

## **Review Article**

### **Stri-sharira in classics of Ayurveda: A Critical Review**

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**Abstract:** Knowledge of stri-sharira (anatomy and physiology of female reproductive system) is necessary to find appropriate etio-pathogenesis and treatment of gynaecological disorders. Ayurveda classics have put emphasis on applied aspect of science and hence instead of describing micro structural details, they have described 'sharira' wherever necessary. 'Yoni' suggests the total genital path. 'Avarta' of yoni explains various parts of genital path. Modern science explains analogous descriptions regarding vagina that it is a fibro-musculo-membranous sheath communicating the uterine cavity by the outside at the vulva. It includes the excretory channel for the uterine secretion and menstrual blood. The location of 'garbhashaya' is in third avarta of yoni, at the backside the bladder, in between pittashaya and pakvashaya. Sushruta quoted the word 'plalamntargata' which can be compared with 'beeja granthi' (ovary). Ritu chakra (menstrual cycle) is under the control of three doshas. Rajah-srava kala (duration of menstruation) varies from three days to seven days. Ayurveda has described the mechanism of artava pravritti precisely. Rajah-kala (menstrual phase) is of 3 to 5 or 7 days in it there is menstrual blood loss and there is dominance of vata dosha. Throughout this phase the vata dosha works by its chala guna and kshepana karma and pitta works by its drava and sara guna. Ritu-kala (proliferative phase including ovulation) is of 12 or 16 days or whole month. In this period even without menstruation establishment of 'navina rajah' (new cycles) takes place and there are optimum chances of fertilization. These functions are similar with kapha dosha; hence it reveals that there is dominance of kapha in this phase.

**Keywords:** Stri-sharira, Ritu-kala, garbhashaya, yoni, rajah-srava.

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#### **INTRODUCTION**

'Sharira' word comprises anatomy along with physiology. To understand appropriate etio-pathogenesis and treatment of gynaecological disorders, the knowledge of stri-sharira (anatomy and physiology of female reproductive system) is necessary. Anatomy of the female reproductive system is not clearly explained in classics of Ayurveda. Ayurveda classics have put emphasis on applied aspect of science and hence instead of describing micro structural details, they have described 'sharira' wherever necessary. We found scattered references regarding 'stri-sharira', hence in this article I had tried to critically review maximum references concerned with present subject and crafted them chronologically.

#### **Yoni:**

The word 'yoni' in classics refers to complete female reproductive system and individual organs independently.

Vyutpati – The word 'yoni' is obtained from 'yuj' dhatu; it means to link or to join.

योनिः (स्त्री यौति संयोजयति ।)

Svarupa (appearance) - Sushruta has explained that the shape of yoni looks like 'shankha nabhi' (hollow

segment of conch shell). It contains three 'avarta' (circles or envelopes or compartments). The location of 'garbhashaya' is in third 'avarta'. According to this description, yoni suggests the total genital path. 'Avarta' of yoni remind you of various parts of genital path[1]. Modern science explains analogous descriptions with Ayurveda but with more details; i. e. vagina is a fibro-musculo-membranous sheath communicating the uterine cavity by the outside at the vulva. It includes the excretory channel for the uterine secretion and menstrual blood. It is the organ of coitus and forms the birth canal at the time of delivery. The canal is directed upwards and backward forming an angle of 45° with the horizontal in erect posture. The diameter of the canal is about 2.5 cm, being widest in the upper part and narrowest at its introitus. It possesses an anterior, a posterior and two lateral walls. There are four fornices – one anterior, one posterior and two laterals. It has layers from in to out wards viz., mucous coat, submucous layer, muscular layer and fibrous coat[2].

#### **Garbhashaya:**

Vyutpatti - It is a place where the 'garbha' (foetus) resides or develops [3].

Synonyms -

- Vipul srotasa[4]
- Kukshi[5]
- Garbhashaya[6]
- Dhara[7]

Location – The situation of garbhashaya is in third avara of yoni, at the backside the bladder, in between pittashaya and pakvashaya[8-10].

Shape - Sushruta has explained that garbhashaya resembles with mouth of 'rohita' fish. In his commentary Dalhana has clarified that it is hollow inside just like mouth of 'rohita' fish[11]. Chakrapanidatta has described that the shape of uterus is like 'kshudra-tumbi phala' which is having its mouth downwards and its shape is somewhat flattened[12].

Uterus[13] – Modern science has explained somewhat similar description but in detail. It is one of the internal genital organs for menstruation, sperm transport and capacitation, embryo embedding and child bearing in a woman.

Situation: Lies in the pelvic cavity, between urinary bladder in front and the rectum behind.

Shape: Pyriform or pear shaped antero-posteriorly flattened organ.

Size: In nulliparous – 3” x 2” x 1” – 1 x b x t and in parous – measured more

Weight: Nulliparous – 45-50 gm, Parous – 50-70 gm.

Parts: It is divided mainly into three parts.

a) Body or Corpus:

Fundus: Upper 2/3 part lying above the plane of the tubal attachment is called as 'fundus uteri'.

Cavity: It is triangular in figure, communicating into the lumens of the fallopian tubes on both sides.

b) Cervix or Neck: It is separated in to two parts -

- Supra vaginal portion
- Vaginal portion

c) Isthmus: It is constricted 1/4” (0.5 cm.) portion of uterus lying at the joint of corpus and cervix.

**Beeja granthi (ovary):**

Ayurveda classics have not directly given any reference regarding ovary. But Sushruta has quoted the word 'फलमन्तर्गत' which can be compared with ovary structure. 'Beeja granthi' (ovary) is a component of female genital organ wherein the 'beeja' is stored, matured and expelled out at appropriate time. Thus, the above references confirm the direct picture regarding ovary. Classics have mentioned various synonyms for ovary such as phala, antargata phala and beeja granthi[14].

Ovary[15] - Modern science has explained about ovary in depth as follows -

Adult ovary, one on each side is a solid flat reniform structure.

1) Size: 3.5 cm. in length, 1.5 cm in thickness

2) Weight: 5-10 gm.

Each ovary consists -

3) Two ends: tubal and uterine

4) Two borders: meso-ovarian and free posterior

5) Two surfaces: medial and lateral

Structure -

The ovary is covered by a single layer of cubical cell known as germinal epithelium. The substances of the gland consist of outer cortex and inner medulla.

Fallopian tube -

Fallopian tubes are also two in number, one on each sides of uterus. Each tubes lies in the upper free border of the broad ligament and has a length of approximately 10 cm. the lumen at the lateral end of the fallopian tubes opens into the peritoneal cavity. The medial end of lumen opens into the uterine cavity. The ova, when released from the ovaries, enter in the lumen of the tubes through its abdominal ostium and travel through the tube to reach the uterine cavity.

Functions - There are mainly two functions –

- Transport the gametes.
- To facilitate fertilization and survival of zygote through its secretion.

**Rajah:**

Nirukti - Discharge coming out through female body at particular time, i.e. ritu[16]. Discharge through female body during ritu kala is raja.

Synonyms - Different words used to denote menstrual blood in classics

1) Artava – Pure artava is red in colour resembling with colour of insect named indragopa[17]. Many places the word artava is used to denote menstrual blood[18].

'Ritu' means a particular or specific time and 'bhavam' implies its occurrence. Thus, the whole term denotes a substance of the body which flows out at a specific time or period is entitled as 'artava'[19].

2) Shonita – This word indicates menstrual blood and at certain places, i.e. ending of shonita after conception, manifestation of shukra and shonita at appropriate age in male and female respectively etc[20].

3) Asrik - This term is used in asrigdhara kala and similar conditions refer to menstrual blood[21].

4) Rajah - Excess discharge of rajah etc. quotations refers to menstrual blood. It indicates substances which stains the vagina or the yoni is termed as 'rajah'[22].

5) Rakta- Appearance or discharge of rakta, with holding of rakta by vata etc. refers to menstrual blood[23].

6) Pushpa- This specific term is used to represent blood through vaginal passage. In contextual references from classics of Ayurveda, this term has two meaning i.e. antah-pushpa (ovum) and bahi-pushpa (artava). These two denotations are interconnected[24].

**Ritu Chakra (menstrual cycle) –**

Ritu chakra term from Ayurveda texts is similar with menstrual cycle from modern texts. It is known to be under the control of three doshas.

**Rajah srava kala:** It means duration of menstruation. There are variations in opinions in concern with duration of menstruation. Charaka has mentioned five days about menstruation period[25], Vagabhata[26] and Bhavamishra[27] have quoted three days for rajah srava while Harita[28] and Bhela[29] have noted it as seven days.

**Mechanism of artava pravritti** - Classics of Ayurveda have described the cause of artava pravritti that the blood collected for entire month by both the ‘dhamanees’ became minor black colour and identical smell which is brought downwards to yoni by apana type of vata for excretion[30]. Vishvamitra has clarified microscopic appearance of vessels by using the word ‘sukshma kesha’. Predominantly menstruating phase is mechanised under vata. Throughout this phase the vata dosha works by its chala guna and kshepana karma and pitta works by its drava and sara guna.

**Ritu kala (proliferative phase):** Ritu kala is the most chief factor for conception. Acharya have different opinions regarding duration of ritu kala. Classics have explained about ritu kala. Sushruta[31], Vagbhata[32] and Chakrapani[33] have quoted the 12 days duration of ritu kala. Bhavamishra has mentioned 16 days duration of ritu kala[34]. These references reveals that if duration of ritu kala is sixteen days then counting of ritu kala is from 1<sup>st</sup> day of menstruation onset and duration of ritu kala is 12 days then ritu kala is considered from 4<sup>th</sup> day of menstruation onset.

During ritu kala (proliferative phase), kapha dosha acts predominantly. Kapha works by its snigdha (fusing) guna and shleshakara karma, by which it repairs the superficial and intermediate layers of endometrium. As this is ‘upachaya’ which is a constructive work, it is done mainly by kapha. Ritu kala also includes ovulation process in which pitta dosha acts predominantly. Pitta dosha by its ushna (hot) guna and pakti karma comes into role and thus changes rasa dhatu into rakta dhatu. This may help in maturing the graffian follicles and thereafter ovulation takes place.

**Ritu vyatita kala (secretory phase):** This span means the period coming after ritu kala in which there are less chances for conception. Sushruta has discussed that as lotus flower closes following sunset, analogously following ritu kala the yoni of woman gets constricted and does not accept ‘shukra’ into its inner sections. As ritu vyatita kala comes after ritu kala, it is a secretory phase where pitta dosha will be act predominantly[35]. During this phase the cervical mucus turn into more thick and viscid. This whole endocrinology of hypothalamo-pituitary-ovarian-uterine axis is managed by nervine reflex. This nervine reflex may be correlated as the functions of vata dosha according to Ayurveda. Hence regarding all the phases of ritu chakra, vata dosha plays significant role.

**Role of tridosha in ritu chakra –**

1) Rajah Srava Kala – Rajah srava kala is mainly influenced by vata. It is well known thing that movement of any substance from one place to other is the function of vata dosha; hence excretion will be considered as a function of apana type of vata[36].

2) Ritu kala - Ritu kala starts with establishment of ‘navina raja’[37]. Throughout this span, there is high possibility for fertilization. The word ‘nave cha avasthite - raja’ may be regard as proliferation of endometrium followed by ovulation. For regeneration, prithvi (solid substance) mahabhuta and jala (water or liquid substances) mahabhuta are required. ‘Pancabhautik’ constituents of kapha are prithvi and jala. Hence, we can state that in this phase dominance of kapha dosha is confirmed. Dalhana[38] has mentioned that ‘artava’ is saumya in its pri-stage of formation and saumaya dravyas have dominance of kapha. Therefore this phase is dominated by kapha dosha.

3) Ritu vyatita kala - It comes after ritu kala and in this span ‘purana raja’ lies in garbhashaya[39]. Subsequent to ritu kala, artava becomes agneya and increase the basal body temperature by 0.8 to 1.0 F. This increased temperature is thermogenic effect of progesterone hormone. Considering by vision of Ayurveda, it may be interpreted that during ritu vyatita kala, function of dhatvagni is increased. Agni is ‘panchabhautika’ constituent of pitta. Hence it reveals that this phase is controlled by pitta dosha. It can be summarized as follows –

Specific stage	Duration	Condition of reproductive system	Dominant dosha
Rajah kala - menstrual phase	3-5 or 7 days	Menstrual blood loss	Vata
Ritu kala - proliferative phase including	12 or 16 days or whole month	Even without menstruation establishment of ‘navina	Kapha

ovulation		rajah' (new cycles) optimum chances of fertilization	
Ritu vyatita kala - secretory phase	9 or 13 days	Presence of 'purana rajah' and constriction of yoni, less chances of conception, raised body temperature	Pitta

Menstruation according to modern science[40] -

**Etymology:** The word menstruation is derived from a Greek word 'men' – meaning month. Its literal meaning is the periodic discharge of a bloody fluid from the uterus.

**Definition:** It may be defined as a 'periodic and cyclical shedding of progesterational endometrium accompanied by loss of blood'. (Jeffcoate's).

**Synonyms:** Period, Menses, Catamenial flow

**Age of menarche and menopause:** Modern text depicts menarche to occur between 11 – 15 years with a mean of 13 years. The age of menopause is considered between 45 – 53 years of age. In this phase of life there is absence of primordial follicles creating menopausal condition. In this time estrogen level falls while androgen and gonadotropin level are increased. In past few decades, the age of menarche is gradually declining with improvement of nutrition and environmental condition.

**Characteristics of menstrual blood:**

- **Colour:** In the modern text the menstrual flow is said to begin as pink in colour afterwards it turn into dark red.
- **Odour:** In menstrual blood, there is presence of mucous and nutritive substances like glycogen, iron etc, so specific odour is found.
- **Quantity:** Total loss of blood is difficult to estimate but, normally 20 –80 ml approximately, with average of 50 ml is lost every month.
- **Components:** Mainly arterial and partially venous. Un-clotted dark reddish with endometrial tissue bits. Disagreeable smell due to the secretion of sebaceous glands and decomposition of blood elements. All elements of blood except prothrombin and fibrinogen but rich in calcium, mucous from cervix, vaginal discharges etc.

**Duration and interval of menstrual period:** The menstrual cycle is of 28 days, though cycles of 3 to 5 weeks are also within the normal range. Menstruation last for 3 to 7 days, with average of 4 – 5 days.

**Normal menstrual cycle:** The normal menstrual cycle can be divided into two segments -

1) Ovarian cycle and

2) Uterine cycle, based on the organ under examination

Ovarian cycle may be further divided into -

a) Follicular phase and

b) Luteal phase

Uterine cycle is divided into corresponding -

a) Proliferative and

b) Secretory phase

**CONCLUSION**

Knowledge of stri-sharira (anatomy and physiology of female reproductive system) is necessary to find appropriate etio-pathogenesis and treatment of gynaecological disorders. Ayurveda classics have put emphasis on applied aspect of science and hence instead of describing micro structural details, they have described 'sharira' wherever necessary. 'Yoni' suggests the total genital path. 'Avara' of yoni explains various parts of genital path. Modern science explains analogous descriptions regarding vagina that it is a fibro-musculo-membranous sheath communicating the uterine cavity by the outside at the vulva. It includes the excretory channel for the uterine secretion and menstrual blood. The location of 'garbhashaya' is in third avarta of yoni, at the backside the bladder, in between pittashaya and pakvashaya. Sushruta quoted the word 'plamntargata' which can be compared with 'beeja granthi' (ovary). Ritu chakra (menstrual cycle) is under the control of three doshas. Rajah-srava kala (duration of menstruation) varies from three days to seven days. Ayurveda has described the mechanism of artava pravritti precisely. Rajah-kala (menstrual phase) is of 3 to 5 or 7 days in it there is menstrual blood loss and there is dominance of vata dosha. Throughout this phase the vata dosha works by its chala guna and kshepana karma and pitta works by its drava and sara guna. Ritu-kala (proliferative phase including ovulation) is of 12 or 16 days or whole month. In this period even without menstruation establishment of 'navina rajah' (new cycles) takes place and there are optimum chances of fertilization. These functions are similar with kapha dosha; hence it reveals that there is dominance of kapha in this phase. Ritu-vyatita-kala (secretory phase) is of 9 or 13 days. In this span presence of 'purana rajah' and constriction of yoni takes place. In this period there are minimum chances of conception and there is raised body temperature. It concludes that there is pitta dominance in this stage.

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