AIMS AND OBJECTIVES
The present study was carried out with the following aims and objectives:

1. To study the incidence of abnormal glucose tolerance test in pregnant women.
2. To find out the correlation between abnormal GTT and PIH.
3. To study the mode of delivery in cases of abnormal glucose tolerance test and incidence of caesarean section.
4. To study its correlation with intrapartum complications.
5. To study the incidence of perinatal mortality and morbidity in the study group (Abnormal GTT) and control group.
MATERIAL AND METHODS
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This is a comparative study of evaluation of neonatal complications in infants of mothers having abnormal glucose tolerance and mothers having normal glucose tolerance during third trimester of pregnancy.

Study was carried out over antenatal mothers in antenatal period attending the department of Obstetrics and Gynaecology, M.L.B. Medical College, Jhansi and infants born to these mothers. The study was conducted in 85 patients (Antenatal mothers) in the department of Obstetrics and Gynaecology, M.L.B. Medical College, Hospital, Jhansi during the year 1994-95.

Antenatal mothers were screened on the basis of certain factors present in history and clinical examination i.e. obesity, age, family history of diabetes, previous history of unexplained perinatal death, previous history of infant born with congenital malformations, polyhydroamnios, hypertension, proteinuria and moniliasis.

These mothers underwent detailed medical history and thorough clinical examination including obstetrical examination.

Mothers with established diabetes were excluded from the study.
METHODOLOGY

Mothers were subjected to 100 gm glucose 3 hours glucose tolerance test, at 30±4 weeks gestation, then at weekly interval, up to one week after delivery.

Criteria for abnormal glucose tolerance test (GTT)

On the basis of 3 hour GTT, mothers having abnormal glucose tolerance were grouped into three categories.

I. Gestational Diabetes

On the basis of O'Sullivan criteria gestational diabetes is diagnosed, if two or more values are abnormal.

O'Sullivan Criteria:

- Fasting glucose - 105 mg/dl
- At one hour - 190 mg/dl
- At two hour - 165 mg/dl
- At three hour - 145 mg/dl.

In our study fasting glucose testing was omitted because it was usually seen normal in previous studies.

II. Impaired Gestational Glucose Tolerance

If two hour plasma glucose levels lies between 140 to 164 mg/dl, this category is defined as impaired gestational glucose tolerance (IGGT).

III. Isolated Abnormalities of blood glucose

If any of the plasma glucose values exceeded the O'Sullivan criteria at the appropriate time (IABG).
Those mothers who showed abnormal test were given suitable dietary advice and if necessary were kept on insulin. Plasma glucose values were estimated every week, so as to keep post prandial plasma glucose value below 120 mg/dl.

**Newborn**

Newborns of these mothers were subjected to a thorough clinical examination and investigations:
- Weight of the baby at the time of birth.
- Gestation of baby.
- Any congenital anomaly, if present.
- Any clinical evidence of respiratory distress syndrome.
- Any clinical evidence of hypocalcemia.
- Hyperbilirubinemia — all the common causes of pathological jaundice were excluded.

**Weight of baby**

Weight of newborn was taken by electronic weighing machine by Lectomedrik. It has got accuracy upto 10 gms weight of the baby was plotted against intrauterine growth charts and babies having birth weight more than 90th percentile for gestational age were termed as macrosomic babies.

**Gestational age**

Gestational age of baby was estimated by using Dubowitz's criteria. Dubowitz has derived a score based on: 
a. External characteristics.

b. Neurological characteristics: This score system is convertible into a graph.

**Investigations of Newborn**

For the purpose of investigations blood samples of newborn were collected by heel prick method. Investigations included:


b. Serum bilirubin estimation (if clinical evidence of hyperbilirubinemia present).

**Plasma glucose estimation**

Plasma glucose levels in mothers and newborns were estimated by Hemoglukotest 20-800 R. Strip using glucometer named Reflolux-S supplied by Boehringer Mannheim.

**Principle**

Test is based on glucose oxidase/peroxidase reaction. Hemoglukotest strips react specifically to glucose.

Test area consists of two test zones with different sensitivity to glucose. The lower test zone gives (clearly distinguishable) colour in the range 20-120 mg/dl, and upper test zone in the range of 120-800 mg/dl).

Exact values are determined with the help of Reflolux-S glucometer.
Test strips were protected from humidity and direct sunlight.

Reflolux-S

It is the instrument used for plasma glucose measurement.

Principle

The colour intensity of the reacted strip area is measured by reflectance photometry in Reflolux-A. The instrument is equipped with double beam optical system, capable of evaluating both zones of the test area simultaneously.

Technical Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Reflolux-S</th>
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</thead>
<tbody>
<tr>
<td>Ranges of measurement</td>
<td>10-500 mg/dl</td>
</tr>
<tr>
<td>Wave length</td>
<td>950 nm (infra red)</td>
</tr>
<tr>
<td>Power supply</td>
<td>6 volt battery</td>
</tr>
<tr>
<td>Storage capacity</td>
<td>Maximum 20 blood glucose value.</td>
</tr>
</tbody>
</table>

Test Procedure

- Finger was pricked with disposable needle after cleaning the test area.
- Test area of hemoglukotest strip 20-800 R was covered with one large drop of blood. Timer pressed immediately.
- At the long buzzer at 60 sec. blood is wiped off with clean dry cotton from the test area of haemoglukotest strip at 20-800 R.
- At the 80 second, glukostrip was inserted into the Reflolux-3 glucometer facing the test area towards the on off button.
- After 120 seconds, the display automatically shows exact plasma glucose values.

**Serum bilirubin measurement**

Mitr's bilirubin reagent is used for determination of total and direct serum bilirubin.

**Procedure**

Three test tubes labelled as B-blank, D-direct and T-total taken.

<table>
<thead>
<tr>
<th>Reagent</th>
<th>For 3 ml Cuvette (m)</th>
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<tbody>
<tr>
<td></td>
<td>B</td>
</tr>
<tr>
<td>1. Diazo blank D reagent</td>
<td>2.0</td>
</tr>
<tr>
<td>2. Diazo working reagent</td>
<td>-</td>
</tr>
<tr>
<td>3. Serum</td>
<td>0.1</td>
</tr>
<tr>
<td>4. Reagent C</td>
<td>1.0</td>
</tr>
<tr>
<td>5. Distilled water</td>
<td>-</td>
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Contents of each tube were mixed thoroughly after each addition.

Optical densities of contents of all the three tubes were measured at 540 ± 15 nm.

**Calculation**

Total Bilirubin = \[
\text{O.D. of T - O.D. of B} \quad \div \quad \text{O.D. of Standard} \quad \times \quad 5.0 \text{ mg%}
\]

Direct bilirubin = \[
\text{O.D. OF D - O.D. of B} \quad \div \quad \text{O.D. of Standard} \quad \times \quad 5.0 \text{ mg%}
\]