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# Intrauterine growth restriction in term pregnancy: Clinical outcome

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## Abstract

The risk of morbidity and mortality depends on basic pathology which mainly caused the growth problem, severity of growth restriction, gestational age of mother -how much earlier it is, and the baby's gestational age at birth. The 10th percentile is commonly used to define "small for gestational age" at all stages of pregnancy. The risk of neonatal mortality at the 10th percentile has a bimodal distribution with higher mortality at 26 and 34 weeks ' of gestation. A detailed history as per questioner was taken with general physical examination and investigations were done as per requirement. The accumulated data was evaluated and statistically analyzed. The pregnancy outcome of 70 cases was studied, which showed that 40(61.43%) cases went into spontaneous labor, labor was induced in19 (28.57%) cases and 11(1.%) cases were taken for elective caesarean section for various indications. The fetal outcome of the study showed that out of 70 cases recruited in the study, 65 (92.86%) were live births, 3(4.28%) were still birth and 2(2.86%) cases had intra uterine fetal demise.

**Keywords:** Intrauterine growth restriction, term pregnancy, clinical outcome

## Introduction

Fetal growth restriction (FGR) is a pathological condition in which a fetus has not achieved his genetic growth potential, regardless of fetal size. Fetal growth restriction represents the second primary cause of perinatal mortality, accounting for 30% of stillbirths, besides determining a higher frequency of premature births and intrapartum asphyxia [1].

FGR newborns are common in the developing countries. A significant global burden of FGR neonates is contributed by the Asian continent. Poor socioeconomic status, poor care of the girl child, medical and obstetric disorders complicating pregnancy contribute to a significant proportion of FGR in developing countries. Of late genetic factors affecting the mother, placental and fetus are increasingly reported [2].

Risk factors of fetal growth restriction may be caused by maternal, placental, or fetal factors. Nearly one-third of FGRs are due to genetic causes, and two-thirds are related to the fetal environment [3].

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growth problem, severity of growth restriction, gestational age of mother- how much earlier it is, and the baby's gestational age at birth. The 10th percentile is commonly used to define "small for gestational age" at all stages of pregnancy. The risk of neonatal mortality at the 10th percentile has a bimodal distribution with higher mortality at 26 and 34 weeks ' of gestation [4]. There is a spurt in mortality and neonatal problems as the fetal weight decreases below the 5th percentile. FGR is a feature commonly seen in approximately 50% of all stillbirths. Also the higher incidence of both short-term and long-term sequalae is higher for growth-restricted babies delivered prematurely. Normal labour will be difficult to tolerate and mostly babies are delivered by caesarean section. After birth these infants have high chances of having problems like hypoglycemia, neonatal sepsis, hypothermia and polycythemia. Also they are more prone to jaundice and meconium aspiration syndrome [5].

Those infants who survive severe FGR have in increased risk of morbidity like long-term developmental delay and neuromotor disabilities such as cerebral palsy.

FGR infants face multiple problems from birth to adolescence. They are more prone to immediate mortality and morbidities, apart from experiencing the long term growth deficits and abnormal neurodevelopment [6]. They are also more likely to have poor school performance and childhood behavioral issues. The health policy of the country must be directed towards prevention of FGR births as they are burden to health infrastructure of the country and add to neonatal mortality. FGR remains a challenge for the neonatologist/obstetricians. Greater integration and coordination among primary, secondary and tertiary health care facilities should be ensured to tackle the problem. To summarize, the successful management of FGR requires a concerted liaison of both medical and socials sectors in the developing world.

## Methodology

### Study design

- A Prospective Observational study of all term pregnant women with FGR admitted to Department of OBG.

### Study setting

- Department of Obstetrics and gynecology

### Inclusion criteria

- All Term Pregnant women with FGR admitted in Department of OBG

### Exclusion criteria

- Preterm (gestation <37 completed weeks)

### Method of collection of data

- Study was conducted for all cases with clinical/Sonological term FGR admitted under department of OBG.
- A detailed history as per questioner was taken with general physical examination and investigations were done as per requirement. The accumulated data was evaluated and statistically analyzed.

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Following investigations were done:

- CBC.
- Urine routine, urine culture and sensitivity.
- RBS.
- LFT.
- RFT.
- LDH, Uric acid.
- Ultrasound with Doppler study.
- TORCH investigations, HPE of placenta, Neonatal autopsy (if needed).

**Sample size**

Sample size was calculated at 95% Confidence Level = 68, by rounding off, the final sample size considered is 70.

**Results**

**Table 1:** Distribution according to age

| Age group | Frequency (n=70) | Percentage |
|---|---|---|
| ≤20 | 20 | 28.6% |
| 21-25 | 30 | 42.9% |
| 26-30 | 17 | 24.3% |
| >30 | 3 | 4.3% |

In our study, the total number of cases were 70. Among which majority of cases that is 30(42.9) cases belonged to age group between 21-25yrs, 20(28.6%) cases belonged to age group ≤ 20yrs.

**Table 2:** Ultrasound Findings

| USG AFI | Frequency (n=70) | Percentage |
|---|---|---|
| Anhydramnios | 4 | 5.7% |
| < 5cm | 14 | 20% |
| 5 to 8cm | 12 | 17.14% |
| > 9cm | 40 | 62.86% |

Amniotic fluid volume of 70 cases was obtained. Anhydramnios was found in 4(5.7%) of cases. AFI<5cm was found in 14(20%) cases, AFI from 5 to 8cm was found in 12(17.14%) cases and AFI >9cm was found in 40(65.86%) cases.

**Table 3:** Doppler Changes

| Umbilical Artery Doppler (S/D ratio) | Frequency(n=70) | Percentage |
|---|---|---|
| <3 | 55 | 69.23% |
| >/=3 | 15 | 23.07% |

- Umbilical Artery Doppler was studied in cases, which showed normal Doppler studies in 55(69.23%) cases and abnormal umbilical artery Doppler was found in 15(23.07%) cases.
- Abnormal Middle cerebral artery Doppler noted in-3 cases (4.32%).
- Cerebro placental Index <1-3 cases (4.32%).

**Table 4:** Pregnancy Outcome

| Onset of labor | Frequency (n=70) | Percentage |
|---|---|---|
| Spontaneous | 40 | 61.43% |
| Induced | 19 | 28.57% |
| Elective LSCS | 11 | 10% |

The pregnancy outcome of 70 cases was studied, which showed that 40(61.43%) cases went into spontaneous labor, labor was induced in19 (28.57%) cases and 11(1.%) cases were taken for elective caesarean section for various indications which are mentioned below.

**Table 5:** Maternal Outcome

| Type of delivery | Frequency(n=70) | Percentage |
|---|---|---|
| NVD | 34 | 48.57% |
| Emergency LSCS | 24 | 34.29% |
| Elective LSCS | 11 | 15.71% |
| Assisted Breech delivery | 1 | 1.43% |

The maternal outcome in our study showed that 48.57% of cases delivered vaginally. 50% of cases under went caesarean section, among which 24(34.29%) cases underwent emergency caesarean delivery and 11(15.71%) cases were taken for elective caesarean section. 1(1.43%) case was delivered by assisted breech delivery.

**Table 6:** Fetal Outcome

| Fetal outcome | Frequency (n=70) | Percentage |
|---|---|---|
| Live Birth | 65 | 92.86% |
| Still Birth | 3 | 4.28% |
| IUFD | 2 | 2.86% |

The fetal outcome of the study showed that out of 70 cases recruited in the study, 65 (92.86%) were live births, 3(4.28%) were still birth and 2(2.86%) cases had intra uterine fetal demise.

## Discussion

The association between pathological fetal-growth restriction and oligohydramnios is mainly because of diminished fetal urine production caused by hypoxia and diminished renal blood flow. However the bio-physical profile done by Chauhan *et al.* [7] in single tons found oligohydramnios in less than 10 percent of pregnancies suspected of growth restriction. In the present study 42.84% FGR cases showed correlation with AFI. Severe oligohydramnios (<5 cm) was observed in 25.7% of cases as opposed to amniotic fluid index between 5 to 8cm in 17.14% of cases.

In high risk pregnancies, umbilical artery velocimetry with increase S/D ratio >3 identifies FGR with sensitivity and specificity 78-85% respectively. Absent or reversed end diastolic flow in umbilical artery of FGR after 30- 32 weeks gestation as it was associated with a very high risk of adverse outcome. In the present study, out of 70 cases of FGR 15 (23.07%) had abnormal umbilical S/D ratio, among which 3 (4.32%) cases also showed abnormal Middle cerebral artery Doppler with cerebro placental Index <1, who were delivered via caesarean section. In other cases, though there was USG evidence of severe oligohydramnios, but there were no compromise of umbilical artery S/D ratio and managed accordingly.

Most of the growth restricted fetuses with impaired placental function withstand poorly the stress of labor so the chances for operative delivery is much more frequent among FGR

fetuses. Marsal *et al*. [8] had 35% of 7022 FGR pregnancies delivered by caesarean section and 3% by vaginal instrumental instruction. The mode of delivery could be decided based on the favorability of the cervix, and the severity of the FGR as judged by the Doppler studies of the fetal vessels and response of the fetus to an Oxytocin challenge test. In present study 43 (61.43%) of our patients underwent spontaneous labor. Labor was induced for various indications in 20 (28.57%) cases as opposed to elective caesarean section in 11 (10%) cases for different indications with highest 5(45.45%) cases being severe oligohydramnios, 2(18.18%) cases of placenta previa, 4 (36.36%) cases of post caesarean section. Among the patients who underwent spontaneous labor and were induced for various reasons 24 (34. 29%) underwent emergency cesarean delivery for various indications of which 16 (66.67%) were for Fetal Distress.

In our study among 70 cases of FGR 65 (92.86%) were live births with 3(4.28%) still births and 2(2.86%) were IUFD, 26 (40%) neonates had morbidity who were admitted to NICU with 17(24.3%) neonatal mortality with Respiratory distress syndrome (41.18%) being most common cause.

In our study among 70 cases of FGR 50% of cases underwent caesarean delivery increasing the maternal morbidity. Where two cases had postpartum hemorrhage which was managed medically. No Maternal Mortality.

## Conclusion

Maternal (74.28%) was the commonest cause followed by Idiopathic (11.43%) and Placental (10%) and Fetal (4.29%) causes. Among Maternal causes Pre Eclampsia was found to be in 50% cases. Most of the patients (50.7%) required caesarean section increasing maternal morbidity.

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