



## Research Article

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### CLINICAL MANAGEMENT OF *KSHEENA SHUKRA* (OLIGOSPERMIA) WITH SPECIAL REFERENCE TO *ARDHAMATRIKA* AND *TRITIYA BALADI VRISHYA YAPANA BASTI*: A COMPARATIVE STUDY

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#### ABSTRACT

*Ksheena shukra* is the disorder where there is *kshaya* (loss) of *shukra* (semen), both quantitatively and qualitatively due to the change in diet and lifestyle, which may lead to infertility. In oligospermia also, the sperm count is decreased, which is the most common cause for infertility. "*Basti karma*" (medicated enema) is proved to be efficacious and important in managing this condition as it has *balya* (strengthening), *shukrala* (increases seminal volume), *vrishya* (aphrodisiac) and *brimhana* (nourishing) properties. Considering all these merits and scopes of *basti*, *Ardhamatrika niruha basti* and *Tritiya baladi vrishya yapana basti* are selected for the present study to assess their efficacy on different parameters. 30 male patients of *ksheena shukra* were selected and randomly divided into 2 groups for clinical study. In group A, *Ardhamatrika niruha basti* and in group B, *Tritiya baladi vrishya yapana basti* was given in *karma basti* schedule. Systematic observations were made before and after the treatment and the effect of therapies were assessed on the basis of improvement in subjective and objective parameters. The data obtained was statistically analyzed by applying 't' test. Though, both the *Bastis* provided statistically significant results, the relief produced in group B was more as compared to group A. On the basis of encouraging results, *Tritiya baladi vrishya yapana basti* and *Ardhamatrika niruha basti* can be recommended for the treatment of *ksheena shukra*.

**Keywords:** *Ksheena shukra*, Oligospermia, *Basti karma*, medicated enema, *Ardhamatrika niruha basti*, *Tritiya baladi vrishya yapana basti*

#### INTRODUCTION

*Ayurveda* had very long back realized the factors governing fertility and their defects that give rise to *vandhyatva* (impotency) and *ksheena shukra*. *Shukra*, the ultimate *dhatu* meant mainly for reproduction also exhibits qualities as *dhairya* (patience), *priti* (pleasure), *dehabala* (physical strength), *harsha* (excitement), etc. in the male. *Chakrapani* while commenting on '*Shukra*' described that it is responsible for production of offspring.<sup>1</sup> Any abnormality in *shukra* may lead to *ashta shukra dushti* and *ksheena shukra* which is associated with *klaibya* (erectile dysfunction), *shukra kshaya*, *maithuna ashakti* (loss of libido), *daurbalya* (generalized weakness) and *mukhashosha* (dry mouth).

"*Ksheena shukra*" is described as one of the *shukra dushti* by *Acharya Sushruta* and *Vagabhatta*.<sup>2,3</sup> Here *vata dosha* along with *pitta dosha* undergoes vitiation and the normal qualities and quantity of *shukra dhatu* is deranged.<sup>4</sup> As a result, *shukravaha strotasa* (the channels which carry semen) undergoes *dushti*, which incapacitates one normal individual from conceiving his life partner, ending up with infertility.

In modern medicine, the condition associated with *ksheena shukra* can be well matched with oligospermia. In this condition, the sperm count becomes low and with this there is corresponding decrease in likelihood of conception. For many decades' sperm concentration of less than 20 million sperms/ml was considered low or oligospermic; however, recently the WHO reassessed sperm criteria and established new reference to less than 15 million sperm/ml.<sup>5</sup> WHO defines infertility as the inability to conceive a

child. Male infertility refers to a male's inability to achieve pregnancy in a fertile female and oligospermia is the most common reason behind male infertility. Male infertility is commonly due to the deficiencies in the semen volume and quality. Infertility affects up to 15 % of reproductive couples worldwide. According to the WHO estimate, the overall prevalence of primary infertility in India is between 3.9 to 16.8%.<sup>6</sup> In India infertility is a social stigma, (particularly in rural areas) which affects the couples' psychological harmony, sexual life and social functioning. Parenthood remains one of the most desired goals of every couple, and failure to procreate causes great anguish which may result in disturbed married life, separation (divorce) and sometimes even more serious consequences like suicides. In fact, there has been a drastic change in a male's day to day activities including life style (wearing of tight garments, jeans etc), food habits (junk foods), environmental pollution, industrial and occupational hazards like working on computers for more time, other habits including smoking, alcohol, tobacco etc. Due to all these factors infertility is increasing day by day.

In such condition *Vajikarana*, can come as a savior from this problem. "*Vajikarana tantra*", one of the ramification of *Ashtanga Ayurveda* deals with aphrodisiacs, virility and improving health of progeny with several drugs, recipes and special therapeutic procedures.<sup>7</sup> *Vajikarana* besides its aphrodisiac properties, it has an important motto '*apatya santankara*' (makes potent for the maintenance of the continuity of lineage). In *shukra dosha*, i.e., in *ksheena shukra*, the choice of treatment is *basti* (*Prashasta shukra dosheshu basti karma visheshta*) which is made out of *shukra vardhaka dravyas*, *ghrita*, *taila* etc.<sup>8,9</sup> Hence by considering all the scopes, the present study

was designed to assess and compare the effect of two *Bastis*, *Ardhamatrika niruha basti* (*Vangasena*) and *Tritiya baladi vrishya yapana basti* (*Charaka*) in multiple parameters of *shukra dushti*, especially in *ksheena shukra*.<sup>10,11</sup>

### Aim

To compare the effect of *Ardhamatrika niruha basti* and *Tritiya baladi vrishya yapana basti* in *ksheena shukra*.

### MATERIALS AND METHODS

**Study design:** Randomized controlled study.

#### Study Setting

Department of PG studies in Panchakarma, Ayurveda Mahavidyalaya, Heggeri extension, Hubli, Karnataka, 580024

#### Ethical Clearance

Study was approved by Institutional ethical committee on 14 March 2012 and trial has been registered in CTRI with Reg. no. CTRI/2018/06/014488.

#### Selection of Patients

After getting the ethical clearance for the trial, the subjects of male gender and between the age group of 21-45 years diagnosed as *ksheena shukra* and fulfilling the inclusion criteria were registered from the OPD and IPD of Panchakarma, Ayurveda Mahavidyalaya, Hubli irrespective of the caste and religion, presenting with the sign and symptoms of *ksheena shukra*. Routine blood examinations (Hb%, TLC, DLC, ESR, FBS and PPBS) and urine- routine and microscopic examination were carried out in order to rule out any other pathology and to monitor normal values of blood during trial period. The trial subjects were detailed about nature of trial and informed consent was obtained. The patients were diagnosed on the basis of *Ayurvedic* parameters having *ksheena shukra lakshanas-daurbalya*, *mukhashosha*, *sadana* (exhaustion), *shukra avisarga* (inability to ejaculate), *shrama* (fatigue), *pandu* (anemic) and *klaibya*<sup>12</sup> and modern parameters of semen analysis.

#### Inclusion criteria

- Male subjects of age between 21 to 45 years
- Subjects with clinical features of *ksheena shukra*
- Subjects with total sperm count below 20 million/ml
- Subjects fit for *basti karma*

#### Exclusion criteria

- Subjects categorized under Azoospermia.
- Subjects with past history of mumps, orchitis and trauma.
- Subjects with history of diabetes, thyroid disorders, TB, vascular disorders, testicular disorders, previous reproductive organ surgery, STD, HIV/AIDS, hydrocele, varicocele, CA testis.
- Subjects with uncontrolled metabolic disorders and other chronic systemic disorders.

#### Grouping of patients

A minimum of 30 cases diagnosed as *ksheena shukra* were selected randomly and categorized into two groups consisting 15 subjects in each group.

#### Group A

The patients of this group were administered *haritakyadi choorna* 5 to 10 gm BD before food with *ushnodaka* (warm water) as *anupana* for *koshtha shuddhi* till *nirama lakshanas* were observed.<sup>13</sup> After that, daily *sthanika abhyanga* (local massage) with *mahamasha taila* and *avagaha sweda* (tub sudation) with *ushnodaka* were carried out for 10-15 min prior to *basti karma*. This was followed by the alternate administration of *Ardhamatrika niruha basti* and *anuvrasana basti* (*Mahamasha taila*)<sup>14</sup> in *Karma basti* schedule.

#### Group B

The patients of this group were administered *haritakyadi choorna* 5 to 10 gm BD before food with *ushnodaka* (warm water) as *anupana* for *koshtha shuddhi* till *nirama lakshanas* was observed. Then after, daily *sthanika abhyanga* (local massage) with *mahamasha taila* and *avagaha sweda* (tub sudation) with *ushnodaka* were carried out for 10-15 min prior to *basti karma*. Further, *Tritiya baladi vrishya yapana Basti* was administered in *karma basti* schedule.

**Duration of clinical trial:** 30 days

**Parihara kala (Follow-up time):** 60 days

#### Diagnostic criteria

#### Subjective Parameters

Scoring system was adopted for assessment of various subjective features and following symptom scores were given depending upon the changes seen before and after the treatment:

**Table 1: Grading for the assesment of gravity of Symptoms**

S. No.	Grading of Symptoms	
1	Absent	0
2	Mild	1
3	Moderate	2
4	Severe	3

## Objective Parameters

Objective parameters were based on semen analysis and following grading score was adopted-

**Table 2: Grading for the assesment of seminal parameters**

S. No.	Volume	
1.	< 1 ml	0
2.	1-2 ml	1
3.	≥ 2 ml	2
Liquefaction time:		
1.	> 60 min	2
2.	30-60 min	1
3.	≤ 30 min	0
Sperm count		
1.	0-5 million/ml	0
2.	6-10 million/ml	1
3.	11-15 million/ml	2
4.	16-20 million/ml	3
5.	21-25 million/ml	4
6.	26-30 million/ml	5
7.	31-35 million/ml	6
8.	36-40 million/ml	7
9.	41-45 million/ml	8
10.	46-50 million/ml	9
11.	51-55 million/ml	10
12.	56-60 million/ml	11
13.	≥ 60 million/ml	12
Motility		
1.	Active	2
2.	Sluggish	1
3.	Non-motile	0

## Statistical method used in the study

Various observations were made, and results obtained were computed statistically to find out the significance of the values obtained and various conclusions were drawn accordingly. 'p' value was calculated with the help of standard charts on the basis of 't' value.

## Assessment of overall effect of therapy

Overall effect of therapy was calculated by taking the percentage of relief and the result was recorded as:

**Table 3: Percentage relief**

Marked relief	Above 75% improvement
Moderate relief	50%-75% improvement
Mild relief	25%-50% Improvement
No relief	Below 25% improvement

## RESULT

After careful observation of 30 subjects of *Ksheena shukra*, the effectiveness of both the therapies was assessed. All the 30 subjects of *ksheena shukra* studied in this series were between the age group of 21–45 years and out of these maximums were between 30–41 years of age group (70%). Most of the subjects were belonging to middle class (70%) and were married (93.33%). These subjects were having *dvandvaja prakruti* with dominance of *vata pittaja prakruti* (70%) and most of them were having *avara* or *madhyama sara* (96.77%), *madhyama samhanana* (86.67%), *madhyama satva* (60%) and *madhyama satmya* (73.33%). Most of the subjects were having *avara bala* (53.33%) and *vishama agni* (66.67%). The study on various *nidana* aspects revealed that in all the subjects, *vata* and *pittaulvanata* (dominance) was present. All the subjects presented with *ksheena shukra* (oligospermia) and most of the subjects had *daurbalya*, *mukhashosha*, *shrama*, *sadana* and *pandu as samanya roopa*. In most of the subjects, *chinta* (worry), *shoka* (agony), *bhaya* (fear) were found as *manasika karana* (psychological cause) while in *aharaja nidana* (dietetic cause) excessive intake of *katu*, *amla*, *lavana*, *tikta* and *kashaya rasa* and *ushna*, *tikshna*,

*laghu* and *ruksha guna yukta ahara*. Most of the subjects used to consume mixed diet with the pattern of *vishama ashana* (irregular dietary habits). Most of them complained of disturbed sleep, i.e., either *alpa* or *vishama nidra* (disturbed sleep). Most of the subjects were using very hot water for bath and were wearing tight cotton undergarments. Most of them were suffering from chronic *malabadhata* (constipation) and had the habit of masturbation. Most of them were addicted to excessive intake of tea, coffee or alcohol; many of them were smokers and tobacco chewers. 96.77% of the subjects in this study were previously treated with allopathic or *Ayurvedic* therapy.

15 subjects of *ksheena shukra* treated with *Ardhamatrika niruha basti* under Group A showed 49.62% relief in *daurbalya*, 56.52% relief in *mukhashosha*, 43.01% relief in *shrama*, 23.33% relief in *sadana* and 45.98% relief in *pandu*. The therapy under Group A provided statistically highly significant effect on *daurbalya*, while on other parameters the effect was significant except *sadana* which was statistically not significant. The effect of *Ardhamatrika niruha basti* on sperm count showed 75.18% relief, 50.53% relief in motility, 24.29% relief in volume of semen and 13.08% relief in liquefaction time. The therapy provided

statistically highly significant effect on sperm count, significant effect on motility and volume, however in liquefaction time it showed statistically not significant effect. In a nutshell, the therapy provided moderate relief in 3 subjects and mild relief in 12 subjects. The subjects of Group B wherein *Tritiya baladi vrishya yapana basti* was given showed 67.63% relief in *daurbalya*, 82.19% relief in *mukhashosha*, 64.60% relief in *shrama*, 60.00% relief in *sadana* and 57.45% relief in *pandu*. The therapy under Group B provided statistically highly significant effect on *daurbalya* and significant effect was seen on *mukhashosha*, *shrama*, *sadana* and *pandu*. The effect of *Tritiya baladi vrishya yapana basti* on sperm count showed 91.25% relief, 56.98% relief in motility, 50% relief in liquefaction time and 49.53% relief in volume. The therapy provided statistically highly significant effect on sperm count, significant effect on motility and volume and liquefaction time. In a nutshell, there was marked improvement in 4 subjects, moderate improvement in 10 subjects and mild relief was noticed in 1 subject.

So, it is evident from the above discussion that the relief provided by *Tritiya baladi vrishya yapana basti* was comparatively better than *Ardhamatrika niruha basti*. This is because all the ingredients of *basti* were *vata pitta hara* which resulted in *samprapti vighatana* (breakdown of pathogenesis) of *shukra dushti* v/s oligospermia. *Madhura rasa*, *guru* and *snigdha gunas*, *shita virya*, *Madhura vipaka*, *Balya*, *vrishya* and *Shukrala* actions of *dravyas* provided better improvement in sperm count and motility. Due to the improved status of health as well as the action of ingredients like *Kapikachhu (Mucuna pruriens)*, *Yava (Hordeum vulgare)*, *Bala (Sida cordifolia)* etc., the subjects also showed increased libido, frequency and duration.

The following parameters were examined and recorded before and after the treatment and subjected to statistical analysis:

**Table 4: Effect of therapy on cardinal features in Group A (Subjective parameters)**

Parameter	Mean		Mean diff	% relief	SD	SE	't' value	'p' value	Remark
	BT	AT							
<i>Daurbalya</i>	1.33	0.67	0.66	<b>49.62</b>	0.62	0.16	4.18	< <b>0.001</b>	SHS
<i>Mukhashosha</i>	0.46	0.20	0.26	<b>56.52</b>	0.46	0.19	2.26	< <b>0.05</b>	SS
<i>Shrama</i>	0.93	0.53	0.4	<b>43.01</b>	0.51	0.13	3.06	< <b>0.01</b>	SS
<i>Sadana</i>	0.60	0.46	0.14	<b>23.33</b>	0.35	0.09	1.47	> <b>0.10</b>	SNS
<i>Pandu</i>	0.87	0.47	0.4	<b>45.98</b>	0.51	0.13	3.06	< <b>0.01</b>	SS

BT- Before Treatment, AT- After Treatment, SD- Standard Deviation, SE- Standard Error, SHS- Statistically Highly Significant, SS- Statistically Significant, SNS- Statistically Not Significant

**Table 5: Effect of therapy on cardinal features in Group B (Subjective parameters)**

Parameter	Mean		Mean diff	% relief	SD	SE	't' value	'p' value	Remark
	BT	AT							
<i>Daurbalya</i>	2.07	0.67	1.4	<b>67.63</b>	0.63	0.16	8.57	< <b>0.001</b>	SHS
<i>Mukhashosha</i>	0.73	0.13	0.6	<b>82.19</b>	0.63	0.16	3.67	< <b>0.01</b>	SS
<i>Shrama</i>	1.13	0.4	0.73	<b>64.60</b>	0.79	0.21	3.56	< <b>0.01</b>	SS
<i>Sadana</i>	1	0.4	0.6	<b>60</b>	0.74	0.19	3.15	< <b>0.01</b>	SS
<i>Pandu</i>	0.47	0.2	0.27	<b>57.45</b>	0.46	0.12	2.26	< <b>0.05</b>	SS

BT- Before Treatment, AT- After Treatment, SD- Standard Deviation, SE- Standard Error SHS- Statistically Highly Significant, SS- Statistically Significant

**Table 6: Comparative efficacy of therapies on cardinal symptoms in Group A and Group B**

Assessment Parameters (N = 30 DF = 28)	Group A			Group B			Unpaired 't' test (Group A vs. Group B)				Remark
	Mean	SD	SE	Mean	SD	SE	SD	SE	't'	'p'	
<i>Daurbalya</i>	0.66	0.62	0.16	1.4	0.63	0.16	0.62	0.22	-3.21	> 0.10	SNS
<i>Mukhashosha</i>	0.26	0.46	0.19	0.6	0.63	0.16	0.55	0.20	-1.65	> 0.10	SNS
<i>Shrama</i>	0.4	0.51	0.13	0.73	0.79	0.21	0.66	0.24	-1.36	> 0.10	SNS
<i>Sadana</i>	0.14	0.35	0.09	0.6	0.74	0.19	0.57	0.21	-2.21	> 0.10	SNS
<i>Pandu</i>	0.4	0.51	0.13	0.27	0.46	0.12	0.48	0.12	0.75	> 0.10	SNS

N- Sample size, DF- Degree of Freedom, SD- Standard Deviation, SE- Standard Error, SNS- Statistically Not Significant

**Table 7: Effect of therapy on seminal parameters in Group A (Objective parameters)**

Parameter	Mean		Mean diff	% relief	SD	SE	't' value	'p' value	Remark
	BT	AT							
Volume	1.07	1.33	0.26	<b>24.29</b>	0.46	0.12	2.25	< <b>0.05</b>	SS
Liquefaction time	1.07	0.93	0.14	<b>13.08</b>	0.52	0.13	1	> <b>0.10</b>	SNS
Sperm count	1.33	2.33	1	<b>75.18</b>	0.37	0.09	10.24	< <b>0.001</b>	SHS
Motility	0.93	1.40	0.47	<b>50.53</b>	0.51	0.13	3.50	< <b>0.01</b>	SS

BT- Before Treatment, AT- After Treatment, SD- Standard Deviation, SE- Standard Error, SS- Statistically Significant, SNS- Statistically Not Significant, SHS- Statistically Highly Significant

**Table 8: Effect of therapy on seminal parameters in Group B (Objective parameters)**

Parameter	Mean		Mean diff	% relief	SD	SE	't' value	'p' value	Remark
	BT	AT							
Volume	1.07	1.60	0.53	49.53	0.51	0.13	4	< 0.01	SS
Liquefaction time	1.2	0.6	0.6	50.00	0.63	0.16	3.67	< 0.01	SS
Sperm count	1.6	3.06	1.46	91.25	0.83	0.21	6.81	< 0.001	SHS
Motility	0.93	1.46	0.53	56.98	0.51	0.13	4	< 0.01	SS

BT- Before Treatment, AT- After Treatment, SD- Standard Deviation, SE- Standard Error, SS- Statistically Significant, SHS- Statistically Highly Significant

**Table 9: Comparative efficacy of therapies on seminal parameters in Group A and Group B**

Assessment Parameters	Group A			Group B			Unpaired 't' test (Group A Vs Group B)				Remark
	Mean	SD	SE	Mean	SD	SE	SD	SE	't' value	'p' value	
Volume	0.26	0.46	0.12	0.53	0.51	0.13	0.48	0.17	1.49	> 0.10	S.N.S
Liquefaction time	0.14	0.52	0.13	0.60	0.63	0.16	0.58	0.21	-2.21	> 0.10	S.N.S.
Sperm count	1	0.37	0.09	1.46	0.83	0.21	0.64	0.23	1.97	> 0.05	S.N.S.
Motility	0.47	0.51	0.13	0.53	0.51	0.13	0.51	0.18	0.35	> 0.10	S.N.S.

SD- Standard Deviation, SE- Standard Error, SNS- Statistically Not Significant

**Total effect of therapies in the study**

**Table 10: Effect of therapy on different parameters in Group A and B (in %)**

Cardinal Features	Group A			Group B		
	BT	AT	%age	BT	AT	%age
<i>Daurbalya</i>	1.33	0.67	49.62	2.07	0.67	67.63
<i>Mukhashosha</i>	0.46	0.2	56.52	0.73	0.13	82.19
<i>Shrama</i>	0.93	0.53	43.01	1.13	0.4	64.60
<i>Sadana</i>	0.60	0.46	23.33	1	0.4	60
<i>Pandu</i>	0.87	0.47	45.98	0.47	0.2	57.45
Volume	1.07	1.33	24.29	1.07	1.60	49.53
Liquefaction time	1.07	0.93	13.08	1.2	0.6	50
Sperm count	1.33	2.33	75.18	1.6	3.06	91.25
Motility	0.93	1.40	50.53	0.93	1.46	56.98

BT- Before Treatment, AT- After Treatment

**Table 11: Overall effect of therapy on cardinal symptoms in both Groups**

Remarks	Group A	Group B	Total	%age
Marked relief Above 75 %	0	4	04	13.34
Moderate relief 50-75%	3	10	13	43.33
Mild relief 25%-50%	12	1	13	43.33
No relief Below 25%	0	0	00	00.00

**CONCLUSION**

Though both the *Tritiya baladi vrishya yapana basti* and *Ardhamatrika niruha basti* provided significant results in the subjects of *ksheena shukra*, the *Tritiya baladi vrishya yapana basti* provided better relief than the other group. The *ksheena shukra* is a *krichhra sadhya vyadhi* (curable with difficulty), because the rate of relief depends on many factors like *nidana parivarjana* (preventive management), *pathya sevana* (wholesome measures) and proper medications. Furthermore, it may also require long term follow upon a greater number of subjects with intensive observations. However, on the basis of present study, it can be concluded that the treatment comprising of *Tritiya baladi vrishya yapana basti* and *Ardhamatrika niruha basti* was found effective and worthy of trial on the patients of *ksheena shukra*.

**Recommendations for the further study**

On the basis of the encouraging results obtained in this study, both *Tritiya baladi vrishya yapana basti* and *Ardhamatrika niruha*

*basti* can be recommended for the treatment of *ksheena shukra*. At the same time, after seeing efficacy of the therapies, the repeat courses of these *bastis* can be advised to get even better results. In addition, a large sample size with all the scientific parameters should be taken for the clinical trial to establish the claims of treating *ksheena shukra* satisfactorily.

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