SCREENING FOR GESTATIONAL DIABETES MELLITUS WITH 1 HOUR 50G ORAL GLUCOSE CHALLENGE TEST IN PREGNANCY

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ABSTRACT: Gestational Diabetes mellitus (GDM) is associated with a risk of adverse pregnancy outcome and is a predictor for subsequent diabetes. **OBJECTIVE:** To offer selective screening for pregnant women between 24-28 weeks of gestational diabetes with one hour 50gm glucose challenge test. **MATERIALS AND METHODS:** 270 pregnant women between 24-28 weeks gestational age with risk factors attending ANC clinic were taken into clinical study. **RESULTS:** A majority of the patients in this study group belong to 25-30 years. 33 out of 270 cases studied were found to be screened positive for gestational diabetes i.e. with 50g GCT and further more 30 of 33 were confirmed to be gestational diabetes, the sensitivity of this test being 90.90% and specificity of this test being 88.08%

KEYWORDS: Glucose Challenge Test (GCT), Gestational Diabetes Mellitus (GDM).

INTRODUCTION: Gestational Diabetes Mellitus is defined as glucose intolerance first recognized during pregnancy, a type of diabetes that can develop in some women late in pregnancy (usually after 24th week). They do not have diabetes before becoming pregnant. The complications of Gestational Diabetes associated with pregnancy and labour are increasing steadily with the rising incidence of GDM.

MATERIAL AND METHODS: A total of 270 pregnant women attending ANC clinic with associated risk factor for gestational diabetes between 24-28 Weeks were screened with 50g oral Glucose Challenge Test, the study was a prospective clinical study done on outpatient basis from November 2011 to May 2013 at Basaveshwar Teaching & General Hospital & Sangameshwar Hospital Gulbarga. American Diabetes associates of clinical recommendation 2002 diabetes care 2002, said that so far the test which has been found to be most cost effective is 50g Glucose Challenge Test.

The Glucose Challenge Test entails oral administration of 50g of glucose between 24 to 28 Weeks of gestation regardless of the length of time since the last meal, with measurement of plasma glucose 1 hour later. Women with plasma glucose values >140g per deciliter are referred for a diagnostic test of 100g oral Glucose Tolerance Test.

INCLUSION CRITERIA: Pregnant women between 24 – 28 Weeks of gestation with any of the following risk factors will be offered screening.

1. B MI > 27 Kg/m²
2. Previous macrosomic baby weighing 4 kg or more
3. Previous history of Gestational Diabetes Mellitus.
4. Family history of diabetes (1st degree relative).
5. Maternal age > 25yrs.

6. History of still birth
7. History of neonatal death.
8. Concomitant obesity /hypertension
9. Preeclampsia, oligohydramnios, polyhydramnios

EXCLUSION CRITERIA: Pregnant women between 24 – 28 Weeks gestation who fulfill all of the following criteria are classified as low risk and will not be offered screening.

1. Age < 25 yrs.
2. Normal body weight.
3. No family history

RESULTS: A majority of the patients in this study group belong to 25-30 years 33 out of 270 cases studied were found to be screened positive for gestational diabetes i.e. With 50g GCT and further more 30 of 33 were confirmed to be Gestational Diabetes, the sensitivity of this test being 90.90% and specificity of this test being 88.08%.

S. No.	Risk Faction	No. of Cases	No. of Positive	Percentage %
01	Age =25	63	12	19.0%
02	Age =>25	154	16	10.4%
03	BMI = > 25	95	25	26.3%
04	Previous weight > 4 kg	13	5	38.5%
05	Previous still birth	13	3	23.1%
06	Past history of GDM	1	1	100%
07	Family history	8	1	12.5%
08	Polyhydramnios	40	4	10/0%
09	Preeclampsia	38	12	31.6%

DISCUSSION: Approximately 7% of all pregnancies are complicated by GDM, resulting in more than 200,000 cases annually. The prevalence may range from 1 to 14% of all pregnancies, depending on the population studied and the diagnostic tests employed.¹

The presence of fasting hyperglycemia (>105 mg/dl or >5.8 mmol/l) may be associated with an increase in the risk of intrauterine fetal death during the last 4–8 weeks of gestation. Although uncomplicated GDM with less severe fasting hyperglycemia has not been associated with increased perinatal mortality, GDM of any severity increases the risk of fetal macrosomia. Neonatal hypoglycemia, jaundice, polycythemia, and hypocalcemia may complicate GDM as well. GDM is associated with an increased frequency of maternal hypertensive disorders and the need for cesarean delivery. The latter complication may result from fetal growth disorders and/or alterations in obstetric management due to the knowledge that the mother has GDM.¹

Selective screening based on risk factors help in selecting those screened positive pregnant women who need further diagnostic procedure of oral GTT for appropriate management of GDM. Hence, thereby improving both maternal & perinatal outcome.

Most screening strategies make use of the presence or absence of recognized risk factor for gestational diabetes mellitus. Screening for Gestational Diabetes Mellitus based on the presence of

risk factors is recommended by the British National Institute for health and clinical excellence (NICE). Alternatively, the American Diabetes Association (ADA) recommends selective screening for Gestational Diabetes Mellitus excluding those with the absence of risk factor.²

The glucose-challenge test as a screening method was first proposed by O'sullivan et al in 1973.³

So far the test which has been found to be most cost-effective is the 50g glucose challenge test. Using this cut off, about 80% of gestational diabetes can be detected and 15% of patients will - be required to undergo GTT.⁴

Many risk factors for gestational diabetes mellitus have been identified. The most widely recognized of these include advanced maternal age, increasing maternal body mass index (BMI), Ethnicity, family history of type 2 diabetes mellitus. Additional risk factors are a history of a macrosomic baby in a previous pregnancy or adverse pregnancy outcome, a women's own low birth weight, glycosuria, polyhydramnios or a large for gestational age in the current pregnancy.^{5, 6}

CONCLUSION: Our study has documented the increased prevalence of GDM in our population necessitating selective screening for glucose intolerance in pregnancy mainly between 24-28 weeks of gestation using 1 hour plasma glucose values of > 140 mg/dl as a one step procedure. This is simple, economical, particularly for the countries with poor economic background and ethically more prone to high prevalence of diabetes like India.

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ORIGINAL ARTICLE

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