

## VALUE OF GRAVIDOGRAM IN ANTENATAL CARE

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### SUMMARY

Gravidometric data of 1000 consecutive cases delivered at or near term is presented. These fundal height measurements were used to construct a nomogram for our patient population. Values two standard deviations away from the mean were used as cut off values to separate abnormal cases. The method served well for antenatal detection of IUGR, with a specificity of 41% and a positive predictive value of 71%. Correlation of gravidometric data with other pregnancy disorders is also discussed. The method proved simple, effective, reliable and totally inexpensive for antenatal detection of growth retardation.

### INTRODUCTION

The last two decades have witnessed an upsurge in the development of technology designed to monitor foetal wellbeing and to provide parameters for identification of high risk pregnancies. Diagnosis of altered foetal growth is one of the most challenging problems faced by the practicing obstetrician.

Biophysical parameters cover a wide spectrum of observations ranging from simple physical measurements of the patients weight and fundal height to the more sophisticated application of high technology involving ultrasonography and doppler studies.

Over the years, astute physicians have used the simple biophysical parameters to recognise pregnancies at risk and contributed significantly to lowering maternal and perinatal risks. The present day high-tech parameters have only further advanced patient care to a small extent, but at a high cost.

### MATERIAL AND METHODS

The present study is based on the application of gravidometry of 1000 consecutive cases delivered at or near term. Fig. 1 shows our gravidogram based on the fundal height measurements of these cases observed during pregnancy from 20 weeks of gestation till term. A firm dating and an ultrasonographic examination in the first trimester were necessary for cases used to construct the gravidogram. The data was used to construct the

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nomograms for out patient population. All patients delivering prior to 37 weeks were excluded while constructing the nomogram. The mean fundal height corresponding to different gestational ages, and values two standard deviations away from the mean were also determined. the fundal height values of high risk cases amongst these 1000 cases were analysed in light of standard Gravimetric data accumulated for this study.

**RESULTS**

The mean birth weight of the series was 3.024 Kg. Mean birth weights of babies above and below the two halves of the nomogram were 3.53 Kg. in the upper and 2.2 Kg. in the lower half, 73 values fell below the lower 2 SD line. Mean birth weight of these cases was 1.98 Kgs., 42 cases had their fundal height values falling above the upper 2 SD line and the mean birth weight of these cases was 3.74 Kg.

**TABLE I**

Shows details of cases with fundal height values above the upper 2 SD limit.

High Risk Factor	No. of Cases
-- Twins	8
-- Maternal obesity	6
-- Diabetes	3
Hydramnios	2
Fibroids with pregnancy	2
Postdated pregnancy	2
Others	19
<b>Total</b>	<b>42</b>

Almost all cases of twins, hydramnios and fibroids with pregnancy could be identified. No attributable cause was found in 19 cases. Maternal obesity may decrease the accuracy of this method.

**TABLE II**

**Hypertension in pregnancy.**

	No. of cases
-- Above nomogram	5
-- Below nomogram	8
-- Total IUGR	12
-- Preterm delivery	18
-- Diabetes with hypertension	3

The 5 cases with values above the upper limit had late onset hypertension, not associated with proteinuria. None had significant IUGR in contrast, the 7 cases below the lower limit had moderate to severe hypertension associated with proteinuria. The incidence of prematurity and growth retardation was high in this group.

**TABLE III**

**Diabetes in pregnancy**

	No. of cases
-- Above nomogram	3
-- Along nomogram	13
-- Below nomogram	6
-- Preterm	4
-- Total cases of diabetes	22



Though preterm delivery is common, no significant pattern can be identified.

TABLE IV

Distribution of cases below mean -- 2 SD

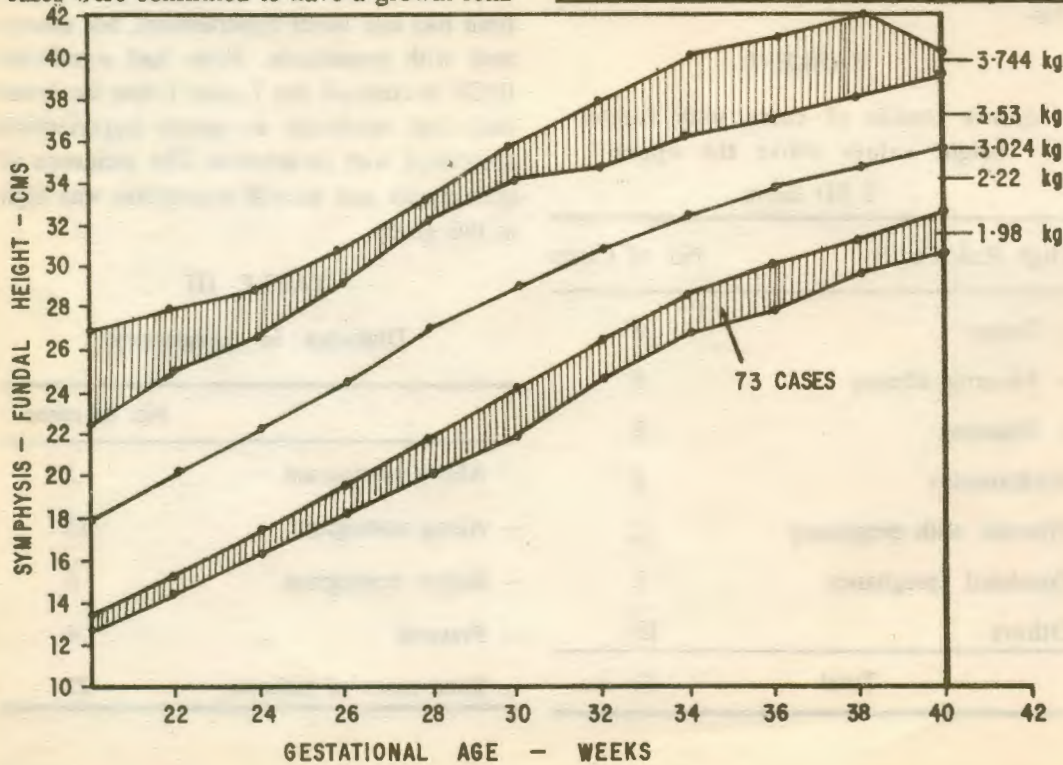
High risk factor	No. of cases
IUGR	23
Pregnancy with hypertension	8
Bad Obstetric history	7
Congenital malformation	7
Diabetic pregnancy	6
Others	22
<b>Total</b>	<b>73</b>

What is more important is that out of the thirty-two cases of IUGR in this series, gravidogram could detect twenty-three, giving a positive predictive value of 71%. Ultrasonography could detect 87.5% of them antenatally. Serial values of fundal height lagging more and more below the mean line was found more significant for the detection of IUGR. Table V shows the analysis of these cases.

TABLE V

Total No. of cases below 2 SD limits	73
Incidence of occurrence in population	0.73
Clinically suspected cases of IUGR	73
Total cases of IUGR in the series	32
Cases of IUGR detected by gravidogram	23
Cases of IUGR detected by Ultrasonography	28
Specificity of gravidogram for IUGR	71.8%
Sensitivity of gravidogram for IUGR	41.5%

Twenty-three out of the seventy-three cases were confirmed to have a growth retardation



**DISCUSSION**

Fundal height has been criticised as a poor indication of gestational age and foetal weight. But two recent studies have highlighted the use of fundal height measurements in a systematic manner. Belizan et al (1978) in Argentina were able to identify 86% of foetuses under the 10th centile, with a false positive rate of only 10%. Westin (1977), using cut off values of 2 c. mm. from the mean fundal height reported that 44% of pregnancies with inadequate fundal height resulted in IUGR babies, and 75% of small for gestational age infants were detected by this method. Both these studies corroborate our findings. Thus gravidogram appears to select a subgroup of patients requiring more sophisticated workup like ultrasonography after screening a large population.

In a country like ours, a widely applicable parameter holds a great significance in making a dent on the national perinatal figures. The application of the use of gravidogram in day to day clinical practice will go a long way, without frittering away our scarce national resources in the use of high-tech imported gadgets, in a widebased national programme.

Gravidogram is a simple, reliable and effective method. It is easily reproducible and totally inexpensive. A simple tape measurement is all that is necessary and no extra technical skill is required.

**REFERENCES**

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