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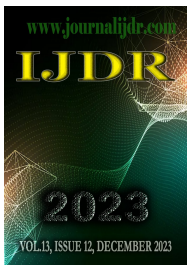

RESEARCH ARTICLE OPEN ACCESS

RELIABILITY OF GESTATIONAL AGE ASSESSMENT OF NEWBORN BY PHYSICAL PARAMETERS: A TWIN PREGNANCY CASE REPORT

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ABSTRACT

Background: Estimation of gestational age is one of the crucial steps in improving clinical care for neonates and determining the complications due to premature delivery. Several ways have been used for the assessment of gestational age out of which assessment of physical parameters in newborns is of importance in case of lack of access to ultrasound, late registration of pregnancy and maternal illiteracy which makes the accurate estimation of neonate's gestational age difficult. ***Case report:*** Here we report a case of a 28-year-old woman with dichorionic and diamniotic twins who delivered a male baby followed by the delivery of a female baby through caesarean section at full term. However, on assessment of physical parameters of both newborns, one was found to be a term baby while the other was preterm based on the assessment of physical parameters which included- examination of the ear, genitals and the sole creases. ***Conclusion:*** This case report concluded that the physical examination findings alone are not as reliable as the ultrasound scan in establishing the gestational age of the newborn, although, in clinical settings where access to ultrasound is unavailable, the New Ballard Scoring system is of great importance in estimating the newborn's maturity by evaluating certain physical as well as neuromuscular parameters.

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INTRODUCTION

Gestational age is a crucial piece of information used by healthcare providers for the assessment of the fetus and mother at any time throughout pregnancy[1]. There are several modes through which we can determine the gestational age such as detailed menstrual history more specifically the date of the last menstrual period, physical examination of the mother by estimating uterine fundal height, ultrasound of both trans-vaginal as well as trans-abdominal and examination of physical features and neurological maturity in newborn postnatally[2,3,4]. Improving ultrasound accessibility is essential for the health of expectant mothers and newborns, but considering the limitations and difficulties with ANC access indicates the need for an easy physical parameters estimation that can predict the gestational age[5]. These physical parameters include lanugo, plantar and palmar creases, breast nodules, ear recoil, genital and scalp hair[6].

Case Presentation

We report the case of a 28-year-old woman who came for her first antenatal visit. Her LMP was 19 October'2022 and the calculated gestation according to LMP was 7 weeks. Her first USG scan showed intrauterine dichorionic and diamniotic twins with gestational age 6 weeks 1 day (Fig 1). Then she came with her second-trimester scan which showed intrauterine dichorionic and diamniotic twins with gestational age of fetus 1- 18 weeks 3 days and fetus 2- 16 weeks 4 days. The fetal weight was 248 grams and 154 grams respectively (Fig 2). In her last trimester scan, fetus 1 had a gestational age of 35 weeks 1 day, weighing 2.6 kg and with cephalic presentation. Fetus 2 had 34 weeks and 1 day of gestation with fetal weight and presentation- 2.25 kg and breech respectively (Fig 3). She underwent the caesarean section and delivered a male baby followed by a female baby on 27 June 2023. Both the babies cried immediately and were vitally stable. The APGAR score of the male and female baby was 9/10 & 8/10 and weighed 2.75 kg and 2.3 kg respectively.

The sex of fetus has not been disclosed to patient or to Attendants

7/12/22

WITH COLOUR DOPPLER FACILITIES

Name [redacted] Age 28Y Sex F

Ref. By Dr.

Note: This Ultrasound examination report is simply a professional opinion and not the final diagnosis. In case of any discrepancy the procedure may be asked to repeat immediately and this report is not valid for medicolegal purpose.

EDD BY FETAL PARAMETERS 01-08-23

APPROXIMATE GESTATIONAL AGE 6W1D

1) PREGNENCY STATUS: a) confirmed/not confirmed b) viable / not viable
c) single/multiple Twin d) intra-utrine/extra-utrine

2) FETAL LIE: a) Cephalic/Breech/Transvers b) Stable/Unstable

3) FETAL PARAMETERS:
a) BPD ..... mm ..... wks ..... days
b) FL ..... mm ..... wks ..... days
c) FAC ..... mm ..... wks ..... days
d) EFBW ..... gm

4) EARLY PREGNENCY:
a) GSD 2.1 mm 5 wks 6 days Two Sac Seen
b) CRL 5 mm 6 wks 3 days
c) HC ..... mm ..... wks ..... days

FETAL HEART RATE : F1-140, F2-142 BPM.

PLACENTA a) fundal/anterior/posterior/rt lateral/lt Lateral/lower segment
b) Maturity Grade : 0 decidual reaction is seen.
c) Hemorrhage : Present/Absent

LIQUOR AMNAI : Adequate

FETAL TONE : +

FETAL MOVEMENT : +

FETAL RESPIRATORY MOVEMENTS : –

CERVIX : 40 mm in length & I.os closed.

OTHERS : Normal yolk sac seen of both fetuses.

are multiple mobile stones of 12mm diameters seen

SSION : Dichorionic and diamniotic twin gestation 6W1D is seen & normal cardiac activity.

Dr.

Department of

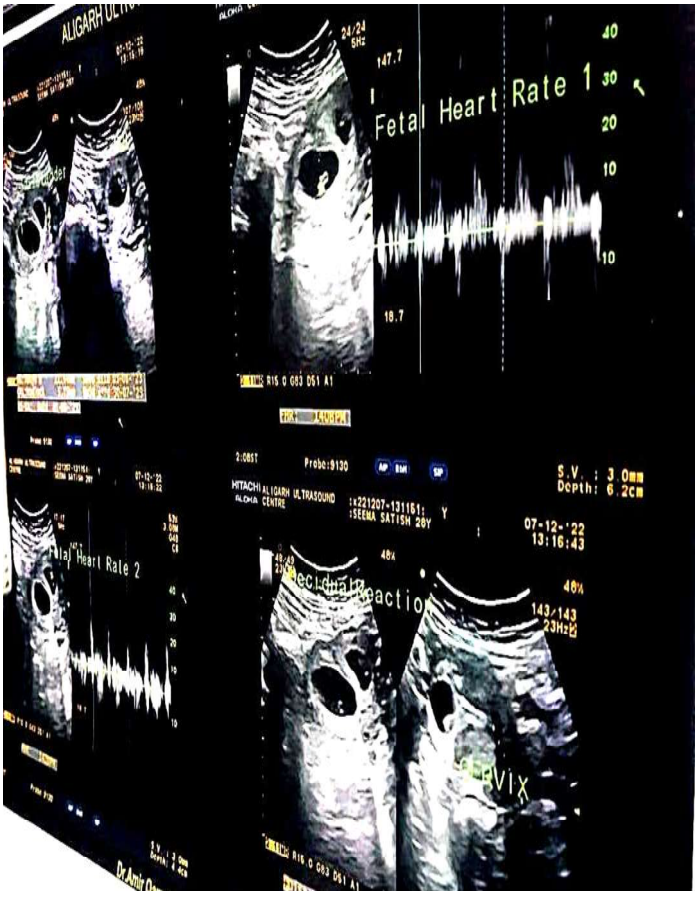

Figure 1. First-trimester scan

ALIGARH ULTRASOUND & IMAGING CENTER
NAAZ PLAZA, OPP. BIBI TGHAR
MEDICAL ROAD, ALIGARH
ULTRASOUND REPORT

Name [redacted] 28 Yrs/F 24/02/2023

EDD by parameters: F1-15.07.2023 and F2- 07.08.2023
Appropriate gestation age: F1-18W 3D and F2- 16W4D by USG
FETAL LIE:: both Cephalic and Unstable

1. FETAL PARAMETERS-F1:
BPD: ---------- 42 mm Corresponding to 18 W5D.
FL: ---------- 26 mm Corresponding to 17 W5D.
AC: ---------- 135 mm Corresponding to 19 W0D.
EFBW: 248 gm
2. FETAL PARAMETERS-F2:
BPD: ---------- 35 mm Corresponding to 17 W0D.
FL: ---------- 19 mm Corresponding to 15 W4D.
AC: ---------- 111 mm Corresponding to 17 W0D.
EFBW: 154 gm

3. CARDIAC ACTIVITY: Present, H.RATE: 168 and 167B/min
4. PLACENTA: a. F1-Posterior and F2- Anterior
b. Maturity grade: I
c. Haemorrhage: Absent

5. LIQUOR: MLP-F1: 55mm MLP-F2: 57mm
6. FETAL TONE: Normal
7. FETAL MOVEMENTS: Normal
8. FETAL RESPIRATORY MOVEMENTS: Not seen at this gestation
9. CERVIX: 40mm in length with I.Os closed.
10. OTHERS: *There are few chorold plexuses cyst of 4 to 5mm diameters seen in both ventricles of Fetus I (larger Fetus).*
A thick membrane separating both the foetuses.

MPRESSION: Intrauterine Dichorionic, Diamniotic twins gestation of F1-18W3D and F2- 16W4D is seen with normal cardiac activity of both fetuses

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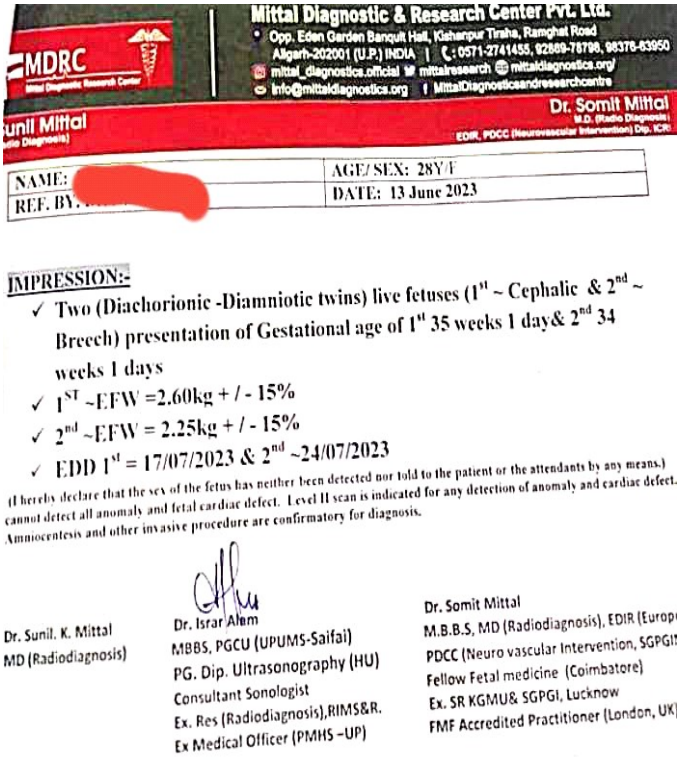
is Ultrasound examination report is simply a professional opinion and not the final diagn
y discrepancy the procedure may be asked to repeat immediately and this report is not

Figure 2. Second-trimester scan

On examination, the male baby was found to be term and the female baby was preterm based on the following physical parameters.



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NAME: [redacted] AGE/ SEX: 28Y/F
REF. BY: [redacted] DATE: 13 June 2023

IMPRESSION:-

- ✓ Two (Diachorionic -Diamniotic twins) live fetuses (1st ~ Cephalic & 2nd ~ Breech) presentation of Gestational age of 1st 35 weeks 1 day& 2nd 34 weeks 1 days
- ✓ 1ST ~EFW =2.60kg + / - 15%
- ✓ 2nd ~EFW = 2.25kg + / - 15%
- ✓ EDD 1st = 17/07/2023 & 2nd ~24/07/2023

(I hereby declare that the sex of the fetus has neither been detected nor told to the patient or the attendants by any means.) cannot detect all anomaly and fetal cardiac defect. Level II scan is indicated for any detection of anomaly and cardiac defect. Amniocentesis and other invasive procedure are confirmatory for diagnosis.

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Figure 3. Third-trimester scan

A

B

Fig. 4 A: Well-curved pinna in a term baby; B: Flat pinna in preterm baby

Fig. 5. A: Well-pigmented scrotal sac with fully descended testes in a term baby

Fig. 5. B: Prominent labia minora & clitoris in preterm baby

Fig. 6 A: Deep transverse creases on soles

Fig. 7. B: Faint marks on sole, no deep creases in term baby

The male baby had to have a well-curved pinna (Fig 4A), well-pigmented and pendulous scrotal sacs with fully descended testes (Fig 5A) & deep transverse creases on the soles (Fig 6A) indicative of a term baby. On the other hand, the other twin female baby was presented with flat ear pinna (Fig 4B), prominent and exposed labia minora and clitoris (Fig 5B) and no deep creases (Fig 6B) pointing toward preterm delivery.

DISCUSSION & CONCLUSION

Estimation of gestational age is of utmost importance to provide the mother and the fetus the standard care in every pregnancy which can be obtained by any means or altogether- history, physical examination, ultrasonography during the antenatal period and examination of the newborn in the postnatal period. Though this case report concludes that the physical parameter alone is not a good tool to get a certain idea about the gestational age of the newborn, in settings without widespread availability of ultrasound and where the accuracy of the last menstrual period is extremely uncertain, the most popular technique for determining gestational age is still clinical assessment of newborn[7,8,9].

For better assessment, multiple scoring systems have been described in the literature out of which the Expanded New Ballard Scoring (ENBS) system is one of the most commonly implicated systems that estimate the infant's maturity by evaluating physical as well as neuromuscular parameters[5,10]. It is a straightforward and reliable gestational assessment method that is nevertheless applicable to newborns born into a wide range of demographics[11].

Patient Consent: Verbal informed consent for publication of her clinical details was obtained from the patient.

Conflict of interest: Author declares that there is no conflict of interest.

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