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ORIGINAL ARTICLE

An Ayurvedic Management of Nasal Polyposis

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Abstract A nasal polyp is a prolapsed pedunculated part of the oedematous mucosa of the nose or paranasal sinuses. It is inflammatory in origin and not a neoplastic (Bhargava in A short book of E.N.T. diseases. 9th edn. Usha Publication, [1]). This present study was aimed to treat Nasal polyposis with the drug administration through nasal as well as oral route. Total 61 patients were registered in three groups. Simple random sampling (alternate) method was adopted for the selection of the patients and selected patients were divided into 3 groups. Patients of Nasya Group and Nasya + Oral group received Ayurvedic treatment where as Controlled Group patients were treated with allopathic medicine. Duration of treatment was kept 3 months for Nasya Group and Nasya + Oral group, while 21 days for Controlled Group. Follow up was kept for 2 months at interval of 15 days each. Though all three groups showed significant improvement in subjective symptoms; Nasya Group and Nasya + Oral group showed better result in grading of Polyp.

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Keywords Nasal polyp · Ayurvedic treatment · Nasya

Introduction

The incidence of nasal polyps in children is 0.1%, among adults 1–4% with a range of 0.2–28% in United States. Worldwide incidence is the same as the incidence in US [2, 3]. It increases with age, reaching at peak in those aged 50 years and older. The male: female ratio is about 2:1 [4]. The patient will experience nasal polyps to be an unpleasant disease, which severely interferes with the quality of life [5]. Classically Nasal Polyp is caused by a combination of allergy and infection. Jamnagar being seacoast, occurrence of allergic rhinitis and there by nasal polyp is common in this region. Furthermore change in humidity and atmospheric pollution may make nose more susceptible to allergy [6].

Medical management of polyps is the same as that for allergic rhinitis and aimed at relieving symptoms until surgery can be arranged, but it usually remains incomplete. If the surgery is performed under local anaesthesia the polyp themselves often shrink, which makes removal difficult. Due to the nature of nasal polyposis as an inflammatory disease of the mucous membrane, surgery cannot be expected to cure the disease [7]. However, recurrence is common as there are large parts of the polyps which shrink into the ethmoidal cells. The patients have to use steroid spray indefinitely to avoid recurrence. Also any obvious aetiological factors should be treated. Despite these measures a number of patients have multiple nasal polyp recurrences which necessitate further surgery [8]. Treatment for polyps as mentioned remains limited and recurrence rate is very high. Keeping these points in mind for

the present study it was planned to evaluate the efficacy of *Shikhari Taila Nasya* and *Chitraka Haritaki Avaleha* for the management of Nasal Polyposis. Drugs were administered through Nasal route *(Shikhari Taila Nasya* [9]*)* as well as oral route (*Chitraka Haritaki Avaleha* [10]). *Nasya* is the fourth treatment among the *Panchakarma* (Five detoxifying therapies of the body). It is best procedure for treating *Shiroroga* (diseases affecting the head area).

Aims and Objectives

- To evaluate the efficacy of Ayurvedic treatment *Shikhari Taila Nasya* and *Chitraka Haritaki Avaleha* in cases of Nasal polyps.

Materials and Methods

Preparation of Both the Trial Drugs

- Collection, identification and authentication of raw drugs:

The raw drugs except Honey, Jaggery & Black sesam seed Oil were procured from Pharmacy of Gujarat Ayurveda University, Jamnagar. Honey, Jaggery and Oil were procured from local market of Jamnagar. The raw drugs were identified and authenticated by the department of Dravyaguna and Pharmacognosy laboratory of IPGT & RA, Gujarat Ayurveda University, Jamnagar (Tables 1 and 2). The identification was carried out based on the morphological features, organoleptic characters and powder microscopy of the individual drugs and formulation as per API standards for the authentication.

- Preparation of the drug *Chitraka Haritaki Avaleha* at Pharmacy of G.A.U.

Definition [11] *Avaleha* is a semi-solid preparation of drugs, prepared with addition of jaggery, sugar or sugar-candy and boiled with prescribed juices or decoction. Fine powders of drugs are then added in small quantities and stirred continuously to form a homogenous mixture. Honey, if mentioned is added when the preparation becomes cool and mixed well.

Method of Preparation

Preparation of *Yavakoota* (Coarse Powder) *Chitraka* (*Plumbago Zeylanica* Linn.)*, Amalaki* (*Embelica Officinalis* Gaertn.)*, Guduchi* (*Tinospora Cordifolia* Miers.) and *Dhashamoola* (Roots of 10 different herbs) were taken and made into coarse powder separately and then mixed to make a homogeneous mixture. *Haritaki* (*Terminalia Chebula Retz.)* was taken as a whole tied in *Potali* and was kept embedded in whole process of decoction preparation for boiling. At the end of decoction preparation before filtration, *Haritaki* fruits were taken out and made into paste after removing the seeds.

Preparation of Decoction (Decoction) Decoction preparation was done as per *Sharangadhara Samhita*[6]. One part of coarse powder was added with 4 parts of potable water and subjected to heat on medium temperature, until the volume was reduced to 1/4th of its initial quantity. The contents were filtered.

Preparation of *Avaleha* In filtered decoction jaggery was added to and cooked in medium flame was done make 2 thread condensed sugar mixture when pressed between two fingers. Finally paste of *Haritaki* was mixed to make homogenous mixture. Then after fine powders of *Prakshepa Dravyas* (adjuvant) were added and stirred continuously and vigorously to form a homogenous mixture. When whole mixture got cooled afterwards honey was added and mixture was finally mixed to get *Chitraka Haritaki Avaleha*.

Table 1 Contents of *Shikhari Taila* (*Chakradatta Nasarogaadhikara*)

Drug	Botanical Name	Part Used	Proportion
Gruhadhooma	Soot	Ash	270 gms
Pippali	*Piper Longum* Linn.	Fruit	270 gms
Devadaru	*Cedrus Deodera* (Roxb.) Loud.	Bark	270 gms
Yavakshara	*Hordeum Vulgare*	Whole plant	270 gms
Karanja	*Pongamia Pinnata* Pierre.	Seed	270 gms
Saindhava	Rock salt	–	270 gms
Apamarga	*Achyranthes aspera* Linn.	Seed	270 gms
Til Taila	*Sesamum orientale* Linn.	Seed Oil	7560 ml

Table 2 Contents of *Chitraka Haritaki Avaleha* (*Chakradatta Nasarogaadhikara*)

Drug	Botanical Name	Part used	Pro.
Chitrak moola coarse powder	*Plumbago Zeylanica* Linn.	Root	5 kg
Amalaki coarse powder	*Embelica Officinalis* Gaertn.	Fruit	5 kg
Guduchi coarse powder	*Tinospora Cordifolia* Miers.	Stem	5 kg
Bilva coarse powder	*Aegle Marmelos* Carr.	Whole plant	500 gm
Agnimanth coarse powder	*Clerodendrum Phlomidis* Linn.	Whole plant	500 gm
Shyonak coarse powder	*Oroxylum Indicum* Vent.	Whole plant	500 gm
Patala coarse powder	*Steospermum Sauveolens* DC.	Whole plant	500 gm
Gambahari coarse powder	*Gmelina Arbora* Roxb.	Whole plant	500 gm
Shalaparni coarse powder	*Desmodium Gangeticumi* DC.	Whole plant	500 gm
Prishnaparni coarse powder	*Uraria Picta* Desv.	Whole plant	500 gm
Brihati coarse powder	*Solanum Indicum* Linn.	Whole plant	500 gm
Kantakari coarse powder	*Solanum Xanthocarpum* Birm.	Whole plant	500 gm
Gokshura coarse powder	*Tribulus Terrestries* Linn.	Whole plant	500 gm
Guda	*Saccharum Officinarum Linn.*	Stem	20 kg
Haritaki	*Terminalia Chebula Retz.*	Fruit	12 kg
Shunthi powder	*Zingiber Officinale Roxb.*	Rhizome	748 gm
Maricha powder	*Piper Nigrum Linn.*	Fruit	748 gm
Pippali powder	*Piper Longum Linn.*	Fruit	748 gm
Tvak powder	*Cinnamomum Zeylanicum Blume.*	Bark	748 gm
Ela powder	*Elettaria Cardamomum Linn.*	Fruit	748 gm
Patra powder	*Cinnamomum Tamala Nees* and *Eberm*	Leaf	748 gm
Nagakesara powder	*Mesua Ferrea Linn.*	Anthers	748 gm
Yavakshara powder	*Hordoleum Vulgare*	Whole plant	92 gm
Madhu	*Honey*	–	1500 gm

- Drug preparation for *Shikhari Taila*

Definition [12] *Tailas* (Medicated Oils) are preparations in which oil is boiled with prescribed *Kashayas* (Decoction) and *Kalka* (paste) of drugs according to the formula. This process ensures absorption of the active therapeutic properties of the ingredients used.

Method of Preparation

First of all *Moorcchana* (Swooning) of Black sesame seed oil was done. In that decoction of all drugs and all the drugs are added after mixing with decoction and making paste of it. Paka should be made on slow flame. When watery content evaporates and gets properly cooked then removed from flame, filtered and filled in bottles after getting cool.

- Phytochemical analysis of the *Chitraka Haritaki Avaleha*

Both the formulations were analyzed by using, qualitative and quantitative parameters as per guidelines at Pharmaceutical Chemistry Laboratory of I. P. G.T & R. A., Gujarat Ayurveda University, Jamnagar [13].

Study Design Randomized controlled clinical trial

Method

For clinical study 61 patients of Nasal polyposis attending the O.P.D., Department of *Shalakya,* I.P.G.T. & R.A. Hospital, Jamnagar were selected. Patients of nasal polyp between the age Nasya Group 5–55 years were included in this study. Patients Information sheet was prepared and written consent was taken from the patients before starting the study. A detailed research proforma was prepared incorporating all points from Ayurveda and modern aspects to study the patients. Clinical study was started after getting approval of Institutional Ethics Committee. (IEC Appr. No.—PGT/7-A/Ethics/2012-2013/3552, dated 25/02/2013).

Routine Haematological (Hb, TC, DC, ESR) and AEC, RBS along with Urine routine, microscopic examinations were done prior to the treatment. Patients were diagnosed on the basis of subjective and objective criteria for nasal

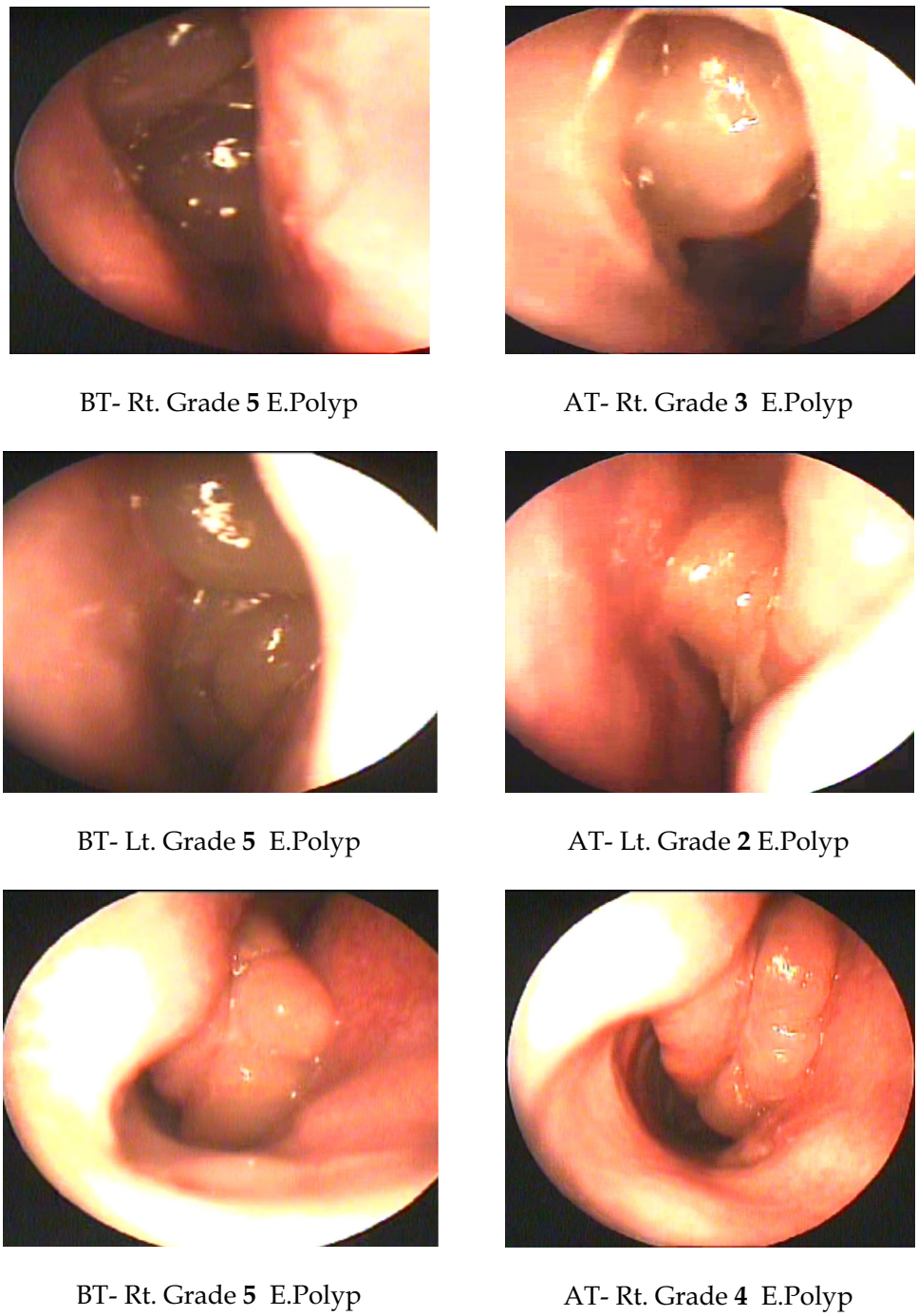


Fig. 1 Nasya + Oral Group result in grading of polyp

polyps. Nasal polyp was confirmed by Nasal Endoscopy. Sinus hazyness was assessed by using Paranasal Sinus X-ray (Water's and Caldwell view mainly and Nasopharynx lateral view if required). CT scan in 6 patients was done before and after treatment to assess the staging of the polyp and to objectify the changes before and after treatment.

Study Design Simple random sampling (alternate) method was adopted for the selection of the patients and selected patients were divided into 3 groups.

Nasya Group: in this group, patients were treated with *Nasya* of *Shikhari Taila*, 10 drops in each nostril. (6 sittings of *Nasya* was done for 7 days with the interval of 7 days after each sitting for the period of 3 months).

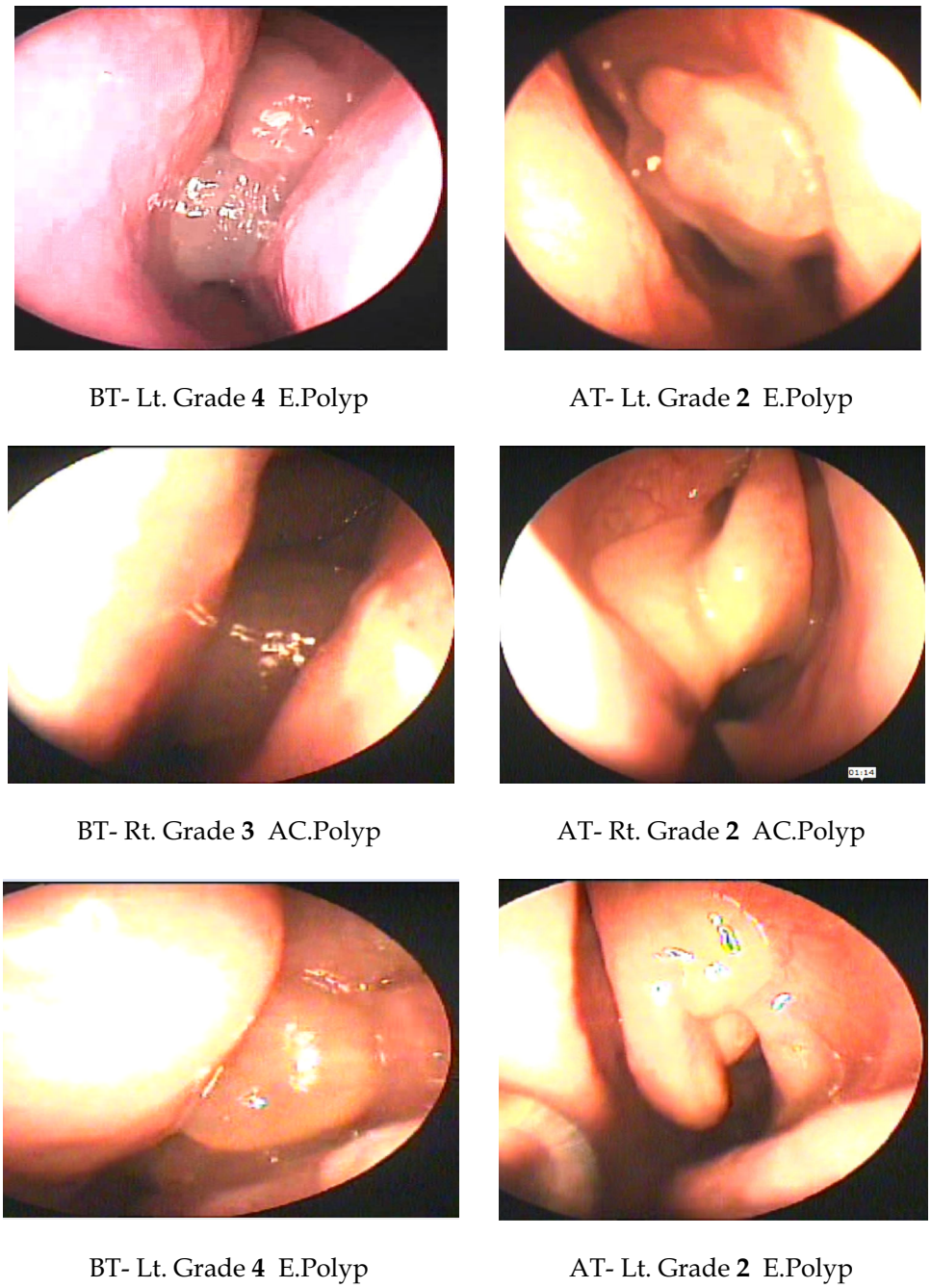


Fig. 2 Nasya + Oral Group result in grading of polyp

Nasya + Oral group: In group 2 *Shikhari Taila Marsha Nasya* along with *Chitraka Haritaki Avaleha* (10 gms twice a day for the period of 3 months) were given.

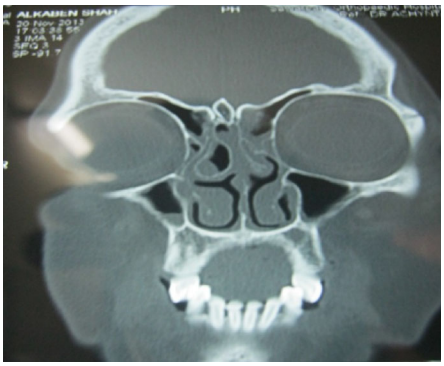
Controlled group: In group 3 anti-histaminic drug i.e. Tab. Zyncet-D (1 tab. OD) with steroid spray 0.05% fluticasone (2 puffs/twice a day) were given for the period of 21 days. In cases of superadded infection antibiotic treatment i.e. Tab.zifi 200 and Tab. Cefakind 250 (1 tab. BD each) was given.

Follow up study was continued up to 2 months after completion of the therapy.

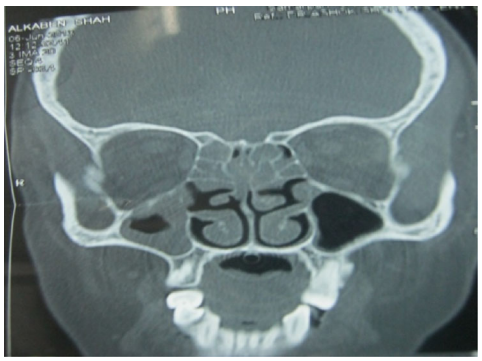
The efficacy of the therapies was assessed on the basis of subjective and objective criteria. The symptoms were evaluated using visual analogue score. The score ranged from 0 to 10 (0 = none and 10 = most severe) for each symptom. Relief in symptoms obtained in the patients was recorded before and after treatment for assessment. Nasal Polyposis was scored by Modified Hadley's clinical scoring system for endoscopical grading and Zinreich modification of Lund Mackay scoring system for CT scan, while sinusitis was scored by X-ray (0–2 score).

Criteria for the assessment of overall effect of therapy:

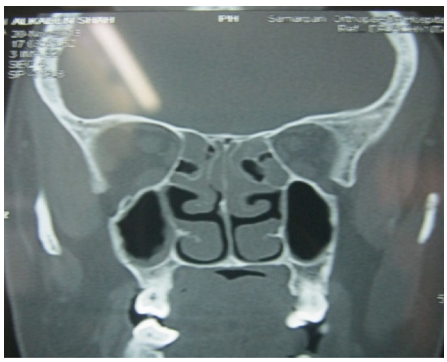
BT- Frontal sinuses-Hazy



AT- Frontal sinuses-Clear



BT- Ethmoid, Maxillary sinuses-Hazy



AT- Ethmoid (partial), Maxillary complete -clear

Fig. 3 Nasya Group result in CT scan findings

1. Complete relief—100% relief in objective as well as subjective signs and symptoms.
2. Marked relief—76–99% relief in objective as well as subjective signs and symptoms.
3. Moderate relief—51–75% relief in objective as well as subjective signs and symptoms.
4. Mild relief—26–50% relief in objective as well as subjective signs and symptoms.
5. No relief—up to 25% relief in objective as well as subjective signs and symptoms.

Statistical Analysis: Data was analyzed from findings recorded in the predesigned proforma. The values were expressed as percentage of relief and Mean SEM. The data was analyzed by paired 't' test. One way ANOVA test with the help of Sigma Stat 3.5 software was used to find significant difference between the groups. The obtained results were interpreted as:

*Not significant (NS): $p > 0.05$

**Significant (S): $p < 0.05$ and 0.01

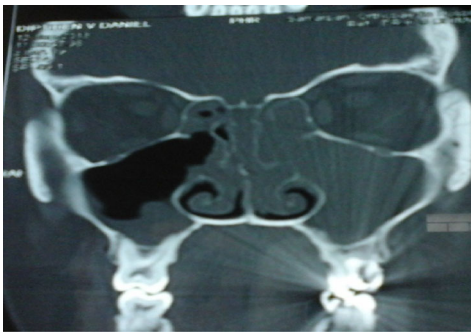
***Highly significant (HS): $p < 0.01$ or $p \leq 0.001$

Results and Discussion

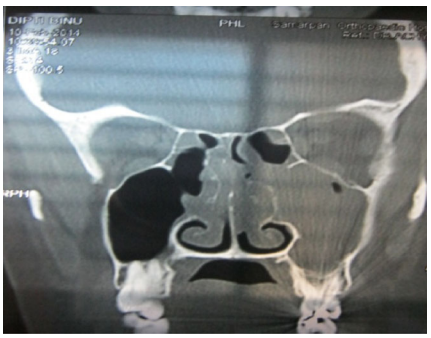
Total 61 patients registered in the study; among them 52 completed the trial while 09 patients discontinued the treatment.

1. Age—In this study, 39.34% patients were between age group 46–55 years. It is evident that Nasal Polyposis usually manifests in patients older than 20 years and is more common in patients older than 40 years. Nasal polyps are rare in children younger than 10 years [14].
2. Gender—55.74% were male. This may be due to increased exposure of occupational agents and environmental irritants in male. Although the male to female ratio is 2–4:1 in adults [15].
3. Occupation and Surroundings: 39.34% were house wives and 29.51% were having dusty surrounding. Dust mites are scavengers of flecks of human skin and coat the digestate with mite-specific protein for excretion [16].
4. Past Disease History: 72.13% patients had history of allergic rhinitis; 11.48% had nasal polyp; history of maxillary sinusitis found in 14.75% patients.

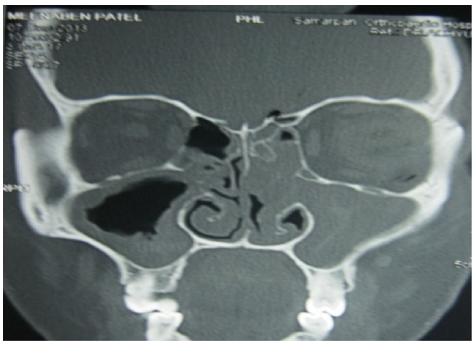
Fig. 4 Nasya + Oral Group result in CT scan finding



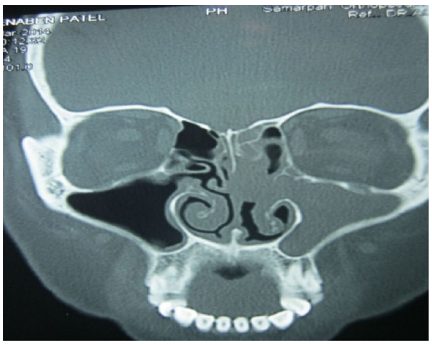
BT- Frontal,Ethmoid,Maxillary sinuses-Hazy



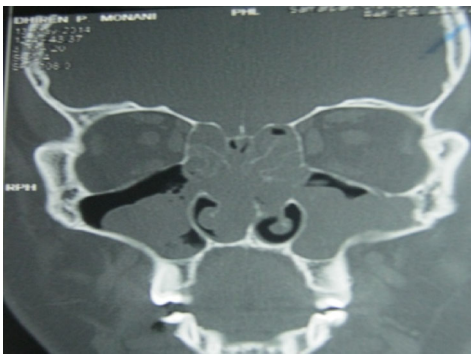
AT- Frontal Ethmoid partial,Maxillary sinus complete-Clear



BT- Ethmoid, Maxillary sinuses-Hazy with obstruction at osteometal complex



AT- Ethmoid (partial), Maxillary & Rt. osteomeatal complex complete-clear

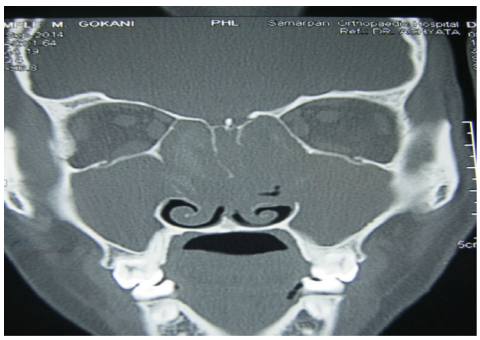


BT- Ethmoid, Maxillary sinuses-Hazy

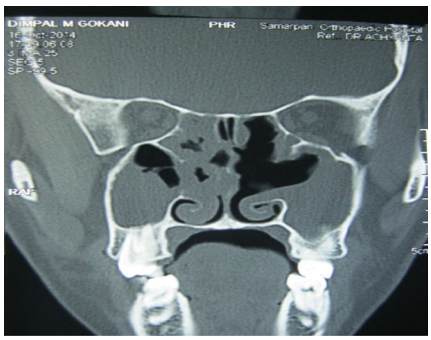
AT- Ethmoid, Maxillary partial, - clear

5. Past Treatment History: 50.82% had history of taken anti-histamins; 45.90% had history of taken decongestant nasal spray or drops; 34.43 and 21.31% had history of taken steroid nasal route and orally subsequently. 21.31% had history of taken antibiotics. 14.75% had under gone polypectomy previously. 8.20% of the patients had taken Homeopathy medicine. This shows that available treatment options for the patients are those only which are mentioned above. Still the disease remains untreated. Due to the nature of nasal polyposis as an inflammatory disease of the mucous membrane, surgery cannot be expected to cure the disease [17].
6. Chief Complaints:
   - Nasal obstruction was observed in 86.89% patients and continuous in 27.87% patients. It may be because of the Polyp mass obstructing the cavity.
   - 75.41% patients were complaining of sneezing. It present with allergic polyps [18].

Fig. 5 Nasya + Oral Group result in CT scan finding



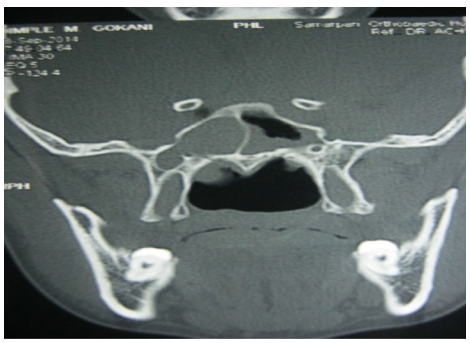
BT- Frontal,Ethmoid,Maxillary sinuses-Hazy



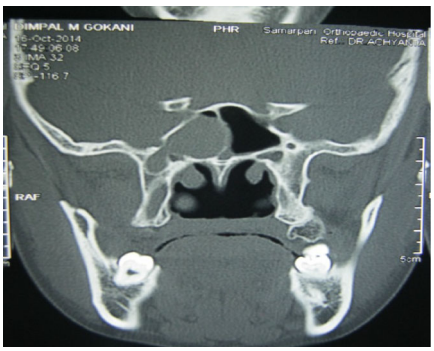
AT- Frontal, Ethmoid, Maxillary sinus partial -Clear

BT- Sphenoid sinuses-Hazy

AT- Sphenoid sinuses complete-clear



BT- Sphenoid sinuses-Hazy



AT- Sphenoid sinuses partial-clear

- Nasal discharge was complained by 81.97% of the patients, 54.10% patients had watery nasal discharge and was profuse in 52.46% patients. Nasal mucosa is rich in goblet cells, secretory glands both mucous and serous [19].

7. Types of Polyp: Ethmoidal polyp observed in 78.69%; Antrochoanal in 19.67% and both in 01.64% of the patients. Single polyp was found in 45.90% and multiple in 54.10% of the patients. It was unilateral in 47.54%, bilateral in 52.46% of the patients.

8. On analyzing comparative effect of therapies

- *Nasya* + Oral Group showed better result in nasal blockage, mouth breathing, difficulty in breathing; sneezing, loss of sense of smell, snoring, nasal discharge, headache, post nasal drip; cough and dryness of throat etc., itching eyes etc., f.b. sensation in nose, loss of sense of taste. However the percentage of improvement of sneezing and loss of sense of smell in Group 3 is greater than Nasya + Oral Group, but the difference being 0.1% which is negligible.

- *Nasya* Group showed better result in dryness of throat etc.
- Controlled Group showed better result in sneezing and loss of sense of smell.

9. On analyzing comparative effect of therapies
   - *Nasya* + Oral Group showed better result in Grading of Nasal Polypi (25%), Nasal discharge (64.29%) and Polypoidal mucosal changes (100%) (Figs. 1 and 2).
   - *Nasya* Group showed better result (56.1%) in CT Scan findings (Fig. 3); while 26.04% improvement was found in Nasya + Oral Group in CT Scan findings (Figs. 4 and 5).
   - Controlled Group showed better result in maxillary sinus hazyness (24.39%).

   .

10. On analyzing overall effect of therapies, complete remission/cure was not found in any of the groups; marked relief in Nasya Group i.e. 1 (5.88%) and Nasya + Oral Group—1 (5.88%); moderate relief in Nasya—3 (17.65%), Nasya + Oral Group—5 (29.41%); Controlled Group—1 (5.88%); mild relief in *Nasya* Group—04 (23.53%), *Nasya* + Oral Group—09 (52.94%); Controlled Group—10 (55.55%); whereas no relief was observed in *Nasya* Group—08 (47.06%); *Nasya* + Oral Group—02 (11.76%); Controlled Group—07 (38.89%).

Thus, after analyzing total effect of therapies, it can be said that Nasya + Oral Group followed by *Nasya* Group showed better results in subjective as well as objective parameters, while results in Controlled Group are also encouraging in subjective parameters.

No adverse effect was observed in patients during this study.

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Funding This study was funded by Ministry of AYUSH. Grant in aid general of non-planned regular grant of IPGT & RA was provided for the present study.

Compliance with Ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval Clinical study was started after getting approval of Institutional Ethics Committee. (IEC Appr. No.-PGT/7-A/Ethics/2012-2013/3552, dated 25/02/2013). All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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