CRITICAL STUDY OF GARBHA-SHAYYA WITH SPECIAL REFERENCE TO UTERUS

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ABSTRACT

In the Context of Ayurved, Acharya Shusrut explains the Rachna Sharir (Anatomy) of human being and he described many structures in a specific manner of ‘Dristant’. Nirdarshanam is the term used, when the meaning of a word or sentence is supported by an example i.e. Drishtant. He explains the anatomy of garbha-shayya as dristant ‘Rohit-matsya mukham’. To understand the cause and management of infertility and many other female related disorders by the context of Ayurved which are idiopathic till toady. It is needed, first to understand the concept of Dristant, and anatomy of Garbha-shayya by experimental cadaveric study and other related structures according to Ayurved. Drishtant Rohit-matsya-mukham for Garbha-shayya (Uterus) is the reflected image for external as well as internal features of structures of mouth of Rohu Fish. The normal anatomy of Garbha-shayya is not as per Drishtant i.e. Rohit-matsya-mukham than it may be one of the cause for Infertility.

KEYWORDS: Dristant, mouth of Rohu Fish, Garbha-shayya, Garbha-ashaya, Rohit-matsya-mukham, Vandhya (infertility).
INTRODUCTION

Ayurveda is an ancient medical science, having detailed description of subjects dealing with life science. To understand the pathology, medical and surgical management of any disorders it is necessary to first understand anatomy and physiology.

The word *Sharir* is collectively used for *Rachna* (Anatomy) and *Kriya* (Physiology) in the *ayurved* classics. According to Ayurved classics *Rachna sharir* (Anatomy) is best explained by Acharya Sushrut in *Sushrut samhita*. Acharya Sushrut explained many structures in the form of Dristant. *Nirdarshanam* is the term used, when the meaning of a word or sentence is supported by an example i.e. Drishtant.\(^1\)

Ayurved classics explained that the things present in the universe are similarly present in the human body.\(^2\) In the same manner methodology of description of Acharya Sushruta is that he encompasses various aspects regarding anatomical structures and has explain many body structures by comparing it with things present in the universe through the Drishtant.

Acharya Sushrut described the anatomy of *yoni* (female genital tract) by *drishtant Shankh-nabhi akriti* (cocha shell shaped) and anatomy of *Garbha-shayya* (Uterus) by *drishtant Rohit-matsya-mukham* (mouth of Rohu fish) from appearance.\(^3\)

Motherhood is the essence of being a woman. It is a state which is rewarded and worshipped even by the gods. The function of reproduction is the noblest and should be the most reverent of all human power. God has given magnanimous gift, only to the woman. Therefore, he made mother. Woman is considered as one of the greatest human race.

The women itself denotes its importance. The women gives shelter and nutrition to the *Garbha* (embryo) in *garba-ashaya* (Uterus) and the conception is takes place and conceptive material develops from ovum to fetus in the uterus of women.

Acharya Sushruta has described the *Ratu, Kshetra, Ambu* and *Beeja* are the chief factors of conception. *Kshetra* is *Garbha-ashaya* or *Garbha-shayya*.\(^4\)

Being the important organ of reproduction, study related to anatomical and applied aspects of *Garbha-shayya* is necessary, because to find out the idiopathic etiology of many disorders related to uterus like infertility, pcod, etc through Ayurved classics, which is idiopathic till today.
The cadaveric study and clinical study was carried out to obtain observations, to establish correlation between observation of literary study and cadaveric study.

The present study was an attempt to explore available information regarding Garbha-shayya and structure pertaining to it, and its clinical significance as per Drishtanta described in Sushrut Samhita.

MATERIAL AND METHODS
The study was carried out by taking the guidelines from previous research work, which was carried out with a specific methodology.

A) Literature Study
B) Cadaveric Study
C) Study Related to Drishtant
D) Clinical Study

A) Literature Study
To carry out literary part of work, study of the Ayurved Samhitas i.e. Bruhat-trayi (Charak Samhita, Sushrut Samhita and Ashtang Sangraha) was carried out; but as the Sushrut Samhita is said to be the best in Sharir; the main focus of study was on Sushrut Samhita. The study was carried out according to the methodology developed by the previous research worker in the field of Rachana Sharir (Anatomy). Thorough study of the Sushrut Samhita was carried out and baseline thoughts were developed on the basis of this detailed and thorough study.

1. In the study; to achieve scientific information, references from the Bruhat-trayi were considered. But as the Sushrut Samhita is said to be the best in Sharir; the main focus of study was on Sushrut Samhita.

2. If a word has more than one meaning then all meanings of the word are considered and appropriate meaning as per study was selected for correct interpretation.

3. Wherever controversial Shlokas were found, it was checked that whether the Shlokas are Prakshipta or not.

4. The typical methodology of description of Acharyas & sequence of the description was considered.

5. Meaning of Shlokas was not drawn independently, in fact every Shloka was considered with all its references within the Samhita.
6. In brief, scientific meaning is drawn by trying to enter into role of ‘Acharya sushrut’, in the anatomical view of Acharys sushrut for the virtual extraction of the hidden scientific meaning & virtual thinking to interpret the Shlokas.\(^5\)

The study of Sushrut Samhita was carried out as per above described methodology of the research study. The entire Sushrut Samhita was studied using above mentioned methodology for the purpose of the study.

B) Cadaveric Study
Cadaveric study was carried out as per the guidelines of Cunningham’s manual of practical Anatomy in Dept. of Rachna sharir B.S.D.T’s Ayurved college, Wagholi, Pune in the following ways:
1. Embalmed Female cadaver was selected for the cadaveric study.
2. Dissection of the body part i.e. Female pelvis was carried out as per the guidelines of Cunningham’s manual of practical Anatomy.\(^6\)
3. The observations were noted.

C) Study related to Drishtant
The study was carried out in the following manner
1. Comparison was done between Rohu fish i.e. Labeo Rohita and Rohit-matsya described in Sushrut Samhita by Modern and Ayurvedic Literary review respectively.
2. After the confirmation that Rohit-matsya is same as today’s Rohu fish (Labeo Rohita), Rohu was taken for inspection.
3. Inspection of Rohu fish mouth was done to reveal and correlate Garbha-shayya i.e. uterus with mouth of Rohu fish. First the external features were correlated and then coronal section of both uterus and mouth of Rohu fish was taken to compare the internal structure.
4. The observations were noted by the photographs taken during dissecting uterus and Rohu fish mouth in the coronal section for internal structures.

D) Clinical study
Clinical study was carried out in B.S.D.T’s Ayurved college and hospital, Wagholi, Pune to understand the application and clinical significance regarding Garbha-shayya. In clinical study 15 female patients each of Garbhini (ANC) and Vandhya (infertility) women were randomly selected of age group 18 to 45yrs, for the purpose of the case control study, regarding, Asssesemt of Garbha-shayya in Garbhini (ANC 1\(^{st}\) trimester) and Vandhya i.e. infertility patients.
Group 1-Garbhini (A.N.C.1st trimester)

Ultrasonography study of Garbhini was carried out for understand the application of structure pertaining to Garbha-shayya in Garbhini i.e. A.N.C., the study was carried out in the following manner:

a) 15 Garbhini i.e. A.N.C of 1st trimester were selected for U.S.G.

b) Informed consent was taken.

c) Ultrasonography study was carried out regarding the uterine site of gestational sac in A.N.C patients.

d) The observations of ultrasonography study were noted.

e) A.N.C patients were observed clinically and findings were noted in their case record sheet.

Group 2-Vandhya (infertility) Patients

Ultrasonography study of vandhya Patients was carried out for understand the application of structure pertaining to Garbha-shayya in Vandhyatva i.e. Infertility. The study was carried out in the following manner:

(a) 15 female patients of the infertility were selected for U.S.G study.

(b) Informed consent was taken.

(c) Ultrasonography study was carried out regarding the anatomical defect related to the uterus causing infertility.

(d) The observations of ultrasonography study were noted.

(e) Infertility patients were observed clinically and findings were noted in their case record sheet.

RESULTS AND DISCUSSION

OBSERVATIONS

Observation Table No 1 - Comparitive features of Rohit-matsya as described in sushrut samhita and Rohu (Labeo Rohita)

<table>
<thead>
<tr>
<th>Comparative Features</th>
<th>Rohit-matsya</th>
<th>Rohu (Labeo Rohita)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Rohit-matsya</td>
<td>Binomial Name - Labeo Rohita</td>
</tr>
<tr>
<td>Location</td>
<td>tatra nadayo – rohit[7]</td>
<td>In river and ponds</td>
</tr>
<tr>
<td>Identification and</td>
<td>Tatra Rohito- raktangh Krishna-</td>
<td>Upper body with dark scales. Lower body</td>
</tr>
<tr>
<td>Biological Features</td>
<td>pristho matsya. [8]</td>
<td>and belly golden brown, fins that are</td>
</tr>
<tr>
<td></td>
<td>Mukham cha vartulam matam. Sa</td>
<td>bright red. Oval gaping mouth</td>
</tr>
<tr>
<td></td>
<td>rohito. (nighantu ratnkar-part1)</td>
<td>ringed by thick lips.</td>
</tr>
<tr>
<td>Habitat</td>
<td>Shasp-shaival bhojanah[9]</td>
<td>Eats phytoplankton i.e. algae and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>submerged plants and vegetation.</td>
</tr>
</tbody>
</table>
Observation Table No 2 – External Features correlation of Uterus with mouth of *Rohu* fish i.e. *Labeo Rohita*.

<table>
<thead>
<tr>
<th>Features of Uterus- A</th>
<th>Rohit Matsya Features –B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uterus is symmetrical organ</td>
<td>Body symmetrical</td>
</tr>
<tr>
<td>Anterior wall of uterus is flat &amp; posterior wall is convex</td>
<td>Mouth is flat below &amp; convex above</td>
</tr>
<tr>
<td>Cervix with small opening and hollow uterine cavity inside</td>
<td>Mouth small and hollow cavity inside with no teeth on jaws</td>
</tr>
<tr>
<td>Uterus have cervix with anterior &amp; posterior lips differentiated after childbirth</td>
<td>Mouth small with upper &amp; lower lips</td>
</tr>
<tr>
<td>Uterus is also triangular in shape as broad at fundus and narrow at cervix</td>
<td>Mouth is triangular in</td>
</tr>
</tbody>
</table>

Photograph no.1

A -is Cervix of multiparous women.  
B –is mouth of *Rohu* Fish.

Photographical Observation No.2  
Photographical Observation No.3

In the photograph no.2.  
A – Anterior view of uterus.  
B - Anterior view of *Rohu* Fish mouth.

In the photograph no.3  
A – Posterior view of uterus.  
B – Posterior view of *Rohu* Fish.

**Internal Features correlation of Uterus with mouth of *Rohu* i.e. *Labeo Rohita***

The internal structure correlation is explained by the photographs taken in the coronal section of uterus and *Rohu* fish mouth.
Photographic Observation No. 4

In the photograph no. 4

A- Coronal section uterus B- *Rohu* fish mouth internal structure. Comparison indicated by No. 1 to 5.

Table No 3 - Observations of Photograph No. 4

<table>
<thead>
<tr>
<th>A- Coronal section of uterus</th>
<th>No.</th>
<th>B- Coronal section of mouth of <em>Rohu</em> fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uterine cavity</td>
<td>1</td>
<td>Triangular cavity of <em>Rohu</em> mouth.</td>
</tr>
<tr>
<td>Isthmus of uterus</td>
<td>2</td>
<td>Narrow bridge like structure in <em>rohu</em> mouth</td>
</tr>
<tr>
<td>Cervix of uterus showing external and internal os.</td>
<td>3</td>
<td>Two openings are seen at lips of <em>Rohu</em> and at structure connected to narrow bridge</td>
</tr>
<tr>
<td>Cervix in coronal section shows curved shape of cervical lips with serrations.</td>
<td>4</td>
<td>At the lips of <em>Rohu</em> curved shape with serrations are seen.</td>
</tr>
<tr>
<td>Fallopian tubes are the structure attached on both sides of uterus.</td>
<td>5</td>
<td>A structure is attached to triangular cavity on both sides in <em>Rohu</em> fish mouth.</td>
</tr>
</tbody>
</table>

Observations of Clinical Study

The observations were noted from the specially designed Case Record Form and findings of Ultrasonography. The total 30 patients were observed for the study, 15 patients were of A.N.C (Group A) and 15 patients of Infertility (Group B).

Group A (A.N.C)

Table No- 3 ;Gestational Site, By U.S.G wise distribution

<table>
<thead>
<tr>
<th>Gestational Site By U.S.G</th>
<th>No. Of Pt.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper</td>
<td>8</td>
<td>53.33%</td>
</tr>
<tr>
<td>Upper &amp; Middle</td>
<td>7</td>
<td>46.66%</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
Group B Infertility

Table No-4 Findings of U.S.G wise distribution

<table>
<thead>
<tr>
<th>U.S.G Findings</th>
<th>No. of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Septet uterus/vagina</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>Bicornuate Uterus</td>
<td>1</td>
<td>6.67</td>
</tr>
<tr>
<td>Arcuate Uterus</td>
<td>1</td>
<td>6.67</td>
</tr>
<tr>
<td>Uterine/Endometrial polyp</td>
<td>2</td>
<td>13.33</td>
</tr>
<tr>
<td>Endometrial Insufficiency/Hypoplasia</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>Retroverted/Retroflexed Uterus</td>
<td>2</td>
<td>13.33</td>
</tr>
<tr>
<td>Endometriosis</td>
<td>2</td>
<td>13.33</td>
</tr>
<tr>
<td>Incompetent Os</td>
<td>1</td>
<td>6.67</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

In this chapter all the points of literary study, clinical study, cadaveric study were discussed.

It is found in study that Acharya Sushrut described term Yoni for entire female reproductive system. Female reproductive system has external and internal genital organs. The internal organs of genital tract cannot be seen by mere external observation due to its complicated arrangement, so Acharya Sushrut has given the Drishtant of conch shell for Yoni, as internal structure of conch shell cannot be visualized by superficial observation and can be seen only after breaking the conch.\[11\]

Yoni is having three Avarta (fold) that resembles the shape of sankha-nabhi (hollow portion of conch shell with 3 folds). Garbha-shayya i.e. uterus is positioned at the third upper most fold, which is the bed of foetus. It suggests that is the organ of internal female reproductive system.

The anatomical position of Garbha-shayya said to be in between Pitta-ashaya and Pakva-ashaya.\[12\] Here Pitta-ashaya means the small intestine and Pakva-ashaya means rectum. During cadaveric study, it was observed that coils of small intestine rests on uterus above while rectum was seen below the uterus. This explains the normal anatomical site of Garbha-shayya is in between Pitta-ashaya and Pakva-ashaya.

Sushruta also stated that Garbha-shayya is place where the foetus lies. As per this explanation the normal anatomical site of implantation of the embryo is in the uterine cavity.

Aspect of Acharya sushrut regarding Garbha-shayya and Garbh-ashaya

Acharya Sushrut used word Garbha-shayya and Garbh-ashaya precisely for Uterus. He used the word Garbha-shayya in context of anatomical aspect related to uterus i.e. its shape, position and the normal anatomical site for implantation of embryo means uterine cavity.
Acharya Sushrut used the word Garbh-ashaya While explaining other aspects of uterus (excluding anatomical) i.e. physiological, pathological and treatment related to uterine disorders. Acharya Sushrut used the word Garbh-ashaya in samhita in context of:

1. While defining Garbha he used the word Garbh-ashaya as the organ where conception takes place.[13]
2. While defining the physiology of conception, he stated Garbh-ashaya the place of union of shukra (semen) and shonit (ovum).
3. While describing the causes related to Mudha-garbha (malposition of foetus).[14]
4. While describing normal position of foetus at time of delivery is cephalic presentation in uterus.[15]
5. Also during stating the concept of Ashaya, Acharya Sushrut describes one extra Ashaya in females and used the word Garbh-ashaya for it.[16]
6. While explaining the concept of Artav-vaha-strotas, Garbh-ashaya is the word used for the mool-sthana of the Artav-vaha-strotas.[17]
7. For the treatment related to female genital tract.[18]

DISCUSSION RELATED TO DRISHTANT

Nir-darshanam is the term used when the meaning of a word or sentence is supported by an example i.e. by Drishtant. From the literary review we can say that Drishtants are the things which are used to correlate the structures present in human body. As Acharya Sushrut explained the structure of Garbha-shayya with the help of drishtant of Rohit-matsya-mukham.

Acharya Sushrut explains that the normal anatomy of structure Garbh-ashayya which resembles the mouth of Rohit-matsya. Again he specifies that (sansthanam-tatha-rupam) which means appearance, figure and shape, of the structure i.e. Garbha-shayya is the reflected image of the Drishtant i.e. Mukha of Rohit-matsya (mouth of rohu fish).

Discussion related Comparison of Rohit-matsya and Labeo Rohita(observation table no 1)

After studying the classical references related to Rohit-matsya the Labeo Rohita commonly known as Rohu was selected for comparison.

Rohu was collected from Govt. Department of Fisheries Manjari Pune, certifying the species as Labeo Rohita.
The references states that *Rohit-matsya* is found in river water and feeds on grasses and algae, it was compared with Rohu fish natural inhabitant of the riverine system of northern and central India and feeds on phytoplankton preferring algae and submerged plants and vegetation. This shows similarities between the location and habitat of *Rohita-matsya* and *Rohu* fish.

There is also similarity in binomial name of *Rohu* fish i.e. (*Labeo Rohita*) and *Rohit-matsya*. It is self-explanatory by the complete name, Rohit by first word of *Rohit-matsya* and Rohita of *Labeo Rohita*.

Secondly the characteristics of its mouth by word *Labeo*-Greek word used for lip. As one of their most defining features is oval gaping mouth ringed by thick lips. *Rohit-matsya-mukham* is the Drishtant given in Sushruta samhita.

Above discussion is suggestive of that the *Rohit-matsya* described in Sushrut-samhita is *Rohu* i.e. *Labeo-Rohita*.

**External observations related discussion on correlation of Rohu fish mouth with Uterus: (Observation table No.2 and Photographs No 1 to 3)**

1. The mouth of Rohu fish is small having hollow cavity inside, it can be compared with the *Garbha-shayya* i.e. uterus as uterus is having small opening of external os of cervix and the hollow uterine cavity inside.
2. Body of the Rohu fish is symmetrical and also the uterus is the organ which is bilaterally symmetrical in shape.
3. The mouth of Rohu fish is flat below and somewhat convex on the upper side, similarly the anterior wall of uterus is flat and convex at the posterior wall.
4. The mouth of Rohu fish is triangular in shape similarly we see that uterus is also triangular in shape i.e. broad at fundus and narrow at cervix.
5. Mouth of fish is small having somewhat oval shape with fringed upper and lower lips, uterine cervix is the structure which correlates as cervix is having small opening of external os, and anterior and posterior lips differentiated after child birth.

Above discussion is suggestive of that externally *Garbha-shayya* i.e. uterus is the reflected image of Rohu fish mouth i.e. *Rohit-matsya* as explained by Acharya Sushruta.
Internal observations related discussion on correlation of coronal section of Uterus and coronal section mouth of Rohu. (Observation table No.3 and Photograph No.4)

1. The cavity of uterus is triangular in shape in coronal section; similarly the triangular cavity is seen of the mouth of Rohu fish.

2. In the uterus between apex and base, is a slight constriction, known as the isthmus, similarly narrow bridge like structure is seen in the mouth of Rohu fish.

3. Cervix of uterus has external Os at opening of vaginal part and internal Os where connected with uterus, similar shape is seen in coronal section of mouth of Rohu fish opening at the lips and between the narrow bridge like structure.

4. The structure of cervix in coronal section shows curved shape of cervical lips with serrations of epithelium, similar shape and serrations are seen at Rohu fish mouth i.e. at the lips of Rohu.

5. At the fundus of uterus, fallopian tubes are the structure attached which appears as coming out from the cavity of uterus on both sides, in coronal section similar structure is seen coming out on both sides of cavity of mouth of Rohu fish.

From above discussion it suggests that the external as well as internal features of Drishtant, Rohit-matsya-mukham (Rohu fish mouth) are the reflected image of the structure Garbha-shayya i.e. (uterus).

Discussion of Observed Clinical Data

Group A – A.N.C

The study reveals that findings of U.S.G in A.N.C maximum patients’ i.e.53.33% have Gestational sac in upper segment of uterus, and 46.66% have in upper and middle segment. From the study we can say mostly the site of gestation is upper segment of uterus in first trimester.

Group B Infertility

The study reveals that findings of U.S.G in Cases of Infertility suggestive that 20% patients having Septet Uterus or Vagina, 20% of Endometrial Hypoplasia or insufficiency, 13.33% each of Uterine or Endometrial Polyp, Endometriosis and of Retroverted or Retroflexed Uterus and only 6.67% had findings of Bicornuate, Arcuate Uterus or Incompetent Os. This study reveals that Anatomical defects of uterus causes mostly primary infertility.
Further Scope of Study: From the literary study, the properties of Rohit-matsya (Rohu fish) are madhur-rasatmak, kashaya anurasa, guru, vatashamak, mild Rakta-pitta vardhak, ushna, vrushya and mala-stambhak.

In treatment of amenorrhoea (nashta-artava) use of Rohit-matsya (Rohu fish) is given.[19] As Rohit is best among matsya group and vrushya as per Ayurvedic classics, it can be used in the treatment of diseases related to female genital tract that needs further study with the clinical trials.

CONCLUSION
After the discussion on the literary study, Drishtant related study and results of clinical study the conclusions are presented herewith,
1. The structures pertaining to Garbha-shayya is Garbh-ashaya that is the uterus.
2. Garbha-shayya is the word used for uterus while showing its anatomical aspect and Garbh-ashaya while describing other aspects of uterus i.e. physiological, pathological, medical management and surgical management of uterine disorders by Acharya Sushrut.
3. The Rohit-matsya described by Acharya Sushrut is Rohu fish (Labeo Rohita).
4. The Drishtant Rohit-matsya-mukham, for Garbha-shayya (uterus) is the reflected image for external as well as internal features of structure of mouth of Rohu fish.
5. In clinical study of A.N.C patients the normal anatomical site of gestation is in upper segment of uterine cavity but as foetus grows it covers the whole uterus, which suggests that Garbha-shayya is Garbh-ashaya i.e. uterus.
6. The clinical study of Infertility patients suggests that if the anatomical structure of Garbha-shayya is not as per Drishtant i.e. Rohit-matsya-mukham than it may be one of the cause for Infertility.

REFERENCE