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Original Research Article

Fetomaternal Outcome in Cases with Gestational Diabetes Mellitus

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Conflict of interest: Nil

Abstract

Background: The Prevalence of GDM is increasing around the world due to multiple risk factors. GDM is associated with maternal complications and fetal complications which adversely affects outcomes in both.

Method: This retrospective study was carried out among 50 patients diagnosed with gestational diabetes mellitus admitted & delivered at the department of obstetrics and gynecology, Shri M.P. Shah Govt. Medical College, Jamnagar

Results: In our study, 78% of patients with gestational diabetes mellitus (GDM) underwent cesarean delivery and 22% had a normal vaginal delivery. Prevalence of Hypertension was 20% and polyhydramnios was 44% with GDM. In this study, 46% of neonates developed complications and were admitted to NICU out of which 12% had respiratory distress. Macrosomia and Hyperbilirubinemia were seen in 16% and 16% cases respectively.

Conclusion: GDM is associated with higher maternal and fetal morbidity. Early detection, treatment, monitoring and intervention are essential for short and long-term maternal and fetal complications.

Keywords: Gestational diabetes mellitus (GDM), Lower segment cesarean section (LSCS), Low birth weight, Maternal and Fetal outcome.

Introduction

The purpose of this study to evaluate fetomaternal outcome of Gestational diabetes mellitus.

This is a retrospective study conducted in the department of Obstetrics and Gynecology in Shri M P Shah Medical College, G G Hospital in Jamnagar for period of 1 year among 50 patients included in this study. This study is done by retrospective analysis of the delivery register (labour room) and Hospital medical records.

Maternal outcome of GDM is preeclampsia, polyhydramnios, septicaemia, wound infection and diabetic ketoacidosis. Fetal outcome of GDM is macrosomia, respiratory distress, hypoglycemia, hyperbilirubinemia and congenital anomalies.

Prompt recognition and management of its complications will be certainly improve maternal and fetal outcome which includes antenatal care, health screening and strict follow up. Gestational diabetes mellitus is defined as "carbohydrate/ glucose intolerance of varying degrees of severity with onset or first recognition during pregnancy" irrespective of treatment with diet or insulin.

Women with gestational diabetes are individuals with a genetic or metabolic predisposition towards diabetes who are incapable of compensating for the diabetogenic effects of pregnancy.

Pregnancy is a diabetogenic state. Glucose intolerance and gestational diabetes mellitus result when pancreatic beta-cell function cannot adequately compensate for the degree of insulin resistance in pregnancy. Metabolic plasticity (adaptation) during pregnancy protects the fetus during periods of limited maternal resources.

Usually women of GDM revert back to normal glycemic status following delivery but they are at higher risk for developing Diabetes mellitus in later life. Neonates of GDM mothers are also at high risk for developing obesity and Diabetes mellitus Females diagnosed with GDM are expected to have a higher incidence of PIH, pre-eclampsia,

hypothyroidism, Anaemia and caesarian sections. Fetal complications like low birth weights/very low birth weights, respiratory distress, Macrosomia, NICU admission, hypoglycemia and hyperbilirubinemia are higher among GDM.

Methods

This is a Retrospective study of gestational diabetes patients attending the hospital from February 2024 to February 2025, fifty (50) patients had been registered during the study period who have taken treatment and have delivered at our hospital.

Inclusion criteria

1. Pregnant women diagnosed of gestational diabetes mellitus first time during pregnancy irrespective of gestational age were included.
2. All the booked cases or encountered in emergency were included in study.
3. Patients who could be followed up, investigated and those in which fetaloutcome could be recorded were only included.
4. Patients with GDM who were managed and delivered in our hospital were included in the study.

Exclusion criteria

1. Patients with pregestational DM with (type 1, type 2 DM) were excluded from the study
2. Overt diabetes were excluded from the study
3. All ANC patient with GDM who had taken DAMA /DOR after diagnosis or with loss to follow up

Results

Total 50 patients had been selected for the study and maternal and fetal outcomes were recorded.

Table 1: Mode of Delivery

Outcome	No of cases	Percentage (%)
Mode of Delivery Normal	11	22
Emergency LSCS	23	46
Elective LSCS	16	12

Table 1 -shows that 23 mothers (67.5%) were delivered through LSCS, 16 (22.5%) underwent Elective LSCS and 11 (32.5%) mothers had a normal vaginal delivery.

Table 2: Maternal outcome (n-50)

Outcome	No of cases	Percentage (%)
Preeclampsia	10	20
Post-partum haemorrhage	3	6
Polyhydramnios	22	44
Septicaemia	3	6
Diabetic ketoacidosis	1	2
Wound infection	5	10
Intrauterine fetal death	3	6

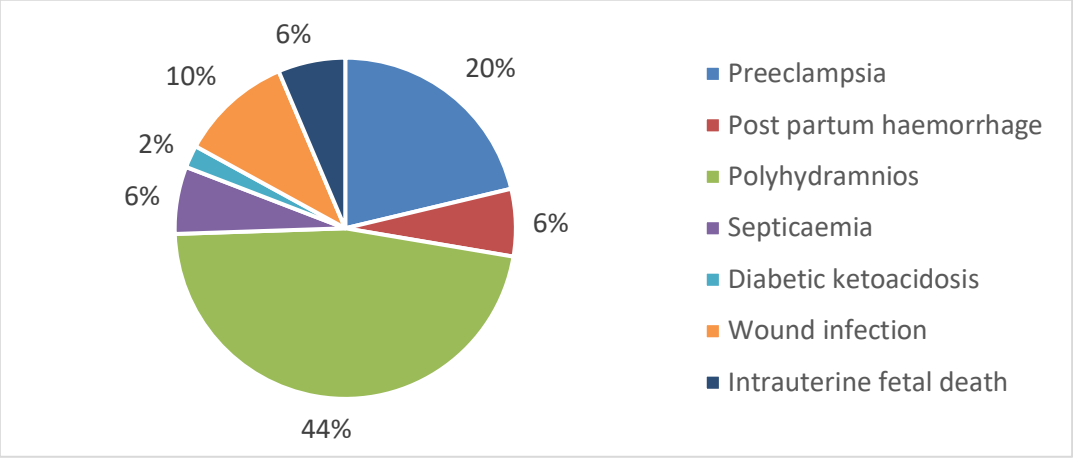

Figure 1:

In the present study, most common association of gestational diabetes mellitus in pregnancy is PIH that is 10 cases developed preeclampsia and 22 cases hadabnormality in amniotic fluid (polyhydramnios), 3 patients developed septicaemia, 5 patients had wound gap after

caesarean section, 3 patients had intra uterine fetal death, 1 patient developed diabetic ketoacidosis.

Table 3: Indications of caesarean section in gestational diabetes mellitus (n=39).

Indications	No.of cases	Percentage (%)
Previous CS(1/2)	10	25%
CPD	6	15%
Fetal Distress	7	17%
PIH	4	10%
Uncontrolled GDM	5	12%
Induction failure	4	10%
PROM	3	7%

In the present study it was observed that most common indications for caesarean section in patients with gestational diabetes mellitus were previous 1 or more CS which includes 10 cases, 6 cases were having cephalopelvic disproportion, 4 cases were having induction failure and 7 cases were of fetal distress, 5 cases had uncontrolled GDM.

Table 4: C cross table between indication of emergency and elective LSCS in GDM)

Indications	Elective LSCS	Emergency LSCS	Total cases
Previous CS (1,2)	10	00	00
CPD	02	04	06
Fetal Distress	00	07	07
PIH	02	02	04
Uncontrolled GDM	05	00	05
Induction failure	00	04	04
PROM	00	03	03

In our study, Previous LSCS and uncontrolled GDM are common indications for elective LSCS in GDM. Fetal distress and failed induction are more common in emergency LSCS.PIH and CPD can be seen in both, but CPD leans toward emergency**.**

Table 5: Fetal outcome (n-50)

Outcome	No of cases	Percentage (%)
Macrosomia	8	16
Respiratory distress syndrome	6	12
Hypoglycemia	10	20
Hyperbilirubinemia	8	16
Congenital anomalies	4	8
NICU admision	23	46
Perinatal mortality	6	12

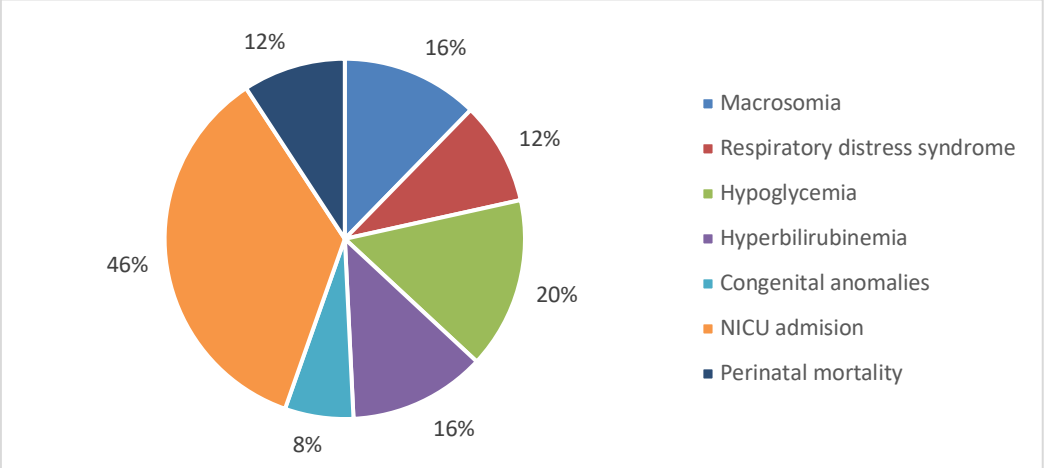

Figure 2:

Table 5 shows that out of 50 patients, in our study, macrosomia was seen in 8 cases, hypoglycemia in 10 cases, perinatal mortality was observed in 6 cases of gestational diabetes mellitus. Respiratory

distress was present in 6 babies who required supplemental oxygen or positive pressure ventilation, 23neonates were required NICU management.

Table 6: Birth weight distribution in GDM patients (N=50)

Birth weight range	Normal delivery (11)	LSCS(39)
2.0 kg - 3.0 kg	02	03
3.0 kg - 3.5 kg	08	28
3.5 kg - 4 kg	01	05
> 4 kg	00	03

Table 6, shows that majority of babies weighed between 3.0–3.5 kg, with 8 delivered vaginally and 28 by LSCS. A smaller proportion of neonates had birth weights between 2.0–3.0 kg (2 normal deliveries and 8 LSCS). Higher birth weights were also noted, with 1 baby between 3.5–4.0 kg delivered vaginally and 5 by LSCS, while 3 babies weighing more than 4 kg were delivered by LSCS. Thus, the incidence of macrosomia (>4 kg) was confined to the LSCS group, highlighting the increased likelihood of operative delivery with increasing birth weight in GDM pregnancies.

Discussion

In this study clinical characteristics, complications/association, maternal and fetal outcomes have been described in 50 patients with gestational diabetes mellitus (GDM). Gestational diabetes identifies patients who are at high risk for developing diabetes in later life.

The rate of LSCS was higher in patients with GDM, which was 46% in our study. In studies by Bhat et al [7] and Shreelakshmi, et al [5] LSCS reported to be 40% and 33% respectively. We found a significant association of GDM with PIH, pre-eclampsia and polyhydramnios. In studies done by Madhuri CH et al [13] and Boriboonhirunsarn D et al [14] also reported a similar correlation. We found a significant association of GDM with PIH, pre-eclampsia and polyhydramnios.

Most commom complications observed were preeclampsia, uteroplacental insufficiency, polyhydramnios, postpartum hemorrhage, septicemia sudden intrauterine fetal death. In the present study incidence of polyhydramnios was 44% in cases of gestational diabetes mellitus and it was comparable with the study by Jindal et al in which 44% women with GDM had polyhydramnios. Women with GDM are at increased risk both for delivering an excessively grown infant and for having that delivery complicated by macrosomia and shoulder dystocia. When shoulder dystocia occurs, infants of mothers with diabetes are more likely to suffer brachial plexus injury than infants of nondiabetic women.

Respiratory distress, Macrosomia and Hyperbilirubinemia were other complications in Neonate .Present study noted six perinatal mortality. In our study Macrosomia was noted in16% neonates, hyperbilirubinemia was present in 16% neonates, the study was comparable to the observations of Wahi et al and Bener et al where macrosomia was seen in 16.2%, and 10.3% respectively and in this study 6% IUD were noted compared to 6% in Nigam et al.

In our study, analysis of birth weight distribution among neonates of mothers with GDM revealed a clear trend toward higher birth weights being associated with operative delivery.

Conclusion

Gestational diabetes is associated with PIH, pre-eclampsia, polyhydramnios and a higher incidence of LSCS. New born are associated with low birth weights, respiratory distress, hypoglycaemia, macrosomia, and hyperbilirubinemia and NICU admission. Incidence and prevalence of any disease are the basis for prevention. GDM should be evaluated at a larger sample size and multicentre level in Gujarat state. Regular antenatal visits with proper education, routine screening and optimal treatment will reduce maternal complications and perinatal morbidity and mortality state study. Rate of caesarean sections was higher in the patients were gestational diabetes mellitus. Neonates born to gestational diabetes mellitus mothers had increased rate of macrosomia and metabolic complications which can lead to increase in perinatal morbidity and mortality rates. But immediate intensive care after birth lead to reduced neonatal mortality. Educating patients about regular antenatal care and proper screening of blood glucose levels in each trimester is important measures to reduce maternal and perinatal morbidity and mortality related to gestational diabetes mellitus.

The present study highlights that gestational diabetes mellitus is associated with a higher incidence of increased birth weight, with the majority of neonates weighing >3.0 kg. A strong correlation was observed between rising birth weight and need for cesarean delivery, with all cases of macrosomia managed operatively.

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majority of neonates weighing ≥3.0 kg. A strong correlation was observed between rising birth weight and the need for cesarean delivery, with all cases of macrosomia managed operatively.

Limitations:

One key limitation of this research study on fetomaternal outcomes in 50 cases with gestational diabetes mellitus (GDM) is the relatively small sample size, which may not adequately represent the broader population and can limit the generalizability of the findings.

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