



Research Article

A CONCEPTUAL AND CLINICAL STUDY OF APARA (PLACENTA)

Meshram Dnyaneshwar Sudhakar<sup>1\*</sup>, Harode Meena Omprakash<sup>2</sup>, Pawar Kiran Bhikaji<sup>3</sup>, Borse Vilas Pundlikrao<sup>4</sup>, Nehare Ramkrushna Suryabhan<sup>1</sup>

<sup>1</sup>Assistant Professor, Dept. of Rachna Sharir, Government Ayurved College, Osmanabad, Maharashtra India.

<sup>2</sup>Assistant Professor, Dept. of Rachna Sharir, Government Ayurved Collage, Nagpur, Maharashtra India.

<sup>3</sup>Assistant Professor, Dept. Of Kriya Sharir, Government Ayurved College, Osmanabad, Maharashtra India.

<sup>4</sup>Panchakarma Vaidya, Government Ayurved Collage And hospital, Osmanabad, Maharashtra India.

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ABSTRACT

Comparative study of *Sharir* (anatomical and physiological) terms from *Samhita* text with modern scientific terms has become needful today. *Apara* described in *Samhita* text is important structure for *Garbha* (fetus). *Samhita* description says it is formed by obstructed *Artava* (menstrual blood). It lies in relation to the maternal heart and provides nutrition to the developing *Garbha* through *Garbhanabhinadi* (umbilical cord). It sheds off after *Prasuti* (labour). This indicates *Apara* to be the Placenta from modern anatomical term. Its formation described from obstructed *Artava* may be because of resemblance of its maternal surface with blood clots and absence of *Artava* in *Garbhavastha* (pregnancy). *Samhita* description lacks its actual location and anatomical features. It is also called as *Jarayu* indicating different meanings in *Kasyapa Samhita*, *Sushruta Samhita* and *Caraka Samhita*. These facts indicate the need for its literary research. For anatomical study 30 pregnant females were selected randomly and their gestational ultrasonography was taken in third trimester to see the location of *Apara* (placenta) and abnormality. It is found that *Apara* is normally adhered to upper uterine segment. *Apara* received after labor from these selected 30 pregnant females were observed for anatomical features. The parameters noted for weight, diameter, thickness at center, number of cotyledons, attachment of umbilical cord at center or periphery, and abnormality of *Apara*. Observations given in charts and graphs. Lacuna in *Samhita* text regarding anatomical features of *Apara* needs the study of term Placenta.

**KEYWORDS:** Apara, Placenta, Conceptual, Clinical Study.

INTRODUCTION

Expert *Chikitsaka* (Physician) needs detail study of body and body parts.<sup>[1]</sup> *Shashtra adhyana* (Textual Theoretical study) and practical both are essential for expanding the knowledge.<sup>[2]</sup> In *Ayurvedic Samhita* (text book) and their commentaries *Sharir* description of some body parts and organs is given in poetic manner, it is variable in different *Samhita* and also deficit its complete anatomical description which may create confusion. It has created the necessity for study of *Sharir* terms in correlation with modern science.

*Garbhavastha* (fetal span) is important and inseparable part in every individual's life. *Garbha* (fetus) is dependent on the Mother for nutrition

and development during fetal life. Nutrition is provided to the developing fetus by *Apara* (placenta) through *Garbhanabhinadi* (umbilical cord). *Apara* is important organ for *Garbha* (fetus).

*Sushrutacharya* describes its formation from obstructed *Artava* (Menstrual blood).<sup>[3]</sup> Whereas modern science does not advocate formation of any important organ from obstructed menstrual blood. *Charak samhita* describes the location of *Apara* in relation to *Matru hriday* (Heart of the mother) and provides nutrition to fetus.<sup>[4]</sup> *Samhita* references of *Apara* deficits its proper location and anatomical description. *Astanga Sangraha* has described the synonym '*Jarayu*' for *Apara*.<sup>[5]</sup> Description of *Jarayu* in

*Kasyap Samhita* indicate it to be the peritoneum.<sup>[6]</sup> *Sushrut Samhita* indicate it to be *Kala* (membrane).<sup>[7]</sup>

*Charak samhita* indicate it to be the fetal membrane.<sup>[8]</sup> All these descriptions in *Samhita* creates confusion and controversy in study of term *Apara*. This topic has taken for conceptual study of *Apara* as literary research as well as for anatomical and clinical study of *Apara* ultrasonography examination of 30 pregnant females in third trimester was taken for its normal location and any abnormality. *Apara* received after labor from these 30 females were examined for Anatomical features.

### OBJECTIVES

- 1) To study the references of *Apara* from *Ayurvedic Samhita* and correlate it with modern anatomical term.
- 2) To locate the appropriate position of *Apara*.
- 3) Practical observation of *Apara* for its anatomical features.

### MATERIALS AND METHODS

Clinical and practical study of *Apara* is taken by two ways.

- 1) Pregnant female examination
- 2) Observation of *Apara* after labor

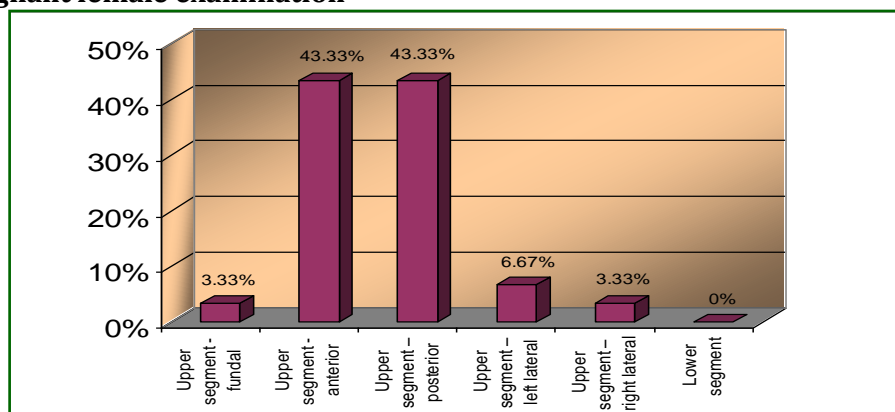
#### Selection of Pregnant female

- 1) Pregnant females from Ayurved College Hospital OPD and IPD were selected randomly.
- 2) 30 pregnant females were selected for study.

#### Pregnant female Examination

- 1) All selected pregnant females were taken for gestational Ultrasonography examination in third trimester to see position/location of *Apara* and deformity of *Apara*

#### 1) Result of Pregnant female examination



Graph 1: Location of *Apara* (placenta) attachment

- 2) Observations were presented in tables and charts

#### Examination of *Apara* after labour

*Apara* obtained from selected 30 pregnant females were examined for anatomical features and abnormality

#### Materials used for *Apara* examination

- 1) Tooth forceps
- 2) Plane forceps
- 3) Scalpel with blade
- 4) Surgical scissor
- 5) Magnifying glass
- 6) Thread
- 7) cap
- 8) mask
- 9)Gloves
- 10) Weighing machine
- 11)Length measuring centimeter scale
- 12) *Apara*.

### RESULT AND DISCUSSION

This study is taken for two purposes

1. Conceptual study of *Apara* by literary research.
2. Clinical and practical study of *Apara*.
3. Literature Review for conceptual study.

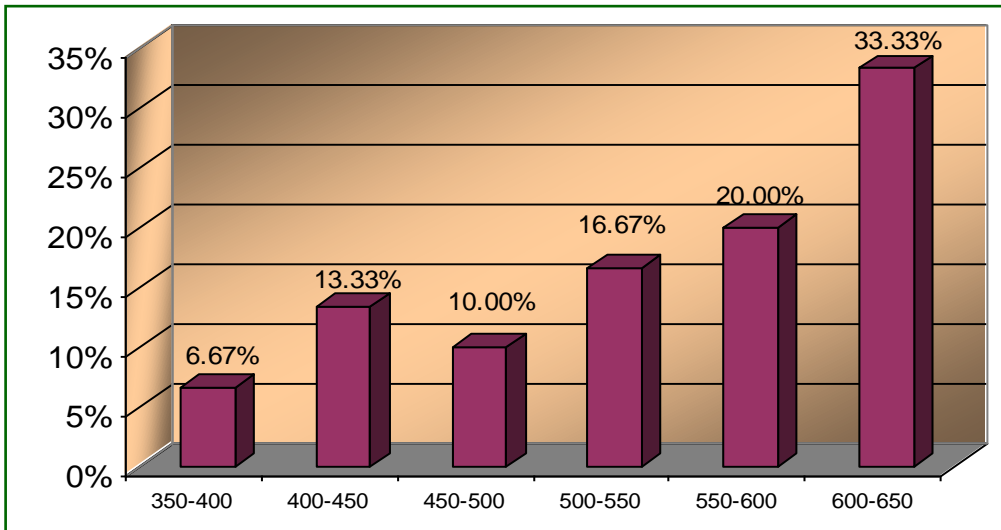
Study of *Apara* references from *Samhita* denotes that it is formed after Garbhadhan, provides nutrition to *Garbha* (fetus) and it shed off after *Prasuti* (labor). Thus the *Apara* term can be correlated with Placenta.<sup>[9]</sup> Location of *Apara* and its anatomical structural description is not clearly mentioned in *Samhita* text. The maternal surface of *Apara* (placenta) resembles the blood clots, this may be the reason why it is described to be formed from obstructed *Artava* (menstrual blood). The obstruction of *Artawavaha srotasa* can be compared with ovum fertilization and formation of corpus luteum which is essential for placenta formation.<sup>[10]</sup>

As fetal membrane is continuous with placenta, and after labor it came out along with placenta, the *Jarayu* term is taken for placenta with fetal membrane in *Samhita* text.

**2) Result of Examination of *Apara* after labor / practical study of *Apara***

*Apara* received after labor of selected 30 females were taken for observation in a tray. It was rounded disc shaped with attachment of *Garbhanabhinadi* at centre of its smooth fetal surface.(figure 1) It is mottled white in color. Fetal membrane removed to expose its maternal surface. (figure 2) It resembles the blood clots, it is irregular and have cotyledons. *Apara* were measured for following parameters and the results noted. (figure3)

Weight of *Apara* (placenta) range: 350 - 650 gms, Mean weight of *Apara*: 520 gm



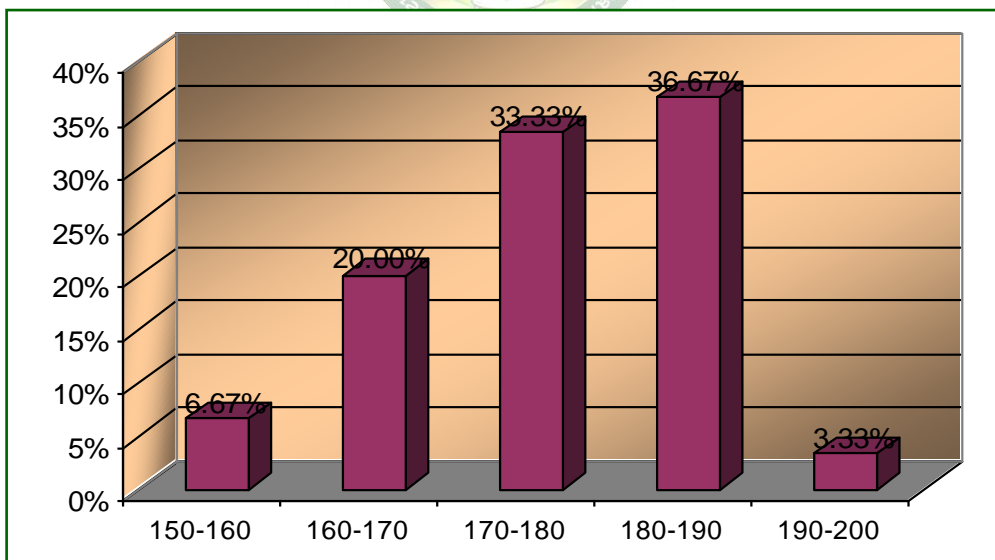
**Graph 2: Showing weight of *Apara***

Diameter of *Apara* (Placenta)

Diameter of *Apara* (placenta) range: 150-200 mm

Mean diameter of *Apara* (Placenta): 172.33 mm i.e. 172 mm

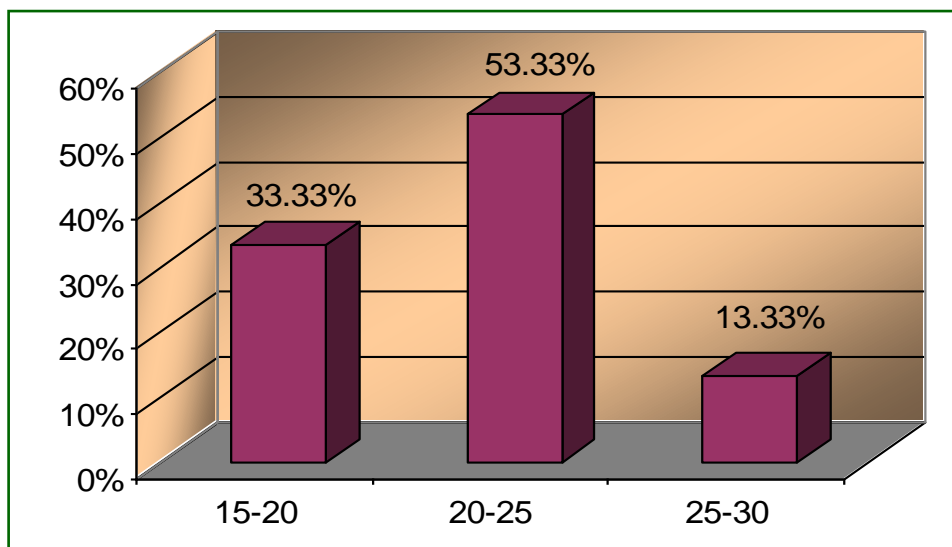
Graph showing diameter of *Apara* (placenta)



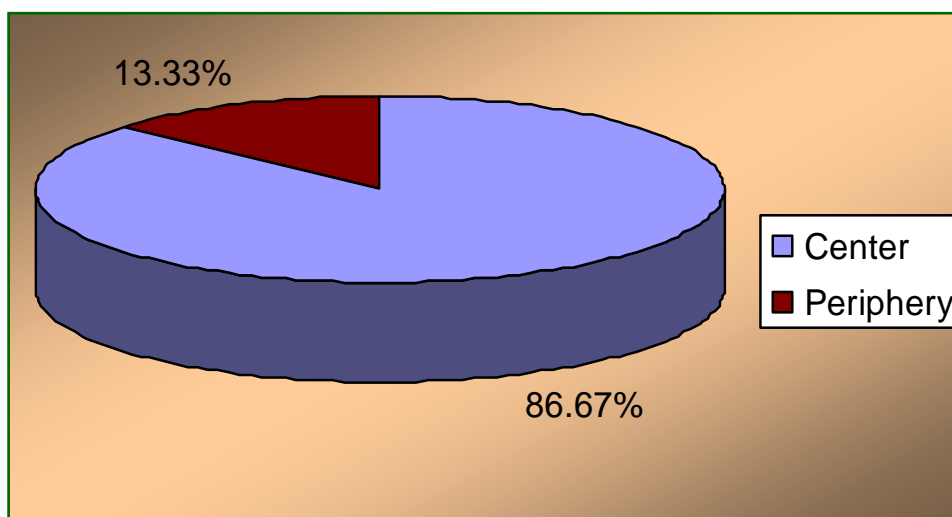
**Graph 3: Thickness of *Apara* at centre**

*Apara* (Placental) thickness at center: Range 15-30 mm

Mean *Apara* (placental) thickness at center: Range 20 mm



Graph 4: Showing thickness of *Apara* at centre



Graph 5: Showing attachment of *Garbhanabhinadi* (Umbilical cord)

Number of cotyledons-

Range of number of cotyledons : 15-20

Placental abnormality- 2 placenta (6.67%) found with placental calcification while 28 placenta (93.33%) found normal

### CONCLUSION

In current literary and clinic anatomical study it was found that,

1. The term *Apara* in *samhita* text is Placenta.
2. *Jarayu* term synonym for *Apara* indicate three meanings-peritoneum, membrane and fetal membrane. This term indicating fetal membrane is taken for both placenta and fetal membrane as both these are expelled together.
3. Description of *Apara* formation from obstructed menstrual blood in *Samhita* text may be because of its resemblance to blood clots and absence of menstruation during pregnancy.
4. Location of *Apara* is not clearly mentioned in Ayurvedic *Samhita* text. It is normally attached to upper uterine segment.
5. Anatomical description of *Apara* is not mentioned in *Samhita* text, it needs to be studied from modern text as Placenta. Mean weight of placenta 520 gm, mean placental diameter 172 mm, mean placental thickness at center 20 mm. It has 15-20 cotyledons on its maternal surface. *Garbhanabhinadi* is normally adhered to centre of *Apara*.
6. In this study 99.33% *Apara* found normal while 6.67 % *Apara* found with placental calcification in small quantity.

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**\*Address for correspondence**

**Dr. Meshram Dnyaneshwar Sudhakar**  
Wagbhat, Quarter No. 7  
Government Ayurved College Campus,  
Madhuban, Tuljapur Road, Osmanabad –  
413501, Maharashtra India.  
Email: [dnyaneshwarmeshram@gmail.com](mailto:dnyaneshwarmeshram@gmail.com)  
Cell: +919420207210, +917775025791





### Study Photographs



**Figure 1: *Apara* (placenta) fetal Surface**



**Figure 2: Jarayu (Fetal membrane) removed to expose maternal surface of *Apara***



**Figure 3: Maternal surface of *Apara* (Placenta) with some placental calcifications**