



A COMPARATIVE CLINICAL STUDY TO EVALUATE THE EFFECTIVENESS OF BALAKORANDA TAILA NASYA AND KSHEERABALA TAILA NASYA IN THE MANAGEMENT OF AVABAHUKA

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ABSTRACT

Nasya is one among the *Panchakarma*, where the medicine is administered through the nose. Nasal passage being the gateway of head, *Nasya* is especially desired for diseases of the parts above the clavicle. *Avabahuka* is a *Urdhajatrugata vatavyadhi* where pain and stiffness of shoulder joint leading to restricted movements of upper limb. *Balakoranda Taila* is a *Vatahara taila* mentioned in Ancient Ayurvedic text book which can administer as *Nasya*. It is compared with *Ksheerabala Taila Nasya* in the management of *Avabahuka*. A Comparative Clinical study was performed in 40 patients, divided into 2 groups (Group A and Group B, 20 patients each) suffering from *Avabahuka*, as per the selection criteria. In Group A, *Balakoranda Taila Nasya* was given for 7 days and Group B, *Ksheerabala Taila Nasya* was given for 7 days. Assessment was done with regards to Shoulder Pain and Disability Index (SPADI), Stiffness and Range of movements and changes were recorded and statistically analysed. **Results and Interpretation:** Overall, statistical analysis indicated that both treatments were significant in all subjective and objective parameters after treatment and at follow-up, with greater significance observed at follow-up. *Balakoranda Taila Nasya* showing slightly more immediate analgesic action compared to control.

Keywords: *Avabahuka*, *Urdhajatrugata Vatavyadhi*, *Nasya*, *Balakoranda Taila*, *Ksheerabala Taila Nasya*.

INTRODUCTION

Nasya is one among the *Panchakarma*, which is indicated in *Urdhwajatrugata Vikaras*. It implies not only local action at the PNS area but also at the upper neurological centres and the whole body by means of the control system¹. Although *Nasya* has been generally categorized under *Shodhana*, by altering the medicine used, *Brimhana* effect can be obtained. *Brimhana nasya* alleviates vitiated *Vata* which is responsible for pain and restriction of movements in the disease *Avabahuka*.

Avabahuka is a disorder which negatively affects the routine domestic activities of an individual, both in sedentary lifestyle and heavy workers. In *Avabahuka*, vitiated *Vata dosha* localizes in shoulder region and does the *Sankocha* of *Siras* leading to the manifestation of *Sirasankocha* and *Bahupraspandanaharatvam*².

Cervical region pathologies can cause pain on the shoulder and arm. The radiculopathy that affects the C₅ and C₆ roots is considered as the cause of atrophy and weakness in shoulder rotator cuff muscles and deltoid

muscle³. The most frequently affected levels are C₆-C₇, followed by C₅ -C₆⁴. Cervical Spondylosis can be compared with *Avabahuka*. In the general population, the point prevalence of Cervical Spondylosis ranges from 0.4% to 41.5%, the 1-year incidence ranges from 4.8% to 79.5% and lifetime prevalence as high as 86.8%⁵.

In *Avabahuka* there is vitiation of Vata with *Anubanda* of *Kapha* at the shoulder region⁶. For *Urdwajatrugata* diseases, *Nasya* is the best *Panchakarma* treatment because nasal pathway is the gateway to head⁷. Cervical Spondylosis can be considered under *Vata vyadhi*, where *Brimhana Nasya* is essential, but studies with different classically mentioned Taila on *Nasya* is not been explored yet. *Ksheerabala taila* is practised for different Vatika conditions and was found to be effective on *Nasya Prayoga* in Cervical Spondylosis⁸. Therefore, it is taken as control group in this study. *Balakoranda Taila* indicated in *Vatavyadhi*⁹ contains drugs which are *Vatahara* and *Brimhana* in action and may help in reducing the symptoms of *Avabahuka*. Hence, the present study had done to compare the effectiveness of *Balakoranda Taila Nasya* and *Ksheerabala Taila Nasya* in subsiding the signs and symptoms of the patients suffering from *Avabahuka*.

MATERIALS AND METHODS

OBJECTIVES

PRIMARY OBJECTIVES

- 1) To evaluate the Effectiveness of *Balakoranda Taila Nasya* in the management of *Avabahuka*
- 2) To evaluate the Effectiveness of *Ksheerabala Taila Nasya* in the management of *Avabahuka*

SECONDARY OBJECTIVES

- 1) To compare the effectiveness of *Balakoranda Taila Nasya* and *Ksheerabala Taila Nasya* in the management of *Avabahuka*
- 2) To assess *Samyak Lakshanas* of *Nasya karma*

PLAN OF STUDY

- Study Design - A Randomised Comparative Clinical Study Design
- Study Setting - OPD & IPD of MVRAMCH, Parassinikadavu
- Study Period - 18 months
- Sampling Technique - Simple Random Sampling (Lottery method)
- Procedure duration - 7 days; Follow up-15th day after treatment

SELECTION OF PARTICIPANTS

Diagnostic Criteria:

Signs and Symptoms mentioned in *Ayurveda* Classics for *Avabahuka*

- *Amsa Sandhi Shula*
- *Stabdatha*
- *Bahupraspandanaharatvam*

Inclusion Criteria:

- Participants fulfilling the diagnostic criteria
- Participants between the age group of 20 - 70years will be selected
- Irrespective of gender
- Participants fit for the procedure *Nasya*
- Participants with controlled Diabetes Mellitus and Hypertension (Under Medication)

Exclusion criteria:

- Participants with a history of fracture or dislocation of the affected hand
- Pregnant women and lactating women

- Nasal polyp
- *Peenasa*
- *Urdhvagata Raktapitta*

SAMPLE SIZE – 40participants

Sample size formulae

$$n_i = \frac{(Z_{\alpha/2} + Z_{\beta})^2 2\sigma^2}{d^2}$$

where n_i is the sample size required in each group ($i=1,2$), α is the selected level of significance and $Z_{\alpha/2}$ is the value from the standard normal distribution holding $1 - \alpha/2$ below it, and $1 - \beta$ is the selected power and Z_{β} is the value from the standard

$$\text{Therefore, } \frac{(Z_{\alpha/2} + Z_{\beta})^2 2\sigma^2}{d^2} = \frac{(1.96+1.645)^2 \times 2 \times 17.60}{(20)^2}$$

$$= 20$$

With reference to the clinical study by Paresh R. Desmukh and Kavita K. Fadnavis the σ , the standard deviation is taken as 17.60 and effect size is considered such that there will be a change of 20 units during these experiment trail.

here $\alpha = 0.05$
 $Z_{\alpha/2} = 1.96$
 $B = 0.05$
 $Z_{\beta} = 1.645$
 $\sigma = 17.60$
 and
 $D = 20$

Hence, total 40 participants (20 in each group) were selected for this study

INTERVENTION DETAILS

DRUG REVIEW

Table No 1: Description of *Balakoranda Taila* and *Ksheerabala Taila*

Name of Medicine	<i>BALAKORANDA TAILA</i>	<i>KSHEERABALA TAILA</i>
Ingredients	<i>Bala, Koranda, Tilataila, Kalka of Dhanwantharam taila and Ksheera</i>	<i>Bala, Ksheera and Tilataila</i>
Reference	<i>Vaidyamanoranaena Chikitsakrammam</i>	<i>Sahasrayoga</i>

THERAPEUTIC INTERVENTION

Table 2: Description of Trial and Control Group

Particulars	Group A	Group B
Sample Size	20	20

Drug	<i>Balakoranda Taila</i>	<i>Ksheerabala Taila</i>
Dose	4ml per nostril	4ml per nostril
Duration	7 days	7 days
Time	3- 5pm	3-5pm

ASSESSMENT CRITERIA

Assessment of the results was done on the basis of signs and symptoms. The parameters were assessed one day prior to the treatment, after the treatment and on 15th day after the treatment using different scoring system assigned.

1. SHOULDER PAIN AND DISABILITY INDEX (SPADI)¹⁰

The patient was asked to mark against the number corresponding to how he/she feels the pain at that moment.

PAIN SCALE

How severe is the pain?

Circle the number that best describes the pain where: 0 = no pain and 10 = the worst pain imaginable.

At its worst?	0	1	2	3	4	5	6	7	8	9	10
When lying on the involved side?	0	1	2	3	4	5	6	7	8	9	10
Reaching for something on a high shelf?	0	1	2	3	4	5	6	7	8	9	10
Touching the back of your neck?	0	1	2	3	4	5	6	7	8	9	10
Pushing with the involved arm?	0	1	2	3	4	5	6	7	8	9	10

DISABILITY SCALE

How much difficulty do patient have? Circle the number that best describes your experience where: 0 = no difficulty and 10 = so difficult it requires help.

Washing your hair?	0	1	2	3	4	5	6	7	8	9	10
Washing your back?	0	1	2	3	4	5	6	7	8	9	10
Putting on an undershirt or jumper?	0	1	2	3	4	5	6	7	8	9	10
Putting on a shirt that buttons down the front?	0	1	2	3	4	5	6	7	8	9	10
Putting on your pants?	0	1	2	3	4	5	6	7	8	9	10
Placing an object on a high shelf?	0	1	2	3	4	5	6	7	8	9	10
Carrying a heavy object of 10 pounds (4.5 kilograms)	0	1	2	3	4	5	6	7	8	9	10
Removing something from your back pocket?	0	1	2	3	4	5	6	7	8	9	10

2. *STABDATHA* (STIFFNESS)

Grade 0: No stiffness

Grade 1: Sometimes for 5-10 minutes

Grade 2: Daily for 10-30 minutes

Grade 3: Daily for 30-60 minutes Grade 4: Daily more than 1 hour.

3. *BAHUPRASPANDITAHARAM* (Restricted Range of Movements) Grade 0 - No movement

Grade 1 - Up to 50% of the full range of joint motion Grade 2 - 50 to 70% of the full range of joint motion

Grade 3 - more than 70% and less than full range of joint motion Grade 4 - Full range of joint motion

RESULT

All the datas were tabulated and statistical analysis was done with the following statistical tests using the SPSS 27 version software. Assessments of subjective and objective parameters are done by using Friedman Test, Wilcoxon Signed Ranks Test and Mann-Whitney U Test.

Sl.No	Parameter	Z value (BT-AT)	P value (BT-AT)	Z value (BT-FU)	P value (BT-FU)
1	Pain (SPADI)	-4.472	0.001	-4.472	0.001
2	Stiffness	-3.739	0.000	-3.727	0.000
3	Flexion	-4.053	0.000	-4.179	0.000
4	Extension	-4.053	0.000	-4.179	0.000
5	Abduction	-4.053	0.000	-4.472	0.000
6	Adduction	-4.053	0.000	-4.179	0.000
7	Medial rotation	-4.053	0.000	-4.179	0.000
8	Lateral rotation	-4.053	0.000	-4.379	0.000

Sl. No	Samyak Snigdha Lakṣaṇa	Z value (BT-AT)	P value (BT-AT)	Z value (BT-FU)	P value (BT-FU)
1	Sirolaghava	-4.472	0.000	-4.472	0.000
2	Sukha Swapna	-4.053	0.000	-4.053	0.000
3	Sukha Prabodha	-3.873	0.000	-4.053	0.000
4	Vikaropasamana	-3.739	0.000	-4.053	0.000
5	Indriya Suddhi	-3.873	0.000	-4.053	0.000
6	Manasukha	-3.739	0.000	-4.053	0.000
7	Sukha Ucchvasa	-3.739	0.000	-4.053	0.000

DISCUSSION

- **Effect of therapy on Pain (SPADI Score):** Both trial (Balakoranda Taila Nasya) and control (Ksheerabala Taila Nasya) groups showed significant pain reductions from baseline to post-treatment and follow-up. The trial group demonstrated slightly greater immediate relief, supporting the analgesic efficacy of Balakoranda Taila Nasya over Ksheerabala Taila Nasya in Avabahuka.
- **Effect of therapy on Disability (SPADI Score):** Disability scores declined markedly in both trial (Balakoranda Taila Nasya) and control (Ksheerabala Taila Nasya) groups from baseline to post-treatment and follow-up. The trial group showed greater early improvement, indicating both interventions reduce disability, with Balakoranda Taila Nasya offering faster functional recovery in Avabahuka.
- **Effect of therapy on Stiffness:** Stiffness decreased significantly in both trial (Balakoranda Taila Nasya) and control (Ksheerabala Taila Nasya) groups across all time points. No intergroup differences emerged, indicating comparable efficacy in relieving shoulder stiffness for Avabahuka.

- **Effect of therapy on Flexion:** Both trial (Balakoranda Taila Nasya) and control (Ksheerabala Taila Nasya) groups showed highly significant shoulder flexion gains across time points. Trial: baseline mean 1.00 to 3.60 post-treatment and 3.95 follow-up; control: 1.05 to 3.35 and 3.85. No intergroup differences emerged, though Balakoranda Taila Nasya yielded slightly higher scores, indicating comparable efficacy in Avabahuka.
- **Effect of therapy on Extension:** Both trial (Balakoranda Taila Nasya) and control (Ksheerabala Taila Nasya) groups exhibited highly significant extension gains. Trial: baseline mean 1.00 to 3.60 post-treatment and 3.95 follow-up; control: 1.05 to 3.40 and 3.85. No intergroup differences appeared, with Balakoranda Taila Nasya showing slightly higher values and earlier gains in backward arm movement for Avabahuka.
- **Effect of therapy on Abduction:** Both trial (Balakoranda Taila Nasya) and control (Ksheerabala Taila Nasya) groups showed significant abduction gains. Trial: baseline mean 1.00 to 3.60 post-treatment and 4.00 follow-up; control: 1.05 to 3.45 and 3.85. No intergroup differences emerged, with Balakoranda Taila Nasya demonstrating slightly greater sideways arm lifting improvement in Avabahuka.
- **Effect of therapy on Adduction:** Both trial (Balakoranda Taila Nasya) and control (Ksheerabala Taila Nasya) groups achieved significant adduction gains. Trial: baseline mean 1.00 to 3.60 post-treatment and 3.95 follow-up; control: 1.05 to 3.50 and 3.85. No intergroup differences were noted, though Balakoranda Taila Nasya showed slightly earlier relief from periarticular restriction in Avabahuka.
- **Effect of therapy on Medial Rotation:** Both trial (Balakoranda Taila Nasya) and control (Ksheerabala Taila Nasya) groups showed significant medial rotation gains. Trial: baseline mean 1.00 to 3.55 post-treatment and 3.95 follow-up; control: 1.05 to 3.40 and 3.90. The trial group achieved consistently higher scores, suggesting enhanced efficacy for internal rotation in Avabahuka.
- **Effect of therapy on Lateral Rotation:** Both trial (Balakoranda Taila Nasya) and control (Ksheerabala Taila Nasya) groups demonstrated highly significant lateral rotation gains. Trial: baseline mean 1.05 to 3.65 post-treatment and 4.00 follow-up; control: 1.05 to 3.50 and 3.90. No intergroup differences emerged, but Balakoranda Taila Nasya enabled slightly earlier recovery in Avabahuka.

DISCUSSION ON THE EFFECT OF THERAPY ON *SAMYAK NASYA LAKSHANA*

- **Shirolaghava-** Both Balakoranda Taila Nasya and Ksheerabala Taila Nasya groups exhibited steady, significant Siro-laghava score increases from Day 1 (trial mean 0.25 ± 0.44 ; control similar) to Day 7 (both reaching 1.0), reflecting progressive head lightness. This aligns with *samyak-nasya lakshanas*, indicating dosha clearance from sira-mukha srotas and prana-vata restoration. No intergroup differences emerged, confirming both oils' efficacy by therapy end.
- **Sukha Swapna-** Mean Sukha-svapna scores rose steadily over seven days in both groups, reaching 0.80 by Day 7 (trial: Day 1 mean 0.00; control: 0.10). The trial group (Balakoranda Taila Nasya) showed earlier onset from Day 2, versus Day 3 for control (Ksheerabala Taila Nasya), with a favourable trend toward Balakoranda Taila Nasya in Avabahuka.
- **Sukha Prabodha-** Both Balakoranda Taila Nasya and Ksheerabala Taila Nasya groups showed significant refreshed awakening improvements over seven days (trial: Day 1 mean 0.05 to Day 7 0.80; control similar but slightly slower). Trial gains emerged from Day 3, versus Day 3–4 for control, with no intergroup differences but earlier effects from Balakoranda, likely via reduced kapha heaviness in Avabahuka.
- **Vikaropashama-** Both Balakoranda Taila Nasya and Ksheerabala Taila Nasya significantly reduced Avabahuka symptoms (pain, stiffness, restricted movements) over seven days, with trial group improvements from Day 3 versus Day 4 for control. This reflects vata-kapha pacification and enhanced joint function, though no intergroup differences emerged.
- **Indriya Shuddhi-** Both Balakoranda Taila Nasya and Ksheerabala Taila Nasya drove progressive gains over seven days (trial from Day 3; control from Day 4), clearing urdhva-jatrugata srotas for indriya-prasadana and Siro-laghava as per classics. No intergroup differences noted.
- **Manasukha-** Both Balakoranda Taila Nasya and Ksheerabala Taila Nasya significantly improved mental calmness over therapy, with trial gains from Day 3 (faster than control). This reflects vata pacification in the head, enhancing manasika status per Ayurvedic texts, though no intergroup differences emerged.
- **Sukha ucchvasa-** Both Balakoranda Taila Nasya and Ksheerabala Taila Nasya groups improved respiration progressively over seven days (trial from Day 3; control from Day 4), alleviating kapha-vata in upper pranavaha srotas per classics. No intergroup differences, but trial showed earlier gains in Avabahuka.
- **Discussion on Event Evaluation Scale** - Across all the parameters the incidence of events was very low, indicating that both interventions were generally safe. The trial group (*Balakoranda Taila Nasya*) showed fewer “Ayoga” manifestations such as *Vikaraashanti* and no *Siroguruta*, reflecting balanced dosha elimination.

A single late *Kaphapraseka* episode suggests the trial drug's stronger kapha mobilisation but without adverse sequelae. Overall, the Event Evaluation Scale data support good tolerability and safety of *Balakoranda Taila Nasya* compared to *Ksheerabala Taila Nasya*.

CONCLUSION

The present comparative clinical study evaluated *Balakoranda Taila Nasya* (trial) and *Ksheerabala Taila Nasya* (control) in the management of *Avabahuka*. Both groups showed statistically significant ($p < 0.001$) improvement in pain, stiffness, disability scores, and range of motion (flexion, extension, abduction, adduction, medial and lateral rotation). Between-group analysis revealed no significant difference, confirming the null hypothesis; however, clinical trends indicated that *Balakoranda Taila Nasya* produced earlier and more sustained relief, especially in range of motion and stiffness.

Samyak-Lakshana pattern showed progressive improvement in both groups, with earlier response in the *Balakoranda Taila* group (Day 2–3) versus *Ksheerabala* (Day 3–4), converging by Day 7 at the ideal score (1.0), indicating attainment of complete *Samyak Nasya*. This aligns with Ayurvedic expectations of immediate cleansing and subsequent normalization of *Vata-Pitta*, leading to restful sleep and refreshed awakening. Both oils were effective and safe, though *Balakoranda Taila Nasya* demonstrated a marginal clinical advantage for quicker recovery.

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