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Upshot of Open Lateral Internal Sphincterotomy And *Arkaksharsutra* (caustic therapy) In the Treatment of Fissure-In-Ano W.S.R To *Fissure in ano:* One Centre Experience

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ABSTRACT

Background: The word *Fissure in ano* as a whole means "to cut circumferentially" or to cut all around. *Fissure in ano* resembles fissure-in-ano which is amongst the common painful condition occuring in the anorectal region. *Ksharasutra (Caustic therapy)* is a parasurgical procedure effective in the management of *Fissure in ano.*

Aim: To compare the efficacy of *Arka Ksharasutra (Caustic therapy)* and open lateral internal sphincterotomy (OLIS) in the management of *Fissure in ano*.

Methodology: Total 30 patients having signs and symptoms of fissure-in-ano were selected and randomly divided into two groups. In Group A (n=15), *Arka Ksharasutra (Caustic therapy)* ligation after anal stretching was carried out while in Group B (n=15), OLIS with excision of skin tag was carried out under local anesthesia or spinal anesthesia. Relief in postoperative symptoms and complications (if any) were recorded for 4 weeks and follow-up was done for 1 month.

Results: In both the groups, significant results were obtained, but the difference among groups was statistically insignificant. Duration required for postoperative symptoms like pain, bleeding, swelling and wound healing to subside was found to be more in Group A*(Ksharsutra (Caustic therapy)* than Group B (OLIS).

Conclusion: Open lateral internal sphincterotomy (OLIS) provided better results than *Ksharasutra (Caustic therapy)* ligation in the management of *Fissure in ano.*

Keywords: Fissure-in-ano, *Fissure in ano*, *Ksharasutra (Caustic therapy)*, *Arka*, open lateral internal sphincterotomy

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INTRODUCTION

Sedentary lifestyle, improper dietary and sleeping habits, psychological disturbances like anxiety, depression and increased stress leads to constipation which is the main causative factor for *Fissure in ano* and affects a large percentage of population at least once in their life. In Ayurveda *Fissure in ano* resembles to fissure-in-ano of modern parlance which is the most common cause of severe burning pain in anus.[1] *Acharya Sushruta* mentions *Fissure in ano* as *basti netra vyapad*. It has been described that, due to inappropriate administration of *bastinetra* (wooden nozzle/catheter) may cause this disease. Defective *bastinetra* (wooden nozzle/catheter) will also give rise to *Fissure in ano*. *Gudaksata* may occur due to inappropriate administration of defective *bastinetra* (wooden nozzle/catheter) This results into cutting type of pain. The etiopathogenesis are most commonly crypto glandular infection according to anal infection theory, trauma due to hard stool results in tearing of anal valves, loss of elasticity due to infection and fibrosis in the anal canal, enthusiastic use of ointments and laxative abuse, sphincter hypertonia, incorrectly performed surgical procedures by iatrogenic means and during parturition straining over perianal region.[2] Clinical features are burning pain in anus during and after defecation, bleeding per anum in acute fissure, constipation since long duration, sentinel pile associated with or without anal papilla and reflex symptoms of dysuria and dysmenorrhea.[3] Symptoms of *Fissure in ano* are burning and cutting pain in ano during and after defecation with or without bleeding.[4] On inspection linear crack is seen in endoderm just behind the external skin tag at 6 or 12 o'clock position. Common presentation of fissure-in-ano is posteriorly in males and mid anteriorly in females.[5]

Fissure in ano is described in Ayurveda also as a symptom of various disease conditions such as *Vatikajwara, Vatikapakwa atisara,* (Diarrohea due to vata*) Sahajaarsha* (congenital haemorrhoids) *Kaphajaarsha,* (Diarrohea due to kapha*) Arshapoorvarupa,* (the prodromal symptoms) *Udavarta* (abdominal disease due to retention of faeces), Complication of pregnancy(*garbhini*), unlawful administration of purgative or enema (*Basti*), complication of *Vamana*(emesis*)* and *Virechana* (purgation). It was considered as a disease for first time in *Kashyapa samhita* and its three types (*Vataja, Pittaja* and *Kaphaja*) were described. This classification was also followed in *Sharangdhara samhita* in the medieveal period.[6] *Sushruta* has described a number of surgical and para-surgical procedures such as *Ksharakarma* (causatic therapy *Agnikarma* (thermal cauterization), and *Raktamokshana* (therapeutic blood letting). Among them, *Ksharakarma* (causatic therapy) has multitherapeutic uses and has pharmacological and surgico-medicament action.

The contemporary surgical treatments such as Lord's anal dilatation, fissurectomy and sphincterotomy for the anal fissure are available with their own advantages and disadvantages like recurrence, incontinence or hemorrhage. These disadvantages can be overcomed by Ayurveda with the help of para surgical measures like *Ksharasutra (Caustic therapy),* which is well established in the

management of fistula[7], piles[8]and chronic fissure in ano.[9]

At present, open lateral internal sphincterotomy (OLIS) is considered the gold standard treatment for fissure-in-ano.[10]Hence, in this study, evaluation of the *Ksharasutra (Caustic therapy)* application as an important para-surgical tool by transfixation technique for surgical management of *Fissure in ano* was planned. *Ksharasutra (Caustic therapy)* application was compared with modern surgical process of OLIS in the management of fissure-in-ano. OLIS is outpatient department (OPD) procedure with minimum complication. Hence, this intervention has been taken as control group. This study was planned with an aim to evaluate and compare the role of *Ksharasutra* (Caustic therapy) ligation and OLIS in the management of fissure-in-ano *w.s.r to Fissure in ano.*

MATERIALS AND METHODS:-

Selection of patients for study:
Patients were selected from the OPD/IPD of Department of Shalyatantra, Jammu Institute of Ayurveda and Research, Jammu and Shri Sain Charitable Hospital, Pamposh Colony, Janipur, Jammu irrespective of gender, occupation and religion. The registered patients were randomly allocated into two groups – Group A and Group B.

Diagnostic criteria:
The patients were diagnosed on the basis of history, signs and symptoms, local examination with digital per rectal examination. Digital per rectal examination was carried out with 2% Xylocaine jelly to assess the sphincter tone after assessing the patient's tolerance towards pain.Proctoscopic examination was carried out at the time of operation under suitable anesthesia to exclude other anorectal pathologies like hemorrhoids, polyp, any growth etc.

Inclusion criteria
Patients of *Fissure in ano*(having chronicity more than 6 months and age between 17years and 60years were selected. Patients of *Fissure in ano* associated with *Arsha* (Hemorrhoids) and *Bhagandara*(fistula-in-ano) were also included in this study.

Exclusion criteria:
Fissure-in-ano having chronicity of <6 months and patient suffering from malignancy, acute fissure-in-ano, congenital anal stricture or carcinoma of ano-rectum, positive cases of human immunodeficiency virus (HIV), venereal disease research laboratory (VDRL) and hepatitis-B were excluded. In this trial, uncontrolled cases of diabetes mellitus, uncontrolled hypertension and patients of tuberculosis were also excluded.

Laboratory investigations:
Routine hemogram such as Hb%, total leucocyte count, differential leucocyte count, bleeding time, clotting time and erythrocyte sedimentation rate were done. Biochemical investigations such as fasting blood sugar, postprandial blood sugar, kidney function test (blood urea and serum creatinine) and liver function test (total serum bilirubin, serum glutamic Oxaloacetic transaminase and serum glutamic pyruvic transaminase) were performed on all registered patients. Human immunodeficiency virus (HIV), Venereal Disease Research Laboratory (VDRL) and hepatitis-B, urine analysis for albumin, sugar and microscopic examination was also performed. Stool examination for routine and microscopy was also done. X-ray chest (PA view), ECG, USG Abdomen and Pelvis was done in patients above 40 years of age.

Steps for preparing *Ksharasutra (Caustic therapy):*

Ksharsutra prepared by *Arkakshara* (*Calotropis procera* L.), *Snuhiksheera* (latex of *Euphorbia nerifolia* L.) and *Haridra churna* (powder of *Curcuma longa* L.) same as the standard method described in Ayurvedic Pharmacopeia of India.[11]

Methods

Group A: Under advisable anesthesia *Arka Kshara sutra (Caustic therapy)* application with trans fixation of sentinel tag was done.

Group B: Under advisable anesthesia OLIS followed by excision of sentinel tag was done.

Operative procedure

Common preoperative procedures adopted for both the groups

Written informed consent was taken from every patient.Fitness tests, including laboratory tests and physical examination of all patients were done for anesthesia as well as surgery point of view. Injection tetanus toxoid, 0.5 ml intramuscular (IM), was given before surgery. Intradermal injection of xylocaine 2% sensitivity test was done before surgery. The patient was kept nil orally at least 6 hours prior surgery. Preparation of part i.e. Shaving of perineal area was done. Soap water enema at bed time prior to surgery and proctolytic enema at 7 am on the day of operation was given.

Procedure of Ksharasutra (Caustic therapy) transfixation in Group A

The patient was laid down in the lithotomy position. Painting and draping of perianal region was done. Injection xylocaine 2% with adrenaline was given for the purpose of local anesthesia. With two fingers, anal sphincters were dilated in controlled manner. The whole fissure bed including all fibrous tissue was incised by tissue cutting scissor and fibers of internal anal sphincter were separated by blunt dissection by gauze piece from fissure bed till anoderm. After that transfixation of sentinel tag was done by *Arka Ksharasutra* (Caustic therapy) with the help of round body curved needle. Haemostasisis achieved by 'T' bandaging and the patient was shifted to the ward in stable condition.

Procedure of open lateral internal sphincterotomy in Group B

The patient was laid down in lithotomy position. Painting and draping was done. Local anesthesia was given with injection xylocaine 2% with adrenaline. Anal dilatation was done as mentioned in Group A. Intersphincteric groove was palpated with the index finger and 1 cm incision was taken at 5 o'clock at perianal skin through the intersphincteric groove. The lateral side of internal anal sphincter was dissected and a segment of it was withdrawn outside using curved artery forceps and then divided completely with electric cautery. Pressure packing was done for 5 min to reduce the chances of hematoma. The wound was left open to heal by secondary intension. The whole fissure bed including fibrous tissue and sentinel tag was excised with the help of scissor. Sterilized dressing was carried out. After hemostasis, 'T' bandage was applied and the patient was shifted to the ward in stable condition.

Postoperative regimens for both the Groups

After surgery patient was kept in head low position till complete recovery from the anesthesia. Appropriate intravenous (IV) fluids were used as per the need. Antibiotic coverage was given for 5 days. Suitable analgesics were used as per the requirement. From next day of surgery onwards, sitz bath with *Triphala* decoction mixed with warm water was advised twice a day. *Haritki* powder 5 gm two times before meal with luke warm water was prescribed for softening the stool. 10 ml of *Matra Basti*(enema with oil) with *Jatyadi taila* was given once daily after sitz bath. 1 g (500mgx2) of *Gandhak rasayan* three times a day with warm water after meal was prescribed in all patients. Post-operative regimens were given for four weeks

.

ASSESSMENT CRITERIA

Assessment was carried out on the basis of post-operative complains by specially designed gradation method as depicted in Table 1

Table 1: Gradation of post-operative complains

Gradation	Pain	Swelling	Oozing
0	No pain	Absent	Dry gauze
1	Pain at the time of defecation and tolerable pain, even without analgesia	Present	Spot of discharge on gauze
2	Pain at the time of defecation and continuous which relieves after oral analgesia	-	Half gauze wet with discharge

Overall assessment was carried out on the basis of post-operative pain, swelling, oozing and wound healing as depicted in Table 2.

Table 2: Criteria for overall assessment

Results	Assessment criteria
Cured	Relief in pain, perianal swelling and oozing within 0-7 days and wound healing within 30 days
Improvement	Relief in pain, perianal swelling and oozing within 7-14 days and wound healing within 30 days
Moderate Improvement	Relief in pain, perianal swelling and oozing within 14-21 days and wound healing within 30 days
Mild Improvement	Relief in pain, perianal swelling and oozing within 21-30 days and wound healing within 30 days
No relief	No relief in pain and oozing even after 30 days

Duration of treatment and followup

Patients were assessed on weekly interval up to 4 weeks and thereafter till 1 month to observe recurrence and any untoward effects of the treatment.

Statistical test

For the assessment of result by statistical analysis, the Wilcoxon signed-rank test was used to evaluate the effect of individual treatment and the Mann–Whitney rank sum test was used for intergroup comparison as the data was non parametric in nature.

OBSERVATIONS

Total 30 patients of fissure-in-ano were registered, among them 15 patients were in group A and 15 patients in group B.

The maximum patients belonged to 17–30 years (39.72%),male (64.30%), Hindu religion (94.80%) had *Krura* (hard) *Koshtha* (56.87%). The maximum patients reported complaint of passing hard stool (98.77%). 43.16% of patients were found to have *vatakaphaja prakriti*.(constitution) The symptoms of *Fissure in ano* observed among the patients of both the groups were pain in ano in 100% (moderate 46.39%), constipation in 94.80% with irregular

bowel in 62% and bleeding per rectum in 89.08% of patients (dropping type in 68.72%, mild in 63.22%, after defecation in 42% and occasional in nature in 80.26%). On local examination, 3.26% patients had unhealthy peri-anal skin and 94.27% patients had discharge from anal canal. Maximum patients (51.11%) had chronic fissure with sentinel tag at 6 o'clock position. Sphincter spasm was found in 73.22% and anal papilla was observed in 41.96% of the patients.

RESULTS

In the present study, weekly assessment was done to assess and compare the efficacy of *arka Ksharasutra (Caustic therapy)* and open lateral internal sphincterotomy (OLIS). The assessment was made on the basis of relief in post-operative pain, swelling, oozing and healing of the wound. Assessment was done on the 7th day, 14th day, 21st day and 30th day. Although individual results in both groups were found statistically highly significant ($P < 0.001$) in pain in ano [Table 3], but on comparing, there was statistically insignificant difference (0.280) in number of days required for relief in post-operative pain. Patients of group A required an average of 10.88 days while patients of group B, average 9.71 days were required for relief in post-operative pain, which shows that group B (OLIS) was better than group A (K. S. Application).

On 7th post-operative day, patients of group A got 50% relief in post-operative swelling, while in group B, 33.33% relief was observed. In 2nd week, 100% patients got relief in postoperative swelling in both the groups [Table 5]. There was statistically insignificant difference in number of days required for relief in swelling, but in mean difference, patients of group A required an average of 1.62 days, while in group B, an average of 1.06 days was needed for relief in post-operative swelling [Table 4]. It was observed that all patients had got 100% relief in postoperative oozing of blood till the end of 1st week in group A and 3rd week in group B [Table 6]. There was statistically insignificant difference in number of days required to stop post-operative oozing per rectum. Patients of group A required an average of 7 days to stop postoperative oozing, while in group B, an average of 6.73 days was needed.(SD: Standard deviation, SE: Standard error, BT: Before treatment, AT: After treatment, Df: difference, W: Wilcoxon signed rank test)

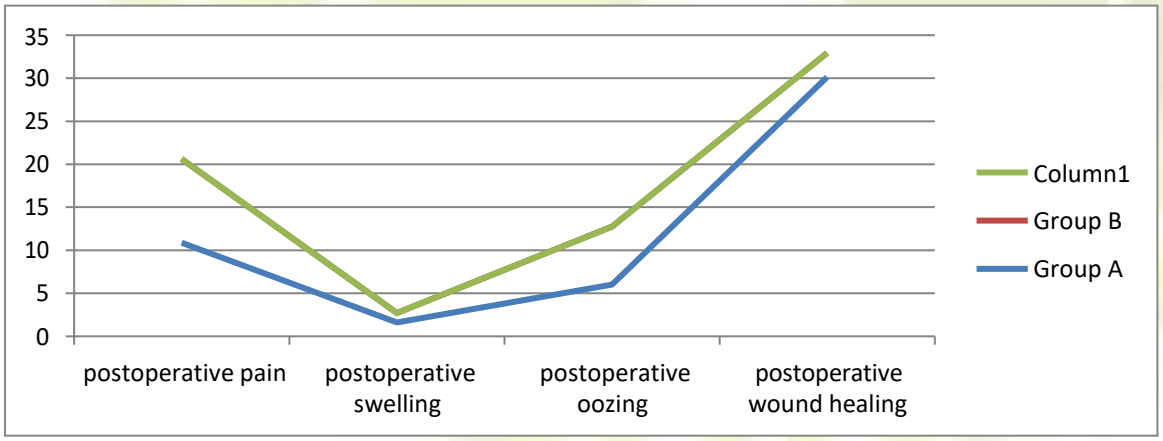
Table 3: Assessment of postoperative pain in ano in Group A and B (*n*=30)

Statistical analysis of pain in ano in Group A (*n*=15)									
Days	**Mean BT**	**Mean AT**	**Mean DF**	**Percentage relief**	**W**	**SD**	**SE**	**P**	**Significance**
7th	2.66	0.94	1.72	65.00	-105	0.88	0.23	<0.001	Highly Significant
14th	2.66	0.41	2.25	85.00	-120	0.88	0.23	<0.001	Highly Significant
21th	2.66	0.28	2.38	90.00	-120	0.91	0.24	<0.001	Highly Significant
30th	2.66	0.14	2.52	95.00	-120	0.74	0.20	<0.001	Highly Significant
>30th(5th week)	2.66	0.08	2.58	97.50	-120	0.74	0.20	<0.001	Highly Significant

Statistical analysis of pain in ano in Group B (*n*=15)									
Days	**Mean BT**	**Mean AT**	**Mean DF**	**Percentage relief**	**W**	**SD**	**SE**	**P**	**Significance**
7th	2.41	0.61	1.80	75.01	−105	0.77	0.21	<0.001	Highly Significant
14th	2.41	0.21	2.20	91.68	−120	0.67	0.17	<0.001	Highly Significant
21st	2.41	0.13	2.28	94.44	−120	0.59	0.15	<0.001	Highly Significant
30th	2.41	0.13	2.28	94.44	−120	0.59	0.15	<0.001	Highly Significant
>30th (5th week)	2.41	0.07	2.34	97.22	−120	0.61	0.61	<0.001	Highly Significant

Table 4: Average days required to get relief in post-operative symptoms

Symptoms	Group A (days)	Group B(days)	P	Significance
Postoperative pain	10.88	09.71	0.282	Non-significant
Postoperative swelling	1.62	1.06	0.615	Non-significant
Postoperative oozing	**7**	6.76	0.498	Non-significant
Postoperative wound healing	30.11	27.38	0.216	Non-significant



Graph no.1

The 46.67% patients found healing of post-operative wound within 30 days. There was statistically insignificant difference in number of days required for post-operative wound Healing, but patients of group A took an average of 30.11 days for post-operative wound healing, while in group B, an average of 27.38 days was required for post-operative wound healing. Out of 30 patients

of *Fissure in ano*, 50% of patients were cured and 30% of patients had marked improvement. Moderately improved and mild improvement was noted in 6.67% of patients each. 6.67% did not have any relief. Complication was reported in two patients. In group A complication was reported as skin tag in one patient and in group B subcutaneous fistula in one patient. These patients were treated accordingly, i.e., excision of skin tag and fistulectomy of subcutaneous fistula respectively. No patient reported recurrence of *Fissure in ano* in both the groups during1 month of follow up. Hence, it can be said that both the modalities of treatment are effective for the management of chronic fissure.

DISCUSSION

Between 17-30 years age group 39.72% patients were noted. As per the classics, more prevalence of fissure in ano is mentioned in this age group.[12]The male-to-female ratio was 18:12. Fissure-in-ano can occur irrespective of the gender equally as reported by other study.[13]But in this study, male patients were more, may be due to less sample size. This study showed that 100% of the patients were suffering from burning pain in ano, which is a cardinal symptom of *Fissure in ano*.[14]Constipation is a main causative factor of *Fissure in ano*(chronic fissure-in-ano) and it was reported in 98.77% of patients.[15]Moreover, 91.33% of patients noted bleeding per ano. The position of fissure-in-ano at 6 o'clock position was found in 41.11% and 56.32% in male and female patients respectively. This might be due to direct pressure of stool during defecation and less muscular support at 6 o'clock position.[16] The usual site for anal fissure is midline posterior; however, lateral fissures are seen in diseases such as Crohn's disease, ulcerative colitis, tuberculosis, and syphilis.[17]All (100%) patients had developed sentinel tag; among them, sentinel tag was at 6 o'clock position in 52.44% patients, sentinel tag was at 12 o'clock position in 12.80% patients, and sentinel tag was both at 6 o'clock and 12 o'clock position in 36.44% of the patients. Females have more chances to develop sentinel tag at 12 o'clock, whereas male patients have more chances to develop sentinel tag at 6 o'clock position.[18]The sentinel tag develops externally and papilla internally in chronic fissure after 6 months of chronicity.[19]Spasmodic anal sphincter was observed in 72.22% of the patients. In chronic fissure-in-ano, sphincters become spasmodic due to increased intrarectal pressure and causes delay in healing of fissure bed.[20] In 42.22% of the patients, anal papilla was found during P/R digital examination which is one of sign in chronic nature of fissure-in-ano. It is a general observation that in cases of chronic fissure-in-ano, either a sentinel tag or anal papilla is developed.

Anal pain was relieved early in group B (OLIS) as compared to group A (KSL). In group A, *ArkaKsharasutra (Caustic therapy)* was *in situ* during 1st week and penetration of *Kshara* causes burning pain, so less number of patients got relief in pain than group B. During 2nd week, *Ksharasutra (Caustic therapy)* was slough out with skin tag and created fresh wound, so patients got relieved from pain as compared to 1stweek. While in group B, fresh wound occurred at the time of operation which can be correlated as *Shuddhavrana* (A CLEAN Wound) and in *Shuddhavrana*, (A CLEAN Wound) pain is less or absent.[21] Hence, the patients of group B got relief from pain earlier than in patients of group A.Perianal swelling at operated site is due to tissue injury and it varies from patient to operated patient. The perianal swelling was found in only 6 patients.

Hence, insignificant result was found due to less number of sample. There was statistically insignificant difference in the number of days required for healing of postoperative wound ($P > 0.217$).

In group A, slough out of *Ksharasutra (Caustic*

therapy) applied at the base of tag and wound was healed by secondary intention. In Group B, excision of sentinel tag leads to fresh wound; this was also healed by secondary intention. It might be due to the occurrence of fresh wound after sloughing out of *Ksharasutra* (Caustic therapy) in group A, which was healed later than group B where wound was created immediate after excision of tag. Therefore, wound healing started 6–7 days late in group A as compared to group B.

The mean time required to relieve all the post-operative complaints was found minimal in OLIS-treated group in comparison to *Ksharasutra (Caustic therapy)* treated group, which may indicate better efficacy and applicability of OLIS as operative procedure for the management of *Fissure in ano*(chronic fissure-in-ano).

Mode of Action of *Arka Ksharasutra* (Caustic therapy)

Arka is *Katu* (pungent) and *Tikta* (bitter) in *Rasa*, *Laghu (light)*, *Ruksha(dry)* and *Teekshnaguna*, *(sharp) Ushnavirya(hot in potency)* and possessing *Bhedana* (incision), *Krimighana*, (killing of worms). *Bhedana* (incision), properties *Vishaghna (anti-toxic)*, *Vrunahara*, (wound healer) *Vatahara*, *Shophaghana* (anti-inflammatory) properties.[22] With *Chhedana (excision) a*nd *Bhedana (incision)* properties of *Kshara, (Caustic therapy)* helps to excise the sentinel tag as well as of fissure bed.[23] It also helped to remove unhealthy fibrous tissue and debris by action of *Ksharana* (exuding) and make the wound *Shuddha*(healthy) by virtue of *Shodhana* properties(purification).[24]The antiseptic property of latex of *Snuhi (Euphorbia nerifolia* L.*)* helps to check secondary infection.[25]*Haridra* powder (*Curcuma longa* Linn.) has anti-inflammatory as well as antibacterial properties and hence it made the wound clean, healthy and promoted uneventful healing.[26]

Table 5: Assessment of post-operative swelling in group A and B (*n*=30)

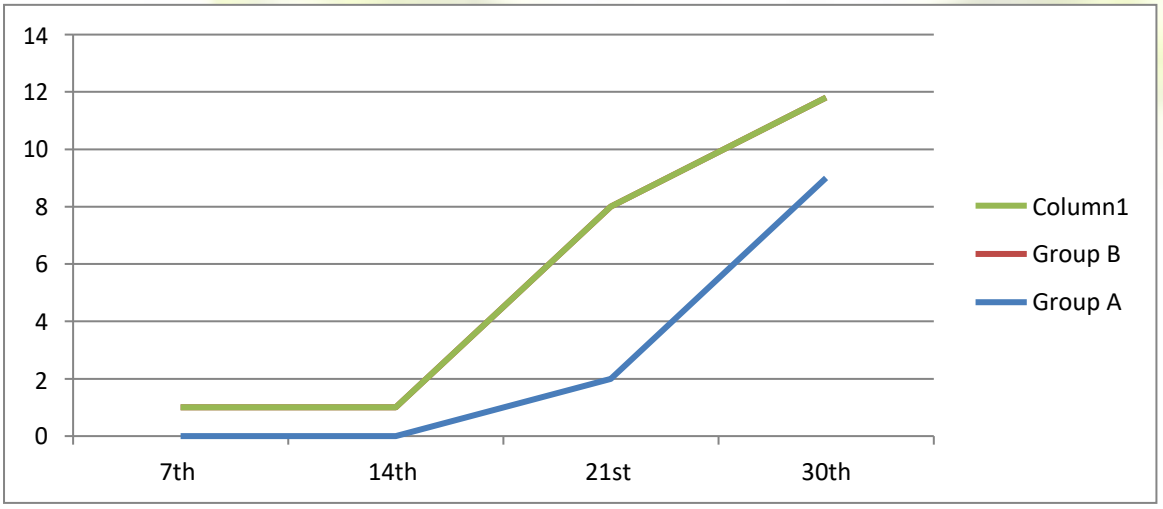
Statistical analysis of post-operative swelling in group A (*n*=15)									
Days	**Mean BT**	**Mean AT**	**Mean Df**	**Percentage relief**	**W**	**SD**	**SE**	**P**	**Significance**
7th	0.28	0.14	0.14	**50**	−3	0.353	0.091	0.500	Non-Significant
14th	0.28	0.00	0.27	100	−10	0.458	0.118	0.125	Non-Significant
21st	0.28	0.00	0.27	100	-	-	-	-	-
30th	0.28	0.00	0.27	100	-	-	-	-	-
Statistical analysis of post-operative swelling in group B (*n*=15)									
Days	**Mean BT**	**Mean AT**	**Mean Df**	**Percentage relief**	**W**	**SD**	**SE**	**P**	**Significance**
7th	0.21	0.13	0.07	33.33	−1	0.258	0.0667	1.00	Non-Significant
14th	0.21	0.00	0.20	100	−6	0.414	0.107	0.250	Non-Significant
21st	0.21	0.00	0.20	100	−6	0.414	0.107	0.250	Non-Significant
30th	0.21	0.00	0.20	100	-	-	-	-	-

Table 6: Assessment of post-operative per rectal oozing in group A and B (*n*=30)

Statistical analysis of per rectal oozing in group A (*n*=15)									
Days	**Mean BT**	**Mean AT**	**Mean Df**	**Percentage relief**	**W**	**SD**	**SE**	**P**	**Significance**
7th	2.14	0.41	1.73	81.25	-91	1.033	0.267	<0.001	HS
14th	2.14	0.00	2.73	100	120	0.990	0.256	<0.001	HS
21st	2.14	0.00	2.73	100	-	-	-	-	-
30th	2.14	0.00	2.73	100	-	-	-	-	-
Statistical analysis of per rectal oozing in group B (*n*=15)									
Days	**Mean BT**	**Mean AT**	**Mean Df**	**Percentage relief**	**W**	**SD**	**SE**	**P**	**Significance**
7th	1.81	0.26	1.53	85.19	-91	0.834	0.215	<0.001	Highly significant
14th	1.81	0.06	1.73	96.30	-120	0.799	0.206	<0.001	Highly significant
21st	1.81	0.00	1.80	100	-105	0.775	0.200	<0.001	Highly significant
30th	1.81	0.00	1.80	100	-	-	-	-	-

Table 7: Days required for *vranaropana*(wound healing) (*n*=30)

Wound healing	**Group A (n=15)**	**Group B (n=15)**	**Total**
7 days	0 (0.00)	1 (0.00)	0 (0)
8-14 days	0 (0.00)	1 (6.67)	1 (3.33)
15-21 days	2 (13.33)	6 (40.00)	8 (26.66)
22-30 days	9 (60.00)	5 (33.33)	14 (46.67)
>30 day (5th week)	4 (26.67)	3 (20.00)	7 (23.33)

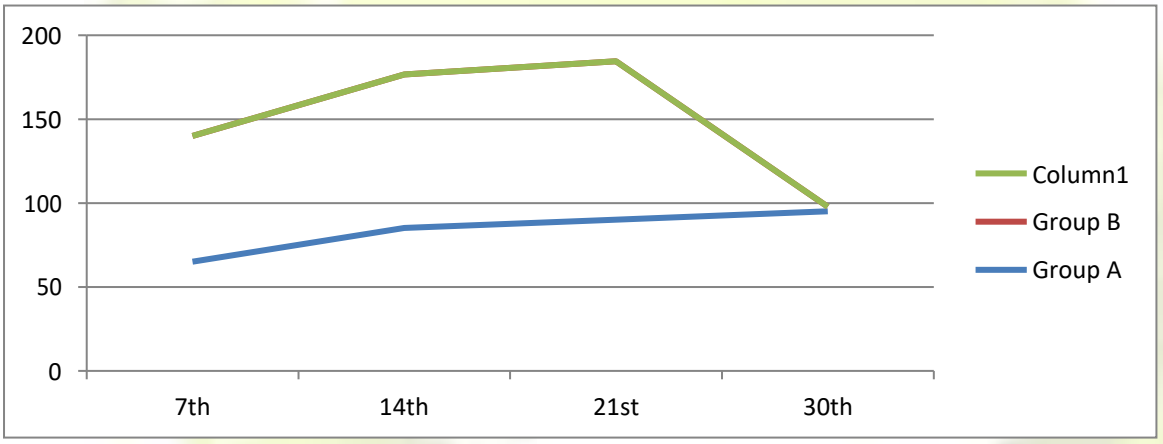


Graph no.2

Table 8: Statistical comparison in post-operative pain, oozing and swelling (*n*=30)

Statistical comparison in post-operative pain

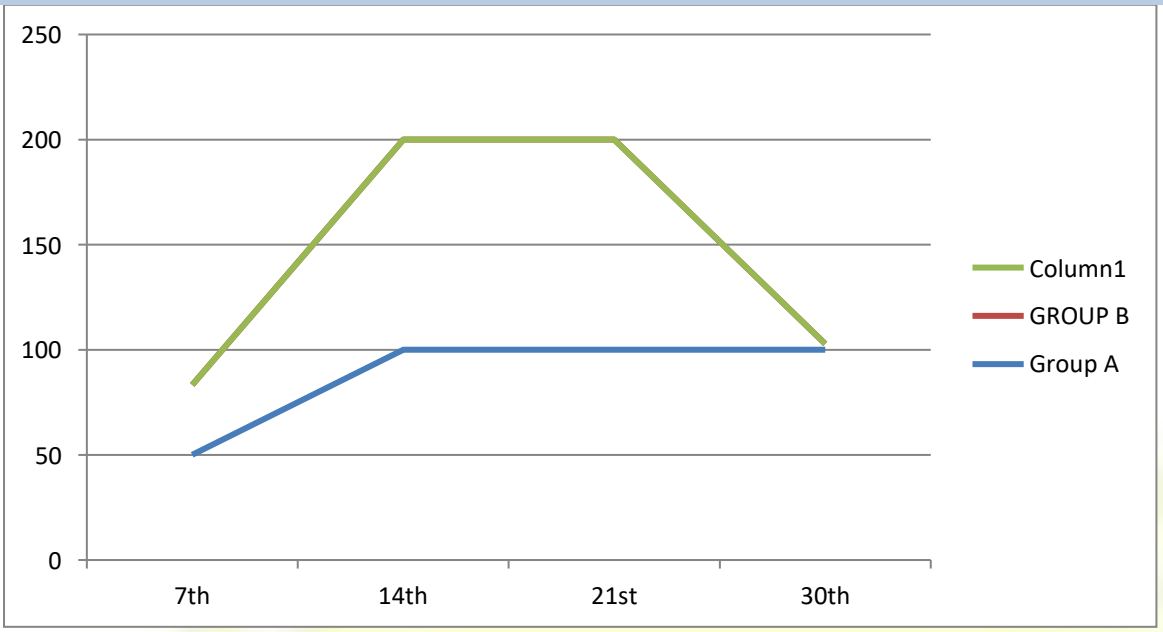
Days	Group A		Group B		P	Significance
	Mean	Percentage relief	Mean	Percentage relief		
7th	1.73	65	1.81	75.01	0.787	Non-Significant
14th	2.27	85	2.21	91.69	0.688	Non-Significant
21st	2.40	90	2.27	94.44	0.376	Non-Significant
30th	2.53	95	2.27	94.44	0.174	Non-Significant
>30th (5th week)	2.60	97.50	2.33	97.22	0.962	Non-Significant



Graph no.3

Statistical comparison in post-operative swelling

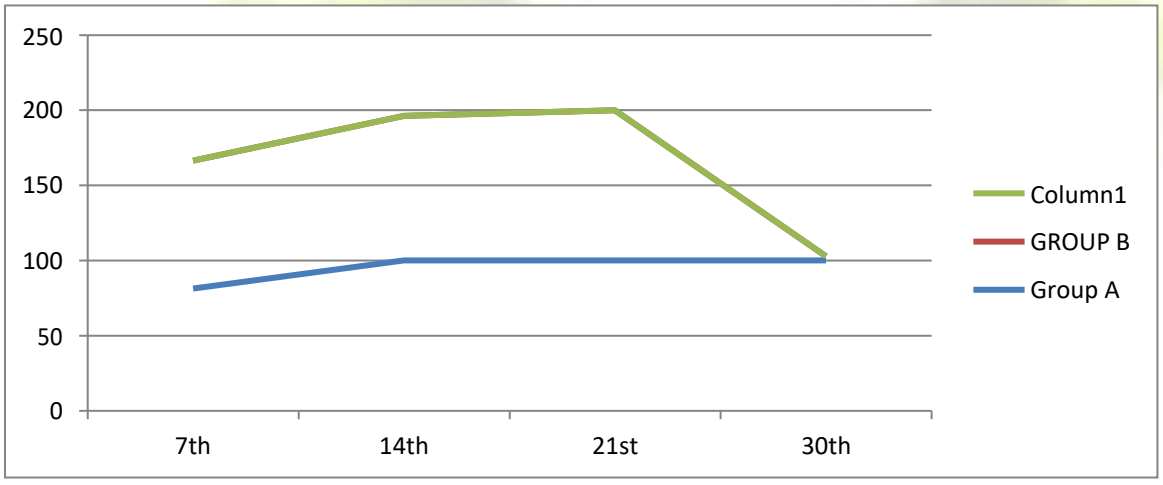
Days	Group A		Group B		P	Significance
	Mean	Percentage relief	Mean	Percentage relief		
7th	0.13	50	0.07	33.33	0.577	Non-Significant
14th	0.27	100	0.20	100	0.692	Non-Significant
21st	0.27	100	0.20	100	0.692	Non-Significant
30th	0.27	100	0.20	100	-	-



Graph no.4

Statistical comparison in postoperative oozing

Days	Group A		Group B		P	Significance
	Mean	Percentage relief	Mean	Percentage relief		
7th	1.73	81.25	1.53	85.18	0.527	Significance
14th	2.13	100	1.73	96.30	0.255	Non-Significant
21st	2.13	100	1.80	100	0.329	Non-Significant
30th	2.13	100	1.80	100	-	



Graph no.5

Mode of action of open lateral internal sphincterotomy

In chronic fissure- in-ano, internal sphincter muscle (continuation of circular muscle of rectal wall) becomes fibrotic due to recurrence ulcer. The fibrosis of internal sphincter creates symptoms such as pain and non healing of fissure. After sphincterotomy (OLIS), internal sphincter is divided, so sphincter spasm as well as pain relieved which helps to heal fissure bed.

Mode of action of *Triphala kashaya, Haritki powder, Jatyadioiland Gandhak Rasayana:*

Sitz bath with *Triphala kashaya* was advised. *Triphala* is well known for its wound healing properties.[27]Also possesses antimicrobial property.

Haritki powder *(Curcuma longa)*was given 5 g, two times a day, with plain warm water before meal .

daily to all patients of both the groups in post-operative days. It has mild laxative action and thus helped to relieve constipation and proper digestion of food in post-operative patients.

Most of the ingredients used in *Jatyadi* oil are *Shothahara*(anti-inflammatory), *Vedanasthapana*(analgesic), and *Ropana*(healing) in nature which are important for wound healing.[29]Hence, it was also found helpful to check wound infection. *Jatyadi* oil has *Shodhana*(cleansing) and *Ropana*(wound healing) action. Soothing effect of *Jatyadi* oil protected postoperative anal wound from further infection and helped in healing.[30]

1gm of *Gandhak Rasayana* three times a day with warm water after meal was prescribed in all the patients. It is a great antibacterial, antiviral and antimicrobial Ayurvedic medicine

CONCLUSION

Thus from this study we can come to a conclusion that open lateral internal sphincterotomy with skin tag excision is more effective procedure than *Ksharasutra* (Caustic therapy) application with anal dilatation in the management of *Fissure in ano (*fissure-in-ano).

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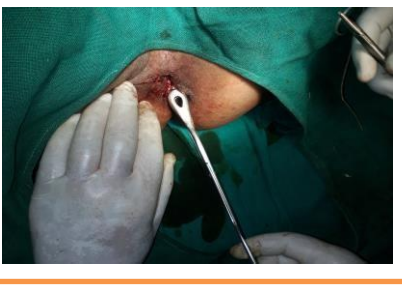

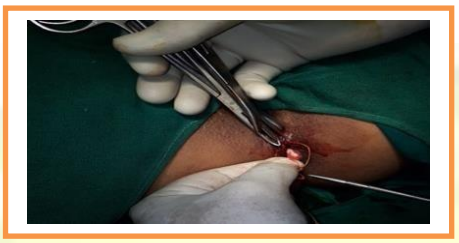

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