PROSPECTIVE STUDY OF GESTATIONAL AGE ESTIMATION BY USING USG GUIDED FETAL FOOT LENGTH AT 15-40 WEEKS DONE IN O & G DEPARTMENT, GOVT. KILPAUK MEDICAL COLLEGE CHENNAI

Submitted to

The Tamil Nadu Dr. M.G.R. Medical University

In partial fulfillment of the requirements for the award of the degree of

M.D. DEGREE EXAMINATION

BRANCH – II (OBSTETRICS & GYNAECOLOGY)

KILPAUK MEDICAL COLLEGE

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

CHENNAI

APRIL 2014

BONAFIDE CERTIFICATE

Certified that the dissertation titled **"Prospective Study Of Gestational Age Estimation By Using USG Guided Fetal Foot Length At 15-40 Weeks Done In O & G Department, Govt. Kilpauk Medical College Chennai.** is a bonafide work of the candidate **Dr.K.THENNARASI,** post graduate student, Department of Obstetrics &Gynecology, Kilpauk Medical College, Chennai – 10, done under my guidance and supervision, in partial fulfillment of regulations of **TheTamilnaduDr.MGR Medical University** for the award of **M.D.Degree Branch II, (Obstetrics & Gynecology)** during the academic period from May 2011 to April 2014.

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DECLARATION

I **Dr. K.THENNARASI** solemnly declare that this dissertation titled **"Prospective Study Of Gestational Age Estimation By Using USG Guided Fetal Foot Length At 15-40 Weeks Done In O & G Department, Govt. Kilpauk Medical College Chennai.** Was prepared by me at Government Kilpauk Medical College and Hospital, Chennai, under the guidance and supervision of **Prof. Dr. G.GEETHA, M.D., D.G.O**., Professor, Department of Obstetrics and Gynaecology, Govt. Kilpauk Medical College and Hospital, Chennai.

This dissertation is submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of the University regulations for the award of the degree of M.D. Branch II (Obstetrics andGynaecology).

Date

Place:

Dr. K.THENNARASI

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INSTITUTIONAL ETHICAL COMMITTEE
GOVT.KILPAUK MEDICAL COLLEGE,
CHENNAI-10
Ref.No.161/ME-1/Ethics/2013 Dt:07.02.2013.
CERTIFICATE OF APPROVAL

The Institutional Ethical Committee of Govt. Kilpauk Medical College, Chennai reviewed and discussed the application for approval "A Study on Randomised prospective study of fetal gestational age estimation by using USG guided fetal foot length at 15 – 40 wks done in O & G Dept." for Project work submitted by Dr. K. Thennarasi, MS (O & G), IInd year PG Student, Kilpauk Medical College, Chennai.

The Proposal is APPROVED.

The Institutional Ethical Committee expects to be informed about the progress of the study any Adverse Drug Reaction Occurring in the Course of the study any change in the protocol and patient information /informed consent and asks to be provided a copy of the final report.

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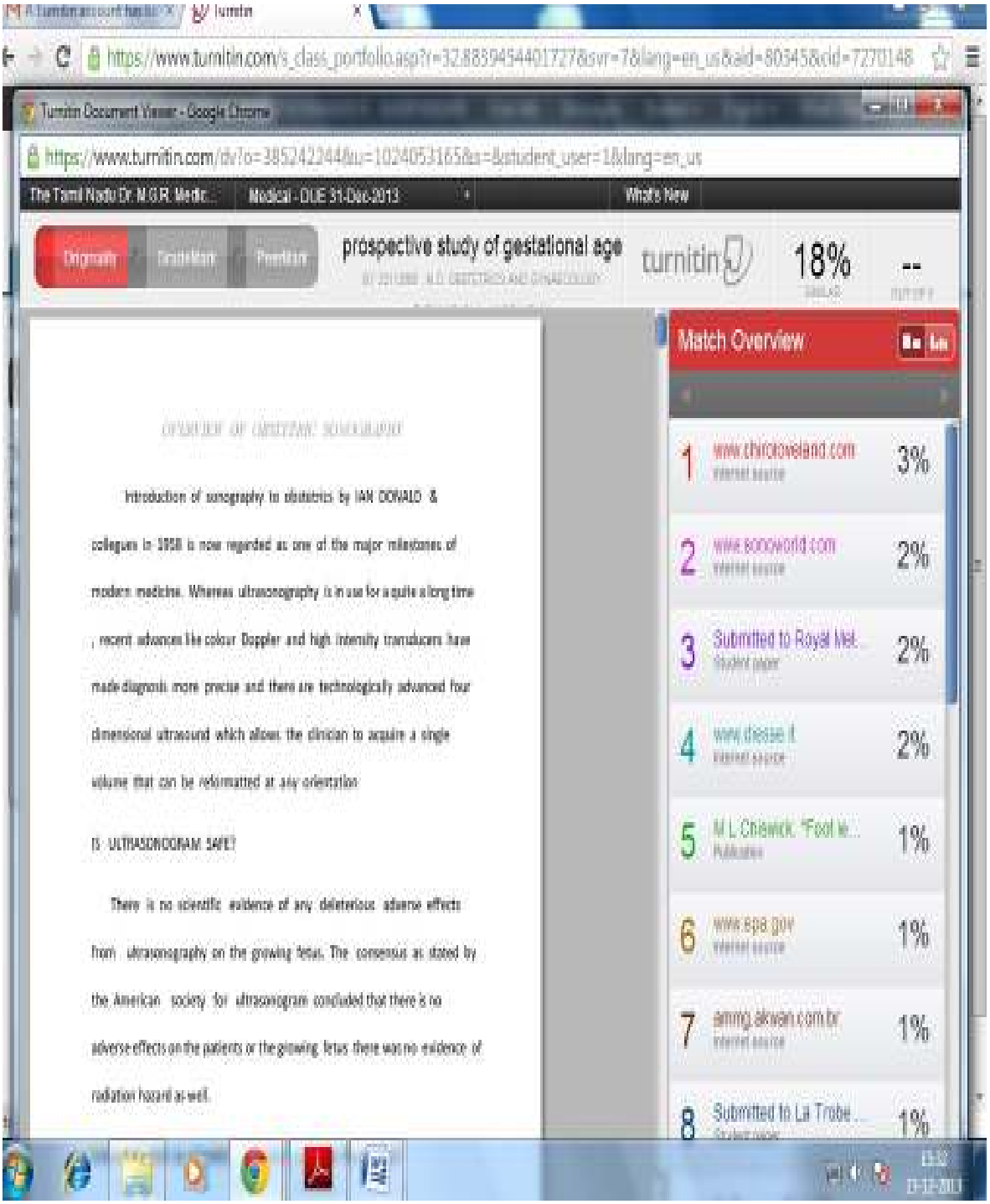
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What's New
prospective study of gestational age
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Match Overview
Introduction of sonography to obstetrics by IAN DONALD &
colleagues in 1958 is now regarded as one of the major milestones of
modern medicine. Whereas ultrasonography is in use for a quite a long time
, recent advances like colour Doppler and high intensity transducers have
made diagnosis more precise and there are technologically advanced four
dimensional ultrasound which allows the clinician to acquire a single
volume that can be reformatted at any orientation
IS ULTRASONOGRAM SAFE?
There is no scientific evidence of any deleterious adverse effects
from ultrasonography on the growing fetus. The consensus as stated by
the American society for ultrasonogram concluded that there is no
adverse effects on the patients or the growing fetus there was no evidence of
radiation hazard as well.
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LISTS OF ABBREVIATIONS

LMP : last menstrual period

EDD : expected date of delivery

USG : ultrasonogram

GA : gestational age

MSD : mean sac diameter

CRL : crown rump length

FL : femur length

AC : abdominal circumference

BPD : biparietal diameter

MA : menstrual age

IVF : in vitro fertilisation

IUGR : intrauterine growth restriction

MHZ : mega hertz

ACR : American College of Radiology

ACOG : American college of obstetrics and gynaecology

AIUM : American institute of ultrasound in medicine

AFP : Alpha feto protein

HCG : Human chorionic gonadotrophin

[U] : upper limit

[L] : lower limit

% : percentage

FGR : fetal growth restriction

INTRODUCTION

OVERVIEW OF OBSTETRIC SONOGRAPHY

Introduction of sonography to obstetrics by IAN DONALD & collegues in 1958 is now regarded as one of the major milestones of modern medicine. Whereas ultrasonography was in use for a quite a long time , recent advances like colour Doppler and high intensity transducers have made diagnosis more precise and there are technologically advanced four dimensional ultrasound which allows the clinician to acquire a single volume that can be reformatted at any orientation

IS ULTRASONOGRAM SAFE?

There is no scientific evidence of any deleterious adverse effects from ultrasonography on the growing fetus. The consensus as stated by the American society for ultrasonogram concluded that there is no adverse effects on the patients or the growing fetus there was no evidence of radiation hazard as well.

REVIEW OF LITERATURE

EVIDENCE FOR AND AGAINST ROUTINE SCAN IN PREGNANCY

Between 1980-1984 , meta analysis of 4 randomised controlled studies, it was shown there was more reliable estimation of period of gestation in the group screened by USG rather than the unscreened group.

Helsinki trial by Saari-kemppainen & collegues showed a significant reduction in the perinatal mortality among USG screened group [from 9/1000 to 4.6/ 1000] was reported.

The Routine Antenatal Diagnostic Imaging with USG [RADIUS] trial a multicentre randomised study of screening USG published in 1993, the findings were, increased rate of detection of congenital anomalies, decreased incidence of tocolysis in the scanned group , also earlier diagnosis of multiple gestation &a lower rate of post dated pregnancy owing to more accurate pregnancy dating.

A subsequent meta analysis published by Bucher & associates based on 4 randomised controlled studies with data on 15,935 women found that perinatal mortality rate was much reduced in group of patients subjected to routine USG. Early diagnosis of congenital anomalies is done in patients subjected to USG. They concluded that

routine ultrasound scanning is effective & useful as a screening test for malformations

OBSTETRIC USG EXAMINATION:

GUIDELINES:

The American college of Radiology (ACR), American Institute of USG in Medicine (AIUM), &American college of obstetrics & gynaecology (ACOG) the standard sonographic examination that is recommended for accurate gestational age estimation is Biparietal diameter [BPD], Abdominal circumference[AC], Femoral length [FL].[12]

EQUIPMENTS AND STANDARDS:

All studies should be conducted with real time scanners using a transabdominal and / transvaginal approach. The choice of transducer frequency is a trade off between beam penetration and resolution. In general 3-5 Mhz transducer frequency provides efficient resolution with adequate depth penetration in all but the extremely obese patient.

In recent years , many imaging centres have installed picture archiving &communication systems [PACS]

ESTIMATION OF MENSTRUAL AGE IN 1st TRIMESTER:

Within the first trimester menstrual age may be estimated sonographically with greater accuracy than at any other stage . biologic variation about the mean for all sonographic parameters at a given menstrual age.

GESTATIONAL SAC DIAMETER:

It is possible to estimate menstrual age from weeks 5-10 on the basis of the size of gestational sac. Dating of sac alone is important because it is the first structure seen before visualisation of yolk sac & then the embryo. Gestational sac measurement is accurate to within approximately one week of menstrual age. At 5.5 weeks, the yolk sac appears. At 6 weeks an embryo appears first adjacent to the yolk sac.[12]

The measurements are most accurate when obtained by a high frequency transvaginal probe in sagittal & transverse planes at 90° to one another. Gestational sac > 8mm or 16mm without a yolksac or an embryo needs follow up USG to rule out early pregnancy failure.

CROWN RUMP LENGTH:

Conventional measurement derived from transabdominal data are available beginning from 6wks & 2 days onwards.

A well performed CRL measurement in 1 st trimester of pregnancy is accurate to 5-7 days and is equivalent to / greater in accuracy than BPD measured in 2 nd trimester.

FETAL MEASUREMENTS:

Sonographic foetal measurements provide information about foetal age & growth. They help in assigning gestational age, estimate foetal weight [EFW] , and to diagnose growth problems .One other important use is to detect a number of foetal anomalies such as skeletal dysplasia and microcephaly.[12] These abnormalities can be diagnosed or suspected on the basis of values that deviate from normal for dates.

The true measure of age is the number of days since conception termed conceptual age. Historically , pregnancies were dated by the number of days since the 1st day of last menstrual period termed menstrual age. Today the term quite often used to date pregnancies is gestational age defined by,

GA [MA] = CONCEPTIONAL AGE +2 WEEKS

In a 28 day cycles, GA & MA are equal. In women with longer cycles gestational age is less than menstrual age; the opposite holds in women with shorter cycles[12]

Accurate knownledge of gestational age is important for a number of reasons. The timing of chorion villous biopsy in first trimester, genetic amniocentesis in 2nd trimester, timing of elective induction / caesarean delivery in 3rd trimester depends on GA.

The diagnosis of preterm labour and the characterisation of a pregnancy as postdated depends mainly on the calculation of accurate foetal age. Knowledge of foetal age can be critical in distinguishing normal from pathologic foetal development. For example midgut herniation is a normal phenonmenon upto 11-12 weeks of gestation but it signifies omphalocele thereafter.[12] The normal size of a variety of foetal bony parts depends on GA ,as do levels of maternal serum alpha feto protein[AFP], human chorionic gonadotrophin[HCG] & estriol. when a foetal anomaly is detected prenatally the maternal choice and obstetric management are greatly influenced by the foetal age.

Estimated fetal weight on its own & in relation to GA plays a vital role in obstetric decisions regarding timing & route of delivery .early delivery may benefit a fetus that is small for dates. Such a fetus may be inadequately supplied by its placenta with oxygen and nutrients and may therefore do better in the care of a neonatologist than in utero. When fetus is large caesarean section may be the preferred route of delivery particularly complicated by diabetes mellitus. In view of these consideration foetal measurements should be a component of every obstetric sonogram.[12]

AIM AND OBJECTIVE

AIM OF THE STUDY

THE OBJECTIVE:

To evaluate the role of fetal foot length as a biometric parameter in estimation of gestational age along with conventional parameters biparietal diameter, femur length, abdominal circumference in normal singleton pregnancy.

TYPE OF STUDY:

Prospective.

PERIOD OF STUDY:

January- December 2013.

MATERIALS AND METHODS

MATERIALS & METHODS

Pregnant women of gestational age 15-40 weeks as assessed clinically and other conventional USG parameters attending the antenatal outpatient department and inpatient department during second & third trimester in our govt. kilpauk medical college hospital Chennai.

INCLUSION CRITERIA:

Pregnant women of gestational age 15-40 weeks attending antenatal outpatient department and inpatient department in normal singleton pregnancy.

EXCLUSION CRITERIA:

1. Structural anomalies.
2. Oligohydraminous.
3. Multiple pregnancies.

After getting approval from ethical committee , Kilpauk medical college the study was done with patient consent , detailed menstrual [whether patient is sure of her menstrual dates or not, LMP] ,previous obstetric , past medical & surgical history was taken. Patients general condition was examined. vitals such as pulse rate, blood pressure, temperature was checked. Cardiovascular and respiratory systems were examined. A thorough obstetric examination was made. All routine

investigation was done as a part of antenatal examination. Obstetric ultrasound examination was done in patients included in study and documented.

SAMPLE SIZE

Sample Size for Frequency in a Population-by Open Epi-software.

Population size(for finite population correction factor or fpc)(*N*):	3000
Hypothesized % frequency of outcome factor in the population (*p*):	50%+/-5
Confidence limits as % of 100(absolute +/- %)(*d*):	5%
Design effect (for cluster surveys-*DEFF*):	1

Sample Size(*n*) for Various Confidence Levels

Confidence Level (%)	Sample Size
95%	341

Equation

Sample size $\boldsymbol{n = [DEFF*Np(1-p)]/ [(d^2/Z^2_{1-\alpha/2}*(N-1)+p*(1-p)]}$

Statistical Analysis: Done by SPSS Package version 17. The continuous variable Foot length, GA by Foot length with respect to Age distribution is done by Analysis of Variance. The statistical

Probability value < 0.05 has taken as Significant. The measure of agreement of foot length with BPD, Femur length and Abdominal circumference were done by correlation coefficient and scatter diagram. The classification of correlation coefficient is as follows.

If r = +.70 or higher Very strong positive relationship

+.40 to +.69 Strong positive relationship

+.30 to +.39 Moderate positive relationship

+.20 to +.29 weak positive relationship

+.01 to +.19 No or negligible relationship

-.01 to -.19 No or negligible relationship

-.20 to -.29 weak negative relationship

-.30 to -.39 Moderate negative relationship

-.40 to -.69 Strong negative relationship

-.70 or higher Very strong negative relationship

GESTATIONAL AGE DETERMINATION:

Clinical dating of pregnancy is usually done using patients history of 1 st day of her LMP. & on physical examination of uterine size. Unfortunately both of these methods are subject to imprecision leading to inaccurate estimation of gestational age. Dating by LMP may be inaccurate because of variable menstrual cycle length [20%] , incorrect memory , recent use of oral contraceptives , bleeding during early pregnancy. Determination of the uterine size may be affected by uterine fibroids , multiple pregnancy & maternal body habitus.

Clinical dating is reliable only if one of the following 2 conditions apply.

1. Patient has a regular cycles & uterine size correlates with LMP.
2. Available specifying time of conception such as basal body temperature chart / an IVF pregnancy.

In such cases where pregnancy cannot be accurately dated by clinical evaluation & history USG is accepted as the most useful & accurate tool for estimation of gestational age.[12]

Ist TRIMESTER DATING:

Sonographic milestones of early pregnancy measurements of the embryo once it can be visualised by USG allow highly accurate dating from 5 weeks gestation until end of 1st trimester.[12]

The earliest sign of an intrauterine pregnancy is identification of a gestational sac in uterine cavity. This appears as a round or oval fluid collection surrounded by a ring. It is 1st seen at approximately 5 wks gestation by transvaginal scan & by 5-5.5 wks transabdominally.

From 5-6 weeks gestation there are two methods for assigning age via the mean sac diameter [MSD] or based on the sonographically identifiable contents of the gestational sac. The MSD average internal diameter of the gestational sac is calculated as mean of anteroposterior , transverse , & longitudinal diameter.

Gestational sac is 1st identifiable at 5 wks, the yolk sac at 5.5 wks , the embryo at 6 wks. The timing of these milestones is subject to slight variability, but usually are seen within 0.5 wk of the stated gestational ages. From 6 weeks until the end of 1st trimester GA correlates closely with the CRL of the embryo.[12] The term embryo applies up to the end of organogenesis at 10 wks gestation, the term fetus applies thereafter.

The accuracy of GA determination by USG measured by the width of 95% confidence range is approximately +/- 0.5 wk

throughout the first trimester. The first trimester USG estimation of gestational age will be within 5-7 days in 95% of cases.

SECOND & THIRD TRIMESTER DATING :

Many sonographic parameters have been proposed for estimating GA in 2nd and 3 rd trimester. They include conventional parameters like the biparietal diameter , head circumference, femur length , length of other long bones , binocular distance , the combinations of two or more fetal measurements; the corrected biparital diameter and composite age formulas. measurements of structurally abnormal fetal body parts should not be used in the assignment of gestational age.

FETAL HEAD MEASUREMENTS:

Three measurements or parameters involve the fetal head BPD , corrected BPD & head circumference. All 3 measurements are taken from standard transaxial views taken at the level of paired thalami and cavum septum pellucid. The biparietal diameter is measured from the outer edge of the cranium nearest the transducer to the inner edge of the cranium farthest from the transducer.[12]

The occipito frontal diameter is obtained from the same transaxial image as the BPD & is measured from midskull to midskull along the long axis of fetal head. The head circumference is the

length of the outer perimeter of the cranium , made on the same transaxial image of the fetal head.

Although the BPD is simpler to measure than the corrected biparietal diameter or the head circumference it has the disadvantage of being the only one of the three calculations that disregards head shape. The fetus with the longer head will therefore be assigned a greater GA based on the corrected BPD or head circumference ,however both fetus will be assigned the same gestational age if BPD is used as the basis for age assessment[12]

FEMUR LENGTH:

The length of the diaphysis of fetal femur is often used for the prediction of age. Careful determination of the ossified diaphysis of the femur is necessary in order to obtain an accurate estimate of the gestational age by femoral length.

To obtain the exact measurement, the transducer should be aligned to the long axis of the diaphysis. This can be made sure by demonstrating that both the femoral head or the greater trochanter and the femoral condyle are simultaneously in same plane. The cursors must be properly positioned at the junction of the bone with cartilage

and the thin bright reflection of the cartilaginous epiphysis should not be included in the measurement.

ABDOMINAL CIRCUMFERENCE:

The fetal abdominal circumference is the length of the outer perimeter of the fetal abdomen measured on the transverse scan at the level of stomach and intrahepatic portion of umbilical vein. Alternatively abdominal circumference may be calculated with equivalent results from two orthogonal abdominal diameters, one anteroposterior and the other transverse measured on the same image, composite age formulas that combine several fetal measurements can also be used to predict GA.

The accuracy of gestational age determination ranges from 12 wk for head circumference and corrected biparietal diameter between 14 & 20 wks to 35 weeks in late 3 rd trimester for the femur length.[12]

The two fetal head measurements that take head shape into account corrected BPD & HC are equivalent in accuracy to each other and are more accurate than BPD throughout gestation. In 2 nd trimester these two head measurements are the best predictors of

gestational age. In the 3 rd trimester these two head measurements the femoral length & composite age formulas all predict GA with similar accuracy.

Composite age formulas use two or more measurements in conjunction to estimate GA. A noted demerit of using such Formulae is that an abnormal measurement or an anomaly might be obscured. For example in a fetus with a skeletal dysplasia manifested by shortened long bones and a very normal head circumference , the composite formula would grossly underestimate; falling between that predicted by corrected BPD & that predicted by the short FL. As a result, the Femur length might not appear to be abnormally small when compared to this gestational age.

ASSIGNMENT OF GA:

In some cases especially when the initial ultrasonogram occurs late in pregnancy, judgement must be applied to decide whether to use clinical or sonographic criteria to determine age.[12]

Because fetal measurements become progressively less accurate predictors of gestational age as pregnancy advances , the age once assigned at the time of initial scan taken in early pregnancy should not be changed thereafter. Anytime later in pregnancy the pregnancy dating must be based on the initial sonographic study, calculated by

taking the GA assigned at that time of initial scan and adding number of weeks that have elapsed since then. On subsequent examination standard fetal measurements like BPD , FL, AC, should be obtained and compared to normal standards for the gestation, based on the initial sonogram, to determine whether the fetus is appropriate in size.

PIONEER STUDIES:

STREETER et al in 1920 described that fetal foot has a distinct pattern of normal growth. He suggested that the fetal foot could be used to estimate gestational age.[2]

GOLDSTEIN et al found heel ossification centers could be a useful tool in ascertaining the accurate gestational age.[14]

CAMPBELL et al studied the ratio between fetal femur /foot length and discovered that it would serve as a better tool to differentiate those foetuses with skeletal dysplasia from those with short bones probably due to constitutional factors or fetal growth restriction [FGR] [5]

MOLLY CHATTERJEE et al in 1994 conducted a study involving 53 normal pregnant women at the prenatal diagnosis unit dept of obstetrics & gynaecology, university of New Mexico [1] The study group involved patients who are sure of her dates ,had regular menstrual cycles, didnot have any early pregnancy bleeding , nor they took oral pills in previous three months prior to conception[22]. In all patients ultrasonogram as early as 14 weeks was done to confirm gestational age either by crown rump length, or by biparietal diameter, head circumference and abdominal circumference. The measurements were taken with standard 3.5 & 5 MHz transducers.

They had measured the fetal foot from end of the big toe to the heel on plantar and lateral views .on data analysis, a significant linear relationship was found between parameters [R2=0.89, p <o.ooo1]

STREETER et al provoked many researchers to do further studies with fetal foot length. [2] In 1987 **Munsick** et al made a study with a finding that there was no racial difference in foot measurements between 10 and 20 weeks gestation.[3] Advanced technology have now made accurate determinations possible.

In the same year MERCER et al done the study of fetal foot length measurement to predict accurate fetal age ,they concluded that fetal foot length was a reliable parameter for determination gestational age & was particularly useful in conditions such as hydrocephalus, anencephaly, or skeletal dysplasia or short limb dwarfism.[4] Also visualisation of foot helps to find out anomalies like club foot & arthrogyposis. fetal foot polydactyly , syndactyly has been associated with certain chromosomal anomalies eg; trisomy [7]

A study was conducted at the department of obstetrics and gynaecology San Francisco general hospital , university of California, to establish fetal foot length ranges using LMP and ultrasound dating by biparietal diameter and to determine ethnic variations where about 1099 pregnant patients awaiting second

trimester pregnancy termination. Models of foot length were developed on the basis of LMP alone, ultrasonogram measured biparietal diameter and ‘ best estimate’ is determined [21].

The results of study were regression by LMP determined fetal foot length and ultrasound dating have nearly similar equation, similar R value close to 0.9 although standard errors were larger. Gestational

duration by ultrasonography alone produced a better model fit than with LMP alone there was no significant difference in regressions in terms of ethnicity. The study emphasized that more accurate measurements needed for greater precision in correlating gestational duration and foot length. Biparietal diameter as a single measurement provides adequate estimation of GA more reliably than LMP dating.

Sonographic measurements of fetal ultrasound parameters are the basis for accurate determination of conceptional age [12] and also helps in detection of growth abnormalities. Selection of single best parameter in dependent upon pregnancy duration and is influenced by respective limitations CRL [crown rump length] is the best biometric parameter in first trimester, biparietal diameter closely correlates in mid trimester abdominal circumference forms an important measure in evaluating appropriate growth and femur length is the best in evaluation of skeletal dysplasia. Use of more than one predictors is shown to have improved accuracy of estimates. We should take into account various epidemiological factors in assessing growth pattern. specific growth profile charts are recommended for every different communities.

In the second trimester the biparietal diameter, head circumference , transcerebellar diameter, abdominal circumference, femur length and other long bones are also useful. The TCD is useful as it is spared in IUGR . another major advantage in doing ultrasonography in early second trimester is that, it helps to indentify structural anomalies or abnormal biometry. Multiple structural abnormalities suggest aneuploidy.

Second trimester estimated fetal weight [EFW] have been developed which are useful in early detection of fetal growth restriction. The sensitivity of short long bone in detection of fetal aneuploidy [7] is approximately 30% with false positive rates <5%. Another important application of second trimester USG is to identify pregnancies at risk of premature delivery and cervical insufficiency.

There was a cross sectional prospective study from 5372 singleton foetuses between 15-37 weeks gestation conducted in department of obstetrics and reproductive sciences , St . Peters university

New Jersy USA to ascertain the reliability of fetal foot length in predicting gestational age in cases of abnormal fetal growth. They

measured foot length in small and large for gestational age foetuses. They using cross sectional data constructed a nomogram [11] .

They ascertained small- for gestational age as EFW< 10^{th} percentile and large for gestational age as EFW > 90^{th} percentile. They found that 60.6% had foot lengths below 10^{th} percentile & 29.4% had foot measurements above 90^{th} percentiles. They concluded that fetal foot length can be influenced by abnormal growth patterns. Their findings imply that there are limitations to the use of foot length for GA assignment, particularly in foetuses with growth abnormalities.

A study conducted in Kathmandu university hospital , Nepal integrating departments of Radiology & obstetrics and gynaecology published in NJR VOL 1 , 2011, [6] to demonstrate correlation between fetal foot length and gestation age, also to study the relationship between fetal foot length and femur length. It was a cross sectional study. Foot length was measured from skin edge overlying calcaneous to the distal end of the big toe on either plantar / sagittal view in singleton pregnant women between 15 and 40 weeks of gestation. Neonatal foot length was measured at birth .analysis was done by simple linear regression. They concluded as there is significant linear correlation between foot length and gestation age and foot & femur

length enabling to have foot length as a alternative parameter. The latter ratio is fairly constant throughout gestation. They also suggested that there are situations where standard parameters cannot be used for example, hydrocephalus, anencephaly, short limb dysplasia [4] and in third trimester pregnancy with an engaged head.

JOSHI et al also quoted the **STREETER** et al in 1920 findings that fetal foot could be used to estimate fetal age.[6].

MERCER et al studied 223 postpartum & 224 USG measurements between late first trimester till 43 weeks concluded foot length estimation as a more accurate biometry in gestation age assignment [4].

MHASKER et al done 105 measurements fetal foot length and found similar results[16].

PLATT et al suggested that the measurement of fetal foot length with ultrasound gives a reliable assessment of anatomic fetal or neonatal foot length is highly correlated to the fetal age [8].

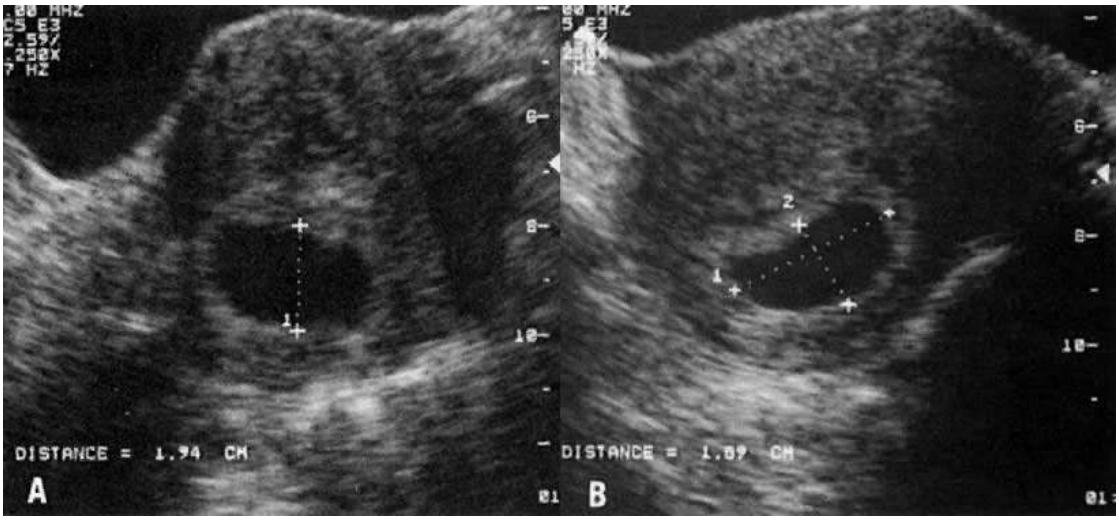
Therefore exact assessment of fetal age is an important key in the management of a obstetric case. If patient is not sure of her dates, or in cases of multiple pregnancy, abnormalities of liquor

volume most of the consulting obstetricians depend on standard USG measurements as described in literature.

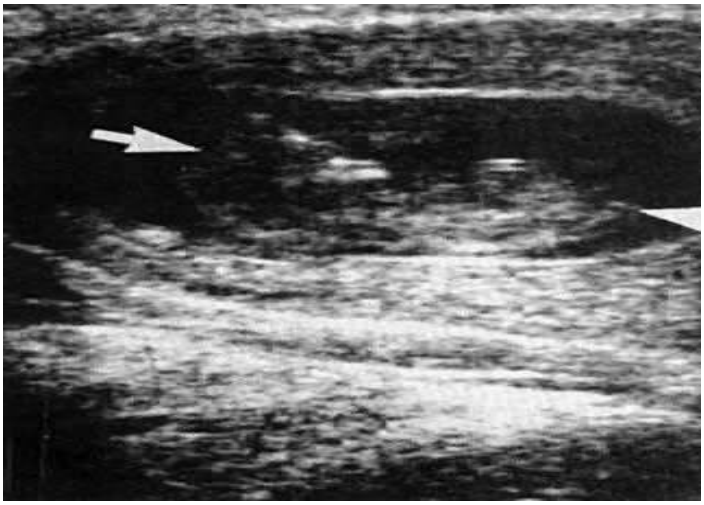
In normal scenarios we depend on MSD, CRL, BPD, HC, & FL for a conclusion. However in exceptional situations such as macrocephaly / microcephaly, limb dysplasia [4] , engaged head in late pregnancy , in cases of fetal growth retardation difficulty may arise and hence we need alternative reliable parameters like fetal foot length which is a relatively simple technique, performed easily in everyday practice with good reliability.

SHALEV et al proposed same agreement between fetal foot length and prediction of gestation [9].

GESTATIONAL SAC MEASUREMENTS:

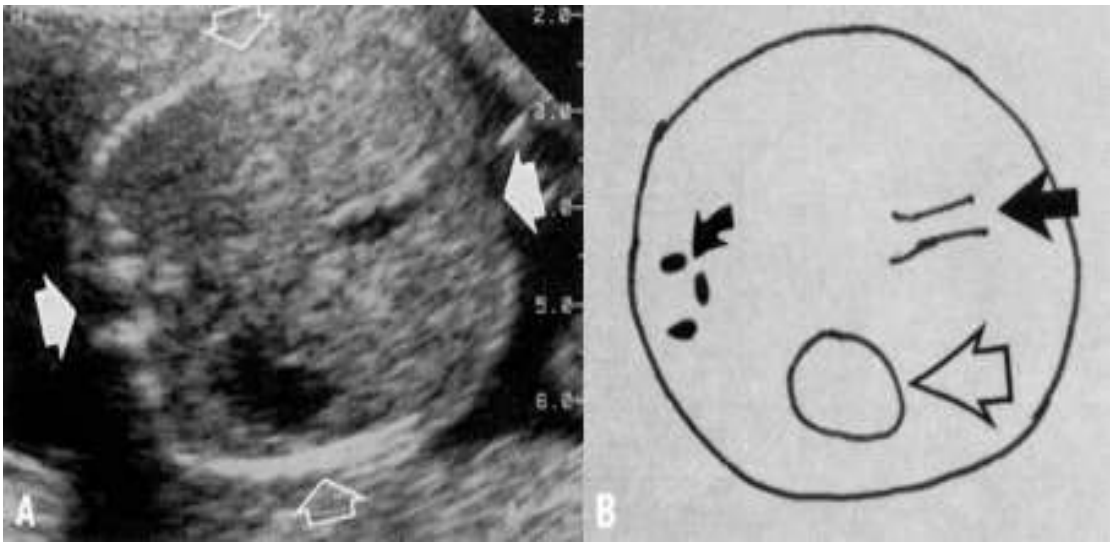


CROWN RUMP LENGTH MEASUREMENT:



FEMUR LENGTH MEASUREMENT:

ABDOMINAL CIRCUMFERENCE MEASUREMENT:



FOOT LENGTH MEASUREMENT

A study by Mandarim - de- Lacerda et al [10] presents statistically significant curves of the foot length and concluded that these curves have a good application in various fields of medicine such as anatomy, forensic medicine. They also showed that our fetal foot growth was not significantly varying compared to developed countries [10].

CAMPBELL et al [5] have found from their study that ratio of femur to foot length guides better in differentiating foetuses with dysplastic limbs from those limbs which were constitutional short . If fetus has symmetrical fetal growth restriction the ratio is > or equal to 0.9 whereas in most dysplastic limbs it will be < 0.9 because of sparing of extremities [5]. JOHNSON et al found that femur/ foot length ratio could serve as an additional marker for chromosomal abnormalities [7].

A study conducted at St. Mary's hospital Manchester [17] found that there was a positive linear correlation between foot length and other indices of body size in small for gestational and appropriate for gestational age babies of all ages. However, in premature babies the correlation between foot length and birth weight was pronounced. Birth weight of premature babies can therefore be estimated from foot length measurement from a specially designed

neonatal foot gauge that is performed simply and rapidly. Foot length measurements are valuable in premature babies who are too ill at birth for conventional anthropometric measurements [17] to be made and in whom such measurements could not be done because of the encumbrance of incubator and various ICU apparatus. Even drug dosages can be calculated indirectly from foot length measurements.

Markowski and Lawler [1977] suggested that foot length could be used to predict the gestational age of very premature aborted foetuses[18]. The measurement of foot length may prove to be a valuable adjunct to other anthropometric measurements in the classification of light for dates babies; it may be the only measurement that can be conveniently made in ill babies nursed in incubators

ANALYSIS AND RESULTS

ANALYSIS -PATTERN

Correlation: **Pearson's correlation** (modified from instructor's resource Guide for the text)

The concept of correlation is first introduced in chapter three. When working with the regional data files (GLOBAL, AFRICA, ASIA, EUROPE, LATIN, AND NAF-SAS), the following guidelines for interpreting positive or negative correlations (Pearson's r) may be helpful. These are only crude estimates for interpreting strengths of correlations.

If r = +70 or higher very strong positive relationship

+.40 to +.69 strong positive relationship

+.30 to +.39 moderate positive relationship

+.20 to +.29 weak positive relationship

+.01 to +.19 no or negligible relationship

-.01 to -.19 no or negligible relative relationship[

-.20 to -.29 weak negative relationship

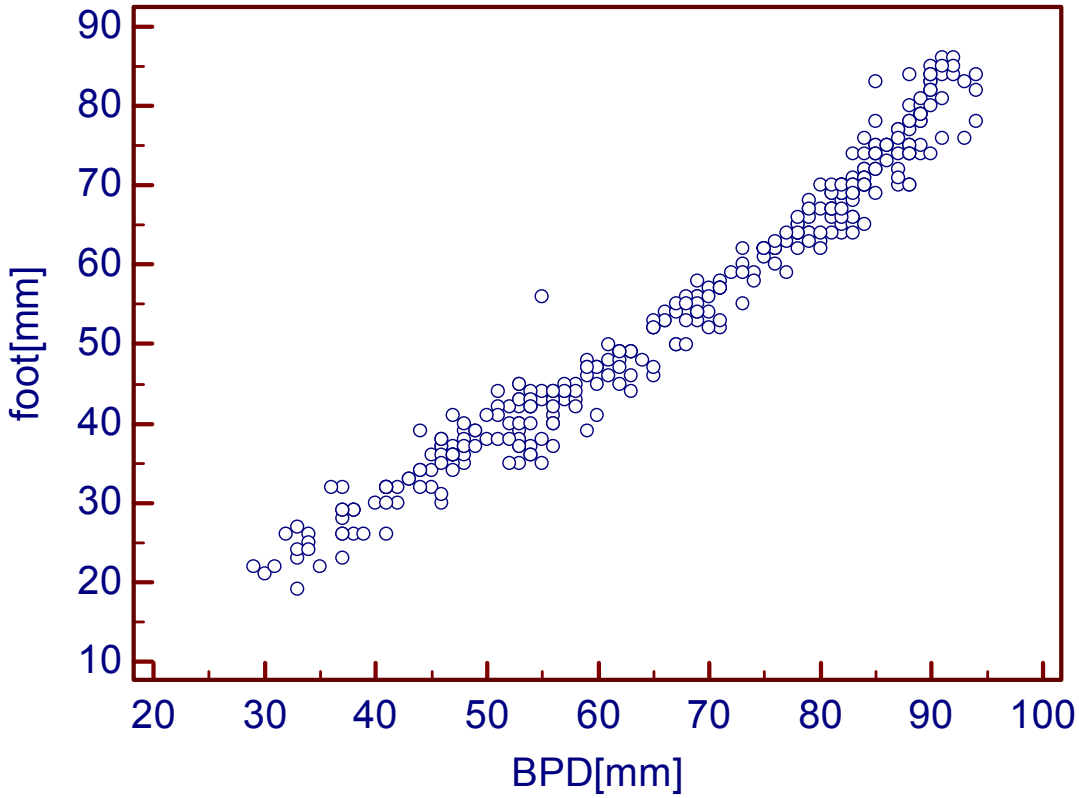
-.30 to -.39 moderate negative relationship

-.40 to -.69 strong negative relationship

-.70 or higher very strong negative relationship

TABLE I

CORRELATION OF FOOT LENGTH WITH BPD IN ESTIMATION OF GA



Correlation

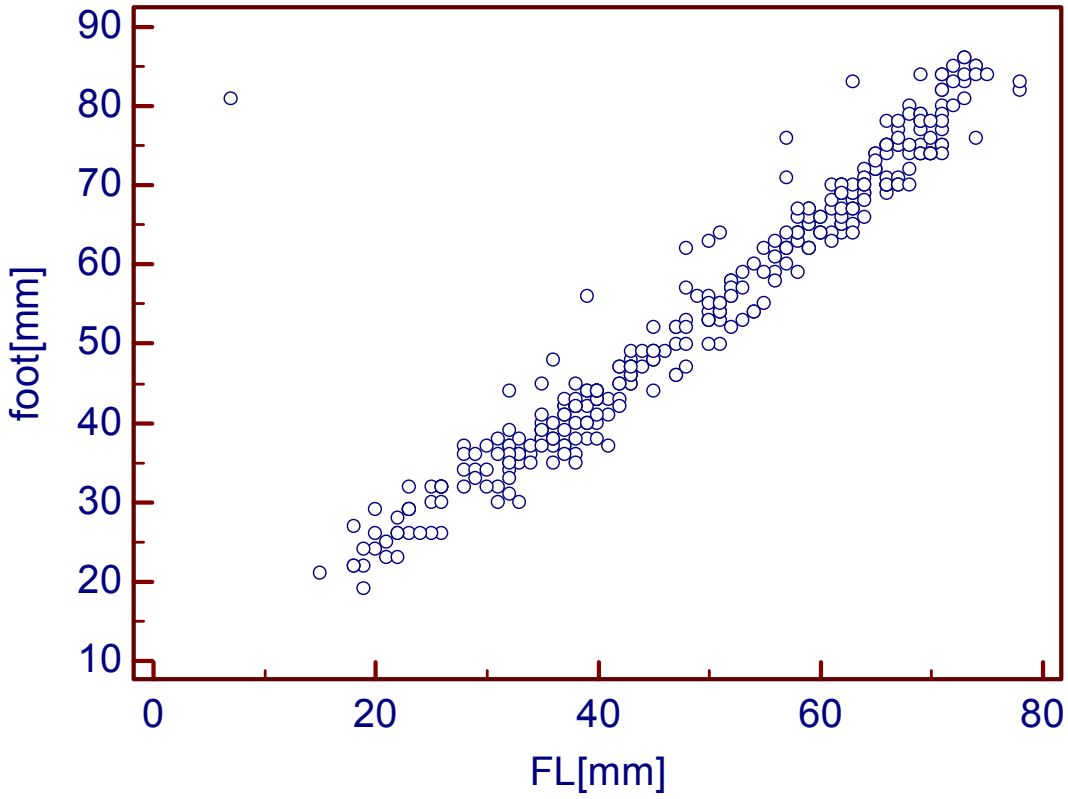
Variable Y	foot[mm]
Variable X	BPD[mm]

Sample size	341
Correlation coefficient r	0.9827
Significance level	P<0.0001
95% Confidence interval for r	0.9786 to 0.9860

This scatter diagram shoes that, foot length in millimetres taken along Y axis and biparietal diameter taken along X axis showed a significant correlation of 0.9827 with a significant p vaue of <0.0001

TABLE II

CORRELATION OF FOOT LENGTH WITH FL IN ESTIMATION OF GA



Correlation

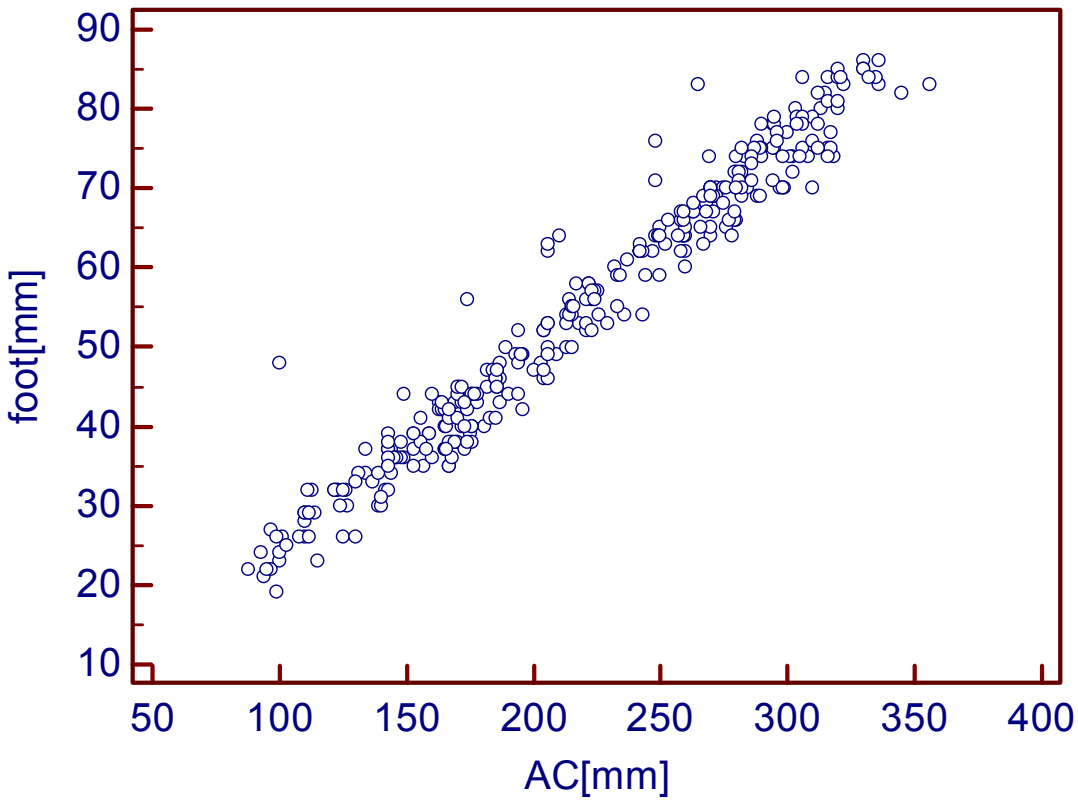
Variable Y	foot[mm]
Variable X	FL[mm]

Sample size	341
Correlation coefficient r	0.9563
Significance level	P<0.0001
95% Confidence interval for r	0.9462 to 0.9646

This scatter diagram shows foot length in millimeters plotted in Y axis and femur length in millimeters plotted in x axis showing a positive coefficient of correlation of 0.9563 which is a significant thing with a p value <0.0001 this further helps to consider fetal foot length measurement as a reliable biometric parameter in assigning fetal age.

TABLE III

CORRELATION OF FOOT LENGTH WITH AC IN ESTIMATION OF GA



Correlation

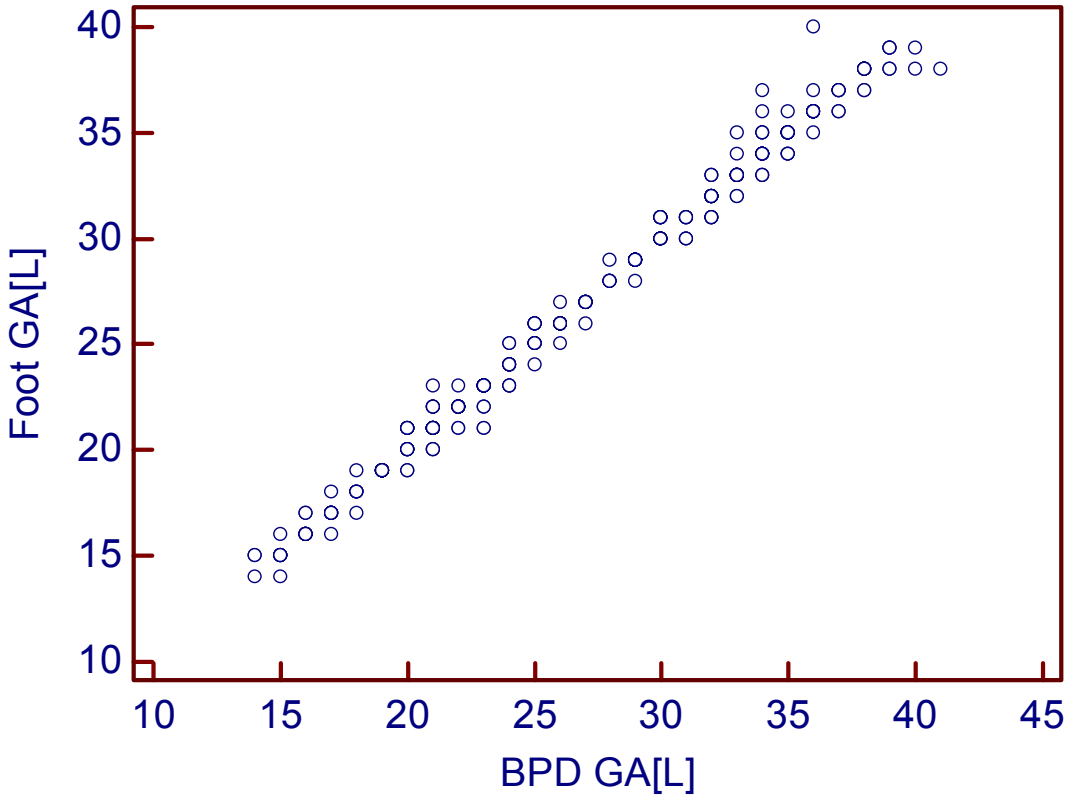
Variable Y	foot[mm]
Variable X	AC[mm]

Sample size	341
Correlation coefficient r	0.9791
Significance level	P<0.0001
95% Confidence interval for r	0.9742 to 0.9831

This scatter diagram depicting foot length in Y axis and abdominal circumference in X axis also had good corelation of 0.9761 with a significant p value. The results of correlation obtained in this study is similar to the significant correlation with p value < 0.001 as in previous studies [8],[2] ,[6].

TABLE IV

CORRELATION OF FOOT LENGTH [L] WITH BPD [L] IN ESTIMATION



orrelation

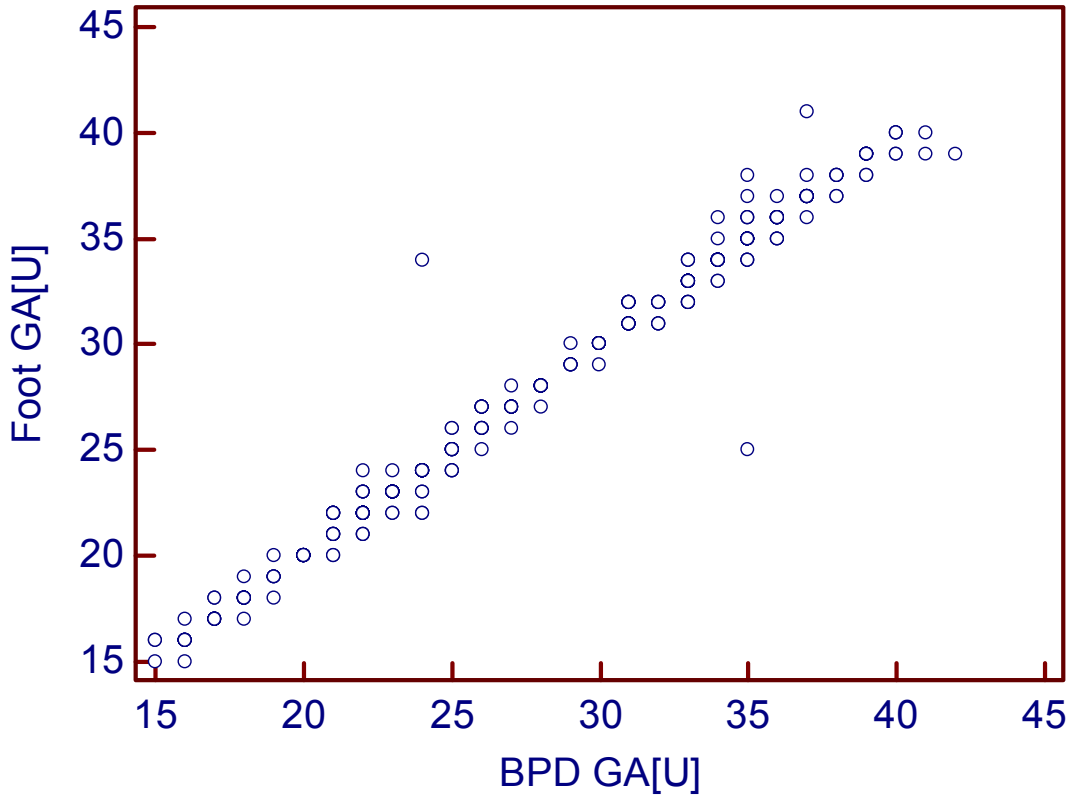
Variable Y	Foot_GA[L]
Variable X	BPD GA[L]

Sample size	341
Correlation coefficient r	0.9955
Significance level	P<0.0001
95% Confidence interval for r	0.9944 to 0.9963

This scatter diagram studying the linear corelation coefficient of 0.9955 comparing lower limit of Foot length with standard biparitel diameter. Also the relationship between fetal foot length and gestational age according to Molley et al is similar p <0.0001

TABLE V

CORRELATION OF FOOT LENGTH [U] WITH BPD [U] IN ESTIMATION OF GA



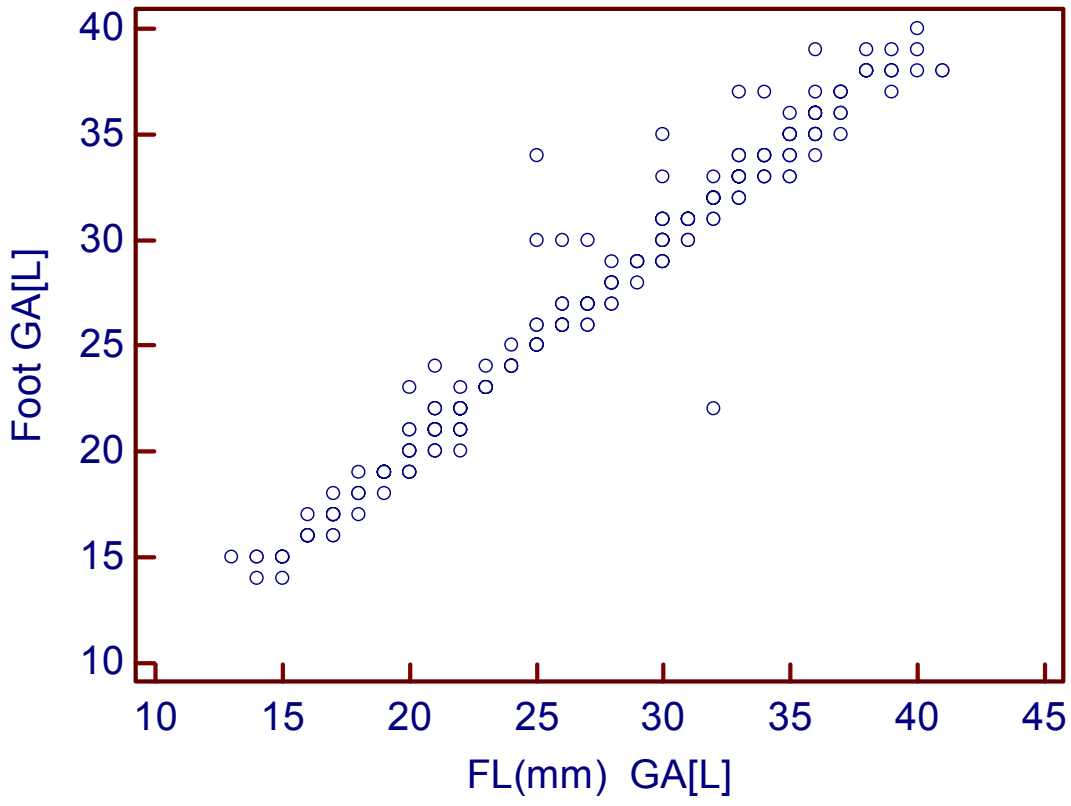
Correlation

Variable Y	Foot_GA[U] Foot GA[U]
Variable X	BPD_GA[U] BPD GA[U]

Sample size	341
Correlation coefficient r	0.9892
Significance level	P<0.0001
95% Confidence interval for r	0.9866 to 0.9913

TABLE VI

CORRELATION OF FOOT LENGTH [L] WITH FL [L] IN ESTIMATION GA



Correlation

Variable Y	Foot_GA[U] Foot GA[U]
Variable X	FL_mm__GA[U]_week_ FL(mm) GA[U]_week_

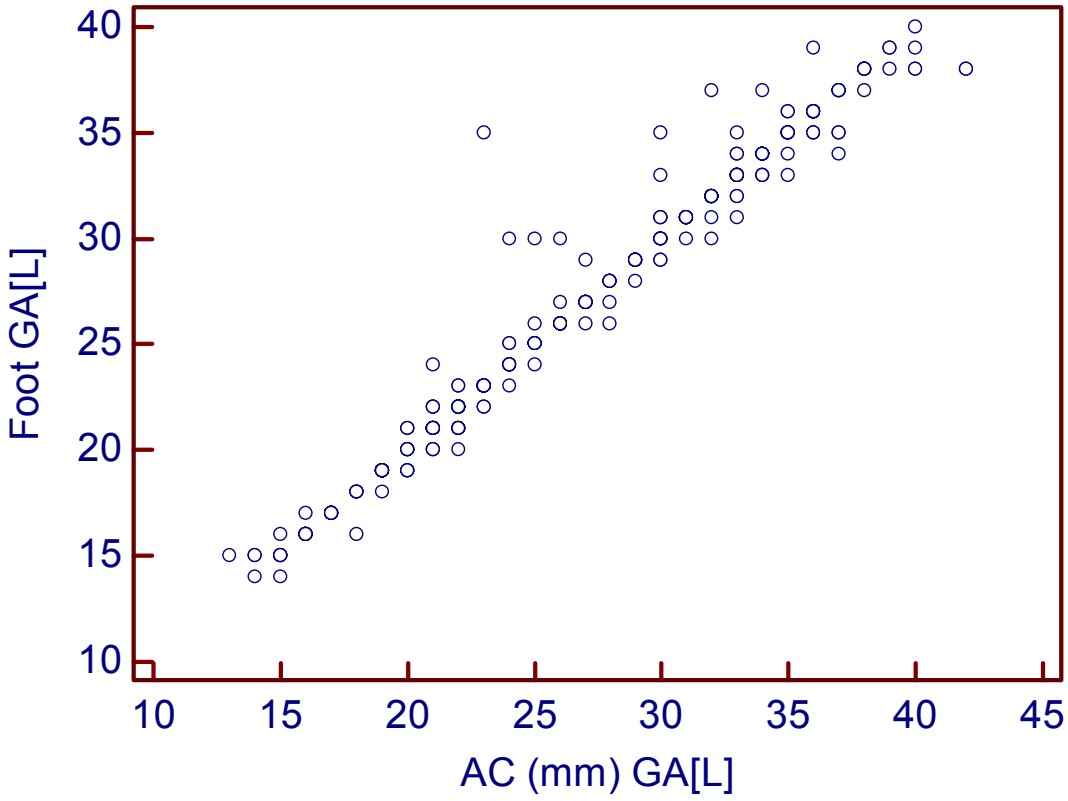
Sample size	341
Correlation coefficient r	0.9884
Significance level	P<0.0001
95% Confidence interval for r	0.9857 to 0.9906

The previous two scatter diagrams measuring correlation between foot length and femur length which already showed a significant linear relationship the upper and lower range limits

Of both parameters when compared also shows good measurement of agreement with a statistically significant p value <0.0001, the 95% confidence interval being not very wide.

TABLE VII

CORRELATION OF FOOT LENGTH [L] WITH AC [L] IN ESTIMATION OF GA



Correlation

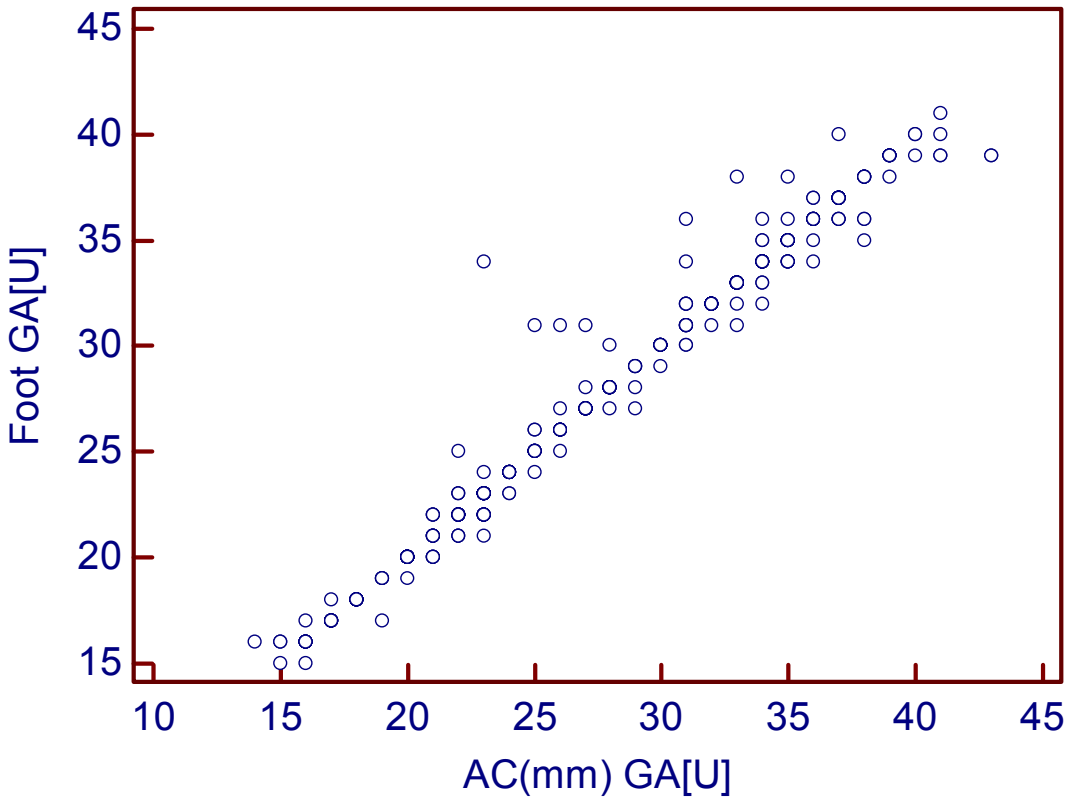
Variable Y	Foot_GA[L] Foot GA[L]
Variable X	AC__mm__GA[L] AC (mm) GA[L]

Sample size	341
Correlation coefficient r	0.9855
Significance level	P<0.0001
95% Confidence interval for r	0.9820 to 0.9882

This scatter diagram depicting foot length in mm lower range is analysed for its correlation with lower limit of abdominal circumference and found to have significant correlation with a correlation coefficient of 0.9855 with p value of < 0.0001 which is statistically significant.

TABLE VIII

CORRELATION OF FOOT LENGTH [U] WITH AC [U] IN ESTIMATION OF GA



Correlation

Variable Y	Foot_GA[U]
Variable X	AC_mm__GA[U]

Sample size	341
Correlation coefficient r	0.9862
Significance level	P<0.0001
95% Confidence interval for r	0.9830 to 0.9888

One study conducted in USA [21] to study the prediction of fetal foot length & gestational age showed a positive linear correlation value of 0.87, with larger standard errors. But my study showed a correlation coefficient of 0.9862 .so fetal foot length is a reliable parameter in prediction of accurate gestational age along with standard conventional parameters like biparietal diameter, femur length and abdominal circumference.

Fetal foot length can be a reliable measurement in fetal age prediction in case where there situations where conventional parameters are of less reliability. Biparietal diameter cannot be accurate in places of abnormal head shapes like microcephaly or macrocephaly . Head circumference cannot be used in assessing gestational age in cases of dolicocephaly.

The long bones length measurement was studied in fewer studies failed to predict gestational age of growing fetus accurately because the skeletal limb dysplasias virtually affecting most of the bones. It cannot be depended even in conditions like short limb dwarfism. In case of anencephaly a neural tube defect occurring due to deficiency of folate and other antiepileptic therapy there is absence of skull calveria .then it is difficult to ascertain gestational age by conventional methods such as biparietal diameter or head circumference or transcerebellar diameter/ occipito frontal diameter. In such situations along with other traditional parameters femur length and abdominal circumference fetal foot length can be a good reliable parameter .

When choosing a single best fetal parameter to assess period of gestation there are little biologic variations. Each study claims one parameter to be more reliable than other conventional parameters. Using multiple biometric parameters as in my study the accuracy of fetal age estimation can be greatly improved which helps in a very great way to take appropriate clinical decisions regarding timing of termination of pregnancy, and induction of labour to minimise maternal morbidity , mortality and improved perinatal outcomes which is our ultimate goal.

The use of multiple parameters [15] also reduces the effects due biologic phenonmenon or a technical error that occurs in single measurement. It is also known from various studies to ascertain gestational age that random errors gets reduced with multiple parameter measurement [15] rather than single parameter in the estimation.

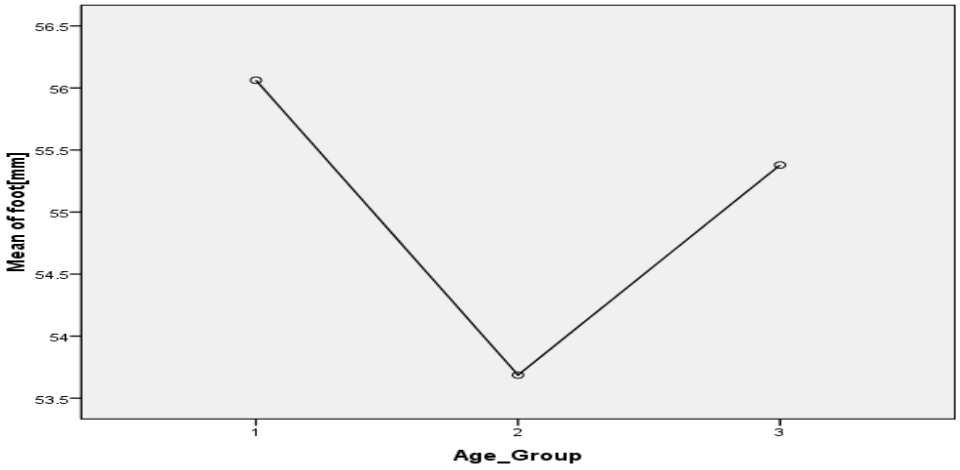
About 20% of antenatal women do not have reliable dates [5], may cycles irregular due to various reasons it is our duty to estimate gestational age in those individuals also to decide on timing of delivery the mode of induction and to decide risk benefit ratio in certain high risk pregnancies like preeclampsia, overt diabetes, heart diseases, Rh isoimmunisation and so on.

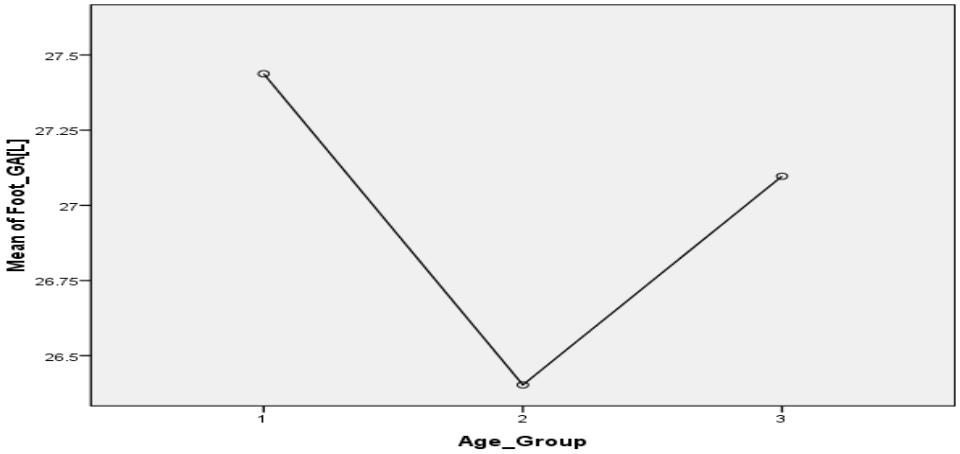
Among my study group there were 43 patients with irregular cycles whose biometric parameters were analysed to find whether fetal foot l foot length measurements can predict accurate gestational ages the analysis showed that it reliably predicts fetal age with a correlation coefficient of 0.98 & a significant p value <0.0001. from this study it is evident that fetal foot length reliably helps in accurate estimation of gestation even in patients with irregular cycles.

TABLE IX

AGE DISTRIBUTION ANALYSIS

Age distribution		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Significance
						Lower Bound	Upper Bound	
foot[mm]	20yrs.	16	56.06	17.372	4.343	46.81	65.32	NO
	21-25yr	201	53.69	17.886	1.262	51.20	56.17	
	26-32yr	124	55.38	16.464	1.479	52.45	58.31	
	Total	341	54.41	17.330	.938	52.57	56.26	
Foot_GA[L]	20yrs.	16	27.44	6.792	1.698	23.82	31.06	
	21-25yr	201	26.40	6.961	.491	25.43	27.37	NO
	26-32yr	124	27.10	6.615	.594	25.92	28.27	
	Total	341	26.70	6.819	.369	25.98	27.43	
Foot_GA[U]	20yrs.	16	28.44	6.792	1.698	24.82	32.06	
	21-25yr	201	27.40	6.961	.491	26.43	28.37	
	26-32yr	124	28.18	6.626	.595	27.00	29.36	NO
	Total	341	27.73	6.825	.370	27.01	28.46	


56.5
56
55.5
55
54.5
54
53.5
Mean of foot[mm]
1
2
3
Age_Group


27.5
27.25
27
26.75
26.5
Mean of Foot_GA[L]
1
2
3
Age_Group

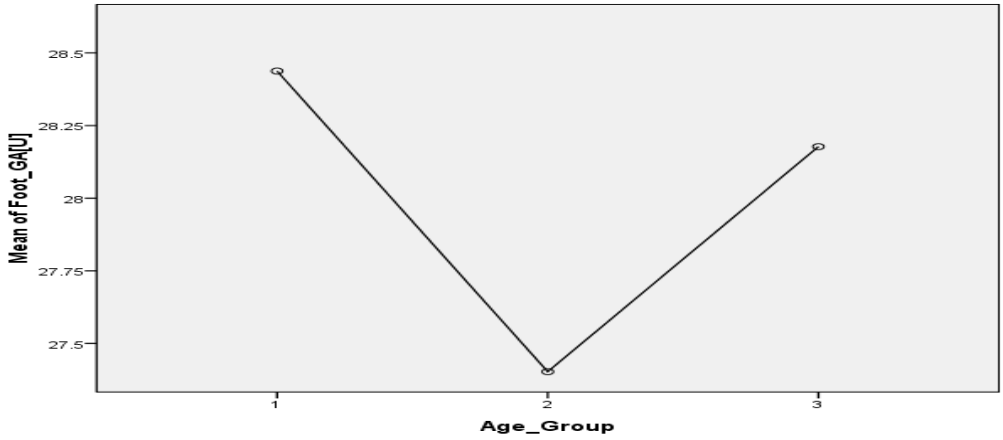
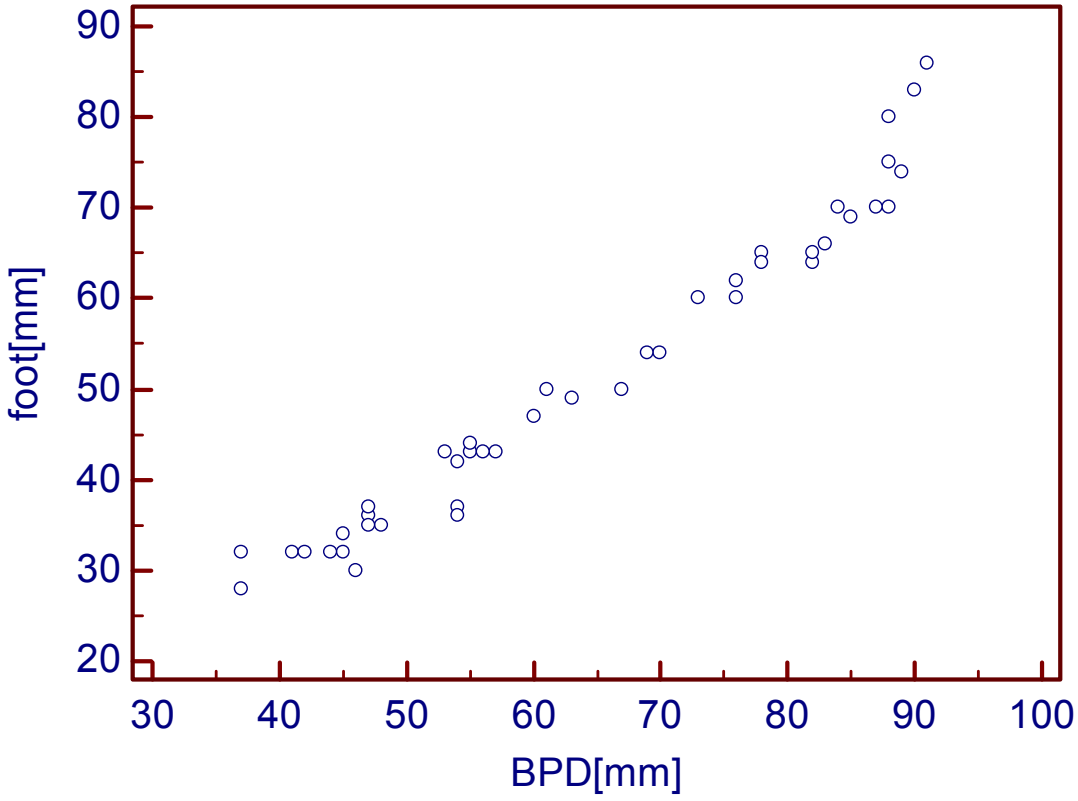

28.5
28.25
28
27.75
27.5
Mean of Foot_GA[U]
1
2
3
Age_Group

TABLE X

IRREGULAR CYCLES: FOOT LENGTH CORRELATION WITH BPD



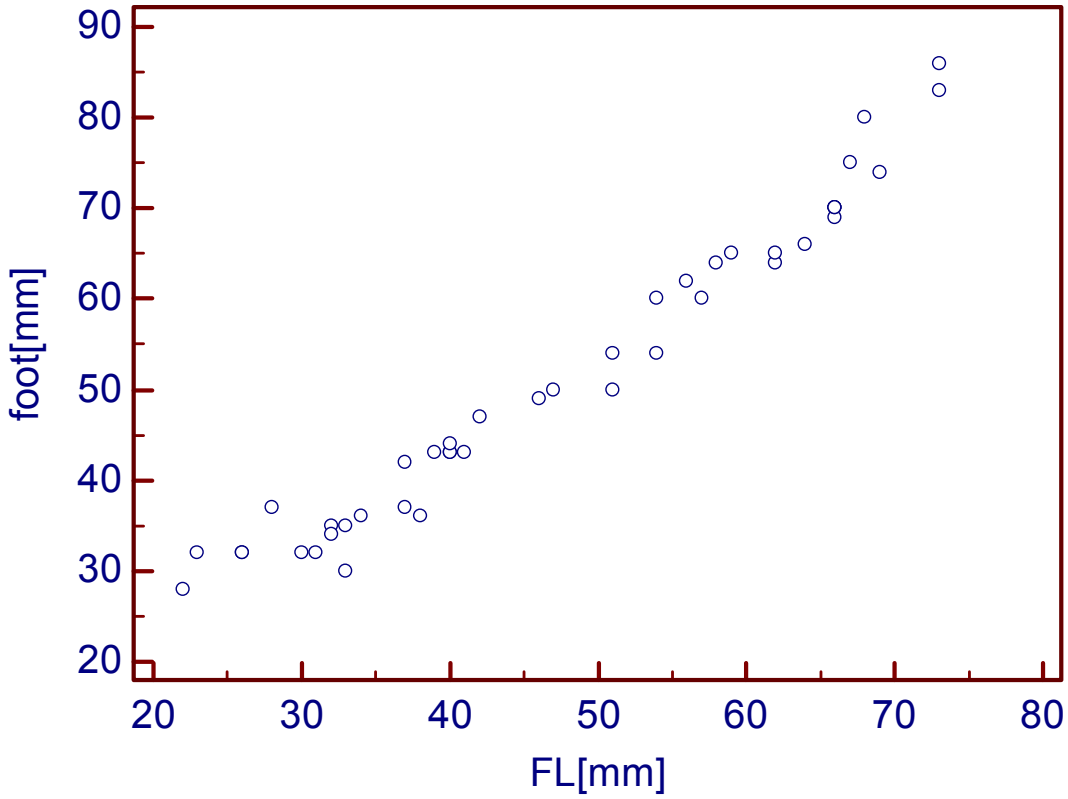
Correlation

Variable Y	foot[mm]
Variable X	BPD[mm]

Sample size	43
Correlation coefficient r	0.9816
Significance level	P<0.0001
95% Confidence interval for r	0.9660 to 0.9900

TABLE XI

IREGULAR CYCLES: FOOT LENGTH CORRELATION WITH FL



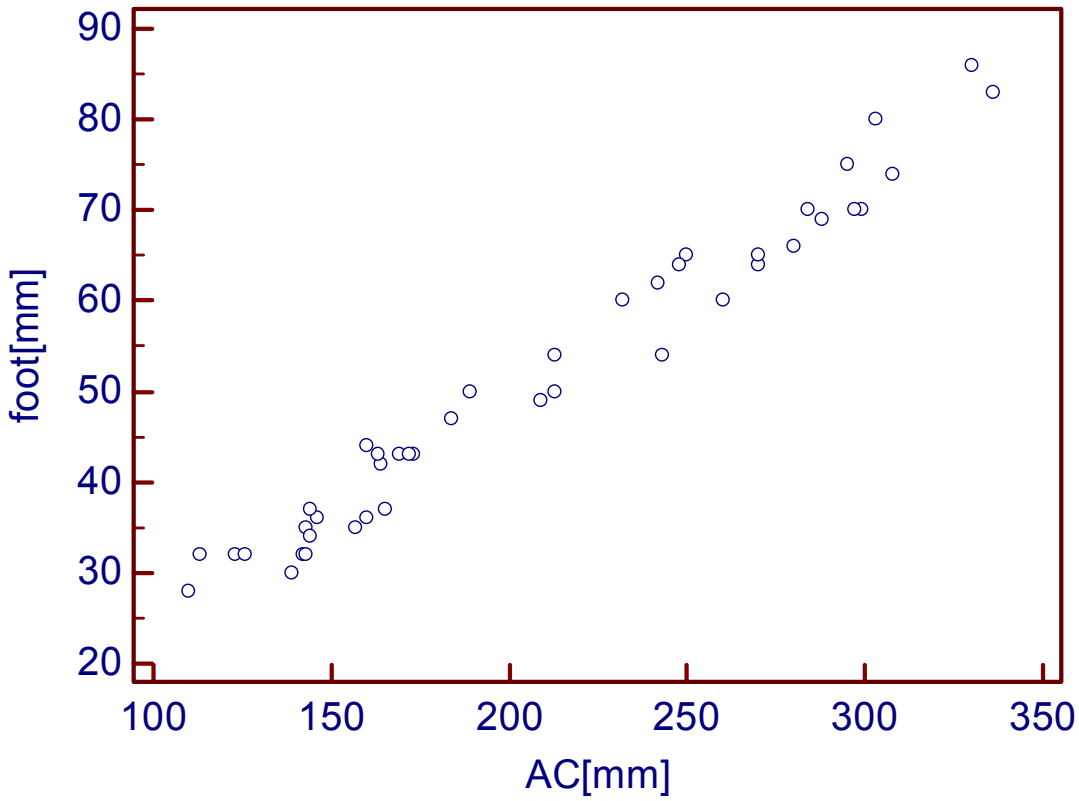
Correlation

Variable Y	**foot[mm]**
Variable X	**FL[mm]**

Sample size	**43**
Correlation coefficient r	**0.9815**
Significance level	**P<0.0001**
95% Confidence interval for r	**0.9659 to 0.9900**

TABLE XII

IRREGULAR CYCLES: FOOT LENGTH CORRELATION WITH AC



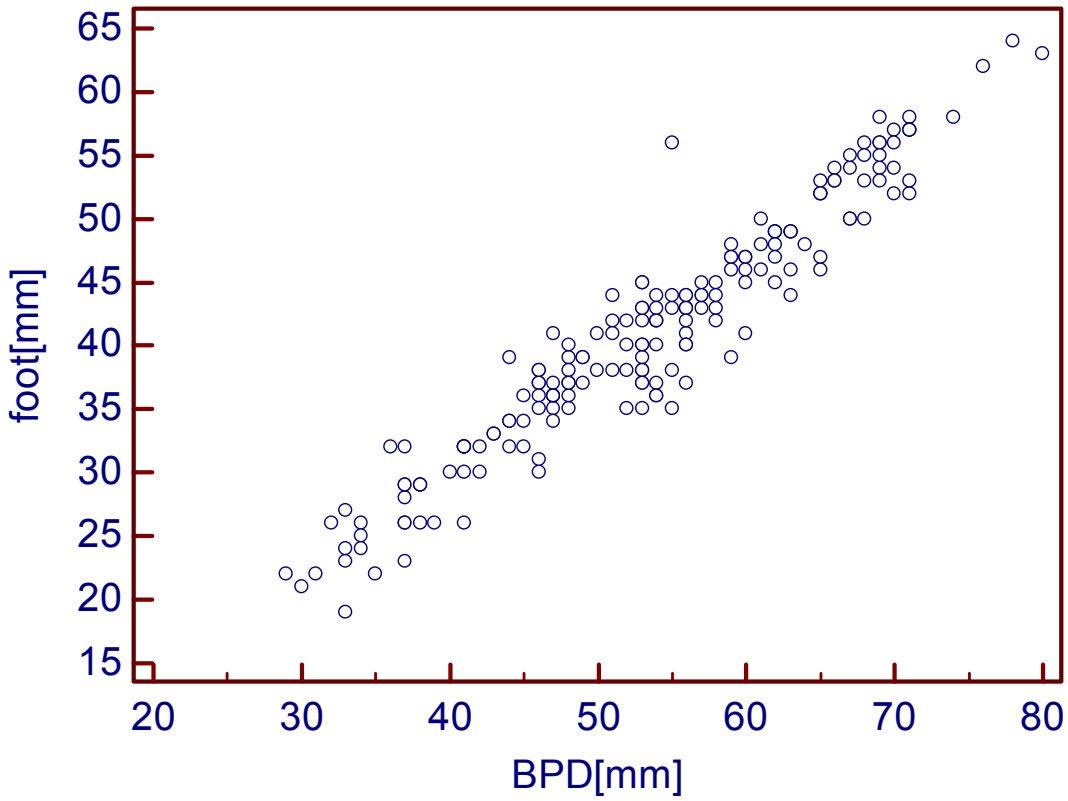
Correlation

Variable Y	foot[mm]
Variable X	AC[mm]

Sample size	43
Correlation coefficient r	0.9847
Significance level	P<0.0001
95% Confidence interval for r	0.9718 to 0.9917

TABLE XIII

SECOND TRIMESTER: FOOT LEGTH CORRELATION WITH BPD



Correlation

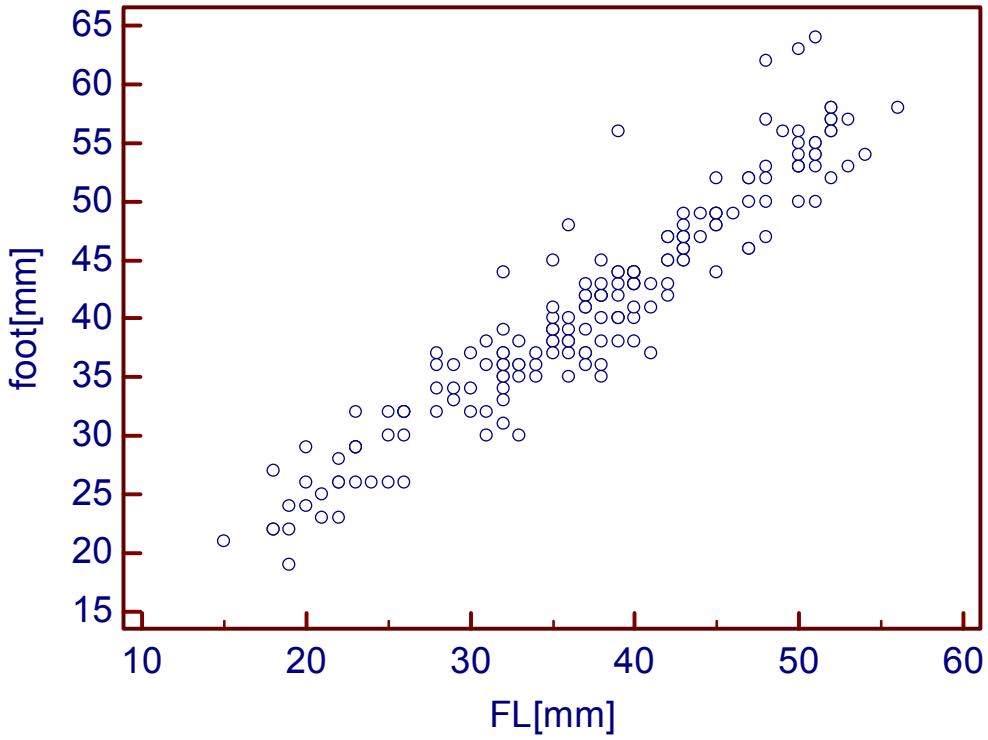
Variable Y	foot[mm]
Variable X	BPD[mm]

Sample size	189
Correlation coefficient r	0.9605
Significance level	P<0.0001
95% Confidence interval for r	0.9477 to 0.9702

From my study population an analysis was made to determine measure of correlation between foot length & gestational age in terms of period of pregnancy. there were 189 patients in study group belonging to second trimester. There is a significant correlation prediction in second prediction with a correlation coefficient of 0.9605 and a significant p value of <0. 0001.

TABLE XIV

SECOND TRIMESTER: FOOT LENGTH CORRELATION WITH FL



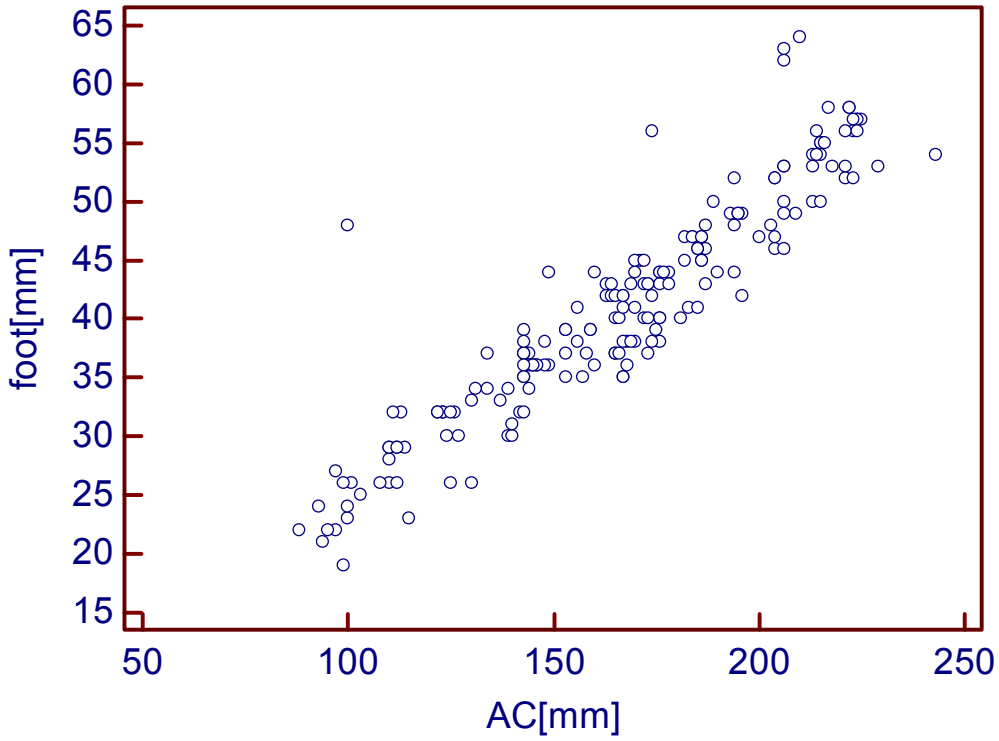
Correlation

Variable Y	foot[mm]
Variable X	FL[mm]

Sample size	189
Correlation coefficient r	0.9483
Significance level	P<0.0001
95% Confidence interval for r	0.9317 to 0.9610

TABLE XV

SECOND TRIMESTER: FOOT LENGTH CORRELATION WITH AC



Correlation

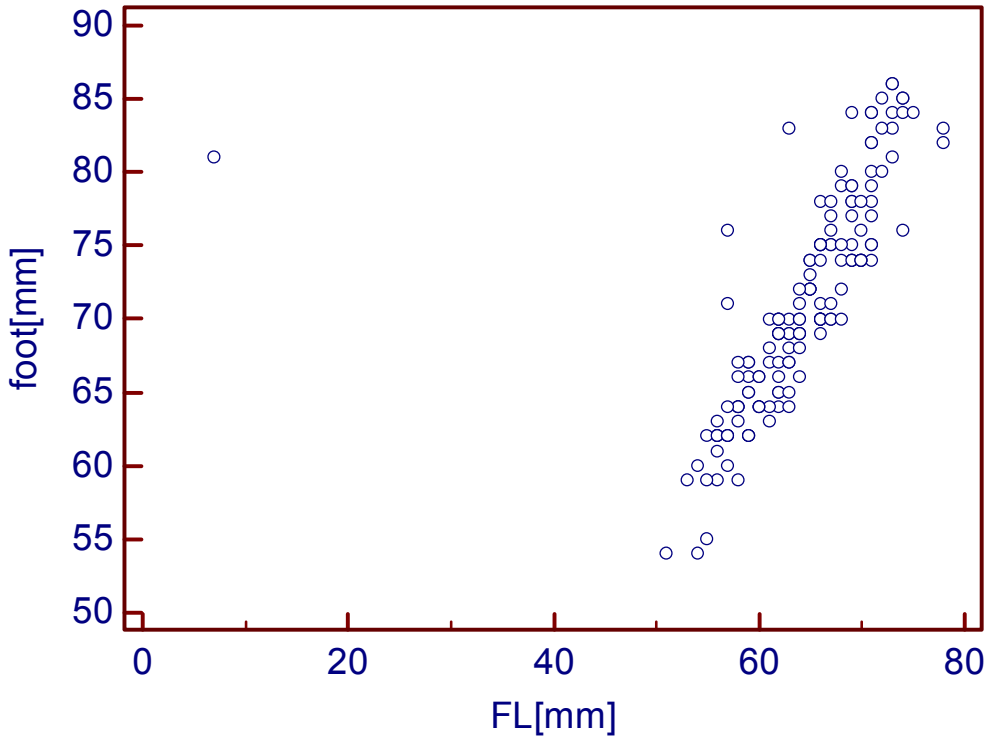
Variable Y	foot[mm]
Variable X	AC[mm]

Sample size	189
Correlation coefficient r	0.9267
Significance level	P<0.0001
95% Confidence interval for r	0.9034 to 0.9445

Similarly the analysis of measurement of agreement between fetal foot in predicting gestational age in third trimester was done to find out whether fetal length predicts gestational accurately in second or third trimester

TABLE XVI

THIRD TRIMESTER: FOOT LENGTH CORRELATION WITH FL



correlation

Variable Y	foot[mm]
Variable X	FL[mm]

Sample size	152
Correlation coefficient r	0.6238
Significance level	P<0.0001
95% Confidence interval for r	0.5159 to 0.7123

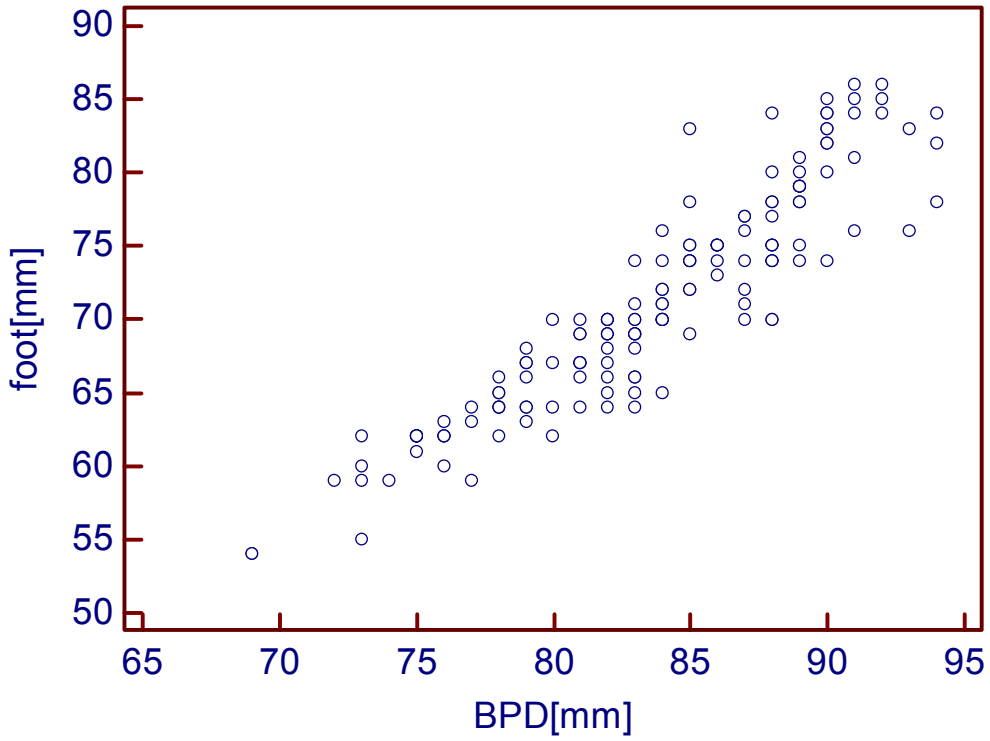
The correlation between the fetal length in predicting GA in third trimester was not significant when compared to prediction in third trimester . 95% confidence interval has a wide range falling between 0.5159 to 0.7123. correlation coefficient is 0.6 which is lower than 0.9 in second trimester . In advanced pregnancy there is less accuracy with conventional parameters like biparietal diameter in predicting exact period of gestation. Abdominal circumference measurement in third trimester is mainly to detect fetal growth restriction.

In case of assymetrical IUGR those two measurements the femur length and abdominal circumference will fall below 5 th percentile appropriate for that age. Biparitel diameter does not get

affected because of fetal brain sparing effect there is preferential more blood flow to brain to prevent fetal hypoxia.

TABLE XVII

THIRD TRIMESTER: FOOT LENGTH CORRELATION WITH BPD



Correlation

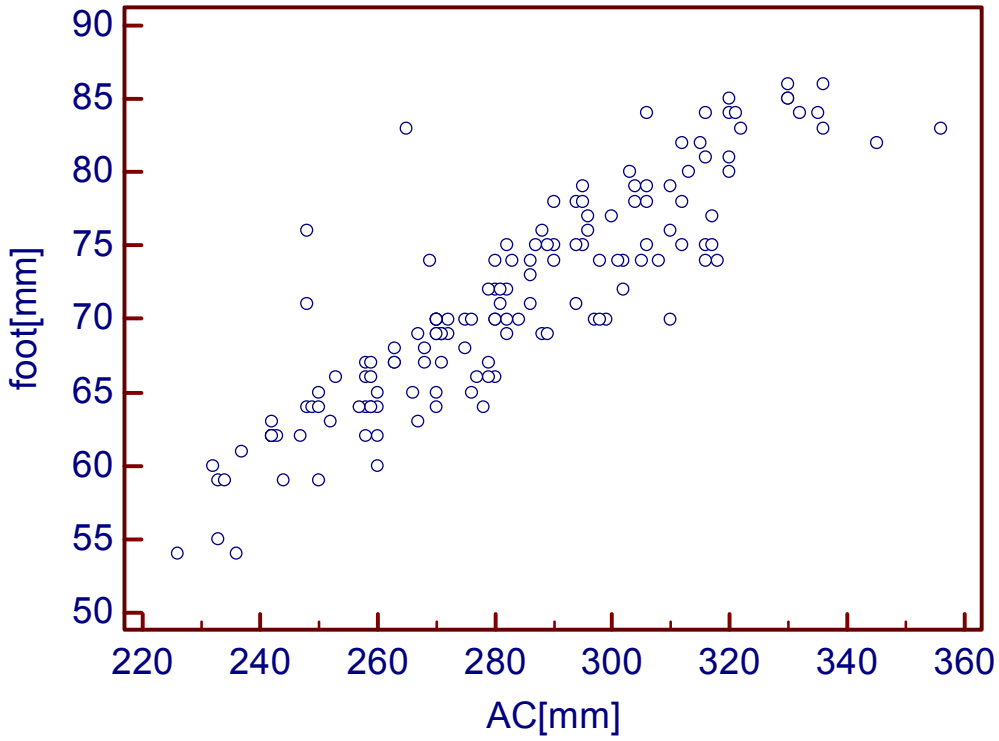
Variable Y	foot[mm]
Variable X	BPD[mm]

Sample size	152
Correlation coefficient r	0.9201
Significance level	P<0.0001
95% Confidence interval for r	0.8915 to 0.9414

The correlation between the fetal foot length in assigning accurate gestational age is statistically significant $p < 0.0001$ though with a wide range of confidence interval .the correlation R value is 0.92 which is less when compared with second trimester correlation R value of 0.98

TABLE XVIII

THIRD TRIMESTER: FOOT LENGTH CORRELATION WITH AC



Correlation

Variable Y	foot[mm]
Variable X	AC[mm]

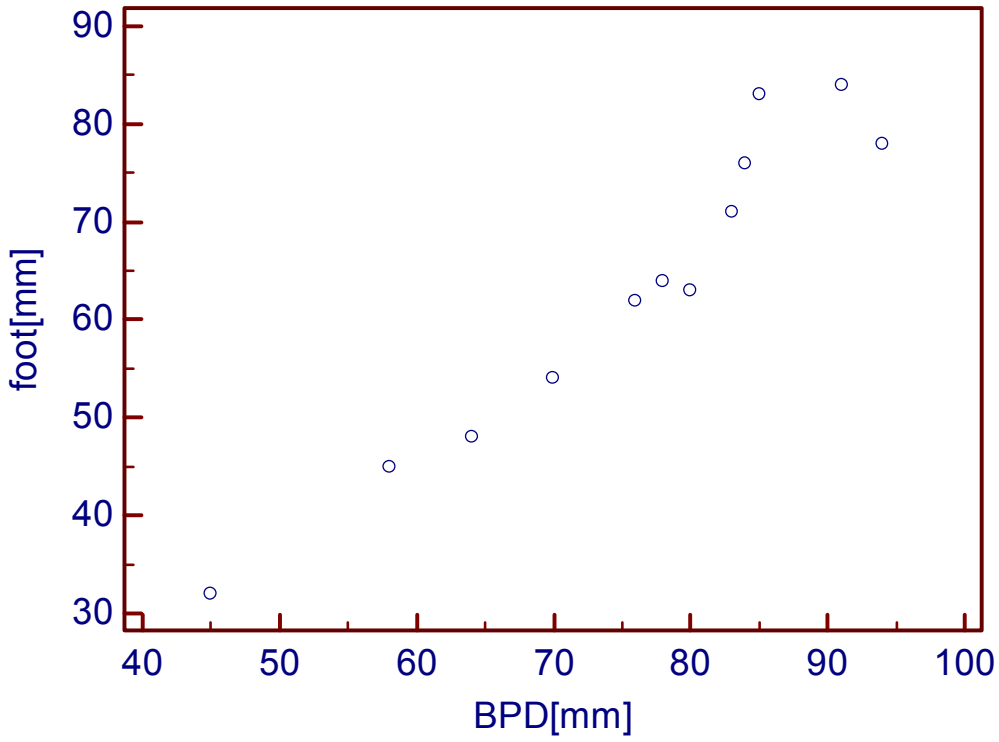
Sample size	152
Correlation coefficient r	0.8919
Significance level	P<0.0001
95% Confidence interval for r	0.8539 to 0.9204

ANALYSIS IN IUGR

From the sample size of 341 we had 12 cases of fetal growth retardation suspected clinically and confirmed using conventional ultrasound parameters. On analysis the following results were obtained the scatter diagram representation follows below.

TABLE XIX

IUGR : FOOT LENGTH CORRELATION WITH BPD



Correlation

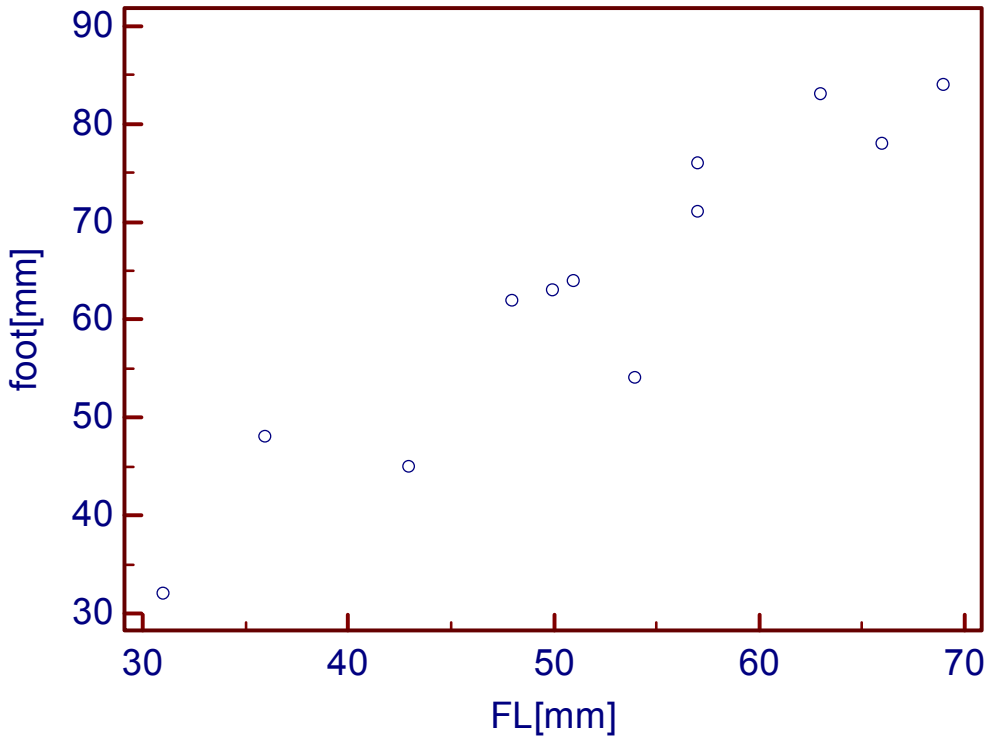
Variable Y	foot[mm]
Variable X	BPD[mm]

Sample size	12
Correlation coefficient r	0.9646
Significance level	P<0.0001
95% Confidence interval for r	0.8753 to 0.9903

The scatter diagram shows there is good prediction of gestational age by fetal foot length as compared to biparietal diameter in cases of IUGR in a random population with correlation coefficient R value of 0.96 the sample size is too small n=12 . confidence interval is very wide ranging from 0.87 to 0.99 further studies are needed in a population of IUGR alone to find out the exact prediction level and if it is spared in IUGR[11].

TABLE XX

IUGR: FOOT LENGTH CORRELATION WITH FL



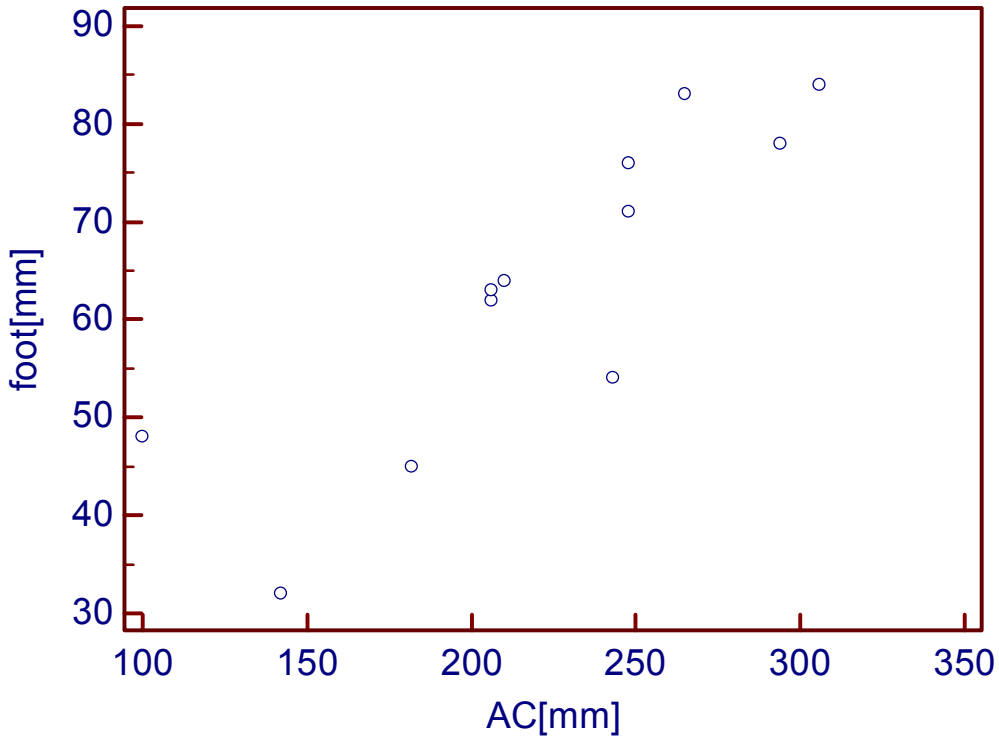
Correlation

Variable Y	foot[mm]
Variable X	FL[mm]

Sample size	12
Correlation coefficient r	0.9397
Significance level	P<0.0001
95% Confidence interval for r	0.7938 to 0.9833

TABLE XXI

IUGR : FOOT LENGTH CORRELATION WITH AC



Correlation

Variable Y	foot[mm]
Variable X	AC[mm]

Sample size	12
Correlation coefficient r	0.8526
Significance level	P=0.0004
95% Confidence interval for r	0.5457 to 0.9578

From the analysis of fetal foot length and other conventional parameters in IUGR patients [n=12] there is good correlation of foot length prediction of Gestational age. The confidence interval range is wide with statistical significance. The correlation coefficient is 0.85 . to conclude fetal foot length does have a significant correlation with gestational age probably further more detailed study with more number of patients in an IUGR population is needed to comment more.

LIMITATIONS OF THE STUDY

*Fetal foot length can only be measured in a particular fetal positions since fetus keeps moving always it takes time about 15-20 minutes to take correct measurement.

*Fetal foot length measurements is done from either of the foot which is in appropriate position.

*It is measured either in sagittal or plantar view.

DISCUSSION

DISCUSSION

Accurate gestational age assessment is of great importance in Obstetric practice . Appropriate estimation of GA requires good judgement by the obstetrician caring for the patient. Since clinical data such as the menstrual cycle or uterine size often are not reliable parameter for pregnancy dating should be determined by the obstetrician early in the pregnancy. USG is an accurate and useful modality for the assessment of GA in first &second trimester of pregnancy & as a routine part of prenatal care, can greatly impact obstetric management and improve antepartum care.

The value of any given studied biometric parameter [eg biparietal diameter , femur length, abdominal circumference , foot length] is based on ease of obtaining the measurement and the accuracy with which it predicts menstrual age. A measurement that is easily obtained but inaccurate for judging menstrual age is of little value. As well, a measurement that accurately predicts menstrual age but is very difficult to obtain is also usually not valuable. In most of the cross sectional studies that measure various biometric parameters data are then analysed using linear regression analysis. Most of the published tables that provide predictions of menstrual age from

sonographic measurements in this way.the variability usually the result of measurement error or actual biologic variability in size is expressed as $\pm$ 2 standard deviations which is applicable to 95% of foetuses in a normal population.

From analysis of my data with a sample size [n=341] fetal foot lenth measurement as a biometric parameter is a reliable parameter in predicting gestational age fetal foot length correlates well with the conventional parameters like biparietal diameter, femur length, and abdominal circumference. The correlation coefficient [R] of fetal foot length is 0.9827 , 0.9563, 0.9791 with BPD , FL, AC respectively. The correlation of fetal foot length with conventional parameters is statistically significant with a p value of <0.0001 in all of the above three correlations. Also the 95% confidence interval lies within the range of 0.95-0.98 which is a statistically significant value thus fetal foot length measurement is a reliable parameter in determining gestational age in accuracy with conventional parameters. So in situations where there is abnormal head shape as in microcephaly / hydrocephalus , anencephaly where BPD measurement is invalid fetal foot length becomes a better prediction tool.

Femur length becomes unreliable parameter in cases of short limb dwarfism and other skeletal dysplasias, where fetal foot length is a good alternative in gestational age prediction along with other parameters

Fetal foot length measurement has no statistical significance in estimating GA in various gestational ages

COMPARISION WITH VARIOUS PIONEER STUDIES.

WITH RESPECT TO GESTATION AGE:

STUDY	CORRELATION COEFFICIENT [R]	P VALUE
Streeter et al ,1920	0.98	<0.0001
Joshi et al, 2011	0.97	0.0001
Platt et al, 1988	0.94	0.0001
Molly et al , 1994	0.89	<0.0001
Wozmiak et al, 2009	0.89	<0.001
Drey et al , 2005	0.87	0.0001
Mhaskar et al ,1989	o.84	0.0004
My study	0.96	<0.0001

About 20% of antenatal women have irregular menstrual cycles or they are not sure of dates. In such pregnant women the obstetrician solely has to depend on early pregnancy dating USG and serial scans to ascertain the interval growth. From the analysis of my data which also includes patients with irregular cycles [n=43] it is found that fetal foot length has a good correlation in second and third trimesters with correlation coefficient of 0.98 and a statistical significance [p value < 0.0001]

COMPARATIVE STUDY IN IRREGULAR CYCLES

STUDY	CORRELATION COEFFICIENT [R]	P VALUE
Drey et al ,2005	0.87	0.0003
My study	0.98	<0.0001

From my data analysis it is found that there is a statistically significant correlation in gestational age estimation in second trimester than compared to third trimester sample size [n=189] in second trimester was analysed by linear regression with third trimester group [n=152]

The correlation coefficient [R] is 0.94 in second trimester and 0.80 in third trimester with a significant P value <0.0001.

COMPARATIVE STUDY IN SECOND AND THIRD TRIMESTER

STUDY	CORRELATION COEFFICIENT		P VALUE
	II TRIMESTER[R]	III TRIMESTER[R]	
Sahas et al 2009	0.94	0.89	<0.0001
My study	0.94	0.80	<0.0001

The prediction of fetal foot length in assessment of gestation in antenatal women with foetuses with intrauterine growth restriction has less statically correlation when compared with biparietal diameter with a wide range of 95% confidence interval.

CONCLUSION

CONCLUSIONS

- Fetal foot length measurement is a reliable parameter in the prediction of gestational age along with conventional parameters biparietal diameter, femur length, and abdominal circumference.
- Fetal foot length measurement reliably predicts gestational age in antenatal women with irregular menstrual cycles.
- Fetal foot length can be influenced by fetal growth abnormalities .This study imply that the fetal foot length measurement has a limited role in growth abnormalities.
- further studies are required in cohort of IUGR to establish the role of foot length in gestational age prediction.
- Foot length is more accurate in ascertaining period of gestation in second trimester when compared to third trimester .
- Foot length measurement has no statistical significance in estimating GA in various gestational ages.
- Fetal foot length is a reliable biometric parameter in predicting accurate gestation age upon which obstetric decisions can be made with precise for a better perinatal outcome .

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PATIENT PROFORMA

PROFORMA

- **Name :**
- **Age :**
- **Address :**
- **Op/ip no :**
- **LMP EDD**
- **Pregnancy Confirmed By UPT/USG**
- **Booked & Immunised At**
- **Menstrual history**
- **Obstetric history**
- **Past history**
- **General examination**
- **Height, weight, BMI**
- **Vitals**
- **Cvs, Rs**
- **Obstetric examination**
- **Routine investigations**
- **Usg, Doppler sos**

BIOMETRIC PARAMETER[mm]	1^{ST} TRIMESTER[wk[	2^{ND} TRIMESTER[wk]	3^{RD} TRIMESTER [wk]
CROWN RUMP LENGTH			
BIPARIETAL DIAMETER			
FEMUR LENGTH			
ABDOMINAL CIRCUMFERENCE			
FOOT LENGTH			
PLACENTA			
FETAL HEART RATE			
ESTIMATED FETAL WEIGHT			
AMNIOTIC FLIUD VOLUME			

MASTER CHART

S.NO	AGE[YRS]	CYCLES	IUGR+/-	DATE	foot[mm]	GA[L]	GA[U]	BPD[mm]	GA[L]	GA[U]	FL[mm]	GA[L]	GA[U]	AC[mm]	GA[L]	GA[U]
1	20	reg	nil	3.10.13	74	36 wk	37 wk	90	36wk	37wk	70	36wk	37wk	318	35wk	36wk
2	23	reg	nil	8.6.13	38	23wk	24wk	51	21wk	22wk	35	20wk	21wk	176	22wk	23wk
3	20	reg	nil	20.4.13	21	15wk	16wk	30	14wk	15wk	15	13wk	14wk	94	14wk	15wk
4	24	reg	nil	23.5.13	37	20wk	21wk	48	20wk	21wk	34	21wk	22wk	153	20wk	21wk
5	28	reg	nil	25.9.13	66	31wk	32wk	78	30wk	31wk	58	30wk	31wk	253	30wk	31wk
6	27	irregular	nil	16.7.13	60	29wk	30wk	76	29wk	30wk	57	30wk	31wk	260	30wk	31wk
7	30	reg	iugr	1.10.13	78	37wk	38wk	94	38wk	39wk	66	34wk	35wk	294	34wk	35wk
8	24	reg	nil	1.8.13	58	29wk	30wk	74	29wk	30wk	56	29wk	30wk	217	27wk	28wk
9	21	reg	nil	17.7.13	50	26wk	27wk	67	25wk	26wk	48	25wk	26wk	206	26wk	27wk
10	26	reg	nil	3.10.13	74	36wk	37wk	87	35wk	36wk	70	36wk	37wk	301	36wk	37wk
11	29	reg	nil	28.6.13	40	21wk	22wk	54	22wk	23wk	39	22wk	23wk	173	22wk	23wk
12	25	reg	nil	14.9.13	66	32wk	33wk	83	33wk	34wk	60	32wk	33wk	277	32wk	33wk
13	25	reg	nil	28.6.13	40	21wk	22wk	48	20wk	21wk	36	21wk	22wk	166	22wk	23wk
14	26	reg	nil	14.6.13	44	22wk	23wk	54	21wk	22wk	39	22wk	23wk	170	22wk	23wk
15	27	reg	nil	13.8.13	66	31wk	32wk	82	32wk	33wk	60	31wk	32wk	259	31wk	32wk
16	22	reg	nil	11.6.13	35	21wk	22wk	53	21wk	22wk	34	21wk	22wk	153	21wk	22wk
17	29	1rregular	nil	30.7.13	49	26wk	27wk	63	25wk	26wk	46	25wk	26wk	209	26wk	27wk
18	26	reg	nil	19.6.13	40	21wk	22wk	56	23wk	24wk	39	22wk	23wk	176	22wk	23wk
19	30	reg	nil	6.9.13	70	33wk	34wk	84	34wk	35wk	68	35wk	36wk	298	35wk	36wk
20	32	irregular	nil	25.6.13	43	22wk	23wk	56	23wk	24wk	40	22wk	23wk	163	21wk	22wk
21	31	reg	nil	17.9.13	74	35wk	36wk	88	36wk	37wk	70	36wk	37wk	298	36wk	37wk

22	22	reg	nil	10.6.13	36	20wk	21wk	47	20wk	21wk	33	2owk	21wk	148	20wk	21wk
23	23	reg	nil	18.7.13	48	24wk	25wk	61	24wk	25wk	45	24wk	25wk	203	25wk	26wk
24	25	reg	nil	10.9.13	69	33wk	34wk	83	32wk	33wk	64	33wk	34wk	289	34wk	35wk
25	26	reg	nil	29.7.13	49	25wk	26wk	62	24wk	25wk	45	24wk	25wk	206	24wk	25wk
26	20	irregular	nil	20.7.13	43	21wk	22wk	53	21wk	22wk	40	21wk	22wk	173	21wk	22wk
27	28	reg	nil	26.7.13	44	22wk	23wk	58	23wk	24wk	40	22wk	23wk	190	23w	24w
28	30	reg	nil	28.10.13	74	34wk	35wk	85	33wk	34wk	70	36wk	37wk	316	37wk	38wk
29	21	reg	nil	12.11.13	76	36wk	37wk	91	37wk	38wk	70	36wk	37wk	288	35wk	36wk
30	23	reg	nil	27.7.13	40	21wk	22wk	52	21wk	22wk	35	21wk	22wk	165	21wk	22wk
31	25	reg	nil	29.7.13	41	21wk	22wk	47	20w	21wk	35	21wk	22wk	156	21wk	22wk
32	28	reg	nil	26.9.13	61	29wk	3owk	75	29wk	30wk	56	30wk	31wk	237	29wk	30wk
33	22	reg	nil	12.11.13	63	30wk	31wk	77	30wk	31wk	58	31wk	32wk	252	31wk	32wk
34	28	reg	nil	4.9.13	54	26wk	27wk	69	27wk	28wk	51	27wk	28wk	226	28wk	29wk
35	22	reg	nil	9.7.13	26	16wk	17wk	38	16wk	17wk	25	17wk	18wk	130	18wk	19wk
36	28	reg	nil	6.8.13	41	21wk	22wk	50	20wk	21wk	37	22wk	23wk	170	22wk	23wk
37	20	reg	nil	7.5.13	36	19wk	20wk	45	19wk	20wk	33	20wk	21wk	149	20wk	21wk
38	23	reg	nil	30.1.13	26	17wk	18wk	37	16wk	17wk	23	16wk	17wk	110	16wk	17wk
39	21	reg	nil	12.6.13	75	35wk	36wk	85	34wk	35wk	71	36wk	37wk	317	37wk	38wk
40	22	irregular	nil	16.3.13	50	25wk	26wk	61	24wk	25wk	47	25wk	26wk	189	24wk	25wk
41	26	reg	nil	6.3.13	41	21wk	22wk	51	20kw	21wk	37	22wk	23wk	167	22wk	23wk
42	27	reg	nil	15.5.13	63	30wk	31wk	79	31wk	32wk	61	31wk	32wk	267	32wk	33wk
43	20	reg	nil	27.6.13	84	38wk	39wk	92	39wk	40wk	73	39wk	40wk	316	38wk	39wk
44	26	reg	nil	5.2.13	30	18wk	19wk	41	17wk	18wk	26	17wk	18wk	124	18wk	19wk
45	23	reg	nil	26.6.13	82	38wk	39wk	94	40w	41w	78	41wk	42wk	345	42wk	43wk
46	25	reg	nil	1.7.13	83	38wk	39wk	93	41w	42wk	78	41wk	42wk	356	42wk	43wk
47	29	reg	nil	24.1.13	22	15wk	16wk	29	14wk	15wk	18	14w	15w	88	13w	14w
48	22	reg	nil	18.6.13	74	35wk	36wk	83	33wk	34wk	71	37wk	38wk	269	33wk	34wk

49	26	reg	nil	24.5.13	74	34wk	35wk	84	34wk	35wk	68	35wk	36wk	280	33wk	34wk
50	30	reg	nil	24.6.13	84	40wk	41wk	88	36wk	37wk	75	4owk	41wk	332	40wk	41wk
51	29	reg	nil	14.5.13	67	32wk	33wk	81	32wk	33wk	63	32wk	33wk	279	33wk	34wk
52	25	reg	nil	18.2.13	37	20wk	21wk	53	21wk	22wk	35	21wk	22wk	158	21wk	22wk
53	22	reg	iugr	8.6.13	76	35wk	36wk	84	34wk	35wk	57	30wk	31wk	248	30wk	31wk
54	19	reg	iugr	26.3.13	48	24wk	25wk	64	25wk	26wk	36	21wk	22wk	100	21wk	22wk
55	20	irregular	nil	22.2.13	43	22wk	23wk	55	22wk	23wk	39	22wk	23wk	169	22wk	23wk
56	21	reg	nil	24.5.13	77	35wk	36wk	87	35wk	36wk	69	36wk	37wk	317	37wk	38wk
57	25	reg	nil	4.6.13	45	22wk	23wk	53	21wk	22wk	38	22wk	23wk	171	22wk	23wk
58	27	reg	nil	7.7.13	45	22wk	23wk	53	21wk	22wk	35	21wk	22wk	170	22wk	23wk
59	24	reg	nil	28.6.13	84	38wk	39wk	94	39wk	40wk	74	40w	41wk	335	40wk	41wk
60	29	reg	nil	23.5.13	70	33wk	34wk	83	33wk	34wk	67	35wk	36wk	280	33wk	34wk
61	21	reg	nil	28.2.13	44	21wk	22wk	51	20w	21wk	32	20wk	21wk	149	20wk	21wk
62	27	reg	nil	6.3.13	45	23wk	24wk	57	23wk	24wk	42	23w	24w	172	22wk	23wk
63	28	reg	nil	14.2.13	38	19wk	20wk	46	20w	21wk	33	20wk	21wk	148	20wk	21wk
64	20	reg	nil	25.4.13	62	29wk	30wk	73	28w	29w	59	30wk	31wk	247	29wk	30wk
65	22	reg	nil	23.3.13	39	21wk	22wk	59	23wk	24wk	35	21wk	22wk	175	22wk	23wk
66	24	reg	iugr	14.5.13	63	30wk	31wk	80	31wk	32wk	50	26w	27w	206	25wk	26wk
67	26	reg	iugr	6.6.13	71	33wk	34wk	83	33wk	34wk	57	30wk	31wk	248	30wk	31wk
68	22	reg	nil	22.7.13	66	31wk	32wk	81	32wk	33wk	62	32wk	33wk	279	33wk	34wk
69	31	reg	nil	21.6.13	81	37wk	38wk	91	38wk	39wk	73	39wk	40wk	320	38wk	39wk
70	30	reg	nil	26.4.13	53	26wk	27wk	65	25wk	26wk	50	26w	27w	229	27wk	28wk
71	29	reg	nil	11.3.13	44	22wk	23wk	56	22wk	23wk	40	22wk	23wk	177	22wk	23wk
72	24	reg	nil	12.4.13	53	26wk	27wk	66	26w	27wk	50	26wk	27wk	206	25wk	26wk
73	26	irregular	nil	3.1.13	34	19wk	20wk	45	19wk	20wk	32	19w	20wk	144	19w	20w
74	29	reg	nil	8.2.13	34	19wk	20wk	47	20w	21wk	30	19w	20wk	139	19wk	20wk
75	20	reg	nil	22.4.13	56	27wk	28wk	69	27wk	28wk	49	26wk	27wk	221	27wk	28wk

76	24	reg	nil	27.2.13	38	21wk	22wk	52	21wk	22wk	36	21wk	22wk	169	22wk	23wk
77	21	reg	nil	22.5.13	70	33wk	34wk	84	33wk	34wk	66	34wk	35wk	275	33wk	34wk
78	23	reg	nil	24.5.13	70	33wk	34wk	80	32wk	33wk	66	33wk	34wk	280	34wk	35wk
79	28	reg	nil	26.6.13	78	36wk	37wk	85	34wk	35wk	70	36wk	37wk	304	36wk	37wk
80	19	reg	nil	16.3.13	39	20wk	21wk	48	20w	21wk	36	21wk	22wk	159	21wk	22wk
81	20	reg	nil	1.7.13	77	35wk	36wk	88	35wk	36wk	71	36wk	37wk	300	35wk	36wk
82	27	reg	nil	14.3.13	47	24wk	25wk	62	24wk	25wk	44	24wk	25wk	200	24wk	25wk
83	22	reg	nil	5.6.13	74	35wk	36wk	88	35wk	36wk	69	36wk	37wk	302	36wk	37wk
84	29	irregular	nil	10.6.13	54	26wk	27wk	69	26w	27wk	51	26w	27w	213	26wk	27wk
85	21	irregular	nil	17.4.13	43	22wk	23wk	57	22wk	23wk	41	22wk	23wk	172	22wk	23wk
86	26	reg	nil	28.6.13	70	33wk	34wk	83	33wk	34wk	64	33wk	34wk	282	33wk	34wk
87	22	reg	nil	12.1.13	24	15wk	16wk	33	15w	16w	20	15w	16w	100	15w	16wk
88	20	reg	nil	22.3.13	47	23wk	24wk	60	23wk	24wk	42	23w	24w	182	23wk	24wk
89	21	reg	nil	16.3.13	38	20wk	21wk	53	21wk	22wk	35	20w	21wk	168	21wk	22wk
90	27	reg	nil	19.5.13	64	31wk	32wk	77	30wk	31wk	57	30wk	31wk	257	30wk	31wk
91	232	irregular	nil	3.7.13	83	38wk	39wk	90	38wk	39wk	73	39wk	40wk	336	40wk	41wk
92	24	reg	nil	8.3.13	38	21wk	22wk	48	20w	21wk	36	21wk	22wk	156	20wk	21wk
93	28	reg	nil	30.5.13	70	33wk	34wk	84	33wk	34wk	64	33wk	34wk	276	33wk	34wk
94	19	reg	nil	3.4.13	38	21wk	22wk	53	21wk	22wk	39	22wk	23wk	170	22wk	23wk
95	20	reg	nil	28.6.13	64	31wk	32wk	79	30wk	31wk	60	31wk	32wk	259	31wk	32wk
96	25	reg	nil	2.3.13	33	18wk	19wk	43	18w	19w	29	18w	19w	130	18wk	19wk
97	22	reg	nil	23.5.13	64	31wk	32wk	80	31wk	32wk	60	31wk	32wk	259	31wk	32wk
98	31	reg	nil	8.1.13	24	15wk	16wk	34	15w	16w	19	15w	16w	93	14wk	15wk
99	30	reg	nil	8.7.13	67	32wk	33wk	82	32wk	33wk	63	32wk	33wk	268	32wk	33wk
100	23	irregular	nil	13.3.13	37	21wk	22wk	54	21wk	22wk	37	21wk	22wk	165	21wk	22wk

101	21	reg	nil	18.5.13	64	31wk	32wk	81	32wk	33wk	60	31wk	32wk	258	31wk	32wk
102	23	reg	nil	19.1.13	22	15wk	16wk	35	15w	16w	19	15w	16w	97	15w	16wk
103	20	reg	nil	4.3.13	39	21wk	22wk	53	21wk	22wk	37	21wk	22wk	159	21wk	22wk
104	24	reg	nil	20.5.13	65	31wk	32wk	78	30wk	31wk	59	31wk	32wk	260	31wk	32wk
105	26	irregular	nil	2.7.13	69	34wk	35wk	85	34wk	35wk	66	34wk	35wk	288	34wk	35wk
106	21	irregulr	nil	5.6.13	70	34wk	35wk	88	35wk	36wk	66	34wk	35wk	299	35wk	36wk
107	26	reg	nil	17.1.13	26	16wk	17wk	32	15wk	16wk	22	16wk	17wk	112	16wk	17wk
108	28	reg	nil	3.5.13	19	14wk	15wk	33	15wk	16wk	19	15wk	16wk	99	15wk	16wk
109	20	reg	nil	9.4.13	30	17wk	18wk	40	17wk	18wk	25	17wk	18wk	127	17wk	18wk
110	29	reg	nil	23.5.13	45	23wk	24wk	62	24wk	25wk	42	23kw	24wk	186	23wk	24wk
111	20	reg	nil	19.3.13	40	22wk	23wk	56	22wk	23wk	40	22wk	23wk	172	22wk	23wk
112	19	reg	nil	15.7.13	53	26wk	27wk	69	26wk	27wk	51	26wk	27wk	218	26wk	27wk
113	21	irregular	iugr	12.10.13	54	27wk	28wk	70	27wk	28wk	54	27wk	28wk	243	27wk	28wk
114	23	reg	nil	4.9.13	40	22wk	23wk	53	22wk	23wk	38	22wk	23wk	176	22wk	23wk
115	26	reg	nil	13.8.13	37	20wk	21wk	49	20w	21wk	41	22wk	23wk	166	22wk	23wk
116	21	irregular	nil	22.8.13	35	20wk	21wk	48	20w	21wk	33	20w	21wk	157	20wk	21wk
117	20	reg	nil	18.11.13	75	35wk	36wk	88	35wk	36wk	71	36wk	37wk	316	36wk	37wk
118	19	reg	nil	13.8.13	40	22wk	23wk	53	22wk	23wk	39	22wk	23wk	181	22wk	23wk
119	29	reg	nil	13.11.13	42	23wk	24wk	58	24wk	25wk	42	23wk	24wk	196	24wk	25wk
120	21	reg	nil	30.7.13	30	18wk	19wk	42	18wk	19wk	31	19wk	20wk	140	19wk	20wk
121	28	irregular	nil	14.11.13	70	34wk	35wk	87	35wk	36wk	66	25wk	36wk	284	34wk	35wk
122	22	reg	nil	10.8.13	38	21wk	22wk	50	20w	21wk	38	21wk	22wk	167	21wk	22wk
123	21	reg	nil	19.8.13	42	22wk	23wk	52	22wk	23wk	39	22wk	23wk	164	21wk	22wk
124	28	reg	nil	6.11.13	70	34wk	35wk	88	35wk	36wk	67	34wk	35wk	310	34wk	35wk
125	21	irregular	nil	24.7.13	36	19wk	20wk	47	19wk	20wk	34	20w	21wk	146	20wk	21wk

126	28	irregular	nil	25.10.13	65	32wk	33wk	82	32wk	33wk	62	32wk	33wk	270	32wk	33wk
127	19	reg	nil	17.9.13	54	27wk	28wk	69	27wk	28wk	54	28wk	29wk	236	28wk	29wk
128	21	reg	nil	9.8.13	33	19wk	20wk	43	19wk	20wk	32	19wk	20wk	137	19wk	20wk
129	24	reg	nil	7.11.13	26	16wk	17wk	39	17wk	18wk	24	17wk	18wk	108	16wk	17wk
130	20	reg	nil	26.11.13	37	21wk	22wk	53	22wk	23wk	37	22wk	23wk	165	21wk	22wk
131	27	irregular	nil	8.8.13	32	19wk	20wk	44	19wk	20wk	30	19w	20wk	143	20wk	21wk
132	28	irregular	nil	11.11.13	70	34wk	35wk	84	34wk	35wk	66	34wk	35wk	297	34wk	35wk
133	20	reg	nil	20.11.13	64	31w	32wk	79	31wk	32wk	61	31wk	32wk	260	31wk	32wk
134	19	reg	nil	25.10.13	65	32wk	33wk	83	32wk	33wk	62	32wk	33wk	266	32wk	33wk
135	25	irregular	nil	27.8.13	5o	26wk	27wk	67	26w	27wk	51	26w	27w	213	26wk	27wk
136	23	reg	nil	9.8.13	37	22wk	23wk	56	22wk	23wk	36	21wk	22wk	173	22wk	23wk
137	21	reg	nil	29.10.13	76	37wk	38wk	93	37wk	38wk	74	37wk	38wk	310	37wk	38wk
138	29	reg	nil	6.9.13	52	27wk	28wk	71	27wk	28wk	48	26w	27wk	221	27wk	28wk
139	21	reg	nil	7.11.13	72	35wk	36wk	87	35wk	36wk	68	35wk	36wk	302	35wk	36wk
140	23	reg	nil	21.8.13	46	25wk	26wk	63	25wk	26wk	47	25wk	26wk	204	25wk	26wk
141	29	reg	nil	28.10.13	75	36wk	37wk	88	36wk	37wk	68	35wk	36wk	312	36wk	37wk
142	22	irregular	nil	6.8.13	30	19wk	20wk	46	19wk	20wk	33	19wk	20wk	139	19wk	20wk
143	27	reg	nil	30.8.13	46	25wk	26wk	65	25wk	26wk	47	25wk	26wk	206	25wk	26wk
144	19	reg	nil	5.8.13	41	23wk	24wk	56	22wk	23wk	41	23w	24w	183	23wk	24wk
145	29	reg	nil	26.11.13	74	36wk	37wk	88	36wk	37wk	69	36wk	37wk	305	36wk	37wk
146	26	irregular	nil	29.10.13	74	36wk	37wk	89	37wk	38wk	69	36wk	37wk	308	36wk	37wk
147	22	reg	nil	23.7.13	35	21wk	22wk	55	21wk	22wk	38	21wk	22wk	167	21wk	22wk
148	26	reg	nil	4.10.13	68	33wk	34wk	83	33wk	34wk	64	33wk	34wk	275	33wk	34wk
149	28	reg	nil	23.7.13	56	22wk	23wk	55	22wk	23wk	39	22wk	23wk	174	22wk	23wk

150	19	reg	nil	4.10.13	69	33wk	34wk	83	33wk	34wk	64	33wk	34wk	282	33wk	34wk
151	30	reg	nil	29.11.13	80	38wk	39wk	90	38wk	39wk	72	38w	39w	320	38wk	39wk
152	24	reg	nil	7.6.13	22	14wk	15wk	31	14wk	15wk	18	14w	15w	95	14wk	15wk
153	21	irregular	iugr	5.8.13	32	19wk	20wk	45	18w	19w	31	19w	20wk	142	19w	20w
154	23	irregular	nil	27.11.13	64	32wk	33wk	82	32wk	33wk	62	32wk	33wk	270	32wk	33wk
155	20	reg	nil	21.10.13	65	33wk	34wk	84	33wk	34wk	63	33wk	34wk	276	33wk	34wk
156	23	reg	nil	25.7.13	35	21wk	22wk	52	21wk	22wk	36	20w	21wk	167	21wk	22wk
157	27	reg	nil	26.9.13	59	30wk	31wk	77	30wk	31wk	58	30wk	31wk	250	30wk	31wk
158	19	reg	nil	20.11.13	83	38wk	39wk	90	38wk	39wk	72	38wk	39wk	322	38wk	39wk
159	24	reg	nil	18.6.13	23	16wk	17wk	37	16wk	17wk	22	16wk	17wk	115	16wk	17wk
160	21	reg	nil	22.7.13	31	19wk	20wk	46	19wk	20wk	32	19w	20wk	140	19wk	20wk
161	28	irregular	nil	14.10.13	66	33wk	34wk	83	33wk	34wk	64	33wk	34wk	280	33wk	34wk
162	21	reg	nil	25.11.13	85	39w	40w	92	40w	41wk	74	40w	41wk	330	39w	40wk
163	23	reg	nil	10.8.13	38	22wk	23wk	55	22wk	23wk	40	22wk	23wk	174	22wk	23wk
164	25	reg	iugr	16.11.13	84	39wk	40wk	91	39wk	40wk	69	36wk	37wk	306	36wk	37wk
165	20	reg	nil	23.11.13	64	33wk	34wk	83	32wk	33wk	63	32wk	33wk	278	33wk	34wk
166	27	reg	nil	12.io.13	62	31w	32wk	80	31wk	32wk	59	31wk	32wk	258	31wk	32wk
167	21	reg	nil	1.7.13	26	17wk	18wk	41	17wk	18wk	26	17wk	18wk	125	17wk	18wk
168	29	reg	nil	7.9.13	53	27wk	28wk	71	27wk	28wk	53	27wk	28wk	221	27wk	28wk
169	21	reg	nil	12.11.13	75	35wk	36wk	86	34wk	35wk	67	35wk	36wk	294	35wk	36wk
170	29	irregular	nil	30.7.13	36	21wk	22wk	54	21wk	22wk	38	21wk	22wk	160	20wk	21wk
171	22	reg	nil	27.7.13	55	28w	29w	73	28wk	29wk	55	28wk	29wk	233	28wk	29wk
172	30	reg	nil	4.9.13	47	25wk	26wk	65	25wk	26wk	48	25wk	26wk	204	25wk	26wk
173	29	reg	nil	29.8.13	44	24wk	25wk	63	24wk	25wk	45	24wk	25wk	194	24wk	25wk
174	20	reg	nil	26.6.13	23	15wk	16wk	33	15wk	16wk	21	15wk	16wk	100	15w	16wk

175	21	reg	nil	12.8.13	43	23wk	24wk	58	23wk	24wk	42	23w	24w	187	23w	24w
176	24	reg	nil	27.8.13	50	26wk	27wk	68	26wk	27wk	50	26wk	27wk	215	26wk	27wk
177	22	reg	nil	26.11.13	78	37wk	38wk	89	37wk	38wk	71	37wk	38wk	312	37wk	38wk
178	28	reg	nil	29.11.13	41	23wk	24wk	60	23wk	24wk	40	22wk	23wk	185	23w	24wk
179	20	reg	nil	21.8.13	75	36wk	37wk	89	36wk	37wk	69	36wk	37wk	306	36wk	37wk
180	28	reg	nil	26.6.13	26	16wk	17wk	37	16wk	17wk	22	16wk	17wk	99	15wk	16wk
181	30	reg	nil	13.11.13	52	27wk	28wk	70	27wk	28wk	52	27wk	28wk	223	27wk	28wk
182	23	reg	nil	24.8.13	71	35wk	36wk	87	35wk	36wk	67	35wk	36wk	294	35wk	36wk
183	21	reg	nil	19.2.13	48	23wk	24wk	59	23wk	24wk	43	23w	24w	187	23w	24w
184	21	reg	nil	24.9.13	71	33wk	34wk	84	34wk	35wk	66	34wk	35wk	286	34wk	35wk
185	24	reg	nil	3.2.13	36	21wk	22wk	54	21wk	22wk	37	21wk	22wk	168	21wk	22wk
186	22	reg	nil	7.8.13	59	28wk	29wk	72	28w	29w	53	28wk	29wk	233	28wk	29wk
187	23	reg	nil	5.8.13	39	19wk	20wk	44	19wk	20wk	32	19w	20wk	143	19w	20wk
188	21	reg	nil	7.8.13	74	34wk	35wk	85	34wk	35wk	65	33wk	34wk	283	33wk	34wk
189	28	irregular	nil	11.8.13	65	30wk	31wk	78	30wk	31wk	59	30wk	31wk	250	30wk	31wk
190	29	reg	nil	12.7.13	73	34wk	35wk	86	34wk	35wk	65	33wk	34wk	286	34wk	35wk
191	24	reg	nil	4.3.13	45	23wk	24wk	60	23wk	24wk	43	23w	24w	186	23w	24w
192	19	reg	nil	21.5.13	42	21wk	22wk	53	21wk	22wk	37	21wk	22wk	163	21wk	22wk
193	20	reg	nil	14.7.13	58	27wk	28wk	71	27wk	28wk	52	27wk	28wk	222	27wk	28wk
194	21	reg	nil	22.3.13	39	20wk	21wk	49	21wk	22wk	35	20w	21wk	153	20wk	21wk
195	23	reg	nil	30.4.13	69	32wk	33wk	82	32wk	33wk	63	33wk	34wk	270	32wk	33wk
196	24	reg	nil	12.2.13	85	38wk	39wk	91	38wk	39wk	72	38w	39w	320	38wk	39wk
197	30	reg	nil	17.3.13	32	17wk	18wk	41	17wk	18wk	28	18w	19w	125	17wk	18wk
198	23	reg	nil	4.1.13	49	24wk	25wk	63	24wk	25wk	44	23w	24w	195	24wk	25wk
199	24	reg	nil	4.7.13	69	32wk	33wk	82	32wk	33wk	62	32wk	33wk	267	32wk	33wk
200	22	reg	nil	16.5.13	74	34wk	35wk	86	34wk	35wk	65	33wk	34wk	290	34wk	35wk
201	21	irregular	nil	23.5.13	35	19wk	20wk	47	19wk	20wk	32	19w	20wk	143	19w	20wk

202	24	reg	nil	17.3.13	29	16wk	17wk	37	16wk	17wk	23	16wk	17wk	110	16wk	17wk
203	21	reg	nil	16.4.13	81	37wk	38wk	89	36wk	37wk	7	36wk	37wk	316	37wk	38wk
204	26	reg	nil	3.5.13	44	22wk	23wk	56	22wk	23wk	39	22wk	23wk	178	23w	24w
205	28	reg	nil	2.1.13	55	26wk	27wk	68	26w	27wk	51	27wk	28wk	216	26wk	27wk
206	26	reg	nil	15.3.13	67	31w	32wk	81	32wk	33wk	59	30wk	31wk	258	31wk	32wk
207	21	reg	nil	20.3.13	58	27wk	28wk	69	27wk	28wk	52	27wk	28wk	222	27wk	28wk
208	26	irregular	nil	5.2.13	47	23wk	24wk	60	23wk	24wk	42	23w	24w	184	23w	24w
209	20	reg	nil	3.3.13	72	33wk	34wk	84	33wk	34wk	65	34wk	35wk	280	33wk	34wk
210	19	reg	nil	4.6.13	34	18wk	19wk	44	18wk	19w	28	18w	19w	134	18wk	19wk
211	21	reg	nil	24.3.13	52	25wk	26wk	65	25wk	26wk	47	25wk	26wk	204	25wk	26wk
212	22	reg	nil	21.1.13	68	32wk	33wk	82	32wk	33wk	63	33wk	34wk	268	32wk	33wk
213	21	reg	nil	3.2.13	79	36wk	37wk	89	36wk	37wk	68	36wk	37wk	304	36wk	37wk
214	29	irregular	nil	4.6.13	32	17wk	18wk	42	18w	19w	26	17wk	18wk	126	17wk	18wk
215	20	reg	nil	4.9.13	72	33wk	34wk	84	33wk	34wk	65	33wk	34wk	282	33wk	34wk
216	26	reg	nil	16.3,13	53	25w	26wk	66	26w	27wk	48	25wk	26wk	206	25wk	26wk
217	27	reg	nil	27.4.13	25	15wk	16wk	34	15w	16w	21	15w	16w	103	15w	16wk
218	24	reg	nil	6.1.13	39	20wk	21wk	49	20w	21wk	35	20wk	21wk	153	20wk	21wk
219	28	reg	nil	3.3.13	75	34wk	35wk	86	34wk	35wk	66	35wk	36wk	282	34wk	35wk
220	23	reg	nil	30.2.13	64	30wk	31wk	78	30wk	31wk	58	30wk	31wk	249	30wk	31wk
221	29	reg	nil	5.6.13	36	19wk	20wk	47	19wk	20wk	31	18w	19w	143	19w	20w
222	22	r eg	nil	3.1.13	59	28w	29w	74	29wk	30wk	56	29wk	30wk	244	29wk	30wk
223	29	irregular	nil	13.7.13	86	39w	40w	91	39wk	40wk	73	39wk	40wk	330	39w	40wk
224	20	reg	nil	15.8.13	67	31w	32wk	80	31wk	32wk	59	30wk	31wk	263	31wk	32wk
225	21	reg	nil	24.6.13	36	19wk	20wk	47	19wk	20wk	28	19w	20wk	145	19w	20w
226	21	reg	nil	18.7.13	75	34wk	35wk	86	34wk	35wk	66	34wk	35wk	290	34wk	35wk
227	26	reg	nil	19.2.13	57	27wk	28wk	71	27wk	28wk	53	28wk	29wk	223	27wk	28wk

228	20	reg	nil	12.3.13	85	38wk	39wk	90	38wk	39wk	74	39wk	40wk	330	39w	40wk
229	29	irregular	nil	26.8.13	62	29wk	30wk	76	29wk	30wk	56	29wk	30wk	242	29wk	30wk
230	27	reg	nil	17.3.13	43	21wk	22wk	53	21wk	22wk	37	21wk	22wk	164	21wk	22wk
231	22	reg	nil	20.4.13	56	26wk	27wk	68	26w	27wk	50	26w	27w	214	26wk	27wk
232	29	reg	nil	20.2.13	69	32wk	33wk	83	32wk	33wk	62	32wk	33wk	270	32wk	33wk
233	20	reg	nil	18.3.13	29	16wk	17wk	38	16wk	17wk	23	16wk	17wk	112	16wk	17wk
234	24	reg	nil	14.2.13	75	34wk	35wk	86	34wk	35wk	66	35wk	36wk	287	34wk	35wk
235	28	reg	nil	17.5.13	44	22wk	23wk	57	22wk	23wk	40	22wk	23wk	176	22wk	23wk
236	23	reg	nil	19.1.13	79	36wk	37wk	89	36wk	37wk	69	36wk	37wk	295	36wk	37wk
237	21	irregular	nil	14.8.13	32	17wk	18wk	41	17wk	18wk	26	17wk	18wk	123	17wk	18wk
238	21	reg	nil	12.3.13	43	22wk	23wk	56	22wk	23wk	40	22wk	23wk	176	22wk	23wk
239	22	reg	nil	12.2.13	69	32wk	33wk	83	33wk	34wk	64	32wk	33wk	271	32wk	33wk
240	25	reg	nil	13.5.13	37	19wk	20wk	46	19wk	20wk	32	19w	20wk	143	19w	20wk
241	21	reg	nil	17.1.13	78	36wk	37wk	89	36wk	37wk	69	36wk	37wk	295	36wk	37wk
242	20	reg	nil	2.1.13	57	27wk	28wk	71	27wk	28wk	52	27wk	28wk	224	27wk	28wk
243	23	reg	nil	6.2.13	46	23wk	24wk	60	23wk	24wk	43	23w	24w	187	23w	24w
244	28	reg	nil	3.2.13	62	29wk	30wk	75	29wk	30wk	57	29wk	30wk	243	29wk	30wk
245	26	reg	nil	17.3.13	74	34wk	35wk	85	34wk	35wk	66	34wk	35wk	286	34wk	35wk
246	22	reg	iugr	21.2.13	83	37wk	38wk	85	34wk	35wk	63	33wk	34wk	265	32wk	33wk
247	21	irregular	nil	2.3.13	80	36wk	37wk	88	36wk	37wk	68	36wk	37wk	303	36wk	37wk
248	22	reg	nil	1.3.13	32	17wk	18wk	41	17wk	18wk	26	17wk	18wk	122	17wk	18wk
249	25	reg	nil	12.1.13	46	23wk	24wk	61	24wk	25wk	43	23w	24w	185	23w	24w
250	23	reg	nil	14.3.13	70	32wk	33wk	82	32wk	33wk	61	32wk	33wk	270	32wk	33wk
251	26	reg	nil	3.3.13	62	30wk	31wk	78	30wk	31wk	59	30wk	31wk	260	30wk	31wk
252	26	reg	nil	3.1.13	77	35wk	36wk	87	35wk	36wk	67	35wk	36wk	296	35wk	36wk
253	23	reg	nil	8.3.13	34	18wk	19wk	44	18w	19w	29	18w	19w	131	18wk	19wk

254	24	reg	nil	7.1.13	42	22wk	23wk	56	22wk	23wk	38	21wk	22wk	174	22wk	23wk
255	20	reg	nil	19.2.13	70	32wk	33wk	82	32wk	33wk	62	32wk	33wk	272	32wk	33wk
256	21	reg	nil	21,3.13	53	26wk	27wk	68	26w	27wk	50	26w	27w	213	26wk	27wk
257	25	reg	nil	19.4.13	26	15w	16wk	34	15w	16w	20	15w	16w	101	15w	16wk
258	23	reg	nil	13.7.13	37	19wk	20wk	46	19wk	20wk	32	19w	20wk	143	19w	20w
259	30	reg	nil	4.6.13	63	29wk	30wk	76	29wk	30wk	56	29wk	30wk	242	29wk	30wk
260	31	irregular	nil	3.5.13	42	21wk	22wk	54	21wk	22wk	37	21wk	22wk	164	21wk	22wk
261	24	reg	nil	2.3.13	69	32wk	33wk	81	32wk	33wk	63	32wk	33wk	271	32wk	33wk
262	29	reg	nil	6.1.13	82	37wk	38wk	90	37wk	38wk	71	37wk	38wk	312	37wk	38wk
263	25	reg	nil	30.1.13	44	22wk	23wk	57	22wk	23wk	40	22w	23wk	176	22wk	23wk
264	21	irregular	nil	28.2.13	60	28w	29w	73	28w	29w	54	28wk	29wk	232	28wk	29wk
265	27	reg	nil	11.4.13	76	35wk	36wk	87	35wk	36wk	67	35wk	36wk	296	35wk	36wk
266	21	reg	nil	4.3.13	29	16wk	17wk	38	16wk	17wk	23	16wk	17wk	114	16wk	17wk
267	26	reg	nil	2.3.13	48	24wk	25wk	62	24wk	25wk	45	24wk	25wk	194	24wk	25wk
268	23	reg	nil	3.2.13	68	31w	32wk	79	30wk	31wk	61	31wk	32wk	263	31wk	32wk
269	22	reg	nil	8.2.13	36	19wk	20wk	48	19wk	20wk	32	19w	20wk	144	19w	20wk
270	19	reg	nil	9.1,13	82	37wk	38wk	90	37wk	38wk	71	37wk	38wk	315	37wk	38wk
271	20	reg	nil	28.1.13	70	32wk	33wk	82	32wk	33wk	62	32wk	33wk	270	32wk	33wk
272	24	irregular	nil	26.3.13	32	17wk	18wk	37	17wk	18wk	23	17wk	18wk	113	17wk	18wk
273	22	reg	nil	3.4.13	75	34wk	35wk	85	34wk	35wk	66	34wk	35wk	289	34wk	35wk
274	25	reg	nil	27.2,13	54	26wk	27wk	67	26w	27wk	51	26w	27w	214	26wk	27wk
275	27	reg	nil	7.3.13	78	35wk	36wk	88	35wk	36wk	67	35wk	36wk	290	34wk	35wk
276	25	reg	iugr	20.2,.13	64	30wk	31wk	78	30wk	31wk	51	27wk	28wk	210	26wk	27wk
277	27	reg	nil	18.2.13	56	27wk	28wk	70	27wk	28wk	52	27wk	28wk	224	27wk	28wk
278	29	reg	nil	17.2.13	47	23wk	24wk	59	23wk	24wk	43	23w	24w	186	23w	24w
279	22	reg	nil	3.6.13	62	29wk	30wk	76	29wk	30wk	56	29wk	30wk	242	29wk	30wk

280	23	reg	nil	30.5.13	72	33wk	34wk	85	34wk	35wk	65	33wk	34wk	279	34wk	35wk
281	21	reg	nil	22.3.13	29	16wk	17wk	38	16wk	17wk	20	16wk	17wk	110	16wk	17wk
282	22	reg	nil	15.2.13	47	23wk	24wk	59	23wk	24wk	43	23w	24w	186	23w	24w
283	29	irregular	nil	11.4.13	64	30wk	31wk	78	30wk	31wk	58	30wk	31wk	248	30wk	31wk
284	26	reg	nil	26.3,13	55	26wk	27wk	67	25wk	26wk	50	26w	27w	215	26wk	27wk
285	20	reg	nil	20.3,13	80	36wk	37wk	89	36wk	37wk	71	37wk	38wk	313	36wk	37wk
286	22	reg	nil	14.1.13	57	27wk	28w	71	27wk	28wk	52	27wk	28wk	224	27wk	28wk
287	29	reg	nil	30.1.13	67	31w	32wk	79	30wk	31wk	58	30wk	31wk	259	31wk	32wk
288	25	reg	nil	3.4.13	36	19wk	20wk	46	19wk	20wk	32	19w	20wk	146	19w	20w
289	28	reg	nil	1.3.13	49	24wk	25wk	62	24wk	25wk	45	24wk	25wk	195	24wk	25wk
290	24	reg	nil	5.3.13	70	32wk	33wk	81	32wk	33wk	63	33w	34wk	270	33wk	34wk
291	25	reg	nil	22.3,13	47	23wk	24wk	60	23wk	24wk	43	23w	24w	184	23w	24w
292	22	reg	nil	14.6.13	69	32wk	33wk	82	32wk	33wk	62	32wk	33wk	272	32wk	33wk
293	21	reg	nil	20.2.13	84	38wk	39wk	90	38wk	39wk	71	38w	39w	320	38wk	39wk
294	24	reg	nil	19.1.,13	37	19wk	20wk	48	19wk	20wk	30	20w	21wk	134	19w	20w
295	20	reg	nil	4.1.13	42	21w	22wk	54	21wk	22wk	38	21wk	22wk	167	21wk	22wk
296	21	reg	nil	16.2,13	49	24wk	25wk	62	24wk	25wk	45	24wk	25wk	196	24wk	25wk
297	22	reg	nil	20.3.13	62	29wk	30wk	75	29wk	30wk	56	29wk	30wk	242	29wk	30wk
298	26	reg	nil	2.5.13	70	32wk	33wk	82	32wk	33wk	62	32wk	33wk	270	32wk	33wk
299	22	reg	nil	30.1.13	52	25w	26wk	65	25wk	26wk	47	25wk	26wk	204	25wk	26wk
300	21	reg	nil	12.1.13	49	24wk	25wk	63	24wk	25wk	43	24wk	25wk	193	24wk	25wk
301	26	irregular	nil	14.7.13	28	16wk	17wk	37	16wk	17wk	22	16wk	17w	110	16wk	17wk
302	23	reg	nil	15.3.13	59	28w	29wk	73	28wk	29wk	55	28wk	29wk	234	28wk	29wk
303	26	reg	nil	24.2.13	79	36wk	37wk	89	36wk	37wk	69	36wk	37wk	306	36wk	37wk
304	27	reg	nil	3.4.13	46	23wk	24wk	59	23wk	24wk	43	23w	24w	185	23w	24wk
305	23	reg	nil	15.3.13	42	21wk	22wk	51	21wk	22wk	38	21wk	22wk	165	21wk	22wk
306	25	reg	nil	16.7.13	72	33wk	34wk	85	33wk	34wk	64	33w	34wk	281	33wk	34wk

307	30	reg	nil	25.2.13	52	25w	26wk	65	25wk	26wk	45	25wk	26wk	194	25wk	26wk
308	22	irregular	nil	30.4.13	37	19wk	20wk	47	19wk	20wk	28	19w	20wk	144	19wk	20wk
309	24	reg	nil	12.3.13	64	30wk	31wk	78	30wk	31wk	58	30wk	31wk	250	30wk	31wk
310	23	reg	nil	4.5.13	43	22wk	23wk	56	22wk	23wk	40	22wk	23wk	178	22wk	23wk
311	25	reg	nil	22.4.13	84	38wk	39wk	90	38wk	39wk	71	38wk	39w	321	38wk	39wk
312	21	reg	nil	13.2.13	69	32wk	33wk	81	32wk	33wk	62	32wk	33wk	271	32wk	33wk
313	23	reg	nil	20.4.13	32	17wk	18wk	41	17wk	18wk	26	17wk	18wk	123	17wk	18wk
314	24	reg	nil	16.5.13	62	29wk	30wk	76	29wk	30wk	55	28wk	29wk	242	29wk	30wk
315	27	reg	nil	14.3.13	36	19wk	20wk	47	19wk	20wk	29	20w	21wk	145	19w	20w
316	24	reg	nil	14.4.13	66	31w	32wk	79	30wk	31wk	59	31wk	32wk	258	30wk	31wk
317	20	reg	iugr	25.7.13	62	30wk	31wk	76	31wk	32wk	48	25wk	26wk	206	24wk	25wk
318	19	reg	nil	11.6.13	56	27wk	28w	69	26w	27wk	52	27wk	28wk	223	27wk	28wk
319	23	reg	nil	22.7.13	27	15w	16wk	33	15w	16w	18	14w	15w	97	15w	16wk
320	28	irregular	nil	3.6.13	75	35wk	36wk	88	35wk	36wk	67	35wk	36wk	295	35wk	36wk
321	19	reg	nil	2.8.13	86	39w	40wk	92	39wk	40wk	73	38w	39w	336	40wk	41w
322	22	reg	nil	14.5.13	32	17wk	18wk	41	17wk	18wk	25	17wk	18wk	111	17wk	18wk
323	28	reg	nil	17.7.13	43	22wk	23wk	54	21wk	22wk	38	21wk	22wk	173	22wk	23wk
324	26	reg	nil	19.3.13	62	29wk	30wk	75	29wk	30wk	56	29wk	30wk	242	29wk	30wk
325	24	reg	nil	21.4.13	54	26wk	27wk	66	25wk	26wk	50	26w	27w	215	26wk	27wk
326	25	reg	nil	26.4.13	71	33wk	34wk	84	33wk	34wk	64	33w	34wk	281	33wk	34wk
327	26	reg	nil	19.6.13	78	36wk	37wk	88	36wk	37wk	69	36wk	37wk	306	36wk	37wk
328	23	reg	nil	7.8.13	32	17wk	18wk	36	16wk	17wk	26	17wk	18wk	122	17wk	18wk
329	32	irregular	nil	15.5.13	44	22wk	23w	55	22wk	23wk	40	22w	23wk	160	21wk	22wk
330	24	reg	nil	12.6.13	55	26wk	27wk	69	26w	27wk	51	26w	27w	215	26wk	27wk
331	22	reg	nil	14.6.13	62	29wk	30wk	75	29wk	30wk	57	30wk	31wk	242	30wk	31wk
332	19	reg	nil	27.8.13	67	31w	32wk	79	31wk	32wk	61	31wk	32wk	263	31wk	32wk

333	20	reg	nil	14.6.13	79	36wk	37wk	89	36wk	37wk	71	37wk	38wk	310	36wk	37wk
334	32	reg	nil	17.3.13	29	16wk	17wk	37	16wk	17wk	23	16wk	17w	112	16wk	17wk
335	26	reg	nil	15.4.13	38	19wk	20wk	46	19wk	20wk	31	19w	20wk	143	19w	20w
336	27	reg	iugr	19.6.13	45	23wk	24wk	58	23wk	24wk	43	23w	24w	182	23w	24w
337	22	reg	nil	17.1.13	67	31w	32wk	81	32wk	33wk	62	32wk	33wk	271	32wk	33wk
338	31	reg	nil	23.4.13	35	19wk	20wk	46	19w	20wk	32	19w	20wk	143	19w	20w
339	21	reg	nil	30.6.13	57	27wk	28w	70	27wk	28wk	48	26w	27w	225	26wk	27wk
340	22	reg	nil	24.6.13	31	17wk	18wk	37	17wk	18wk	26	17wk	18wk	123	17wk	18wk
341	32	reg	nil	17.3.13	29	16wk	17wk	37	16wk	17wk	23	16wk	17w	112	16wk	17wk