



### Conceptual study

## A Conceptual Study of *Upavishtaka* with special reference to Intrauterine Growth Restriction (IUGR)

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#### ABSTRACT:

According to modern science, Intrauterine Growth Restriction(IUGR) is an important cause of fetal and neonatal morbidity and mortality. Its prevalence rate in India is 25-30%. Its proper evaluation and management can result in the favourable condition. Intrauterine Growth Restriction IUGR and Small for Gestational Age (SGA) are commonly used interchangeably. The signs and symptoms of IUGR and *Upavishtaka* are same. In *Ayurveda*, *Upavishtaka* is described under *Garbhavyapadas*. In a pregnant Woman who does not follow *Garbhini Paricharya* may develop *Garbhopadravas* and in her fetus develops complications i.e. *Garbhavyapadas*. These *Garbhavyapadas* are the disorders of *Garbha*/fetus like *Garbhastrava* (Early pregnancy loss), *Garbhapata* (2<sup>nd</sup>-trimester abortion), *Garbhashosha*, *Upavishtaka*, *Nagodara*, *Leenagarbha* (various types of IUGR) and *Mritagarbha* (IUD).

In *Ayurvedic* Literature, there are many natural formulations which are devoid of side effects and offers holistic medicine in the management of *Upavishtaka*. Hence, an attempt is made through this article to review the *Ayurvedic* literature regarding *Upavishtaka* (IUGR) and its management.

**KEY WORDS:** *Upavishtaka*, *Garbhavyapadas*, IUGR.

#### INTRODUCTION:

Pregnancy is an important milestone in women life. *Ayurveda* recommends many life style and dietary regimens to prevent complications and diseases. *Acharya Charaka* and *Vagbhata* have described that due to *mithya ahar vihar* (hot and pungent dravyas), over exertion, stress, malnutrition and not following *Garbhini Paricharya*, women suffer from *Yonigatastrava* which in turn causes *Upavishtaka*. Intrauterine Growth Restriction (IUGR) is defined as birth weight or ponderal index below the 10<sup>th</sup> percentile for that gestational age. The terms Intrauterine Growth Restriction (IUGR) and Small for Gestational Age (SGA) are often used to describe the same problem, although there are subtle differences between the two. SGA is diagnosed as birth weight less than 10% for that particular gestational age, parity

and gender. IUGR is a clinical definition and applied to neonates with clinical evidence of malnutrition. In all over the world, IUGR is observed in about 24% of newborns; approximately 30 million infants suffer from IUGR every year. The burden of IUGR is concentrated mainly in Asia which accounts for nearly 75% of all affected infants. Africa and Latin America account for 20% and 5% cases respectively. The incidence of IUGR with very low birth weight infants is 43%. In developed countries, its overall incidence is about 2-8%. The incidence among the term babies is about 5% and that among the post-term babies is about 15%.

In assessing perinatal outcome, one should know following definitions -

**LBW** – birth weight less than 2500gm irrespective of gestational age – have perinatal mortality rate 5-30 times greater than that of infants whose birth weight are at 50<sup>th</sup> percentile of normal weight.

**VLBW** – infants weight less than or equal to 1500gm – have perinatal mortality rate 70-100 times higher

**Extremely VLBW** – weight less than or equal to 1000gm.

In *Ayurveda*, Intrauterine Growth Restriction can be co-related with *Upavishtaka Garbhavyapada* (Cessation of growth). Timely diagnosis and management of IUGR are one of the major achievements in contemporary obstetrics. If the growth restricted fetus is identified and appropriate management instituted, the perinatal mortality can be reduced.

## METHODOLOGY

### Concept of Upavishtaka –

According to *Acharya Charaka*, after some development and attainment of *saara* (after four-month) by the fetus, if bleeding per vaginum or other types of vaginal discharges occurs due to use of pungent and hot food by the pregnant woman, then her fetus does not grow properly due to these discharges and fetus stays in the uterus for very long time this condition is termed as *Upavishtaka*<sup>1</sup>.

### Etiological Factor According to Ayurved and Modern Science :

In *Ayurveda*, causes of *Upavishtaka* are *Ushna* and *Tikshnaahar*, *Atishrama* (over exertion), *Diwaswap*, *Pushpadarshan*, *Yonigataraktastrava*, *Yonigatastrava*, *Garbhopaghatakarbhavas*<sup>3</sup>.

According to modern science causes of IUGR are as follows,

#### 1. Maternal –

- Constitutional – small women and maternal genetic and racial background
- Maternal nutrition before and during pregnancy - critical substrate requirement for fetal growth is deficient (Glucose, Amino-acids, and oxygen)
- Maternal Diseases – Anaemia, Hypotension, Thrombophilia, Heart disease, Chronic renal disease, Collagen vascular diseases
- Toxins – Alcohol, Smoking, Cocaine, heroin, drugs.

**2. Fetal** – Enough substrate in maternal blood and crosses the placenta but not utilised by the fetus.

- Due to structural anomalies like Cardiovascular or Renal
- Infection – TORCH and malaria
- Due to a chromosomal abnormality, Commonly – Triploidy and Aneuploidy, Trisomies and Turner's syndrome
- Multiple pregnancies - excessive fetal demand
- Mechanical hindrance to growth

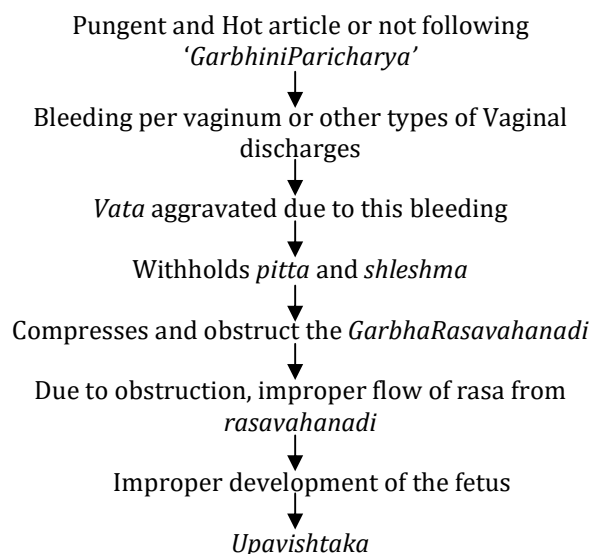
**3. Placental** – Poor uterine blood flow to the placental site for a long time leads to chronic

- placental insufficiency with inadequate substrate transfer.
- Placental pathologies – placenta previa, Abruption, circumvallate, infarction, mosaicism

**4. Unknown -**

### C. Samprapti of Upavishtaka according to Ayurvedic and Modern View

#### I) Samprapti of Upavishtaka (Ayurvedic View):



#### II) Pathophysiology According to Modern Science:

3 main causes

- Reduced availability of nutrition in mother
- Reduced transfer
- Reduced utilisation

Due to this cell size and cell number reduced

- 1) liver glycogen content reduced
- 2) oligohydramnios – as a reduction in blood flow to renal and pulmonary

Reduced renal and pulmonary contribution to amniotic fluid

oligohydramnios

- 3) Intrauterine hypoxia and acidosis.

**D. Correlation of Upavishtaka With IUGR -**

1. Symmetrical IUGR / Type 1

2. Asymmetrical IUGR / Type 2

3. Intermediate IUGR

**Table No. 1 : Types of IUGR according to Modern science**

Symmetrical IUGR	Asymmetrical IUGR	Intermediate IUGR
Symmetric growth restriction begins early in gestation in the hyperplastic stage. i.e. between 16-27 weeks	If insult to the fetus in the later part of pregnancy in the stage of hypertrophy. i.e. after 27 weeks.	Combination of Type 1 and 2. Occurs in the intermediate phase of growth. Affects both hyperplasia and hypertrophy phase.
Cell number reduced in the fetus and overall decreased growth potential.	The cell numbers are normal but cell size is reduced. Due to brain sparing effect, head growth remains normal but abdominal girth slows down.	The decrease in cell No. as well as the size
Causes – Intrauterine infections (TORCH) Chromosomal disorders Congenital malformations	Causes – Uteroplacental insufficiency Chronic hypertension Renal disease Vasculopathies	Causes – Chronic hypertension Lupus nephritis Maternal vascular disease.
Uniformly small	Head larger than abdomen,	-
Ponderal index normal – all parameters are below the 10 <sup>th</sup> percentile for gestational age.	Ponderal index low (i.e >2)	-

In *Ayurvedic* literature, *Acharya Charaka* has mentioned that *Upavishtaka* develops after attainment of *saara* (after four months). As mentioned above Symmetrical IUGR occurs in 16-27 weeks i.e. after four months. So *Upavishtaka* can be co-related with the Symmetrical type of IUGR.

*Acharya Charaka* has not described the exact period of *Nagodara*. He has described *Nagodara* after *Upavishtaka*. So it can be considered that *Nagodara* also develops after the attainment of *sara* in *Garbha*. This can be correlated with Asymmetrical IUGR.

**E. Table No. 2 : Upavishtaka according to various Acharya**

Author	Etiology	Clinical Features	Period of Delivery	Principles of Treatment
<b>Charaka Samhita</b>	Use of hot, pungent articles, bleeding or other vaginal discharges in <i>Sanjatasara-garbha</i>	Absence of fetal growth, prolonged Intra-uterine stay	After considerable delay	<i>Jivaniya, Brimhaniya</i> drugs, <i>ghrita, Aamgarbha (eggs), riding (yaanavahana)</i>
<b>Ashtang Sangraha</b>	Due to use of contra-indicated articles in <i>Sanjatasara-garbha</i> , continuous but less bleeding per vagina causing aggravation of <i>Vata</i> and obstruction to <i>Rasavahanadi</i>	Absence of abdominal growth, quickening of the fetus without a decrease in its size	After Years	Same as like <i>Charaka Samhita</i> , later on, induction of labour.
<b>Ashtang Hridaya</b>	Bleeding in developed fetus ( <i>Sanjatasara-garbha</i> )	Same as <i>Ashtang Sangraha</i>	-	<i>Vataghna</i> and remaining treatment is Same as like <i>Charaka Samhita</i>

**F. DIAGNOSIS –**

Reliable diagnosis depends on accurate dating in early pregnancy  
(i.e. LNMP with regular cycles exact date is imp)

**Prenatal diagnosis-**

- 1. Maternal weight gain** – 3<sup>rd</sup>-trimester weight gain less than expected (100-200 gm/week). Maternal weight gain remains stationary or at times falling < 500 gm in two weeks (less 2kg/month) during the second half of pregnancy.
- 2. Gravidoqram** – A lag of 4cm or more in fundal height and abdominal girth measurement with respect to the duration of pregnancy.
- 3. Uterine fundal height** – Measurement of uterine fundal height is the most common method used to clinically estimate fetal growth. If there is a reduction of symphysis-fundal height by 2cm before 36 weeks or 3cm thereafter or the measurement falls below the 10<sup>th</sup> percentile.
- 4. Abdominal girth** – Measurement of abdominal girth showing stationary or falling values.
- 5. Ultrasonography** – the gold standard for assessing fetal growth is serial ultrasound biometry fetus.
- CRL, FL, BPD, HC/AC RATIO, and calculation of estimated fetal weight.
- BPD (Biparietal Diameter)** – Fetus exhibit normal BPD growth during the first two trimesters of pregnancy followed by the arrest of growth during the last trimester, this pattern is called late flattening profile and are more likely to true IUGR babies.
- HC / AC ratio** – After 32 weeks – HC > AC suggests Asymmetrical IUGR. symmetrical IUGR not surely detected by this ratio.
- FL / AC ratio** – If it is >23.5 suggests asymmetrical IUGR.
- Fetal Ponderal Index** – (FPI) – FPI < 7 suggestive of IUGR.

The index is determined by dividing the estimated fetal weight by the third power of femur

1.length. The normal value is 8.3. A value of 7 or less, strongly suggests fetal malnutrition.

**11. Amniotic fluid volume –**

Amniotic Fluid Index (AFI) between 5 and 10 cm indicates decreased fluid volume. The reduced amniotic fluid volume is too often associated with asymmetrical IUGR.

**12. Placental grading and maturation.****13. Diagnosis of congenital anomalies.****14. Fetal breathing movements.****15. Urine production****16. Fetal echo**

**17. Doppler** – umbilical arterial doppler ultrasound is a powerful predictor.

**Post – natal diagnosis –****1) Ponderal index****A 2) Body fat estimation****B3) Total body water estimation****G. General Management -**

- Bed rest in a left lateral position to increase utero - placental blood flow.
- Nutritional supplementation with high calories and protein diet, hyperalimentation consumption of fish oil, zinc, iron calcium and Vit c and E
- A low dose of aspirin 1-2 mg/kg.
- Maternal oxygen therapy.
- If IUGR is suspected, pregnancy monitored more carefully by clinical examination ultrasonography, fetal kick count, Doppler velocimetry and NST.
- Ultrasonography for the fetal biophysical profile is performed every 2 weeks, NST twice a week.
- If fetal growth is normal or marginally less, pregnancy should be allowed to continue to term.
- When NST non-reactive a CST or biophysical profile performed if they are normal the NST is carried out twice weekly and if they are abnormal the baby should be delivered. Steroids are given 48 hrs prior to the delivery.
- Termination of pregnancy – If cervix favourable – ARM and infusion of oxytocin
- Cervix unfavourable – prostaglandin gel to ripe the cervix followed by ARM and infusion of oxytocin.
- Caesarean section is indicated if immediate delivery is necessary

**AYURVEDIC MANAGEMENT –**

In *Samanyachikitsa* of *Upavishtaka* different *Acharyas* explains different types of *chikitsa* for *Vridhhi* and *Poshana* of *Garbha*. *Acharya Charaka* and *Vagbhata* has described *Jeevaniya*, *Madhura* and *Vatahara dravyas* with *Ghritha* and *Dugdha*. Also mentioned *Aamagarbha sevana* and *Kshobhana Chikitsa (Yaavanahana)*<sup>4</sup>.

*Upavishtaka* arises due to *Garbhaposhanajanya vikriti*. *Ahara-rasa* contains all types of *Saptadhatu Poshaka-ansha*. In *Upavishtaka garbha* does not get proper *ahara-rasa*. Improvement in *Ahara-Vihara* of *Garbhini* will improve *Ahara-rasa utpatti* and nutrition of *Garbha*. For the production of *Prakrita Ahara-rasa*, the *Agni* of *Garbhini* should be *Prakrita*. *Acharya Charaka* has described *Bhautika Ghrita* in the management of *Upavishtaka*, in *Chakrapani teeka Bhautikam* means *Mahapaishachikadi Ghrita*. These *Ghrita* helps to improve the *Agni* of *Garbhini*.

#### ACTION OF DRUGS –

1. **Ashwagandha**<sup>5</sup> – It possesses the *Gunas* as *Vatakaphaghna*, *Brimhaniya*, *Rasayana*, *Deepaniya*, *Vrushya* and *Garbhasthapana* hence it will act as a good nutritive value, helping to increase muscle tone of the uterus also acts on micro-circulation.
2. **Yashtimadhu**<sup>6</sup> – It possesses antioxidant properties and also acts as *Rasayana*, *Balya* and *Garbhaposhaka*. It also helps in improving debility (*Rasadidhatusaarata*).
3. **Gambhari**<sup>7</sup> – It is *Tridoshamaka*, *Balya*, *Brimhaniya*, *Rasayana*, *Deepaniya* and *Pachaniya*. So it helps in *Upavishtaka* caused by *Dhatwagnimandya*. Its *tikta rasa* helps to remove the obstruction and thus the fetus can get maximum *Poshana* and complication of LBW can be prevented.
4. **Shatavari**<sup>8</sup> – It is *Rasayana*, *Balya*, *Pushtida* and *Snigdha gunatmaka*. It possesses antioxidant properties. It also works on *Agnimandya*, hence it is very effective in the treatment of *Upavishtaka*.
5. **LaghmaliniVasant**<sup>9</sup> – It is one of the *Vasanta-kalpa* which is *Madhura*, *Balya*, *Garbhaposhaka* and *Garbha-Vriddhikara*. The *kalpa Laghumalini Vasanta* contains *Shuddha kharpara*, *Marich* with butter. *Kharpar* which acts on mainly *Rasavahini*, *Rasa-dhatwagni*, *Rasotpatti Vikriti*. It also works on *Agnimandya*, hence it is very effective in the treatment of *Upavishtaka* which is caused by *dhatu-kshaya*.

#### DISCUSSION AND CONCLUSION :

*Upavishataka* i.e. IUGR is one of the *Garbhavyapada*. It is a common disorder and carries the increased risk of morbidity and mortality in obstetrics. Diagnosis and identification of IUGR are crucial. Timely diagnosis and management of IUGR are one of the measured achievement in contemporary obstetrics. Proper evaluation and management by Ayurveda and Modern can result in a favourable outcome. Perinatal mortality can be reduced if the growth restricted

fetus is identified timely and appropriate management done.

*Ayurveda* offers many excellent natural remedies which are safe, easily available and rejuvenating. These remedies improve complete health, hence the *Ayurvedic* management should be encouraged so that the safe and alternative treatment for IUGR should be available.

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