

A CRITICAL STUDY OF ARTAVAVAHA SROTAS W.S.R. TO ITS VIDDHA LAKSHANA

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ABSTRACT

Ayurveda is most ancient medical science having all the part of medical including anatomy, physiology, pathology, medicine etc. Brief anatomical description of human body is given in *Sharira Sthana* of every text of *Ayurveda*. According to *Acharya Sushruta* and *Acharya Vagbhata*, *Srotasa* are fine passages through which ‘*Rasadi Poshya Dhatu*’ circulate all over the body to provide nutrition. *Acharya Sushruta* described one additional *Artavavaha Srotas* which are two in number, their *Moolasthanas* are *Garbhashaya* and *Artavavahi Dhamanis*. In *Ayurveda*, there is vast description of *Artavavaha Srotas* in terms of its *Moolsthana*, Patho-physiology, Clinical conditions and their *Ayurvedic* management. *Artavavaha Srotas* shows quite

similarities with female reproductive system explained in modern medical science. *Ayurveda* explained different structures or parts of the *Artavavaha Srotas* which are similar to the structures of the female reproductive system. According to *Acharya Sushruta*, Injury to *Artavavaha Srotas* leads to *Bandhytwa* (Infertility), *Maithuna Asahishunta* (Dysperunia) and *Artava Naasha* (Amenorrhoea). This article “A Critical Study Of *Artavavaha Srotas* w.s.r. To Its *Viddha Lakshana*” will reveals Comprehensive Study of *Artavavaha Srotas* with its *Moolasthanas* and Comparative Study of *Viddha Lakshana* of *Artavavaha Srotas* with perspective of Modern Science.

KEYWORDS: *Ayurveda*, *Srotasa*, *Artavavaha Srotas*, *Moolasthanas*, *Viddha Lakshana*.

INTRODUCTION

Ayurveda the Indian system of medicine can be defined as the holistic science of life that

incorporates the psycho- somatic-socio-environmental-spiritual considerations collectively which is responsible for health and disease. *Rachana Sharir* is one of the important branches of *Ayurveda* in which knowledge of *Sharir* have been described for different organs and systems of body.

The concept of *Ayurveda* are like roots of the tree in which one of root is *Srotasa*. *Ayurveda*, the first medical system to announce and describe the existence of the millions of pathways within the human body. They called these ducts or channels or transportation systems of the body as *Srotasa*. The *Srotasa* serve to maintain communication between the different tissues and organs. As long as these channels of circulation perform their normal functions, the body is free from diseases. Disease arises when there is improper flow or communication through the channels.

According to *Acharya Sushruta* and *Acharya Vagbhata*, *Srotasa* are fine passages through which ‘*Rasadi Poshya Dhatu*’ circulate all over the body to provide nutrition. There are two types of *Srotasa* - *Bahirmukha Srotasa* that opens outside the body which are nine in male and twelve in female & *Antarmukha Srotasa* that opens inside the body. *Acharya Sushruta* described eleven *Antarmukha Srotasa* and each one is in pair so that twenty two in number.

Acharya Sushruta described one additional ‘*Artavavaha Srotas*’. *Acharya Charaka* has not counted the *Artavavaha Srotas* in list of the *Srotasa* while discussing the *Srotasa* in *Vimana Sthana*. *Acharya Charaka* has given some references about the *Rajovahi Siras* in the thirtieth chapter of *Chikitsa Sthana*. These *Rajovahi Siras* are nonetheless represents the *Artavavaha Srotas* only. So *Acharya Charaka* has described total fourteen *Antarmukha Srotasa*. According to *Acharya Sushruta*, *Artavavaha Srotas* are two in number, their *Moolasthanas* are *Garbhashaya* and *Artavavahi Dhamanis*.

In *Ayurveda* there is vast description of *Artavavaha Srotas* in terms of its *Moolsthana*, Patho-physiology, Clinical conditions and their *Ayurvedic* management. *Artavavaha Srotas* shows quite similarities with female reproductive system explained in modern medical science. *Ayurveda* explained different structures or parts of the *Artavavaha Srotas* which are similar to the structures of the female reproductive system. The word *Yoni* in *Ayurvedic* classics refers to entire reproductive system and also as individual organs. The word *Yoni* is used in different contexts to denote different organs of female reproductive system.

The structure of the *Yoni* is like a conch shell, it is broader at start, kinked at middle and again broader at end. It is described to be composed of three *Avartas*. *Prathamavarta* comprises vagina and accompanying structures, *Dwitiyavarta* comprises cervix and accompanying structures and *Tritiyavarta* includes uterus along with its appendages.

Garbhashaya consists of two words *Garbha* and *Ashaya* means the organ that holds the *Garbha* called *Garbhashaya*. It is placed between *Pittashaya* and *Pakvashaya*. *Garbhashaya* means uterine cavity which resemble to shape of fish named *Rohit*. It is triangular in shape, apex being at the mouth, says that its mouth is small and meanwhile internal cavity is big. *Rajovahi Sira* is the blood supply of the organ.

Dhamani represent arteries. In *Artavavaha Srotas*, *Dhamani* is having great importance because without *Dhamani* there is no nutrition to *Artavavaha Srotas*, no menstruation has occurred and no conception is possible. While describing *Artavavaha Srotas* by *Acharya Sushruta*, *Dhamani* is described as important *Moola* for the *Srotas*. Women have two *Dhamanis* to carry *Artava* and *Stanya* which coorespond to those carry *Shukra* in males. *Artavavaha Dhamani* can be taken as fallopian tube which conducts *Artava* (ovum) towards uterus during menstrual phase and ovarian and uterine vessels.

Aartava represents the main and important activities of the females. This is a cyclic activity which can be understood in different ways. This activity not only represents the cyclic monthly blood flow from the vagina on gross level but also represents the hormonal changes related with the female reproductive system. *Aartava* makes women very specialized in sense of physiological activities. This physiological specialization is not possible without specialized anatomical structures. Clinical importance of the *Aartava* is very clear because in case of any female reproductive system related examination and questioning first question with everyone will be the pattern of the monthly menstrual flow.

According to *Ayurveda*, health of a female starts in the fetal stage itself which describes the measures to yield a good female child. The distinctive anatomical and physiological features of women in each age group were well studied by the ancient sages of *Ayurveda*. Just as the river is cleaned by its flow, the women are purified by the menstrual flow which is the reason for the non-susceptibility of women to many diseases.

The regimens to be followed during menstrual and post-menstrual periods are well advocated in *Ayurveda*. Disregard to these regimens is the leading cause for many of the gynecological and systemic diseases in women. In addition to the systemic diseases, twenty gynecological diseases are described, which are explained in the classics under the entity of *Yonivyapad* and all the *Yoni Roga* are the diseases of anatomical components of *Artavavaha Srotas*.

According to *Acharya Sushruta*, Injury to *Artavavaha Srotas* leads to *Bandhytwa* (Infertility), *Maithuna Asahishunta* (Dysperunia) and *Artava Naasha* (Amenorrhoea).

Bandhytwa has been included as the first clinical features of injury to *Artavavaha Srotas*. According to Modern medical science, Failure to achieve conception by a couple of mature age having normal coitus during appropriate of menstrual cycle regularly at least for one year is term as infertility. It develops due to fault in either of the partner or both of them.

Maithuna Asahishunta (Dyspareunia) has been included as the second clinical feature of injury to *Artavavaha Srotas*.

Dyspareunia means that the coital act is difficult or painful.

Artava Naasha (Amenorrhoea) has been included as the third clinical feature of injury to *Artavavaha Srotas*. Destruction of *Artava* or non appearance of *Artava* is called *Artava Naasha*.

AIMS AND OBJECTIVES

- Comprehensive Study of *Artavavaha Srotas* with its *Moolasthanas*.
- Comparative Study of *Viddha Lakshana* of *Artavavaha Srotas* with perspective of Modern Science.

REVIEW OF LITERATURE ETYMOLOGY OF SROTASA

The word *Srotasa* is derived from the Sanskrit Dhatu- 'sru'. Meaning of 'sru' is to secrete, to permeate to flow. The structure through which substance is either secreted or circulated or transported is called as *Srotasa*.^[1]

DEFINITIONS OF SROTASA

According to *Acharya Charaka*, from which *Sravana* or flow of body substances take place or through which the materials flow in the body are called *Srotasa*.^[2]

According to *Acharya Sushruta*, *Srotasa* defined as the hollow channel, except *Sira* and *Dhamani*, which originating from root space spreads in the body and carries specific entities.^[3]

STRUCTURE OF *SROTASA*

According to *Acharya Charaka*, *Srotasa* has the color of *Dhatu* that they are carrying or transporting. They are of different shapes and sizes viz- round, thick, large, small, microscopic, elongated and form network and branches.^[4]

CHARACTERISTIC FEATURES OF *SROTASA*

Color – Color of *Srotasa* is similar to that of *Dhatu* they carry. Size – *Anu* (microscopic), *Sthula* (macroscopic)

Shape – *Vritta* (cylindrical), *Dirgha* (long), *Pratana* (reticulated)

As mentioned above by *Ashtanga Hridayakara*, *Srotasa* attain the color of *Dhatu* in which they circulate. These are circular, big, small, long and resembles like lines of a leaf.^[5]

SYNONYMS

According to *Acharya Charaka* below mentioned are the different names or synonyms of all the visible and invisible *Srotasa* available in the body.^[6]

Sira(vein), *Dhamani*(arteries), *Rasaayani*(lymphatics), *Rasvaahini* (capillaries), *Naadi*(tubular conducts), *Panathana*(passages), *Marga*(pathways), *Shareerchidra*(body orifices), *Samvrita-Asamvrita* (opening or blind passages), *Sthana* (sites), *Aashaya* (repositories), *Niketa* (resorts).

FUNCTIONS OF *SROTASA*

- *Srotasa* are the inner transport system of the body which provide platform for activities of other important factors like three *Doshas*, seven *Dhatu*s, the *Oja*, the *Agni*, thought and emotions.
- Transformation (metabolism) of *Poshya Dhatu* occurs in *Srotasa*.
- *Srotasa* are not only the passage or channels for flow of various substances but also they are specific in their functions. Each *Srotasa* provides nutrition to their respective *Dhatu*.
- *Acharyas* have described that the entire range of life processes in health and disease depends on integrity of the *Srotasa* system.

- *Srotasa* serves as conduct through which both *Prasada Dhatu* nutrition as well as *Mala Dhatu* waste product are transported, as structure through the pores of which nutrition and waste products pass to and from the *Sthayi Dhatu*.
- All the *Doshas*, *Dhatu*s and *Malas* are dependant on *Srotasa* for their formation, transformation and destruction.

TYPES OF SROTASA

Though there are millions of *Srotasa* in the body, for the convenience of understanding. *Ayurvedic* classics have broadly classified it into

1. *Bahir Mukha Srotasa* – External openings or apertures
2. *Antar Mukha Srotasa* – Internal channels of the body

1. BAHIR MUKHA SROTASA

Bahir Mukha Srotasa are those which have their openings on the outside of the body. They are essentially large openings. According to *Acharya Sushruta*, Ears, eyes, mouth, nostrils, anus and penis are nine outward openings in males. In females however there are three additional openings i.e. two in breasts and one below vagina carrying the menstrual blood.^[7]

According to another reference from *Kashyapa Samhita*, *Srotasa* are of two types. Channels are said to be of two types i.e. fine and large. Large should be known as nine, out of which two are in lower portion and seven in upper portion of the body. Navel and pits of body hair i.e. pores of skin are referred as Fine channels.^[8]

ANTAR MUKHA SROTASA

Antar Mukha Srotasa are those channels which are present inside the body and also have their openings within the body. They are also called by the name *Yogavahi Srotasa*.

According to *Acharya Sushruta* there are eleven pairs of *Antar Mukha Srotasa* - *Pranavaha*, *Annavaha*, *Udakavaha*, *Rasavaha*, *Raktavaha*, *Mamsavaha*, *Medovaha*, *Shukravaha*, *Mootravaha*, *Purishvaha*, *Artavavaha*.^[9]

Acharya Charaka has mentioned fourteen *Antar Mukha Srotasa* - *Pranavaha*, *Annavaha*, *Udakavaha*, *Rasavaha*, *Raktavaha*, *Mamsavaha*, *Medovaha*, *Asthivaha*, *Majjavaha*, *Shukravaha*, *Mootravaha*, *Purishvaha*, *Swedavaha*, *Artavavaha*.^[10]

From this it is clear that *Acharya Sushruta* excluded *Asthivaha*, *Majjavaha* and *Swedavaha Srotasa* explained by *Acharya Charaka* and *Artavavaha Srotasa* included in the list of *Antar Mukha Srotasa*.

In *Ashtanga Hridaya*, thirteen *Antar Mukha Srotasa* has been mentioned as in *Charak Samhita* except *Artavavaha Srotasa*. If the *Srotasa* is flowing naturally it is in a state of health. Disease begins if the *Srotasa* becomes imbalanced or obstructed due to taking unhealthy food and activities.^[11]

IMPORTANCE OF SROTASA

1. The indulgence of anomalous diet and activities lead to the abnormality in the *Srotasa*, which is the root cause of any disease. In other words, healthy *Srotasa* are the source of good health.
2. Without *Srotasa* no body structure can grow and develop or waste and degenerate.
3. There is much diversity in the *Srotasa* as there is in the elements that compose the structure of the body.
4. There is separate chapter on *Srotasa* in the *Charaka Samhita*, which signifies the importance of *Srotasa*.
5. As per opinion of the *Shalyatantra* specialists, pains of special kinds which may manifest on account of either the piercing of or injury to *Srotasa* that are present in certain parts of the body, are important to gain knowledge of the prognosis of such conditions.
6. *Kayachikitsa* recognizes *Srotasa* that spread throughout the body which include extremely tiny ones. Any pathological involvement of them may manifest subtle kinds of symptoms that may not be recognized or be of help in the assessment of prognosis in such involvements.
7. The theory of semi permeability may be well co-related with *Srotasa* because of the property of being permeable to some substances and impermeable to others.
8. All pathological lesions, either acute or chronic, have their origin in the *Srotasa*.

ARTAVAVAHA SROTASA

Among the type of *Srotasa*, *Artavavaha Srotas* is given prime importance which is only present in females. According to *Acharya Sushruta* the channels carrying the menstrual blood out of the body during menstrual cycle are called *Artavavaha Srotas*. They are two in number and their root is considered as *Garbhashaya* and *Artavavahi Dhamanis*. Injury to *Artavavaha Srotas* leads to Infertility, Dysperunia and Amenorrhoea.^[12]

Acharya Charaka has not included *Artavavaha Srotas* in the description of *Srotasa* in *Vimana Sthana*. Besides this, in thirtieth chapter of *Chikitsa Sthana*, he had stated some references of *Rajovahi Sira* and said that by having the foods with the predominance of *Vata*, the *Vata* aggravates and gets localized in *Rajovahi Sira*. Here it increases the volume of blood, this increased volume will create problems of excessive bleeding in females and this disease is called as *Asrigdara*. These *Rajovahi Sira* are represented by *Artavavaha Srotas* which denotes if there is no reference in the *Samhita* directly, that doesn't mean it is not explained in *Samhita*.

These may be considered as uterine arteries, specially their capillary bed because these arteries are responsible to carry *Artava (Artavavahi Dhamani)*, are two in number have attachment with uterus and injury to these vessels may result in infertility and amenorrhoea due to absence of proper blood supply to uterus along with endometrium, dyspareunia may also occur due to associated inflammation caused during injury and psychological upset due to amenorrhoea etc.^[13]

ANATOMY OF FEMALE GENITALIA AYURVEDIC VIEW

The descriptive anatomy of female genitalia is not so intelligible and clear in Ayurvedic texts as in allopathic books of anatomy, however on scattered references available here and there a gross picture emerges out.

SHRONI

Shroni is said to be the area below *Urusandhi* and above *Smarmandira*. *Urusandhi* refers to union of femur head with pelvic bones. If a straight line is drawn between both these joints, It will pass slightly above the clitoris. In women good quantity of subcutaneous fat is deposited above these joints making this area quite broad.^[14]

BHAGA

Bhaga is of twelve *Angulas*.^[15] The twelve *Angulas* measurement seems to be description of circumference of entire vulva instead of introitus of vagina. According to *Acharya Dalhana* this is the measurement of vaginal introitus of the women called *Hastini*, at other place it is said to resemble leaf of *Pipal*. Its similarity with leaf of *Pipal* might have been given due to resemblance in shape. The leaf is triangular having slight convexity of lateral borders, vulva is also somewhat triangular having its base at Mons pubis and apex mid way between vaginal introitus and anal orifice with slight convexity of its lateral walls.^[16]

SMARATAPATRA / BHAGSHISHNIKA

According to *Acharya Dalhana*, *Smaratapatra* is situated in upper portion of the organ resembling leaf of *Pipal*. Vulva below to this is the orifice for discharge of menstrual blood. During sexual act it is highly stimulated erectile structure. Words *Smaratapatra* and *Madanapatra* are also used for this.^[17]

YONI

‘*Yuj*’ *Dhatu* in the meaning of joining, *Yoni* word is used to join external and internal genitalias in female.^[18]

External orifice

Females have three extra external orifices, two in breasts and one downwards to excrete *Artava* which is situated below the *Smaratapatra* (clitoris).^[19]

Shape of Yoni

Yoni resembles *Shankhanabhi* (hollow portion of conch shell) in shape and has three *Avartas* (circles) *Garbhashya* is attached in third *Avarta*.^[20]

The word *Yoni* in Ayurvedic classics refers to entire reproductive system and also to individual organs separately. Its shape resembles the mid part of conch shell as it is narrow at the introitus and very wide at fornices. Its three *Avartas* are explained as vagina with its adnexal structures, cervix with adnexa and uterus with adnexa by Dr. Ghanekara takes these to be mucous membranous folds. Other few explanations can also be given for these three *Avartas* as

- A. (a) introitus (b) mid canal (c) fornices
- B. (a) thick connective and fibrous layers separating vaginal canal from urinary bladder and urethra anteriorly and rectum and anus posteriorly (b) muscular layer (c) mucous membrane.
- C. (a) external genitalia (b) vagina (c) uterus with adnexa
- D. (a) submeatal sulcus (b) transeverse vaginal sulcus (c) bladder sulcus.

Out of all these four explanations, number B seems to be more logical because *Acharya Dalhana* and *Acharya Indu* have accepted *Garbhashaya* as separate from three *Avartas* are said to be situated in *Garbhashaya* as separate from three *Avartas* and these *Avartas* are said to be situated in *Garbhamarga* (vaginal canal).^[21]

GARBHASHYA

Women possess one extra eighth *Ashaya* as *Garbhashya*, which is situated in third *Avarta* of *Yoni* behind the urinary bladder in between the *Pittashya* and *Pakwashya* or in between multiple coils of intestine covered with *Jarayu* (Peritoneum). It resembles mouth of *Rohita*. *Acharya Dalhana* says that it is hollow inside just like mouth of *Rohita* fish, the *Vasti* is behind the *Bhaga* (vulva) and uterus is above this. *Acharya Vagbhata* has enumerated *Dimbha* amongst the structure of *Koshta*, *Acharya Arundatta* says that it is made from essence of *Rakta* and *Mamsa* and is derived from intestines.^[22]

The similarity of uterus with mouth of *Rohita* fish might have been given probably due to two reasons

- (a) Similarity in shape as both are triangular and hollow inside, the mouth of fish is flat below and slightly convex above - similarly anterior wall of uterus is slightly flat while posterior wall is slightly convex.
- (b) The lips of fish are fleshy and hanging teeth are not just behind the lips rather situated slightly behind these giving appearance of a rounded soft structure which resembles cervix of uterus.

In the context of situation of uterus the word *Pittashya* should not be considered as gallbladder, rather it should be taken as small intestine, the seat of *Pittadhara Kala*, *Pakwashya* refers to the place of digested food (large bowel). The uterus is above sigmoid colon, behind the urinary bladder and multiple coils of small bowel rest upon uterus, it is covered with peritoneum and is an intraabdominal structure which has been mentioned by *Acharya Kashyapa* and *Acharya Dalhana*.^[23]

MODERN VIEW OF FEMALE GENITALIA

The whole body grows, develop and gets differentiated from a single cell, the zygote and in the process of development, different organs and systems become mature at different ages and thus the body attains the complete maturity usually at the age of 16 years in females and at 25 years in male, when both of them are capable to initiate in the process of reproduction.

The female reproductive organs are divided into **External genitalia** and **Internal genitalia**.

EXTERNAL GENITALIA

The **female external genitalia** includes the Mons pubis, Labia majora, Labia minora, Clitoris, Vestibule of the vagina, Bulbs of the vestibule and Greater vestibular glands.

MONS PUBIS

The **Mons pubis** is the rounded, fatty eminence anterior to the pubic symphysis, pubic tubercle and superior pubic rami. The eminence is formed by a mass of fatty subcutaneous tissue. After puberty, the mons pubis is covered with coarse pubic hairs.^[24]

LABIA MAJORA

The **Labia majora** are two thick folds of skin enclosing fat. They form the lateral boundaries of the *puddental cleft*. Their outer surfaces are covered with hair and the inner surfaces are studded with large sebaceous glands.

LABIA MINORA

The **Labia minora** are two thin folds of skin which lies within the pudental cleft.^[25]

CLITORIS

The **Clitoris** is an erectile organ located where the labia minora meet anteriorly. The clitoris consists of a *root* and a small cylindrical *body* which are composed of two crura, two corpora cavernosa and the *glans clitoris*. In contrast to the penis the clitoris is not functionally related to the urethra or to urination. It functions solely as an organ of sexual arousal. The clitoris is highly sensitive and enlarges on tactile stimulation.

VESTIBULE OF VAGINA

The **Vestibule of the vagina** is the space surrounded by the labia minora into which the orifices of the urethra and vagina and ducts of the greater and lesser vestibular glands open. The *external urethral orifice* is located 2- 3 cm behind the clitoris and anterior to the vaginal orifice.

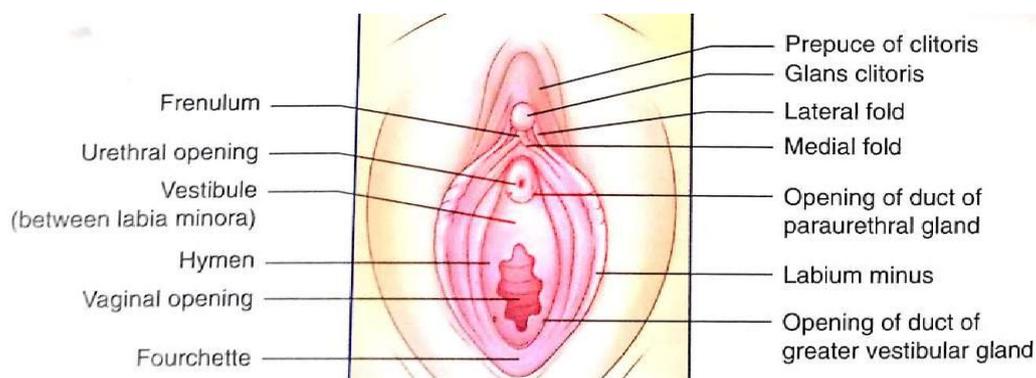
BULBS OF VESTIBULE

The **Bulbs of the vestibule** are paired masses of elongated erectile tissue approximately 3 cm in length. The bulbs lie along the sides of the vaginal orifice superior or deep to the labia minora.

VESTIBULAR GLANDS

The **Greater vestibular glands** [Bartholin glands] approximately 0.5 cm in diameter are located in the superficial perineal pouch. They lie on each side of the vestibule of the vagina. The **lesser vestibular glands** are small glands on each side of the vestibule of the vagina that open into it between the urethral and vaginal orifices. These glands secrete mucus into the vestibule which moistens the labia and vestibule.^[26]

EXTERNAL GENITALIA



INTERNAL GENITALIA

The female internal genital organs include the ovaries, uterine tubes, uterus, and vagina.

OVARIES

The ovaries are the sites of egg production (oogenesis). Mature eggs are ovulated into the peritoneal cavity and normally directed into the adjacent openings of the uterine tubes by cilia on the ends of the uterine tubes. The ovaries lie adjacent to the lateral pelvic wall just inferior to the pelvic inlet. Each of the two almond-shaped ovaries is about 3 cm long and is suspended by a mesentery (the mesovarium) that is a posterior extension of the broad ligament.

EXTERNAL FEATURES

Each ovary has two poles-the upper or tubal pole and the lower or uterine pole, two borders-the anterior or mesovarian border and the posterior or free border and two surfaces- lateral and medial.

FUNCTIONS

Production of oocytes - During reproductive life of about 30 years (from puberty to menopause) the ovaries produce alternatively one secondary oocytes per month. Libration of

oocytes from the ovary is called *ovulation*. It occurs on or about the 14th day of the 28- days menstrual cycle. An oocyte is viable for about 12-24 hours.

Production of hormones – *Oestrogen* is secreted by the follicular and paraluteal cells and *Progesterone* is secreted by the luteal cells.^[27]

UTERINE TUBES

The **uterine tubes** extend from each side of the superior end of the body of the uterus to the lateral pelvic wall. Each uterine tube has an expanded trumpet-shaped end (**infundibulum**) which curves around the superolateral pole of the related ovary. The margin of the infundibulum is rimmed with small finger like projections termed **fimbriae**. The lumen of the uterine tube opens into the peritoneal cavity at the narrowed end of the infundibulum. Medial to the infundibulum, the tube expands to form the **ampulla** and then narrows to form the **isthmus** before joining with the body of the uterus. The fimbriated infundibulum facilitates the collection of ovulated eggs from the ovary. Fertilization normally occurs in the ampulla.^[28]

Uterine part - The short intramural segment of the tube that passes through the wall of the uterus and opens via the uterine ostium into the uterine cavity at the uterine horn.^[29]

UTERUS

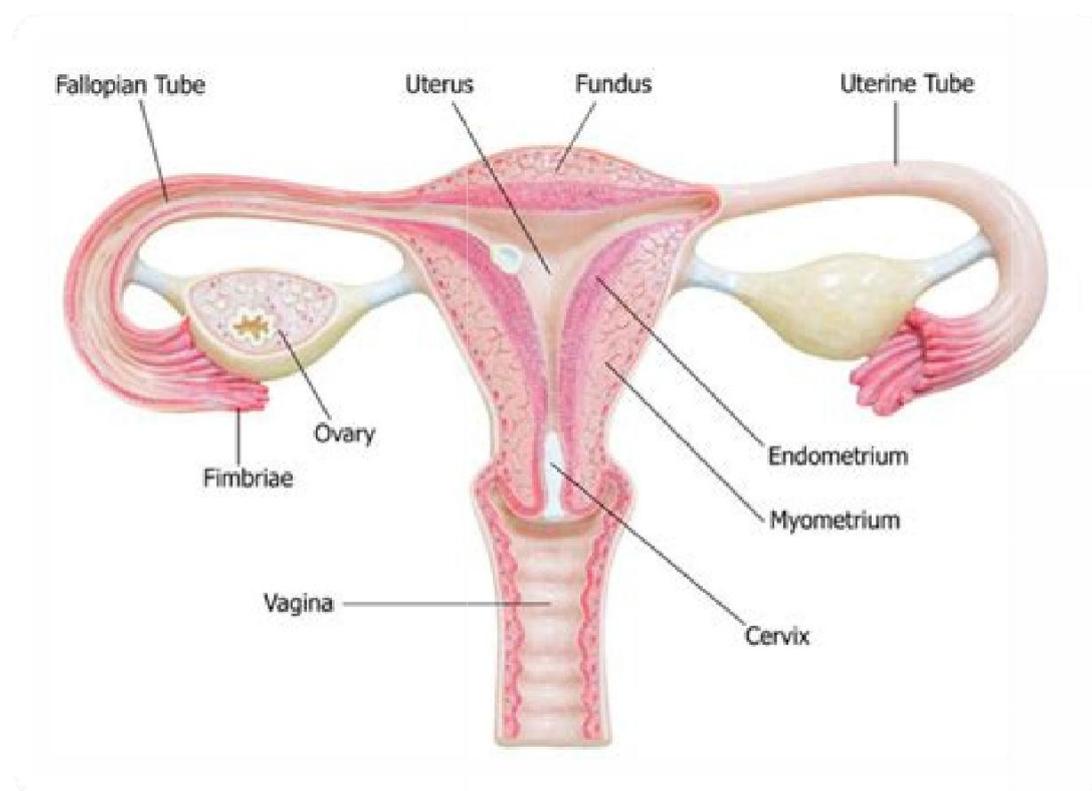
The **uterus** (womb) is a thick-walled, pear-shaped, hollow muscular organ. The embryo and fetus develop in the uterus. Its muscular walls adapt to the growth of the fetus and then provide the power for its expulsion during child birth. The uterus is a very dynamic structure, the size and proportion of which change during the various changes of life. The adult uterus is usually anteverted and anteflexed so that its mass lies over the bladder. Although its size varies considerably, the non-gravid uterus is approximately 7.5 cm long, 5 cm wide and 2 cm thick and weight approximately 90g. The uterus is divisible into two main parts - the body and the cervix.

The body of the uterus forming the superior two thirds of the organ includes the fundus of the uterus the rounded part that lies superior to the uterine ostia. The body lies between the layers of the broad ligament and is freely movable. It has two surfaces vesical and intestinal. The body is demarcated from the cervix by the **isthmus of the uterus** a relatively constricted segment approximately 1cm long.

The **cervix of the uterus** is the cylindrical, relatively narrow inferior third of the uterus, approximately 2.5 cm long in an adult non- pregnant woman. For descriptive purposes, two parts are described a **supravaginal part** between the isthmus and the vagina and a **vaginal part** which protrudes into the superior most anterior vaginal wall. The rounded vaginal part surrounds the **external os of the uterus** and is surrounded in turn by a narrow recess the *vaginal fornix*. The supravaginal part is separated from the bladder anteriorly by loose connective tissue and from the rectum posteriorly by the *recto-uterine pouch*.

The slit-like **uterine cavity** is approximately 6 cm in length from the external os to the wall of the fundus. The **uterine horns** are the superolateral regions of the uterine cavity where the uterine tubes enter. The uterine cavity continuous inferiorly as the **cervical canal**. The fusiform canal extends from a narrowing inside the isthmus of the uterine body, the **anatomical internal os** through the supravaginal and vaginal parts of the cervix, communicating with the lumen of the vagina through the external os. The uterine cavity and the lumen of the vagina together constitute the **birth canal** through which the fetus passes at the end of gestation.^[30]

INTERNAL GENITALIA



BANDHYATWA

Failure to achieve conception by a couple of mature age having normal coitus during appropriate of menstrual cycle regularly at least for one year is term as infertility. It develops due to fault in either of the partner or both of them.

Infertility is not an independent disease, rather a cardinal feature of so many diseases. Other Ayurvedic classics have not used word *Bandhyatwa* but it is the only symptom failure to achieve pregnancy under various conditions such as coitus with an old, young or diseased woman, coitus in abnormal posture, due to diseases of *Yoni* (reproductive system) and abnormalities of *Artava*.^[31]

FACTORS OF CONCEPTION

RITU - *Ritukala* is the most fertile period governed by *Kapha*. In terms of modern science it is a well developed proliferative phase accompanied with ovulation.

KSHETRA - *Manusmruti* describes the female as a field and male as a seed. Others explain that *Avyapanna Yoni-Garbhashya* works as a field. The word *Avyapanna* means undiseased healthy. Thus healthy undiseased condition of female genital tract is the second chief factor of conception.

AMBU- *Ambu* is the liquid product produced from the diet and present in the form of *Rasa*. In other words it represents nutritional elements responsible for the growth of fetus. In terms of modern science *Ambu* means the metabolic products as well as the hormones supplied for the growth of fetus.

BEEJA - *Beeja* includes *Stree Beeja* and *Pumsa Beeja* – ovum and sperm. The term “*Shudha Shukra Shonita*” stresses on healthiness of both rather than on their mere presence.

The terms used to denote the factors of conception are self explanatory. To grow a particular crop following are the essential things

- A. Proper season
- B. Good field
- C. Enough supply of water and minerals
- D. Good seed

Just in the same way in a human life *Ritu*, *Kshetra*, *Ambu*, *Beeja* are four essential factors of conception.

Acharya Charaka summarized the description of conception as follows

“When normal semen is introduced into the healthy uterus through healthy vagina during a well developed proliferative phase which is accompanied with ovulation then the coitus becomes a fruitful one and conception results”^[32]

ETIOLOGY

DISORDERS OF FACTORS OF CONCEPTION

Disorders Of Ritu - *Ritukala* is a period of *Kaphapradhanya*. If it is affected by *Vata* or *Pitta* prominence infertility may result.

Disorders Of Kshetra - *Vyapanna Yoni Garbhashya* - disorders of the female genital tract.

Disorders Of Ambu - *Garbhasravi* or *Mritvatsa* types may result from disorders of *Ambu*.

Disorders Of Beeja - *Artava Dushti* turns *Artava* incapable of fertilization.^[33]

MAITHUNASHINSHUNTA

Dyspareunia is commonly seen due to abnormalities of genital tract of male or female specially due to pain and inflammation of *Vatika* and *Paittika* gynaecological disorders respectively Besides psychological abnormalities are important causes of this. In following conditions *Dyspareunia* is mentined as a symptom.

Paripluta gynaecological disorder

Dyspareunia is the only symptom of this disease according to *Acharya Sushruta*.

Antarmukhi gynaecological disorder

Acharya Charaka have described dyspareunia in the symptoms.

Vedha or injury to Artavavaha Srotas

Infertility, dyspareunia and amenorrhoea are the clinical features of injury to *Artavavaha Srotas*.

TREATMENT

Psychotherapy, treatment capable of suppressing *Vata*, drugs prescribed for specific gynaecological disorder and *Yonishula* should be used. Tub-bath, enema with the decoction of drugs capable of suppressing *Vata* as well as massage and tempon with the oil medicated

with these drugs is beneficial. In case of injury to *Artavavaha Srotas* after removing the foreign body, treatment capable of enhancing the healing of wound, curing inflammation and suppressing *Vata* should be used.^[34]

DYSPAREUNIA

Definition: Dyspareunia means that the coital act is difficult and or painful. Apareunia is inability to practice coitus. The two are most often interchangeable. Dyspareunia is the most common sexual dysfunction.

AETIOLOGY

Male causes: The following male factors are responsible.

- Impotence
- Premature ejaculation
- Congenital anatomic defect of the penis
- Lack of technique of coital act
- Obesity
- Phimosis

Female causes

Physiological – After marriage sometimes coitus is difficult

Systemic – Obesity

Psychological – Vaginismus, Fear of pregnancy & miscarriage

Endocrinal – Atresia of vagina after menopause

Iatrogenic – Oral contraceptive pills^[35]

AMENORRHOEA

Amenorrhoea may be a simple physiological state (*Shareerawastha*) or may have a pathological background. Amenorrhoea may be false in which case menstrual flow is obstructed or it may be true where menstruation is suppressed. It is the true amenorrhoea which is spoken of as amenorrhoea in the real sense. Ayurvedic texts have described this condition under the names like *Rajakshaya*, *Rajaksheenata*, *Artavakshaya*, *Artavaksheenata*.^[36]

Various Conditions Causing Amenorrhoea

Arajaska Yonivyapad - When *Pitta* situated in *Yoni* and uterus vitiates *Rakta* the woman

becomes extremely emaciated and discoloured this condition is known as *Arajaska*. It is a condition marked by amenorrhoea of a secondary variety and also resembles somewhat the uterine amenorrhoea in which uterus is the seat of disease – Tubercular endometritis.

Shandhi Yonivyapad - *Shandhi Yoni* is a condition characterised by amenorrhoea and underdeveloped breast tissue. Dry vagina disturbing the sexual pleasure is another feature. This is said to be a congenital deformity. This sort of uterine amenorrhoea is derived from gross under development of uterus.

Vandhya Yonivyapad - *Vandhya Yoni* is also characterised by amenorrhoea. If we consider the relation of this amenorrhoea and sterility, this type of amenorrhoea is a secondary one.

Vatapittaj Rajodushti - Scanty menstruation is obtained in this condition. The accompanying symptoms are pain at pelvic region. *Acharya Sushruta* had explained the meaning of scanty as either delayed menstruation or periods of short duration. This condition resembles a temporary Hypo- hormonal ovarian amenorrhoea as in cases of Oophoritis.

Shushka Yonivyapad - *Shushka Yonivyapad* as explained by *Acharya Sharangdhara's* commentator *Acharya Adhamalla* is the *Vandhya Yonivyapad* described by others. Amenorrhoea in *Vandhya Yoni* is associated with sterility while that in *Shushka Yoni* is associated with *Shushkta* like atrophy, constipation, oliguria and pain. This condition is said to be originated withholding the bladder and bowel reflexes. This suggests that the condition may be one of Hypothalamic amenorrhoea.

Amenorrhoea is a syndrome not a disease. According to Ayurveda it is a symptom. A symptom can arise as a symptom of temporary imbalance of the governing factors like *Doshas (Dosha-Lakshan)*, a symptom of disease (*Vyadhi – Lakshan*), as a symptom of complication (*Upadrava –Lakshan*) or as a fatal symptom (*Arishta – Lakshan*). Tabulated forms of amenorrhoea according to symptoms are as follows.^[37]

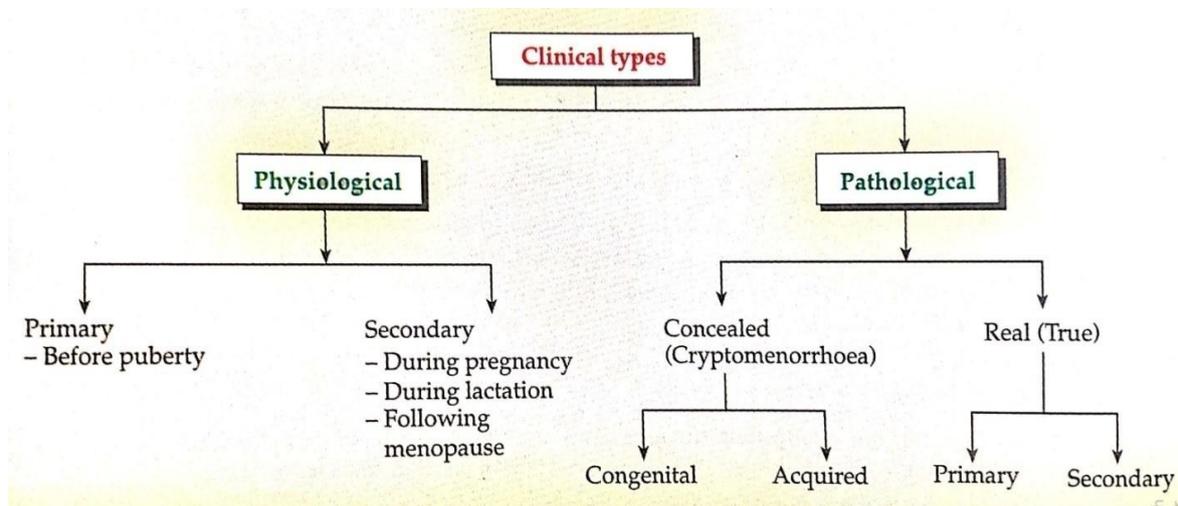
MODERN VIEW OF AMENORRHOEA

Amenorrhea literally means absence of menstruation. It is a symptom and not disease. There are at least five basic factors involved in the onset and continuation of normal menstruation. These are

- Normal female chromosomal pattern (46XX).

- Co- ordinate hypothalamo-pituitary ovarian axis.
- Anatomical presence and patency of the out flow tract.
- Responsive endometrium.
- Active support of thyroid and adrenal glands.^[38]

TYPES OF AMENORRHOEA



DISCUSSION

Ayurveda is the part and parcel of our society and culture. The quotation mentioned above state that “There is no end of *Ayurveda* (science of life) hence one should devote himself to it constantly and without any negligence.”

This title is justified by the importance of the fact that *Acharya Sushruta* has revealed many anatomical facts of *Artavavaha Srotas* along with its *Moolasthanas* & *Viddha Laskshana*. His views regarding *Artavavaha Srotas* are valuable, proved remarkable and evident.

Ayurveda, the first medical system to announce and describe the existence of the millions of pathways within the human body. They called these ducts or channels or transportation systems of the body as *Srotasa*.

According to *Acharya Sushruta* and *Acharya Vagbhata*, *Srotasa* are fine passages through which ‘*Rasadi Poshya Dhatu*’ circulate all over the body to provide nutrition. There are two types of *Srotasa* - *Bahirmukha Srotasa* that opens outside the body which are nine in male and twelve in female & *Antarmukha Srotasa* that opens inside the body. *Acharya Sushruta* described eleven *Antarmukha Srotasa* and each one is in pair so that twenty two in number. *Acharya Sushruta* described one additional ‘*Artavavaha Srotas*’.

Acharya Charaka has not counted the *Artavavaha Srotas* in list of the *Srotasa* while discussing the *Srotasa* in *Vimana sthana*. *Acharya Charaka* has given some references about the *Rajovahi Siras* in the thirtieth chapter of *Chikitsa Sthana*. These *Rajovahi Siras* are nonetheless represents the *Artavavaha Srotas* only. So *Acharya Charaka* has described total fourteen *Antarmukha Srotasa*.

Among the type of *Srotasa*, *Artavavaha Srotas* is given prime importance which is only present in females. According to *Acharya Sushruta* “*Artavavahe Dwe*”. That means *Artavavaha Srotas* is present in pair in body. So structures which are present in pair in body one of them can be consider as *Artavavaha Srotas*. These organs are

- Ovaries
- Fallopian tubes
- Uterine arteries

All of these are important in terms of female genital organs but these cannot fulfill the complete working and understanding of the Female Genital Organs.

Ovaries are the essential part of the female genital organs because these shed off the Ovum which is the most important part for the development of the fetus. But in few cases this is seen that if there will be some problem with ovaries like Polycystic Ovarian Disease, this can hamper the activities (Menstrual Cycle) in females but other *Viddha Lakshana* of *Artavavaha Srotas* like *Maithuna Asahishnuta* (Dyspareunia) doesn't appear. So all alone ovary can't be said as *Artavavaha Srotas*.

Fallopian tubes performs the function of carry of the ovum from ovary to the uterus. It is also an important site of fertilization. But when we discuss about the *Viddha Lakshana* of *Artavavaha Srotas* only *Bandhyatwa* is the symptom that comes due to ligation of fallopian tubes. There is not any role of fallopian tubes in other two symptoms.

Uterine arteries in uterus performs the function of *Poshana* means supply nutrition of all organs of the female genital system. When there is ligation or tubectomy is performed in female body, there is not any interruption in functions of female genital system.

Any system works properly when all of its components are working well even small tiny cells are important in well functioning of the system. So the whole female genital organs can be taken as *Artavavaha Srotas*, single organ and structure cannot be compared with *Artavavaha*

Srotas.

While considering the *Moolasthan* of any *Srotas* following points are taken in consideration like *Utpattisthan* (origin point of view), *Sangrahashthan* (storage), *Vahanasthan* (conduction). The *Moolasthan* is considered that without which the origin, maintenance and destruction of that specific carrier of body nutrient cannot be possible and the place which controls the entire functional dealings and processes of the specific carrier.

The *Moolasthan* of *Artavavaha Srotas* is considered as *Garbhashaya* (Uterus) and *Artavavaha Dhamanis* (Vessels carrying *Artava*).

In *Garbhashaya*, the word *Ashaya* refers as cavity or space in that particular organ which are prime functional areas or cavities of the body. *Garbhashaya* is a space which helps in implantation and development of *Garbha* (foetus) here it does not refer to only a single organ but it is the hollow space in the body where various bio physiological activities happen.

Artavavaha Dhamani can be taken as fallopian tube which conducts *Artava* (ovum) towards uterus during menstrual phase and ovarian and uterine vessels, *Dhamana* word refers to contraction, hence in this study as by contracting fallopian tube conduct the ovum so it works like an *Artavavaha Dhamani*.

Injury to *Artavavaha Srotas* leads to *Bandhytwa* (Infertility), *Maithuna Asahishunta* (Dyspareunia) and *Artava Naasha* (Amenorrhoea).

Bandhytwa has been included in the clinical features of injury to *Artavavaha Srotas*. According to Modern medical science, Failure to achieve conception by a couple of mature age having normal coitus during appropriate of menstrual cycle regularly at least for one year is term as infertility. It develops due to fault in either of the partner or both of them.

Maithuna Asahishunta (Dyspareunia) has been included as the second clinical feature of injury to *Artavavaha Srotas*. Dyspareunia means that the coital act is difficult or painful.

Artava Naasha (Amenorrhoea) has been included as the third clinical feature of injury to *Artavavaha Srotas*.

Destruction of *Artava* or non appearance of *Artava* is called *Artava Naasha*.

CONCLUSION

In *Sushruta Samhita*, when *Acharya Sushruta* starts the topic of *Srotasa* he himself claims that these *Srotasa* are innumerable and again he has classified all these in eleven pairs.

Anatomy of *Artavavaha Srotas* and in that description of *Yoni* with its *Traya Avarta* concept is unique to *Ayurveda*. In Anatomical position Uterus, Cervix and Vagina are placed in Anteverted- Anteflexed Position that *Acharya Sushruta* called as *Avarta*. The structure of the *Yoni* is like a conch shell, it is broader at start, kinked at middle and again broader at end. The three *Avarta* of *Yoni* should be

- First *Avarta* should be Vagina - It starts from Vestibule to External Os.
- Second *Avarta* should be Cervix – It starts from External Os to Internal Os.
- Third *Avarta* should be Uterus – It starts from Internal Os to Fundus of Uterus.

The Third *Avarta* in which *Garbh- Shaaya* should be Uterus / Uterine Cavity which is like *Rohit Matsya Mukha* that is compared with Cervix opening.

Artava constitute both parts *Bahipushpa* and *Antahpushpa* which are compared with menstrual discharge and ovum respectively. So their production sites Uterus and Ovaries and flow pathway Fallopian tube and Vagina all are included *Artavavaha Srotas*.

Concept of *Artavavaha Srotas* has been resolute in two ways – Macroscopic and Microscopic. Macroscopically it is considered as reproductive tract where menstruation, conception and foetal development take place. While Microscopically we must understand physiological aspect as *Artavavaha Srotas* is physio-anatomical concept.

While describing *Artavavaha Srotas* by *Acharya Sushruta*, *Garbhashya* and *Artavavaha Dhamani* is described as important *Moolasthanas* for the *Srotas*. *Garbhashaya* consists of two words *Garbha* and *Ashaya* means the organ that holds the *Garbha* called *Garbhashaya*. It is placed between *Pittashaya* and *Pakvashaya*. *Garbhashaya* means uterine cavity which resemble to shape of fish named *Rohit*. It is triangular in shape, apex being at the mouth says that its mouth is small and meanwhile internal cavity is big. *Rajovahi Sira* is the blood supply of the organ.

Dhamani represent arteries. In *Artavavaha Srotas*, *Dhamani* is having great importance because without *Dhamani* there is no nutrition to *Artavavaha Srotas*, no menstruation has occurred and no conception is possible. Women have two *Dhamanis* to carry *Artava* and

Stanya which correspond to those carry *Shukra* in males. *Artavavaha Dhamani* can be taken as fallopian tube which conducts *Artava* (ovum) towards uterus during menstrual phase and ovarian and uterine vessels.

Functions of reproductive system like ovulation, menstruation, conception, endometrial changes etc. all these are controlled by various hormones under Hypothalamus - Pituitary - Ovarian axis while some functions happen due to its proper blood supply and nerve supply. Capillary network present in reproductive system also play significant role in nutrition, development and proper functioning of the whole system.

Any injury to the *Artavavaha Srotas* or its *Moolaasthana* causes symptoms like Amenorrhoea, Dyspareunia or even Infertility which is also accepted and well explained by Modern science.

So we should understand the whole Female Reproductive System as *Artavavaha Srotas* and this thought should be carried well to define all the anatomical deformities of the same.

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