

## A New technique for the treatment of Jeerna Parikartika w. s. r. to chronic fissure in Ano

Chaturbhuj Bhuyan\*

T. S. Dudhamal\*\*

S. K. Gupta\*\*\*

### ABSTRACT

The 867 cases of chronic fissure in ano aged between 10-60 years of both sexes complaints with painful defecation and bleeding P/R dropping and particularly burning pain with chronic linear ulcer at fissure bed, who were advised for analgesic, anti inflammatory and occasionally antibiotics modern drugs as conservative treatment and further finally diagnosed for fissurectomy. Such patients were selected for surgical study treated with ksharasutra suture treatment procedure (KSS). Taking all the preoperative measures KSS was applied once under suitable anesthesia. The treatment period was only 3-5 days while they were asked to attend the hospital for a week only for observations and the post operative management. The assessment of result was assessed through clinical parameters. The 838 cases were completely cured where as 29 patients got complications like proctitis, abscess and sinus as in numbers 12, 10 and 7 respectively. And also they were managed under Ksharakarma procedure. All the demographic observations concerning to the chronic anal fissure were recorded and critically analyzed. The curing rate of the Ksharasutra suture procedure was 96.65%. No untoward effects were observed in any of the patients after cure.

**Key Words:** Fissure in ano, fissurectomy, parikartiaka, KSS, ksharasutra.

### INTRODUCTION

It is important to note that the most prevalent anorectal diseases now days are piles, fissure, fistula, sinus, proctitis, abscess, pruritus ani which were also observed on those days. Amongst them anal fissure is one of the most painful disease and have delayed healing. Linear anal ulcer turned to chronic anal fissure which is very similar to Parikartika as described in Ayurvedic classics. It has been described as a Vyapad (complication) due to Virechana (purgation) and Basti (medicated enema). The Parikartika is presented in two

conditions i.e. Tivra (acute condition) and Jeerna (chronic condition). Acute condition is marked with fresh anal linear ulcer with agonizing pain while chronic condition is fibrosed anal ulcer bed along with moderate pain with or without skin tag.

The present trend of treatment of acute condition is conservative where as the chronic anal fissure deserves the surgical intervention. Alopatic system of treatment has adopted various treatments like Lord's anal dilatation, sphinctrectomy, fissurectomy.<sup>1</sup> But these methods are being practiced with their certain limitations. In addition to, these procedures are though dealt but major complications like anal stricture, incontinence, recurrence are left as cursed rewards. At present ano rectum area is a quarter field of research because of the different numbers of ano rectal disorders presented in the first moving society due the rapid changes of life style and regimen. As per massive study of Indian Proctology Society the

**Author's Affiliation:** \*Professor and Head, \*\*Assistant Professor, \*\*\*Reader, Department of Shalya-Tantra, Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurveda University, Jamnagar. Gijarat

**Reprint's request:** Prof. Chaturbhuj Bhuyan, Professor and Head, Department of Shalya-Tantra, I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar - 361008., Mob.- 09428671948, Email drcbhuyan@mail.com

(Received on 24.05.2010, accepted on 26.08.2010)

prevalence rate of particular anal fissure is not less than average 20% of anorectal disorders which also varies region wise from 15% to 30%. More over chronic anal fissure cases those who were conservatively treated frequently, advised for operation, operated and referred for the same problems getting recurrence and disappointed cases were really become the source of inspiration for research.

The aim of the study is to find out the effective Shalya Chikitsa from Ayurveda for its complete cure. In this disease the linear ulcerative fibrous bed is caused due to changes of tissues in the invaded lesion by frequent sphincter spasm. The object of the treatment is to remove the entire fissure bed radically, giving rise to regeneration of tissue so that, the question of recurrence may not be possible. To obtain such result from this grave painful disease, Ksharasutra therapy was selected for its surgical procedure. Ksharasutra is one of the chief piece of work under Ksharakarma procedure (Potential Cauterizing Agents therapy). The technique of application is designed taking into the consideration of the effect of Ksharasutra suture treatment (KSST) which is to be applied skillfully particularly limiting to the fissure bed. Lot of experiences in treating the piles, fistula in ano as single and also multiple disorders by Ksharasutra in one sitting intuited to explore the KSST method for its treatment.

While reviewing the Ksharakarm, Kshara has been advocated to prepare from different herbal plants like *Achyranthus aspera*<sup>2</sup>, *Sesamum indicum*, etc. Paneeya Kshara is used internally in number of GIT disorders while pratisarniya kshara is used in many external diseases. As the chronic anal fissure is a chronic wound so Kshara can be used as per classical reference i. e. use of kshara in chronic cases and dushta vrana<sup>3</sup>. Parikartika is defined as kartan vat vedena<sup>4</sup> in Guda Pradesh, the seat of Sadyapranahara Marma.<sup>5</sup> In regard of Ksharasutra, it has been proved very effective in the treatment of fistula in ano.<sup>6</sup> Charaka had focused on the conservative treatment and prescribed suitable dietary regimens for treating the Parikartika.<sup>7</sup> In sequence of treatment of

anorectal disorders Sushruta has given more emphasis on ksharakarma and Shalya Chikitsa modality. Under the ksharakarma the effectiveness of Ksharasutra can be attributed only to the potency of the Kshara. Regarding the treatment of parikartika many research works had been carried out but all those works possessed to the local application and conservative management.<sup>8 9 10</sup>

## AIMS AND OBJECTIVES

Clinical evaluation of Ksharasutra in the management of Jeerna Parikartika (chronic fissure in ano).

## MATERIAL AND METHODS CONCEPTUAL STUDY

All data related to parikartika & ksharasutra had been reviewed from the Ayurvedic as well as modern point of view.

## DRUG REVIEW

Apamarga (*Achyranthus aspera* linn), Haridra (*Curcuma longa*) and Snuhi (*Ephorbia nerifolia* linn) were well described with their properties & therapeutic uses. Apamarga Kshara<sup>1111</sup>

Kshara Sootra

therapy in fistula-in-ano and other anorectal disorders. By, S.K.

Sharma, K.K.Sharma, Kulwant Singh. Rashtriya Ayurved Vidyapeeth (National

<sup>12</sup> had been prepared according to the classical reference.

Ksharasutra<sup>13</sup> - It is being prepared with reference to Ayurved Pharmacopia of India<sup>14</sup> with the help of ksharasutra cabinet. The proper sterilization, preservation and sealing of the Ksharasutra were done.

## CLINICAL STUDY

Total 867 patients of Jeerna Parikartika (chronic fissure in ano) were selected by simple sampling method from OPD & IPD of Post Graduate Dept. of Shalya- Shalakyia, GAM&H, Puri, Odisha and from special anorectal camps organized by Indian Proctology Society.

## METHODS

### INCLUSION CRITERIA

Age group-10 to 50 years

Cases of chronic fissure in ano having complaints of anal pain, painful defecation, bleeding per rectum, constipation and linear ulcerative fibrous bed irrespective of sex, religion, education & socio-economic status.

### EXCLUSION CRITERIA

Age - below 10 & above 50 years

Patients of acute anal fissure and less than one year duration, ulcerative colitis, Ca. rectum, Hypertension, D.M. and Cardiac disorders were excluded.

### DIAGNOSTIC CRITERIA

Diagnosis was made on the basis of physical examinations by performing thorough P/R examinations.

Inspection: Position & number of fissure, sentinel tag.

Digital: To know the spasm of internal sphincter and linear ulcerative fibrous bed with indurations of fissure edges.

### INVESTIGATIONS

Routine Haemogram: HB%, TLC, DLC, ESR, BT, CT, FBS, PPBS, Blood Urea, Serum Creatnine, VDRL., Routine urine and stool examination.

## DRUG, DOSES & DURATION OF TREATMENT

Drug: Ksharasutra

Doses: Ksharasutra application as per requirement

Duration: once application.

Ksharasutra suturing was conducted according to the principle of Trividhakarma.<sup>15</sup>

### PURVA KARMA

- 1 Written informed consent of patient.
2. Fitness of patient and routine investigations were insured.
3. Panchasakar Churna 5gm at bed time with warm water.
4. Shaving & cleaning of the peri anal area was done.
5. Preparation of round body needle loaded with Apamarg Ksharasutra and operation trolley

### PRADHAN KARMA

1. Painting and draping of peri anal region
2. Local anesthesia was given
3. Two fingers anal dilation was done.
4. Type of suture- Continuous suture.
5. Site of suture- at the fissure bed from posterior to anterior keeping one end of ksharasutra on the fissure bed which supports for tying the another end .
6. After that the round body needle is passed through the sentinel tag & trans-fixation and ligation was done.
7. Dressing was done & T-bandage was applied.

### PASCHATA KARMA

1. Light diet was allowed.
2. Panchasakar Churna 5gm.at night was administered followed by Luke warm water.

## DURATION OF TREATMENT

Assessment was done up to two weeks for complete healing.

## FOLLOW UP

It was done from one month to more than one year.

### Regimen (Aahara & Vihara)

**Do's:** -Avagaha sweda<sup>16</sup> (Luke warm water sitz bath with addition of sphaatikadi yoga 5gm.) 12 hourly from next day morning.

-Light blend, leafy vegetables, milk, etc non constipative food stuffs were allowed.

-Advise to consult if any anal problem occurs

### Don't

1. Avoid non-vegetarian and constipative foods.

2. Avoid straining at defecation, long sitting, riding, etc

## ASSESSMENT CRITERIA

### PAIN DURING DEFECATION

G<sub>3</sub>: Pain prolongs for more than one hour after defecation.

G<sub>2</sub>: Pain persists from ½ an hour to 1 hour after defecation.

G<sub>1</sub>: Pain last up to or less than ½ an hour.

G<sub>0</sub>: No pain during defecation.

### P/R BLEEDING DURING DEFECATION

G<sub>3</sub>: Bleeding profuse/syringing.

G<sub>2</sub>: Bleeding drop wise.

G<sub>1</sub>: Bleeding presents in streaking of faecal column., G<sub>0</sub>: No bleeding per rectum.

### CONSTIPATION

G<sub>1</sub>: Present (+)

G<sub>0</sub>: Absent (-)

## SPASM

G<sub>3</sub>: Complete constriction of anal sphincter causing inability to strain.

G<sub>2</sub>: Strain found with slight relaxation of the sphincters.

G<sub>1</sub>: Tip of the finger enters in the anal canal during per rectum examination.

G<sub>0</sub>: No constriction/ spasm.

## OBSERVATIONS

**Table 1: Incidence of Sex of 867 cases**

Sex	No. of patients	%
Male	530	61.13
Female	337	38.87
Total	867	100

**Table 2: Incidence of Age distribution of 867 cases**

Age	No. of patients	%
10-20	72	8.30
21-30	240	27.68
31-40	315	36.33
41-50	195	22.49
51-60	45	5.19
Total	867	100

**Table 3: Education of 867 cases**

Education	No. of patients	%
Literate	354	40.83
Illiterate	513	59.17
Total	867	100

**Table 4: socioeconomic status of 867 cases**

Status	No. of patients	%
Rich	205	23.64
Middle	317	36.56
Poor	345	40.00
Total	867	100

**Table 5: Occupation of 867 cases**

Occupation	No. of patients (male)	%	No. of patients (female)	%
Students	65	7.4	37	4.26
Services	102	11.76	74	8.53
Business	150	17.30	61	7.03
Farmers	88	10.14	18	2.07
Labors	125	14.41	42	4.84
Housewives	00	00	105	12.11
Total	530	61.13	337	38.86

**Table 6: Habitat of 867 cases**

Habitat	No. of patients	%
Urban	210	24.22
Suburban	335	38.63
Rural	322	37.13
Total	867	100

**Table 7: Addiction of 867 cases**

Addiction	No. of patients	%
Alcohol	130	14.99
Tobaco	342	39.45
Smoke	140	16.15
Betel	170	19.61
No addiction	130	15.00
Total	867	100

**Table 8: Dietary Habits of 867 cases**

Diet	No. of patients	%
Vegetarian	152	17.54
Non Vegetarian	425	49.01
Mixed	290	33.45
Total	867	100

**Table 9: Dosha Dominance of 867 cases**

Dosha	No. of patients	%
Vata	490	56.52
Pitta	218	25.14
Kapha	159	18.34
Total	867	100

**Table 10: Built of 867 cases**

Built	No. of patients	%
Normal	227	26.18
Obese	376	43.37
Slim	264	30.45
Total	867	100

**Table 11: Satva of 867 cases**

Satva	No. of patients	%
Pravar	227	26.18
Madhyam	264	30.46
Avara	376	43.36
Total	867	100

**Table 12: Mental Status of 867 cases**

Mental Status	No. of patients	%
Anxiety	259	29.87
Stress	373	43.03
Anger	235	27.10
Total	867	100

**Table 13: Emotions of 867 cases**

Emotions	No. of patients	%
Tension	310	35.75
Depressive	425	49.02
Aggressive	132	15.23
Total	867	100

**Table 14: Sleep of 867 cases**

Sleep	No. of patients	%
Sound	285	32.87
Disturbed	582	67.13
Total	867	100

**Table 15: Appetite of 867 cases**

Appetite	No. of patients	%
Good	315	36.33
Poor	347	40.03
Low	205	23.64
Total	867	100

**Table 16: Koshttha of 867 cases**

Koshta	No. of patients	%
Krura	410	47.28
Mridu	330	38.07
Madhya	127	14.65
Total	867	100

**Table 17: Bowel habit of 867 cases**

Bowel habit	No. of patients	%
Regular	81	9.34
Irregular	261	30.10
Constipated	490	56.52
Clear	35	4.04
Total	867	100

**Table 18: Chronicity of 867 cases**

Chronicity	No. of patients	%
< 1 year	538	62.06
1-5 years	242	27.91
>5 years	87	10.03
Total	867	100

**Table 19: Incidence of suffering status of 867 cases**

Recurrence	No. of patients	%
After fissurectomy	57	6.58
Treated by different pathies	345	39.79
Frequent treated by conservative methods	465	53.63
Total	867	100

**Table 20: Status of Association with other diseases of 867 cases**

Associated disease	No. of patients	%
Sentinel pile	383	45.34
External piles	129	14.88
Internal piles	147	16.95
Anal fistula	64	7.38
Multiple fistula	87	10.04
Diabetes	28	3.22
Tuberculosis	19	2.19
Total	867	100

**Table 21: Clockwise Position of 867 cases**

Clockwise Position	No. of patients (Male)	%	No. of patients (Female)	%
6 <sup>o</sup> Clock	340	39.22	158	18.23
12 <sup>o</sup> Clock	120	13.84	129	14.88
6 <sup>o</sup> & 12 <sup>o</sup> Clock	70	8.07	50	5.76
Total	530	61.13	337	38.87

**Table 22: Character of Pain of 867 cases**

Character of Pain	No. of patients	%
Burning	530	61.13
Cutting	229	26.42
Stretching	108	12.45
Total	867	100

## DISCUSSION AND OBSERVATION

Males patients were suffer more than females (Table 1) because females may not represent a true picture and don't report for treatment unless pain is unbearable and might be social problems. It may be less in female owing to their less exposure to irregular routine of life. The maximum number of patient i. e. 315 patients (36.33%) was observed in the age group of 31-40 years (Table 2). In this age group, the person is most actively engaged in building his carrier, besides giving attention to his food and other habits. During this time, he /she leads most irregular life and eats what over is available without much difference due

**Table 23: Intensity of Pain of 867 cases**

Intensity	No. of patients	%
Rare	349	40.25
Continuous	140	16.15
Intermittent	288	33.22
Occasional	90	10.38
Total	867	100

**Table 24: Symptoms of 867 cases**

Symptoms	No. of patients	%
Pain during defecation	867	100.00
P/R bleeding	867	100.00
Constipación	743	85.69
Spasm	403	46.48

**Table 25: Spontaneous removal of Ksharasutra from fissure bed:n=867**

Total Days	No. of Patients	%
3 <sup>rd</sup> day	470	54.21
4 <sup>th</sup> day	215	24.79
5 <sup>th</sup> day	182	21.00

**Table 26: Results of 867 cases**

Result	No. of Patients	%
Cure d	838	96.65
Complications	29	3.34
Total	867	100

**Table 27: Follow up of 867 cases**

Follow up	No. of Patients	%
1-6 months	518	59.75
6-12 months	213	24.57
>one year	136	15.68
Total	867	100

to his /her first moving. These factors develop constipation and give rise to hard faecal matter, which on passing through the anal canal leads to fissure. According to literacy illiterate patients were more in number (513) due to neglects of their personal health. Economically poor patients were more in number might be due to non feasibility of the treatment, as shown in table-4.

The incidence of prolong sitting in case of business men and others was reported more in table no 5. This was probably due to the constant pressure on the pelvic area which results to exert the referral pressure on the blood vessels so as to manifest the pre disposing factor for the disease. In habitat

maximum patients were from urban area as shown in the table no 6. Total 737 patients (85%) were recorded to have any kind of addiction (Table 7) and maximum patients 342 (39.45%) of tobacco chewing. Different addiction materials may cause constipation, which leads in the formation of fissure in ano.

In this study, 425 patients (49.01%) were reported to consume non-vegetarian diet (Table 8). In non vegetarian diet it is not easy to digest due to less cellulose and almost no residual is formed, which ultimately leads to constipation. In non vegetarian diet spices are in abundant quantity. The excessive uses of spices like piper, chillies, etc. cause irritation to intestinal tract leads to premonitory factors for anal fissure. Vata dosha predominance was reported in 490 patients (56.52%) while 218 patients (25.14%) were found to have pitta predominance (Table 9). It had all ready been mentioned in classics that pain is mainly due to vitiation of vata<sup>1</sup> condition, which gives rise to cutting type of pain during and after defecation. The pain is also sometimes associated with burning sensation, which indicates the involvement of pitta dosha. The obese built patients were more i.e. 376 (43.37%) suffering in number due to fat deposition as shown in the table-10. In relation to satvik predominance avara satva patients were maximum 376 (43.36%) in number as shown in table- 11.

In table 12 and 13 the mental status and emotion of the patient was shown which suggest that maximum i. e. 373 (43.03%) patients were in stress and 425 (49.02%) patients were in depressed mood respectively. Disturbed sleep at night was found in 67.13% of the patients as shown in table- 14. All these factors probably provacate to cause the anal fissure.

Poor appetite was noted in maximum 40.03% of patient as shown in table -15. In koshta finding total 410 patients were of krura koshta which was maximum as shown in table 16. The maximum number of patients i.e. 490 patients (56.52%) was reported to have constipation (Table 17). As the cases were taken of chronic fissure, the chronicity of the disease more than one year was found in

maximum i.e. 538 (62.06%) as shown in table no18. Re occurrence of the disease after conservative management was noted maximum (53.63%) of the patients as shown in the table no. 19. In table no 20 associated diseases along with fissure was shown, it suggests that the maximum cases shown that sentinel pile which was due to the chronic fissure. In relation to clock position in male fissure was at 6 O'clock due to lack of support and in female it was at 12 O' Clock position (Table 21) due to reported child birth or trauma caused by the foetal head. The nature of pain during and after defecation was of burning type in maximum patient i.e. 61.13% as shown in the table 22. In table-23 intensity of pain was recorded which shown rare in most of the patient 349 (40.25%).

Almost all the patients i.e. 867 (100%) were having complaint of pain during defecation and 743 patients (85.69%) were presented with complain of constipation (Table 24) as pain is the cardinal symptom of parikartika and the main etiological factor of anal fissure is constipation. The spontaneous removal of sutured ksharasutra with chronic anal fissure was removed from the fissure bed was more in 4<sup>th</sup> day shown in table-25. This active removal of the sutured Ksharasutra within short span of time is due to its surgical potential actions chedana, bhedana and lekhana.<sup>22</sup>

Sushrutacharya Sushruta samhita, Ayurved Tatva Sandipika, Dr. Ambikadata Shastri,

After completion of the trial period, 96.65% of patients were cured and in 3.34 % of patients had found complications (Table-26). No adverse effect was noticed during or after this procedure.

### PROBABLE MODE OF ACTION

Ksharasutra having kshara property removes the sloughs and fibrotic ulcer and promotes the healing. Kshara also controls the bleeding due to its stambhaka<sup>3</sup> guna acting as a sclerotic agent. In cases of chronic fissure, the suturing of ksharasutra had been conducted where chronic condition is represented by the presence of fibrous tissue.

The entire fibrous tissue was removed because of kshara property which dissolved (vilayana) the fibrosis. The essence of this clinical research work which can be drawn that curing of Jeerna parikartika is quite satisfactory.

## CONCLUSION

The disease described in Ayurveda under the heading of Parikartika, can be regarded as a synonym for fissure-in-ano due to its close resemblance in clinical features. Parikartika can be identical as Agantuja Vrana and can also occur as complication of various generalized disorders. Passage of hard fecal matter is a major cause of Parikartika, in which a cyclic nature of pain and spasm remains present in acute condition where as mild to moderate pain with linear ulcerative fibrous bed present the chronic anal fissure .It deserves surgical intervention. In respect to this, Ksharasutra suturing treatment(KSST) method, completely a new technique ,adopted here, proves to be a successful surgical procedure from all aspects .Hence it may be recommended to practice more and more to establish this method by finding its pros and cons..

## REFERENCES

1. Surgery of Anus, Rectum & Colon. By, John Golighar with collaboration of Herbert Duthie & Horold Nixon, A. I. T. B. S. Publishers & Distributers. Fifth edition, 2002; 131-134.
2. Sushrutacharya Sushruta samhita, Ayurved Tatva Sandipika, Dr. Ambikadata Shastri, Chaumbika Sanskrit Sansthan, Varanasi, Chikitsa Sthan-1/88, 2001; 10.
3. Sushrutacharya Sushruta samhita, Ayurved Tatva Sandipika, Dr. Ambikadata Shastri, Chaumbika Sanskrit Sansthan, Varanasi, Chikitsa Sthan- 34/16, 2001; 151.
4. Sushrutacharya Sushruta samhita, Ayurved Tatva Sandipika, Dr. Ambikadata Shastri, Chaumbika Sanskrit Sansthan, Varanasi, Shareera Sthan- 6/9, 2001; 52.
5. Deshpane P J and Sharma K R Treatment of fistula in ano by a new technique review and follow up of 200 cases. Am J Protocol 24 (1973) 49. Successful non operative treatment of high rectal fistula. Am J Protocol, 1976; 39.
6. Agnivesh, Charak Samhita, Charak, dradabala, Charak chandrika hindi commentary, Dr. Brahmananda tripathi, Chaukhambha subharati prakashan, Varanashi, Reprint 2008. Sidhi sthana 6/62-67 pp 1241 and 7/54-57; 1257-1258.
7. Pashmina Joshi, et al. Management of Parikartika with Dantiyarishtha , Madhukadiyoga and Kshara application-2004, PG thesis , Dept of Shalya, IPGT&RA, Gajurat Ayurved University, Jamnagar.
8. Rao M. M. et al. Therapeutic evaluation of non operative measures in the management of Parikartika vis-à-vis Fissure in ano, JRAS, 2002; XXIII(1-2): 71-80.
9. Rao M. M. et al. Ayurvedic management of Fissure in ano. Aryavaidyam, 2007; XX(4): 210-215.
10. Kshara Sootra therapy in fistula-in-ano and other anorectal disorders. By, S.K. Sharma, K.K.Sharma, Kulwant Singh. Rashtriya Ayurved Vidyapeeth (National Academy of Ayurveda). RAV Publication, 1994; 95: 48-54.
11. Sushrutacharya Sushruta samhita, Ayurved Tatva Sandipika, Dr. Ambikadata Shastri, Chaumbika Sanskrit Sansthan, Varanasi, Sootra Sthan-11/13-15, 2001; 35-36.
12. Kshara Sootra therapy in fistula-in-ano and other anorectal disorders. By, S.K. Sharma, K.K.Sharma, Kulwant Singh. Rashtriya Ayurved Vidyapeeth (National Academy of Ayurveda). RAV Publication, 1994; 95: 43-48.
13. Ananomesous, The Ayurvedic Pharmacopoeia of India, Part-II (formulation), volume-II, by GOI, MHSW, Dept. of AYUSH, New Delhi, 2008; 288.
14. Sushrutacharya Sushruta samhita, Ayurved Tatva Sandipika, Dr. Ambikadata Shastri, Chaumbika Sanskrit Sansthan, Varanasi, Sootra Sthan-5/3, 2001; 15.
15. Sushrutacharya Sushruta samhita, Ayurved Tatva Sandipika, Dr. Ambikadata Shastri, Chaumbika Sanskrit Sansthan, Varanasi, Chikitsa Sthan 8/36, 2001; 47.
16. Sushrutacharya Sushruta samhita, Ayurved Tatva Sandipika, Dr. Ambikadata Shastri, Chaumbika Sanskrit Sansthan, Varanasi, Sootra Sthan-17/12, 2001; 72.
17. Sushrutacharya Sushruta samhita, Ayurved Tatva Sandipika, Dr. Ambikadata Shastri, Chaumbika Sanskrit Sansthan, Varanasi, Sootra Sthan-11/4, 2001; 34.
18. Sushrutacharya Sushruta samhita, Ayurved Tatva Sandipika, Dr. Ambikadata Shastri, Chaumbika Sanskrit Sansthan, Varanasi, Sootra Sthan-11/5, 2001; 34.
19. Sushrutacharya Sushruta samhita, Ayurved Tatva Sandipika, Dr. Ambikadata Shastri, Chaumbika Sanskrit Sansthan, Varanasi, Sootra Sthan-11/5, 2001; 34.