Transvaginal Ultrasound Cervical Length as an Indicator of Successful Induction of labour

Thesis

Submitted for partial fulfillment of the master degree of
Obstetrics and Gynecology

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Arabic Summary ..... --

List of Abbreviations

AUC	:	Area under the curve
BMI	:	Body mass index
BS	:	Bishop score
CL	:	Cervical length
Cm	:	Centimeter
CS	:	Cesarean section
CTG	:	Cardiotocography
FFN	:	Fetal Fibronectin
FHR	:	Fetal heat rate
GAGs	:	Glycosaminolgycans
IGFBP-1	:	Insulin like growth factor binding protein-1
IQR	:	Interquartile range
IU	:	International units
Kg	:	Kilograms
LGA	:	Large for gestational age
LR-	:	Negative likelihood ratio
LR+	:	Positive likelihood ratio
Mg	:	Milligrams
MHZ	:	Mega Hertz
Min.	:	Minutes
Mm	:	Millimeter
NICU	:	Neonatal intensive care unit
NPV	:	Negative predictive value
NS	:	Non-significant
PCA	:	Posterior cervical angle
PGDH	:	prostaglandin dehydrogenase
PGE1	:	Prostaglandin E1
PGE2	:	Prostaglandin E2
PGF2-α	:	Prostaglandin F2-α
PPV	:	Positive predictive value
RCOG	:	Royal college of obstetricians and Gynecologists

List of Abbreviations (Cont.)

RCT	:	Randomized controlled trial
ROC	:	Receiver operator characteristics
S	:	Significant
SD	:	Standard deviation
Sec.	:	Seconds
TVS	:	Transvaginal scan
TVUS	:	Transvaginal ultrasound
UK	:	United kingdom
US	:	Ultrasound

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Introduction

The induction of labour is an obstetric procedure for triggering uterine contractions by mechanical, pharmacologic, or both measures in an attempt to achieve vaginal delivery. This therapeutic modality is used in up to 20% of pregnancies ***(RCOG, guideline number 9, 2001)***.

It represents one of the most common interventions in Obstetrics nowadays, the frequency of which increased from 9.5% in 1991 to 20.6% in 2003. ***(Martin JA et al, 2003, and ACOG Committee opinion 2003)***.

Planned induction of labour has become an established part of modern obstetric practice ***(Shepherd et al.,1981)***.

Individual induction of labour, especially in the treatment of abnormal pregnancy (preeclampsia-eclampsia, pyelonephritis), reduces maternal and fetal morbidity and mortality. Recall that delivery is either warranted or not. The indication for induction should be so valid that if it fails, delivery is performed by cesarean section.
(Benson & Pernoll, 2001).

Theoretically, transvaginal ultrasonograghic measurement could represent a more accurate assessment of the cervix than digital examination because the supravaginal portion of the cervix usually comprises about 50% of cervical length, but this is highly variable among individuals. This portion is difficult to assess digitally specially if the cervix is closed, in addition, effacement is subjective and can vary considerably among examiners.

The logistic regression model of ***Gonen et al. (1998),*** found that only the Bishop score and parity, not cervical

length, significantly correlated with vaginal delivery and duration of labour *"A study done on 86 cases"*.

Paterson-Brown et al. (1991), also found no correlation between cervical length and duration of labour or between cervical length and vaginal delivery. *"A pilot study done on 50 cases"*.

However, ***Tan et al. (2007)*** found that both cervical length and Bishop score are useful predictors of the need for cesarean delivery following labour induction. *"A prospective study was performed on 249 cases"*.

Also ***Pandis et al. (2002)*** found that transvaginal sonographic measurement of cervical length provides a useful prediction of the likelihood of vaginal delivery within 24 h of induction *"A study performed on 240 cases"*.

The Bishop score, since its description in 1964, remains the gold standard for assessing favorability for induction of labour ***(Crane, 2006).*** Transvaginal sonographic cervical length has been shown, by a number of studies to be a better predictor of cesarean delivery than Bishop Score in women undergoing induction of labour ***(Daskalakis et al., 2007; Peregrine et al., 2006; Rane et al., 2005).***

Although the Bishop score is simple and easy to apply, it is a subjective evaluation method and results may vary according to the clinical experience of the person applying it. Vaginal examination allows examining only 50% of cervix and may cause problems in those having a closed external os ***(Jackson et al., 1992).***

Aim of the work

The aim of this study is to determine the efficiency of transvaginal ultrasonographic cervical length to predict successful labour induction.

Research question

Is transvaginal ultrasound estimation of cervical length efficient in predicting successful labour induction?

Research hypothesis

Null hypothesis,

Transvaginal ultrasound estimation of cervical length doesn't differ in its ability to predict successful labour induction when compared to clinical Bishop scoring.