**Apamarga Ksharasutra application and open lateral internal sphincterotomy in the management of Parikartika (chronic fissure-in-ano): A randomized controlled clinical trial**

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**Abstract**

**Introduction:** Parikartika resembles fissure-in-ano which is one of the common painful disease among the anorectal disorders. Ksharasutra which is a para-surgical procedure is effective in the management of Parikartika. **Aim:** To compare the efficacy of Apamarga Ksharasutra and open lateral internal sphincterotomy (OLIS) in the management of Parikartika (chronic fissure-in-ano). **Materials and Methods:** Total 30 patients having signs and symptoms of Parikartika (chronic fissure-in-ano) were selected and randomly divided into two groups. In Group A (n = 15), Ksharasutra 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. **Results:** Relief in postoperative symptoms and complications if any was recorded for 4 weeks and follow-up was done for the period of 1 month. **Conclusion:** In both the groups, significant results were obtained, but the difference among groups was statistically insignificant. Duration required for relief of pain, swelling, and wound healing was found to be more in Group A (Ksharasutra) than Group B (OLIS). **Conclusion:** OLIS provided better results compared to Ksharasutra ligation in the management of Parikartika (chronic fissure-in-ano).

**Keywords:** Fissure-in-ano, Ksharasutra, open lateral internal sphincterotomy, Parikartika

**Introduction**

In the present era, due to changing lifestyle such as sedentary lifestyle, increased stress, improper dietary and sleep habits, the incidences of lifestyle disorders are increasing continuously. This also leads to constipation which is the main causative factor for Parikartika. **Parikartika** can be compared with fissure-in-ano which is one of the common disorder among the anorectal disorders and is painful condition. It is common entity among the people and affects a large percentage of population at least once in their life.

Acharya Sushruta has described the term “Parikartika” as a condition of anus in which cutting and burning type of pain occurs. Acharya Kashyapa has described three types of Parikartika, namely, Vataja, Pittaja, and Kaphaja. According to classic, the factors responsible for the Parikartika are similar to cause of the complications of Basti (enema) and Virechana (purgation) procedure, Arsha (haemorrhoids), Atisara (diarrhoea), and Udavarta (severe constipation).

Sushruta has described a number of surgical and para-surgical procedures such as Ksharakarma (chemical cauterization), Agnikarma (thermal cauterization), and Raktamokshana (therapeutic blood letting). Among them, Ksharakarma 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 fissure are available with their own advantages and disadvantages like recurrence, incontinence or hemorrhage. These disadvantages

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can be overcome by Ayurveda with the help of para surgical measures like Ksharasutra, which is well established in the management of fistula[4], piles[3] and chronic fissure in ano.[6] At present, open lateral internal sphincterotomy (OLIS) is considered the gold standard treatment for chronic fissure-in-ano.[3] Hence, in this study, evaluation of the Ksharasutra application as an important para-surgical tool by transfixation technique for surgical management of Parikartika (chronic fissure-in-ano) was planned. Ksharasutra application was compared with modern surgical process of OLIS in the management of Parikartika. 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 ligation and OLIS in the management of Parikartika (chronic fissure-in-ano).

Materials and Methods
Selection of patients
Patients of Parikartika (chronic fissure-in-ano) having signs and symptoms like, pain in ano, bleeding per rectum and constipation, were selected from the OPD/IPD of Shalya Tantra, IPGT&RA hospital, Jamnagar irrespective of gender, occupation and religion. The registered patients were randomly allocated into two groups by computer randomization method (www.randomization.com). The study was approved by the Institutional Ethics Committee, vide letter no. PGT/-A/ Ethics/2016-17/2675 dated 16.11.2016. The study was also registered in the Clinical Trial Registry of India, vide registration number: CTRI/2017/04/008388 retrospectively.

Diagnostic criteria
The patients were diagnosed on the basis of signs and symptoms like burning pain after defecation, dropwise bleeding after defecation, swelling at anal region.

Examination
On local examination chronic fissure with skintag and on per rectum digital examination spasm of sphincter was noted. Proctoscopy examination was done after giving suitable anaesthesia at the time of operation to exclude other anorectal pathologies such as piles, polyp, and any other growth.

Inclusion criteria
Patients of Parikartika (chronic fissure-in-ano) having chronicity more than 6 months and age between 18 years and 60 years were selected. Patients of Parikartika associated with Arsha (piles) 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 of any organs were excluded. The patients who were suffering from acute fissure-in-ano, congenital anal stricture or carcinoma of ano-rectum were excluded from study. 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 leukocyte count, differential leukocyte 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 in all registered patients. Human immunodeficiency virus (HIV), Venereal Disease Research Laboratory (VDRL) and hepatitis-B (HBsAg), urine analysis for albumin, sugar, and microscopy was also performed. Stool examination for routine and microscopic was also done. These investigations were done only before treatment for fitness of patients for anaesthesia and surgery point of view.

Methods
Group A: Apamarga Ksharasutra application with transfixation of sentinel tag was done under suitable anesthesia.
Group B: OLIS followed by excision of sentinel tag was done under suitable anesthesia.

Operative procedure
Common preoperative procedures adopted for both the groups
Written informed consent was taken from every patient at the time of registration. Written informed consent for operation was also taken. Fitness tests, including laboratory tests and physical examination of all patients were done for anaesthesia 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 h before surgery. Preparation of parts, i.e., shaving of perineal area, was done. Soap water enema at 10 pm at the day before surgery and proctoclysis enema at 7 am on the day of operation was given.

Procedure of Ksharasutra transfixation in Group A
The patient was taken in the lithotomy position. Painting and draping of perianal region was done. Injection xylocaine 2% with adrenaline was given for the purpose of local anaesthesia. With two fingers, anal sphincters were dilated in controlled manner. The whole fissure bed including of 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 Ksharasutra with the help of round body curved needle. After achieving haemostasis, ‘T’ bandage was applied and the patient was shifted to the ward in stable condition.

Procedure of open lateral internal sphincterotomy
The patient was taken 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 intention. The whole fissure bed including fibrous tissue and sentinel tag was excised with the help of scissors. Sterilized dressing was carried out. After hemostasis, ‘T’ bandage was applied and the patient was shifted to the ward in stable condition.

Postoperative procedures
The same procedure was adopted in both the groups. After surgery head low position was given till the complete recovery from the anesthesia. Appropriate intravenous (IV) fluids were used as per the need. Suitable antibiotic coverage was given for 5 days. Suitable analgesics were used as per the requirement. From next day of surgery onward, sitz bath with Panchawalkala decoction mixed with warm water was advised two times a day. Avipatikara powder 5 g two times before meal with luke warm water was prescribed for soften the stool. 10 ml of Matra Basti (enema with oil) with Jatyadi oil was given once daily after sitz bath. 1 g (500mgx2) of Triphala Guggulu Vati three times a day with warm water after meal was prescribed in all patients.

Assessment criteria
Assessment was carried out on the basis of post-operative status of pain, swelling and oozing by adopting the gradation depicted in Table 1 and overall assessment was carried out on the basis of post-operative pain, swelling, oozing and wound healing as depicted in Table 2.

Duration of treatment and follow-up
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 applied on subjective criteria like pain, swelling, oozing and wound healing in intragroup and the Mann–Whitney rank sum test was used for intergroup comparison.

Observations
Total 30 patients of fissure in ano were registered, among them 15 patients in group A and 15 patients in group B. The maximum patients belonged to 18–30 years (38.71%), male (61.29%), Hindu religion (96.77%) had Krura Koshtha (54.84%). The maximum patients reported complaint of passing hard stool (96.77%), 45.16% of patients were found to have Vatakaphaja Prakriti. The symptoms of Parikartika observed among the patients of both the groups were pain in ano in 100% (moderate 48.39%), constipation in 96.77% with irregular bowel in 60% and bleeding per rectum in 90.32% of patients (dropping type in 67.86%, mild in 64.29%, after defecation in 50% and occasional in nature in 82.14%). On local examination, 3.23% patients had unhealthy pri-anal skin and 96.77% patients had discharge from anal canal. Maximum patients (51.61%) had chronic fissure with sentinel tag at 6 O’clock position. Sphincter spasm was found in 74.19% and anal papilla was observed in 41.94% of the patients.

Results
In the present study, weekly assessment was done to assess and compare the efficacy of Apamarga Ksharasutra 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 (0.281) in number of days required for relief in post-operative pain. Patients of group A required an average of 10.86 days while patients of group B, average 9.73 days were required for relief in post-operative pain, which shows that group B (OLIS) was better than group A (K. S. application) [Table 4].

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 post-operative 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 1.60 days, while in group B, an average of 1.07 days was needed for relief in post-operative swelling [Table 4].

It was observed that all patients had got 100% relief in post-operative 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 6 days to stop postoperative oozing, while in group B, an average of 6.73 days was needed [Table 4].

| 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 |
The 46.67% patients found healing of post-operative wound with in 30 days [Table 7]. There was statistically insignificant difference in number of days required for post-operative wound healing, but patients of group A took an average of 30.13 days for post-operative wound healing, while in group B, an average of 27.33 days was required for post-operative wound healing [Table 4].

Out of 30 patients of Parikartika, 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 Parikartika in both the groups during 1 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 18-30 years age group 38.71% patients were noted. As per the classics, more prevalence of fissure in ano is mentioned in this age group.[9] The male-to-female ratio was 19:12. Fissure-in-ano can occur irrespective of the gender equally as reported by other study.[10] 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 Parikartika.[10] Constipation is a main causative factor of Parikartika (chronic fissure-in-ano) and it was reported in 96.77% of patients.[11] Moreover, 90.32% of patients noted bleeding per ano. The position of fissure-in-ano at 6 O’clock position was found in 42.11% and 58.33% 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.[12] 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.[13] All (100%) patients had developed sentinel tag, among them, sentinel tag was at 6 O’clock position in 51.61% patients, sentinel tag was at 12 O’clock position in 12.90% patients, and sentinel tag was both at 6 O’clock and 12 O’clock position in 35.48% 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.[14] The sentinel tag develops externally and papilla internally in chronic fissure after 6 months of chronicity.[15] Spasmodic anal sphincter was observed in 74.19% of the patients. In chronic fissure-in-ano, sphincters become spasmodic due to increased intra rectal pressure and causes delay in healing of fissure bed.[16] In 41.94% of the patients, anal papilla was found during PR 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, Apamarga Ksharasutra 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 was sloughed out with

### 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 |

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

| Days       | Mean BT | Mean AT | Mean Df | Percentage relief | W    | SD    | SE    | P    | Significance |
|------------|---------|---------|---------|-------------------|------|-------|-------|------|--------------|
| 7th        | 2.67    | 0.93    | 1.73    | 65.00             | −105 | 0.884 | 0.228 | <0.001 | HS           |
| 14th       | 2.67    | 0.40    | 2.27    | 85.00             | −120 | 0.884 | 0.228 | <0.001 | HS           |
| 21st       | 2.67    | 0.27    | 2.40    | 90.00             | −120 | 0.910 | 0.235 | <0.001 | HS           |
| 30th       | 2.67    | 0.13    | 2.53    | 95.00             | −120 | 0.743 | 0.192 | <0.001 | HS           |
| >30th (5th week) | 2.67 | 0.07    | 2.60    | 97.50             | −120 | 0.737 | 0.190 | <0.001 | HS           |

#### 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        | 2.40    | 0.60    | 1.80    | 75.00             | −105 | 0.775 | 0.200 | <0.001 | HS           |
| 14th       | 2.40    | 0.20    | 2.20    | 91.67             | −120 | 0.676 | 0.175 | <0.001 | HS           |
| 21st       | 2.40    | 0.13    | 2.27    | 94.44             | −120 | 0.594 | 0.153 | <0.001 | HS           |
| 30th       | 2.40    | 0.13    | 2.27    | 94.44             | −120 | 0.594 | 0.153 | <0.001 | HS           |
| >30th (5th week) | 2.40 | 0.07    | 2.33    | 97.22             | −120 | 0.617 | 0.159 | <0.001 | HS           |

SD: Standard deviation, SE: Standard error, HS: Highly significant, BT: Before treatment, AT: After treatment, Df: difference, W: Wilcoxon signed rank test
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skin tag and created fresh wound so patients got relieved from pain as compared to 1st week. While in group B, fresh wound occurred at the time of operation which can be correlated as Shuddha Vrana and in Shuddha Vrana, pain is less or absent.[17] 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 7 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 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 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-treated group, which may indicate better efficacy and applicability of OLIS as operative procedure for the management of Parikartika (chronic fissure‑in‑ano) [Table 8].

Mode of Action of Apamarga Ksharasutra

Ksharasutra was prepared by adopting standard method described in Ayurvedic Pharmacopeia of India.[18] The Apamarga (Achyranthes aspera L.) Kshara, the main ingredient of Ksharasutra, has the properties like Chhedana (excision), Bhedana (incision), Ksharana (debridation), Stambhana (hemostatic), Shodhana (cleansing), and Ropana (healing).[19] With Chhedana and Bhedana properties of Kshara, Ksharasutra helps to excise the sentinel tag as well

| Symptoms                        | Group A (days) | Group B (days) | P  | Significance |
|---------------------------------|----------------|----------------|----|--------------|
| Postoperative pain              | 10.86          | 09.73          | 0.281 | NS*          |
| Postoperative swelling          | 1.60           | 1.07           | 0.614 | NS*          |
| Postoperative oozing            | 6              | 6.73           | 0.499 | NS*          |
| Postoperative wound healing     | 30.13          | 27.33          | 0.217 | NS*          |

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

| Days  | Mean BT | Mean AT | Mean Df | Percentage relief | W   | SD  | SE  | P         | Significance |
|-------|---------|---------|---------|-------------------|-----|-----|-----|-----------|--------------|
|       |         |         |         |                   |     |     |     |           |              |
| 7th   | 0.27    | 0.13    | 0.13    | 77.77             | −3  | 0.352| 0.090| 0.500     | NS           |
| 14th  | 0.27    | 0.00    | 0.27    | 100               | −10 | 0.458| 0.118| 0.125     | NS           |
| 21st  | 0.27    | 0.00    | 0.27    | 100               | −1  | 0.414| 0.107| 0.250     | NS           |
| 30th  | 0.27    | 0.00    | 0.27    | 100               | −1  | 0.414| 0.107| 0.250     | NS           |

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

| Days  | Mean BT | Mean AT | Mean Df | Percentage relief | W   | SD  | SE  | P         | Significance |
|-------|---------|---------|---------|-------------------|-----|-----|-----|-----------|--------------|
|       |         |         |         |                   |     |     |     |           |              |
| 7th   | 0.20    | 0.13    | 0.07    | 33.33             | −1  | 0.258| 0.0667| 1.00     | NS           |
| 14th  | 0.20    | 0.00    | 0.20    | 100               | −6  | 0.414| 0.107| 0.250     | NS           |
| 21st  | 0.20    | 0.00    | 0.20    | 100               | −6  | 0.414| 0.107| 0.250     | NS           |
| 30th  | 0.20    | 0.00    | 0.20    | 100               | −1  | 0.414| 0.107| 0.250     | NS           |

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

| Days  | Mean BT | Mean AT | Mean Df | Percentage relief | W   | SD  | SE  | P         | Significance |
|-------|---------|---------|---------|-------------------|-----|-----|-----|-----------|--------------|
|       |         |         |         |                   |     |     |     |           |              |
| 7th   | 2.13    | 0.40    | 1.73    | 81.25             | −91 | 1.033| 0.267| <0.001   | HS           |
| 14th  | 2.13    | 0.00    | 2.73    | 100               | 120 | 0.990| 0.256| <0.001   | HS           |
| 21st  | 2.13    | 0.00    | 2.73    | 100               | −1  | 0.834| 0.215| <0.001   | HS           |
| 30th  | 2.13    | 0.00    | 2.73    | 100               | −1  | 0.799| 0.206| <0.001   | HS           |

BT: Before treatment, AT: After treatment, Df: Difference, W: Wilcoxon sign, SD: Standard deviation, SE: Standard error, NS: Non-significant, HS: Highly significant
as fissure bed. It also helped to remove unhealthy fibrous tissue and debris by action of *Ksharana* and make the wound *Shuddha* (healthy) by virtue of *Shodhana* properties. The antiseptic property of latex of *Snuh* (*Euphorbia nerifolia L.*) helps to check secondary infection. *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.

**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 nonhealing of fissure. After sphincterotomy (OLIS), internal sphincter divided so sphincter spasm as well as pain relieved which helps to heal fissure bed.

**Mode of action of Panchawalkala decoction**

Sitz bath with *Panchawalkala* decoction was advised. It exhibited *Vrana Shodhana* and *Vrana Ropana* properties. Due to antimicrobial property and wound healing property of *Panchawalkala*, it also helps in healing of postoperative wound.

### Table 7: Days required for *Vrana Ropana* (wound healing) (*n*=30)

| Wound healing | Group A (*n*=15) | Group B (*n*=15) | Total |
|---------------|------------------|------------------|-------|
| 7 days        | 0 (0.00)         | 0 (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) |

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

| Days | Group A | Group B | P | Significance |
|------|---------|---------|---|--------------|
|      | Mean    | Percentage relief | Mean    | Percentage relief |   |
|      |         |               |    |              |
| 7th  | 1.73    | 65            | 1.80  | 75.00        | 0.787 | NS            |
| 14th | 2.27    | 85            | 2.20  | 91.67        | 0.688 | NS            |
| 21st | 2.40    | 90            | 2.27  | 94.44        | 0.376 | NS            |
| 30th | 2.53    | 95            | 2.27  | 94.44        | 0.174 | NS            |
| >30 (5th week) | 2.60 | 97.50         | 2.33  | 97.22        | 0.962 | NS            |

**Mode of action of Avipattikara powder**

*Avipattikara* powder 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. The main ingredient of this formulation is *Trivrita* (*Operculina turpethum* L.), which has mild purgative action and thus helped to relieve constipation in post-operative patients. It also helps to soften the stool.

**Mode of action of Jatyadi oil**

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. 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.

**Mode of action of Triphala Guggulu**

1 g (500mgx2) of *Triphala Guggulu Vati* three times a day with warm water after meal was prescribed in all the patients. *Triphala* is well known for its wound healing properties. *Guggulu* is also one of the best known anti-inflammatory drug.

Thus, directly or indirectly, good healing effect was achieved by the actions of all three adjuvant medicines, i.e., *Panchawalkala* decoction, *Jatyadi* oil and *Triphala Guggulu* used along with surgical and para-surgical procedure in this study.

**Conclusion**

Open lateral internal sphincterotomy with skin tag excision is more effective procedure than *Ksharasutra* application with anal dilatation in the management of *Parikartika* (chronic fissure-in-ano).
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