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Management of acute anal fissure with open and closed internal sphincterotomy

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***Abstract*---**Introduction: An anal fissure is a lacerate tear in inner thin lining of anus. The tear exposes the muscle (anal sphincter) around the anus. The damage leads to muscle spasm, which pull the fissure edges even more. The spasms lead to pain and it also slow down the healing. An anal fissure is considered acute anal fissure if it occurs in less than 6 weeks or if it recently happened. Treatment done by breaking the cycle of spasm, relieving pain, and to avoid ischemia, which all are cause for anal fissure. First-line of treatment to minimize anal trauma includes stool softeners, bulk agents, and warm sitz baths (5) if not relived then sphincterotomy open or closed type surgery can be done. Material & Methods: We had conducted a comparative observational study from May 2019 to April 2021 at Dhiraj General Hospital, Vadodara in General Surgery department. In admitted patients posted for Sphincterotomy after consent & explaining risk factor, patients were operated. Detailed clinical history, clinical examination including per abdominal and per rectal examination, routine blood investigations & chest x-ray screening was done. In all the patients undergoing Sphincterotomy done either with open or closed method. All the patients were observed for complications after surgery & followed up at 1 st day, 3rd day,1 month post operatively. Results: Post-operative on day 1, the majority of the patients had pain. Out of all patients, 45 (90%) patients

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reported pain. Post-operative on day 3, the proportion of patients with pain reduced from 90% to 58%. Out of all patients, 29 (28%) patients reported pain on day 3. On follow-up after 1 month, only 1 (2%) patient had reported pain. Post-operatively at 1 month, none of the patients had reported incontinence defecation and hematoma formation. Only 1 (0.02%) patient had reported pain and local site infection. The overall average duration of hospitalization was 5.36 days. It was slightly higher among patients operated with closed lateral sphincterotomy (5.40 days) than open lateral sphincterotomy (5.29 days). Conclusion: In the present study, we find both methods equally effective in the management of the acute anal fissure on comparing the open and closed method of lateral sphincterotomy. There is no significant difference between closed and open lateral sphincterotomy methods concerning post-operative pain and other complication like surgical site hematoma, local site wound infection and continence of defecation. Within 1 month following the operative procedure, patients are less likely to develop complications like surgical site hematoma, local site wound infection and continence of defecation. Pain-relieving is also effective after both methods of lateral sphincterotomy.

***Keywords*---**sphincterotomy, incontinence, anal fissure, constipation, perianal pain.

Introduction

An anal fissure is a lacerate tear in inner thin lining of anus. The tear exposes the muscle (anal sphincter) around the anus. The damage leads to muscle spasm, which pull the fissure edges even more. The spasms leads to pain and it also slow down the healing. An anal fissure is considered acute anal fissure if it occur in less than 6 weeks or if it recently happened. First, Recamier described Anal fissure in 1829[1] . It is defined as a ulcerated region in the anal canal located in middle of the dentate line and anal verge at vertical axis of the squamous lining. [2] The cause of anal fissure is Passage of hard stools and Constipation, although diarrhoea can also cause fissure[3]. It may be noticed by bright red bleeding from anus. In Acute fissure, there may be severe pain after defecation, but in chronic fissure pain intensity is commonly less. The diagnosis is made by typical history of pain, clinical findings, and bleeding and discharge [4].Both sexes equally affected and young adults are commonly affected . Treatment done by breaking the cycle of spasm, relieving pain, and to avoid ischemia, which all are cause for anal fissure. First-line of treatment to minimize anal trauma includes stool softeners, bulk agents, and warm sitz baths [5] . Anal fissure treatment by sphincterotomy was first suggested by Boyer [6] .Introduction of lateral internal sphincterotomy done by Eisen hammer in 1951.this sphincterotomy procedure used frequently and is now become the treatment of choice for fissure in ano [7] . this procedure aim is to decrease spasm of internal sphincter which is done by dividing a portion of the muscle. By using either a closed or open technique approximately 30% of internal sphincter fibres are divided, laterally. However, after this procedure the incidence of incontinence to faeces ranges from 0% to

35%. Majority of anal fissures are relatively short-lived and probably acute, resolving either with simple dietary modification or spontaneously or with stool softening laxatives. Fissure requires definitive treatment if the fissure fails to heal within six weeks of onset. This fissure is associated with internal anal sphincter hypertonia.

Lateral internal sphincterotomy is the most commonly used and standard surgical treatment for anal fissure in up to 90% cases and healing is achieved by this procedure. However, Internal sphincterotomy carries a significant risk of developing incontinence. In some studies, the internal sphincterotomy was found simple and to be safe surgery. In the past anal dilatation has been the simplest surgery. Great care had to be taken ,so that the anal internal sphincter was not overstretched. following this procedure, the risk of incontinence made it unpopular. However, it can be still used in young men in those with high pressure sphincters and who also understand the slight risk. Lateral internal sphincterotomy is done by open or closed method. Both methods are practiced widely as per experience ,choice of the surgeon. In open technique, Internal sphincter is divided after the anal mucosa is breached. In the closed type, a submucosal type sphincterotomy is done. As acute anal fissure is very common in our country so we felt that the need to study about the various surgical techniques for anal fissure as a treatment option, namely closed and open lateral internal sphincterotomy, and also to compare the results of these two techniques. The method with optimal clinical outcome, and which is less painful and also patient friendly should preferably for treating this pathology.

Methods

All patients admitted at Dhiraj general Hospital for fissure treatment, a detailed history, symptoms ,signs, general examination, per abdomen, per rectum examination, investigation done for the patients and diagnosed as acute anal fissure and if patient posted for surgery patient will be included in our study. Surgery either open or closed internal sphincterotomy done. All the patients will be analysed postoperatively for our objectives: 1. Pain relief after surgery 2. Post operative surgical site hematoma 3. Local site wound infection 4. Continence of defecation. All patients will be followed up on 1st day, 3rd day, 1 month postoperatively.

Results

1. Age Distribution: (Table 1)
2. Gender Distribution (Graph 1)
3. Comparison of Post operative pain (Table 2)

The proportion of the patients who reported pain was higher among patients operated with the open lateral sphincterotomy than closed lateral sphincterotomy. Among patients operated with the closed lateral sphincterotomy, 21 (84%) patients reported pain at day 1 and 13 (52%) patients reported pain at day 3 while only 1 (4%) patient had reported pain et the end of 1 month. Among patients operated with the open lateral sphincterotomy, 24 (96%) patients reported pain on

day 1 and 16 (64%) patients reported pain on day 3 while none patients had reported pain et the end of 1 month.

Comparison of VAS (Table 3)

Overall VAS score was 6.88 on day 1 and 3.08 on day 3 while 0.04 at the end of 1 month. VAS score was higher among patients operated with the open lateral sphincterotomy than closed lateral sphincterotomy but the difference was found statistically not-significant. Among patients operated with closed lateral sphincterotomy, VAS score was 6.8, 2.88 and 0.08 at the day 1, day 3 and 1 month respectively. Among patients operated with open lateral sphincterotomy, VAS score was 6.96, 3.28 and 0 at the day 1, day 3 and 1 month respectively.

Postoperative Complications: (Table 4)

Post-operatively at 1 month, none patient had reported incontinence defecation and hematoma formation. Only 1 (0.02%) patient had reported pain and local site infection.

Hospital Stay: (Table 5)

The overall average duration of hospitalization was 5.36 days. It was slightly higher among patients operated with closed lateral sphincterotomy (5.40 days) than open lateral sphincterotomy (5.29 days). However, the difference was found statistically nonsignificant

Discussion

There are various treatment modalities available for acute as well chronic anal fissure, but up till now, surgical lateral sphincterotomy remains the gold standard method. Sphincterotomy was first suggested by Boyer in 1818 for the treatment of anal fissures [8]. Subsequently, the initiation of lateral sphincterotomy by Eisenhammer in 1951, [7] this operative technique has been used with growing frequency and is now a day it is considered as the choice of treatment for anal fissure patients.

In present study the mean age of the patient was 47.3 ± 11.8 years. Mean age of patients operated with the open lateral sphincteretomy (48.8±11.6 years) was higher than closed lateral sphincterotomy (45.9±12.2 years) but the difference was found statistically nonsignificant. Majority of the patients presented at age more than 50 years (50%) and less than 40 years (38%). Patients presented with middle age group (41 to 50 years) was comparatively lesser (12%) than other age groups. In contrast to the present study, Gupta et al[8] reported that majority of patients are of middle age, from which 29.4% of patients aged between 41 and 50 years in the closed lateral sphincterotomy group and 30.9% of patients aged between 31 and 40 years in the open lateral sphincterotomy group. [8]The mean age of patients was lower in a study conducted by Gupta et al i.e. 40.13 ± 12.37 years than the present study. [8]

In the present study, the pain was assessed by using the visual analogue scale which represents the intensity of the pain from the scale of 0 to 10 where 0 score denotes no pain and 10 scores denote the worst imaginable pain. This scale is widely and frequently used to measure the intensity of the pain, and generally researchers, assume reduced pain clinically valuable when the statistically significant difference in the VAS score is recorded. In Gupta et al study [8], the mean visual analogue scale pain score was significantly higher in the open lateral sphincterotomy group than in the closed lateral sphincterotomy group after 24 hours of an operative procedure. There was also a statistically significant difference observed between the length of hospital stay in these two study groups in a study conducted by Gupta et al. [8]The mean duration of stay was 2.38 days in the closed sphincterotomy group and 3.38 days in the open sphincterotomy group in this study. In our study, the overall average duration of hospitalization was 5.36 days which was slightly higher among patients operated with closed lateral sphincterotomy (5.40 days) than open lateral sphincterotomy (5.29 days). However, no statistically significant difference was found in the length of hospital stay among both groups in our study.

In the present study, a post-operative follow-up assessment was carried out on day 1, day 3 and at 1 month. Additionally, to pain assessment, post-operative complications like surgical site hematoma, local site wound infection and continence of defecation were assessed. Post-operative on day 1, the majority (90%) of the patients had pain which reduced. Post-operative on day 3, the proportion of patients with pain reduced from 90% to 58% and on follow-up after 1 month, only 1 (2%) patient had reported pain in the present study. The proportion of the patients who reported pain was higher among patients operated with the open lateral sphincterotomy than closed lateral sphincterotomy in the present study. Among patients operated with the closed lateral sphincterotomy, 84% of patients reported pain on day 1 and which reduced to 52% and 4% on subsequent follow-up on day 3 and at 1 month. Among patients operated with the open lateral sphincterotomy, 96% of patients reported pain at day 1 and 64% patients reported pain at day 3 while none patients had reported pain et the end of 1 month. In a study conducted by Sanniyasi et al,[9] post-operative pain relief was present in 87.5% of patients in closed lateral sphincterotomy operated patients and 75% in the open lateral sphincterotomy group. Post-operatively at 1 month none of the patients had reported incontinence defecation and hematoma formation in the present study while in only 1 (0.02%) patient pain and local site infection were reported. Similar to the present study Mukri et al [10] reported none of the study subjects reported incontinence defecation and other post-operative complication on follow-up. However, they reported constipation and post-operative bleeding in some patients.

Conclusion

In the present study, we find both methods equally effective in the management of the acute anal fissure on comparing the open and closed method of lateral sphincterotomy. There is no significant difference between closed and open lateral sphincterotomy methods concerning post-operative pain and other complication like surgical site hematoma, local site wound infection and continence of defecation. Within 1 month following the operative procedure, patients are less

likely to develop complications like surgical site hematoma, local site wound infection and continence of defecation. Pain relieving is also effective after both methods of lateral sphincterotomy.

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Declarations

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Table no 1: Age Distribution:

Age Distribution	Closed Sphincterotomy	Open Sphincterotomy	Total
21-30	4	1	5
31-40	6	8	14
41-50	3	3	6
51-60	11	8	19
>61	1	5	6
Total	25	25	50

Table no .2: Post Operative Pain on Follow up:

Follow up Period	Closed Sphincterotomy	Open Sphincterotomy	P Value
Pain at day 1	21	24	0.16
Pain at day 3	13	16	0.39
Pain at 1 Month	1	0	

Table No 3: Comparison of VAS:

Follow up Period	Mean Visual Analogue Score			P Value
	Closed Sphincterotomy	Open Sphincterotomy	Overall	
Pain at day 1	6.80±1.5	6.96±1.4	6.88	0.69
Pain at day 3	2.88±1.8	3.28±1.6	3.08	0.4
Pain at 1 Month	0.08±0.4	0	0.04	-

Table no 4: Postoperative Complications:

Complications	No of Patients
Pain	1
Local Site Infection	1
Incontinence defecation	0
Hematoma Formation	0

Table No 5: Average Hospital stay:

	Average Hospital stay
Closed Sphincterotomy	5.40±2.18 days
Open Sphincterotomy	5.32±1.84 days
Overall	5.36±2.00 days

Chart 1: Gender Distribution