

*Research Article***Assessment of fetal adrenal gland volume as prediction of success of labour induction prospective observational study****Mohamed H. Mosbeh, Emad M. Ibrahim, Eissa M. Mohamed and Abdelrhman A. Ahmed Ali**

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Abstract

Background/aim: Is to compare the modified Bishop's score, demographic cervical length and fetal adrenal gland enlargement in prediction the success of labour induction and duration of labour. **Methodds:** This study will be conducted at Minia Maternity hospital as prospective observational study. It will include 100 pregnant women with an indication for labour induction. These women will be recruited from patients scheduled to under go labour induction at > 37weeks gestation. The most common indication for induction will include: postdate pregnancies, Preclampsia, diabetes mellitus and intrauterine growth retardation. An informed consent will be obtained from all patients participating in this study. **Results:** fetal gland volume measurement can be achived easily with minimal discomfort to patient. Successful induction of labour was more in women with fetal gland volume more than 4.8 mm. the best cutovalue for FGV is 4.8mm. **Conclusion:** More recently another study demonstrate that the three dimensional (3D) Ultrasonography measurement of fetal adrenal gland volume might help to predict preterm labour.⁽⁷⁾ During preterm labour, abnormal activation of labour cascade lead to increase production of DHEAS in the central zone of fetal adrenal gland with subsequent enlargement of entire fetal adrenal gland.⁽⁸⁾ This is first study, which compares the modified Bishop's score, Demographic cervical length and fetal adrenal gland enlargement in prediction of success of labour induction and duration of labour.

Abbreviation: FGV= FETAL GLAND VOULME, BMI= body mass index, TVUS=trans vaginal ultrasound, fz= fetal zone, Tz=transitional zone, CPD= cephalopelvic disproportion.

Keywords: Fetal Gladvoulme, transvaginal US, misopristol, induction of labour .

Introduction

Induction of labour is Still one of the most important aspects of modern obstetric practice, to long extent, the success of labour induction depend on the cervical status at the start of induction process.⁽¹⁾

Pre induction cervical assessment has been performed for many years using digital examination (Bishop's score), later by ultrasonography

Bishop's score has proved clinically useful for predicting the suces of labour induction.⁽²⁾

Digital examination is inaccurate in comparison to Ultrasonography in estimation of cervical length because it can't provide information of the supra vaginal position of the cervix which comprises 50% of cervical length, in addition, digital examination is subjective and can vary considerably among examination.^(2,3)

Trans vaginal Ultrasonography of the cervix on the other hand is a reproducible and effective method for measuring the cervix prior to labour induction. TVU has the advantage of not only measuring the cervical length but also and perhaps more importantly assessing the dilatation of the internal OS, posterior cervical angle and lower uterine segment.⁽⁴⁾

However other recent studies don't demonstrate any improvements in prediction of induction outcome, whether TVU was compared with Bishop's score or used as an adjust to the scoring system.

Recently, attention has been focused on the role of fetal hypothalamic - pituitary- adrenal axis in the commencement of labour.⁽⁵⁾

Several studies demonstrated that two dimensional (2D) ultrasound assessment of fetal

adrenal gland has the potential to accurately predict preterm labour within 7 days.⁽⁶⁾

More recently another study demonstrate that the three dimensional (3D) Ultrasonography measurement of fetal adrenal gland volume might help to predict preterm labour.⁽⁷⁾

During preterm labour, abnormal activation of labour cascade lead to increase production of DHEAS in the central zone of fetal adrenal gland with subsequent enlargement of entire fetal adrenal gland.⁽⁸⁾

This is first study, which compares the modified Bishop's score, Demographic cervical length and fetal adrenal gland enlargement in prediction of success of labour induction and duration of labour.

Aim of the work

Is to compare the modified Bishop's score, demographic cervical length and fetal adrenal gland enlargement in prediction the success of labour induction and duration of labour.

Patients and Methods

Study Design:- Is prospective observational study.

Study method:

Population of study & patient recruitment:

Our study was done on 100 pregnant women whose were recruited from the obstetric department of Minia Maternal University Hospital in the period between January 2018 to august 2019.

1^{ry} out come :

- Evaluation if there is correlation between fetal adrenal gland volume, successive vaginal delivery .

- If there is cut off value of fetal gland volume at which successful vaginal delivery will be anticipated.

2^{ry} out come:

- Detection of number of doses of misoprostol.

- IF patient needs augmentation for example by oxytocin.

- Detection of time interval of induction to vaginal delivery (which should be with in 24 hrs)

Inclusion Criteria:

1- Maternal age ranged from 18 to 30 years

2- PG – P2+ (primipara & 2nd para)

3- Single living Pregnancy

4- Gestational age between (37 to 42 weeks)

5- Fetal membranes intact.

6- Cephalic presentation

7- No previous scar

8- No uterine congenital anomalies or fibroid

9- Normal situated placenta.

Exclusion Criteria:

1. Non cephalic presentation

2. Any diagnosis of CPD.

3. History of uterine surgery.

4. Any condition that contraindicate induction of labour:

○ Placenta previa OR abruption.

○ Any fetal distress.

○ Onset of labor pains.

○ Eldery PG.

○ Grand multipara.

○ Multiple gestations.

○ Macrosomia.

○ Patient's disapproval.

Results

Table (1): clinical characteristics of all patient (n=100)

	Range		Mean \pm Std. Deviation	
Age (Years)	20	36	27.50	4.719
BMI	18	30	22.52	3.47
Gestational Age (wks)	37	40	38.05	1.209
Systolic blood pressure (mmHg)	120	160	130.50	10.76
Diastolic blood (mmHg)pressure	80	100	87.00	6.43

Categorical data represented by number and(%). Numerical data displayed by minimum, maximum, mean and standard deviation

Discussion

Induction of labour refers to the stimulation of the uterine contractions before the spontaneous onset of the labor. Labor induction is indicated

whenever the advantages for mother or fetus are more important than to be continued such as rupture of membranes along with chorioamnionitis or severe pre-eclampsia, GHTN.

Induction of labour is still one of the most important aspects of modern obstetrics practice. To a long extent, the success of labour induction depends on the cervical status at the onset of induction process.

It seems ideal to determine the caesarean risks before starting induction. The standard method for predicting the response to induction is based on the Bishop score which is defined based on scoring cervical position, cervical consistency, fetal station, cervical effacement, and cervical dilation which are all subjective criteria.⁽⁵⁾

Transvaginal ultrasonography of cervix is an effective method for assessing the cervix prior labour induction

There are studies that have shown that the prediction rate of the Bishop score is weak mainly because it is a subjective based protocol and the rate of bias is high. Recently, attention has been focused on the role of fetal adrenal gland volume measurement as predictive value in success of labour induction. Comparisons between the two methods in predicting induction results have demonstrated great differences⁽⁸⁾.

There have been many studies regarding the lack of correspondence between the prediction results in the two methods and it was observed also in the studies found no significant differences.⁽⁸⁾

In conclusion, our study has shown that:

Fetal adrenal gland volume measurement, which can be achieved easily and with minimal discomfort to the patient, provides a useful prediction of the likelihood of vaginal delivery within 24 h of induction and of the induction to-delivery interval.

Successful induction of labour was more in women with fetal gland volume more than 4.8 mm. The best cutoff value for FGV is 4.8mm

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