



Efficacy of *Chatuprasrutik Basti* in Management of Oligospermia – A Pilot Study

Sagar F. Magar^{1*}, Mamata M. Nakade¹, Rahul Kshirsagar² and Snehalata Pawar¹

¹Department of Panchakarma, Dr. D. Y. Patil College of Ayurved and Research Centre, Pimpri, DPU, Dr. D. Y. Patil Vidyapeeth (Deemed to be University), Pune – 411018, Maharashtra, India; sagarmagar68@gmail.com

²Department of Dravyaguna, SST's Ayurved College, Ahmadnagar, MUHS, Nashik University, Sangamner – 422605, Maharashtra, India

Abstract

Oligospermia is one of the most common reasons for infertility in day-to-day life. Infertility is a widespread issue that affects 8-12 % of couples globally on average and is getting worse day by day. It was observed that the pathology is found in approximately incidence of 60% males alone in infertile couples. In *Ayurveda*, Oligospermia can be correlated with *Shukra-Alpta*. *Bastikarma* is considered to be having particular action on *Shukra Dhatu* and *Chatuprasrutik Basti* is explained as *Shukrakrut Basti* in *Charak Samhita*, So in this study, *Chatuprasrutik Basti* was selected in the management of Oligospermia. **Aim:** This clinical investigation looked into how *Chatuprasrutik Basti* affected the number of sperm in patients with infertility. **Study Design:** This was interventional clinical research with one arm. **Materials and Methods:** *Chatuprasrutik Basti* was administered for two cycles of *Basti* of 6 days each with a month gap in Seven newly diagnosed cases of Oligospermia from the outpatient Department of Panchakarma at SST's Ayurved Mahavidyalaya in, Sangamner, Ahmednagar, Maharashtra, India. **Statistical Analysis:** The "Student paired t-test" was used statistically to analyze the data. **Results:** At the conclusion of therapy, a significant ($p<0.05$) result was found in the evaluation of an objective parameter, specifically sperm count, and a significant result was not found in the evaluation of the factor sperm motility as $p>0.05$. **Conclusion:** *Chatuprasrutik Basti* is effective in the management of Oligospermia considering the factor of sperm count.

Keywords: *Basti*, *Chatuprasrutik Basti*, Male Infertility, Oligospermia, Sperm Count

1. Introduction

Oligospermia is one of the most common reasons for infertility in day-to-day life. The failure to conceive after one year of unprotected coitus is referred to as infertility¹. With an average of 8-12 % of couples affected worldwide and an ongoing rise day by day, infertility has a significant negative impact on couples' psychological, sexual and social well-being. It was reported that in approximately 40% of cases of infertility, the pathology is found in males alone. In contrast to this, 20% of infertility is due to abnormality present in both men and women. Logically this reveals an incidence of 60% of male factors in infertile couples in general.

Oligospermia is defined as less sperm in the ejaculation of the male or less than 15 million sperm

per milliliter² and is very well explained in *Ayurvedic* literature. In *Ayurveda* Condition *Shukra-alpta* can be correlated with Oligospermia by the above definition.

In *Charak Samhita*, the *Shukradushti Hetus* are mentioned, in which most of the causative factors are related to stressful lifestyles and altered food patterns. *Hetus* causes *Shukradushti*, ultimately increasing infertility.

The most cutting-edge method of treating this condition in the conventional medical system is Medical Assisted Reproductive Technique (MART), like artificial insemination, *in-vitro* fertilization, and intracytoplasmic sperm injection, etc and the procedures are very expensive as well as results are not satisfactory. In *Ayurvedic* Classics, it is explained that

*Author for correspondence

Basti Karma is mainly indicated in vitiated *Vata Dosha* as well as *Basti Karma* also has particular action to manage *Shukra doshas*.

“प्रशस्ताः शुक्रदोषेषु बस्तिकर्म विशेषतः ॥” (च. चि. ३०/१५२)

Hence, *Basti karma* is significantly beneficial in *Shukradushtijanya Vyadhi*. Out of various types of *Basti*, *Chatuprasrutik Basti* is explained as *Shukrakrut Basti* in *Charak Samhita*, *Siddhisthan*³. *Basti karma* also has action on *Apana Kshetra*.

2. Aims and Objectives of the Study

To study the effect of *Chatuprasrutik Basti* on sperm count and sperm motility in Oligospermia.

3. Materials and Methods

A total of 7 patients with Oligospermia from the outpatient Department of Panchakarma at SST's Ayurved Mahavidyalaya in Sangamner, Maharashtra, India were registered for the study. Before beginning the intervention, the patient gave their informed consent.

3.1 Quantity of *Basti*

336ml (approx. 340 ml).

3.2 *Kala*

Once a day on an empty stomach.

3.3 Duration of Therapy

Two *Basti* courses were given at intervals of 1 month each for six days. The process of Spermatogenesis needs 74 days for the complete formation of sperm by passing through different stages of maturation⁴. Hence, it was important to monitor the patient for three months at least after withdrawal of treatment under trial. However, according to *Ayurveda*,

Acharya Vagbhat said that there are different references about the formation of *Shukra Dhatu* as it needs 6 days, 8 days or 1 month. Therefore, here one course of *Basti* of 6 days was decided (Table 1)⁵. *Pariharya vishaya* of *Basti* is double the days of *Basti* treatment⁶, so after completion of the second *Basti* course next follow-up was after 12 days i.e. on the 48th day.

3.4 Route of Administration

Per rectum.

3.5 Collection of Semen for Analysis

Abstinence: Before collection of the ejaculate 3-5 days abstinence was followed.

Method: Masturbation.

Container: a dried and wide-mounted bottle was used.

3.6 Approval of Studies and Enrollment of Patient

The human ethics committee of SST's Ayurved Mahavidyalaya in Sangamner, Ahmednagar, Maharashtra gave its approval to the study protocol. 'SSTAYU/774/2021' was the approval number. The subjects were introduced to the study and also counselled orally before the enrolment of the patient. Each subject's written informed consent was obtained before the study began.

3.7 Included Cases Must Fulfill the Following Criteria

- Based on semen analysis, diagnosed cases of Oligospermia.
- Age between 25-45 years.
- Patient who will give written consent.

3.8 Exclusion Criteria

- Azoospermia, Necrozoospermia and Teratozoospermia.

Table 1. Duration and follow-up of therapy

<i>Basti</i> course	Duration of course	The gap between the two courses	Follow up	Investigation
First <i>Basti</i> course	6 days	30 days	1 st day	Semen analysis on the first day
			6 th day	-
Second <i>Basti</i> course	6 days		31 st day	-
			36 th day	-
			48 th day	Semen analysis on the last follow up

- Unmarried patient.
- Patients suffering from systemic diseases like cirrhosis of the liver, CRF, etc.
- Patients with structural deformities like Epispadias, Hypospadias, Cryptorchidism, Hydrocele, Vericocele etc.
- Drug abuse patient.
- Patients receiving antihypertensive treatment.
- Patients having genetic and congenital disorders.

3.9 Withdrawal Criteria

- If a major illness or other adverse effect happens during the study that requires immediate medical attention.
- The investigator feels that the protocol has been violated or the patient has become non-cooperative.
- The patients are not willing to continue the trial.

3.10 Method of Preparation

Chatuprasrutik Basti was prepared as described in the text *Charak Samhita Siddhistan*⁸. *Chatuprasrutik Basti* is the type of *Yapan Basti*, hence it was prepared freshly daily.

3.11 Basti Sammelana

Ingredients of any *Basti* are mixed in a specific order to get a homogenous mixture called *Basti sammelana*. Acharya Charak and Acharya Vagbhat describe this order.

Chatuprasrutik Basti was prepared in the following order:

- First *madhu* (honey) (80ml) was taken in a pot.
- Then *saindhav* (rock salt) (5 gm) was added and this mixture was then thoroughly mixed.
- After that, *Sneha* i.e. ghee (80ml) and *til tail* (80ml) were added and again mixed thoroughly.
- After this *hapusha kalka* was added and again thoroughly mixed.
- At last milk (80ml) was added and again all this mixture was mixed thoroughly.

3.12 Diet and Restrictions

Patients were advised:

- To avoid spicy intake
- To avoid oily food, junk food
- To stop smoking, drinking
- To increase ghee, milk, *dadim*, *mash*, and wheat in the diet.

4. Investigation for Screening

History-based examination and semen analysis were used to investigate and screen all patients. Before beginning the intervention, a semen analysis was done to rule out any further cases that might have been related to the exclusion criteria.

5. Diagnostic Standards

The 2010 Semen analysis guidelines published by the World Health Organization were taken as the basis for the diagnostic standards for Oligospermia as shown in Table 2.

6. Assessment Criteria

Assessment of the study was done based on changes in semen parameters especially sperm count observed before and after the treatment. In all patients, semen analysis was done before treatment and at last follow-up after completing the treatment duration and *Pariharya kal* of *Basti*. Along with sperm count, sperm motility was also observed before and after the treatment. The obtained results were subjected to analysis statistically.

7. Observations and Results

In the current study, semen analysis was performed to determine the impact of *Chatuprasrutik Basti* on sperm count and sperm motility. Based on this information, two assessments of the patients were made before and after the treatment. Semen analysis is the most often performed test for sperm count. Through the application of the proper statistical test, the sperm count, and sperm motility were statistically analyzed. Due to the quantitative, paired and parametric nature of the data,

Table 2. Diagnostic standards for semen analysis

Sr. No.	Semen analysis	Cut-off reference values
1	Volume	1.5 ml
2	pH	7.2 to 7.8
3	Sperm count	15 million/ml
4	Viscosity	<3 (scale 0-4)
5	Total Motility	40%
6	Viability	58%

Table 3. Comparative effectiveness of the above-mentioned parameters both before and after treatment

Criteria	Mean of differences	S.D of differences	t value	P value	r Value	Sig.
Sperm count	9.000	6.000	3.969	0.0074	0.5143	Yes
Sperm motility	2.143	6.986	0.8115	0.4481	0.8221	No

Table 4. Symptomatic relief in percentage

Sr. No.	Symptoms	Relief in percentage
1	Sperm count	82.94
2	Sperm motility	5.44

the student-paired t-test was performed. To determine whether pairing was effective, the correlation coefficient's *r* value was determined and is shown in Table 3.

- The level of significance for the factor sperm count, since the P value is < 0.05.
- For the factor of sperm count, there is compelling evidence to reject the null hypothesis.
- Therefore, the impact of therapy on factor sperm count is statistically significant.
- The effect of therapy is statistically not significant on factor sperm motility since the P value > 0.05 level of significance for that factor provides strong support to accept the null hypothesis.

7.1 Symptomatic Relief in Percentage

7.1.1 Average Relief in Percentage

The percentage of relief was calculated using the following formula:

The average relief in the percentage of the symptom is summarized in a single Table 4.

8. Discussion

Shuddha shukra has the property of fertilization with optimum quantity and optimum motility of sperm. One of the main abnormalities that contribute to male infertility is Oligospermia, which is defined as having less sperm count. According to *Ayurveda*, it can be correlated with *Shukra-alpta*. While defining *Vajikaranatantra* Acharya *Sushruta* explained four conditions of *Shukra Doshā*⁷. Those are *Alparetas*, *Kheena Shukra*, *Dushta Shukra* and *Vishushka Retas*. In this *Alparetas* is the condition in which *Shukra* is less in quantity the normalcy according to *Dalhana*⁸. *Shukra-alpta* is a type of *Shukra Dushti* that has the predominance of *Vata*

and *Pitta Doshā*. To deal with *Shukra Dushti*, Acharya *Charaka* has mentioned *Basti Karma*. Specifically, *Yapan Basti* is explained by Acharya *Charaka* in *Siddhi Sthana* as the best *Rasayana* and *Vajeekarana*. *Basti* is one of the best *Panchakarma* treatments for vitiated *Vata Doshā*. It is one of the *Panchakarma*, involving the administration of *Kwatha* or *Sneha* through the *Guda* into the *Pakwashaya*. They have been regarded as *Mula Sthana* of *Vata Doshā*. Therefore, calming *Vata Doshā* in this area calms *Vata* throughout the body, much as how a tree's entire structure disintegrates itself when its roots are severed⁹. The morbid *Doshas* are eliminated from the entire body by the *Basti*, which is located in *Pakwashaya*, by its *Veerya*, like how the Sun is far from the Earth yet still absorbs its water content¹⁰. Additionally, *Basti* eliminates the morbid *Doshas* that have accumulated in the *Kati*, *Pristha* and *Koshta* regions. *Yapan Basti* is one of the synonyms of *Niruha Basti*¹¹.

Yapan Basti performs both actions as *Snehana* as well as *Shodhan*¹². Additionally, it has *Rasayana* and *Vajikarana Gunas*. *Rasayana* is a term used to refer to something that maintains the flow of *Poshaka Rasa* (*Ayana = gati/path*). In general, the nature of *Rasayana* is typically *Agnivardhaka* and *Sroto Vishodhaka*. The quality of *Rasa Dhatu* and *Dhatwagni* is simultaneously improved. Thus, eventually, a better *Dhatu* is formed as a result. All of the *Dhatu*s are collectively fed by *Yapana Basti*, which also improves the body's *Dhatwagni* to sustain *Dhatu samya*, which eventually corrects the *Shukra Dhatu Kshaya*. It acts specifically in situations like *Dhatu Kshaya*, *Bala Kshaya*, *Shukra Kshaya*, *Ati-vyavaya* and *Vandhyatva* etc¹³. *Ati Maithuna* is the main cause of *Shukra Kshaya*, *Shukra-alpta*, hence *Yapana Basti* may be indicated to treat *Shukradosha*. One of this is *Chatuprasrutik Basti*. *Chatuprasrutik Basti* has the *Shukrakrut* action and is known to improve the quality of sperm. The ingredients of *Chatuprasrutik Basti* support the improvement in the semen quantity and quality. *Madhu* have *Vajikaran*, *Sukshmmarganusari*, *Yogvahi* property¹⁴. *Goghru* have *Vrushya*, *Shukravardhan* and *Balya*, *Vata-pittahar* property¹⁵. *Tila Taila* is *Balya*, *Uttama Vataghna* and

Vrishya (~aphrodisiac)¹⁶ and *Godugdha* has *Jeevaniya* (vitalizer), *Rasayan*, *Balya*, *Madhur Rasa*, *Sheet Virya* property¹⁷. *Hapusha* has *Katu*, *Tikta Rasa* and *Vatahar* property¹⁸. *Saindhav* helps the *Basti Dravya* to reach up to the molecular level due to its *Sukshma* and *Tikshna* properties. Hence all the ingredients of *Chatuprasrutik Basti* have an action on *Shukra Dhatu* and *Basti* is the main treatment to treat *Shukra Dosh*. *Chatuprasrutik Basti* is useful to increase sperm count, it also enhances sperm motility. This *Basti* has positive results in sperm motility but not marked improvement, this may be due to the less number of sample size. Therefore, *Yapan Basti* was used in the study, which was carried out to determine the effects. From the above-mentioned research study, it was found that *Chatuprasrutik Basti* has a nourishing effect on *Shukra-alpta* and also treats vitiated *Vata*. It also eliminates morbid *Doshas* accumulated throughout the body, particularly in the *Kati*, *Prishtha* and *Koshtha* region. The overall average effect showed 82.94% relief in sperm count and 5.44% relief in sperm motility. From this study, it can be concluded that *Chatuprasrutik Basti* can be used in the Oligospermia. Given that the experiment was a pilot study with a relatively small sample size, a larger sample size was required to ensure statistical viability.

9. Conclusion

As per the above statistical analysis, it is concluded that *Chatuprasrutik Basti* is effective in the management of Oligospermia by considering the factor of sperm count. The patients in the current study have not experienced any negative effects at all.

10. Acknowledgement

We would like to express our gratitude towards Dr. Ravin Chandak sir, Principal of SST's Ayurved College, Sangamner, District Ahmednagar, India for hospital support during this study and the authors are also thankful to Dr. Gopal Chavan, Dr. Manisa Walunj for their constant support and encouragement.

11. References

1. Dutta DC, edited by Hiralal Konar, Textbook of Gynaecology, New Delhi, Jaypee Brothers Medical Publishers, 2016. <https://doi.org/10.5005/jp/books/12997>
2. Dutta DC, edited by Hiralal Konar, Textbook of Gynaecology, New Delhi, Jaypee Brothers Medical Publishers, 2016. <https://doi.org/10.5005/jp/books/12997>
3. Vaidya Yadavaji Trikamaji, Charaksanhita of Agnivesh, Commentary of Sri Chakrapanidatta, Varanasi, Chaukhamba Surbharati Prakashan, 2021.
4. Dutta DC, edited by Hiralal Konar, Textbook of Gynaecology, New Delhi, Jaypee Brothers Medical Publishers, 2016. <https://doi.org/10.5005/jp/books/12997>
5. Pt. Hari Sadashiv Sastri Paradakara, Astangahrdaya of Vagbhata, Commentary of Arundatta, Varanasi, Chaukhamba Surbharati Prakashan, 2018.
6. Vaidya Yadavaji Trikamaji, Charaksanhita of Agnivesh, Commentary of Sri Chakrapanidatta, Varanasi, Chaukhamba Surbharati Prakashan, 2021.
7. Vaidya Yadavaji Trikamaji, Sushrutsanhita of Sushrut, Commentary of Sri Dalhanacharya, Varanasi, Chaukhamba Surbharati Prakashan, 2003.
8. Vaidya Yadavaji Trikamaji, Sushrutsanhita of Sushrut, Commentary of Sri Dalhanacharya, Varanasi, Chaukhamba Surbharati Prakashan, 2003.
9. Vaidya Yadavaji Trikamaji, Charaksanhita of Agnivesh, Commentary of Sri Chakrapanidatta, Varanasi, Chaukhamba Surbharati Prakashan, 2021.
10. Vaidya Yadavaji Trikamaji, Charaksanhita of Agnivesh, Commentary of Sri Chakrapanidatta, Varanasi, Chaukhamba Surbharati Prakashan, 2021.
11. Vaidya Yadavaji Trikamaji, Sushrutsanhita of Sushrut, Commentary of Sri Dalhanacharya, Varanasi, Chaukhamba Surbharati Prakashan, 2003.
12. Vaidya Yadavaji Trikamaji, Charaksanhita of Agnivesh, Commentary of Sri Chakrapanidatta, Varanasi, Chaukhamba Surbharati Prakashan, 2021.
13. Vaidya Yadavaji Trikamaji, Charaksanhita of Agnivesh, Commentary of Sri Chakrapanidatta, Varanasi, Chaukhamba Surbharati Prakashan, 2021.
14. Vaidya Yadavaji Trikamaji, Sushrutsanhita of Sushrut, Commentary of Sri Dalhanacharya, Varanasi, Chaukhamba Surbharati Prakashan, 2003.
15. Pt. Hari Sadashiv Sastri Paradakara. Astangahrdaya of Vagbhata, Commentary of Arundatta, Varanasi, Chaukhamba Surbharati Prakashan, 2018.
16. Vaidya Yadavaji Trikamaji. Sushrutsanhita of Sushrut, Commentary of Sri Dalhanacharya, Varanasi, Chaukhamba Surbharati Prakashan, 2003.
17. Pt. Hari Sadashiv Sastri Paradakara. Astangahrdaya of Vagbhata, Commentary of Arundatta, Varanasi, Chaukhamba Surbharati Prakashan, 2018.
18. Sharma PV. Dravyaguna-Vijnana, Volume-II, Varanasi, Chaukhamba Bharati Academy, 2020.