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Study of evaluation of cervical scoring in prediction of labour and it's outcome - An observational study

[1]Devjanani Raiguru, Assistant Professor, Department of Obstetrics and Gynaecology, NIMS Medical College, Jaipur, Rajasthan, India.

[2]Dr Pradip Borkar, Consultant, Department of Obstetrics and Gynaecology, National Institute of Medical Sciences, Jaipur, Rajasthan, India.

[3]Dr Rutu Patel, Resident, Department of Obstetrics and Gynaecology, National Institute of Medical Sciences, Jaipur, Rajasthan, India

[4]Ashwani Verma, Assistant Professor, Department of Obstetrics and Gynaecology, NIMS Medical College, Jaipur, Rajasthan, India.

Corresponding Author: Ashwani Verma, Assistant Professor, Department of Obstetrics and Gynaecology, NIMS Medical College, Jaipur, Rajasthan, India.

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Abstract

Background: Cervix plays major role in childbirth. The sign of onset of labour are painful uterine contraction, slight mucus mixed bleeding the 'show', dilatation and effacement of cervix and formation of bag of membranes. Bishop score is quantifiable method used to predict labour induction outcome which includes cervical dilatation, effacement, head station, consistency and position of cervix. A Bishop score of 9 conveys a high likelihood for successful induction.

Methods: The present study was carried out in Department of Obstetrics and Gynaecology, National Institute of Medical Sciences, Jaipur, from March 2023 to February 2024. Total 434 pregnant women were included in this study.

Result: This study included total 434 pregnancies, 202 primigravida and 232 multigravidas over the period of one year. The analysis showed the signs of cervical ripening, engagement of presenting part can be used to predict the onset and outcome of labour. Out of 202 primigravida patients in our study 175 patients delivered vaginally and 27 delivered by LSCS(lower segment caesarean section). Out of 232 multigravida patients 212 delivered vaginally and 20 delivered by LSCS.

Conclusion: Each cervical factor plays an important role as far as onset of labour is concerned in both primigravida as well as multigravida patients, if the score for individual factor was more, the onset of labour was earlier and vice versa. Thus, from this study it can be concluded that the onset of labour and outcome as an unfavorable cervix tends to prolonged labour, therefore it indirectly affects the perinatal outcome.

Keywords: Bishop score, cervical effacement, pregnancy outcome.

Introduction

The cervix plays a major role in childbirth. As the foetus descends within the uterus in preparation for birth the presenting part usually the head, rests on and is supported by the cervix [1]. As labour progresses the cervix becomes softer and shorter, begins to dilate and rotates to face anteriorly [2]. The support the cervix provides to the foetal head starts to give way when the uterus begins its contraction. During childbirth the cervix must dilate to a diameter of 10 cm.

Oxytocin is further released during labour when the foetus stimulates the cervix of more than 10 cm (4 inch) to accommodate the head of the foetus as it descends from the uterus to the vagina. While becoming wider the cervix also becomes shorter, a phenomenon known as effacement [1].

The sign by which the onset of labour is recognised must be clearly understood before talking of prediction of labour. These signs are painful uterine contraction, slight mucus mixed bleeding the 'show', dilatation and effacement of cervix and formation of bag of membranes. The onset and outcome of labour varies from individual to individual and much depends on the condition of the cervix. Therefore, cervical status may be used as important parameter of the predictor of the onset and outcome of labour [3].

Cervix has to actively hold the content of uterus in the erect human female hence acting as a unique predictor of labour.

Uterine contractions are variable, and thus may be unreliable and descent of the presenting part may not parallel closely with the progress of labour and hence cannot be universally accepted.

On other hand cervical dilatation and effacement closely follows the progress of labour, in most of the patients, it is simple to assess, easily appreciable and it is relatively objective. Hence cervical dilatation with effacement is generally preferred criteria to follow the progress of labour [3].

The dilatation of cervix is very much important prerequisite for normal vaginal delivery. Uterine work required to complete the labour from the onset is directly related to the previously achieved degree of cervical readiness, and is independent of either position of the vertex or the parity of the patients [3].

One quantifiable method used to predict labour induction outcomes is the score described by Bishop (1964), it includes cervical dilatation, effacement, head station and consistency and position of cervix. As favourability or Bishop score decreases, the rate of induction to effect vaginal delivery also declines. A Bishop score of 9 conveys a high likelihood for successful induction. For research purposes, a bishop score of 4 or less identifies an unfavorable cervix and may be an indication for cervical ripening[4].

Since cervix seems to be such a useful factor for labour. It was felt that knowing an approximate time for labour and its outcome by way of knowing about cervix will be beneficial to the patient as well as obstetrician. Therefore, a study was undertaken to predict the onset and outcomes of labour.

Aim of the Study

The present study was carried out in Department of Obstetrics and Gynaecology, National Institute of Medical Sciences, Jaipur over the period of one year i.e. March 2023 to Feb 2024.

The study was mainly carried out to know the cervical status for predicting the course of labour and its outcomes in form of deliveries.

Objectives

Present study was conducted with following objectives

1.To know the cervical factor for predicting the course of labour

2. To Find out the role of cervical condition on the course and outcome of labour.

Materials and Methods

Study Site: The present study was carried out in Department of Obstetrics and Gynaecology, National Institute of Medical Sciences, Jaipur.

Study Population: Women fulfilling the inclusion criteria and randomly selected were included in this study**.**

Study Design: Cross sectional observational study

Duration of study : Study was carried out over the period of one year March 2023 to Feb 2023

Inclusion Criteria

1. Singleton pregnancy beyond 37 completed weeks of gestation and without any clinical cephalopelvic disproportion.

2. Cephalic presentation during the onset of labour.

3. Patients with spontaneous and induced labour.

Exclusion Criteria

1. Patients in which there was pre-existing contraindication to vaginal delivery.

2. Patients with hydramnios and multiple pregnancy.

3. Cephalopelvic disproportion

4. Patients with full dilatation of cervix on admission.

Discussion

Present study included total 434 pregnancies,202 primigravida and 232 multigravidas over the period of one year. The analysis showed the signs of cervical ripening, engagement of presenting part can be used to predict the onset and outcome of labour.

In this study all patients were examined first time after completion of 37 weeks of gestation age. Most of the patients belonged to rural area and between age group 20-29 year of age. Intermediate type of cervix was common in primigravida and multigravida patients.

In the current study no correlation was found between rural/ urban status of the patients, age, parity, and cervical ripeness at 37 weeks of gestation age.

S. Katherine Laughon [2012] also found no statistically correlation between cervical score at 37 weeks of gestation age and maternal age, parity and socioeconomic group [5].

In the present study, there was decrease in the proportion of low score and increase in the higher score after one or two weeks of initial examination indicating that there was one or more of the factors included in the score, which was increasing in value during last few weeks of pregnancy

Robert (1977) also found changes in cervical score between 36 weeks and 40 weeks of gestation period [6].

Out of all Primigravida 73(36.13%) cases had unfavorable cervix (0-4 score),95(47.2%) cases had intermediate cervix (5-7 score) and 34 cases (16.83%) had favourable cervix with bishop score more than 7.

1.36% cases with unfavorable cervix had onset of labour within 7 days of pelvic examination.23.15% cases with intermediate cervix and 58.82% cases with favourable cervix had onset of labour within 7 days of pelvic examination.

73.97% cases with unfavourable cervix, 6.31% cases with intermediate cervix and 5.88% cases with favourable cervix had onset of labour after more than 14 days of pelvic examination.

Of all Multigravida cases examined for the first time 27.12 % had unfavourable cervix (0-4score), 42.24% had intermediate cervix (4-7 score) and 30.60% had favourable cervix (score more than 7). In our study 15.87% case with unfavourable cervix, 57.14% cases with intermediate score and 92.95% case with favourable

cervix had onset of labour within 7 days of pelvic assessment.58.73% cases with unfavourable score, 4.8% cases with intermediate score presented in labour after 14 days of pelvic examination. Both multigravida and primigravida patients with favourable cervix had onset of labour within 7 days of pelvic examination as compared to those with unfavourable cervix. This had a significant P value in our study.

Kenneth Lenovo (1986) described cervical examination between 26 and 30 weeks of gestation as a method for identifying women at risk for delivery before 34 weeks. in their study blinded cervical examination were performed in 185 women and 8% were found to have cervical dilatation 2 or 3 cm. The incidence of delivery before 34 weeks of gestation was 27% in such women compared with 2% in those whose cervix were undilated or 1cm. However parous women with cervical dilatation remained at increased risk for delivery before 34 weeks of gestation. They concluded that early third trimester cervical examination may be as important in identifying women at risk for preterm delivery [7].

Out of all primigravida in our study 175 patients delivered vaginally in which 31.4% had score less than 4, 51.4% had intermediate score and 17.14% cases had favourable score (more than 7) on first visit.3.8% cases with unfavourable cervix (score less than 4),11.1% cases with intermediate cervix (score 4-7) and 16.6% cases with favourable cervix (score more than 7) delivered in less than 8 hours. 54.5% cases with unfavourable cervix, 88.8% cases with intermediate score and 83.3% cases with favourable score delivered within 8-18 hours.47.2% cases with unfavourable score delivered in more than 18 hours.

212 multigravida patients delivered vaginally out of which 25% cases had unfavourable score, 41.3% cases had intermediate score and 33.9% cases had favourable score more than 7 at first visit.5.6% cases with unfavourable cervical score,48.2% cases with intermediate score and 83.3% cases with favourable score delivered in less than 4 hours. 56.6% cases with unfavourable score, 45.9% cases with intermediate score and 16.6% cases with favourable score delivered within 4-8 hours. While 37.5% cases with unfavourable score and 5.7% cases with intermediate score delivered after more than 8 hours of examination.

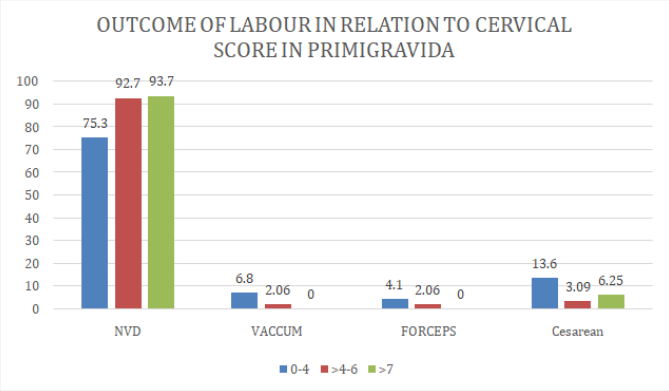
Friedman 1978 demonstrated a clear-cut relationship between the state of cervix at spontaneous onset and outcome of labour [8]. In his study, cervix was considered to be unfavourable fi it was 1<mc dilated at onset and favourable if it was >2cm dilated. In his study frequent caesarean delivery was found to be more nulliparous who began labour with unripe cervix, and forceps inert common in responding multipara patients.

Duration of labour of less than 8 hours was found in 16.6% primigravida cases with favourable cervix as compared to only 3.8% cases with unfavourable cervix. In multigravida the duration of labour was less than 4 hours in 83.3% cases with favourable cervix and 5.6% cases with unfavourable cervix delivered in less than 4 hours.

In our study of primigravida patients, 75.3% cases with unfavourable cervix, 92.7% cases with intermediate cervix and 93.75% cases with favourable cervix delivered vaginally. 24.65% cases with unfavourable cervix required induction of labour. 6.84% cases with unfavourable cervix were delivered by assisted vaginal delivery with vacuum, 4.10% cases required forceps delivery. 13.6% cases with unfavourable cervix were delivered by L.S.C.S. Common indications being prolonged labour, meconium-stained liquor with fetal distress, postdated pregnancy. In patients with favourable cervix 3.12% cases required induction of labour and

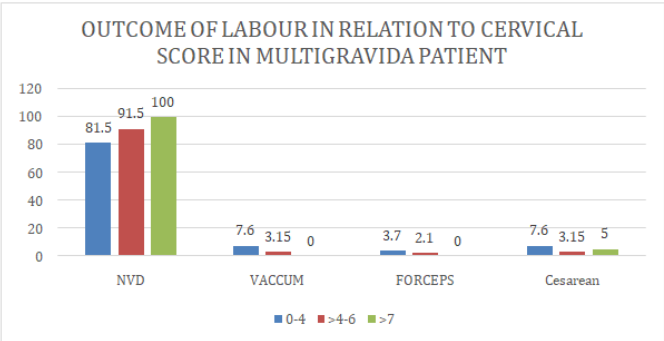
6.25% cases were delivered by L.S.C.S for fetal distress and severe preeclampsia.

Graph 1

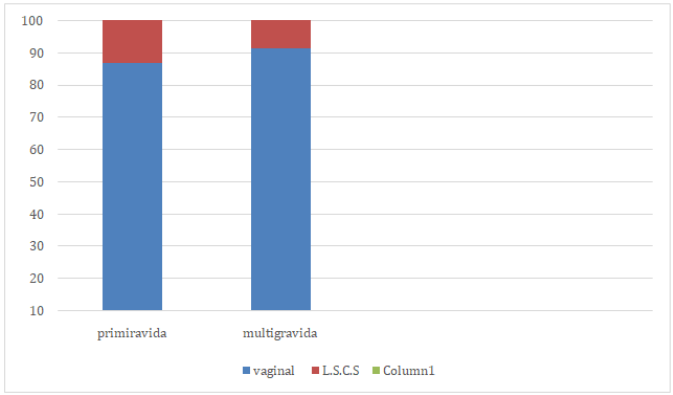


Out of 232 multigravida patients examined after 37 completed weeks of gestation, 91.3% cases delivered vaginally. 3.44% cases had vacuum assisted delivery, 1.72% cases had forceps delivery and 3.44% cases were delivered by L.S.C.S. All cases with favourable cervix delivered vaginally. 81.5% cases with unfavourable cervix and 91.5% cases with intermediate cervix required induction of labour. 7.69% cases with unfavourable cervix were delivered by vacuum and 3.7% had forceps assisted delivery. 7.6% patients with unfavourable cervix required L.S.C.S. Among the intermediate type of cervix 3.15% cases induction of labour. Vacuum delivery was conducted in 3.15% cases and forceps delivery was conducted in 2.10% cases and 3.15% cases were delivered by caesarean section.

Graph 2



Graph 3: Rate of vaginal delivery and L.S.C.S in primigravida and multigravida.



Robert (1977) also reported an increase in the incidence of caesarean section in patients with unripe cervix at 40 weeks [6].

Calder et al (1977) reported 32% incidence of caesarean section in patients with unripe cervix, when labour was induced by amniotomy followed by oxytocin infusion. While the incidence was 14% when PGE2 was used Extra aminotically before induction of labour [9].

Among the primigravida 86.6% cases delivered vaginally. The rate of vacuum delivery, forceps delivery and L.S.C.S was high in patients with unfavourable cervix. Among the multigravida 100% cases with favourable cervix delivered vaginally as compared to 81.5% cases with unfavourable cervix.

In our study no correlation was found between weight of baby, APGAR score and cervical score at 37 weeks of gestation. **Robert (1977)** also found no correlation between weight and Apgar score of baby with cervical score at 37 weeks of gestations [6].

Conclusion

Each cervical factor plays an important role as far as onset of labour is concerned in both primigravida as well as multigravida patients, if the score for individual factor was more, the onset of labour was earlier and vice versa. Cervical score at the completion of 37 weeks also affects

the outcome of labour. The rate of assisted vaginal delivery and L.S.C.S was high in cases with unfavourable cervix. Thus, making cervical score a very important predictor in the outcome of labour Thus from this study it can be concluded that the onset of labour and outcome as an unfavourable cervix tends to prolonged labour, therefore it indirectly affects the perinatal outcome. Perinatal morbidity and mortality is directly affected by prolonged labour. Therefore, cervical scoring is used as an important parameter which will help to obstetrician to predict the approximate timing of onset of labour and its likely outcome. Hence, Cervical factor plays an important role in onset and progress of labour.

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