

## One Step Procedure for Screening and Diagnosis of Gestational Diabetes Mellitus

Dr B.S.V. Sivaranjani<sup>1</sup> MS(OBG), DGO ,Dr G. Karuna<sup>2</sup>MS(OBG),  
<sup>1,2</sup>Assistant Professor

<sup>1,2</sup>Department of Obstetrics and Gynecology, Guntur Medical college, Guntur, Andhra Pradesh

**Abstract:** This is a hospital based prospective randomized controlled study conducted at Guntur Government Hospital, Guntur.

**Objective:** To study the prevalence of Gestational Diabetes Mellitus (GDM) among Antenatal Women attending OPD by using one step procedure of 2 hr.75 gm OGTT and to evaluate and compare the occurrence of GDM in normal antenatal cases and in patients with risk factors for GDM . And also to assess the need for Universal screening.

**Conclusion:** The prevalence of GDM in our study population using is 3.33%.This one step procedure is acceptable, economical and feasible to perform. From our study we recommend Universal Screening for GDM in all antenatal women.

**Keywords:** Antenatal women, GDM, one step procedure, prevalence, risk factors, Universal screening

### I. Introduction

Gestational Diabetes Mellitus (GDM) is one of the most common medical disorders found in pregnancy. Failure to identify a woman with GDM denies her the opportunity to have treatment for potentially preventable serious fetal complications and also future development of Type II Diabetes [1]. There are a lot of controversies as to which test to be used for screening, when should the screening be done and on whom it should be applied [2] .India falls under moderately high risk group for GDM and with adoption of western life style, incidence of type II DM is raising precipitously [3]. Among ethnic groups in South Asian countries, the Indian women have the highest prevalence of GDM. So the number of women with GDM is also raising , hence the need for this study.

**Aim of the study :** To use one step screening procedure of 2hr.75gm OGTT and to evaluate GDM .

### II. Materials and Methods

All pregnant women seeking antenatal care between 24 to 28 weeks gestation attending OPD during the period January-2013 to December-2015 are taken in the study. Totally 300 pregnant women were randomly selected. Women with previous H/O overt diabetes, history of intake of drugs that effect glucose metabolism like corticosteroids, patients who refuse to undergo test procedure are excluded from the study.

All subjects are screened for GDM by 2hr 75gm OGTT. If the test value was more than or equal to 140mg/dl, patient was labeled as GDM. 75gm glucose was dissolved in 200ml of water and the patient was asked to drink it in 5 minutes. After 2 hours venipuncture was done and plasma glucose was estimated by GOD-POD method using Bayers kit and auto analyzer.

**Group 1 :** This group of patients had clinical or historical factors for GDM which included Age $\geq$ 30 years, family H/O type2 DM (1<sup>st</sup> degree relatives), obesity (BMI $>$ 27kg/M<sup>2</sup>), H/O GDM in previous pregnancy, H/O macrosomy in previous pregnancy, H/O fetal loss up to 20 weeks of gestation in previous pregnancy, H/O congenital anomalies, prematurity, unexplained perinatal loss in previous pregnancy  
**Group 2 :** patients with out any of the above risk factors Age $>$  25 years, normal weight before pregnancy, no H/O diabetes in 1<sup>st</sup> degree relatives, no H/O abnormal glucose tolerance, no H/O poor obstetric outcome The occurrence of GDM in two groups were evaluated and compared

### III .Results and Analysis

**Table1:** result of 2hr. 75Gm OGTT

Percentage	No of patients	Test value in mg//dl
96.66%	290	<140
0.66%	2	140-149
1%	3	150-159
0.33%	1	160-169
0.66%	2	170-179
0.66%	2	180-190

**Risk Factor Correlation With GDM**

Out of 300 pregnant women screened 118 (39.33%) were with risk factors, and 182(60.67%) were with out risk factors. Total 10 cases (3.33%) had test positive of 300 pregnant women universally screened in this study population, test result was positive in 8 of 118 cases with risk factors positive and 2 of 182 cases with out risk factors. That is GDM positivity was 6.77% in group 1 and 1.09% in group 2

**Table2:** risk factor correlation with GDM

Total	Group2 (risk factor negative)	Group1 (risk factors positive)	
10	2(0.66%)	8(2.66%)	GDM positive
290	180(60%)	110(36.66%)	NGT
300	182	118	Total

Rate of positivity of group 1 (Risk factors positive) as compared with group 2 (Risk factors negative) is shown.

**Table 3:** prevalence of risk factors in normal and GDM population

'P' Value	Percentage	GDM (10)	Percentage	Normal (290)	Risk factors
0.0011	30%	3	3.44%	10	Age >= 30yrs
0.00101	30%	3	5.17%	15	Obesity
0.001	40%	4	7.24%	21	Family H/O DM
0.00136	40%	4	10%	29	Past H/O fetal loss
-	0%	0	0.34%	1	Previous H/O macrosomia
0.001	0%	0	1.72%	5	Past H/O congenital anomalies
-	10%	1	7.5%	22	H/O prematurity
-	10%	1	-	-	H/O previous GDM
-	10%	1	2.06%	6	H/O unexplained neonatal loss
0.0014	10%	1	4.82%	14	H/O PIH/PE
-	0%	0	1.37	4	H/O polyhydromnias

Family H/O DM past H/O fetal loss, obesity, age>30yrs, prematurity were statistically more common in GDM population compare to normal population

**Table 4:** prevalence of GDM

Prevalence	Cases of GDM	Total antenatal cases
3.33%	10	300

**IV. Discussion**

Prevalence of GDM in the present study is comparable with that of study done by Bhattacharya et al.(3%)Vinita Das et al.(4%) and Amit Gupta et al.(3.05%), [4,5,6]. Prevalence found in study by Swamy et al.,was(7.7%) and Seshaih et al. was (16.55%) which is much higher compared to other studies[7,8,9,10]. All the above are studies on Indian women.

In the present study we included the risk factors as recommended by 5<sup>th</sup> International Workshop Conference on GDM with some modifications [11,12,13,14].There is a continued debate between proponents of routine screening for all pregnant women and those who propose it strictly for selected populations presenting GDM risk factors[15] In the present study 20% GDM patients could have been missed if Universal screening is not used. This is comparable to observation of Vinita Das et al[16] in which 16.7% of women belonged to low risk group and hence would have been missed if Selective screening criteria was used.

Two step procedure of screening with GCT and then diagnosing GDM based on the cut off values with 100 gm or 75 gm OGTT is not practical as the pregnant woman has to visit the clinic at least twice and the number of blood samples drawn vary from 3to 5. Hence single step procedure of 75gm Glucose Challenge Test with 75gm of oral glucose load and diagnosing GDM if 2hrPPG is > or equal to 140mg/dl as recommended by WHO serves both as a one step screening and a diagnostic procedure , and is easy to perform besides being economical. Study done by Seshaih et al [17] also supports our findings.

**V. Conclusions**

Universal screening of all antenatal women is recommended by our study as the prevalence of GDM in Indian women is higher. Risk factors were statistically significant in GDM women compared to normal

population. Our study recommends single one step procedure of 2 hr. 75gm OGTT for screening and diagnosis of GDM.

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