

PREDICTION OF MODE OF DELIVERY BY ANGLE OF PROGRESSION BEFORE THE ONSET OF LABOUR IN FULL TERM GRAVID WOMEN

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ABSTRACT

Background- Fetal head descent can be assessed by the ultrasound parameter, the angle of progression (AOP). Our aim was to assess Angle of progression by transperineal ultrasound, antepartum before onset of labor and whether a narrow angle has association with a higher rate of Caesarean section.

Method- In our study, after proper selection by inclusion and exclusion criteria, a single observer will be performing the transperineal ultrasound examination and single obstetrician will be assessing the pelvis by clinical pelvimetry. Uncomplicated full term pregnant women, with cephalic presentation will be recruited for the study. Gestational age will be determined by LMP or first trimester ultrasound scan. Labor and delivery will be conducted by any person who will be blinded to AOP. Outcome will be assessed in terms of mode of delivery in relation to Angle of progression, validity of measuring Angle of progression (AOP) in full term gravid women before they go into labor, clinical pelvimetry in full term gravid women and comparison of clinical pelvimetry and AOP in relation to the mode of delivery.

Results: Will be obtained after statistical analysis by the student t test and chi square test using SPSS software Chicago, USA.

Keywords: Angle of Progression, Labor, Caesarean Section.

Introduction-

The simple and ultimate objective of a pregnancy is to deliver a healthy baby to a healthy mother. All pregnant women towards the end of the pregnancy or in early labor or who are admitted in view to induce labor are desirous to know whether they will deliver vaginally, or will require an operative delivery. It is the expectation of the couple to be as prepared as possible for the birthing process. How will be the effect of labor on pelvic floor? Will the effort and energy be worth a vaginal delivery?

Increased rate of Caesarean sections is a thought of concern in the present scenario. Further identifying women at risk of operative delivery (caesarean) by predicting the mode of delivery has the ability to reduce maternal morbidity, maternal anxiety, neonatal morbidity.(1,2) Although there is evidence mentioning the clinical

importance of assessing an unengaged fetal head by digital examination in predicting caesarean delivery before onset of labor, there is limited accuracy of assessing the unengaged fetal head by this means.(3) Vaginal examinations are quite painful and increase the chances of introducing infections. In fact certain conditions are contraindications for vaginal examinations such as placenta previa, chorioamnionitis, PPROM. The results of such examinations are quite subjective and poorly reproduced. Hence there is a need to find a better tool to assess fetal head descent.

Ultrasound has gained popularity as an important tool in obstetrics in terms of assessing the fetal gestational age, detecting congenital anomalies and fetal growth. The 'angle of progression' (AOP), has been shown to be a reliable, objective and replicable method for assessing fetal head descent in laboring women.(4)

This study aims to observe whether assessment of AOP before onset of labor can provide better idea on outcome of labour than clinical pelvimetry.

Methodology-

Place of study- Department of obstetrics and gynaecology in AVBRH, Jawaharlal Nehru Medical College, Wardha, Maharashtra.

Type of study - observational study

Study period- 2 years

Sample size- 200 women.

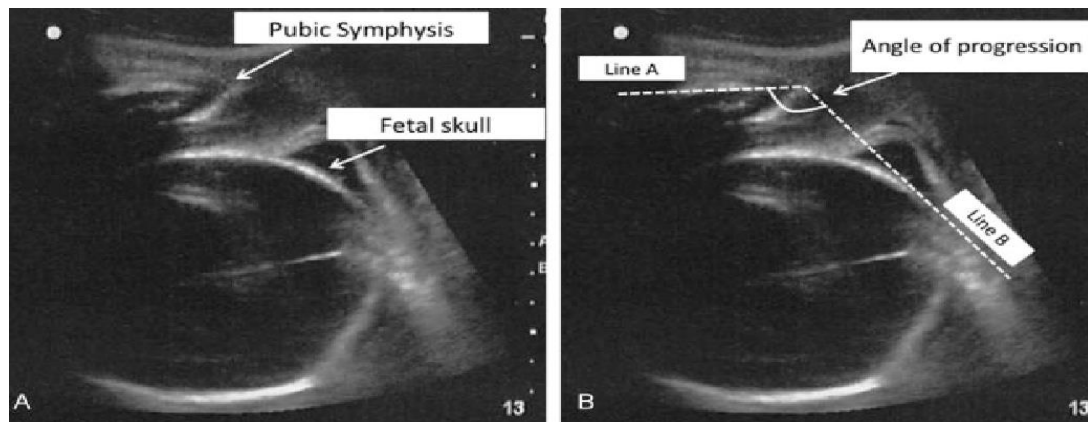
Inclusion criteria-

- 1) Women with 37 to 42 completed weeks of pregnancy giving consent.
- 2) Cephalic presentation.
- 3) Low risk pregnant women of any parity.

Exclusion criteria-

- 1) Women in labor.
- 2) Women with previous LSCS
- 3) Malpresentation.
- 4) Any known case of musculoskeletal deformity.
- 5) Any high risk pregnancy.
- 6) Any contraindications like local bacterial or viral infection or other skin.

Technique of Ultrasound measurement of AOP- A covered transducer will be placed between the labia below the symphysis pubis and transperineal ultrasound images will be taken. The probe is positioned so that the USG beam is in a midsagittal orientation. This view should include the whole length of the symphysis pubis and the fetal skull. In this plane, a line is drawn on the screen between the two points identifying the long axis of the pubic symphysis. A second line is then drawn on the frozen image that extends from the most inferior portion of the pubic symphysis tangentially to the maximum fetal skull convexity. The angle between the two lines is measured and is termed as the angle of progression. The figure below demonstrates the technique of measuring the AOP.



CLINICAL PELVIMETRY- There are two methods described for clinically examining a patient for any cephalo pelvic disproportion. These are -

A) ABDOMINAL METHOD- Patient is asked to empty the bladder and then is placed in dorsal position with thighs slightly flexed and separated. The fetal head is grasped by the left hand. Two fingers (index and middle) of the right hand are placed above the symphysis pubis keeping the inner surface of the fingers in line with the anterior surface of the symphysis pubis to note the degree of overlapping if any when the head is pushed downwards and backwards.

B) ABDOMINO-VAGINAL METHOD (MULLER –MUNRO KERR) - This bimanual method is superior to the abdominal method as the pelvic assessment can be done simultaneously. Muller introduced this method by placing the vaginal finger tips at the level of the ischial spines to note the descent of the head. Munro Kerr added placement of the thumb over the symphysis pubis to note the degree of overlapping.

The patient is asked to empty the bladder, given lithotomy position and internal examination done under all aseptic precautions. Two fingers of the right hand are introduced into the vagina with the finger tips upto the ischial spines and the thumb placed over the pubic symphysis. The head is grasped by the left hand and is pushed in a downward and backward direction into the pelvis.

Inferences:

- 1) No cephalopelvic disproportion – Head can be pushed down to the level of ischial spine and there is no overlapping of the parietal bone over the symphysis pubis.
- 2) Slight or moderate disproportion – Head can be pushed down a little but not upto the level of ischial spines and there is slight overlapping of the parietal bone
- 3) Severe disproportion- Head cannot be pushed down and instead the parietal bone overhangs the symphysis pubis displacing the thumb.

After proper selection by inclusion and exclusion criteria, a single observer will be performing the trans perineal ultrasound examination and single obstetrician will be assessing the pelvis by clinical pelvicmetry. Labor and delivery will be conducted by the labor unit who will be blinded to the AOP.

Expected results-

The outcome will be studied in terms of feasibility of AOP to predict the mode of delivery and whether it is a better objective tool than clinical pelvicmetry.

Discussion –

Vaginal digital examination /clinical pelvimetry is quite subjective and has been described to be inaccurate. This has led many investigators to scout the role of various ultrasound parameters in predicting mode of delivery.

The pioneering work by Antonio Barbera et al. reports the use of transperineal/ translabial ultrasound, and describes that the angle between the symphysis pubis and the leading part of the fetal skull (“angle of progression”) can predict the mode of delivery that is which patient would deliver vaginally and which patient would require operative delivery .(1)

R.LEVY et al in their study found that an AOP >95 degree within a week of labor onset was associated with vaginal delivery in vast majority of cases(5). Different studies related to pregnancy and labour were reported. Salampuria reported a case of Acute Respiratory Distress Syndrome during Pregnancy (6). Singh et al conducted colour doppler evaluation in high-risk pregnancy(7). Bhatia et al reported a rare case of Postpartum Haemolytic Uremic Syndrome (PHUS) with Posterior Reversible Encephalopathy Syndrome (PRES) complicating pregnancy(8). Similar studies on at risk pregnancies were reported by Gaikawd et al (9) and Thakare et al (10).

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