



GESTATIONAL DIABETES MELLITUS: MATERNAL AND PERINATAL OUTCOME IN A TERTIARY CARE HOSPITAL

Obstetrics & Gynaecology

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ABSTRACT

Gestational diabetes mellitus (GDM) is defined as any amount of carbohydrate intolerance first diagnosed in pregnancy. GDM may be associated with adverse maternal and perinatal outcome. This study assessed the outcome of GDM. Shortly after delivery, glucose homeostasis generally restored to normal, but women with GDM are at high risk of developing type 2 diabetes (T2DM). Meanwhile, progressively more data emerge that show that the risk of adverse perinatal outcomes is also associated with degrees of hyperglycaemia. **Aim:** The aim of the study was to determine the maternal and perinatal outcome in GDM Cases. **Materials And Methods:** The current study is a retrospective analysis of 100 women diagnosed with GDM who got antenatal care and delivered in ASRAM hospital in 12 months period of time women (October 2022 to October 2023). Diagnosis of GDM was made as per DIPSI guidelines. Other Medical comorbidities were noted. All the women were followed up till delivery and the complications were recorded. The baseline characteristics (age, body mass index, parity, mode and time of delivery) were noted in all cases. Total 100 patients met the criteria for GDM, when all the antenatal women who were screened for GDM in the 12 months period. GDM patients were started on diet following which insulin or oral hypoglycemic agents were given if required. Maternal and perinatal outcome was noted. **Results:** Out of 100 GDM pt 16% managed on MNT, 12% received Tab. Metformin, 72% women received insulin. The glucose values were within the recommended range in 86% of the women. 14 of them had preterm delivery. 48% percent of the women required caesarean section. 28 required admission to the Neonatal Intensive Care Unit, and 20 had macrosomic baby. New-born babies whose mothers were GDM optimally treated had less complications. **Conclusion:** Adequate treatment of GDM on diet, oral hypo glycaemic agents, or insulin to achieve euglycemia can achieve near-normal maternal and neonatal outcome. The majority of women required insulin for treatment and optimal control of blood glucose resulted in lower neonatal complications.

KEYWORDS

INTRODUCTION:

Gestational diabetes mellitus (GDM) is defined as carbohydrate intolerance of variable severity with onset or first recognition during pregnancy. Pregnancy is itself a diabetogenic state. 1. Indian population falls in the high-risk ethnic group for diabetes the recent data on prevalence of GDM in India is 16.55% by WHO criteria of 2hr blood glucose level of 140mg/dl. 2. There are controversies about screening, diagnostic tools, and glucose level threshold use as different organizations use different criteria. 3. GDM is associated with an increased risk of complications for both the mother and the child. The rate of preeclampsia and caesarean section is increased in the mother and the risk of macrosomia is increased in the new born. 4. The benefit of blood glucose control during pregnancy has primarily been noted in the reduction of certain neonatal complications such as macrosomic babies, hyperbilirubinemia, respiratory distress syndrome, shoulder dystocia. 5. Our hospital serves underprivileged patients and challenges to treatment exist here. This study was undertaken to study the burden of comorbidities and the outcome of GDM. Most convincing evidence of adverse pregnancy outcome in gestational diabetes was provided by hyperglycemia and adverse pregnancy outcome (HAPO)6. In India, Seshiah et al... performed a community-based study on the prevalence of GDM in South India and came up with Indian guidelines for GDM which are commonly used in Indian condition. According to this study Medical nutrition therapy is offered to GDM cases first to maintain Fasting BSL <90 mg/dl and post meal glucose <120 mg/dl. If MNT fails to achieve control i.e., FPG ~ 90mg/dl and Post meal glucose ~ 120 mg/dl, insulin may be initiated 7.

MATERIALS AND METHODS

The current study is a retrospective analysis of 100 women diagnosed with GDM who got antenatal care and delivered in ASRAM hospital in 12 months period of time women (October 2022 to October 2023). Diagnosis of GDM was made as per DIPSI guidelines. It was a retrospective study of 100 Antenatal patients screened, diagnosed as GDM and were managed and delivered in a tertiary care center. Baseline characteristic of women including age, body mass index (BMI), and parity, mode and time of delivery were taken. GDM patients were started on diet initially, later insulin or oral hypoglycemic agents were given if required. Maternal and perinatal outcome was noted in all women. Initially, patients were started on diabetic diet with some physical exercises. Diet was started by a

dietician. If Blood sugar levels were not controlled on diabetic diet, then women were either started on oral hypoglycemic agent or insulin. GDM was considered to be optimally controlled if the fasting glucose (FBS) was <95 mg/dl and 2nd h postprandial glucose (PPBS) was <120 mg/dl. All the women were followed up till delivery and the maternal and fetal outcomes were recorded. The women received regular antenatal care. Any antenatal complications were noted and treated, particularly urinary tract infection (UTI), candidiasis, preeclampsia, hypothyroidism. Shoulder dystocia was defined as a vaginal cephalic delivery that requires additional obstetric maneuvers to deliver the fetus after the head has delivered, and gentle traction has failed (8). Macrosomia was defined as birth weight >4 kg. Neonatal hypoglycemia was defined as plasma glucose level <45 mg/dl by point of care glucose testing later confirmed by laboratory testing 9. As a protocol, all patients with GDM on insulin were induced at 38 weeks, and those controlled on diet were induced at 39-week period of gestation if not in labour before this period. The study was approved by the Institute ethics committee, and a written informed consent was obtained from the women. Maternal complications during pregnancy and during delivery were recorded. The neonatal complications were recorded.

Inclusion Criteria

All patients attending the antenatal OPD who were diagnosed as GDM from October 2022 to October 2023 and got delivered at Alluri Sitarama Raju Academy of Medical Sciences and general hospital, Eluru.

Exclusion Criteria:

- All pregnant patients with
- 1. History of GDM in previous pregnancy.
- 2. Known case of diabetes mellitus/family history of diabetes mellitus
- 3. History of macrosomic baby.

OBSERVATIONS AND RESULTS:

Out of a total of all the women who were screened For GDM, 100 women developed GDM. A total of 16 (16%) were controlled on diet, whereas 72 (72%) required insulin and 12 (12%) were treated with oral hypo glycaemic agent (metformin).

Table 1: Treatment Given For GDM Cases

No of patients (%)	
Diet	16(16%)
Insulin	72(72%)
Metformin	12(12%)

Table:2 Maternal Complications In GDM Patients

COMPLICATIONS	Percentages
UTI	32%(32)
Gestational hypertension	38%(38)
Preeclampsia	20%(20)
Polyhydramnios	35%(35)
Infections	26%(26)
Postpartum hemorrhage	20%(20)

Table: 3 Mode Of Delivery In GDM Patients

Mode of delivery	Percentages
Preterm delivery	
– Spontaneous	8%(8)
- Induced	6%(6)
Normal vaginal delivery	
– Spontaneous	24%(24)
-Induced	14%(14)
Cesarean delivery	48%(48)

Table : 4 Neonatal Complications In Newborn Of GDM Mother

Complications	Percentages
1.Macrosomia	20%(20)
2.Neonatal hypoglycemia	26%(26)
3.Respiratory distress	3%(3)
4.NICU admission	20%(20)
5.Hyperbilirubinemia	24%(24)
6.Congenital anomalies	8%(8)

DISCUSSION

The main aim was to compare maternal and fetal outcomes in cases diagnosed as Gestational diabetes mellitus by DIPSI. Gestational diabetes mellitus (GDM) is common problem in pregnancy. However, controversies exist regarding adverse effects of GDM due to the use of different criteria used by different studies and various confounding factors in these studies.

Pregnancy Induced Hypertension

In the study, be Saxena et al., the incidence of PIH was 40% 11 . According to Wahi et al. in Jammu, India it was 6.45% (12). Xiong et al. reported mothers with GDM were at increased risk of presenting with pre-eclampsia as they have similar risk profile¹³ . In the present study, 46 % (38%) had gestational hypertension and 20 % preeclampsia). patients had pregnancy complicated by both GDM and PIH. No statistically significant difference was seen between both). Thus, there is an association between PIH and GDM and early diagnosis and initiation of treatment should be done to improve the outcome.

Polyhydramnios was noted in 35 (35%) patients. **Preterm delivery**In a study by Mahalakshmi et al., 19% were preterm live birth. 14 Saxena et al. reported a 12% incidence of preterm babies 12 In the present study, Preterm delivery was seen in 14%. Preterm births in present study were attributed to premature preterm rupture of membranes, preterm labour and early induction in cases of severe preeclampsia. No pregnancy was continued till post dates as chances of IUFD are increased.

Mode Of Termination

According to Kale et al., the incidence of LSCS in patients with GDM was found to be 60% 15 . According to Saxena et al., caesarean was done in 42% cases (11). Wahi et al. reported 22.58% incidence of caesarean (12). Cassey et al. reported caesarean section rates of 30% in women with GDM. 16 A study in Denmark by Jensen et al., and in Sweden by Aberg et al. also found an increased rate of caesarean section in patients with GDM. 17,18.

In the present study, 48% patients of underwent LSCS. 52 % delivered vaginally. Difference was not statistically significant (p=0.21).

Macrosomia:

In study by Cypriak et al., history of big baby (macrosomia) was present in 11% of patients (19). Najafian et al. found incidence of macrosomia in 9% cases (20). Balaji et al. found incidence of macrosomia in India as 9.9% (21). In present study, macrosomia was

seen in 20% of baby. Difference was not statistically significant. Gestational diabetes, maternal obesity (BMI), maternal age and positive history of previous macrosomia were the major risk factors for macrosomia which were compared with the normal weight infant groups. Fetal macrosomia is a common adverse infant outcome of GDM if unrecognized and untreated in time. For the infant, macrosomia increases the risk of shoulder dystocia, postpartum haemorrhage and genital injury.

NEONATAL COMPLICATION

Mitanchez in literature review found there was limited data from which to report on the prevalence of respiratory distress in infants born to mothers with GDM. 22

In present study 3 cases had respiratory distress syndrome. Malak et al. noted the incidence of neonatal intensive care admission was 4.9%. 23 In our study 20% had NICU admission. Mitanchez et al. 22 observed that untreated moderate or severe GDM increased the risk of fetal and neonatal complications. However, the risk of neonatal complication and macrosomia was minimal with adequate treatment. They found a relationship between maternal blood glucose levels and increased birth weight. Treatment of GDM reduces the risk of macrosomia and adverse neonatal outcome.

CONCLUSION:

GDM is a window of opportunity for prevention of diabetes in future life but this opportunity provided by GDM can be utilized only if optimal medical and obstetric care is provided to the antenatal patient with GDM. Optimal management of GDM remains a challenge for the obstetricians and endocrinologists. There is a higher prevalence of GDM in India which varies from area to area and socioeconomic status. Adequate treatment of GDM on diet, oral hypoglycemic agents, or insulin to achieve euglycemia can achieve near-normal maternal and neonatal outcome. Although birth weight and neonatal hypoglycemia remain higher in GDM patients.

LIMITATIONS

A limit of our study is the retrospective nature of the analysis and the lack of data on maternal weight gain during pregnancy and lack of data on the ponderal index of the newborn. Lack of in- house endocrinologist for consultation at our institute.

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