Ultrasound assessment of fetal head-perineum distance and cervical length to predict the success of labour induction

Ieva Pitkēviča [a,b,c,d,*], Laura Rācene [a,b], Līva Ķīse [a,b], Violeta Bule [a,b,c], Zane Rostoka [a,b,c], Beāte Sārta [a,b], Agnija Vecvagare [a,b], Ļubova Lapidus [a,b], Laura Luse [a,b,c], Laura Isajeva [d], Dace Rezeberga [a,b,c], Natālija Vedmedovska [a,b]

[a] *Department of Obstetrics and Gynecology, Riga Stradins University, Latvia*
[b] *Riga Maternity Hospital, Latvia*
[c] *Riga East University Hospital, Latvia*
[d] *Department of Public Health and Epidemiology, Faculty of Public Health and Social Welfare, Riga Stradins University, Latvia*

* Corresponding author.

E-mail address: ievapitkevica@gmail.com

Introduction and aims of the study: Induction of labour (IOL) is one of the most frequent obstetric procedures. Successful IOL results in a vaginal delivery, either spontaneous or operative. The Bishop score remains a gold standard for assessing suitability for IOL and ultrasound measurements may be added to the list. The study aims to evaluate ultrasound measurements of fetal head-perineum distance and cervical length as predictive factors for the success of IOL.

Methods: The project "Role of Metabolome, Biomarkers and Ultrasound Parameters in Successful Labour Induction" started implementation in Riga Maternity Hospital in January 2021. Fifty nulliparous women with singleton term pregnancy, cephalic presentation, intact membranes and a Bishop score of 6 or less with an indication for IOL were included. An ultrasound examination was performed before labour induction. IOL consisted of combined method with misoprostol and mechanical dilatation of cervix with Foley catheter.

Results: The mean cervical length was 2.53cm (range 1.05 to 4.75cm). The mean fetal head-perineum distance was 5.08cm (range 3.52 to 7.29cm). Out of 50 patients, 90.0% (n = 45) had successful IOL- vaginal delivery, 10.0% (n = 5) had Caesarean section. The ROC analysis identified that cervical length < 2.56cm (AUC = 51.6%) and fetal head-perineum distance < 5.26cm (AUC = 41.7%) were cut-off levels to predict vaginal delivery. The success rate of IOL among women with cervical length < 2.56cm was 88.0% (n = 22) and 96.5% (n = 28) among women with fetal head-perineum distance < 5.26cm.

Conclusions: Alternative measures to predict the success of labour induction should be studied. Ultrasound examination is a safe and non-invasive method that has been shown to provide valuable objective measurements.

Acknowledgements: This research is funded by the Latvian Council of Science project "Role of Metabolome, Biomarkers and Ultrasound Parameters in Successful Labour Induction", project No. lzp-2021/1-0300.

doi:10.1016/j.ejogrb.2023.08.229

Risk factors for reproductive health disorders after operative delivery

Oksana Makarchuk *, Nataliia Henyk, Iryna Orishchak, Viola Shutak

Ivano-Frankivsk National Medical University, Ukraine

* Corresponding author.

E-mail address: Irka-h@i.ua

Introduction: Caesarean section rate in Eastern European countries is about 40%. A significant complication is a scar defect on the uterus, isthmocele or niche, which is detected in 24–70% of cases during ultrasonographic examination. There is no unanimous opinion on the mechanism of formation, site of incision, number of previous cesarean sections, suturing technique and maternal comorbidities, such as diabetes may all play a role.

The aim of the work was to find risk factors for isthmocele formation after operative delivery.

Methods: The medical documentation of childbirth of 100 patients was analyzed, where in 60 cases a scar defect on the uterus was found (the main group), which made it possible to analyze the parameters of the comparison group (40 patients) without sonographic signs of isthmocel. Statistical processing of the material was carried out with the help of the Microsoft Excel application program using the "Statistica - 6.0" package. The analysis of medical records allowed us to identify the following risk factors: two or more cesarean sections (43.3%), retroflexion of the uterus (63.3%), young age of the woman under 19 years (20.0%), performing the operation in the second period of labor (56.7%), large fetus at birth (26.7%), surgical intervention technique (incision localization, suturing technique) (23.3%), body mass index (36.7%), gestational diabetes (16,7%), infectious complications in the postpartum period (20.0%).

Conclusion: The use of multivariate analysis made it possible to establish the most significant risk factors for isthmocele after operative delivery: high parity of Caesarean section (OR- 4.33, 95%; CI (1.58–11.86), low maternal body mass index (OR- 2.73 , 95% CI (1.03–7.19) and gestational diabetes (OR- 7.80, 95% CI (1.0–63.56), prolonged labor and operative delivery in the second period (OR- 6.16 , 95% CI 2.35–6.14), as well as an infectious factor in the postpartum period.

doi:10.1016/j.ejogrb.2023.08.230

Predictors of effectiveness in the medical treatment of early abortion with misoprostol: development of a nomogram to estimate the individual probability of therapy failure

Alessandro Libretti *, Marco Tosi, Maria Cristina Rovellotti, Valentino Remorgida

Department of Gynaecology and Obstetrics, Maggiore Della Carità University Hospital, University of Eastern Piedmont, Novara, Italy

* Corresponding author.

E-mail address: libretti.a@gmail.com

Introduction and aims of the study: Early spontaneous abortion is the most frequent complication of pregnancy. If early complete miscarriage is a self-healing pathology, incomplete and retained abortion are common conditions for which millions of women need hospitalization and treatment. The pharmacological induction of the expulsion of the abortion relies on the use of Misoprostol, a prostaglandin E1 analogue. However, medical treatment is significantly less effective than surgery. Our aim is to create a predictive model, suitable to be transformed into a tool for the clinical practice, able to estimate the individual probability of failure of the Misoprostol treatment.

Methods: Examination of patients hospitalized for medical treatment of incomplete or retained abortion. Screening of potential predictors able to influence the outcome of the medical treatment.

Selection of a series of predictors among those available from the consultation of medical records.

Results and/or discussion: The presence of minor clinical symptoms in the previous 7 days before treatments, the use of hormonal contraceptive for a long period and/or more than 5 years continuously were variables that were significantly more present in the group of patients who achieved a complete emptying of the uterine cavity with Misoprostol.

Conversely, the presence of a multiple pregnancy, medically assisted procreation techniques pregnancies, and/or progesterone supplementation in the first trimester for a duration of at least two weeks, were

parameters significantly more common among the patients who had to undergo surgery due to the lack of efficacy of the Misoprostol treatment.

Conclusions: According to our model, the highest risk of failure is obtained in a patient who has never had minor clinical symptoms, undergone progesterone therapy and who has never taken hormonal therapy.

doi:10.1016/j.ejogrb.2023.08.231

Cervical sonoelastography as a tool for prediction of success of labour induction at term

Līva Ķīse [a,b,c,d], L. Rācene [a,b], Z. Rostoka [a,c], A. Vecvagare [a,b], B. Sārta [a,b], L. Lapidus [a,c], I. Pitkēviča [a,c], L. Lūse [a,b], V. Bule [a,c], M. Priedniece [a,c], K.L. Vaganova [a], L. Isajeva [d], D. Rezeberga [a,b,c], N. Vedmedovska [a,b]

[a] *Department of Obstetrics and Gynaecology, Riga Stradins University, Latvia*
[b] *Riga Maternity Hospital, Latvia*
[c] *Riga East University Hospital, Latvia*
[d] *Department of Public Health and Epidemiology, Faculty of Public Health and Social Welfare, Riga Stradins University, Latvia*

Introduction and Aims of the Study: The frequency of induction of labour (IOL) is rising in obstetrical practice. Specialists search for objective and reliable methods to predict success of IOL.

Aim: to evaluate role of cervical strain elastography in prediction of IOL success.

Methods: The study enrolled 50 patients in Riga Maternity hospital from June'22-January'23. The inclusion criteria: healthy primiparas with singleton pregnancy, cephalic presentation, intact membranes and Bishop score ≤ 6. IOL Method - Foley catheter combined with oral misoprostol.

Cervical tissue strain elastogram was performed on GE Versana Premier ultrasound machine, with transvaginal E8CS probe. The cervical elasticity index (EI) was evaluated based on color map in 3 regions – internal os, cervical canal, and external os. Cervical tissue was rated according to color map: red (soft), yellow (medium soft), green (medium hard), and blue (hard).

Descriptive statistical analysis was carried out using IBM SPSS 24.0 software. Significance level for ANOVA and chi-square tests, denoted by the alpha of 0.05.

Results: The median age of patients was 28 (IQR 6) years, median gestational week 41 + 1 (IQR 1), median BMI 21.1 (IQR 4.2). Vaginal delivery (VD) was achieved in 90% (n = 45): spontaneous VD - 64% (n = 32), operative VD - 26% (n = 13). Cesarean section - 10% (n = 5) of cases. Active labour within 12 hours - 90% (n = 45) of cases, and VD within 24 hours - a 86.6% (n = 39). No statistically significant association was found between EI cervical regions and mode of delivery. The drawbacks of the study might be small sample size.

Conclusion: Elastography is a novel method to use in prediction of IOL success, and continuous research in larger population is needed.

This research is funded by the Latvian Council of Science project "Role of Metabolome, Biomarkers and Ultrasound Parameters in Successful Labour Induction", project No. lzp-2021/1-0300.

doi:10.1016/j.ejogrb.2023.08.232

Assessment of h3k27me3 level in the tet1 promoter region in eutopic endometrium of women with endometriosis and infertility

Magdalena Adamczyk [a,*], A. Rawłuszko-Wieczorek [b], M. Nowacka [b], E. Wender-Ożegowska [a], M. Kędzia [a]

[a] *Department of Reproduction and Perinatal Medicine, Poznan University of Medical Sciences, 60-535, Poland*
[b] *Department of Biochemistry and Molecular Biology, Poznan University of Medical Sciences, 60-781, Poland*

* Corresponding author.

E-mail address: magdawroobel@gmail.com

Introduction: Endometriosis is a complex gynecological clinical syndrome that causes infertility. The pathomechanism of infertility in endometriosis is unclear. In infertile patients with endometriosis, reduced expression of the TET1 gene was found in the eutopic endometrium. The role of histone modifications in the TET1 promoter region in regulating its expression in infertile endometriosis patients is unknown.

Objective: Assessment of the level of repressive histone modification H3K27me3 in the promoter region of the TET1 gene in the eutopic endometrium of infertile and fertile patients with and without endometriosis.

Material and methods: The study included 18 patients with and 13 patients without endometriosis. The patients were additionally divided according to their fertility status into fertile and infertile women. The research material was eutopic endometrium. H3K27me3 levels were assessed in three regions of the TET1 promoter (within and outside the CpG Island). Chromatin immunoprecipitation (ChIP) was used to assessment the occurrence of H3K27me3 in the TET1 gene. The statistically significant value was $p < 0.05$.

Results: The level of H3K27me3 in three different regions of the TET1 promoter have not differed between patients with and without endometriosis. Alterations in the level of H3K27me3 were also not found between fertile and infertile women. The analysis of a smaller number of cases only for high-efficiency ChIP (validated by postitve controls for H3K27me3) indicated a significantly higher level of H3K27me3 in the group of infertile women with endometriosis compared to the control group ($p = 0.037$).

Conclusions: 1. The level of histone repressive modification H3K27me3 in the TET1 promoter region is not a probable factor regulating the expression of the TET1 in a group of patients with endometriosis.2. The level of H3K27me3 in the TET1 promoter does not depend on female fertility, regardless of the coexistence of endometriosis.3. High-efficiency ChIP analysis on a larger group of patients may give more accurate results.

doi:10.1016/j.ejogrb.2023.08.233

The impact of androgens in the Intrafollicular Endocrine Milieu in follicular fluid in four different protocols: HMG,HMG/hCG,rFSH, rFSH/hCG

N. Petrogiannis *, E. Liokari, D .Mavrogianni, G. Panagakis, R. Bletsa, K. Kallianidis, D. Loutradis

Fertility Instituto, National and Kapodistrian University of Athens. Athens Medical School, Naval and Veterans Hospital of Athens, Greece

* Corresponding author.

E-mail address: Np120@hotmail.com

Context: The role of different preparation of gonadotropins on the intrafollicular hormonal profile in the follicular fluid has been studied.