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Original article

CLINICAL-MORPHOLOGICAL EVALUATION OF THE QUALITY OF THE UTERINE SCAR TISSUE AFTER CAESAREAN SECTION

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ABSTRACT

Purpose: Caesarean section (C.S.) is the most commonly performed operative procedure of the uterus in women of reproductive age. Each of these women increases their likelihood of complications in subsequent pregnancies. There is an obsolete law in obstetrics: once a cesarean, always a cesarean, due to the danger of failure of the uterine scar tissue and the greatly increased possibility of uterine rupture. This necessitates the application of various methods of assessing the sufficiency of the scar tissue before planning further deliveries. The most accurate methods for determining the structure of a tissue are histological, which by their nature can not be used during the pregnancy but they can correlate to clinical ones.

Materials/ Methods: Prospective study of 40 pregnant women with previous C.S., divided into groups according to the interval between the operations. Another subsequent division of subgroups to the number of Caesarean sections was made. The morphological indicators were compared to a control group of dermal scar from the same patients. The results of the clinical methods were to be compared with the results of the same patients from the morphological studies. We used clinical methods such as the history of the previous pregnancies and puerperal period, history of previous operations and the recovery after them, ultrasound examination and evaluation of the anterior uterine wall preoperatively. The morphological methods used are: Hematoxylin & eosin staining (H&E), followed by Masson Trichrome for collagen; Weigert-Van Gieson staining for elasticity; staining of immunohistochemistry MIB-1 (Ki-67) for cell proliferation.

Results: The study group was presented by patients with one or more previous C.S. that were divided in subgroups. The shortest inter-delivery interval was 14 months, the longest – 19 years. The shorter the period between the C.S.s was, the thinner the myometrium. Cases of abnormal healing have been observed, including: myometrial hyperplasia, adenomyosis, myofiber disarray, elastosis, inflammation, fibroids, keloids. These results can be compared to clinical data from patients but mainly with the number of previous C.S. or those with a brief period between them.

Conclusions: The results from our research proved that multiple C.S. is risk factors for larger defects of the uterine scar but not mandatory. The likelihood of prolonged healing time was higher in cases of more than one C.S. The dimensions of the surgical incision are associated with clinical symptoms such as postmenstrual smears, dysmenorrhoea and chronic pelvic pain.

Keywords: uterine rupture, caesarean section scar tissue, vaginal birth after previous caesarean section, uterine dehiscence

INTRODUCTION

Caesarean section (C.S.) is the most commonly performed operative procedure of the uterus in women of reproductive age. Each of these women increases their likelihood of complications in subsequent pregnancies. There is a continuous discussion about the optimal caesarean delivery rate and what is the most appropriate one for both maternal and fetal outcome. The increased range of C.S. in the last decades is widening new perspectives for complications, and further steps are needed to reach the optimal percentages. However, in 1916, Edwin Cragin placed an obsolete law in obstetrics that has been executed for a long time: “Once a caesarean, always a caesarean”, due to the danger of failure of the uterine scar tissue and the greatly increased possibility of uterine rupture. In the literature is reported that the chance of uterine rupture in nulliparas during the delivery is 2 per 10 000 while it can highly increase with the multiparity and it can reach up to 20-50 per 10 000 in vaginal deliveries after previous caesarean section [1, 2, 3]. This necessitates the application of various methods of assessing the sufficiency of the scar tissue before planning further deliveries. The most accurate methods for determining the structure of tissue are histological, which by their nature cannot be used during the pregnancy. These methods correlate with some clinical ones that we tried to prove.

Several big obstetrical organizations agreed on vaginal birth after prior caesarean section to be first choice option as clinically safe for women with one previous C.S.

Elective surgery system strengthening: development, measurement, and validation of the surgical preparedness index across 1632 hospitals in 119 countries

NIHR Global Health Unit on Global Surgery, COVIDSurg Collaborative*†*

Summary

Background The 2015 *Lancet* Commission on global surgery identified surgery and anaesthesia as indispensable parts of holistic health-care systems. However, COVID-19 exposed the fragility of planned surgical services around the world, which have also been neglected in pandemic recovery planning. This study aimed to develop and validate a novel index to support local elective surgical system strengthening and address growing backlogs.

Methods First, we performed an international consultation through a four-stage consensus process to develop a multidomain index for hospital-level assessment (surgical preparedness index; SPI). Second, we measured surgical preparedness across a global network of hospitals in high-income countries (HICs), middle-income countries (MICs), and low-income countries (LICs) to explore the distribution of the SPI at national, subnational, and hospital levels. Finally, using COVID-19 as an example of an external system shock, we compared hospitals' SPI to their planned surgical volume ratio (SVR; ie, operations for which the decision for surgery was made before hospital admission), calculated as the ratio of the observed surgical volume over a 1-month assessment period between June 6 and Aug 5, 2021, against the expected surgical volume based on hospital administrative data from the same period in 2019 (ie, a pre-pandemic baseline). A linear mixed-effects regression model was used to determine the effect of increasing SPI score.

Findings In the first phase, from a longlist of 103 candidate indicators, 23 were prioritised as core indicators of elective surgical system preparedness by 69 clinicians (23 [33%] women; 46 [67%] men; 41 from HICs, 22 from MICs, and six from LICs) from 32 countries. The multidomain SPI included 11 indicators on facilities and consumables, two on staffing, two on prioritisation, and eight on systems. Hospitals were scored from 23 (least prepared) to 115 points (most prepared). In the second phase, surgical preparedness was measured in 1632 hospitals by 4714 clinicians from 119 countries. 745 (45·6%) of 1632 hospitals were in MICs or LICs. The mean SPI score was 84·5 (95% CI 84·1–84·9), which varied between HIC (88·5 [89·0–88·0]), MIC (81·8 [82·5–81·1]), and LIC (66·8 [64·9–68·7]) settings. In the third phase, 1217 (74·6%) hospitals did not maintain their expected SVR during the COVID-19 pandemic, of which 625 (51·4%) were from HIC, 538 (44·2%) from MIC, and 54 (4·4%) from LIC settings. In the mixed-effects model, a 10-point increase in SPI corresponded to a 3·6% (95% CI 3·0–4·1; p<0·0001) increase in SVR. This was consistent in HIC (4·8% [4·1–5·5]; p<0·0001), MIC (2·8 [2·0–3·7]; p<0·0001), and LIC (3·8 [1·3–6·7%]; p<0·0001) settings.

Interpretation The SPI contains 23 indicators that are globally applicable, relevant across different system stressors, vary at a subnational level, and are collectable by front-line teams. In the case study of COVID-19, a higher SPI was associated with an increased planned surgical volume ratio independent of country income status, COVID-19 burden, and hospital type. Hospitals should perform annual self-assessment of their surgical preparedness to identify areas that can be improved, create resilience in local surgical systems, and upscale capacity to address elective surgery backlogs.

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See Online for appendix

Introduction

The COVID-19 pandemic highlighted the fragility of elective surgical services around the world, yet global surgery risks being neglected in pandemic recovery planning.[1–3] At the start of 2022 an estimated 200 million patients worldwide were awaiting surgery.[1,2] For time-critical conditions, such as cancer, one in seven patients did not have their planned surgery during SARS-CoV-2 outbreaks and many more had substantial delays to their care.[3] Some patients might never have accessed the surgery they required, with high associated disability and millions of years of healthy life lost.[4,5] With the existing challenges in providing accessible and safe surgical systems in low-income countries (LICs) and middle-income countries (MICs) identified by the 2015 *Lancet* Commission on global surgery, health systems and hospitals with less funding for infrastructure, staffing and equipment were the worst affected, with

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Prediction of adverse perinatal outcome at midgestation

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KEYWORDS: competing-risks model; neonatal death; neonatal morbidity; neonatal unit admission; precision medicine; pyramid of prenatal care; small-for-gestational age; stillbirth; stratification

CONTRIBUTION

What are the novel findings of this work?
Women identified by the competing-risks model applied at midgestation as being at high risk of delivering small-for-gestational-age (SGA) neonates are also at increased risk of delivering babies requiring admission to neonatal unit for ≥ 48 h, perinatal death and major neonatal morbidity.

What are the clinical implications of this work?
Women with increased midgestation risk for SGA should be informed about their increased risk for adverse neonatal outcomes. A risk-based personalized stratification of pregnancy care for SGA may potentially reduce the rate of adverse neonatal outcomes, but this remains to be proven.

ABSTRACT

Objectives *First, to investigate the association between adverse neonatal outcomes and birth weight and gestational age at delivery. Second, to describe the distribution of adverse neonatal outcomes within different risk strata derived by a population stratification scheme based on the midgestation risk assessment for small-for-gestational-age (SGA) neonates using a competing-risks model.*

Methods *This was a prospective observational cohort study in women with a singleton pregnancy attending a routine hospital visit at 19 + 0 to 23 + 6 weeks' gestation. The incidence of neonatal unit (NNU) admission for ≥ 48 h was evaluated within different birth-weight-percentile subgroups. The pregnancy-specific risk of delivery with SGA < 10th percentile at < 37 weeks was estimated by the competing-risks model for SGA, combining maternal factors and the likelihood functions of Z-score of sonographically estimated fetal weight and uterine artery pulsatility index multiples of the median. The population was stratified into six risk categories: > 1 in 4, > 1 in 10 to ≤ 1 in 4, > 1 in 30 to ≤ 1 in 10, > 1 in 50 to ≤ 1 in 30, > 1 in 100 to ≤ 1 in 50 and ≤ 1 in 100. The outcome measures were admission to the NNU for a minimum of 48 h, perinatal death and major neonatal morbidity. The incidence of each adverse outcome was estimated in each risk stratum.*

Results *In the study population of 40 241 women, 0.8%, 2.5%, 10.8%, 10.2%, 19.0% and 56.7% were in the risk strata > 1 in 4, > 1 in 10 to ≤ 1 in 4, > 1 in 30 to ≤ 1 in 10, > 1 in 50 to ≤ 1 in 30, > 1 in 100 to ≤ 1 in 50 and ≤ 1 in 100, respectively. Women in higher-risk strata were more likely to deliver a baby that suffered an adverse outcome. The incidence of NNU admission for ≥ 48 h was highest in the > 1 in 4 risk stratum (31.9% (95% CI, 26.9–36.9%)) and it gradually decreased until the ≤ 1 in 100 risk stratum (5.6% (95% CI, 5.3–5.9%)). The mean gestational age at delivery in SGA cases with NNU admission for ≥ 48 h was 32.9 (95% CI, 32.2–33.7) weeks for risk stratum > 1 in 4 and progressively increased to 37.5 (95% CI, 36.8–38.2) weeks for risk stratum ≤ 1 in 100. The incidence of NNU admission for ≥ 48 h was highest for neonates with birth weight below the 1st percentile (25.7% (95% CI, 23.0–28.5%)) and decreased progressively until the 25th to < 75th percentile interval (5.4% (95% CI, 5.1–5.7%)). Preterm SGA neonates < 10th percentile had significantly higher incidence of NNU admission for ≥ 48 h compared with preterm non-SGA neonates (48.7% (95% CI, 45.0–52.4%)* vs *40.9% (95% CI, 38.5–43.3%); P < 0.001). Similarly, term SGA neonates < 10th percentile had significantly higher incidence of NNU admission for ≥ 48 h compared with term non-SGA neonates (5.8% (95% CI, 5.1–6.5%)* vs *4.2% (95% CI, 4.0–4.4%); P < 0.001).*

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Conclusions *Birth weight has a continuous association with the incidence of adverse neonatal outcomes, which is affected by gestational age. Pregnancies at high risk of SGA, estimated at midgestation, are also at increased risk for adverse neonatal outcomes.* © *2023 International Society of Ultrasound in Obstetrics and Gynecology.*

INTRODUCTION

It is believed that small-for-gestational-age (SGA) fetuses are at increased risk of stillbirth and adverse perinatal outcome[1–6]. However, data that support this notion are, first, historical and do not take into account the major improvements in neonatal care with time; second, are focused mainly on term pregnancies; and, third, are available mainly for stillbirth and do not cover the whole range of reported neonatal outcomes. It is also generally accepted that early prediction may lead to timely and effective recognition of smallness and improved outcome[6–8]. However, the association between early prediction and adverse neonatal outcome has not been investigated systematically.

In a series of publications, a new competing-risks model for SGA has been developed and validated[9–15]. This model is based on the concept that SGA is more severe the smaller the baby is and the earlier it is delivered. The new approach is superior to the traditional methods, and it is also effective for the prediction of stillbirth[16,17]. We have shown that patient-specific stratification of care has the potential to enhance clinical management, as knowing that a pregnancy is high risk is not enough and a structured antenatal plan for follow-up visits is required[18]. There is a lack of updated evidence for the continuous association between birth-weight distribution and the incidence of adverse neonatal outcomes. Moreover, the incidence of adverse perinatal outcome related to SGA is unclear, in general and after factoring in disease severity expressed in risk profiling, according to our newly established continuous competing-risks approach.

The objective of this non-interventional observational study of singleton pregnancies was, first, to examine the incidence of adverse neonatal outcomes in relation to neonatal size and gestational age at delivery and, second, to describe the distribution of adverse neonatal outcomes within different risk strata derived by a population stratification scheme based on the midgestation risk assessment for SGA by a competing-risks model.

METHODS

Study population and design

The study population was derived from a prospective study for adverse obstetric outcomes in an unselected cohort of women with a singleton pregnancy attending for routine pregnancy care at 19 + 0 to 23 + 6 weeks' gestation at King's College Hospital, London, UK (October 2011 to January 2014 and October 2016 to March 2020) and Medway Maritime Hospital, Gillingham, UK (January 2012 to January 2014 and October 2016 to March 2020).

In the present study, we used information from maternal characteristics and medical history, together with the midgestation measurements of uterine artery pulsatility index (UtA-PI) and fetal biometry. We measured the left and right UtA-PI using transvaginal or transabdominal color Doppler ultrasound and calculated the mean value for the two arteries[19,20]. The majority of UtA-PI measurements were carried out transvaginally because cervical length was being measured at that time; the transabdominal approach was used when women declined transvaginal sonography. Fetal head circumference, abdominal circumference and femur length were measured, and estimated fetal weight (EFW) was calculated using the Hadlock's formula[21] because a systematic review identified this as being the most accurate model[22]. Ultrasound scans were carried out by sonographers who had extensive training in ultrasound imaging and had obtained the appropriate Fetal Medicine Foundation Certificate of Competence in ultrasound and Doppler examinations (http://www.fetalmedicine.com). Pregnant women or healthcare providers were not aware of the results of this assessment. Gestational age was determined by measurement of fetal crown–rump length at 11–13 weeks' gestation or fetal head circumference at 19 + 0 to 23 + 6 weeks' gestation[23,24].

Inclusion criteria for this analysis were a singleton pregnancy and delivery of a non-malformed liveborn or stillborn at ≥ 24 weeks. Pregnancies with major fetal abnormality, termination or fetal death before 24 weeks were excluded. All women gave written informed consent to participate in the study. The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the NHS research ethics committee (REC reference: 02-03-033 on 11 March 2003).

Outcome measures

Data on pregnancy outcome were collected from hospital maternity records or general medical practitioners of the women. The examined perinatal outcomes included neonatal unit (NNU) admission for ≥ 48 h, perinatal death, which was defined as stillbirth or neonatal death prior to hospital discharge, and major neonatal morbidity. The following outcomes related to major neonatal morbidity were collected, as indicated in the BadgerNet Neonatal discharge summary: need for ventilation (i.e. continuous positive airway pressure or nasal continuous positive airway pressure or intubation), respiratory distress syndrome (i.e. need for surfactant and ventilation), brain injury (i.e. hypoxic ischemic encephalopathy, intraventricular hemorrhage Grade ≥ 2 or periventricular leukomalacia), sepsis (based on positive blood culture), anemia treated with blood transfusion or necrotizing enterocolitis requiring surgical intervention. Ultimately, major neonatal morbidity was defined as a composite of brain injury, sepsis, anemia and necrotizing enterocolitis. Ventilation and respiratory distress

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Open Access Case Report

Analysis of Caudal Regression Syndrome: A Case Report From Bulgaria

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Abstract

A rare congenital condition known as caudal regression syndrome (CRS) or caudal dysplasia sequence (CDS) is defined by deformity of the caudal (lower) half of the body, which can have different effects on skeletal, neurological, gastrointestinal, and genitourinary systems. A 19-year-old G1P0 woman presented for a fetal anomaly scan at 27+6 weeks of gestation due to suspected oligohydramnios. The patient reported a history of maternal diabetes type 1 on insulin for the past 10 years. She presented with severe generalized edema and hypertension that was not reported till the first appointment with us with a blood pressure of 160/90 mmHg. Despite the current situation, the patient was also a severe smoker during pregnancy, with up to 15 cigarettes per day. In her recent blood glucose level diary, she noted poor diabetes control, with glucose levels in the range of 22 to 26 mmol/L. In the following report, we demonstrate that prenatal ultrasonography can detect this rare but important anomaly. Additionally, this case study highlights the significance of conducting a thorough ultrasonographic evaluation in mid-gestation to effectively manage pregnancies impacted by insulin-dependent diabetes mellitus.

Categories: Obstetrics/Gynecology
Keywords: rare diseases, congenital abnormalities, prenatal diagnosis, diabetes mellitus management, regression caudal syndrome

Introduction

A rare congenital condition known as caudal regression syndrome (CRS) or caudal dysplasia sequence (CDS) is defined by deformity of the caudal (lower) half of the body, which can have different effects on skeletal, neurological, gastrointestinal, and genitourinary systems [1,2].

Depending on the severity of the malformation, clinical findings can range from asymptomatic and lacking inferior coccygeal segments to a complete absence of the coccygeal, sacral, lumbar, and even inferior thoracic vertebrae. The related orthopedic anomalies can include pelvic deformity, kyphoscoliosis, agenesis of one or more ribs, dislocation of the hips, flexion contractures of the knees and hips, and deformities of the feet. Anorectal atresia, inguinal hernia, abdominal wall defects, gut malrotation, and imperforate anus are the most common gastrointestinal anomalies in CRS. This condition has also been associated with tracheoesophageal, rectovaginal, and recto-urethral fistulas. There is a possibility of vesicoureteral reflux, hydronephrosis, fused kidneys, renal agenesis, ectopic ureters, and transposition of external genitalia due to Mullerian duct agenesis. Besides all the mentioned conditions, neural tube defects, congenital heart defects, strabismus, and midline facial clefts have also been reported [2,3]. These severe defects may eventually lead to stillbirth or spontaneous abortion.

The exact etiology of CRS is still unknown. Despite the lack of a precise cause, researchers believe vascular hypoperfusion, genetic susceptibility, and maternal diabetes to be potential risk factors [4,5].

The following report demonstrates that prenatal ultrasonography can detect this rare but important anomaly. Additionally, this case study highlights the significance of conducting a thorough ultrasonographic evaluation mid-gestation to effectively manage pregnancies impacted by insulin-dependent diabetes mellitus.

Case Presentation

A fetal anomaly scan was performed on a 19-year-old G1P0 lady who was suspected of having oligohydramnios at 27+6 weeks of gestation. The patient presented to the University Hospital Saint Marina in Pleven, Bulgaria, in August 2023. The woman disclosed a history of insulin-treated type 1 maternal diabetes spanning the previous 10 years. She arrived with a blood pressure reading of 160/90 mmHg, significant generalized edema, and hypertension that was not disclosed until her initial visit with us. Despite the present circumstances, the patient smoked up to 15 cigarettes a day during her pregnancy. She reported inadequate diabetes management in her most recent blood glucose level diary, with glucose readings

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Preeclampsia Management and Maternal Ophthalmic Artery Doppler Measurements between 19 and 23 Weeks of Gestation

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Abstract: Background: The ophthalmic Doppler is a reliable and impartial way to assess the severity of preeclampsia (PE). The study aimed to assess the potential utility of Doppler measurements of the maternal ophthalmic arteries during the weeks 19–23 of gestation, both independently and in combination with established biomarkers for PE. **Methods:** A prospective cohort study was conducted involving women who were recruited from a variety of standard appointments, including booking, scanning, and regular prenatal visits. A total of 200 women that were divided into high-risk and low-risk groups for developing PE were involved during the period between April 2023 and November 2023. **Results:** The ophthalmic ratio had significantly higher values in high-risk patients than in low-risk women ($p = 0.000$). There was a significant relationship between PSV2/PSV1 and gestational age at birth in women with PE compared to the ones who did not develop PE. **Conclusions:** An ophthalmic artery Doppler can play a crucial role in the early detection of PE, allowing for timely intervention and management. Incorporating the ophthalmic artery Doppler as a screening tool for PE in Bulgaria has the potential to improve early detection, risk stratification, and overall maternal and fetal health outcomes.

Keywords: preeclampsia; ophthalmic artery; PSV2/PSV1; management; Bulgaria

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1. Introduction

Over the last decades, different definitions of preeclampsia (PE) have been suggested. According to the International Society for the Study of Hypertension in Pregnancy (ISSHP), a woman is considered to have PE if she develops high blood pressure (systolic blood pressure (SBP) of ≥140 mmHg and/or diastolic blood pressure (DBP) of ≥90 mmHg) for the first time at least 20 weeks into her pregnancy and has proteinuria (≥300 mg/24 h or a protein-to-creatinine ratio >30 mg/mmol or ≥2+ on dipstick testing) [1]. Later, the ISSHP definition of PE was reviewed, including cases without proteinuria but with evidence of hematological, renal, or hepatic impairment [2]. As one of the most serious maternal complications during pregnancy, the accurate prediction of PE onset and progression, as well as the prevention, are the three fundamental elements that should be improved, so the associated PE morbidity and mortality can be effectively lowered [3–5].

The ophthalmic artery serves as a practical pathway for Doppler assessment that offers insight into the less approachable cerebral circulation [6]. It shares morphological and functional similarities with the intracranial vasculature [7,8]. Approximately 30% to 100% of women diagnosed with PE may experience ocular complications [9–11]. The ocular Doppler is a reliable and impartial way to assess the severity of PE. It is a very easily accessible vessel to measure and a promising marker in screening for PE [7,12–16].

According to a study by Sapantzoglou's group, either used alone or in conjunction with other biomarkers, the ophthalmic artery peak of systolic velocity (PSV) ratio between

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High Antenatal Psychosocial Risk Among Pregnant Women in Bulgaria: Evidence to Support Routine Mental-Health Screening

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Abstract

Background: Antenatal depression and anxiety contribute significantly to maternal morbidity and adverse pregnancy outcomes. However, structured screening and targeted interventions are largely absent from standard prenatal care in many Eastern European countries, including Bulgaria. This study examines the prevalence and psychosocial predictors of antenatal psychosocial risk using the validated Antenatal Risk Questionnaire–Revised (ANRQ-R) in a nationally underrepresented population. **Methods:** A cross-sectional survey was conducted among 216 third-trimester pregnant women in Bulgaria. Data on sociodemographic characteristics, health behaviours, and reproductive history were collected. Multivariate logistic regression identified predictors of elevated psychosocial risk. **Results:** A total of 65.7% of participants met the criteria for elevated psychosocial risk. Significant risk factors included passive smoking exposure during pregnancy (OR = 5.03, $p < 0.001$), physical activity prior to pregnancy (OR = 1.81, $p = 0.004$), and a family history of hereditary disease (OR = 42.67, $p < 0.001$). Protective factors were better self-rated current health (OR = 0.37, $p = 0.004$), the presence of chronic illness (OR = 0.42, $p = 0.049$), previous childbirth experience (OR = 0.11, $p = 0.032$), and residence in Northwestern Bulgaria (OR = 0.31, $p = 0.028$). Despite the high prevalence of psychosocial vulnerability, only 9.5% of affected women sought professional help. **Conclusions:** While our findings point to important unmet needs in antenatal mental health, further research is required before national screening policies can be implemented. Pilot programs, cultural validation of tools, and system-level readiness assessments should precede broad adoption.

Keywords: antenatal psychosocial risk; antenatal mental health; perinatal depression; perinatal anxiety; antenatal screening; ANRQ-R; Bulgaria; Eastern Europe; maternal health; pregnancy outcomes

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1. Introduction

The prevalence of mental-health disorders during pregnancy and within the first year postpartum has gained significant recognition [1–3]. For instance, research has shown that up to 40% of pregnant women experience clinically high levels of anxiety or depressive symptoms during pregnancy [4,5].

Perinatal mental health (PMH) encompasses emotional and psychological well-being during pregnancy and the first year postpartum, including conditions such as depression and anxiety [2–7]. PMH disorders can impair maternal functioning, hinder bonding with

children

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Review

Preconception Care and Genetic Screening: A Global Review and Strategic Perspectives for Implementation in Bulgaria

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Highlights

What are the main findings?

- A structured narrative synthesis maps international models of preconception care (PCC) and preconception genetic screening to the Bulgarian context, identifying system levers (NHIF/primary care), gaps in reimbursement and genetics capacity, and feasible policy steps.
- Acceptance of PCC and genetic screening is shaped by cultural, religious, and community norms (with Israel as an instructive comparator); rights-based safeguards—voluntariness, informed consent, confidentiality, and non-discrimination—are essential.
- Cross-cutting domains—mental health, environmental/occupational exposures, and men's preconception health—should be integrated to improve uptake and equity.

What is the implication of the main finding?

- Policymakers can embed PCC into primary care with clear guidelines, provider training, and NHIF-backed financing, using a phased, voluntary approach to expanded carrier screening supported by culturally competent counselling.
- Equity-focused outreach (including underserved/rural communities and partner/men's involvement), together with digital self-assessment tools and routine audit/registry, can scale implementation while safeguarding human rights.

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Abstract

Background: Preconception care (PCC) is a key element of preventive reproductive health, aiming to optimise maternal and child outcomes by addressing biomedical, behavioural, psychosocial, and genetic risks before conception. International frameworks provide clear guidance, yet implementation in many low- and middle-income countries remains inconsistent. **Methods:** A structured narrative review was conducted across PubMed, Web of Science, Cochrane Library, and Google Scholar, focusing on literature published between 2010 and 2025. Eligible sources included empirical studies, clinical guidelines, policy documents, and high-quality grey literature from health authorities. Quality, relevance, and applicability were assessed, with particular emphasis on European and Bulgarian contexts. **Results:** Evidence from diverse settings demonstrates that PCC interventions—such as chronic disease management, vaccination, lifestyle optimisation, and expanded carrier screening (ECS)—can reduce adverse pregnancy outcomes and prevent severe genetic

disorders. Effective international models integrate PCC into primary care, leverage digital health tools, and ensure equitable access through public funding. In Bulgaria, PCC remains underdeveloped: genetic screening is not part of routine care, there are no national guidelines or surveillance systems, and only ~4% of women initiate folic acid supplementation before pregnancy. NGOs and EU-funded digital initiatives provide partial outreach but cannot replace state-supported services. **Conclusions:** Bulgaria urgently requires a coordinated national PCC strategy, incorporating standardised guidelines, provider training, digital platforms, and phased ECS introduction. Strengthening PCC delivery can reduce preventable maternal and neonatal morbidity, advance reproductive justice, and enhance the long-term sustainability of public health systems. These findings support the development of a publicly funded, guideline-driven national PCC strategy with phased introduction of expanded carrier screening under NHIF to improve equity and long-term system sustainability.

Keywords: preconception care; carrier screening; reproductive health policy; child health; Bulgaria; preventive medicine

1. Introduction

The main goal of preconception care (PCC) is to enhance maternal, neonatal, and long-term child outcomes while minimising preventable pregnancy-related complications [1–3]. In other words, PCC is a collection of preventive health interventions that are administered prior to conception or between pregnancies. It is designed to address modifiable biomedical, behavioural, genetic, and psychosocial risk factors that impact reproductive outcomes, thereby guaranteeing a healthier start for the next generation [4,5].

PCC incorporates interventions such as structured health promotion, vaccination, nutritional optimisation, chronic disease management, and STI prevention, which can be delivered universally or customised to individual risk profiles [3,6].

PCC is acknowledged as a critical element of the prevention of intergenerational diseases and reproductive health by international organisations like the World Health Organisation (WHO). The WHO PCC action plan emphasises the importance of ensuring that marginalised populations have access to services in a fair manner [7,8]. In low-resource contexts, however, social determinants—such as financial constraints, rural inaccessibility, and low health literacy—continue to impede uptake [9–11]. Systemic challenges also confront healthcare professionals, including inadequate training, incomplete incorporation of PCC into primary care pathways, and the absence of standardised guidelines [12,13]. Consequently, the provision of PCC remains fragmented, despite the substantial evidence of its cost-effectiveness and its potential to prevent adverse infant health outcomes.

The implementation of PCC in Bulgaria is limited and poorly integrated. Most women of reproductive age obtain information from informal or non-medical sources, and awareness among women of reproductive age is minimal. General practitioners (GPs) are perceived as reactive rather than proactive [14]. The absence of reliable, readily accessible resources is reflected in the interest in a centralised digital platform, and structured counselling is very rare.

At present, Bulgaria does not have a unified national PCC strategy, and preconception counselling is not systematically integrated into reproductive health services. This disparity is indicative of the absence of formal guidelines, the absence of public funding mechanisms, and the minimal integration with primary care, which result in the underutilisation of most preventive opportunities and the exacerbation of health inequalities.

reports

MDPI

Case Report

Prenatal Diagnosis of Autosomal Dominant Polycystic Kidney Disease: Case Report

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Abstract: Background and Clinical Significance: Polycystic kidney disease (PKD) is the most common inherited kidney condition, affecting approximately 500,000 individuals in the US. It causes fluid-filled cysts to develop throughout the kidneys, leading to decreased kidney function. Autosomal dominant polycystic kidney disease (ADPKD) is the more prevalent form, subdivided into the *PKD1* and *PKD2* variants. *PKD1* variants typically result in more severe symptoms and an earlier need for dialysis compared to *PKD2*. A prenatal diagnosis of ADPKD is rare due to its late-onset manifestations, but early detection can be crucial for management and family counseling. **Case Presentation:** A 24-year-old woman, during her first pregnancy, presented for her first prenatal ultrasound at 22 + 2 weeks gestation. The ultrasound revealed an increased echogenicity of the renal parenchyma in the left kidney, with pelvic dystopia, while the right kidney appeared normal. Follow-up scans showed significant progression, with both kidneys exhibiting thinning parenchyma and cyst formation. The baby was delivered via an elective cesarean section at 38 weeks, and a postnatal ultrasound confirmed ADPKD. Genetic testing identified a heterozygous variant of the *PKD1* gene, *NM_001009944.3 (PKD1):c.9157G>A p.(Ala3053Thr)*, classified as likely pathogenic. The baby displayed electrolyte abnormalities but improved after a week of hospitalization. **Conclusions:** This case highlights an unusual early presentation of ADPKD in a fetus with no family history of the disease. A prenatal diagnosis through ultrasounds and genetic testing can aid in early detection and management, providing valuable information for family counseling. Regular monitoring and genetic identification are essential for managing ADPKD and improving patient outcomes.

Keywords: autosomal dominant polycystic kidney disease (ADPKD); genetic kidney disease; prenatal diagnosis; genetic counseling; renal cysts

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1. Introduction and Clinical Significance

Polycystic kidney disease (PKD) is the most common inherited kidney condition, affecting approximately 500,000 individuals in the US alone [1]. It is a hereditary condition that causes fluid-filled sacs, known as cysts, to develop throughout the kidneys, progressively leading to decreased kidney function [2]. Depending on the type of genetic variant, an individual can inherit either the autosomal dominant polycystic kidney disease variant (ADPKD) or autosomal recessive polycystic kidney disease (ARPKD), affecting 1

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Case Report

Prenatal Molecular Diagnosis of COL2A1-Associated Stickler Syndrome: Genotype–Phenotype Correlation in a Resource-Limited Healthcare Setting

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Abstract

Stickler syndrome is a monogenic connective tissue disorder primarily caused by pathogenic variants in collagen-related genes, most commonly *COL2A1*. Prenatal diagnosis remains challenging, particularly in healthcare systems with limited access to molecular genetic testing. We report a prenatal case of suspected craniofacial anomaly detected on second-trimester ultrasound. Fetal DNA obtained by amniocentesis underwent next-generation sequencing. Parental testing was performed to assess inheritance. It was confirmed that autosomal dominant Stickler syndrome type I (ORPHA:90653) was caused by a heterozygous pathogenic frameshift variant in *COL2A1* (c.3137del) that was inherited from the mother and identified in the fetus. Micrognathia was identified during prenatal ultrasound, and postnatal evaluation revealed characteristics that were consistent with Pierre Robin sequence and connective tissue involvement. The molecular discoveries elucidated the observed phenotype and facilitated multidisciplinary perinatal management. This case underscores the indispensable function of molecular diagnostics in the prenatal identification of monogenic disorders, including Stickler syndrome, in cases where conventional karyotyping is inadequate. Targeted clinical surveillance and family counseling are facilitated by early genetic confirmation. The report also emphasizes the necessity of incorporating molecular diagnostics into routine prenatal care for rare genetic diseases and the systemic limitations in access to genomic testing. Although the identified variant has been previously reported, this case highlights the clinical and diagnostic value of prenatal molecular confirmation in a resource-limited healthcare setting.

Keywords: Stickler syndrome; *COL2A1*; frameshift variant; prenatal molecular diagnosis; monogenic connective tissue disorder; genotype–phenotype correlation

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1. Introduction

DNA, RNA, chromosomes, proteins, or metabolites are analyzed to identify heritable disease-related genotypes, mutations, phenotypes, or karyotypes for clinical purposes. This process is known as genetic examination. This is essential for the diagnosis of monogenic disorders, carrier detection, disease risk prediction, and precision clinical management,

life

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Review

Advancing Prenatal Diagnosis: From Conventional Karyotyping to Genome-Wide CNV Analysis

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Abstract

Background: Advances in genome-wide DNA-based technologies have fundamentally transformed prenatal genetic diagnostics, enabling detection of clinically significant submicroscopic chromosomal abnormalities that are not identifiable by conventional cytogenetic methods. These developments have important implications for the diagnosis and management of pregnancies complicated by fetal structural abnormalities, as they enable more accurate etiological diagnosis, improved prognostic assessment, and more informed clinical decision-making and reproductive counselling. Methods: This narrative review synthesizes contemporary international evidence on prenatal genetic diagnostic approaches, including conventional karyotyping, chromosomal microarray analysis (CMA), and genome-wide sequencing technologies. The review focuses on diagnostic performance, clinical utility, ethical considerations, and implementation within diverse healthcare systems. Results: Accumulating evidence demonstrates that genome-wide approaches—particularly CMA and sequencing-based methods—provide a higher diagnostic yield in fetuses with structural anomalies, with an incremental yield of approximately 3–5% over conventional karyotyping. This is mainly due to their ability to detect pathogenic copy number variants below the cytogenetic resolution of karyotyping. These technologies improve etiological insight, enhance genotype–phenotype correlation, and support more precise prognostication and reproductive counselling, especially in pregnancies with fetal structural anomalies. Emerging sequencing platforms further expand the diagnostic spectrum by integrating copy number and sequence-level variant detection. Conclusions: Genome-wide Copy Number Variation (CNV) analysis represents a critical component of contemporary prenatal diagnostics and should be integrated into invasive prenatal testing pathways in accordance with international recommendations. Genome-wide approaches need robust counselling frameworks and equitable health policy implementation to spread. The expense, lack of required experience, and variation in healthcare infrastructure across locations make widespread deployment difficult.

Keywords: prenatal diagnosis; chromosomal microarray analysis (CMA); copy number variations (CNV); whole-genome sequencing; invasive testing; fetal anomalies

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РАЗПРОСТРАНЕНИЕ НА *PARVOVIRUS* B19 IgG АНТИТЕЛА ПРИ БРЕМЕННИ

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SEROPREVALENCE OF *PARVOVIRUS* B19 IgG ANTIBODIES AMONG PREGNANT WOMEN

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Резюме. Цел *на настоящото проучване е да се установи честотата на разпространение на Parvovirus B19 IgG антитела при бременни.* ***Материал и методи.*** *Проведено е проспективно сероепидемиологично проучване. Изследвани са серуми за Parvovirus B19 IgG антитела. Приложен е ензимносвързан имуносорбентен анализ (ELISA). Използва се NovaLisa Parvovirus B19 IgG ELISA Kit (NovaTec Immunodiagnostica GmsH, Германия). Анализирани са серумни проби от 242 бременни, хоспитализирани в Клиника по акушерство и гинекология, Университетска болница „Д-р Г. Странски“ – Плевен.* ***Резултати.*** *Резултатите са интерпретирани съгласно препоръките на производителя. Седемдесет и три (30.17%) от изследваните проби са положителни (над 11 NTU). Преобладаващи са отрицателните (по-малко 9 NTU) проби – 168 (69.42%), а една (0.41%) е двусмислена (9-11 NTU). Не се установиха сигнификантни разлики в зависимост от възрастта (p > 0.05).* ***Заключение.*** *Това проучване установи висока възприемчивост на бременни жени към B19V. Препоръчваме провеждане на серологично изследване при бременни с усложнения и неблагоприятни последици от бременността, както и при други високорискови групи.*

Ключови думи: *Parvovirus B19, бременност, B19 IgG антитела, преваленс*

Abstract. *Our objective was to determine the seroprevalence of Parvovirus B19 IgG antibodies among pregnant women.* ***Material and methods:*** *A prospective seroepidemiological study was carried out. The Parvovirus B19 IgG antibodies were determined in serum samples. Enzyme-Linked Immunosorbent Assay (ELISA) was applied. NovaLisa Parvovirus B19 IgG ELISA Kit (NovaTec Immunodiagnostica GmsH, Germany) and UVmax kinetic microplate reader were used. According to supplier instructions antibody levels greater than 11 NTU were considered as positive, 9-11 – equivocal, and lower than 9 NTU as negative. Serum samples from 242 pregnant women hospitalized in the Clinic of Obstetrics and Gynecology, University Hospital – Pleven, Bulgaria were analyzed.* ***Results:*** *Seventy-three (30.17%) of the samples tested were positive (over 11 NTUs), negative (less than 9 NTU) samples were 168 (69.42%), and one (0.41%) was equivocal (9-11 NTU). Highest frequency (35.48%) was detected in women of less 20 years of age and the lowest prevalence (28.47%) was detected in women between 20 and 30 years of age (table 1). No significant difference was found depending of age (p > 0.05).* ***Conclusion:*** *This study found a high susceptibility of pregnant women to the B19V. We recommend conducting serological survey in pregnant women with complications and adverse outcomes of pregnancy, as well as in other high-risk groups.*

Key words: *Parvovirus B19, pregnancy, B19 IgG antibodies, prevalence*

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Case Report

USE OF HIGH-INTENSITY FOCUSED ULTRASOUND (HIFU) IN TREATING UTERINE FIBROIDS: A CASE REPORT

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Summary

Uterine fibroids are the most common benign uterine tumours in women of reproductive age. They can present with different symptoms, including menorrhagia, cramping lower abdominal pain, bloating, urinary/bowel symptoms, spotting, and infertility. Management could be medical and surgical. Other options include uterine artery embolization and non-invasive treatment with high-intensity focused ultrasound (HIFU). We present a case of a 32-year-old woman with menorrhagia and severe pelvic pain. Ultrasound examination revealed an intramural myoma measuring 93x98x87 mm. The patient signed informed consent for HIFU ablation of the fibroid. Three months after the procedure, an MRI scan showed the fibroid had shrunk to 75% of its original size with dimensions 32x35x29. After six months, she became pregnant and gave birth to a healthy infant at 38-weeks gestation with caesarean section, at which point the fibroid measured 2 cm. HIFU is an alternative to surgical therapies and is highly beneficial in women wishing for future pregnancies. Preserving the option for future pregnancies in patients with uterine fibroids is only one of its benefits and might be the key solution for these women. HIFU treatment of uterine fibroids is an innovative approach. It should be encouraged: it is widely adopted in similar cases where it has positively impacted the treatment of uterine fibroids.
Keywords: uterine fibroid, high intensity focused ultrasound, pregnancy

Introduction

Uterine fibroids (UF) are the most common benign tumour of the female reproductive system. It mainly affects women in the age group of 30-50 years, but in some cases, it occurs at a younger age (20-35 years) [1]. Fibroids are often asymptomatic, but in some patients, they cause menstrual abnormalities - frequent and/or heavy bleeding, anaemia, constipation, frequent urination, pulling pain or heaviness in the abdomen, and infertility [2]. The treatment of fibroids is surgical (myomectomy, hysterectomy) and conservative (hormonal

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Review

50 YEARS OF ANTENATAL CORTICOSTEROIDS: A SYSTEMATIC REVIEW

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Summary

The administration of antenatal corticosteroids (ACS) to accelerate fetal lung maturation is considered one of the most valuable antenatal therapies in preterm labour. Although early indications that administering antenatal corticosteroids has a positive impact on fetal lung maturation and despite the widespread recommendations to use this treatment in women at risk of preterm birth, there is still some uncertainty regarding its effectiveness, particularly in lower-resource settings and in high-risk groups such as women with hypertension or multiple pregnancies. The optimal timing of administration has not improved in over 50 years. This assessment aimed to evaluate the effects of administering a course of corticosteroids to women before anticipated preterm birth (before 37 weeks of pregnancy) on fetal and neonatal morbidity and mortality, maternal mortality and morbidity, and the child's health later in life. It is advised that clinicians only administer a single course of ACS in high-risk cases of preterm birth likely to occur within the next seven days, and the gestational age is between 22+0 and 33+6 weeks. The diagnosis of preterm labour should be made based on available resources and expertise and supported by comprehensive protocols in the relevant setting.
Keywords: antenatal corticosteroids, fetal lung maturation, preterm birth, steroids

Introduction

Preterm neonates have complicated medical issues associated with an elevated risk of complications proportionate to an earlier birth. It is important to note that preterm birth is a risk factor in around 50% of all neonatal deaths [1]. Hence, early diagnosis and appropriate intervention are crucial for improving newborn outcomes, preventing mortality and reducing morbidity associated with preterm birth.

As mentioned above, preterm birth can result in various problems and long-term loss of human potential among survivors. Among these, respiratory distress syndrome, a severe complication due to immaturity of fetal lungs, is the primary cause of early neonatal mortality

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Review Article

Thromboprophylaxis during pregnancy for prevention of adverse complications in patients with inherited thrombophilia: a literature review

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Summary

Compared with non-pregnant women, pregnancy alone carries a three- to fivefold higher risk of venous thromboembolism (VTE). Despite the increasing use of low-molecular-weight heparin in identified high-risk patients, pulmonary embolism is still the leading cause of maternal mortality. However, evidence for optimal use of thromboprophylaxis is scarce. Thrombophilia (hereditary or acquired) is thought to predispose to both VTE and is also associated with complications of pregnancy, such as recurrent miscarriages and preeclampsia. This review discusses the current evidence for optimal thromboprophylaxis during pregnancy by focusing primarily on VTE prevention strategies, the potential to prevent recurrent complications during pregnancy with low molecular weight heparin (LMWH), aspirin, and Nattokinase in pregnant women with congenital thrombophilia.

Key words: Aspirin, low molecular weight heparin, nattokinase, thrombophilia

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Introduction

The overall care for pregnant women with thrombophilia involves careful monitoring. Problems associated with blood clots in pregnancies with thrombophilia can be detected early through attentive observation (Schreck et al. 2022). These issues include deep vein thrombosis, pulmonary embolism, and placental blood clots (Antic et al. 2022). Healthcare professionals can swiftly identify symptoms related to blood clots by regularly examining the patient's clinical status, conducting specific diagnostic tests, and using medical imaging techniques such as ultrasound. Proactively addressing these problems and minimizing their impact on the health of both the mother and the fetus is crucial. Close monitoring allows for the timely detection of problems and quick intervention. Issues related to blood clots can be swiftly treated to reduce risks (Kujovich 2018). Healthcare practitioners can promptly alter anticoagulant therapy to minimize blood clots and bleeding after discovering deep vein thrombosis (Sharma and Kriplani 2018). If a pulmonary embolism is detected, stabilization and treatment can commence immediately (Samuel end Saw 2020). Obstetricians-gynecologists, hematologists,

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Open Access Review Article

Management of Endocrinopathies During Pregnancy: A Systematic Review

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Abstract

Uncertainty surrounds the efficacy and security of several medications in treating endocrinopathies, such as gestational diabetes mellitus (GDM) in individuals whose normal glucose levels cannot be maintained by diet and exercise alone. To improve pregnancy results for GDM individuals, the present review is conducted to measure the effectiveness of several antidiabetic medications for glucose management. Up until 2024, we looked through PubMed and Google Scholar. Patients with GDM were enrolled in randomized controlled studies that examined several medications. Using the Cochrane risk of bias method, we obtained the pertinent data and evaluated the bias probability. To determine the odds ratio and the surface of the cumulative ranking function of the maternal and neonatal consequences of various therapies in GDM individuals, we first performed pair-wise meta-assessments and subsequently used a systematic review. Macrosomia, higher gestational ages, infant hypoglycemia, and birth weight are the neonatal outcomes. Glycohemoglobin (HbA1c), and pregnancy-induced hypertension (PIH) are the maternal outcomes. This thorough analysis of 25 trial designs found that metformin had fewer cases of macrosomia, higher gestational ages, infant hypoglycemia, and decreased birth weight when compared to glyburide. Metformin was found to be the fastest way to control blood sugar levels in individuals with GDM, whereas glyburide was found to be the most successful medicine for the same purpose.

Categories: Obstetrics/Gynecology, Endocrinology/Diabetes/Metabolism
Keywords: endocrinopathies, gdm, glyburide, glycohemoglobin (hba1c), metformin, pregnancy, pregnancy-induced hypertension (pih)

Introduction And Background

Endocrine illnesses and their treatment for the duration of pregnancy are significant topics for healthcare professionals, diabetes specialists, obstetricians, gynecologists, along various medical specialists involved because of their possible influence on pregnancy and fetal development. It is a transitory structure that plays a significant part in the growth of the maternal-fetal unit and the subsequent appearance of several endocrine events. Throughout pregnancy, the hormonal physiology of both the mother and the fetus changes continuously. Both the mother and the fetus adjust to this growth throughout pregnancy using different processes, such as modifications to their endocrine systems and associated feedback modification [1]. During the first stage of pregnancy, the majority of the hormonal glands begin producing hormones; therefore, the fetus's digestive system is entirely dependent on the mother. The fetal glands continue growing until birth, both in terms of function and form, but the fetus is no more as reliant on the mother's endocrine system following pregnancy [2]. Clinical settings requiring endocrinology medication while pregnant relate to two distinct conditions: treating symptoms or diseases discovered during pregnancy or following treatment for a determined endocrine disease recognized before pregnancy. Depending on the stage of gestation, drug treatment throughout the pregnancy exposes the fetus and mother to risks as well as serious side effects [3].

Clinical studies while pregnant are rare, dangerous, and expensive, necessitating rigorous ethical guidelines and long-lasting follow-up. The developing baby is bound to an all-or-nothing law during the first two weeks of pregnancy, which means that medicine could either cause embryonic mortality or have no effect at all on the advancement of the pregnancy. Differentiation of cells and organ development takes place throughout the next eight weeks, or the major and minor organogenesis process period, which ends at the end of the first period. Any drug assumed at this time needs to be confirmed to have no teratogenic risk and not cause birth defects [4]. The medications may cause fetal toxicity in the second and third trimesters, particularly in the central nervous system [5].

Endocrinologists and obstetricians have therapy challenges when managing hormonal imbalances during pregnancy because of the possible harm they might cause to the health of the mother and fetus [6]. The placenta's role and the connection between the mother and fetus are responsible for the physical and endocrine changes that occur during pregnancy. In the second trimester of pregnancy, fetal endocrine gland development and hormone secretion are finished [7]. Fetal hormonal demands before this signature are

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Review article

FIRST TRIMESTER SCREENING AND PREVENTION FOR PREECLAMPSIA AND FETAL GROWTH RESTRICTION: PERSPECTIVE IN BULGARIA

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ABSTRACT

Preeclampsia (PE) and fetal growth restriction (FGR) are major contributors to maternal and perinatal morbidity and mortality worldwide. In Bulgaria, the burden of these conditions is compounded by delayed diagnosis and limited access to comprehensive early screening. First-trimester screening enables the identification of high-risk pregnancies through maternal risk factors, biomarkers, and Doppler ultrasonography. Preventive strategies, particularly the timely administration of low-dose aspirin, have proven effective in reducing the incidence of early-onset PE and FGR. This review summarizes current evidence on the pathophysiology, screening models, and prevention strategies for PE and FGR, with emphasis on their implementation in Bulgarian clinical practice. Recommendations are provided for enhancing maternal care through national policies and expanded screening programs.

Keywords: preeclampsia, first trimester screening, fetal growth restriction, gestational age, pregnancy,

INTRODUCTION

Primary prevention and early evaluation of preeclampsia (PE) and fetal growth restriction (FGR) are gaining increasing importance for pregnant women in Bulgaria and their future children. PE affects approximately 2%–15% of all pregnancies and remains a leading global cause of both maternal and fetal complications. In the later stages of pregnancy (≥ 20 weeks of gestation), PE may present with hypertension accompanied by proteinuria, progressive edema not attributable to anemia, thrombocytopenia or other hematologic disorders, renal insufficiency, hepatic involvement, pulmonary edema, or neurological dysfunction [1].

First-trimester screening for PE and FGR offers a critical opportunity to identify pregnancies at elevated risk and initiate timely interventions. Early management is essential to prevent the development of severe forms of PE, which may involve multi-organ dysfunction, impaired placental perfusion, intrauterine growth restriction, and preterm birth. Implementing risk assessment and management strategies in the first trimester has the potential to reduce maternal and fetal morbidity and mortality in Bulgaria and improve overall maternal-infant health outcomes [2].

Prevention and early detection of PE and FGR in early pregnancy are associated with improved maternal and neonatal outcomes. First-trimester screening, performed before 14 weeks of gestation, typically includes an evaluation of maternal risk factors, biochemical markers, and fetal anatomical indicators via ultrasound [3]. Multiple studies have demonstrated that the early identification of high-risk pregnancies enables healthcare providers to recommend the use of low-dose aspirin,

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Review Article

Recurrent pregnancy loss: etiology, pathophysiology, diagnosis and treatment

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Summary

The current article aims to provide an analytical review of the aetiology, pathophysiology, diagnosis, and treatment of recurrent pregnancy loss (RPL) with a focus on Bulgaria. RPL has become an important reproductive health issue worldwide and affects 2%–3% of reproductive-aged women. The findings showed that the etiological factors can be biological, hereditary or environmental, and in approximately 50% of RPL cases, these factors remain unknown. In relation to pathophysiological processes associated with the condition, the findings showed that different etiological factors affect different gestational processes, such as alteration of the structural and nanomechanical abnormalities of the platelets and disruption of the ANXA5 protective shield that prevents adverse pregnancy outcomes. Also, acquired uterine structural defects such as submucosal uterine leiomyomas, endometrial synechiae, and polyps disrupt the implantation and embryonic development processes, which can result in recurrent miscarriages. A common factor for diagnostic approaches to recurrent pregnancy loss is the examination of historical medical records of patients who have experienced the condition and the identification of possible etiological and risk factors. The management and treatment of recurrent pregnancy loss are often based on the results of the diagnostic tests used to determine the underlying etiological factors associated with the condition.

Key words: Plasminogen activator inhibitor (PAI) 4G/5G, M2/ANXA5 Haplotype, progesterone therapy, thyroid hormonal replacement

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Background

The extreme fragility of pregnancy increases the susceptibility of the process to the direct effects of a wide range of complex biological, hereditary and environmental factors. As a result, a significant proportion of women experience pregnancy-related complications, including but not limited to pregnancy losses, that might have a physical and emotional impact on their lives. While pregnancy loss is a common occurrence in gestational and natal processes, it is a complex adverse outcome of the reproduction process that can be caused by various factors such as genetic or chromosomal abnormalities, including endocrine disorders, immunologic and immunogenic factors and thrombophilia

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Prevalence and Sociodemographic Factors of Antenatal Anxiety and Depression in Pleven, Bulgaria

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Background: Antenatal anxiety and depression are prevalent conditions with significant risks to both maternal and infant health, contributing to preterm birth, low birth weight, and long-term developmental effects. Despite the recognized impact, limited research exists on these disorders in Bulgaria. This study assessed the prevalence of antenatal anxiety and depressive symptoms among pregnant women in Pleven Region and identified sociodemographic and psychosocial risk factors.

Methods: A cross-sectional survey was conducted from June to October 2024, involving 170 pregnant women in their third trimester at the University Hospital 'St. Marina' in Pleven, Bulgaria. Participants completed a self-administered questionnaire that included sociodemographic, behavioral, and psychosocial variables, along with the Antenatal Risk Questionnaire (ANRQ) to assess anxiety and depression.

Results: Nearly 50% of participants reported mild symptoms of anxiety or depression. Significant associations were found between these symptoms and lower educational attainment ($p = 0.03$), smoking during pregnancy ($p = 0.01$), and lack of partner support ($p = 0.02$). A history of adverse childhood experiences was linked to increased psychological distress ($p = 0.01$). Logistic regression revealed that higher educational attainment was the strongest protective factor (OR = 0.41, 95% CI: 0.24-0.71, $p = 0.02$).

Conclusions: These preliminary results indicate a high prevalence of antenatal anxiety and depression in Pleven Region, with significant predictors such as lower education and lack of partner support. The findings stress the need for integrated psychosocial screening during prenatal care, particularly for vulnerable groups. Further efforts should focus on national guidelines for perinatal mental health and early interventions in maternal care.

Key messages:

- High prevalence of antenatal anxiety and depression in Pleven Region, linked to education and partner support.
- Psychosocial screening and early interventions are crucial for improving maternal and infant health outcomes.

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Review

The KISS1/KISS1R Axis in Human Placentation: Molecular Mechanisms and Implications for Foetal Growth Restriction and Pre-Eclampsia

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Abstract

Pre-eclampsia and foetal growth restriction (FGR) are major pregnancy complications primarily driven by placental dysfunction, and remain leading causes of maternal and perinatal morbidity. Ultrasound imaging, Doppler studies, and angiogenic biomarkers like placental growth factor (PlGF) and soluble fms-like tyrosine kinase-1 (sFlt-1) constitute the main diagnostic modalities; however, these predominantly reflect established disease rather than early molecular disturbances underlying placentation. The identification of biomarkers directly associated with trophoblast signalling pathways has the potential to improve early risk stratification and enable mechanistic classifications. Kisspeptin signalling via its receptor (KISS1R) regulates trophoblast invasion, extracellular matrix remodelling, ERK1/2 activation, and angiogenic balance, thereby modulating spiral artery transformation. Kisspeptin-10 (KP-10), the minimal bioactive fragment of KISS1, is highly expressed in placental syncytiotrophoblasts and exerts its effects through the G-protein-coupled receptor KISS1R. Core features of early-onset FGR and pre-eclampsia (PE)—including defective placentation, maternal vascular malperfusion, and angiogenic imbalance—have been linked to dysregulation of this pathway. During normal gestation, maternal circulating kisspeptin concentrations rise exponentially. In contrast, pregnancies subsequently complicated by FGR or PE, particularly in the early gestation, are associated with reduced levels. However, the comparability of existing studies and their translational applicability are limited by a substantial methodological heterogeneity, including assay variability, gestational age dependence, and inadequate adjustment for maternal confounders. These limitations hinder robust conclusions regarding the role of kisspeptin in placental pathology. This review critically integrates molecular, pathophysiological, and clinical evidence relating to the role of KP-10 in placental dysfunction. The key question is whether KP-10 represents a mechanistic biomarker of trophoblast signalling dysfunction or merely a secondary marker of reduced placental mass; resolving this distinction is essential.

Keywords: Kisspeptin-10; kisspeptin; kisspeptin receptor; foetal growth restriction; pre-eclampsia; placental dysfunction; trophoblast invasion; angiogenesis; spiral artery remodelling; angiogenic biomarkers

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Caesarean Section on Maternal Request

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Caesarean section is an abdominal operation that carries additional risks compared to a normal birth. Therefore, in many other countries, the CS is allowed only for medical indications. There is no official "caesarean section on maternal request" option in Albania and many other European countries.

Even all trials to decrease the rates of operative deliveries, currently in Europe almost 1 in 5 deliveries are performed by Caesarean sections (1). Recent data shows big variation within the worldwide numbers with peak rates in South America nearly 55 % and the lowest up to 5% in some African regions (2). Brazil could be a world champion in caesarean delivery - in Rio de Janeiro it reaches 80%. According to a study, the proportion of caesarean sections in Latin America is directly associated with the income of the population - the higher income, the more sections are made (3).

If we look at the statistics of “Queen Geraldine” Hospital for the period 2010-2018, it is to be noted the slight increase of the rates starting from 35% and maintaining constant at 40%.

Year	Total deliveries	Cesarian Sections	Percentage
2010	6691	2344	35 %
2011	6639	2482	37 %
2012	7004	2643	38 %
2013	7153	2719	38 %
2014	7095	2588	36 %
2015	6423	2458	38 %
2016	6670	2570	39 %
2017	7120	2896	41 %
2018	6620	2583	40 %

According to some patients, the foremost important reason for choosing CS is the fear of pain. Unaware of the methods of analgesia for childbirth (from psychoprophylaxis, through drug analgesia, to methods for epidural analgesia), women believe that pain can't be controlled and this can be the main reason for reluctance to convey birth by a normal mechanism. Another advantage of C-section, aside from emergencies and medical indications, is that it is planned. Women are often affected and stressed by the stories of childbearing that they have heard within social media. Last but not least, an outsized percentage of pregnant women feel mentally better and have more confidence within the team of specialists if they're directly involved in choosing the mechanism of delivery and have their birth plan (4).

Nowadays, it's considered that the proportion of caesarean sections compared to normal births in developed countries is simply too high and it might be good to scale back it. In response to the current statement, the very fact that the optimal rate of this intervention remains unproven (although the WHO recommends a CS rate of 10-15%) and low caesarean section isn't necessarily synonymous with quality in obstetrics. The increased risk of maternal mortality related to surgery is the main reason some colleagues wish to limit C-sections.

One of the most common motives of opponents of C-section on maternal request is that it'll significantly increase the already high enough frequency of surgery (5).

But why the caesarean section shall not be done routinely without medical indication? Although caesarean sections are the most common surgical procedure world widely, which makes the used techniques safe and well improved, there are still risks and complications that cannot be ruled out and prevented. They involve greater hazards in some life-saving eventualities when put next to a vaginal birth. In step with statistics, a caesarean puts the mother's life in danger ten times more than a vaginal birth. Infection is the most prevailing consequence first 10 days following the operation. If the wound opens, it's doubtless to become infected in roughly two-thirds of the cases (6). Urinary tract infections from catheterization and gastrointestinal problems, the most prevalent of which is paralytic ileus, are also significant risks. With pelvic surgery, thromboembolic events are also a concern, and the risk of deep venous thrombosis is three to five times higher (7).

Aside from the potential complications, recuperation from a caesarean delivery is slower; the hospital stays twice as long, and the financial costs are increased as high as for normal vaginal deliveries. For the baby, a C-section can be a stressful period. They are more likely to have problems in their early days of life and more often would require resuscitation (8, 9).

Nevertheless, the right to settle should play a key role in women's health because it's a fundamental social and constitutional right. Many questions arise: Why should the patient have the right to refuse a therapeutic act and not have the right to decide on one? Why do women have the right to terminate a pregnancy, but not the right to decide on the mechanism of childbirth?

It seems that legitimising the will of patients associated with the tactic of childbirth won't result in a pointy increase within the percentage of caesarean sections, but will result in real statistics on various pathological obstetric conditions (10).

In recent years, another reason has emerged in most of the European countries - the legal risk within the context of accelerating lawsuits against doctors. In Anglo-Saxon countries, this is often a typical motive for performing CS. This practice is named by the term Defensive Medicine, which is predicated on the so-called principle of caution. In line with this principle, within the absence of reliable scientific data, the existence of a risk of

great or irreversible damage requires precautions to be taken to avoid damage as a guarantee against potential risks that don't seem to be yet available to our knowledge. No doctor has been convicted of abusing CS, but there are many complaints of non-compliance (11).

In 2004, an interesting survey was conducted in France among 387 obstetricians. When asked if they take into consideration the patient's will when she wants an operative birth, only 18% of the colleagues' report to refuse. The main reason for accepting the patient's wish was 37% indicating the respect for the decision of the pregnant woman, and 35% was the chance of legal consequences for themselves (12).

CS without medical indications isn't only a matter of choice, but should also make us consider the standard of our medical services within the delivery room. The reduction within the number of caesareans will come from optimising administrative acts, from increasing security and improving the conditions of parturition, from leaving good memories of the traditional birth of each woman. Normal birth is a physiological action, as nature has taken care of the rapid recovery and adaptation of both mother and child, that the recommendation of doctors round the world is to administer birth by caesarean section only on medical grounds.

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REFERENCES

1. WHO. Caesarean section rates continue to rise, amid growing inequalities in access. June 2021.

2. Betran AP, Ye J, Moller A, et alTrends and projections of caesarean section rates: global and regional estimatesBMJ Global Health 2021;6:e005671.

3. Luz Gibbons, José M. Belizán, Jeremy A Lauer, Ana P Betrán, Mario Merialdi and Fernando Althabe. The Global Numbers and Costs of Additionally Needed and Unnecessary Caesarean Sections Performed per Year: Overuse as a Barrier to Universal Coverage. World Health Report (2010). Background Paper, 30.

4. Eghon Guzman, Jack Ludmir, Mark DeFrancesco. High Cesarean Section Rates in Latin America, a Reflection of a Different Approach to Labor? Open Journal of Obstetrics and Gynecology 2015, 5, 433-435.

5. Begum T, Saif-Ur-Rahman KM, Yaqoot F, Stekelenburg J, Anuradha S, Biswas T, Doi SA, Mamun AA. Global incidence of caesarean deliveries on maternal request: a systematic review and meta-regression. BJOG. 2021 Apr;128(5):798-806. doi: 10.1111/1471-0528.16491. Epub 2020 Oct 8. PMID: 32929868.

6. Martens MG, Kolrud BL, Faro S, Maccato M, Hammill H. Development of wound infection or separation after cesarean delivery. J Reprod Med 1995;40(3):171–175.

7. Zotz RB, Gerhardt A, Scharf RE. Prediction, prevention, and treatment of venous thromboembolic disease in pregnancy. 2003;29(2):143–154.

8. British Medical Journal, Research, December 2007.

9. Feldman GB, Freiman JA. Prophylactic cesarean section at term? New England J Med 1985; 312;1264-7.

10. Souza, J., Gülmezoglu, A., Lumbiganon, P. et al. Caesarean section without medical indications is associated with an increased risk of adverse short-term maternal outcomes: the 2004-2008 WHO Global Survey on Maternal and Perinatal Health. BMC Med 8, 71 (2010).

11. Bhatara, Urvashi, and Padmasri. "Rising rates of caesarean section: an indicator of defensive medicine practiced by obstetricians." International Journal of Reproduction, Contraception, Obstetrics and Gynecology, vol. 7, no. 6, June 2018, pp. 2371+. Gale Academic OneFile, link.gale.com/apps/doc/A546647889/AONE?u=anon~287b02ee&sid=googleScholar&xid=cf63f773. Accessed 1 Jan. 2023.

12. Трифонов Иван, SC по желание - една разумна алтернатива. https://m.bg-mamma.com/?topic=1342156

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Методи за прогнозиране на преждевременно раждане – част I

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Резюме

Преждевременното раждане оказва значително въздействие върху здравето на новороденото, което налага употребата на прогностични методи, за да се оценят рисковите бременни, които е възможно да родят по-рано, или да осигури спокойствие на жените, които са изложени на по-малък риск от настъпването на такова. Няма единна система за скрининг преди раждането с висока чувствителност, която ефективно разпознава жените с висок риск от прематурно раждане, но също така и с висока специфичност, за да се избегнат ненужни лечения и високите разходи за болничен престой. В ежедневната практика е необходим лесен и бърз тест за предвиждане на преждевременно раждане, а в допълнение и въвеждането на алгоритъм от методи за подобряване на клиничната прогноза.

Настоящата публикация има за цел да представи и анализира познатите до момента методи за прогнозиране на предтерминно раждане.

Ключови думи: преждевременно раждане, майчина анамнеза, цервикална недостатъчност, цервикални ексцизионни процедури, инфекции, хориоамниотит, пародонтоза, усложнения на бременността

Methods for predicting preterm birth – part I

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Abstract

Premature birth has a significant impact on the health of the newborn, necessitating the use of prognostic methods to assess at-risk pregnant women who may give birth earlier. It can also provide reassurance to women who have lower likelihood of experiencing preterm birth. Currently, there is no single prenatal screening system with high sensitivity that effectively identifies women at high risk of preterm birth, but also with high specificity to avoid unnecessary treatments and high costs of hospital stay. It is imperative to have a singular test or research that can accurately anticipate preterm birth. In daily practice, a simple and quick test for predicting preterm birth is needed, and in addition, the introduction of an algorithm of methods to improve clinical prognosis.

The purpose of this publication is to present and analyze the currently known methods for predicting preterm birth.

Keywords: preterm birth, maternal medical history, cervical incompetence, loop electrosurgical excision procedure, maternal infections, chorioamnionitis, periodontal disease, maternal complications

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Методи за прогнозиране на преждевременно раждане – част II

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Резюме

Преждевременното раждане е сложен медицински проблем, който се дължи на множество етиологични фактори, включително генетични, инфекциозни, имунологични и екологични влияния. Прогнозирането и предотвратяването на раждане преди 37-та гестационна седмица представлява значително предизвикателство в пренаталната медицина поради разнообразието от етиологични фактори.

Предвестниците на предсрочно раждане, които сигнализират за възможността от появата му, са от изключителна важност за предотвратяването му. Ехографското изследване отдавна е идентифицирано като един от най-добрите предиктори за преждевременно раждане. Измерването на дължината на маточната шийка е най-широко използван в съвременната клинична практика метод за прогнозирането на предстоящо раждане.

Настоящата публикация има за цел да представи и анализира методите за прогнозиране на преждевременно раждане.

Ключови думи: преждевременно раждане, дължина на маточната шийка, скъсена шийка, недоносен плод

Methods for predicting preterm birth – part II

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Abstract

Preterm birth is a complex medical problem that is caused by multiple etiological factors, including genetic, infectious, immunological, and environmental influences. Predicting and preventing birth before 37 weeks of gestation represents a significant challenge in prenatal medicine due to the variety of etiological factors.

Timely detection of early signs indicating the potential occurrence of preterm delivery is of paramount significance for preventing it. It has long been known that one of the best indicators of preterm birth is ultrasound. Measuring the length of the cervix is the most widely used method in modern clinical practice for predicting impending birth.

This publication aims to present and analyze methods for predicting preterm birth.

Keywords: premature birth, cervical length, short cervix, preterm newborn

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Методи за прогнозиране на преждевременно раждане – част III

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Резюме

Различни биохимични маркери, могат да бъдат открити в различните телесни течности (амниотична, урина, слюнка, кръв, цервико-вагинален секрет). Диагностичният смисъл на изследване на цервико-вагинален секрет е доказан в множество публикации, описващи бременни и небременни. Той е съставен от секретите на влагалището, ендоцервикс, ендометриума, децидуа и амниохорион, което обяснява прогностичните му качества за наблюдение на бременността, майчиното и фетално здраве. Изследването на цервико-вагиналната течност е минимално инвазивен метод, което го прави идеален за ежедневната практика.

С повишен интерес е многобройното моделиране на биомаркерите в цервико-вагиналния секрет. Очаква се те да имат способност за прогнозиране на преждевременно раждане (ПР). Това би ерадикирало фалшиво-позитивните резултати на сегашните методи за предикция на ПР. Едно доказателство, че цервико-вагиналният секрет е перфектният източник на молекулни биомаркери, свързани с раждането, е това, че той е близо до гестационните тъкани и се променя със съпътстващите промени в децидуата. С развитието на генетиката се очаква откриването на нови биомаркери, участващи във физиологията на раждането и патофизиологията на ПР.

Настоящата публикация има за цел да представи и анализира методите за прогнозиране на ПР.

Ключови думи: преждевременно раждане, цервико-вагинален секрет, биомаркери, недоносеност

Methods for predicting preterm birth – part III

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Abstract

Different biochemical markers can be detected in various body fluids (amniotic fluid, urine, saliva, blood, cervico-vaginal secretion). The diagnostic value of examination of cervico-vaginal secretion has been proven in numerous publications describing pregnant and non-pregnant women. It is composed of the secretions of the vagina, endocervix, endometrium, decidua and amniochorion, which explains its prognostic qualities for monitoring pregnancy, maternal and fetal health. Examination of cervico-vaginal fluid is a minimally invasive method, which makes it ideal for daily practice.

Of increased interest is the numerous modeling of the biomarkers in the cervico-vaginal secretion. They are expected to have the ability to predict preterm birth (PB). This would eradicate the false-positive results of current PB prediction methods. One piece of evidence that cervicovaginal secretion is the perfect source of birth-related molecular biomarkers is that it is close to gestational tissues and changes with accompanying changes in the decidua. With the development of genetics, the discovery of new biomarkers involved in the physiology of labor and the pathophysiology of PB is expected.

This publication aims to present and analyze methods for predicting PB.

Keywords: premature birth, cervico-vaginal fluid, biomarkers, prematurity

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Разпространение и влияние на антенаталната тревожност и следродилната депресия

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Резюме

Бременността е период на значителни физиологични, психологически, хормонални и социални промени, които увеличават риска от емоционален стрес и психиатрични разстройства. Преходът към родителството води до съществени трансформации както на индивидуално, така и на партньорско ниво, които оказват влияние върху психичното здраве на бъдещите родители и често водят до повишени нива на тревожност и депресивни симптоми. Разбирането на факторите, които предизвикват пренатална тревожност, е от съществено значение за разработването на протоколи за пренатална грижа и наблюдение. Създаването и интегрирането на мултидисциплинарен екип за проследяване на бременните жени и родилките ще допринесе за подобряване на физическото и психическото им състояние.

Ключови думи: антенатална тревожност, следродилна депресия, бременност, раждане

Prevalence and impact of prenatal anxiety and postnatal depression

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Abstract

Pregnancy causes major physiological, psychological, hormonal, and social changes, increasing the risk of emotional stress and psychiatric illnesses. The transition to parenthood involves considerable modifications at both the individual and couple levels, which have an impact on pregnant parents’ mental health and frequently result in heightened levels of anxiety and depression. Understanding the causes of prenatal anxiety is critical for creating prenatal treatment and monitoring practices. The formation and integration of a multidisciplinary team for the monitoring of pregnant women and women in labor will help to improve their physical and mental health.

Keywords: antenatal anxiety, postpartum depression, pregnancy, childbirth

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Клиничен случай на плацента акрета с недиагностициана атрезия на хранопровода

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Резюме

Вродените аномалии значително допринасят за пренаталната заболеваемост, смъртност и дълготрайно увреждане. Пренаталната диагностика улеснява консултирането на родителите и може да предложи алтернативи за фетална терапия, последващ план от мултидисциплинарен екип от специалисти, планиране на оптималното време и място за раждане и формулиране на проследяване и стратегия за лечение на новороденото.

Тази статия описва необичаен клиничен случай, включващ аномалия в прикрепването на плацентата и малформация на плода, като и двете налагат бърза медицинска помощ за спасяване на здравето на майката и бебето.

Съвпадението на placenta accreta със свързаната недиагностицирана пренатално вродена аномалия в документирания клиничен случай благоприятстват положителния неонатален изход. Пренаталната диагноза на placenta accreta води до насочване на пациентката към център за третична грижа, което в крайна сметка подобрява и постпартталната диагноза и лечението на новороденото с вродена атрезия на хранопровода с трахео-езофагеална фистула. Комплексният подход и бързата намеса на детските хирурзи са причината за отличното възстановяване на бебето след оперативното лечение.

Ключови думи: атрезия на хранопровода, абнормно прикрепване на плацентата, плацента акрета, вродени аномалии, трахео-езофагеална фистула

Clinical case of placenta accreta with undiagnosed esophageal atresia

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Abstract

Congenital abnormalities significantly contribute to prenatal morbidity, mortality and long-term impairment. Prenatal diagnosis facilitates parental counseling and may offer alternatives for fetal therapy, a subsequent plan by a multidisciplinary team of specialists, the scheduling of the optimal time and location for birth, and the formulation of a follow-up and treatment strategy throughout the newborn period.

This article details an uncommon clinical case including an abnormality in placental attachment and a fetal malformation, both necessitating prompt medical care to save the health of the mother and the infant.

The coincidence of placenta accreta with the associated undiagnosed prenatal congenital anomaly in the documented clinical case favored a positive neonatal outcome. The patient was sent to a tertiary care center after being diagnosed with placenta accreta during pregnancy. This led to a better diagnosis and treatment of the newborn with congenital esophageal atresia and tracheoesophageal fistula after birth. The comprehensive approach and rapid intervention of pediatric surgeons are the reason for the excellent recovery of the baby after surgical treatment.

Keywords: esophageal atresia, abnormal placental invasion, placenta accreta, congenital anomalies, trachea-esophageal fistula

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