IAMJ

INTERNATIONAL
AYURVEDIC
MEDICAL JOURNAL

Review Article | ISSN: 2320 5091 | Impact Factor: 6.719

COMPREHENSIVE CONCEPTUAL ANALYSIS OF SHUKRAVAHA SROTAS AND KSHEENASHUKRA (OLIGOSPERMIA) – AN OVER REVIEW

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https://doi.org/10.46607/iamj08p5012020

(Published online: November 2020)

Open Access

Article Received: 29/09/2020 - **Peer Reviewed:** 05/11/2020 - **Accepted for Publication:** 14/11/2020

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ABSTRACT

Health and disease state of an individual is based on normalcy of a *Srotas*. Knowledge of *Srotas* plays an important role in diagnosing and management of every disease. The channel which carries *Shukra* is called *Shukravaha Srotas*. *Srotosanga* and *Srotovaigunya* are causes of *Shukra Dusti and Shukra Kshaya*. These are major reproductive issues result in male infertility. Acharya Charaka while listing qualities of *Phalavat Shukra*, *Bahu* (large in quantity) is one of the properties attributed to *Shukra dhatu.* Sufficient quantity of *Shukra* (Semen and Sperms) needed for reproduction. Deficient condition of *Shukra* is labeled as *Ksheenashukra*, is one of *Shukra Dusti* and correlates to Oligospermia- one of the seminal disorders and common causative factor for male infertility. Abnormal structures and functions of *Shukravaha Srotas* alter the production and ejaculation of *Shukra.* Hence an insight into *Shukravaha Srotas* is essential to treat *Ksheenashukra.* The present review elaborates relation between *Shukravaha Srotas, Shukrajanana* and *Ksheenashukra*.

Keywords: *Shukravaha srotas, Shukrajanana, Ksheenashukra, Oligospermia*

INTRODUCTION

Sravanat srotamsi - Structure through which *Sravana* (flow) occurs is *Srotas*.[1] *Srotas* facilitates all transportation of the respective materials in the body. [2] They are *Vrutta* (round), *Sthula* (gross or macroscopic) *Anu* (microscopic), *Deerga* (long) and *Pratanana* (reticulated) in shape.[3] *Shukravaha Srotas* one among

Dhatuvaha Srotas meant for the production and transportation of *Shukra.* [4] *Shukravaha Srotomula* (origin), *Nidana* (etiological factors) and *Dusti Lakshanas* (signs and symptoms) like *Klaibya* (impotency), *Na Chasya Jayate Garbha* (infertility) etc. are dealt.[5] These affect the *Janana* (genesis) and *Pravartana* (ejaculation) resulting in *Ksheenashukra*. Oligospermia is one of the seminal disorder where sperm concentration is less than 15 million/ ml[6]. Alteration in Sperm concentration or motility and morphology, in humans it accounts for 40-50% of male infertility. [7] The present review focuses on the relationship between *Shukravaha Srotas* and *Ksheenashukra.*

Objectives

- To explore the concept of *Shukrava Srotas, Shukrajanana* and *Ksheenashukra*
- To establish the connection between *Shukravaha Srotas* and *Ksheenashukra*

Materials and Methods: Literature reviewed from *Ayurveda Samhitas* and contemporary science.

***Shukra Janana* (Spermatogenesis)**

Acharya Sharangadhara mentioned pharmacological activities like *Shukrala*, *Shukra Janaka* and *Shukra Pravartaka* etc., The drug or activity which produces the *Shukra* is *Shukra Janaka* (Spermatogenesis) e.g.: *Masha (Vigna mungo) Ballatakaphala Majja* and *Amalaki* (*Phyllantus emblica*).[8]

Vrushana, Majjadhatu and *Shukradharakala* are the prime sources for spermatogenesis.

Majjadhatu: (Bone marrow)

Majjastu ya sneha shukram sanjayate tata |

The *Sneha* or *Prasada bhaga* of *Majjadhatu* generates *Shukra* by *Shukradhatvagni. Harshana, Sankalpa* etc. *Manobhavas* (Psychological factors) by which Shukra is ejaculated through *Mootramarga*. [9]

***Vrushanau* (Testicles)**

Vrushanas are the *Mula* of *Shukravha Srotas*. [10] A pair of testicles having seminiferous tubules which produce sperms.

Shukradhara Kala: *Shukradhara Kala* (Semen bearing) extends throughout the body. *Shukra* present in man is like that of *Sarpi* (Ghee) in the *Payasa* (Milk), Jaggery in sugar-cane juice. [11] The part of *Shukra-Dhara Kala* situated at *Vrushana* brings out the transformation of pervading *Shukra dhatu* into ejaculatory part of *Shukra*, the *Retas*. The germinal epithelium present in the testis and the accessory sex glands are considered as *Shukradhara Kala*.

Properties of *Phalavat Shukra* [12] *Shukla (White) Madhura (Sweet) Avisra (without bad odour) Bahalam (Thick with more sperms), Snigdha (Unctuous), Guru (Heavy), Picchila (Slimy), Bahu (Large in quantity),*

Functions of Shukra:

Functions of *Shukra dhatu* are *Garbhodpadana* (fertilization*), Dehabala* (physical strength)*, Dhairya*, (courage), *Preeti* (love), *Harsha* (pleasure) and *Chavana* (ejaculation)[13][14]

***Shukravaha Srothas*:**

Shukra Dhatuvahasrotamsi transport the nutrients of *Sthayi* dhatus that are undergoing metabolic transformations.

Shukrvaha srotho mulas:

All *Samhithakaras* opine that *Vrushana* (Testis) *and Shepha (Penis)* are the *Mula. while Vagbhata in Ashtanga Sangraha* considers *Majja* (*Bone marrow) and Sthanou (Breasts) as Mula.* [15] [16] [17]

Shukra Dusti Karana [18]

Ativyavaya (excessive sexual indulgence), *Ativyayama* (over exercise), Foods with *Rooksha* (dry), *Tikta* (bitter), *Kashaya* (astringent) *Atilavana* (excess salty), *Amla* (sour) and *Ushna* (hot) qualities, *Jara* (aging), *Chinta* (worry) and *Shoka* (grief) etc., improperly performed *Shastra karma* (Surgery), *Kshara* (Caustic therapy) and *Agnikarma* (Thermal microcautery) and Psychological disorders etc. vitiates *Rasadi Dathus* and aggravates *doshas* which affects *Shukrava Srotas* .

Shukra Dusti Vikaras: *Shukra dusti* refers to both *Shukra* and *Shukravaha srotas*. It has an impact on the individual, counterpart and progeny resulting in *Klaibya* (impotency), *Aharshana* (erectile dysfunction), non-conception, termination of pregnancy. Further Progeny carries the *Vikaras* like *Klaibya* (impotency), *Alpayu* (short life span) and *Viroopa* (disfigured) [19]

Male Reproductive System: [20]

Male reproductive system consists of primary and accessory sex organs. The primary sex organs are testis and accessory sex organs are seminal vesicles, prostate gland and penis.

Structures taking part in spermatogenesis are Testis, Seminiferous tubules, Germ cells, Sertoli cells and Leydig cells.

Spermatogenesis: Spermatogenesis occurs in all seminiferous tubules during active sexual life as a result of stimulation by anterior pituitary gonadotropic hormone. It is a scheduled process by which male gametes called Spermatozoa (sperms) are formed from primitive Spermatogenic cells (Spermatogonia). This process occurs in four stages they are 1. Stage of Proliferation, 2. Stage of Growth, 3. Stage of Maturation and 4. Stage of Transformation

Role of hormones in spermatogenesis: Many hormones directly or indirectly influence the spermatogenesis process. The Hypothalamic-Pituitary-Gonadal (HPG) axis is mainly involved in the regulation of the production of testosterone and the process of spermatogenesis. Hormones responsible for this process are FSH, LH, Testosterone Inhibin and Activin.

***Ksheenashukra*:** *Ksheenashukra* is one of the *Shukra dosha*. *Ksheena* means diminished state of *Shukra-dhatu* leading to unproductiveness.[21] It is caused by *Vata Pitta Dosha*. [22]

***Nidanas of Ksheenashukra*:** [23] *Jara* (aging), *Chinta* (worry), *Karmakarshana* (excess work), *Anashana* (starvation), *Stri Ati Nishevana* (excess intercourse), *Nidanartakara Vyadhis*- Diseases like *Grahani, Rajayakshma and Vyavayika Shosha* etc.

Samprapti:

Nidana Sevana ⇨ *Vata Pitta Prakopa* ⇨ *Agnimandya* ⇨ *Rasadi Dhatu Kshaya* ⇨ *Ksheenashukra*

Lakshanas of Ksheenashukra [24]

Dourbalya (weakness), *Mukhashosha* (dryness of mouth*), Pandutva* (pallor), *Sadana* (malaise), *Shrama (*dyspnoea on exertion*), Klaibya (impotency), Shukraavisarga (unable to ejaculate)*

Oligospermia: [25] Oligospermia is a seminal disorder caused by impairment of male reproductive and its governing system. Some of the causes are listed as below.

Primary testicular failure: Testicular damage due to infection, vascular torsion, varicocele, surgery-orchidectomy (pelvic, inguinoscrotal), drugs and toxins and chromosomal abnormalities etc.

Secondary testicular failure: GnRH deficiency - Hypothalamic pituitary disorder, Trauma, Prolactinoma, and Androgenic drugs use and abuse etc.

Non-Reproductive Causes: Liver and Renal insufficiency, Hepatitis and Starvation etc.

DISCUSSION

Functionality of *Shukravaha srotas* depends on *Sarvadaihika Shukra* (Androgens) and *Stanika Shukra* (semen and sperms). Production and expulsion of *Stanika Shukra* bank on hormones like FSH, LH and Testosterone etc. *Ksheenashukra* one of *Shukra Dusti* in which decreased number of sperms are noted. It can be compared with Oligospermia. *Shukravaha Srotas Sanga* (obstruction) and *Srotovaigunya* (pathology) results *Ksheenashukra* (Oligospermia).

The etiological factors mentioned in ancient texts are relevant even today which is supported through many researches.

Improper unhealthy eating habits like excess usage of *Rooksha, Amla, Lavana, Ushna* etc.,[26] resulting in excess amount of reactive oxygen species leading to impaired spermatogenesis and low testosterone.[27]

Shastrakritha and *Srothosangha*-A blockage of reproduction to absence of sperm, is due to injuries from prior inguinal surgeries, Ejaculatory duct obstruction (EDO) leads to low volume and acidic ejaculate with Oligospermia. [28]

Chintha, Shoka etc., Psychological factors are the important components for *Shukravaha Srotas Dusti* which is also noted in causes of oligospermia. Chronic psychological stress may impair testosterone and cause the erectile dysfunctions and retrograde ejaculations. [29]

Shukravaha Srotodusti Vikaras are considered *Vikaras* of *Shukra Dusti.* It affects semen, sperm, male fertility and male sexual functions which lead to impotency and premature ejaculation. It also affects the mother by causing repeated abortion (*Patati Prasravatyyapi*), and the progeny carry genetic defects and become *Alpayu* (short life span) *Viroopa* (disfigured) etc.[30]. DNA fragmentation reveals negative correlation with semen parameters; sperm count and motility.[31] High sperm DNA fragmentation index (DFI) have been shown with lower fertilization, pregnancy rate, live birth rate, and higher abortion rate [32] *Ksheenashukra Lakshanas* like *Dourbalya, Pandutva, Klaibya* are due to deficiency of androgens. *Ksheenashukra* is a type of *Shukravaha Srotodushti Vikara*. So, factors which leads to *Shukravaha Srotodushti* plays an important role in producing *Ksheenashukra* (Oligospermia).

CONCLUSION

Male reproductive system and its governing Hypothalamic-Pituitary-Gonadal (HPG) axis can be correlated to *Shukravaha Srotas.* As the *Shukravaha Srothas* is an integral part of *Shukrajanana* (spermatogenesis) and *Shukra Pravartana* (ejaculation*)*, the *Ksheenashukra* is because of altered structure and functioning of *Shukravahasrothas*. The etiological factors mentioned in Ayurvedic texts are relevant even today which are revalidated.

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Source of Support: Nil
Conflict of Interest: None Declared

How to cite this URL: Nagendra Chary M: Comprehensive Conceptual Analysis Of Shukravaha Srotas And Ksheenashukra (Oligospermia) – An Over Review. International Ayurvedic Medical Journal {online} 2020 {cited November, 2020} Available from: http://www.iamj.in/posts/images/upload/2601_2605.pdf