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# CONCEPTUAL STUDY OF NIDANAS OF KSHEENA SHUKRA W.S.R. OLIGOZOOSPERMIA

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# ABSTRACT :

Infertility affects a significant portion of the Indian population, with estimates from the World Health Organization (WHO) ranging between 3.9% and 16.8%. Nearly half of these cases are attributed to male reproductive issues. This paper focuses on the Ayurvedic concept of Ksheena Shukra, which corresponds to oligozoospermia in modern medical terminology, aiming to explore its causative factors (Nidanas) as outlined in classical Ayurvedic literature.

Contemporary medical treatments for male infertility often rely on hormonal interventions, yet these approaches may not adequately address the root causes of the disorder. Ayurveda, by contrast, emphasizes understanding and treating underlying imbalances. This study examines the etiology of Ksheena Shukra based on authoritative Ayurvedic sources such as the Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya, alongside relevant modern texts, peer-reviewed journals, and online resources.

The goal is to deepen the understanding of Ayurvedic diagnostic principles and highlight the importance of individualized, holistic treatment strategies for male infertility, particularly in cases of Ksheena Shukra.

Keywords: Ksheena Shukra, Oligozoospermia, Nidana, Male Infertility, Ayurvedic Diagnosis

# INTRODUCTION

Infertility is typically defined as the failure to conceive after a period of one year or more of regular, unprotected sexual intercourse.<sup>1</sup> One of the significant contributors to male infertility is *Oligospermia*, a condition characterized by a lower-than-normal concentration of sperm in the semen. According to the semen analysis standards set by the World Health Organization (WHO), *Oligospermia*—also referred to as *Oligozoospermia*—is diagnosed when sperm concentration is less than 20 million per milliliter.<sup>2</sup>

In Ayurvedic medicine, this condition can be closely correlated with *Ksheena Shukra*, which involves both qualitative and quantitative depletion of *Shukra Dhatu* (the reproductive tissue).<sup>3</sup> While modern biomedicine emphasizes sperm count reduction in *Oligospermia*, the Ayurvedic view of *Ksheena Shukra* extends beyond numerical deficiency to include overall functional impairment of reproductive health. According to *Charaka Samhita*, the terms *Ksheena Shukra* and *Shukra Kshaya* are interchangeable. In contrast, *Sushruta* and *Vagbhata* consider it a form of *Shukra Dushti* a pathological vitiation of semen primarily caused by the disturbance of *Vata* and *Pitta doshas*.

The causative factors (*Nidanas*) associated with *Ksheena Shukra* include frequent sexual activity (*Ativyavaya*), consumption of excessively dry, light, and hot foods (*Ati Ruksha-Laghu-Ushna Ahara*), psychological stressors such as worry (*Chinta*) and grief (*Shoka*), as well as lifestyle irregularities. Common symptoms (*Lakshanas*) include generalized weakness (*Daurbalya*), paleness (*Pandutva*), dryness of the mouth (*Mukha Shosha*), fatigue (*Sadana*), physical exhaustion (*Shrama*), and erectile dysfunction or impotence (*Klaibya*). Globally, infertility affects approximately one in six couples, with male factors accounting for 30–40% of these cases<sup>4</sup>. Of these, nearly 30% are linked to sperm-related abnormalities, including *Oligospermia*, *Asthenozoospermia* (reduced sperm motility), *Azoospermia* (absence of sperm), and *Teratozoospermia* (abnormal sperm morphology).

# Nidana<sup>4</sup> (Etiology) of Ksheena Shukra (Oligospermia)

The classical texts, *Sushruta* and *Vagbhata*, emphasize *Vata* and *Pitta* doshas as the primary contributors to *Ksheena Shukra* (low semen quality). The etiological factors can be categorized into general (*Saamanya*) and specific (*Vishishta*) causative factors.

## 1. Samaanya Nidana of Ksheena Shukra (General Causative Factors)

These are the broad factors that disturb the balance of doshas, primarily Vata and Pitta, leading to the impairment of Shukra (semen).

# Dietary Factors Aggravating Vata Dosha:

- *Ruksha-Sheeta-Alpa Laghu Gunayukta Ahara*: The consumption of dry, cold, and light foods increases *Vata*, leading to depletion of vital fluids, including *Shukra*.
- Abhojana: Prolonged fasting disrupts bodily processes, resulting in a deficiency of Shukra.
- *Katu, Tikta, Kashaya Rasa Atisevana*: Excessive intake of pungent, bitter, and astringent tastes causes *Vata* to become aggravated, which impacts the nourishment required for semen production.

# Lifestyle Factors Aggravating Vata Dosha:

- Ativyavaya: Excessive sexual activity leads to the loss of Shukra and weakens the reproductive system.
- *Prajaagarana*: Inadequate sleep increases *Vata*, contributing to the depletion of *Shukra*.
- Langhana: Overly restrictive food intake or fasting weakens the body's tissues, including Shukra.
- Ati Vyayama: Over-exertion causes fatigue and depletes vital reserves, including Shukra.
- Atiplavana: Extended travel, especially in extreme climates, disturbs Vata and affects reproductive health.
- Vega Vidharana: Suppression of natural urges, such as urination or defecation, disrupts the doshic balance and weakens Shukra.
- Krodha, Shoka: Anger and grief disrupt Vata, leading to imbalance in the reproductive system and reducing Shukra quality.

# Dietary Factors Aggravating Pitta Dosha:

- *Katu, Amla, Tikshna, Ushna, Laghu Ahara*: Excessive consumption of hot, spicy, sour, or salty foods leads to an aggravation of *Pitta*, which can impair *Shukra* production.
- *Tila Taila*, *Sarshapa*, *Kulattha*, *Amla Phala*, *Maamsa*, *Matsya*, *Dadhi*, *Takra*, **Souviraka**: These foods (e.g., sesame oil, mustard, black gram, sour fruits, meats, fish, curd, buttermilk, alcohol) increase Pitta and adversely affect the quality of Shukra.

# Lifestyle Factors Aggravating Pitta Dosha:

- Upavasa: Long periods of fasting deplete the body's fluids, including Shukra.
- · Chinta, Krodha: Mental stress, such as worry and anger, increase Pitta and disrupt the balance of reproductive health.
- *Bhaya*, *Shoka*: Fear and grief disturb Pitta, affecting the production and quality of *Shukra*.
- Ayaasa: Fatigue due to over-exertion weakens Shukra.
- Ati Maithuna: Excessive sexual intercourse increases Pitta and depletes Shukra.

# Sarva Dosha Prakopaka Nidana (Factors Aggravating All Three Doshas):

Certain factors lead to an imbalance in all three doshas, which, in turn, affects the production of Shukra.

- Viruddha Ahara, Asatmya Ahara, Guru Ahara, Shushka Ahara: The intake of incompatible, heavy, dry, or unwholesome foods leads to a disturbance in the doshic balance, affecting Shukra production.
- Vishamaashana: Irregular eating habits or skipping meals disrupt the body's equilibrium and affect semen health.
- Adhyashana: Overeating can lead to the disturbance of all three doshas and negatively affect Shukra production.

## Lifestyle Factors Aggravating All Three Doshas:

- Divaasvapna: Sleeping during the day leads to an imbalance in all doshas, including the depletion of Shukra.
- Madya Sevana: Excessive alcohol consumption increases all doshas and disrupts the reproductive system.
- Nitya Stri Sevana: Frequent sexual activity can disturb the doshic balance, leading to the depletion of Shukra.
- Vishama-Atimatra Vyayama: Inconsistent or excessive physical exercise disrupts doshic balance and affects semen quality.

# 2. Vishishta Nidana of Ksheena Shukra (Specific Causative Factors)

These factors are specifically responsible for the depletion of Shukra (semen) and contribute to the development of Ksheena Shukra (oligospermia).

Top of development of Ksheena Shukra (oligospermia).

# **Physical Factors:**

- Ativyavaya (Excessive sexual activity): Engaging in excessive sexual intercourse leads to the depletion of vital energies, including Shukra.
- Ati Vyayama (Overexertion): Physical exhaustion from excessive exercise or labor results in a loss of vital fluids, including semen.
- Asatmya Ahara Sevana (*Consumption of incompatible foods*): Consuming foods that are unsuitable or incompatible with one's constitution can disturb the balance of doshas, resulting in weak Shukra.
- Akaala Maithuna (Untimely sexual intercourse): Engaging in sexual activity at inappropriate times disturbs the body's natural rhythms and depletes Shukra.
- Ayoni Maithuna (Unnatural sexual practices): Non-natural sexual behaviors can disrupt the body's natural reproductive processes, leading to reduced semen quality.
- Amaithuna (Prolonged abstinence from sexual activity): Extended periods of sexual abstinence may weaken Shukra production.
- Naarinaam Arasajnaanam (Intercourse with an uninterested partner): Engaging in sexual activity with an unwilling or uninterested partner can result in a decrease in Shukra quality due to psychological and physiological stress.
- Vyadhi Karshana (Weakness due to other diseases): Diseases that cause general weakness also impair the production of Shukra.
- Vegadhaarana (Suppression of natural urges): Suppressing natural urges such as urination, defecation, or sneezing negatively affects the doshic balance, which in turn reduces Shukra quality.

#### Manasika Hetu (Psychological Causes):

- Chinta (Anxiety): Excessive worry and anxiety can disturb the mind-body connection and deplete vital fluids, including Shukra.
- Shoka (Depression): Emotional distress, such as depression, can lead to hormonal imbalances, affecting semen quality.
- Bhaya (Fear/Phobia): Fear can cause a state of chronic stress, which adversely impacts the reproductive system and Shukra.
- Krodha (Anger/Aggression): Intense anger or aggression disrupts the body's internal equilibrium and depletes Shukra.
- Abhichara Karma (*Psychosomatic disturbances*): Psychological trauma or disturbances can manifest as physical symptoms that impact semen production and quality.

# Abhigataja Hetu<sup>5</sup> (Physical Trauma Causes):

- *Excessive application of* Sastra, Kshaara, *and* Agni Karma: Harsh physical treatments, such as cauterization, burning, or chemical applications, may cause damage to reproductive tissues, leading to reduced semen quality.
- Kshata (*Trauma*): Trauma, especially to areas associated with Shukra production (such as the Vitapa Marma), can lead to a significant reduction in Shukra production.

# Impact of Abrahmacharya:

• Acharya Vagbhata elaborates on Trayopasthambha, stating that Abrahmacharya (lack of celibacy) leads to the depletion of Bala (*vital energy*) and Dhatu (tissues), ultimately resulting in Shukra Dhatu Kshaya (*depletion of semen*).

# Dushi Visha (Accumulated Toxins):

• The consumption of Dushi Visha (accumulated mild poisons) can gradually deplete Shukra, as the toxins disrupt the natural processes of fluid production and nourishment.

### Nidaanaarthakara Vyaadhis<sup>6</sup> (Diseases Contributing to Ksheena Shukra):

Certain diseases act as precursors or contributing factors to Ksheena Shukra:

- Upadamsha<sup>7</sup> (Venereal diseases)
- Shukra Dhaatugata Jwara (Fever affecting the semen tissues)
- Pittaja Prameha (Pitta-related diabetes)
- Shukrameha (Semen-related disorders)
- Lingaarsha (Diseases affecting male organs)
- Vyavaaya Shosha (Excessive depletion due to sexual activity)
- Rajayakshma (Tuberculosis)
- Sahaja Arsha (Congenital piles)
- Sthaulya (Obesity)
- Majja Dhaatukshaya (Depletion of marrow tissue)

# Causes of Oligozoospermia<sup>8</sup>

Oligozoospermia, or low sperm count, can result from various factors. These are classified into pretesticular, testicular, and post-testicular causes.

#### **Pretesticular Factors:**

- Hypogonadotropic hypogonadism
- Retrograde ejaculation
- Anejaculation
- Genetic disorders and chromosomal anomalies

#### **Testicular Factors:**

- Genetic: Klinefelter syndrome, a common chromosomal abnormality, is a significant cause of oligozoospermia.
- *Non-genetic*: Factors like medication, radiation exposure, infections, trauma, varicocele, testicular tumors, cryptorchidism (undescended testis), atrophic testis, orchiectomy (removal of testis), and aging.

#### **Post-testicular Factors:**

Conditions affecting the seminal tract, such as:

- Inflammation
- Congenital bilateral absence of the vas deferens

- Post-vasectomy complications
- Erectile dysfunction
- Premature ejaculation
- Infections, surgical interventions, and trauma leading to ductal blockage

# **Congenital Causes:**

- Congenital Bilateral Anorchia: A condition where both testes are absent from birth, leading to androgen depletion and sexual immaturity.
- Congenital Absence of the Vas Deferens (CAVD): Results in obstruction of sperm transport and hypospermia.
- Cryptorchidism: Failure of the testes to descend into the scrotum, leading to oligozoospermia or azoospermia if untreated.
- Sertoli Cell-Only Syndrome: A condition characterized by the absence of germ cells in the testes, often resulting in azoospermia or oligozoospermia.
- Spermatogenic Arrest: Disruption in the development of germ cells, leading to oligozoospermia or azoospermia.
- Chromosomal Abnormalities: Klinefelter syndrome and other genetic conditions impair sperm production and motility, leading to reduced sperm count.

# Acquired Causes of Ksheena Shukra (Oligozoospermia)

Various acquired physical, pathological, environmental, and lifestyle factors can adversely affect spermatogenesis and sperm transport, contributing to the manifestation of Ksheena Shukra (*oligozoospermia*).

#### 1. Physical and Infectious Conditions

- *Varicocele:* The abnormal dilatation of the pampiniform plexus raises scrotal temperature, impairing thermoregulation essential for spermatogenesis. Elevated temperatures disrupt Sertoli cell function, leading to defective sperm production.
- *Testicular Torsion:* Twisting of the spermatic cord compromises blood supply, resulting in ischemic damage to testicular tissue and irreversible impairment of spermatogenesis.
- Viral Orchitis (e.g., Mumps): Post-pubertal mumps orchitis can cause testicular atrophy, resulting in altered semen parameters and infertility.
- Epididymitis and Orchitis: These inflammatory conditions compromise the epididymal microenvironment required for sperm maturation.
- Sexually Transmitted Infections (STIs): Infections like gonorrhea and chlamydia can lead to obstruction and scarring of the reproductive tract, thereby affecting sperm motility and count.
- Anti-Sperm Antibodies: An immunological reaction where sperm are misidentified as antigens, leading to their destruction and reduced fertilizing potential.

# 2. Neoplastic and Pharmacological Causes

- Malignancies: Tumors such as pituitary macroadenomas, testicular cancer, and adrenal tumors can alter the endocrine axis, leading to
  hyperandrogenism or hypogonadotropic hypogonadism, thus disturbing the hormonal regulation of spermatogenesis<sup>1</sup>.
- *Medications:* Chronic use of cannabinoids, opioids, and psychotropic drugs suppresses *Gonadotropin-Releasing Hormone (GnRH)*, thereby reducing the stimulation of *Follicle-Stimulating Hormone (FSH)* and *Luteinizing Hormone (LH)*, both critical for spermatogenesis.

# 3. Urogenital Surgical or Structural Abnormalities<sup>9</sup>

- Bilateral Vas Deferens Obstruction: Congenital or acquired obstructions impede sperm transport.
- Orchiectomy: Surgical removal of one or both testes reduces the available testicular tissue necessary for sperm production.
- Retrograde Ejaculation: Sperm are redirected into the bladder instead of being expelled, often due to neurogenic or iatrogenic factors.

# **Environmental and Lifestyle Factors**

# 1. Smoking

Nicotine and polycyclic aromatic hydrocarbons present in tobacco smoke have direct gonadotoxic effects. Nicotine binds to receptors on spermatozoa, compromising viability, motility, and acrosomal function<sup>2</sup>

#### 2. Alcohol Consumption

Ethanol acts as a *Leydig cell toxin*, disrupting the hypothalamic-pituitary-gonadal (HPG) axis and inhibiting testosterone synthesis, leading to defective spermatogenesis<sup>10.</sup>

#### 3. Testicular Heat Stress

The optimal scrotal temperature required for spermatogenesis is  $1-2^{\circ}$ C below core body temperature. Prolonged exposure to elevated temperatures (e.g., due to tight clothing, sedentary lifestyle) leads to *germinal epithelial atrophy* and *spermatogenic arrest.*<sup>11</sup>

# 4. Obesity

Increased adipose tissue leads to:

- Elevated scrotal temperature.
- Aromatization of androgens to estrogens, disturbing hormonal balance.
- Mechanical compression due to *scrotal lipomatosis*, impeding sperm transport<sup>12</sup>.

#### 5. Psychological Stress<sup>13</sup>

Chronic stress elevates cortisol levels, which disrupts the HPG axis, leading to decreased libido, ejaculatory dysfunction, and deteriorated sperm parameters.

#### 6. Chemical and Radiation Exposure

Occupational or environmental exposure to *benzene, toluene, xylene, pesticides, herbicides,* and *organic solvents* has cytotoxic effects on germ cells. Likewise, *ionizing radiation or X-rays* may cause *irreversible damage to the seminiferous epithelium*, resulting in persistent oligozoospermia.

# DISCUSSION

The pathogenesis of Ksheena Shukra represents a multidimensional disturbance involving doshic imbalance, especially of Vata Dosha, along with deranged Agni, impaired Dhatuparinama, and Srotodushti of the Shukravaha Srotas. Vata, by its Ruksha (dry), Laghu (light), and Chala (mobile) qualities, leads to depletion of Shukra Dhatu and loss of its unctuous and nourishing characteristics. The consumption of excessive Tikta (bitter), Katu (pungent), Kashaya (astringent), Lavana (salty), and Amla (sour) Rasa, along with Kshariya Ahara (alkaline foods), aggravates Vata and Pitta Dosha, both of which are hostile to Shukra. Vata-induced Rukshata causes Dhatu Kshaya, and the disruption of Dhatuparinama prevents proper transformation of food into successive tissue layers, eventually impairing the quality and quantity of Shukra. Pitta, by its Ushna (hot) and Tikshna (sharp) properties, accelerates metabolic activity to the extent of tissue burnout, causing qualitative deterioration of Shukra Dhatu. Additionally, modern etiological insights into oligozoospermia-such as varicocele, testicular torsion, and mumps orchitis-are pathologies that align with the concept of obstructed or vitiated Shukravaha Srotas, resulting in poor sperm production. Chronic inflammatory conditions and infections also induce degeneration of testicular tissue, echoing the Ayurvedic principle of Dhatu-Kshaya due to prolonged Dosha imbalance and Ama accumulation. Furthermore, sedentary lifestyle, prolonged sitting, tight clothing, heat exposure, and obesity increase scrotal temperature and cause Shukra Dhatu Kshaya by disrupting thermoregulation and Apana Vata function. Smoking and alcohol intake contribute to the toxic load and impair reproductive health, resonating with the Ayurvedic concept of Visha, Agnimandya, and Ojakshaya. Testicular heat stress and scrotal lipomatosis may cause structural and functional disturbances, while endocrine-disrupting chemicals and radiation exposure are modern equivalents of Dhatupaka and Srotodushti. Psychological stress, which is known to affect the hypothalamicpituitary-gonadal axis, is a potent cause of Ksheena Shukra, as it vitiates both Vata and Prana Vata, impairs mental function, libido, and Shukra Utpatti. The role of mental disturbances and psychosexual disorders in reducing Shukra is well-articulated in Ayurvedic classics, emphasizing the importance of Manasika Bhava in reproductive health. Additionally, immunological conditions such as anti-sperm antibody formation mirror the Ayurvedic concept of Asatmya and Dhatwagni Dushti, wherein the body fails to recognize Shukra as its own. Malignancies of the pituitary, adrenal, or testes further disrupt

the endocrine balance *and* lead to *Shukra Kshaya*, aligning with the classical principle of *Dhatu-Kshaya* and *Bija Dushti*. Thus, *Ksheena Shukra* emerges as a condition resulting from combined dietary, behavioral, psychological, environmental, and systemic factors, predominantly mediated by *Vata* but with contributory roles from *Pitta* and *Kapha*. Holistic management must therefore focus on identifying and eliminating causative factors, correcting dietary and lifestyle errors, pacifying vitiated *Doshas*, enhancing *Agni*, and administering *Rasayana* therapies that rejuvenate and strengthen *Shukra Dhatu* while simultaneously promoting mental calmness and emotional balance.

# CONCLUSION

*Ksheena Shukra*, a condition predominantly governed by *Vata Dosha*, arises due to a combination of improper dietary habits, detrimental lifestyle practices, psychological stressors, and environmental exposures, all of which lead to *Shukra Dhatu Kshaya* either by obstructing its formation, impairing its quality, or accelerating its depletion. Although *Vata*, with its *Ruksha* and *Laghu Guna*, plays the primary pathogenic role, *Pitta* and *Kapha Doshas* may also contribute by causing oxidative damage, inflammatory changes, and *Srotorodha*. The multifactorial etiology of this condition highlights the relevance of both classical Ayurvedic understanding and modern biomedical insights, which together recognize the impact of nutritional deficiencies, testicular heat stress, hormonal imbalances, toxic exposures, infections, and emotional distress on male reproductive function. Thus, an integrative approach that involves *nidana parivarjana* (elimination of causative factors), *dosha shamana* (pacification of vitiated *doshas*), *agni deepana* (restoration of digestive-metabolic fire), *srotoshodhana* (channel cleansing), and *rasayana chikitsa* (rejuvenation therapy) is imperative for the effective management of *Ksheena Shukra*. Emphasis on a wholesome diet, appropriate lifestyle modifications, psychological well-being, and the use of *Shukravardhaka* and *Medhya Rasayanas* forms the cornerstone of therapeutic strategies. Early diagnosis, individualized treatment, and sustained lifestyle reform are essential to restore *Shukra Dhatu*, enhance fertility, and promote overall reproductive health in affected individuals.

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