

## EFFECT OF PIPPALYADI CHOORNA AS PRADHAMANA NASYA IN CHRONIC SINUSITIS IN COMPARISON WITH TRIPHALA - TRIKADU CHOORNA PRADHAMANA NASYA: A RESEARCH ARTICLE

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### ABSTRACT

**Introduction:** The mucosal inflammation of *paranasal* sinus which lasts longer than 12 consecutive weeks is termed Chronic Sinusitis. It is usually the result of incompletely resolved acute Sinusitis. It is a condition demanding medical attention with early intervention. The clinical picture of Chronic Sinusitis has similarities with the symptomatology of *Dushta Pratisyaya*, mentioned in Ayurvedic classics. Among the formulations indicated for *Pratisyaya*, *Pippalyadi choorna* is specifically indicated for *Pradhamana nasya*. The present study is to find out the effectiveness of *Pippalyadi choorna* as *Pradhamana nasya* in Chronic Sinusitis. **Methods:** The study design was interventional type of randomized controlled clinical trial. The study area was Department of *Shalakyatantra*, Government Ayurveda College, Thiruvananthapuram and the study population was the outpatients registered in the Department of *Shalakyatantra*. *Pradhamana nasya* was done with *Pippalyadi choorna* in the study group and *Triphala-trikaduchoorna* in the control group for 7 alternate days. The patients were assessed before treatment, after treatment and during follow up. The follow up was done on 30<sup>th</sup>, 60<sup>th</sup> and 90<sup>th</sup> day. Results were documented and statistically analyzed using Wilcoxon Signed Rank test, Mann - Whitney U test according to type of variable. **Result:** Statistical analysis revealed significant improvement in subjective parameters like Nasal obstruction, Post nasal drip, Headache and objective parameter X-ray PNS. **Conclusion:** The *Pippalyadi choorna pradhamana nasya* is an effective protocol to be followed in Ayurveda for Chronic Sinusitis.

**Keywords:** *Dushta Pratisyaya*, *Pradhamana Nasya*, *Shalakyatantra*, *Pippalyadi Choorna*, *Triphala-Trikaduchoorna*

### INTRODUCTION

The high incidence of Chronic Sinusitis can be attributed to both environmental influences and lifestyle modifications due to rapid urbanization. Environmental factors are atmospheric pollution with physical

and chemical agents, high humidity and chronic exposure to air conditioned domicile and work area. Similarly improper bathing styles like regular head baths at night, taking head baths when the body is very hot,

using mixture of hot and cold water for bathing and regular consumption of chilled, spicy and junk foods increases the risk of developing paranasal sinus infections. Once the sinuses are infected, improper management and poor dietary habits can lead the disease into a chronic phase<sup>1</sup>. This chronic pus collection in sinuses is difficult to drain out completely. It remains as a focus of infection leading to inflammation in all associated structures<sup>2</sup>.

In modern medical science, a wide range of antibiotics and decongestants are available for the treatment of Chronic Sinusitis<sup>3</sup>. But these drugs can help only in initial stage. Once pus collection forms in sinuses and is not drained spontaneously, only surgical intervention can help. The present available treatment globally for the management of Chronic Sinusitis is intra nasal surgeries (FESS). Even though the surgery is effective, there is chance of recurrence. Moreover the mental and physical agony of surgery in the general population, the burden of hospitalization, the risk of post-operative complications and drug allergy are the main draw backs.

Since this ailment is of a chronic nature, simple conservative management will not be sufficient for a cure. The Indian medical science illustrates different modalities of *sodhana* therapy, the ideal one related to *uthamanga* (head) is *Nasya* therapy (trans nasal drug administration). Considering the chronicity and symptom wise resemblance, it is better to correlate Chronic

Sinusitis with *Dushta Pratisyaya* where the *dosa dushti* is *sannipatika* with the involvement of *rakta* and has a series of systemic complications<sup>4</sup>, it is quintessential to attain *deha sudhi* before *moordha sodhana*. As *virecana* with prior *sneha sweda* is the best possible *sodhana* that can be resorted for mitigating *pitta* and *kapha* and thereby imparting *rakta sudhi* and *vata anulomana*. Prior *sneha sodhana* are done both in study and control group to avoid bias. The term *dushta* indicates the high degree of vitiation of both *dosas* and *utharothara dhatus*. As *Dushta Pratisyaya* is the chronic stage of *Pratisyaya* where *kapha dosa* predominant *tridosa kopa* occurs, *Pradhamana Nasya*<sup>5</sup> is selected as the chief *sodhana* procedure. *Triphala-trikadu choorna Pradhamana Nasya* is selected in the control group. The formulation is mentioned for *Pradhamana Nasya* by *Acharya Charaka* in *Pratisyaya chikitsa*. The study drug *Pippalyadi choorna* is mentioned in the classical text *Bhaisajya Ratnavali*<sup>6</sup>, *Nasaroga chikitsa prakaranam*.

#### AIM AND OBJECTIVE

To evaluate the effect of *Pippalyadi choorna* as *Pradhamana nasya* in Chronic Sinusitis in comparison with *Triphala-trikaduchoorna Pradhamana nasya*.

#### DRUGS

Study drug-*Pippalyadi choorna*

Control drug-*Triphala – trikaduchoorna in the dose of 500mg per day for seven alternate days*.

**Table A: CONSTITUENTS OF PIPPALYADI CHOORNA**

SI.No	Drug	Botanical name	Part used
1	<i>Pippali</i> <sup>7</sup>	<i>Piper longum</i> Linn.	Fruit
2	<i>Sigru</i> <sup>8</sup>	<i>Moringa oleifera</i> Lam.	Seed
3	<i>Vidanga</i> <sup>9</sup>	<i>Embelia ribes</i> Burm	Fruit
4	<i>Maricha</i> <sup>10</sup>	<i>Piper nigrum</i> Linn	Fruit

**Table B: CONSTITUENTS OF TRIPHALA TRIKADU CHOORNA**

SI.No	Drug	Botanical name	Part used
1	<i>Haritaki</i> <sup>11</sup>	<i>Terminalia chebula</i> Retz.	Fruit
2	<i>Bibheetaka</i> <sup>12</sup>	<i>Terminalia bellerica</i> Roxb.	Fruit
3	<i>Amalaki</i> <sup>13</sup>	<i>Emblica officinalis</i> Gaertn.	Fruit
4	<i>Pippali</i>	<i>Piper longum</i> Linn.	Fruit
5	<i>Maricham</i>	<i>Piper nigrum</i> Linn.	Fruit
6	<i>Nagara</i> <sup>14</sup>	<i>Zingiber officinale</i> Roxyb.	Fruit

## DRUG DETAILS

All the raw drugs were procured from the Pharmacognasy Unit, Ayurveda Research Institute, Poojapura. The correct identity and authenticity of raw drugs were confirmed by studying its organoleptic and powder microscopic studies, then comparing them with the characters mentioned in Ayurvedic Pharmacopoeia of India. Later subject experts of Pharmacognosy Unit confirmed identification.

## PHYSICO CHEMICAL ANALYSIS OF PIPPALYADI CHOORNA

Description: Yellowish brown coloured powder

### Results of analysis

Parameters	Result
pH of 10 % solution of content	: 5.0
LOD	: 7.4% w/w
Water soluble extractive	: 11.5% w/w
Alcohol soluble extractive	: 17.4% w/w
Ash	: 4.05% w/w
Acid insoluble ash	: Traces

## MATERIALS AND METHODS

The patients diagnosed with Chronic Sinusitis were selected from the outpatient department of *Shalakyatantra*, Govt. Ayurveda College, Trivandrum. Patients were divided into group A and group B by block randomization and kept as study group and control group respectively. Total 40 patients were randomly selected for the present study. The selected patients were admitted and subjected to detailed clinical examination; routine haematological and necessary radiological investigations (X-ray PNS-Waters view) were done.

## PREPARATION OF PIPPALYADI CHOORNA

Equal quantities of fresh *Pippali*, *Sigru beeja*, *Vidanga* and *Maricha* were collected, removed foreign materials, cleaned and dried separately in the sun. The dried drugs were finely powdered and 500 gram each of *Pippali*, *Sigru bija*, *Vidanga* and *Maricha* were mixed together using a mortar and pestle for one hour in order to obtain a homogenous mixture. The finely powdered formulation was filtered through a fine sieved cloth. The resultant formulation was stored in tightly stoppered, small mouthed, brown glass bottle and stored in a wooden shelf in a cool, dry and dark area.

## INCLUSION CRITERIA

- Patients diagnosed as having Chronic Sinusitis
- Age group 21- 50

## EXCLUSION CRITERIA

- Congenital malformations of nostrils.
- Diagnosed cases of TB on medication, malignant hypertension.
- Patients with history of multiple episodes of Epistaxis, Disorders of coagulation and Malignancy.
- Patients with history of major brain surgery-shunts
- Patients with history of traumatic injury of brain and diagnosed cases of Cerebro Vascular Accidents.

## ETHICAL CLEARANCE

The study protocol was cleared by the ethical committee of the Institute. Written consent was taken from each patient for participation in the study. Patients were free to withdraw from the study at any time without giving any reason.

## TREATMENT PROCEDURE DONE IN STUDY AND CONTROL GROUP

The patient was first prepared for *Nasya* after proper *deepana pachana* and *snehana* (*Vaiswanara choorna* 5gm twice daily half an hour before food with hot water-3 days and *vicharana sneha* using *Ksheera shadpala ghrta* 15 gm twice daily 7 A.M. and 4 P.M. for 3 days before food) followed by *kaya sodhana* (*virechana* with *gandharva eranda taila* 25 ml at 6 A.M. in luke warm milk). *Pradhamana Nasya* was performed as per the classical procedure for 7 days, with a gap of 1 day between each sitting<sup>15</sup>, in the morning time, in the dose of 500 mg, when the patient is in empty stomach. The patients were assessed before treatment, after treatment, that is on the next day after completion of *Nasya* (21<sup>st</sup> day) and during follow up. Follow up was done on 30<sup>th</sup> day, 60<sup>th</sup> day and 90<sup>th</sup> day.

## PRADHAMANA NASYA

*Churna* (Fine powder of drugs) is administered (inhaled) into nasal passage with the help of *nadi yantra* (*Shadangula nadi* both side open ended). The *churna* of required drug is kept at one end and air is blown from the other end, so that the medicine could enter into the nostrils.

**ASSESSMENT CRITERIA**

Subjective parameters were assessed by grading them from 0 to 3 according to severity. The objective pa-

rameter X-ray PNS was assessed by noting the total score obtained before treatment and on the 90<sup>th</sup> day.

**Table 1:** Grading of Clinical Features

Symptoms	Grade 0	Grade 1	Grade 2	Grade 3
Nasal obstruction	Absent	Occasional	Frequent	Continuous
Anterior rhinorrhoea	Absent	Occasional	Frequent	Continuous
Sneezing	Absent	Occasional	Frequent	Continuous
Post nasal drip	Absent	Occasional	Frequent	Continuous
Headache	Absent	Mild	Moderate	Continuous Severe

The objective parameter X-ray PNS were assessed before treatment and after follow up, that is on the 90<sup>th</sup> day.

**TABLE 2:** Paranasal Sinus Scores

Paranasal sinuses with scores (Right & Left)
Maxillary sinus (0,1,2)
Anterior ethmoid (0,1,2)
Frontal sinus (0,1,2)
Sphenoid sinus (0,1,2)
TOTAL SCORE

**0 = No abnormality, 1 = Partial opacification, 2 = Total opacification**

This scale grades the right and left sides independently and the total score obtained is noted. Scores ranges from 0 to 16. Total score obtained in bilateral pan Sinusitis is 16.

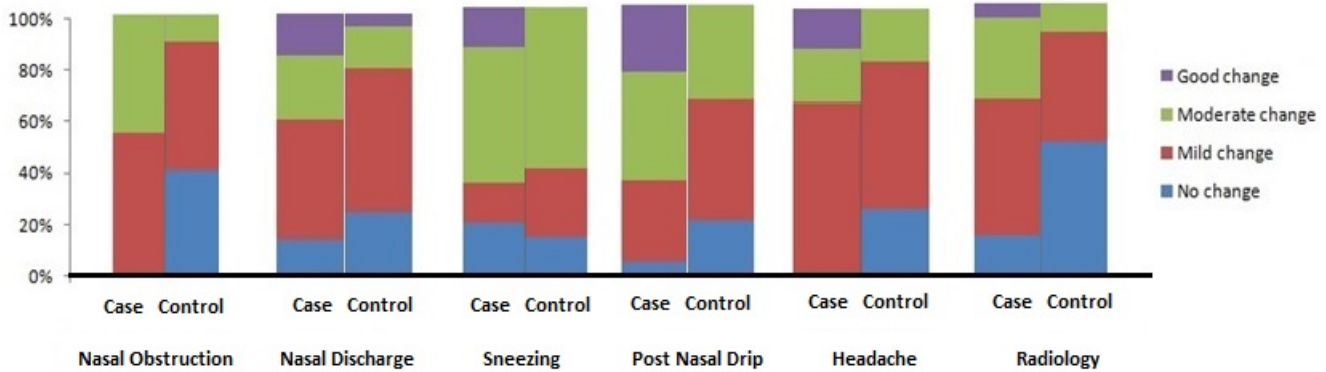
**STATISTICAL ANALYSIS**

The data collected were analysed statistically. Paired comparison of ordinal variables were done using Wilcoxon Signed Rank test. Between groups comparisons of ordinal variables were done using Mann-Whitney U test.

**Table 3:** Analysis of Effectiveness of Treatment from Before Treatment to 90<sup>th</sup> Day Between Case Control (Mann-Whitney Test)

SIGNS AND SYMPTOMS	Z	P	REMARK
Nasal Obstruction	3.391	0.001	Highly significant at 5% level of significance
Nasal Discharge	1.401	0.161	Not significant at 5% level of significance
Sneezing	0.672	0.502	Not significant at 5% level of significance
Post Nasal Drip	2.436	0.015	Highly significant at 5% level of significance
Headache	2.106	0.035	Highly significant at 5% level of significance
Radiology	2.585	0.01	Highly significant at 5% level of significance

**Figure 1: Analysis of effectiveness of treatment on change in parameters**



**OBSERVATION, ANALYSIS & INTERPRETATION**

The study was carried out in forty patients, twenty each in study & control group. On analysis of demographic data, majority (50%) belong to age group 31-40 years, were predominantly males (60%), 55% were employed office workers, 70% from rural area, from middle & low economic status, *vatakapha prakriti* & 55% were having *mandagni*. Considering the chronicity of the disease, majority (42%) were above 3 years. On clinical evaluation, there was a considerable improvement in subjective parameters. Majority of the patients demonstrated a significant increase in wellbeing after the therapy in all the two groups, more in case group. On statistical analysis, the role of *Pippalyadi choorna Pradhamana Nasya* in controlling the subjective parameters like nasal obstruction, post nasal drip and head ache were well appreciated which were not merely due to suppression of symptoms but due to better expulsion of vitiated *doshas* when compared to control group. The objective parameter X-ray PNS also had significant difference in change in radiology comparing the study group and control group before treatment and after follow up. Comparing the other symptoms, both groups were equally effective.

**OBSERVATIONS OF FOLLOW UP**

In the follow up study, Pippalyadi choorna have shown beneficial effect in patients of Chronic Sinusitis by providing highly significant clinical improvement in chief complaints. It has also improved the quality of life of the patient compared to the control group.

**Effect on Nasal obstruction**

While comparing with before treatment and after follow up, in study group, there was no one without any improvement, 55% got mild improvement and 45% got moderate improvement. In control group, 40% were with no improvement, 50% got mild improvement and 10% got moderate improvement.

**Effect on Nasal discharge**

While comparing with before treatment and after follow up, in study group, 15% were without any improvement, 45% got mild improvement, 25% got moderate improvement and 15% got good improvement. In control group, 25% were with no improvement, 55% got mild improvement, 15% got moderate improvement and 5% got good improvement.

**Effect on Sneezing**

While comparing with before treatment and after follows up, in study group, 20% were without any improvement, 15% got mild improvement, 50% got moderate improvement and 15% got good improvement. In control group, 15% were with no improvement, 25% got mild improvement 60% got moderate improvement and none got good improvement.

**Effect on Post nasal drip**

While comparing with before treatment and after follow up, in study group, 5% were without any improvement, 30% got mild improvement, 40% got moderate improvement and 25% got good improvement. In control group, 20% were with no improvement, 45% got mild improvement, 35% got moderate improvement and none got good improvement.

### Effect on Headache

While comparing with before treatment and after follow up, in study group, there was no one without any improvement, 65% got mild improvement, 20% got moderate improvement and 15% got good improvement. In control group, 25% were with no improvement, 55% got mild improvement, 20% got moderate improvement and none got good improvement.

### Effect on Radiology

While comparing with before treatment and after follow up, in study group, 15% were without any improvement, 50% got mild improvement, 30% got moderate improvement and 5% got good improvement. In control group, 50% were with no improvement, 40% got mild improvement, 10% got moderate improvement and none got good improvement.

## DISCUSSION

Nose and its appendages are functional channels (*srotases*) of *prana* and *udana vayu* and the seat of *pancha mahabhootas prithwi* and *vayu*. *Uthamanga (shiras)* is one among the prime seats of *kapha dosha*. *Ghrana* (nose) is mentioned as one among the *kapha* sthanas, but it is also an organ of potent *vathika* function-*uchwasa* (inspiration) and *niswasa* (expiration). *Nasya* has been mentioned specifically for the *urdhwajatrugata vikaras* (upper body ailments). Drugs utilized in *Nasya* procedure are absorbed by mucous membrane into general blood circulation, are then pooled into venous sinuses of brain. Drugs are cleared rapidly from the nasal cavity after intra nasal administration, resulting in fast systemic drug absorption.

### PROBABLE MODE OF ACTION

The aetiopathogenesis of *Dushta Pratisyaya* is *vata-kapha* predominant *tridosas dushti*. *Nasya* has been mentioned specifically for the *urdhwajatrugata vikaras*. *Nasya* have direct action on the *Shringataka marma* and drugs acting through these *srotases* are certain to bring about *srotosuddhi* in *urdhwanga*. During the *poorvakarmas Snehana* and *Swedana*, the blood vessels get dilated and thereby help to increase the absorption rate of *Nasya dravyas* in the blood stream. Drugs having *katu*, *ushna* and *teekshna* properties when administered for *Nasya karma* causes

*draveekarana*, *vilayana* and *chedana* (liquefaction, merging and dissociation) of vitiated *doshas*. Nerve endings in olfactory epithelium are stimulated by *Nasya karma* and impulses are transmitted to the Central Nervous System. The profound action of the medicines within a short span of time and minimal rate of recurrence may be attributed to the *sodhana* and *ropana karma* of the drugs utilized in the formulation. Initially *Pippalyadi choorna Pradhamana Nasya* causes elimination of the stagnated secretions (*sodhana karma*) followed by repair of the damaged sinus walls (*ropana karma*). After renovating the sinus walls, the chance of further inflammation and damage can be reduced and the sinuses can function in the normal physiological manner. Thus the sinus is restored anatomically, structurally and functionally. The study drug *Pippalyadi choorna* is mentioned in the classical text *Bhaisajya Ratnavali*, *Nasaroga chikitsa prakaranam*. The *tridosaharatwa karma* of *Pippali* when combined with *kapha vata haratwa karma* of *Sigrubeeja*, *Vidanga* and *Maricha* along with the *krimi nasana* property of *Vidanga* and *Maricha* makes it ideal for the present study. In addition the *tikshna*, *ruksha*, *ushna guna* of *Sigrubeeja*, *Vidanga* and *Maricha* is minimized to a level tolerable to the patient by the *snigdha*, *anushna virya* of *Pippali*. Thus *Pippalyadi choorna* becomes an ideal drug of choice which is cost effective and easy to prepare.

## CONCLUSION

The treatment of Chronic Sinusitis is very much relevant in present time. *Pippalyadi choorna Pradhamana Nasya* is effective in controlling the disease. Both study and control drugs were effective in the management of Chronic Sinusitis. On comparing with the control group, there observed significant difference in reducing the symptoms like nasal obstruction, post nasal drip and head ache. The radiological analysis also showed significant difference comparing the study group and control group before treatment and after follow up. Satisfactory results were obtained in prevention of recurrence. There were no adverse effects reported during the treatment period.

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