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Literary Review on *Apara* (Placenta)

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ABSTRACT

Garbha will produce when the man with *Suddha Sukra* with a women having *Suddha Arthava*, *Yoni*, *Garbhshaya*, *Rutukala* then the union of *Sukra* and *Shonita* takes place along with the *Manas* and *Atma*. But its normal development and growth in the intrauterine life till birth is carried out by the *Apara*. *palcenta* is fetomaternal organ which is the primary site of nutrition, gas exchange and excretory function. Improper formation and function of placenta may end up with abortion, IUGR, fetal abnormalities and preterm births. So, in this study an effort has been put forth to make conceptual study covering almost all the aspects of *Apara* as per Ayurveda and modern.

Key words: *Apara*, *Placenta*, *Garbhshaya*, *Rutukala*.

INTRODUCTION

Apara is called as *Jarayu*. *Garbha* obstructs both *Rasa* and *Rakta Vaha Nadi* and *Jarayu* is formed out of *Rakta*. The *Rasa* forms the *Nabhi Nadi*^[1] and gives *Bala* and *Varna* to the fetus.^[2] Placenta is the most important communication or organ of transfer between the mother and fetus. It will nourish, protect and provides the all needs of baby which does not express in the intrauterine life. Due to some placental abnormality and diseases, there is increased rate of fetal and maternal morbidity and mortality. So, it is important to understand the thorough knowledge of placenta.

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Development of Placenta

As per *Acharya Charaka*^[3] the fetus in the intrauterine life does not feels *Kshuda* (hungry), *Pipasa* (thirst). It completely depends on the mother as *Ahara Rasa* flows from the mother's heart to the placenta and from the placenta to umbilical cord and then *Nabhi* (umbilicus) of the fetus which provide nourishment. As per *Acharya Sushruta and Vagbhata*,^[4,5] after conception the openings of *Arthavavaha Srotas* are obstructed due to this obstruction *Arthava* is not seen. This *Arthava* is directed upwards and accumulates in uterine cavity and forms the placenta. This can be correlated with changes in the hypothalamic-pituitary- ovarian axis. The placenta is developed from chorion frondosum as fetal component and decidua basalis as maternal component. When the interstitial implantation is completed on 11th day the trophoblast differentiates into inner cytotrophoblast layer and outer syncytiotrophoblast layer. As cytotrophoblast proliferates newly formed cells migrates into the syncytiotrophoblast and lose their cell membrane forming rapidly growing multinucleated mass. The cytotrophoblast secretes proteolytic enzyme and syncytiotrophoblast are finger like projection allowing the blastocyst to embed into the endometrium. The

syncytiotrophoblast produces HCG hormone which will send the message to corpus luteum to secrete huge amount of progesterone. Due to progesterone the endometrium becomes more vascular and secretory and makes a bed for embryo. Lacunae or spaces begin to form in the syncytiotrophoblast. As the syncytiotrophoblast erodes the endometrium blood vessels and glands, the lacunae become contact with maternal blood and secretion. Isolated lacunae fuses and establish the early uteroplacental circulation. This space become the future intervillous space. From end of the 2nd week the finger like projection cells from cytotrophoblast expands into the syncytiotrophoblast called primary villi, like wise secondary and tertiary villies are formed and expand into the decidua basalis, which connect the chorionic plate with the basal plate. The villies that are connected to the deciduas basalis are called anchoring villi, sides of the stem villi are free within the intervillous space are called nutritive villi. Arterio-capillary-venous system in the mesenchymal core of each villus completed on 21st day. This starts the intraembryonic vascular system. As the growth of embryo proceeds, decidua capsularis becomes thinner at the beginning 6th week and the both villi and lacunar space get obliterated in abembryonic area, converting chorion into chorionic laeve. These chorion frondusum and desidua basalis forms the discrete placenta.^[6]

Placenta formation according to Ayurveda

After the conception the *Arthava Vaha Srotas* gets obstructed



Artava directed upwards which accumulates in uterine cavity and form the *Apara*.

Placenta formation according to modern

After the implantation the syncytiotrophoblast cells of placenta produce HCG hormone, this hormone sends messages to the corpus luteum which was about to die rather than that it produces more amount of progesterone.



The endometrium which was about to shed during menstruation, it will not because the increased level of progesterone the endometrium becomes more vascular and glandular to make well bed for growing fetus.



Due to this the menstruation will stops till birth.

Structure

The placenta is a circular disc with diameter of 15-20 cm and thickness of about 3cm at its center and weight about 500 grams. It consists of two plates. Chorionic and basal plate. The chorionic plate lies internally lined by amniotic membrane and the cord is attached to this plate. Basal plate lies to the maternal aspect. Intervillous space containing the stem villi with their branches and filled with maternal blood.

- Chorionic plate consists from within outward:
 - a) Primitive mesenchymal tissue containing umbilical vessels
 - b) Cytotrophoblast
 - c) Syncytiotrophoblast
- Basal plate consists from outside to inwards:
 - a) Functional endometrium - compact and spongy layer
 - b) Nithabuch's layer
 - c) Cytotrophoblast
 - d) Syncytiotrophoblast
- At places where basal septa project from basal plate into intervillous space but fails to reach the chorionic plate. Ares between the septa are known as cotyledons(lobes).
- Placenta contains 60 stem villi. Each cotyledon consists 3-4 stem villi. The capillary system within the villi is almost 50 km long.

Functions of the Placenta

The main functions of the placenta are, transfer of nutrients and waste product between the mother and fetus.

- Respiratory function - O₂ enters the fetal vessel and CO₂ is excreted in maternal blood by the process of diffusion.
- Nutritive function - nutrients in the form of glucose, amino acids, lipids, water, electrolyte, hormones, minerals from the maternal blood transfer to the fetal circulation.
- Excretion - waste product from the fetus such as urea, uric acid, creatinine, are excreted in maternal blood by simple diffusion
- Protection - by preventing any kind of antigen or infection from entering in fetal circulation. Substances of high molecular weight of more than 500 daltons are held up.
- Endocrine function - secretes the hormone like Oestrogen, HCG, progesterone, HPL.
- Enzymetic function - numerous enzymes are elaborated in the placenta.
- Immunological function - placenta offers immunological protection against rejection.

Abnormalities of the Placenta^[7]

- **Placenta succenturiate:** An extra or accessory or succenturiate lobe at a distance from the main normal placenta and connected to it by membranes containing branches of umbilical veins.
- **Placenta circumvillate:** The fetal surface is central depressed zone and surrounded by a thickened ring. Ring is composed of double fold of amnion and chorion with degenerative deciduas vera and fibrin in between.
- **Placenta marginata:** fibrous ring is present at the margin of the chorionic plate.
- **Placenta membranecea:** placenta not only develops from the chorion frondosum but also from the chorion leave so that the whole ovum is practically covered by the placenta.
- **Placenta bilobate:** Placenta may develop as separate and nearly equally sized discs.

Multilobed placenta may develop having three or more lobes of equal size.

- **Placenta fenestrata:** missing central lobe of the placenta.
- **Placenta accretes, increta, percreta:** placenta penetrates into the uterine wall.

CONCLUSION

Correlation between the *Apara* and Placenta done on the basis of its formation and function. For continuation of pregnancy till birth, to get the healthy fetus and the normal third stage of labor the in-detail study about placenta is essential.

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