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Accurate knowledge of foetal age is important under several circumstances. It helps the pregnant women, her family, the obstetrician and the radiologist in the planning of pregnancy, in the prediction of maturity and the detection of growth retardation. The estimation of intrauterine age often presents a problem in medical emergencies induction of labour or when elective caesarean section is indicated. Since perinatal mortality and morbidity is decreased if fetus is mature at the time of delivery. It is also helpful when patient has no record of L.M.P. or may conceive during lactational amenorrhoea.

It is a tradition to know fetal age by abdominal palpation, but it has its own limitations if the patient is very fatty or there is much liquor or patient does not relax her muscles. The gestational age estimated by menstrual history or uterine fundal height, contain inaccuracies even in the best of circumstances.

It has been estimated that menstrual history is not reliable in atleast 20% of the women for reasons that may include - oligomenorrhoea, bleeding in the first trimester, and becoming pregnant in the post partum period, or after the use of oral contraceptives or intrauterine
devices. In women with optimal menstrual histories only 85% delivered within ± two weeks of their estimated date of confinement (EDC), decreasing to 70% in women uncertain of their dates.

The different terms that are commonly used to indicate the duration of pregnancy and thus fetal age is somewhat confusing. Menstrual age or gestational age is estimated from the first day of L.M.P. or about two weeks before the ovulation and fertilization or nearly three weeks before implantation of the fertilized ovum. About 280 days (40 weeks) elapse on an average between first day of L.M.P. and delivery of the infant. The usual practice is to calculate the gestational age on the basis of menstrual age of a given pregnancy.

A new born infant is considered premature when he is incapable of independent uncomplicated extrauterine life and meets any or all of the following objective criteria.

(1) Birth weight below 2500 gm
(2) Gestation of less than 37 weeks
(3) Length (crown-heel) less than 47 cm
(4) Head circumference less than 33 cm.
A new born infant is considered postmature when the gestation is known to be longer than 42 weeks or when the characteristic clinical features are present. This consists of dry, wrinkled, scaly skin often stained with meconium, long fingernails, and hair. Radiologically presence of large ossification centres with identifiable trabeculations and increased thickness of diaphysis of long bones are signs of postmaturity.

Now more sophisticated and specialized techniques have been used for precise assessment of foetal age. Amniotic fluid can be used for the estimation of foetal maturity but it is not done in routine practice. Ultrasonography is new modality and commonly used to assess the fetal maturity and growth. By ultrasound fetal gestation sac can be first detected in the uterus at five weeks of menstrual age. While radiographically detectable fetal skeletal parts are difficult to find before 13-14 weeks. Due to radiation hazards to the fetus pregnant women should not be radiographed in first and second trimester of pregnancy.

Many bone parameters have been advocated for assessment of gestational age by radiography. The largest of long bones, the femur, is easiest to image and measure as accurately as any other long bone. The femur measurement
is also of value in the detection of foetal skeletal
dysplasias. The femur is measured along the long axis
of the diaphysis of the osseous portion of the shaft.

At one time the biparietal diameter (BPD) was
the most discussed and documented ostetic measurement.
The B.P.D. is taken in the transaxial plane at the widest
portion of skull, but proved too difficult and has been
dropped out of use.

Inspite of all the drawbacks knowledge of assessment
of fetal age by plain skiagram is neccessary. Because
the facilities of ultrasound are not available everywhere,
and it is too costly for the patient.

Review of literature reveals that radiological
examination of the osseous development of the fetus consti-
tutes a reliable means of estimating physiological foetal
age. Of the factors studied, particular attention was paid
to the ossification in the lower limb centers, long bones
measurements, diameters of skull, length of lumbar spine
curve.

Hartley (1957), published data of development of
the skeleton as a whole and gave the periods of appearance
of various ossification centres. Schreiber, M.H. (1963),
indicate that when this center is present and radiographica}
identifiable on antepartum films a mature foetus is present in 96 percent of cases but Dee, Perkin, and Simpson, (1966), have questioned the reliability of these centers.

Brandfass and Howland, (1966), describe a simple method of determination of foetal weight by long bone measurements on pelvimetry or maternal abdominal films with 90 percent accuracy. R.H. Owen (1970), and Martin (1971), have independently worked and found a definite relation in growth of long bones and gestational age.

Alan J Margolis (1967), reported relationship between lumbar vertebral and new born length. Similar findings have previously been reported by Fagerberg and Ronema (1959). The accuracy of this method was 95%.

Bundelkhand region being an economically backward region, the patients are largely unable to afford the newer modalities like ultrasonography. This along with a paucity of work, in India, on the estimation of gestational age by plain skiagrams, prompted us to undertake the present study based on the underlying concept that the rate of growth of foetal bones is related to the foetal age.