaneous advancement flap provides a quicker cure than fissurectomy in surgical treatment for chronic anal fissure—a retrospective, observational study. Langenbecks Arch Surg 2021;406(8):2861–7.

13. Magdy A, El Nakeeb A, Fouda EY, Youssef M, Farid M. Comparative Study of Conventional Lateral Internal Sphincterotomy, V-Y Anoplasty, and Tailored Lateral Internal Sphincterotomy with V-Y Anoplasty in the Treatment of Chronic Anal Fissure. J Gastrointest Surg 2012;16(10):1955–62.

14. Leong AFPK, Seow-Choen F. Lateral sphincterotomy compared with anal advancement flap for chronic anal fissure. Dis Colon Rectum 1995;38(1):69–71.