

Comparison of Glyceryl Trinitrate 0.2% and Lateral Anal Sphincterotomy in Cases of Anal Fissure

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ABSTRACT

Objective: The objective of study was to compare the results of Glyceryl Tri Nitrate (0.2%) and lateral anal sphincterotomy in cases of anal fissure.

Study design: Quasi experimental study.

Setting: Department of General Surgery, Mayo Hospital, Lahore.

Duration: Six months

Methods: Sixty patients fulfilling the inclusion criteria were selected. The patients were divided into two groups of 30 patients each. Patients in group A were treated with 0.2% topical nitroglycerine paste and patients in group B were treated with lateral anal sphincterotomy.

Results: The mean age in group A was 35.30 ± 7.63 years and in group B was 33.03 ± 9.62 years. On follow up in group A there were 4(13.3%) patients of pain whereas in group B there was no patient. In group A, there were 7(33.3%) patients of reduced bleeding as compared with group B, there was no patient. In group A, there were 9(30%) patients of dizziness as compared with group B there was no patient. In group A, 21(70%) patients have successful treatment as compared with group B who had 100% success rate.

Conclusion: Our study showed that internal sphincterotomy is superior to topical nitroglycerin (0.2%) in the treatment of anal fissure, with a high rate of healing, few side effects and low risk of early incontinence. Thus lateral anal sphincterotomy remains the treatment of choice in cases of anal fissure where as GTN 0.2% remains the treatment of choice for chronic anal fissure that are unfit for surgery, refuse surgery or did not benefit from surgery.

Key words: Anal fissure, glyceryl tri nitrate, laterals anal sphincterotomy.

INTRODUCTION

Anal fissure was recognized as a clinical entity in 1934. It is a longitudinal defect of the anal canal mucosa and endoderm extending usually from the dentate line to the external verge of the anal canal. This defect exposes the lower half or even most of the fibers of internal anal sphincter. Anal fissure is almost always accompanied by extensive tension of this muscle. Anal fissures affect all age groups but predominantly in the 3rd and 4th decades of life. Fissure disease causes from 6 to 15% of office visits and 10% of operative procedures in a colorectal practice¹.

A recent theory is that it may be due to ischemia of posterior commissure of anal canal, exacerbated by hyper tonicity of internal anal sphincter². many other causative factors of anal fissure, like passage of hard stool, varicose veins of anal canal and childbirth in women have been proposed. Childbirth has been implicated as a cause of anterior midline fissure but the incriminating causes have been difficult to substantiate³.

Chronic anal fissure is the most common cause of anal pain associated with internal anal sphincter hypertonia. Reduction of hypertonia favors fissure healing. Temporary reduction in sphincter tone can be achieved by conservative treatment. Surgical sphincterotomy achieves permanent reduction of sphincter hypertonia and is very successful in healing anal fissures, but requires an operation with associated small morbidity.

MATERIAL AND METHODS

This is Quasi experimental study conducted in the Department of General Surgery, Mayo Hospital, Lahore from January 2007 to July 2007.

Sixty patients were included in this study. They were randomly allocated in two groups using random number table. Group A (30 patients) was managed with Glyceryl Tri Nitrate (0.2%) and group B (30 patients) was managed with lateral anal Sphincterotomy.

All those patients over 12 years with anal fissure diagnosed clinically of both sexes were included in the study. Patients with pregnancy, inflammatory bowel disease, recurrent anal fissure and haemorrhoids were excluded from the study.

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RESULTS

Sixty patients with anal fissure and fulfilling the inclusion criteria subjected to diagnose clinically, selected from out patients department of Mayo Hospital Lahore were included in this study. The patients were divided into two groups (group A and group B) of 30 patients each. Group A was managed with Glyceryl Tri Nitrate 0.2% and group B was managed with lateral anal Sphincterotomy.

Sphincterotomy relieved pain much earlier compared to GTN. On follow up of first week in group A, 04(13.3%) patients had no pain, 18(60%) patients had reduced pain and 8(26.7%) patients had same level of pain as compared with group B, there were 28 (93.3%) patients having no pain, 2(6.7%) patients with reduced level of pain. On follow up of second week in group A, 4(13.3%) patients had no pain, 18(60%) patients had reduced pain and 8(26.7%) patients had same level of pain as compared with group B, all patients were pain free. On follow up of sixth week in group A, there were 26(86.7%) patients with out pain and 4(13.3%) with mild pain as compared with group B, there were 30(100%) patients with out pain (Table 2).

On follow up of first week in group A, 19 (63.3%) patients had no bleeding, 5 (16.6%) patients had reduced bleeding, 6(20%) patients had same level of bleeding as compared with group B. There were 23(76.7%) patients with out bleeding and 7(23.3%) patients with reduced level of bleeding. On follow up of second week in group A, there were 19(63.3%) patients with no bleeding, 4(13.3%) patients with reduced bleeding and 7(23.3%) patients with same level of bleeding as compared with group B, there were 23(76.7%) patients with no bleeding and 7(23.3%) patients with reduced level of bleeding. On follow up of sixth week in group A, there were 23(76.7%) patients with out bleeding, 7(23.3%) patients with reduced bleeding and as compared with group B, there were 30(100%) patients with out bleeding (Table 3).

Table 1: Distribution of patients by sex

Sex	Group A (n=30)		Group B (n=30)	
	No.	%	No.	%
Male	08	26.7	08	26.7
Female	22	73.3	22	73.3

On follow up of first, second, fifth and sixth weeks in group A, there were 9(30%) patients with dizziness and 21(70%) patients with out dizziness as compared with group B, there were 30(100%) patients with out dizziness (Table 4).

On follow up in group A, all 30(100%) patients were continent as compared with group B 26(86.7%) patients were continent, and 4(13.3%) patients

developed flatus incontinence during first and second weeks while on fifth and sixth weeks all patients (Table 5).

Table 2: Distribution of patients by follow-up of pain

Follow up	No	Reduced	Same	Total	P value
1st week					
Group A (n=30)	04	18	8	30	0.001
Group B (n=30)	28	02	0	30	
2nd week					
Group A (n=30)	04	18	8	30	0.000
Group B (n=30)	30	0	0	30	
5th week					
Group A (n=30)	24	6	0	30	0.000
Group B (n=30)	30	0	0	30	
6th week					
Group A (n=30)	26	4	0	30	0.000
Group B (n=30)	30	0	0	30	

Table 3: Distribution of patients by follow-up of bleeding

Follow up	No	Reduced	Same	Total	P value
1st week					
Group A (n=30)	19	5	6	30	0.035
Group B (n=30)	23	7	0	30	
2nd week					
Group A (n=30)	19	4	7	30	0.017
Group B (n=30)	23	7	0	30	
5th week					
Group A (n=30)	22	8	0	30	0.011
Group B (n=30)	29	1	0	30	
6th week					
Group A (n=30)	23	7	0	30	.005
Group B (n=30)	30	0	0	30	

Table 4: Distribution of patients by follow-up of dizziness

Follow up	Yes	No	Total	P value
1st week				
Group A (n=30)	09	21	30	0.001
Group B (n=30)	0	30	30	
2nd week				
Group A (n=30)	09	21	30	0.001
Group B (n=30)	0	30	30	
5th week				
Group A (n=30)	09	21	30	0.001
Group B (n=30)	0	30	30	
6th week				
Group A (n=30)	09	21	30	0.001
Group B (n=30)	0	30	30	

On follow up of first week in group A, there were 10(33.3%) patients with treatment failure and 20(66.7%) with treatment success as compared with group B there were 21(70%) patients with treatment success and 9(30%) patients with treatment failure. On follow up of second week in group A, there were 21(70%) patients having successful treatment and

9(30%) patients having treatment failure as compared with group B there were 22(73.3%) patients with successful treatment and 8(26.7%) patients with treatment failure. On follow up of fifth week in group A, there were 21(70%) patients having successful treatment and 9(30%) patients having treatment failure as compared with group B there were 29(96.7%) patients having successful treatment and 1(3.3%) patient with treatment failure. On follow up of sixth week in group A, there were 21(70%) patients having successful treatment and 9(30%) patients having treatment failure as compared with group B there was 100% success rate (Table 6).

Table 5: Distribution of patients by follow-up of incontinence

Follow up	No	Yes	Total	P value
1st week				
Group A (n=30)	30	0	30	0.038
Group B (n=30)	26	04	30	
2nd week				
Group A (n=30)	30	0	30	0.038
Group B (n=30)	26	04	30	
5th week				
Group A (n=30)	30	0	30	1.0
Group B (n=30)	30	0	30	
6th week				
Group A (n=30)	30	0	30	1.0
Group B (n=30)	30	0	30	

Table 6: Distribution of patients by follow-up of treatment failure

Follow up	No	Yes	Total	P value
1st week				
Group A (n=30)	20	10	30	0.781
Group B (n=30)	21	09	30	
2nd week				
Group A (n=30)	21	09	30	0.774
Group B (n=30)	22	08	30	
5th week				
Group A (n=30)	21	09	30	0.006
Group B (n=30)	29	01	30	
6th week				
Group A (n=30)	21	9	30	0.000
Group B (n=30)	30	0	30	

DISCUSSION

In this study a non-operative treatment modality i.e. 0.2% Glyceryl Tri-Nitrate paste application was compared with a surgical procedure i.e. lateral internal sphincterotomy for the treatment of anal fissure.

Internal sphincterotomy is superior to topical nitroglycerin 0.20% in the treatment of chronic anal fissure, with a high rate of healing, few side effects, and low risk of early incontinence. Thus, internal

sphincterotomy remains the treatment of choice for chronic anal fissure.

The long-term outcome in two groups of patients who had participated to compare the effectiveness of topical nitroglycerin with internal sphincterotomy in the treatment of chronic anal fissure was assessed. After six months follow-up, it seems that lateral internal sphincterotomy was a more durable treatment for chronic anal fissure compared with topical nitroglycerin therapy and does not compromise long-term fecal continence. Thus, sphincterotomy continues to be a good treatment for patients with chronic anal fissure.

In our study, there were 26.7% male and 73.3% females while in the study of Liratzopoulos et al there were 48.78% male and 51.22% females. But in the study of De Nardi et al there were 56.7% male and 43.3% females. This difference is may be due to difference in dietary habits and cultural values in different regions of the world.

In our study, the patients treated with internal sphincterotomy responded exceptionally well for pain relief. 28(93.33%) patients were pain free in first post operative week while in group A, there were 4(13.3%) patients got relief of pain in the same period and 26(86.7%) patients out of 30 got pain relief after six weeks. Where as all patients treated with lateral anal sphincterotomy were pain free just in 2 weeks interval. So our study strongly demonstrate the pain severity decreases much more earlier in sphincterotomy group than glyceryl trinitrate group similar to the results of Tranqui et al 92% of the patients having no pain or only occasionally mild pain. So we recommend patients should be treated with lateral anal sphincterotomy to get better pain relief as shown in Table 2.

In our study, in group B, 23(76.7%) patients were free from bleeding at first follow up and 7(23.3%) patients complained scanty bleeding where as in group A 19(63.3%) patients were free from bleeding, 5(16.7%) patients were with reduced bleeding but 6(20%) patients had no effect on their bleeding complaint. After six weeks all patients treated with lateral anal sphincterotomy were free from bleeding but in group A 23(76.7%) patients got complete relief from bleeding and 7(23.3%) patients complained of reduced bleeding as shown in Table 5. International studies like the results of Garcea et al there were 16.9% patients of bleeding treated with GTN paste which is comparable to our result. Thus surgical treatment remained superior to non operative treatment (GTN) in order to get rid of bleeding.

In our study, there were 30% patients who developed dizziness during treatment with GTN. Which is comparable with International study of Bielecki and Kolodziejczak dizziness was developed

in 33.3% of the patients. Dizziness is a side effect of GTN paste. As there is no such complication with surgical procedure as our study showed in Table 6. So we recommend the surgical procedure in patients with anal fissure to avoid dizziness unless there is a contra-indication to surgery.

In our study there were 13.3% patients who developed flatus incontinence during the first two follow ups but after six weeks, no patient of incontinence was reported in group A and group B. But in the study of Rotholz et al the incontinence was reported in 10.2% of patients. But in the study of Elsebae the complication of incontinence was occurred in 14.8% of patients. This is due to better understanding of anatomy and improvement in surgical skills.

In our study, there were 70% of the patients treated successfully in group A, while all patients were successfully treated in group B after six weeks of treatment. International studies like in the study of Evans et al 45% of the patients healed with glyceryl trinitrate. But according to the study of Kennedy et al 59% of the patients healed with glyceryl trinitrate, Mishra et al reported that glyceryl trinitrate group 30% of the patients healed after six weeks but in the sphincterotomy group 85% of the patients healed successfully.

Our study is comparable with international studies as shown by results. Our study depicts that internal sphincterotomy is a better choice than GTN paste.

CONCLUSION

Internal sphincterotomy is superior to topical nitroglycerin 0.2 percent in the treatment of chronic anal fissure, with a high rate of healing, few side effects, and low risk of early incontinence. Glyceryl Tri-Nitrate 0.2% remains the choice of treatment for chronic anal fissure that are unfit for surgery, refuse surgery or did not benefit from surgery. Thus, internal sphincterotomy remains the treatment of choice for chronic anal fissure.

REFERENCES

- Dziki A, Trzcinski R, Langer E, Wronski W. New approaches to anal fissure. *Acta Chir Iuqosl* 2002; 49:73-5.
- Lindsey I, Jones OM, Cunningham C, George BD, Mortensen NJ. Botulinum toxin as second-line therapy for chronic anal fissure failing 0.2% percent glyceryl trinitrate. *Dis Colon Rectum* 2003; 46:361-6.
- Wiley M, Day P, Rieger N, Stephens J, Moore J. Open vs closed lateral internal sphincterotomy for idiopathic fissure in ano: a prospective, randomized, controlled trial. *Dis Colon Rectum* 2004; 47:847-52.
- Liratzopoulos N, Efremidou EI, Papageorgiou MS, Kouklakis G, Moschos J, Manolas KJ et al. Lateral subcutaneous internal sphincterotomy in the treatment of chronic anal fissure. *J Gastrointestin Liver Dis* 2006; 15:143-7.
- Brown CJ, Dubreuil D, Santoro L, Liu M, O'Connor BI, McLeod RS. Lateral internal sphincterotomy is superior to topical nitroglycerin for healing chronic anal fissure and does not compromise long-term fecal continence: six-year follow-up of a multicenter, randomized, controlled trial. *Dis Colon Rectum* 2007; 50: 442-8.
- Richard CS, Gregoire R, Plewes EA, Silverman R, Burul C, Buie D, et al. Internal sphincterotomy is superior to topical nitroglycerin in the treatment of chronic anal fissure: results of a randomized, controlled trial by the Canadian Colorectal Surgical Trials Group. *Dis Colon Rectum* 2000; 43: 1048-57.
- Mishra R, Thomas S, Maan MS, Hadke NS. Topical nitroglycerin versus lateral internal sphincterotomy for chronic anal fissure: prospective, randomized trial. *ANZ J Surg* 2005; 75: 1032-5.
- Elsebae MM. A study of fecal incontinence in patients with chronic anal fissure: prospective, randomized, controlled trial of the extent of internal anal sphincter division during lateral sphincterotomy. *World J Surg* 2007; 31: 2052-7.
- Nyam DC, Pemberton JH. Long-term results of lateral internal sphincterotomy for chronic anal fissure with particular reference to incidence of fecal incontinence. *Dis Colon Rectum* 1999; 42: 1306-10.
- Fiducia G, Bosco V. Partial left lateral subcutaneous sphincterotomy for anal fissure: role and results. *Chir Ital* 2006; 58: 501-4.
- Rosa G, Lolli P, Piccinelli D, Mazzola F, Zugni C, Ballarin A, et al. Calibrated lateral internal sphincterotomy for chronic anal fissure. *Tech Coloproctol* 2005; 9: 127-31.
- Garcea G, Sutton C, Mansoori S, Lloyd T, Thomas M. Results following conservative lateral sphincteromy for the treatment of chronic anal fissures. *Colorectal Dis* 2003; 5: 311-4.
- Bielecki K, Kolodziejczak M. A prospective randomized trial of diltiazem and glyceryl trinitrate ointment in the treatment of chronic anal fissure. *Colorectal Dis* 2003; 5: 256-7.
- Altomare DF, Rinaldi M, Milito G, Arcana F, Spinelli F, Nardelli N, et al. Glyceryl trinitrate for chronic anal fissure--healing or headache? Results of a multicenter, randomized, placebo-controlled, double-blind trial. *Dis Colon Rectum* 2000; 43: 174-9
- Jonas M, Speake W, Scholefield JH. Diltiazem heals glyceryl trinitrate resistant chronic anal fissures: a prospective study. *Dis Colon Rectum* 2002; 45: 1091.