

Oligozoospermia -*Shukra Kshaya* and *Yapan Basti*– A Review Article

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Abstract:

Background -Oligospermia is a problem related to male infertility. It is observed that a large number of fertile age group populations are suffering because of it. Modern science explains infertility and explains oligospermia in detail Ayurved term oligozoospermia is *shukrakhaya*. *Ayurveda* describes the different types of *shukradushti*. Further treatment is available in contemporary science to correct these problems, including hormonal therapy and corrective surgery. **Observations** -Ayurveda explains *Basti chikitsa* for converting *Shukra* and *shukraalpata*. *Yapan basti*, which gives strength to the body, has played a significant role in correcting such situations. There are different *basti*, and *Yapan basti* is explained to correct the *Shukra alpata* condition. **Conclusion** -*Yapan basti* shows a substantial increase in sperm count in various research conducted.

Keywords: *Shukrakshaya Yapan basti*, sperm, Oligozoospermia,

Introduction:

Oligozoospermia, a problem related to male infertility, is increasing daily, and 8 to 12 % of the total world population and 3.7% of the people of Maharashtra (1) are suffering from the same. The definition of an infertile couple clarifies that those couples do not get pregnant even after unprotected sex of 2 years of their physical relationship. Many of the time, the cause of infertility is Oligozoospermia. According to WHO, Oligozoospermia is a condition where the sperm count is below 15 million Sperms/ml (2). The increasing issue related to infertility increases the different treatment modalities in modern science but has specific side effects. The treatment modalities are quite expensive and not affordable to everyone. The chances of success lie between 9 and 50% depending upon age (3). To overcome this, Ayurveda has shown many treatment modalities in the form of drugs and different panchakarma procedures. Ayurveda explains *virechana*, *basti*, for the treatment of *Shukra Kshaya* condition (4). Acharya Charaka also explained the importance of *Yapan Basti* in the management of *Shukra Kshaya*. *Ksheen Shukra* is a condition that we can easily compare with the modern term Oligozoospermia explained in Ayurveda text (5). As per Ayurveda *charya* in *Shukra dushti* *vat* and *pitta dosha* as vitiated, affecting the average quality and quantity. *Basti*, as explained as *ardhachikitsa* in *Ayurveda Basti* is indicated in *Shukra vikara* and used the word *prashasta* for *Shukra vikar* (6,7)

Aim:

To study in detail the etiopathology of Oligozoospermia and the role of *Yapan basti* in it

Objectives:

To review in detail the concept of sperm and *Shukra*.

To examine in detail the concept of Oligozoospermia and *Shukra kshaya*.

To review the Modern line of treatment for Oligozoospermia

To review the role of *Yapan Basti* in Oligozoospermia

Article review on *Yapan basti*.

Concept of Sperm:

Although the sperm is the end product of spermatogenesis, the process is complete with the synchronizing effect of different hormones within the genital organ and through the hypothalamogonadal axis. The formation of healthy sperm depends on the nutritional physiology of the testicular organ, especially the testes, and balanced hormonal flow (8). Testes have septa, seminiferous tubules, Rete testes, straight tubules, and epididymis efferent arterioles. Seminiferous tubules have two cells; one is a spermatogenic germinal epithelial cell; sperm production starts in the germinal epithelial lining of seminiferous tubules with mitotic and meiotic division (9). The second cell present in seminiferous tubules is the Sertoli cell which plays a significant part in the nourishment of sperm, and it also helps in the process of Spermatogenesis (10,11). In between the two Seminiferous tubules, the Leydig cells are present, which plays a significant role in the formation of testosterone, an essential hormone in the gonadal system and spermatogenesis (12,13). The formation of sperm is known as spermatogenesis. The word spermatogenesis came from the Greek word *Sperma* meaning seed, and *genesis* meaning birth (14).

The process of spermatogenesis requires adequate support from Gonadotropin Hormone release from the hypothalamus by triggering the anterior pituitary gland. The spermatogenesis

method depends upon the hypothalamus-pituitary-adrenal axis and its balance state to release the necessary hormone essential for spermatogenesis.

Concept of *Shukra*

Shukra is essential for the formation of the embryo. *Shukra* is one of the vital *dhatu* among the seven *dhatu*s that plays an essential role in building the *sharir*. It is produced from *majja dhatu* as *sarbhag* of it. It has four *mahabhuta* in its constitution viz *tejvayu*, *aap*, *pruthvi* and it originates from *Madhur*, *amla*, *lavanadishadras*. It is *Soumya* in nature (15). *Shukra* is having *pitraj bhav* (16). In the human body, the *Shukra dhatu* develops *chyavan*, *priti*, *dehabal*, *harsha*, and it helps in reproduction (17).

In Ayurveda, the importance of *Shukra* is explained in the form of offspring. It is said that the *Shukra dhatu* is essential to have progeny; Charak acharya explains that a person without progeny is like a tree having a single branch, shade less, fruitless and having a foul smell (18). The quantity present in our body that Ayurveda called *pramana* of *shukradhatu* is *ardha Anjali*, 80 ml. As explained in Ayurveda texts, the main characteristics of *Shukra* are *sphatikabh* which is white like alum, *dravyum* which has liquid property; and *snigdham*, which means viscid *madhuram*, which means having a sweet taste *Madhu Gandhi* that is smell like honey.

The ayurvedic concept of *Shukra* can be compared with modern sperm as well as with androgen. When we think of *Shukra* as sperm, we will understand its external features as explained above, and the primary function of *Shukra* as sperm is reproduction. When *Shukra* in Ayurveda is compared with sex hormones, it is easy to understand its function as testosterone which will provide muscle strength to the person in Ayurveda; it is explained as giving *bala*. The concept of *sarvang Shukra* can be explained with *shukradhara kala*, which is said to be spread all over the body. It is more defined by giving example, sugarcane with its juice all in it or curd containing *ghrita*. Ayurveda also explains the concept of *Shukra saar* person in which it explains the person with *Shukra saar*, and it is quality *Soumya*, *soumyaprekshina*, *kshirpurnlochana*, *praharsha bahula*, *bhrajishnu*, *mahasphi* (19). One more quality explains there is dental growth with proper symmetry. This is well presented with the level of normal testosterone. As per Harivansha *Puran Shukra dhatu* is considered as *kaphavargiya dravya*²⁰.

Concept of Oligozoospermia

The term Oligozoospermia is the combination of four words

Oligo means very few, Zoo means live, Sperm-end product of spermatogenesis and ia means condition. Oligozoospermia and low sperm count refer to semen with a low concentration of sperm (21). Oligospermia can be detected by doing a semen analysis of two samples with three days of abstaining. A total sperm count below 15 million sperm/ml is considered the case of oligospermia (22). Oligospermia is classified as below (23)

Mild: concentrations 10 million – 15 million sperm/mL

Moderate: concentrations 5 million – 10 million sperm/mL

Severe: concentrations less than 5 million sperm/mL

The causes of Oligozoospermia may be found in the testes or extra testicular

Pre testicular causes of Oligozoospermia-The main reasons for this are deficiency of Hormones and overall weakness of the body. These states of the body, like hypogonadism, lead to Oligozoospermia. Medicinelike Spironolactone, ketoconazole, cimetidine,

tetracycline, Nitrofurantoin, sulfasalazine, colchicine, calcium channel blockers, Methotrexate (24). Alcohol also affects the Leydig cell (25). It also causes atrophy of seminiferous tubules and is responsible for Oligozoospermia

Testicular Causes of Oligozoospermia testicular cause the hormones required for the process of spermatogenesis are enough but still, the process of spermatogenesis is not happening because of the following reasons-chromosome microdeletion, Genetic Defect due to Y Chromosome (26), Klinefelter's syndrome (27), Hydrocele (28), Mumps (29), Syphilis, several Viral infections. Post testicular causes: Absence of Vas differences, Obstruction in Vas difference, prostatitis, Ejaculatory duct obstruction, Cryptorchidism (30), systemic diseases like cirrhosis of the liver, and renal failure affect the process of spermatogenesis (31). Vitamine B12 Deficiency also affects the spermatogenesis process (32). Depressions in male patients affect the semen volume and density of sperm (33).

Treatment in modern science to treat the condition of Oligozoospermia and treat infertility A review:

Modern science advises Hormonal therapy, the use of exogenous testosterone. Medication includes clomiphene citrate, Tamoxifen, Use of Dopamine antagonists like Bromocriptine or Cabergoline, Gonadotropin-Releasing Hormone Therapy, Human Menopausal Gonadotropin Hormone, Aromatase Inhibitor (Anastrozole). Surgical care includes Vasovasostomy or Vasa Epididymostomy, Sperm Retrieval Technique -Testicular sperm extraction, Per Cutaneous epididymal Sperm Aspiration, Electro ejaculation, Artificial Insemination, Assisted Reproductive technique In vitro fertilization Intracytoplasmic sperm injection etc.

Concept of Shukra Alpata A review:

Ayurveda has explained eight types of *Shukra Dusti Vataj Pittaj, Kaphaj, Garanthibhut, Putipuyanibhut, mutrapurishgandhi* and *ksheen* (34) *Shukradushti* also demonstrated by using semen analysis and termed as follow *Fenil, Tanu, Ruksh, Vivarn, Pichhil, Puti, Anya dhatu sanshrishtha , avsadi*. Dr Krishna Rathod et al. mentioned in their article the Ayurved method of semen analysis which is explained by Ayurveda acharya (35). He explained the Quality *Phenil: Phenila* means frothy or that which contains froth. Froth is formed when surface tension is lowered. Surfactants are responsible for reducing surface tension. Surfactants, when present in the semen, destroy the sperm structural membrane and hence sperms die due to leakage of internal organelles. It may be said that one may ascertain the presence of surfactants in semen by quantifying the froth.

Tanu: Tanutva depends upon the quantity of sperm. Lesser the sperm more the *tanutva*; in short, the state of oligospermia can be explained by using *tanutva* of the semen.

Ruksha: The property of semen with dryness can be explained by understanding the *ruksha gun* firstly, which Sushrut says as *Ruksha* means dryness and is ascertained by direct observation. Clinically dryness can be explained by the PH level of semen. If the PH is more than 8.5, it means alkaline semen, which indicates more dryness of semen and directly affects the sperm quality and quantity.

Vivarn: The standard colour of semen is *spatikabh*, any deformity in the shade, which may be reddish, or yellowish leads to different disease states and deformation of sperm.

Picchil: this refers to stickiness or viscosity *Sushruta* says that it can be ascertained by observation and touch. And can denote deformity in an extra testicular gland that is secreting

their secretion for the easy moment of the sperm, especially the bulbourethral gland, prostate gland.

Puti: It means putrefied smell, it may be because of any infective condition of sperm and related organs.

Anya dhatu samshatra: The presence of non-spermatozoa cells (gelatinous bodies, mucous membranes, macrophages, epithelial cells, etc.) in sperm can be considered as *anya dhatu samsrsta*. Anti-sperm antibodies can be seen in the semen sample

Avsadi: *Avasadi* means the property of sedimentation. Some unquified or partially liquefied shows sedimentation, In normal conditions, the semen should be mixed with distilled water and turn the colour to whitish. In certain situations, the semen drop won't disperse and sinks to the bottom, and no discolouration of water occurs. Such samples may be called *avasadi*

Ayurveda explains the diseases of *Shukra* as *Bijoipghat*, *Virya Kshaya*, *Jarajanya* all these explain the status of *Sthanik Shukra* as well as *Sarvang Shukradushti*, i.e. deformities in sperm and disturbances in hormone responsible for spermatogenesis.

In Ayurveda, eight types of *shukradusti* are mentioned *vataja*, *pittaj*, *kaphaj*, *granthibhut*, *putipuyanibham*, *mutrapurishgandhi* and *ksheena*. When *Vata* and *pitta doshas* are vitiated, the quality and quantity of *Shukra* get altered, leading to *ksheenashukra*. *Shukra* has essential functions, *Shukra* provides *Dhairya*, *Prasannata*(joy), *Bala* (power), *Praharsh* and *Bija* of *Garbhotpatti*. Due to the modern lifestyle, *Dhatu poshan* is affected. *Dushit dhatu* effect *poshan*, *Shukra dhatu* is not nourished correctly in abundance to quality, leading to *Shukra kshaya*. *Shukra kshay* is Visible by the following signs, i.e. *Dourbalya*, *Pandutva*, *Medhravedana*, *Vrishanvedana*, *Shukraavisarga*, *Chiratpraseka*, *Maithuna ashakti*. And qualitative and a change in the number of *Shukra dhatu* leads to infertility. Independent parameters are *Pandutva*, *Dourbalya*, *Medhravedana*, *Vrushanvedana*. Objective parameters are sperm volume, sperm count, sperm flow, Sperm morphology, and Haemospermia. *Vata* and *Pitta Dosha* are the main *Doshas* in *Samprapti* of *Shukrakshaya*. *Hetusevan* causes *vata*, *Pittaprakopa* and affects *Dhatuposhana* and leads to *Shukradhatu kshaya*. *Aharaj hetus*, *Viharajhetus*, *Manasikhetus* and many other features play a significant role in *Shukrakshaya*

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Oligospermia can be correlated with *ksheenashukradushti*. Necrozoospermia can be associated with *vataj shukradushti*. Properties of *vataj shukradushti* are phenyl (frothy), *Tanu*(less dense), *ruksha* (lack of unctuousness/smoothness), *kashtaalpamutrakayukta* (painful ejaculation with less seminal volume) and incapability of producing offspring. Management of *Shukra dosha* mentioned in *Samhitas* is *Snehan*, *Vamana*, *Virechana*, *Basti* and *Shamanaushadi*.

Basti as explained in Ayurveda for treating *shukraalpata* A review:

Basti is then said to be *Ardha Chikitsa* in Ayurveda. The word *Ardha chikitsa* denotes its importance in the Ayurved line of treatment. It is the half treatment of the entire treatment module that we apply to the patient. According to Ayurveda *Vat* is the significant component of the human body that is actively responsible for any diseased condition; control of *Vat dosha* directly help us to control the disease state *Piita Pangokaphapangopango mal dhatva*, *Vayuna yatra niyantetatrachhantimeghavat* This clarifies the importance of *vat dosha*. It means that *pitta* and *kapha dosha* are secondary and helpless without the active aggregation of *vaat dosha*. And for the treatment of *vata dosha basti* is the best treatment.

Basti explained in Ayurveda for Shukra Kshaya A review:

There are different *basti* explained in Ayurveda for *Shukrajanan*; these are *Shaliparnyadi Yapan basti*, *Jivyantyadi Anuvasan Basti*, *Vayasthapan Guduchyadi basti*, *Mustadi Yapan basti*, *Dwitya Baladi Yapan Basti*, *Erandmuladi Yapan Basti*, *Madhutailik Basti*, *Vaitaran Basti*, *Mansashukrabalvardhaksarvroghar basti*, *mayurbasti*, *godhadi basti*.

Out of the above-explained *basti* following *Yapan basti* are described in Ayurveda for *shukrajanan*, *kliabyaharan*, *santatijanan*, *putraj*, which ultimately explains its importance in *oligozoospermia*.

Yapan Basti explained in Ayurveda A review:

Shaliparnyadi Yapan Basti

It contains

Shaliparni, *prushnaparni*, *brahatidwaya* 40gm each. Milk is used to cook it. Later adding *Shatapushpakalk Saindhav*, *Til tail Madhu*. The whole emulsion is useful in treating the *shukrakshay* condition.

Mustadi Yapan Basti

contains *Musta*, *Usher*, *balaaragwadh*, *Rasna Manjishtha*, *Kutki*, *Trayaman*, *Punarnarva Bibhitaki*, *Guduchi*, *Laghupanchamul*, *Madanphal*, *Madhu*, *ksheer*, *mansras*. It is explained as best *rasayan chikitsa* and *shukramansjanan* (37)

Dwitiya baladiyapan Basti:

It contains *Bala*, *Rasna*, *Aragwadh*, *Madanphal*, *Bilva*, *Guduchi*, *Punarnarva*, *Erandmul*, *Ashwangadha*, *Sahachar*, *Paalash*, *Devdaru*, *Laghupanchamul*, *Brahatpanchamul*, *madanphal*, *Yav*, *Kol*, *Kulatha*, *Yasti*, *Madanphal*, *Shatapushpa*, *Kushtha*, *Pimpali*, *Vacharasanjan*, *Priyangu*, *Yavani*, *Madhu*, *Saindhav*, *Ksheer*, *Mansaras*. It is helpful in *Shukrasanga* as per *Charakacharya*

Erandmuladi Yapan Basti:

It Contains

Erandmul, *Palashtwak*, *Laghupanchamul*, *Rasna*, *Ashwagandha*, *Guduchi*, *Punarnarva*, *Aragwadh*, *Devdaru*, *Siddha Ksheer*, *Madanphal*, *Kalk of Shatapushpa*, *Musta*, *Pippali*, *Hapusha*, *Bilv*, *Priyangu*, *Yavani*, *Vacha*, *Rasanjan*, *Indrayav*, *Kushtha Madhu*, *Saindhav*, *Tiltail*, *Ghrita*. It is helpful for patients who desire the child.

Yapan Basti research article review:

A *Panchabhautik* review of *Yapan Basti* article by Dr Anup Kuman et al. explains the importance of *Yapan Basti* as explained in *Charak*. It explains that it helps control diseases and maintain body balance; also, the *Yapan basti* is useful in treating the disease. In the Ayurveda Classics, there is a definition of *mustadiyapanabasti* as *Raj yapanabasti*. As the name suggests that *Rajayapana Basti* is the highest among all the *Basti*. It is the king of *Yapana* and is the best *Rasayana Yapana Basti*. It operates two functions *Anuvasana* and *Niruha*. That is why these *Basti* are *Strotoshodhaka* and *Brihana* simultaneously (38).

In a case study of an oligospermia patient with a sperm count of 8 million/ml, *Baladi Yapan basti* was given along with other Ayurveda formulations. The results were highly significant and sperm count reached 48 million/ml (39).

Basti treatment itself is *vrishya* in action, as explained in the Ayurveda text. In a comparative study of *Ardhamatrik Basti* and *Trityabaladivrishya Basti* on 30 subjects, it is observed that *Trityabaladivrishya Basti* is significantly valuable for the cases of oligospermia (40).

In another clinical study on 30 subjects of *shukra kshaya*, the effect of *Kokilakshadhiyogam* with *baladhiyapana basti* was observed. As per the objective parameters of semen analysis, the results were highly significant ($p < 0.00001$), and on subjective parameters, the results show significant results ($p < 0.05$). As *Yapana Basti* is best *rasayan* therapy. *Rasayana* is the drugs that give *gati* i.e. maintain the flow for the *poshan* of *sharir dhatu*. *Rasayan* drugs are *agnivardhak* in action also they improve the quality of *ras dhatu* and ultimately *shukradharu*. *Yapan basti* has the quality like nutritive and nourishing; it also does *Brimhana* in nature. It contains *Madhu and Taila*, which have their significance and give the *Yapan basti* (41). One studied reviewed regarding Ayurvedic Formulation on Oligospermia (42).

Conclusion:

Oligozoospermia is a global problem. Modern, as well as Ayurveda, has explained the details of it. The available line of treatment includes Hormonal and supportive medicinal therapy along with surgical correction. Ayurveda explains different medicine along with *Basti*, specially *Yapan Basti*. There are different *Yapan Basti* described in Ayurved. The research done on oligospermia shows the effectiveness of the *Yapan basti chikitsa* in correcting the *shukraalpata* condition.

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