

Correlation of Symphysis Fundal Height, Abdominal Girth and Ultrasound with Gestational Age

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Abstract

Objective: To estimate the gestational age by using symphysis fundal height and abdominal girth and to correlate with USG gestational age. The simplest way to determine gestational age is to examine the mother by palpating the abdomen and estimating the size of her uterus compared with a landmark such as umbilicus. Measuring symphysis fundal height and abdominal girth can be used as a sensitive indicator in estimating the gestational age. **Methods:** About 180 women were enrolled in this prospective population based observational study, who were attending Saveetha Medical College and Hospital Obstetric OPD and the gestational age was estimated by measuring symphysis fundal height abdominal girth and correlating it with ultrasound finding. **Result:** About 80.52% of gestational age found by symphysis fundal height correlated with the gestational age found by LMP and 77.73% of gestational age found by symphysis fundal height correlated with gestational age found by USG. About 72% of the gestational age estimated by abdominal girth correlated with the gestational age found by LMP and 66.57% of gestational age found by abdominal girth correlated with gestational age found by USG. About 19.479% of gestational age determined by symphysis fundal height did not correlate with gestational age found by LMP; they were further evaluated by USG to find the accuracy and the cause. The USG results showed the following- 4.5% were having low growth profile, 5.8% were found to have intrauterine growth retardation (IUGR), 7.97% had macrosomia due to gestational diabetes and 1.2% was polyhydramnios. Even the USG findings in cases not correlating with abdominal girth the same reasons were obtained in 19.479% and the remaining 8.52% among the 72% of gestational age found by abdominal girth not correlating with LMP were found to be false positive. **Conclusion:** SFH was found to have high sensitivity in estimating the gestational age when compared to gestational age estimated by abdominal girth, even in the presence of USG and hence it can be used as a good indicator in low setting areas.

Keywords: Abdominal Girth, Correlation, Gestational Age, Symphysis Fundal Height, Ultrasound

1. Introduction

In concern to obstetricians, accurate determination of gestational age has always been an issue since it greatly affects the management of antenatal mothers. A considerable lot of the obstetric patients in the developing countries are questionable of their last menstrual period which constitutes a major issue to the obstetricians.

Gestational age has been estimated from the date of Last menstrual period traditionally and it's the most accepted clinical estimator of actual gestational age. Other methods to estimate gestational age include date of quickening, estimating the uterine size by pelvic

examination in early pregnancy, symphysis fundal height estimation, amniotic fluid analysis and Ultrasonic estimation^{1,2}.

One of the most encountered issue in modern obstetrics is correct determination of gestational age. Though there are many advanced methods to calculate the gestational age, but simple non invasive methods can also be useful .A simple inch tape can also be used to elicit these parameters to judge the foetal growth .In clinical practice, to record the actual fundal height measurement is taken from the palpable top of the uterus to the superior edge of pubic symphysis is considered standard practice beginning around 20 weeks of gestation. Most caregivers

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will record their results for patients' fundal height on every prenatal visit.

Applying the method of estimating gestational age from Symphysis fundal height is very useful in low resource setting, where sophisticated health technology is scarce.

2. Materials and Methods

The type of study we conducted was a prospective population based observational study. It was done over a period of 1 year at Obstetrics out Patient Department of Saveetha Medical College and Hospital. We used convenient sampling technique for a sample size of 180. The study tool used was a simple inch tape. Our Inclusion criteria includes pregnant women who have finished 20 weeks of gestation coming to Obstetrics Out Patient Department of Saveetha Medical College and Hospital, pregnant women with regular history of menstrual cycle before conception, singleton gestational, antenatal women who were certain of their correct Last menstrual period and uncomplicated pregnancy. And the Antenatal cases excluded from our study are the ones with who were unsure of their last menstrual period, multiple pregnancy, molar pregnancy and ectopic gestation.

Before the examination some of the basic datas such as Name, age, parity, height, weight and co-morbid conditions were obtained. The parameters which were assessed include Symphysis fundal fundal height, abdominal girth and ultrasound. After assessing gestational age by symphysis fundal height and abdominal girth, finally their Last menstrual period was asked in order to avoid bias.

Initially, an approval was obtained from the University for the Study and an informed consent was obtained from the patient. The purpose of the study was explained to her. We Ensured that there will not be any pain or any risk through any means during this study. Advice was given to empty her bladder. She was taken to a separate room and positioned in supine posture with legs extended. Ensure hands are clean and warm. Dextroversion of uterus was corrected. At the uppermost border of symphysis pubis zero mark of the tape was placed. The abdomen was palpated gently to find out the fundus of the uterus. The tape was run along the midline to the place where the palpable top of uterus was felt. The distance was measured in centimeters. The abdominal girth was found by running

the tape around the abdomen at the level of umbilicus. The collected data was correlated with the gestational age.

3. Result

Among 180 cases the maximum number of antenatal mothers belonged to the age group 21-25 years (35.75%) (Figure 1). The Gravida distribution was from G1-G4 in our study, out of which the maximum was G2 (38.88%) (Figure 2). The LMP status of all the 180 cases was known (Figure 3). About 80.52% of gestational age estimated by symphysis fundal height correlated with the gestational age estimated by LMP and 77.73% of gestational age estimated by symphysis fundal height correlated with gestational age estimated by USG (Figure 4). It was also found that symphysis fundal height not correlating with ultrasound was 22.26% (Figure 5). About 72% of the gestational age estimated by abdominal girth correlated with the gestational age found by LMP (Figure 6) and 66.57% of gestational age found by abdominal girth correlated with gestational age found by USG About 19.479% of gestational age determined by symphysis fundal height did not correlate with gestational age found by LMP, they were further evaluated by USG to find the accuracy and the cause. The USG results showed the following- 4.5% were having low growth profile, 5.8% were found to have intrauterine growth retardation (IUGR), 7.97% had macrosomia due to gestational diabetes and 1.2% were polyhydramnios. Even the USG findings in cases not correlating with abdominal girth the same reasons were obtained in 19.479% and the remaining 8.52% among the 72% of gestational age found by abdominal girth not correlating with LMP were found to be false positive.

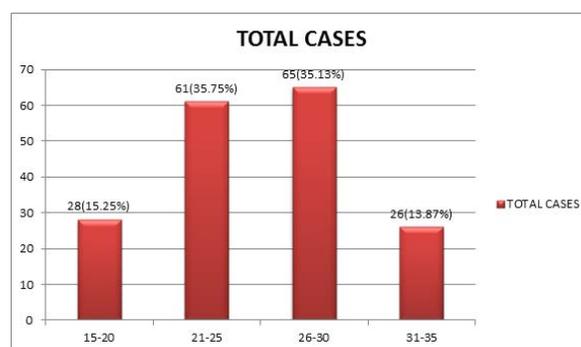


Figure 1. Among 180 cases, the maximum number of cases belonged to the age group 21-25 (35.75%).

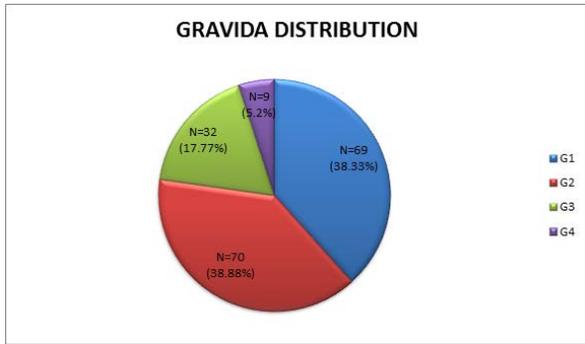


Figure 2. The maximum cases were among Gravida 2 (38.88%).

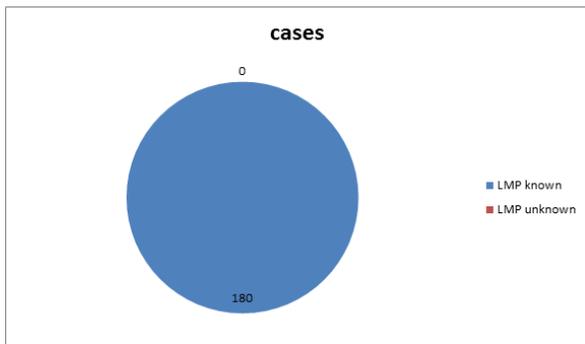


Figure 3. The last menstrual period of all antenatal mothers were known.

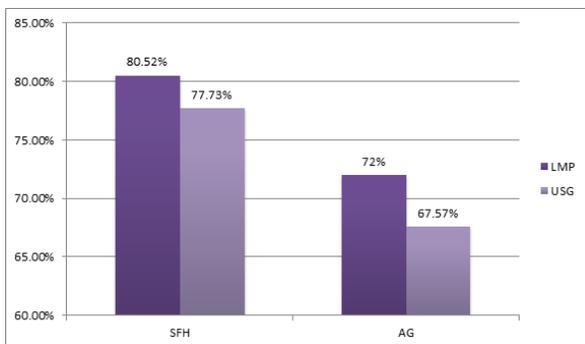


Figure 4. Correlation of symphysis fundal height and abdominal girth with their last menstrual period and ultrasound.

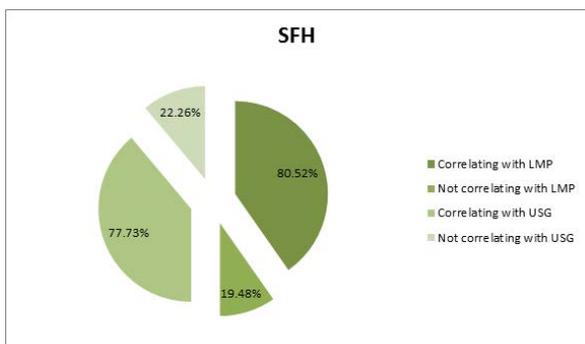


Figure 5. Symphysis fundal height and its correlations.

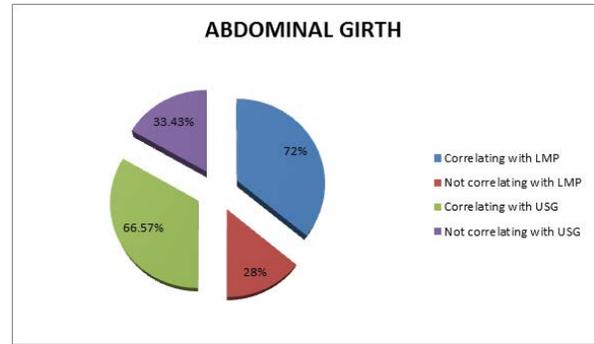


Figure 6. Abdominal girth and its correlations.

4. Discussion

SFH measurement is a simple and inexpensive method to detect gestational age. In our study the sensitivity of SFH in determining the gestational age was found to be around 77.93%.

In another study conducted in USA the sensitivity of SFH was found to be 88.5%.³ In our study, 80.52% of cases were correlating for gestational age calculated from SFH and 77.73 % of the cases were found to be correlating with gestational age estimated from USG and the sensitivity of USG was found to be 83.56% in our study. In a similar study, a linear correlation was found between SFH and USG⁴. This means that SFH is a good indicator of gestational age⁵. Symphysis fundal height measurements are more valid predictors of the gestational age than abdominal girth measurements, the sensitivity of abdominal girth in our study was 62.92%.⁶ In our study the USG findings among the non correlating cases of gestational age found by SFH showed that 19.479% of the cases did not correlate with the a gestational age, they were further evaluated by USG to find the accuracy and the cause. The USG results showed the following-4.5% were having low growth profile, 5.8% were found to have intrauterine growth retardation (IUGR), 7.97% had macrosomia due to gestational diabetes and 1.2% was polyhydramnios. A similar study conducted in India, the SFH measurements were found to have a high sensitivity of 76.5% in predicting small for date babies and fetal macrosomia.⁷ In a study conducted by Japaraj Robert Peter et al stated that there is no difference between SFH and USG to find any growth abnormality and it is still not identified if one method is more effective than the other because of poor evidence, and how these methods compare with ultrasound measurement.⁸

In a study conducted in Nigeria it was found that

ultrasound has no unique advantage over symphysis fundal height measurement in assessing gestational age².

5. Conclusion

In our study, it was found that SFH is a good indicator in determining the gestational age and also in finding any discrepancies between the expected and estimated symphysis fundal height and certain growth abnormalities. But abdominal girth was not found to be a sensitive tool from our study. Also, SFH is a good option in finding the reason for growth abnormality in a reasonable number of antenatal cases.

Therefore, we suggest that in areas where sophisticated technologies like Ultrasound are not available and in routine clinical practice, SFH can confidently be used to monitor the growth of the fetus and the more extensive use of symphysis fundal height estimation for evaluating gestational age may diminish the cost of antenatal care without loss of nature of care.

6. References

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