ASSESSMENT OF THE ACCURACY OF MANIPAL SCORING SYSTEM IN PREDICTING SUCCESSFUL LABOR INDUCTION

Thesis

Submitted For Partial Fulfillment of Master Degree in

Gynecology and Obstetrics

BY

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2018

Acknowledgments

First and foremost, I feel always indebted to ***Allah*** *the Most Beneficent and Merciful.*

I wish to express my deepest thanks and respect for ***Dr. Gaser Mohamed Adly El Bishry****, Professor of Obstetrics and Gynecology, Faculty of Medicine, Ain Shams University, for his wise guidance, kind encouragement, I have the honor to complete this work under his supervision.*

I am deeply thankful to ***Dr. Ihab Fouad Serag El Din Allam****, Professor of Obstetrics and Gynecology, Faculty of Medicine, Ain Shams University, for his valuable supervision, guidance, kind advice throughout this work.*

Many thanks and gratitude to ***Dr. Radwa Rasheedy Ali****, lecturer of obstetrics and gynecology, faculty of medicine, Ain Shams university for here effort, care and encouragement to complete this work.*

I wish to express my deepest thanks, respect and love to my family for their support and much needed encouragement.

Finally I would like to thank the patients who gave me the chance to achieve my work.

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Abstract

Background: Induction of labor (IOL) is the intervention used to artificially initiate uterine contractions leading to progressive dilatation and effacement of the cervix to accomplish delivery prior to the onset of spontaneous labor. It is considered one of the most commonly performed obstetrical procedures, as its percentage reaching 20% in pregnant women for various reasons by several medical and surgical methods. **Aim:** This study aims to evaluate the accuracy of Manipal cervical scoring system and compare its performance with the Burnett modification of Bishop score on successful induction of labor. ***Subjects:*** The study population was a consecutive series of participants attending Ain shams university maternity hospital emergency room who were suitable for induction of labor. 105 pregnant females were selected according to the following inclusion and exclusion criteria. **Conclusion:** Many factors were associated with successful labor induction including: BMI, parity, GA, EFW, BPD, gestational weight gain. **Recommendations:** The introduction of Manipal score in the daily practice to predict successful induction. Avoid vaginal examination which is painful, cause discomfort and anxiety for many women especially with the availability of oral misoprostol as an induction agent which is effective in achieving vaginal birth.

Keywords: Extra-amniotic saline infusion , International Federation of Gynecology and Obstetrics, Prostaglandins, single deepest

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List of abbreviations

ACOG	American College of Obstetricians and Gynecologists
AC	Abdominal circumference
AFI	Amniotic fluid index
AFV	Amniotic fluid volume
BPD	Biparietal diameter
BUCC	Buccal
CL	Cervical length
CS	Cesarean section
EASI	Extra-amniotic saline infusion
FDA	Food and Drug Administration
EFW	Estimated fetal weight
FL	Femur length
FIGO	International Federation of Gynecology and Obstetrics
HC	Head circumference
IOL	Induction of labor
IQR,	Interquartile range.
PCA	Posterior cervical angle
PGs	Prostaglandins
PO	Per os
PPH	Post-partum hemorrhage
PV	Per vagina
ROM	Rupture of membrane
SDVP	single deepest vertical pocket
SL	Sublingual
TVU	Transvaginal ultrasound
VD	Vaginal delivery
WHO	World Health Organization

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2016

Introduction

Induction of labor (IOL) is the intervention used to artificially initiate uterine contractions leading to progressive dilatation and effacement of the cervix to accomplish delivery prior to the onset of spontaneous labor **(Kurian et al., 2016).**

It is considered one of the most commonly performed obstetrical procedures, as its percentage reaching 20% in pregnant women for various reasons by several medical and surgical methods **(Kurian et al., 2016).**

According to Laughon SK et al**.,** IOL was performed in 42.9% of the nulliparas and 31.8% of the multiparas women while elective induction at term occurred in 35.5%. Elective induction at term in multiparas was highly successful (vaginal delivery 97%) compared to nulliparas (76.2%).

IOL usually used when it is more beneficial to mother and to the fetus to terminate the pregnancy, however, the percentage of marginally indicated and elective labor induction is increased (**Moore and Rayburn, 2006)**.

IOL most commonly used to decrease fetal or neonatal morbidity and mortality as with post-term pregnancy, oligohydramnios, suspected intrauterine growth restriction (IUGR), as well as it can reduce maternal morbidity as in female with some medical disorders like preeclampsia or to benefit both mother and fetus as in case of

prelabor rupture of membranes (PROM) at term **(Mozurkewich et al., 2009)**.

Labor induction by using of prostaglandin has several benefits as increasing the rate of successful vaginal delivery, decreases cesarean section rate, lowers the use of regional analgesia and increases maternal satisfaction **(Kurian et al., 2016).**

Assessment of cervical status is the main predictor for estimating the likelihood of a successful vaginal delivery **(Leduc et al., 2013).**

However, integrating leading factors for failed labor induction other than cervical status, such as parity, maternal age and weight, and fetal weight may improve the prediction of vaginal delivery after labor induction **(ROOS et al., 2010).**

Although, many methods have been developed to assess cervical status before induction, yet an appropriate method awaits elucidation. Various studies conducted comparing transvaginal and digital examination to find out which one is better for pre-induction cervical assessment and the results achieved were controversial **(Bansiwal et al., 2013)**.

Bishop score is the most popular method and is considered the gold standard traditional method of assessing favorability of the cervix. However, It is subjective, has not shown a good correlation with outcomes, and associated with procedure discomfort **(Alvarez and Colomo, 2016).**

Digital examination also underestimate cervical length by more than 13mm, as even the most experienced clinician cannot digitally evaluate the upper half of cervix (area immediately adjacent to the internal os) **(Bansiwal et al., 2013)**.

Many ultrasound parameters were used such as the cervical length, the foetal head–perineal distance and other qualitative characteristics like(dilatation, wedging pattern or funnel), As Ultrasound is less subjective and is more accepted and less painful to the women than vaginal exams, and some of the parameters have good correlations with outcomes**(Alvarez and Colomo, 2016)**.

More recent literature suggest that the use of transvaginal sonography (TVS) instead of Bishop score for preinduction cervical assessment to choose the induction agent markedly decrease the need for intra cervical prostaglandin usage without adversely affecting the induction success in some cases **(Bansiwal et al., 2013)**.

Aim of the Study

This study aims to evaluate the accuracy of Manipal cervical scoring system and compare its performance with the Burnett modification of Bishop score on successful induction of labor.

Research hypothesis

In women undergoing labor induction Manipal cervical scoring system may be more accurate than the Burnett modification of Bishop score.

Research Question

In women undergoing labor induction does the Manipal cervical scoring system more accurate than the Burnett modification of Bishop score?

Patients and Methods

Study Design:

Prospective cross sectional study.

Study Population:

The study population will be a consecutive series of participants attending Ain shams university maternity hospital.

Pre induction assessment using bishop scoring system and trans vaginal ultrasound will be performed on 105 pregnant females.

Sample size calculation

Sample size calculation was based on the sensitivity of Manipal Scoring System in predicting successful labor induction. Prior data indicated that the incidence of successful labor induction was 86.9% and the sensitivity of Manipal scoring system in predicting success was 77% (Bajpai et al., 2015). If the true sensitivity differs ± 10%, we will need to study 105 mothers to be able to reject the null hypothesis with 80% power setting type I error probability to 0.05.Calculations were done using Flahault et al., equation (2005).

Inclusion Criteria:

1. Singleton gestation at 37 completed weeks or greater.
2. Cephalic presentation.
3. Longitudinal lie.
4. Living fetus.
5. Intact membrane.