



Research Article

www.ijrap.net



A STUDY OF ANAL SPHINCTER TONE IN ACUTE FISSURE IN ANO PATIENTS TREATED WITH MAHANARAYANA OIL

Peshala KKVS^{1*}, Sahu M², Singh L²

¹Junior resident, Department of Shalya Tantra, IMS, Banaras Hindu University, Varanasi, UP, India

²Professor, Department of Shalya Tantra, IMS, Banaras Hindu University, Varanasi, UP, India

Received on: 09/04/14 Revised on: 26/05/14 Accepted on: 10/06/14

*Corresponding author

Dr. K.K.V.S. Peshala, Junior resident, Department of Shalya Tantra, Institute of Medical Sciences, Banaras Hindu University, Varanasi, UP, India

E-mail: peshala.bhu@gmail.com

DOI: 10.7897/2277-4343.05365

ABSTRACT

The internal anal sphincter (IAS) is an important structure which is responsible to maintain the resting tone. It is known to be responsible for occurrence of fissure in ano. Action of Mahanarayana oil on hypertonic sphincter was evaluated in this study. Three groups were formed with randomly selected forty five patients having symptoms of acute fissure in ano. There were fifteen patients in each group having the age between eighteen to seventy five years. Group I, the control group, was treated with Triphala Guggulu, Hingvashtaka choorna, Powder Isabgol and sitz bath. Group II was treated with Ointment Diltiazem locally, with same regimen as in Group-I. Group III was treated with local application of Mahanarayana oil, with same regimen in Group - I. All the three groups were underwent ano rectal manometry procedure, before and after treatment by sixteen channel ano rectal manometry technique to evaluate resting pressure, squeeze pressure, volume of first sensation and Recto anal inhibitory reflex (RAIR). It was observed that resting pressure (mmHg) within group, compared by pair t test was significantly decreased in Group III after treatment as compared to Group II and I ($100.87 \pm 30.981SD$ vs $75.13 \pm 12.489SD$ ($P < 0.01$), $85.60 \pm 11.513SD$ vs $77.00 \pm 9.150SD$ ($P < 0.001$) and $90.80 \pm 11.803SD$ vs $88.47 \pm 8.717SD$ ($P > 0.05$). Similarly, squeeze pressure, and Volume of first sensation etc. showed significant difference in Group III. Hence it can be concluded that Mahanarayana oil local application caused a significant decline in the Resting anal pressure with other parameters and also found to be better to relieve the acute spasm of anal sphincter in acute fissure in ano.

Keywords: Ano rectal manometry, Fissure in ano, hypertonic sphincter, Mahanarayana oil

INTRODUCTION

Ano rectal Manometry is a diagnosis method which can quantify anal pressures i.e. resting and Squeeze pressures. Fissure-in-Ano, can be correlated with Parikartika as described in Ayurveda. It is a disease with immense pain. There is an elongated ulcer or crack in lower anal canal (below dentate) which may or may not associated with constipation, severe pain and streak of blood along with stool. Based on clinical symptoms it is classified into two varieties as acute fissure-in-Ano and chronic fissure-in-Ano. Comparatively, pain is more in acute type of fissure. It has been postulated that fissure may occur due to trauma to anoderm and spasm of internal sphincter. Problem of complication after surgery and recurrence after medical treatment of fissure-in-ano still gives a wide scope for deep consideration to evolve newer methods of management for this disease. These drawbacks in the management of fissure-in-Ano have provided scope for adopting principles of Ayurveda. The condition Parikartika has not been described as an independent disease in Ayurvedic texts¹⁻³. It is described as a complication of treatment procedures, consequence of pregnancy, some of the diseases etc. All management options of the current study were aimed to reduce anal sphincter tone, heal ulcer, and correct digestive power and stool consistency. Forty five patients were treated with Mahanarayana oil, Ointment Diltiazem in Group III and Group II respectively. Evaluation of anal sphincter tone was done by using sixteen channel ano rectal manometry and comparison was done with control group (Group I).

MATERIALS AND METHODS

Forty five patients of either sex, attended in OPD of Sir Sunderlal Hospital, BHU, Varanasi, India, age range between eighteen to seventy five years, with history of anal fissure not more than six weeks were selected for the study. Ano rectal manometry was performed as a pre-therapy assessment. Patients were divided in to three groups, fifteen in each group. Group I was treated with Hingvashtaka Churna one table spoon twice daily and Triphala Guggulu –two tablets twice daily, Isabgol powder two table spoon night time and Sitz bath (forty degree warm water five minutes morning and evening). Group II was treated with Ointment Diltiazem amount of two centimetre length, per anal application at night time, with same regimen as in Group I. Group III was treated with Mahanarayana oil ten millilitre per rectal daily at night time and with same regimen as in Group - I. Treatment was continued up to one month and pre and post therapy clinical assessment was done according to signs and symptoms rating scale i.e. Pain, Tenderness, Burning sensation, Bleeding per rectum, Ulcer, Constipation, Itching around anus in all groups. Ethical clearance number for this study was Dean/2013-14/EC 263.

Manometric Recordings

Sixteen channel water perfused ano rectal manometry system was used for pre and post therapy assessment of the internal sphincter tone and external sphincter tone as resting pressure and squeeze pressure was done.

Method of Recording

With the patients in left lateral position, probe was inserted in to rectum after lubrication and allowed for 5 minutes run in time. Resting pressure was measured in three occasions. Then subjects were asked to contract anus to get squeeze pressure in three occasions. Mean values were taken for the analysis. These values were taken pre and post therapy (after one month duration).

Statistical Analysis

Overall assessment was done based on the improvement in subjective and objective score before and after treatment, which was subjected to statistical analysis, and the results were compared. The analyses of the effects of the therapy were based on Chi square test; Wilcoxon Signed ranks test, paired t test, one way ANOVA test and post Hoc test. The significance was discussed on the basis of the mean score, percentage, and SD, SE, t and p values. (Level of significance-p < 0.05 is statistically insignificant, p < 0.01 is statistically highly significant and p < 0.001 is statistically highly significant)

RESULTS

68 % patient had increased resting pressure and others had upper level of resting pressure and mean was 93.53.

(Above 85 mmHg of resting pressure was considered as high resting pressure). Group III showed significantly reduced anal resting pressure, which was also lower than those of the Group I and II (P < 0.01) Table 1. It was observed that there was significant difference of anal squeeze pressure than other two Groups (P < 0.05) -Table 2. There was no difference in RAIR among all Groups. Significant difference of 1st sensation after treatment of Group III was observed (P < 0.01) Table 3. Anal fissure was posterior in maximum number of patients and there was no relationship between position of the ulcer and sex of the patients. Pain relief was observed after 2-5 days from the starting date of the treatment of Group III, and significant pain relief achieved within one month duration (P < 0.001). Burning sensation (P < 0.001), Bleeding per rectum (P < 0.01) also significantly reduced in Group III. Percentage of complete healing of the ulcer after the one month treatment of Group III was 93 %, in group II it was 55 % and group I it was 41 %. The time period taken to decrease the pain was longer in patients with more stressful life style (in group III). Complete relief of the pain and percentage of ulcer healing were observed in three groups. 75 %-100 % reduction of both factors was taken as complete cure while 50 %-75 % was taken as moderate cure after 1 month of time

Table 1: Effect of therapies on resting pressure in three groups, before and after treatment

Groups	Resting pressure Mean ± SD- (mmHg)		Within the group comparison (Pair t test) AT-BT
	Before treatment	After treatment	
III	100.87 ± 30.981	75.13 ± 12.489	25.733 ± 22.493 t = 4.431, p < 0.01
II	85.60 ± 11.513	77.00 ± 9.150	8.600 ± 6.479 t = 5.141, p < 0.001
I	90.80 ± 11.803	88.47 ± 8.717	2.333 ± 6.195 t = 1.459, p > 0.05
Between groups (one way ANOVA)	F = 2.201 P = 0.123	F = 7.430 P = 0.002	-
Post Hoc test Significant pairs (p < 0.05)	-	(I, III) (II, III)	-

Table 2: Effect of therapies on squeeze pressure in three groups

Groups	Squeeze pressure Mean ± SD (mmHg)		Within the group comparison (Pair t test) AT-BT
	Before treatment	After treatment	
III	157.67 ± 42.059	134.47 ± 34.461	23.200 ± 32.045 t = 2.804, p < 0.05
II	136.07 ± 36.470	122.47 ± 27.534	13.600 ± 15.883 t = 3.316, p < 0.01
I	144.93 ± 24.126	137.27 ± 21.956	7.667 ± 10.132 t = 2.93, p < 0.05
Between groups (oneway ANOVA)	F = 1.441 P = 0.248	F = 1.146 P = 0.328	-

Table 3: Effect of therapies on 1st sensation in three groups

Groups	1 st sensation Mean ± SD (ml)		Within the group comparison (Pair t test) AT-BT
	Before treatment	After treatment	
III	83.33 ± 44.987	113.33 ± 35.187	-30.000 ± 36.839 t = -3.154, p < 0.01
II	67.27 ± 24.067	90.00 ± 20.702	-22.733 ± 25.254 t = -3.486, p < 0.01
I	76.67 ± 25.820	90.00 ± 20.702	-13.333 ± 29.681 t = -1.740, p > 0.05
Between groups (one way ANOVA)	F = 0.897 P = 0.416	F = 3.898 P = 0.028	-

In Group III it is observed that patients got complete cure after 1 month (93 %) while in group II it was moderate. 5 patients got recurrent of symptoms after 2 month in Group II and 1 patient got recurrent of the symptoms in Group III (6.6 %). No post therapy complications were reported in group III. One patient got mild headache after application of ointment Diltiazem (6.6 %) in group II.

DISCUSSION

The present study entitled “A study of sphincter tone in acute fissure in ano patients treated with maharanyana oil” was designed to evaluate the effects of Sneha Vasti (oil enema) on anal sphincter tone in patients with fissure in ano. Ayurveda indicated vasti to normalize the Vata and ingredients of oil has its specific action; hence Group III was treated with Mahanarayana oil. The key ingredients of Mahanarayana oil, Shatavari (*Asparagus racemosus*) has the properties to pacify the Vata -Pitta and Vranaropana (Wound healing), Sesame oil (*Sesamum indicum*) has properties to pacify Vata and wound healing properties, which facilitates to achieve above aims. Internal sphincter is responsible for maintaining 85 % of resting pressure. The mechanism of pressure increase is not exactly known, but some researches had found that, erosion of tissue in the fissure region during every defecation causes production of ADP, 5-HT, Platelet activating factors as well as substance P, VIP, which causes smooth muscle and vessel contraction. By releasing NO and prostacyclin I₂ these substances cause relaxation in normal endothelium which is not traumatized. VIP have been localised in the IAS,⁴ and VIP is released in the venous effluent from the rectum following neural stimulation. According to some studies it is found that tissue in fissure region is a place where there is diminished production of NO. It is the predominant neurotransmitter mediating relaxation of the human internal anal sphincter so it promoted healing by lowering intra-anal pressure, thereby increasing local blood flow. NO may also dilate blood vessels supplying the anal canal. Less NO level may be responsible for less relaxation of smooth internal sphincter hence increase resting pressure^{5,6}. These factors describe the increased sphincter tone observed in current study. The Saponin rich fraction of *Asparagus racemosus* has anti oxytocic activity⁷. By virtue of this action, it may also causes for relaxation of smooth muscle of anal canal and reduces the spasm. Oil has soothing action and lubricant layer which may act as a barrier over the wound to minimize the friction by stool during defecation and promote wound healing. Wound healing action of Mahanarayana oil may also cause muscle relaxation according to above description. In Group II, Ointment Diltiazem acts by blocking the L-Type of calcium channels in smooth muscle, hence relaxation occurs. Previous study by Jonas M *et al*⁸ reported that Diltiazem decreases mean resting pressure from 102 +/- 5 to 79 +/- 5 which is 17 in percentage. But these results were obtained after application of up to eight weeks twice daily. It is a known fact that effect of ointment lasts for 3-5 hours. These factors may cause the difference of two results. Percentage of complete healing of the ulcer after the one month treatment of Group III was 93 %, in Group II it

was 55 % and group I it was 41 % which shows significant difference in group III. In Group III marked decrease of sphincter tone was reported. It may correct the blood supply by releasing the pressure on arteries which run perpendicular through the sphincter and may facilitate the wound healing. In addition to above, antioxidant, anti-inflammatory and immunomodulatory properties were reported in Satavari and it also enhances wound healing activity. According to study of “Antioxidant status in delayed healing type of wounds” by Anamika M, it was reported that, low levels of antioxidants accompanied by raised levels of markers of free radical damage play a significant role in delaying wound healing. Wound healing action of Satavari is noted in previous studies and they suggest it is due to stimulation of interleukin -8, an inflammatory alfa-chemokine which affects the function and recruitment of various inflammatory cells, fibroblasts and keratinocytes. It may increase the gap junctional intracellular communication in cultured fibroblasts and induces a more rapid maturation of granulation tissue.⁹ Early study by Carpeti *et al* and knight *et al* reported the healing rate after application of Ointment Diltiazem after 8 wk of 67 % and 73 % respectively.^{10,11} But these observations are made after application of the ointment twice daily and may be the reason for changes in results from Group B of current study Pain is the most prominent complaint of the patients. Sphincter hypertonia which reduces the blood supply to fissure region may produce ischemic condition may be a reason for pain. The distal anal canal where fissure in ano occurs is supplied by inferior rectal artery and it is an area usually only supplied by end vessels and is thus more susceptible to ischemia. Friction over the wound area during defecation may also cause pain. But a study conducted by Keck JO *et al* reported that, the primary abnormality in fissure is persistent hypertonia affecting the entire internal sphincter and unrelated to pain¹². Pain relief and sphincter relaxation may lead to increase the volume of first sensation after treatment. Along with reduction of the pain, some patient complained about mild itching in anal verge persisted for 2-3 days. It may be due to production of histamines during healing process by the cells. Histamine usually helps to activate the cells which may help to close the wound and create new tissue or it may be due to nerves in skin that are cut when the skin is cut.

CONCLUSION

After the evaluation of data it was concluded that, Mahanarayana oil is better treatment for fissure in ano to relieve sphincter spasm along with other symptoms without adverse effect.

REFERENCES

1. Sharma RK, Das B, editor, Charaka Samhita of Charaka, Chakrapani commentor, Chikitsa sthana, Jwarachikitsa adhyaya, Chapter 3, Verse 186 and 235, Varanasi, Chowkhamba series office; 2002. p. 167, 189.
2. Tewari PV, editor, Kashyapa samhita of Vrddhajivaka, Khila stana, Antartvartni chikitsita adhyaya, Chapter 10, Verse 102-106, Varanasi, Chaukhamba vishvabharati; 2008. p. 565.
3. Sharma PV, editor, Sushrut Samhita of Sushrut, chikitsa stana, vamanavirechanavyapachchikitsitam, Chapter 34, Verse 3,16,21, Varanasi, Chowkhamba Vishvabharati; 2000. p. 589, 595, 597.

4. R Bhardwaj, CJ Vaizey, PB Boulos. Neuromyogenic properties of the internal anal sphincter: therapeutic rationale for anal fissures, *Gut*, 2000;46(6):861-8. doi:10.1136/gut.46.6.861
5. Madalinski, Mariusz Henryk. Current Understanding of Anal Fissure Pathophysiology, *Advances In Biomedical Research*; p 498-502
6. Poh A et al, innovations in chronic anal fissure treatment; *World journal of gastrointestinal surgery* 2010; 2(7): 231-241.
7. New findings vindicate efficacy of shatavari, *Traditional medicine* by Lalit tiwari. Http://: www.infinity foundation.com
8. Jonas M. A randomized trial of oral vs. topical diltiazem for chronic anal fissures, *Dis of colon and rectum* 2001; 44(8): 1074-8. <http://dx.doi.org/10.1007/BF02234624>
9. Prabhath Kodancha G et al. Wound Healing Profile of *Asparagus racemosus* (Liliaceae) Wild; 2011.
10. Knight et al, Topical diltiazem ointment in the treatment of chronic anal fissure, *Brj Surgery* 2001; 88: 553-556. <http://dx.doi.org/10.1046/j.1365-2168.2001.01736.x>
11. Carpeti EA et al, Topical diltiazem and bethanocol decrease anal sphincter pressure and heal anal fissure without side effects, *Dis colon rectum* 2000; 43(10).
12. Keck JO et al. Computer-generated profiles of the anal canal in patients with anal fissure, *Dis Colon Rectum* 1995; 38(1). <http://dx.doi.org/10.1007/BF02053863>

Cite this article as:

Peshala KKVS, Sahu M, Singh L. A study of Anal sphincter tone in acute fissure in ano patients treated with Mahanarayana oil. *Int. J. Res. Ayurveda Pharm.* 2014;5(3):318-321 <http://dx.doi.org/10.7897/2277-4343.05365>

Source of support: Nil, Conflict of interest: None Declared