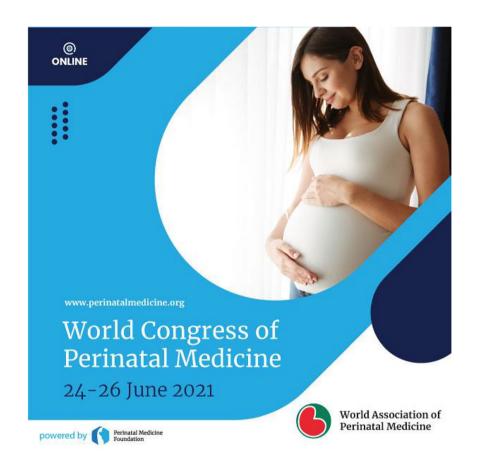
### **Abstracts**

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#### SPEAKERS ABSTRACTS

#### The application of super slow review of ultrasound clips to a diagnosis of fetal tachyarrhythmia:

Name and surname: Jun Yoshimatsu

Institution: National Cerebral and Cardiovascular Center

Email: yoshimatsu.jun.hp@ncvc.go.jp

**Objective:** Fetal arrhythmias occur in 1–2% of all pregnant cases. Premature atrial contraction (PAC), premature ventricular contraction (PVC) which are clinically benign are relatively common and do not require therapy. In contrast supraventricular tachycardias (SVTs), atrial flutter (AFL), ventricular tachycardia which are life-threatening are relatively rare but require treatment. These tachyarrhythmias easily complicate fetal congestive heart failure which can be followed by a fetal death. Thus, prenatal treatment for SVT and AFL is warranted to convert to sinus rhythm. Recently our group demonstrated that protocol-defined transplacental treatment for fetal SVT and AFL was effective and tolerable in 90% of cases. In order to choose the appropriate medication for fetal tachyarrhythmia the accurate diagnosis is important. Because fetal electrocardiography is still not available fetal echocardiography is commonly used for the diagnosis of fetal arrhythmia. The M-mode and Doppler echocardiography may achieve prenatal identification of arrhythmic types. The easier method helps more accurate and precise diagnosis of it. Recent advances of ultrasound examination technology allows a high spatial resolution and high temporal resolution at the same time. The image editing of video clips of four chamber view, which is the most easier image plane, is applicable for the diagnosis of fetal arrhythmias. We conducted the research to innovate the useful video clip editing method including a super slow motion for the precise diagnosis of fetal arrhythmias.

Method: From our fetal echocardiography database, 55 fetal echocardiography video clips (35 AFL, 20 SVT) were reviewed. Four chamber view clips of each case were selected. Every clips were edited into 10% speed. One examiner inserted the clip maker at the timing of atrial contraction and ventricular contraction. The intervals between ventricular contraction and atrial contraction were measured. Also the number of times of contraction of atrium and ventricle and their relations were recorded.

**Results:** Every contractions of each portion (atrium and ventricle) could be detected easily with edited video clips. The differentiation between AFL and SVT could be done completely by counting the number of contractions of atrium and ventricle. Also the V-A intervals and the A-V intervals could be measured in one hundredth seconds. In all cases, the diagnosis is compatible with that had made postnatally.

**Conclusion:** The first step of this study was depended on the examiner's naked eyes helped by editing application. The accuracy of each steps of this study were satisfactory. This is the preliminary step to conduct the deep learning of Artificial Intelligence (AI). The most important point of using AI is setting up what to teach and how to teach. Our study showed the possibility of the application of AI to make a diagnosis of fetal tachyarrhythmia.

Keywords: fetal arrhythmia AI.

## Regionalization of perinatal care system and the ecology model

Name and surname: Tsuyomu Ikenoue

Institution: University of Miyazaki, Miyazaki, Japan Email: tsuyomu\_ikenoue@med.miyazaki-u.ac.jp

**Objective:** To compare the data of regionalization of perinatal care in Miyazaki to the data of the ecology model of primary care.

**Method:** On a population-based approach, we analyzed 53,461 deliveries in the area of Miyazaki prefecture, located in the southern part of Japan. Birth hospitals of pregnant women were confirmed, while the hospital framework of the care system was divided into 4 grades according to risk-allocation criteria. The perinatal mortality rates in Miyazaki were maintained at a good level of quality throughout the years. Primary care model data observed in the United States and Britain by White and Green were used to compare the 2 different types of medical care.

**Keywords:** perinatal care, regionalization, ecology of medical care

# Relationship between atypical antibodies and unconjugated hyperbilirubinaemia associated with haemolytic disease of the new-born

Name and surname: Fatima Usman

Institution: Department of Paediatrics, Aminu Kano Teaching Hospital/Bayero University Kano, PMB 3452, Kano, Nigeria.

Email: fusman.pae@buk.edu.ng

**Objective:** To summarize the prevalence of atypical antibodies causing HDN and describe their association with significant and severe unconjugated hyperbilirubinaemia.

Method: A retrospective case-control study was conducted between 2014 and 2019, involving neonates 330 weeks gestational age and less than 2 weeks postnatal age with HDN. One hundred and thirteen consecutive neonates were studied, comparing 68 neonates with atypical antibodies and 45 without atypical antibodies. The prevalence of atypical antibodies and the type of antibody causing significant and severe hyperbilirubinaemia were calculated. The severity of hyperbilirubinaemia was compared between the neonates with atypical antibodies and those without atypical antibodies using the Chi Square test and student's t-test.

**Results:** The prevalence of atypical antibodies was 68/1021 (6.7%), with anti D constituting 45/1021 (4.4%), much higher than the prevalence of non-Rhesus D antibodies (23/1021, 2.3%). Atypical antibodies were associated with significant hyperbilirubinaemia in 45/68 (66.2%), and of these, anti D (33/45,73.3%) was the single most implicated alloantibody, and among the non-Rh D antibodies, anti U (2/23, 8.7%%) was the commonest. Also, 5/45 (11.1%) of the neonates with atypical antibodies developed severe disease, majority having anti D as a single occurring antibody (3/45, 6.7%); compared to 7/45 (15.6%) without atypical antibodies (c2= 0.385, p=0.535). There was no significant difference between the total bilirubin levels of the two groups (t=0.884, p=0.379).

**Conclusion:** The occurrence of atypical antibodies in neonates with HDN is common. Anti D and anti U are the most prevalent causes of significant HDN. Rhesus D remains a leading cause of severe unconjugated hyperbilirubinaemia, however, the severity was not more than in neonates without atypical antibodies.

Keywords: Atypical antibodies; Haemolytic disease; Unconjugated hyperbilirubinaemia

## The Role of Ultrasound in Preconception Counseling

Name and surname: Sanja Kupesic-Plavsic

Institution: Paul L. Foster School of Medicine, Texas Tech University Health Sciences Center El Paso

Email: sanja.kupesic@ttuhsc.edu

Objective: Following this presentation, the participants should be able to apply the components of a comprehensive preconception US examination of the ovaries, uterus, and fallopian tubes.

Method: Transvaginal 2D and 3D ultrasound; transvaginal color Doppler ultrasound

**Results:** A systematic ultrasound preconception ultrasound consists of a detailed examination of the uterine shape, size and contour, evaluation of the endometrial thickness, volume, pattern and vascularity, and assessment of the junctional zone regularity, echogenicity and thickness. Uterine anatomy is explored in the coronal plane by simultaneous visualization of the uterine cavity, the external surface of the fundus and cervix. Saline infusion sonogram (SIS) is recommended for patients with increased endometrial volume, abnormal endometrial pattern and irregular uterine cavity shape suggestive of Müllerian duct anomalies or acquired intracavitary abnormalities. Myometrial lesions should be recognized and proper dimensions and locations should be ascertained. Ovarian dimensions and volume are measured and the antral follicle count is recorded. Adnexa are carefully assessed for masses, endometriosis and dilated tubes. Color power Doppler US may be applied to evaluate vascularity of the ovaries and pelvic lesions. Hysterosalpingo-contrastsonography (Hy-Co-Sy) should be optimally utilized for assessment of tubal patency. Accessibility and mobility of the ovaries should be checked in real time for better planning of the ultrasound-guided oocyte retrieval. The cul-de-sac is assessed for the presence of free fluid or masses.

**Conclusion:** The preimplantation ultrasound (US) refers to targeted imaging of the uterus and adnexa prior to assisted reproductive techniques (ART) to optimize the infertility treatment outcomes.

**Keywords:** Adenomyosis; endometrial receptivity; hydrosalpinx; infertility; ovarian reserve; preimplantation; saline infusion sonography; uterine anomalies; uterine cavity lesions.

### How to proceed with the limits of viability: are we on the right track?

Name and surname: Milan Stanojevic

Institution: Department of Obstetrics and Gynecology Medical School University of Zagreb, Croatia

Email: milan.stanojevic@optinet.hr

**Objective:** To show that the definition of the infants born at the limits of viability within the countries is dependent on the social and medical conditions in which the infant is born, and even in one country in which neonatal intensive care is available, it depends on the place of birth and organization of perinatal care.

**Method:** With decreasing gestational age mortality, survival to discharge, short- and long-term morbidity and mortality of preterm infants are increasing. It is questionable how to define viability and where the limit of viability can be set. The definition of the limits of viability is not quite clear. There are at least two ways of understanding it: the first, defining the gestational age and/or birth weight (BW) at which human fetus has the capability of survival outside the uterus; and the second, gestational age and/or birth weight at which more than 50% of infants survive to discharge home from the hospital. While in developing countries infants of less than 28 weeks of gestation (GW) without neonatal intensive care have 95% probability of dying, survival of infants between 22 and 25 GW in developed countries is reaching 90%.

**Results:** Up to now the definition of the limits of viability has not be established, and that precise definition of viability scientifically has not been produced yet. Currently, the World Health Organization (WHO) sets lower limit of viability at 22 GW, or 500 g BW, or 25 cm of birth length. It is now decreasing towards 20 GW, and smallest male infant survived to discharge published recently was 268 g.

**Conclusion:** The universal definition of the limit of viability is probably not possible, because of its variability from one individual to the other, from one setting to the other and from one community to the other. The development of artificial uterus and placenta are on the way, while only 1% of infants born in the world at 28 GW have access to neonatal intensive care. Are we on the right track?

**Keywords:** fetal viability, limits of viability, survival, neonatal intensive care, morbidity, mortality

## Reproductive Outcome in Women with Congenital Uterine Anomalies: A **Review of six Cases**

Name and surname: Aliyu Labaran Associate Professor of Obstetrics and Gynaecology.

Institution: Aminu Kano Teaching Hospital/Bayero University, Kano, Nigeria

Email: zainalabidinaliyu@yahoo.com

**Objective:** These review is meant to highlight the different types of congenital uterine anomalies, presentations and and reproductive outcomes in women with uterine anomalies.

**Method:** Review of cases managed over 5 years.

Results: Title: Reproductive Outcome in Women with Congenital Uterine Anomalies: A Review of six Cases. Labaran Dayyabu ALIYU, Department Obstetrics and Gynecology, Fetal Medicine Unit Bayero University, Kano Nigeria PMB: 3452, Kano, Nigeria. Email: zainalabidinaliyu@yahoo.com Abstract Congenital uterine anomalies result from the abnormal formation, fusion or resorption of Mullerian ducts during fetal life. They account for 1-10% of the unselected population,

8% of infertile women and 5-30% of women with a history of miscarriage. The discrepancy in these prevalence rates presumably relates to the application of different diagnostic methods, with variable test performance, and the use of different classification systems to define the abnormalities. They form a spectrum of anomalies ranging from the less severe to the severe forms which are associated with poor reproductive outcomes. These anomalies have been implicated as potential cause of infertility, recurrent pregnancy loss, preterm delivery and fetal Malpresentation. It is also generally accepted that the various types of Mullerian anomaly are individually associated with these outcomes in different ways and to variable degrees, with greater effects being evident in women with profound defects.

**Objective:** These review is meant to highlight the different types of congenital uterine anomalies, presentations and and reproductive outcomes in women with uterine anomalies. Diagnosis of uterine anomalies in resource constrained settings is challenging. In most cases these anomalies are discovered incidentally when the patients are being managed for other conditions. Over five years we managed six of women with different uterine anomalies. Four were cases of uterine Didelphys, one was a case of Unicornuate uterus and one was a case of Bicornuate uterus. Among the four cases of Didelphys uteri, one presented with an acute abdomen and a history of recurrent miscarriages and at laparotomy she was found to have uterus Didelphys. The other three cases were carrying term pregnancies. One had a dystotic labour for which she had caesarean section and was found have uterus Didelphys and was delivered of live baby with good Apgar score, weighing 3.1 kg. One presented with a ruptured uterus and a fresh stillborn fetus following augmentation of labour with oxytocin at home. The last of the four presented with prolonged labour, intrauterine fetal death with the fetus in breech presentation and was delivered of a macerated male baby. Among the six cases one was a primigravida with Unicornuate uterus that presented in labour with breech presentation. She was delivered of a live female baby with good Apgar score, weighing 2.3 kg. All case the cases were diagnosed intraoperatively. These highlighted what is commonly encountered by Obstetrician in developing countries.

**Conclusion:** Most cases of congenital Uterine anomalies are diagnosed incidentally at caesarean section or laparotomy in developing countries. Pregnancy outcomes are variable. Some were delivered of normal live babies, in some the babies have died but had caesarean section for other reasons. Others had recurrent miscarriages. These pregnancy outcomes were similar to findings from other series except that in those series diagnosis were made before pregnancy in the course of conducting investigations for other indications.

**Keywords:** Review, Congenital, Uterine anomaly, Reproductive outcome.

# Rare and challeging diagnoses in Fetal Medicine

Name and surname: Radu Vladareanu<sup>1</sup>, Mona Elena Zvanca<sup>1</sup>, Alexandra Munteanu<sup>2</sup>, Mihaela Bot<sup>1</sup>, Simona Vladareanu<sup>1</sup>, Cristian Andrei<sup>2</sup>, Ciprian Pop-Began<sup>1</sup>

Institution: <sup>1</sup>Carol Davila University of Medicine and Pharmacy, Elias University Hospital, Bucharest, Romania; <sup>2</sup>Elias University Hospital, Bucharest, Romania

Email: vladareanu@gmail.com

Objective: Our aim is to share and discuss rare and difficult prenatal diagnoses such as Kabuki Syndrome, Parapagus dicephalus conjoined twins and Binder syndrome.

Method: using first and second trimester ultrasound screening we have depicted structural fetal anomalies and performed genetic testing such as conventional methods, including rapid tests (QF PCR), cytogenetic karyotype, molecular karyotype (CGH) and Next Generation Sequencing (NGS) in order to diagnose these rare conditions

**Results:** First and second trimester ultrasound screening by trained and experienced proffesionals and new generation ultrasound machines combined with genetic testing are highly effective in depicting rare syndromes. Whole Exome Sequencing and molecular karyotyping combined with 3D/4D ultrasound were indispensable for prenatal diagnosis. The main criteria of genetic testing antenatally is a structural malformation or early and severe growth restriction, but postnatally it is neurodevelopmental delay, therefore the depiction rate of rare conditions is lower prenatally. The largest registry including children with developmental disorders and their families is based in UK

(DDD – Deciphering Developmental Disorders) and publishes regular reports on the efficiency of WES (Whole Exome Sequencing) testing which reaches 40% in cases where conventional techniques failed to find a diagnosis and similar testing in an antenatal setting shows poorer results, with an average of 12.5% diagnosis rate.

**Conclusion:** Rare and difficult diagnoses such as Kabuki's Syndrome, Binder's Syndrome, Parapagus Dicephalus conjoined twins and many others can now be depicted as early as 16-20 gestational weeks due to new and complex ultrasound and genetic techniques.

**Keywords:** Kabuki's Syndrome, Binder's Syndrome, Parapagus Dicephalus Conjoined Twins, Whole Exome Sequencing, rare syndromes, structural fetal anomalies

## Umbilical cord abnormalities what we need to know for intra and postpartum care

Name and surname: Radu Vladareanu<sup>1</sup>, Mona Elena Zvanca<sup>1</sup>, Alexandra Munteanu<sup>2</sup>, Simona Vladareanu<sup>1</sup> Institution: <sup>1</sup>Carol Davila University of Medicine and Pharmacy, Elias University Hospital, Bucharest, Romania <sup>2</sup>Elias University Hospital, Bucharest, Romania

Email: vladareanu@gmail.com

Objective: our aim is to link different types of umbilical cord abnormalities to genetic condition, fetal growth restriction or fetal macrosomia and the possibility to predict and prevent fetal distress.

**Method:** we used repeted ultasound scans in the first, second and third trimester, color Doppler, 3D/4D and postnatal assessement of the umbilical cord to predict and confirm the pre, intrapartum and postpartum risk for fetal distress and / or genetic conditions.

Results: pathological insertion of the cord occurs in 1–2% of singleton pregnancies. In multiple pregnancies, the incidence of velamentous cord insertion is 10-fold higher than in singleton pregnancies. Bilobed or multilobed placentas of roughly equal parts occur in up to 4% of pregnancies and the placental lobes may be linked by a thin bridge of chorionic tissue. Associated anomalies include trisomy 21, spina bifida, ventricular septal defects, esophageal atresia, obstructive uropathies, congenital hip dislocation, and asymmetrical head shape. Velamentous insertion associated with vasa previa appears to have an increased rate of congenital malformations. Also, 13% cases of single umbilical artery are associated with velamentous cord insertion

**Conclusion:** Alterations in morphology and ultrastructure of the umbilical cord should extend the investigation, since there are associations with chromosomal anomalies. Most cases with isolated congenital anomalies of umbilical cord have a favorable outcome. The velamentous cord insertion and vasa artery assumes an additional risk and the parents should be advised of the need for extra surveillance and the possibly poor outcome.

**Keywords:** Umbilical cord, vasa previa, umbilical artery, thrombosis

## How to proceed with the limits of viability: are we on the right track?

Name and surname: Milan Stanojevic

Institution: Department of Obstetrics and Gynecology Medical School University of Zagreb, Croatia

Email: milan.stanojevic@optinet.hr

**Objective:** To show that the definition of the infants born at the limits of viability within the countries is dependent on the social and medical conditions in which the infant is born, and even in one country in which neonatal intensive care is available, it depends on the place of birth and organization of perinatal care.

**Method:** With decreasing gestational age mortality, survival to discharge, short- and long-term morbidity and mortality of preterm infants are increasing. It is questionable how to define viability and where the limit of viability can be set. The definition of the limits of viability is not quite clear. There are at least two ways of understanding it: the first, defining the gestational age and/or birth weight (BW) at which human fetus has the capability of survival outside the uterus; and

the second, gestational age and/or birth weight at which more than 50% of infants survive to discharge home from the hospital. While in developing countries infants of less than 28 weeks of gestation (GW) without neonatal intensive care have 95% probability of dying, survival of infants between 22 and 25 GW in developed countries is reaching 90%.

**Results:** Up to now the definition of the limits of viability has not be established, and that precise definition of viability scientifically has not been produced yet. Currently, the World Health Organization (WHO) sets lower limit of viability at 22 GW, or 500 g BW, or 25 cm of birth length. It is now decreasing towards 20 GW, and smallest male infant survived to discharge published recently was 268 g.

**Conclusion:** The universal definition of the limit of viability is probably not possible, because of its variability from one individual to the other, from one setting to the other and from one community to the other. The development of artificial uterus and placenta are on the way, while only 1% of infants born in the world at 28 GW have access to neonatal intensive care. Are we on the right track?

Keywords: fetal viability, limits of viability, survival, neonatal intensive care, morbidity, mortality

### Antihypertensives in pregnancy: fetal growth and development

Name and surname: Josip Juras

Institution: School of Medicine, University of Zagreb; UHC Zagreb, Department of Obstetrics and Gynecology

Email: josipjuras@gmail.com

**Objective:** To evaluate the use of antihypertensive drugs on the fetal growth and development.

**Method:** Systematic review of literature.

Results: Hypertensive disorders in pregnancy affect about 7-8% of pregnant women, and in cases of comorbidities, especially diabetes, this percentage rises to 15%. In 2018, the European societies of hypertension and cardiology published a new classification of hypertensive disorders in pregnancy. Drug-related fetopathy refers to structural and functional abnormalities. As a rule, drugs, when used in the 1st trimester, have teratogenic potential, while in the 2nd and 3rd trimesters can have an effect on the functionality of organs or the organ system. According to one study, about 19% of pregnant women suffering from chronic hypertension used ACE inhibitors or sartans during the 1st trimester, and approximately one-third of pregnant women continued to use their default therapy during the 1st trimester. Fetogenic and teratogenic risks are most commonly associated with ACE inhibitors and sartans. There is less data on the effect of methyldopa, while there are comparisons of calcium channel blockers and beta-blockers, and the most common fetal outcomes measured are birth weight, delayed neurocognitive development, hematological diseases, congenital malformations, premature birth. Fetopathy associated with RAS inhibitors involves changes in the heart and brain in the 1st trimester due to their dominant development, while in the 2nd and 3rd trimesters refers to impairment of kidney function and structure and other organ systems. Decreased renal perfusion causes a lack of amniotic fluid, which can lead to pulmonary hypoplasia, limb deformities, weaker fetal head ossification, and ultimately higher perinatal mortality and neonatal morbidity. Overall, research on the impact of antihypertensives on fetal growth and development is diverse.

**Conclusion:** Most of the published studies have similar shortcomings, due to the method of data collection, due to the presentation of, for example, the severity of the disease, due to the impossibility of comparing the drug and the underlying disease for ethical reasons.

**Keywords:** antihypertensives, fetal growth, fetal development

# Recommending COVID-19 Vaccination for Pregnant Women-An Ethical **Imperative**

Authors: Frank A. Chervenak, MD; Laurence B. McCullough, PhD; and Amos Grunebaum, MD Affiliation: Zucker School of Medicine at Hofstra/Northwell and Lenox Hill Hospital, New York, NY 10075

This presentation focuses on how physicians should counsel patients who are pregnant, planning to become pregnant, breastfeeding or planning to breastfeed about vaccines for COVID-19. We begin with an evidence based account of the following 5 major challenges: the limited evidence base, the documented increased risk for severe disease among pregnant coronavirus disease 2019-infected patients, conflicting guidance from government agencies and professional associations, false information about coronavirus disease 2019 vaccines, and maternal mistrust and vaccine hesitancy. We subsequently provide evidence-based, ethically justified, practical guidance for meeting these challenges in the professionally responsible counseling of patients about coronavirus disease 2019 vaccination. To guide the professionally responsible counseling of patients who are pregnant, planning to become pregnant, and breastfeeding or planning to breastfeed, we explain how obstetrician-gynecologists should evaluate the current clinical information, why a recommendation of coronavirus disease 2019 vaccination should be made, and how this assessment should be presented to patients during the informed consent process with the goal of empowering them to make informed decisions. During this process, the physician should be alert to vaccine hesitancy, ask patients to express their hesitation and reasons for it, and respectfully address them. In contrast to the conflicting guidance from government agencies and professional associations, evidence-based professional ethics in obstetrics and gynecology provides unequivocal and clear guidance: Physicians should recommend coronavirus disease 2019 vaccination to patients who are pregnant, planning to become pregnant, and breastfeeding or planning to breastfeed. To prevent widening of the health inequities, build trust in the health benefits of vaccination, and encourage coronavirus disease 2019 vaccine and treatment uptake, in addition to recommending coronavirus disease 2019 vaccinations, physicians should engage with communities to tailor strategies to overcome mistrust and deliver evidence-based information, robust educational campaigns, and novel approaches to immunization.

### Vaginal microbiome and pregnancy

Orion Gliozheni, Elko Gliozheni

Department of Obstetrics & Gynecology. University of Medicine of Tirana - Albania

A significant number of microorganisms live in a mutualistic, harmonious relationship in human body, whilst a few of them become opportunistic in immunosuppressed conditions, leading to acute, fatal, and chronic conditions. Sequencing of the 16S rRNA gene using Next-Generation technology has recently been widely exploited to characterize the human microbiome. The vaginal microbiome is a specific compartment of the human microbiome and plays an important role in health and disease of the female reproductive tract. Before the advent of Next-Generation sequencing, the characterization of the vaginal microbiome through traditional microbiological techniques (culture-dependent) revealed a predominance of Lactobacillus species. The most common resident Lactobacilli of human vagina include L. crispatus, L. iners, L. gasseri, and L. jensenii. The vaginal microbiome appears to play an important role in many aspects of reproduction, insofar as its composition is associated with tubal factor infertility, with early miscarriage, the preterm delivery, the postpartum period and with neonatal health outcomes of term infants. It is known that BV is associated with PTB and therefore, it is logical to question the potential association of the vaginal microbiome with PTB. Ascending genital infections alter the delicate materno-fetal immune balance by release of toxins and array of enzymes compromising the fetal membrane cover and subsequently, disrupting the membranes. Most of these infections are occult accounting for ~25% of PTL, the source of which was recognized after the advent of 16SrRNA sequencing. Endogenous microflora from oral cavity, vagina and gut was reported as the causative agent in 15–50% of cases. It has been shown that this Lactobacillus-rich microbiome falls tremendously, becoming more diverse and richer in the postpartum period, reaching the level of non-pregnant vagina, which can be attributed to varying estrogen levels.

The vaginal microbiome may play an important role in determining the fate of viral challenge. Various vaginal viruses interact with vaginal bacterial microbiota and host immunity and that any imbalance thereof may contribute to the risk of adverse reproductive health outcomes, including infertility and adverse birth outcomes. More than half of women delivering infants with intrauterine growth restriction had viruses in their amniotic fluid during pregnancy, and adenovirus was detected in the amniotic fluid collected by amniocentesis in 60% of these women.

Several studies have confirmed that the microbiome of infants with conditions like PTB, very low birth weight infants, or necrotizing enterocolitis, also have an altered microbiome. However, it is unclear if these alterations are caused by early gestational age at delivery or hospitalization because neonatal exposure in early life is pertinent to the establishment of the microbiome.

**Conclusion:** We have described the current state of the science on several aspects of the female reproductive microbiome, as well as their current association with perinatal disorders of both the mother and her offspring. The vaginal microbiome varies

from one woman to the next, across the lifespan, and in association with both health and disease states. A systemic analysis of the microbiome across the reproductive health spectrum (adolescence, pregnancy, postnatal and perimenopausal/menopausal /postmenopausal) will undoubtedly shed light on the most significant and perplexing common disorders of our time.

### **Management of Anemia in Pregnancy**

Sule Göncü Avhan Ankara City Hospital

Anemia in pregnancy is a common health problem with a 38% worldwide prevalence reported by World Health Association (WHO). Anemia is associated with adverse perinatal outcomes like; preterm birth, low birth weight, lactation problems, postpartum depression, and neurocognitive changes in early childhood. Most common reason of anemia is iron deficiency. Complete blood test and serum ferritin levels can be used for diagnosis. Presence of low Hb concentration (<11 g/dL during the first and third trimester and <10.5 g/dL during the second trimester) together with a low serum ferritin concentration (<30 µg/L) is diagnostic for anemia during pregnancy. WHO recommends routine supplementation of all pregnant women with a single daily dose of 60 mg iron for six months during pregnancy. Pregnant women should be checked for Hb levels in every trimester and for ferritin levels at least ones in early pregnancy. Oral iron preparations can be used throughout pregnancy and should be given as first-line therapy. Iron2+ salts are the most frequently used oral iron preparations for the treatment of anemia. Iron3+ polymaltose complex could be an alternative preparate due to its less side-effect profile compared with Iron2+ salts and it can be taken with meals. IV iron therapy is recommended during 2nd and 3rd trimesters, but it cannot be used during first trimester because there is no safety data available of its' first-trimester usage. Intermittent oral supplementation has similar maternal and fetal outcomes as daily and could be an alternative therapy in nonanemic patients because it is associated with fewer side effects. IV iron should be given to women who cannot tolerate oral iron, those who have severe anemia later in the pregnancy; those for whom oral iron does not effectively increase the hemoglobin and/or ferritin levels, and those with anatomic abnormalities such as history of bariatric surgery or other conditions that interfere with oral iron absorption like inflammatory bowel disease.

### Newborns at risk of Covid-19

Ola Saugstad

Department of Pediatric Research, University of Oslo

After more than 1 year of the SARS-CoV-2 pandemic, the gap between different guidelines how to handle newborn infants during this pandemic has been minimized. The American Academy of Pediatrics (AAP)'s recommendations are now more in accordance with those of the World Health Organization (WHO).

Although both vertical and horizontal transmission are rare, SARS-CoV-2 positivity is associated with an increased risk of premature delivery and higher neonatal mortality and morbidity. Mode of delivery and cord clamping routines should not be affected by the mother's SARS-CoV-2 status. Skin to skin contact, rooming in and breastfeeding are recommended with necessary hygiene precautions. Antibodies of infected or vaccinated women seem to cross both the placenta and into breast milk and likely provide protection for the newborn. New mutants of the virus may change the clinical pic

## **Reducing Preterm Birth in Twin Pregnancies**

Abdallah Adra

Division of Maternal Fetal Medicine, Department of Obstetrics & Gynecology, American University of Beirut

The incidence of twin gestation has increased markedly over the past decades, mostly because of increased use of assisted reproductive technologies. Preterm birth accounts for almost 50% of the complications observed in twin pregnancies.

Several interventions have been proposed to prevent preterm birth in singleton high-risk pregnancies, including vaginal progesterone, cervical cerclage and the use of cervical pessaries. The mechanism of initiating labor may, however, be different in singleton and twin gestations. Therefore, it is mandatory to evaluate the proposed interventions in randomized trials of multiple pregnancies.

During this presentation, we will review & assess the results of trials to prevent preterm delivery in twin pregnancies. Currently, it is reasonable to conclude the following:

- 1- No intervention has been shown to reduce the risk of preterm birth in asymptomatic twin pregnancies, regardless of cervical length measurement, including bed rest, limitation of home activities, and prophylactic tocolysis.
- 2- Vaginal progesterone seems to have a promising role in reducing the risk of preterm birth in twin pregnancies with a short cervix of less than 25 mm. Intramuscular 17-alpha-hydroxyprogesterone has not been shown to be of effective.
- 3- Cervical cerclage, whether elective or ultrasound-indicated, has not been shown to reduce the risk of preterm birth in twins. Rescue cerclage may be considered in women with a very short cervix (less than 15 mm), & in those with dilated cervix at less than 24 weeks gestation.
- 4- Cervical pessaries might be of interest in cases where there is a short cervix, but these results need to be confirmed in future trials, because of conflicting results in the literature.
- 5- Cerclage, cervical pessaries and progesterone should not be routinely used in twin pregnancies without an additional risk factor, such as prior history of preterm birth or short cervix, until further evidence is obtained.

### Decreasing the risk of ROP development in NICU

Esin Koç

Improvement of the neonatal intensive care over the last decades has increased the survival rate of even the youngest preterm babies. Currently, the survival rate of preterm infants > 26 gestational week is more than 80% especially in high income countries. Retinopathy of prematurity (ROP) which is an avoidable neovascular retinal disease, has lifetime impact on vision and ocular morbidities in premature babies. Altough early prevention rather than controlling disease progression should be preferred, multifactorial characteristics and complexity of ROP make the prevention difficult. Neonatal care during the first hours and weeks of life determines a preterm baby's chance of avoiding ROP and its complications. Depending on the quality of neonatal care and lack of access to screening and treatment, more mature babies are treated for ROP in middle income countries. The importance of improved neonatal care in prevention of ROP is well illustrated by studies showing that in high income countries, severe ROP is confined to infants with GA< 30 wk and BW under 1500g whereas in MIC and developing countries more mature babies are under the risk of having severe ROP.

The two determinant factors for ROP are immature retinal vessels due to prematurity and oxygen therapy causing oxidative injury. There are several other factors like sepsis, necrotizing enterocolitis, low-caloric intake, poor weight gain in NICU, disregulated growth facors and genetics influencing the risk of pathologic angiogenesis and ROP development.

The first hour of life has been called 'the golden hour' because several low-cost interventions greatly improve outcomes. These include antenatal corticosteroid administration before 35 weeks of gestation, delay in clamping the umbilical cord by 30-60 seconds, keeping preterm babies warm by using plastic bags and gentle respiratory management to avoid injury to the lungs. Careful oxygen administration and O2 monitoring immediately after birth are essential in preterm babies. Stabilization of preterm babies may require inflation of the lung with blended air/oxygen (FiO2: 30-40%).

During NICU care, ensuring that the oxygen saturation is between 89% and 94% is important. Avoiding hypoxemic episodes and keeping infants stable in the SpO2 target to avoid excess oxygen remains a challenge in NICU. Also, optimizing nutrition by promoting and supporting mothers to give breastmilk, reducing the risk of infections, reducing blood sampling especially first week of life are essential points in prevention of ROP.

In conclusion, reducing the burden of visual morbidity from ROP begins with primary prevention and improved neonatal care. Pediatricians, neonatologists and obstetricians should take the responsibility and cooperate for prevention of ROP.

### Metabolomics in prenatal medicine

Giovanni Monni, Valentina Corda, Alba Piras, Federica Murgia, Rosa Maria Ibba Prenatal and Preimplantation Genetic Diagnosis and Fetal Therapy, Microcitemico Hospital, Cagliari, Italy prenatalgmonni@gmail.com

Metabolomics is the youngest among the "-omics" sciences; it studies the metabolome, i.e. all metabolites of low molecular weight of a cell, a tissue, an organ or biological fluid and provides information on what actually "happened" rather than "what could happen". It can be applied not only to chronic diseases but to medication response studies, to drugs, screening, etc.

This abstract presents results of metabolomics investigations in normal and pathological chorionic villi and amniotic fluids so as to provide a biological interpretation.

In particular, our results analyze the metabolic modifications that occur during the weeks in the first trimester of pregnancy in a control group of normal fetuses and a group of fetuses with chromosomal abnormalities.

We also studied the metabolomic differences in the field of beta talassemia by analyzing the chorionic villi of a control group samples with samples from fetuses healthy carriers of beta thalassemia and heterozygous ones.

We also analyzed amniotic fluid samples of fetuses with enlarged nucal translucency compared to normal ones.

We employed nuclear magnetic resonance, high performance liquid chromatography and mass spectrometry associated with gas chromatography for the analyses. The data obtained were studied by multivariate and univariate statistical analysis.

The results demonstrate specific altered metabolic pathways in pathological cases compared to control groups.

The advantages of the application of metabolomics in the field of prenatal and perinatal medicine are various, such as: rapid and inexpensive analysis, reproducibility, small quantities of sample material required and non-invasiveness of diagnosis.

## Non-invasive ventilation: why synchronization is better

Corrado Moretti

Emeritus Consultant in Paediatrics, Policlinico Umberto I, Sapienza University of Rome

Nasal continuous positive airway pressure (NCPAP) was the earliest form of non-invasive respiratory support used in infants with respiratory failure and its use has become standard practice in order to avoid invasive mechanical ventilation (MV) and to facilitate weaning from the ventilator. However, despite early NCPAP coupled with surfactant replacement therapy given through the INSURE or LISA techniques, a very high percentage of very low birth weight infants develops respiratory failure and needs intubation and MV or fails extubation. Non-invasive ventilation modes are increasingly employed in preterm infants in order to reduce the intubation rate. It must be stressed that tracheal intubation, duration of mechanical ventilation and extubation failure are all factors that play an important role in increasing the risk of morbidity (BPD, IVH) and mortality.

Nasal Intermittent Positive Pressure Ventilation (NIPPV) or Nasal Intermittent Mandatory Ventilation (NIMV) are non-invasive modes of ventilation generated by ventilators that provide NCPAP plus superimposed ventilator mandatory breaths and are identified as SNIPPV/SNIMV when the ventilator pressure waves are synchronized with the spontaneous efforts of the patient. These techniques are being increasingly used in preterm infants with respiratory failure and several trials seems to demonstrate that NIPPV and SNIPPV are more effective than NCPAP and BiPAP in reducing extubation failure and also as primary mode of ventilation (1-4). Their effects include a higher mean airway pressure (MAP), a washout of the anatomical dead space in the upper airways and a stimulatory effect on the respiratory drive. With SNIPPV the benefits are more consistent due to the positive effects of synchronized mechanical breaths in reducing thoracoabdominal asynchrony, inspiratory effort, breathing frequency and work of breathing (WOB) and at the same time in increasing tidal volume (Vt) and minute volume (Ve), gas exchange and respiratory drive (1, 5-8).

Different modes of synchronization are currently available:

- Pressure triggered: preterm infants have a very weak inspiratory effort, and therefore it is difficult to set trigger sensitivity owing to the small drop in pressure.
- Graseby capsule: the capsule placed on the baby's abdomen detects the increase of the pressure due to the contraction of the diaphragm.
  - Neurally Adjusted Ventilatory Assist (NAVA): the electrical activity of the diaphragm is detected to trigger the ventilator.
  - Flow-triggered: an advanced flow-trigger was designed to overcome the problem of the leaks from the open circuit.

Choice of interface is critical to successful non-invasive ventilation. Nasal ventilation is currently performed using various different models, of which short binasal prongs are the most widespread device. The double inspiratory loop cannula (DILC), initially developed for the delivery of low or high-flow oxygen therapy, was adopted in the last few years into routine clinical practice in many centers for the delivery of NCPAP and NIPPV. This device has several advantages, including ease of use and reduced rates of nasal trauma, lower infant pain scores and enhanced mother-child bonding; for all these reasons DILC is highly preferred by parents and nursing staff. However, one of the main problems with DILC is its higher intrinsic resistance compared to SBP, which is likely to compromise flow and pressure delivery to the airway and to reduce the efficacy of NCPAP and NIPPV. A new DILC interface was recently developed with a structure that allows it to perform NCPAP and flow-SNIPPV in an effective, safe and comfortable way, gathering the physiological advantages of synchronized ventilation with comfort and ease of use (9).

#### **Fetal descent**

Torbjørn Moe Eggebø National Center for Fetal Medicine Norwegian University of Science and Technology, Trondheim, Norway

Background: Fetal head descent can be expressed as fetal station and engagement. Assessing fetal head station is based on the distal part of the fetal skull. Assessing engagement is based on the proximal part. Knowledge of fetal head descent during labor is mainly from the classic studies by Friedman in 1965.

Methods: Fetal descent can objectively be examined longitudinally with transperineal ultrasound and expressed as head direction, angle of progression (AoP), head symphysis distance (HSD) and head-perineum distance (HPD). Clinically assessed station zero corresponds to AoP 116 degrees, HSD 34 mm and HPD 36 mm. Fetal engagement can be assessed with transabdominal ultrasound.

Labor patterns: Labor curves based on AoP and HPD are published. They have many similarities with Friedman's curve, but ultrasound examined fetal head was at a higher level throughout the first stage than Friedman reported. A rapid descent started around four hours before delivery. The labor patterns were similar in women with and without epidural analgesia. Conclusion: Ultrasound examination of fetal descent will be more feasible with new small high-quality devices.

## Ultrasound as a tool for objectively monitoring labor evolution

Torbjørn Moe Eggebø National Center for Fetal Medicine Norwegian University of Science and Technology, Trondheim, Norway

**Background:** Understanding of labor mechanics is important for all birth attendants. The critical diameters in a human fetus is the head and the shoulders. The fetus must rotate to negotiate the birth canal. These rotational movements of the fetal head and shoulders are often called the cardinal movements. The first movement is flexion, followed with internal rotation, extension and at last external rotation. Failure to rotate may cause labor dystocia. The clinicals examinations are found being imprecise.

Methods: Fetal position, station and attitude can be examined longitudinally throughout labour with transabdominal and transperineal ultrasound. Cervical dilatation can also be seen in early active phase of labor.

#### **Benefits:**

- Ultrasound is more accurate than clinical examinations.
- Findings can be objectively documented.
- Women prefer ultrasound before clinical examinations.
- Maternal pushing can be optimized through biofeedback.

Ultrasound has the potential to add clinically important knowledge to the clinicians and may assist in decision making.

## **Shoulder Dystocia**

**Dimitrios Siassakos** 

Associate Professor-Reader in Obstetrics, University College London

**Objective:** Discuss cutting-edge research on prediction and prevention of dystocia and injury; debate the propulsive theory; and describe evidence-based management to optimise outcome

#### Methods:

- 1. Comparative study of women with gestational diabetes, normal GTT, or 'reactive hypoglycemia'
- 2. Systematic literature review of brachial plexus injury at caesarean section
- 3. Critical appraisal of evidence claimed to support the propulsive theory: precipitous second stage; modelling studies; in utero injury etc
  - 4. Review of training courses

#### **Results:**

- 1. A study of >1000 women has shown that reactive hypoglycemia increases the risk of outcomes typically associated with gestational diabetes and likely represents a different type of insulin resistance
- 2. A systematic review of 2,154 studies and 62 full papers has shown that in the majority of brachial plexus injuries at caesarean section there were either risk factors or descriptors of a challenging extraction
- 3. There are no robust data to support that permanent injury of an impacted shoulder can happen without accoucheur involvement.
- 4. Courses focussing on evidence-based management have been associated with zero permanent brachial plexus

Conclusion: I will summarise the evidence and summarise the principles of effective management of shoulder dystocia, to avoid brachial plexus injury.

It is time we stop blaming, falsely as I will demonstrate, natural propulsive forces for permanent Erb's palsy.

### **Obesity in Pregnancy - A Global Problem**

Joachim W. Dudenhausen Berlin/Germany

In countries of high income and unlimited nutrition resources is present the phenomenon of accelerated body mass index. There is a rise in mean periconceptional body weight and an increase of obese pregnant women. Obese mothers are an important upcoming problem in obstetrics. Advanced maternal BMI complicate pregnancy and delivery. It must pointed out, that the consequences do not end with delivery, but represent a livelong burden to the mother and the child. Therefore strategies to reduce antenatally the body weight of obese women are mandatory. Physical activity and nutrition adjustment are options to avoid obese pregnant women and the complications.

## Intrapartum fetal heart rate decelerations - what are they & how are they regulated?

Christopher A. Lear, Jenny A. Westgate, Laura Bennet, Alistair J. Gunn

The Fetal Physiology and Neuroscience Group, Department of Physiology, The University of Auckland, Auckland, New Zealand

Intrapartum decelerations are the most distinctive component of the fetal heart rate during labour. Historically, it was widely taught that the majority of intrapartum decelerations were mediated by non-hypoxic mechanisms and conversely that only a minority were related to fetal hypoxaemia. These concepts are now outdated, as shown by physiological evidence that there is little or no contribution to typical decelerations from the fetal baroreflex (3), changes in preload (1) or fetal head compression (2). By contrast, modern studies strongly support that the vast majority of intrapartum decelerations are mediated by activation of the peripheral chemoreflex by recurrent fetal hypoxaemia (2-4). The growing evidence that the best currently available biomarkers of fetal

acidaemia are measures of the total deceleration area, further suggests that the great majority of intrapartum decelerations are related to impaired fetal gaseous exchange. We propose that accurate understanding the physiology of labour, and particularly the repeated but brief episodes of fetal hypoxaemia during contractions, is essential to improve fetal monitoring and outcomes.

### The Importance of Fetal Fraction

Andrew McLennan Sonologist, Sydney Ultrasound for Women VMO, Maternal Fetal Medicine Unit, Royal North Shore Hospital, Sydney Clinical Associate Professor, Sydney Medical School - Northern, University of Sydney

Maternal cell-free DNA principally derives from the haematopoietic system but all maternal organs provide some cfDNA, including solid tumours. 'Fetal' cfDNA fragments are trophoblastic (placental) in origin. Fetal fraction (FF) refers to the percentage of free DNA fragments in the maternal circulation derived from the feto-placental unit.

The measurement of FF is an essential quality control component of non-invasive prenatal testing (NIPT). Trophoblastic-derived cfDNA is assessed by a wide variety of technical approaches including sex chromosome-based methods, genotype-independent methods (such as fragment size or methylation profile) or SNP-based methods. They are not directly comparable and there is no standardization of reporting which complicates interpretation for the clinician.

Fetal fraction is a function of both maternal and placental cell-free (cf) DNA levels. Maternal levels are strongly influenced by body mass index, conception method and autoimmune conditions whilst feto-placental levels are most strongly influenced by gestational age and placental mass.

High levels of FF have been linked to adverse pregnancy outcomes, such as pre-eclampsia, but there is no consistency in the literature. Low levels of FF reduce NIPT screening accuracy. The lower limit of FF detection varies widely between analytic platforms which in turn influences the test failure rate (1-8%). Approximately 60% of those with test failures receive a result on the second draw, but the remainder are a group at high risk of adverse outcomes including miscarriage, rare chromosomal abnormalities and placental dysfunction.

The relative contribution of a trisomic chromosome to the cfDNA amount can be compared to the overall FF to assess the potential for placental or maternal mosaicism in cfDNA screening. This 'trisomic fraction' can also be used in the interpretation of twins discordant for a chromosome abnormality. Overall FF is elevated in twins but the per-twin FF is lower than singletons increasing the test failure rate, notably in dizygotic twins.

This presentation will focus on those important elements of FF that influence clinical pregnancy management.

### Medical management of early-onset Rhesus Disease

Mark D Kilby1,2

1. Institute of Metabolism & Systems Research, University of Birmingham, UK and 2. Fetal Medicine Centre, Birmingham Women's & Children's Foundation Trust, Birmingham, UK.

Background: Maternal red cell alloimmunisation and the treatment of in-utero fetal anaemia is one of the 'success stories' of fetal therapy. Overall, the modern management of fetal anaemia secondary to maternal red cell antibodies by in-utero intravascular transfusion has survival rates overall >95% with a procedure related fetal loss rate of ~1%.

However, there are a 'group' of women of high parity and high potency of antibodies where there is the risk of significant fetal anaemia before twenty weeks of gestation. In these circumstances, the procedure related risk of fetal loss is significantly higher (at ~5%). In these relatively rare pregnancies, medical management may be considered in an attempt to delay and attenuate the risks of severe fetal anaemia until a gestation when in-utero transfusion carries less perinatal risk.

The use of maternal intravenous immunoglobulin (IVIg) to reduce the trans-placental passage of IgG antibody to the fetus is discussed with its potential immunological action and evidence from case cohort studies indicating the prolongation of gestational age when fetal anaemia develops. However, IVIg is relatively non-specific in action and therapeutic benefits modest. I will also discuss the protocol for an observational study using the drug, Nipocalimab (Johnson and Johnson) and the potential rational for its use.

**Conclusion:** In a small cohort of women with severe, early-onset fetal anaemia secondary to maternal red cell alloimmunisation, medical management may improve perinatal outcome in the pregnancy.

**Disclosure:** MDK is a PI in the Momenta study but receives no financial support from J & J.

### Prenatal exome sequencing in babies with congenital malformations

Mark D Kilby1,2

1. Institute of Metabolism & Systems Research, University of Birmingham, UK and 2. Fetal Medicine Centre, Birmingham Women's & Children's Foundation Trust, Birmingham, UK

Background: The interim analysis of the PAGE study (Lancet. 2019) noted that in this prospective cohort study, two groups in Birmingham and London recruited patients (fetuses with structural anomaly on USS) from 34 fetal medicine units in England and Scotland. Methods: We used whole-exome sequencing (WES) to evaluate the presence of genetic variants in developmental disorder genes (diagnostic genetic variants) in a cohort of fetuses with structural anomalies and samples from their parents, after exclusion of an euploidy and large CNVs. Women were eligible for inclusion if they were undergoing invasive testing for identified nuchal translucency or structural anomalies in their fetus, as detected by ultrasound after 11 weeks of gestation. The partners of these women also had to consent to participate. Sequencing results were interpreted with a targeted virtual gene panel for developmental disorders that comprised 1628 genes. Genetic results related to fetal structural anomaly phenotypes were then validated and reported postnatally. The primary endpoint, which was assessed in all fetuses, was the detection of diagnostic genetic variants considered to have caused the fetal developmental anomaly.

Results: Over a three year period, the clinical data were collected until end of March, 2018. After exclusion of fetuses with aneuploidy and CNVs, 876 fetuses with structural anomalies, including two sets of twins and 1702 parental samples (851 case-parental trios and 25 case-parent dyads). After bioinformatic filtering and prioritisation, 549 genetic variants representing 336 potential diagnoses were selected as "potential pathogenic variants" (38.4%) and reviewed by a multidisciplinary clinical review panel (CRP). A diagnostic genetic abnormality was identified in 97/876 cases (11·1%;95% confidence interval (CI):9·0-13.2%). An additional 24 (3·9%) fetuses had a variant of uncertain significance that had potential clinical usefulness. Variants were identified in 271 different genes, the most common was KMT2D codes lysine (K)-specific methyltransferase 2D (Prenatal KABUKI SYNDROME 1 [congenital mental retardation syndrome]). Detection of diagnostic genetic variants enabled us to distinguish between syndromic and non-syndromic fetal anomalies. Most 'genetic variant diagnoses (58.8%; 57/97) are de-novo in origin. Inherited mutations comprise 39 (40% inherited) of total genetic diagnosis (29 recessive, 6 dominant, 3 hemizygous & 1 imprinted). 1 case UPD chromosome 15. Diagnostic genetic

variants were present in 17.2% with multisystem anomalies (i.e. more than one fetal structural anomaly), 10% of 81 fetuses with cardiac anomalies, and 21% fetuses with skeletal anomalies and 23% of hydropic fetuses; these phenotypes were most commonly associated with diagnostic variants. However, diagnostic genetic variants were least common in fetuses with isolated increased nuchal translucency ( $\ge 4.0 \text{ mm}$ ) in the first trimester (in three [3.2%] of 93 fetuses). Conclusion: These data and the potential use of prenatal WES will be discussed and how it has informed the development of the routine clinical Fetal Medicine / Genetics Clinic within National Health England.

## Vaginal infections and preterm labor

George Daskalakis Professor of Obstetrics Gynecology-Fetomaternal and

Perinatal Medicine, National and Kapodistrian University of Athens, Greece

Preterm labor (PTL) is the main cause of perinatal morbidity and mortality and may be considered as a global health challenge. Infections, both overt and subclinical, have been associated with PTL accounting for 25-40% of all preterm births. Although some times is difficult to decide whether infection is the cause or the effect of processes resulting to preterm labor, there is evidence, based on clinical, biochemical and microbiological data, that infection and the inflammation produced by infection, are the main cause of a considerable percentage of preterm deliveries. Firstly, higher rates of levels of inflammatory cytokines and microbial colonization have been found in the amniotic fluid of patients with preterm labor than women not in labor and term patients in labor. Secondly, the in vitro administration of bacterial products in amnion cells resulted in higher levels of prostaglandin E2. Moreover, in animal studies intrauterine or systemic administration of microbes or microbial products to pregnant animals, resulted in preterm labor. In addition PTL has been related to subclinical intrauterine infections, while women identified with intra-amniotic infection or intrauterine inflammation in the mid-trimester (elevated matrix-degrading enzymes and cytokines 3 in the amniotic fluid) are at risk for giving birth preterm. During inflammation associated to infection process, prostaglandins are simultaneously released and their overproduction could be detrimental. Prostaglandins promote uterine contractions contributing to embryonic and fetal expulsion. Numerous bacterial pathogens including Garnerella vaginalis, Ureaplasma urealyticum, Mycoplasma hominis, Chlamydia trachomatis, Trichomonas vaginalis, Neisseria gonorrhoeae, Actinomyces, Candida spp and Streptococcus spp have been associated with preterm birth, chorioamnionitis and early onset neonatal sepsis. Further research is urgently required to develop effective methods for the prevention and treatment of infections associated PTL and above all, to reduce fetal injury.

## PERCUTANEOUS FETAL SCLEROTHERAPY FOR CONGENITAL PULMONARY AIRWAY MALFORMATION TYPE 2 AND 3: A novel therapeutic option

Erasmo Huertas

Erasmo Huertas MD. Obstetrician & Gynecologist. Associate Proffesor Universidad Nacional Mayor de San Marcos. Lima. Peru

Congenital pulmonary airway malformation (CPAM) is at present days a relatively frequent developmental malformation of the lower respiratory tract.

Large congenital pulmonary airway malformation can cause perinatal demise due to pulmonary hypoplasia. Currently, fetal intervention is indicated only if the mass is large enough to cause hydrops. For Type 2 and 3 CPAM steroid administration reverse hydrops in most cases, but if it fails there are at least two therapeutic procedures: Laser ablation and Percutaneous sclerotherapy

We propose to use percutaneous sclerotherapy with 3% Polidocanol as a minimally invasive and affordable therapy to treat CPAM Type 2 and 3, with hydrops or high risk of pulmonary hypoplasia assessed by CCAM Volume Ratio (CVR) and Quantitative Lung Index (QLI). The advantage of this novel therapeutic option is that avoids need for neonatal lung resection and hospitalization.

### Is autism predictable antenatally?

Olus Api

VKV American Hospital, Perinatology, Istanbul, Turkey

Epidemiological data show that, some form of autism affects 2 – 6 of every 1,000 children, with the most recent statistic being 1 in 54 which is an alarming increase in the incidence of autism in North America, Europe and many other parts of the world. Understanding the contributory factors may give us the opportunity to start risk assessment protocols and preventive approaches for individuals identified as "at risk". Besides, the American Academy of Pediatrics began recommending that all pediatricians screen for autism at 18 and 24 months, which is a very good thing given how effective intensive early intervention can be.

ASD is a brain development or growth disorder, the precise cause of which is still unknown.

Although environmental factors, such as infections or the use of certain drugs during pregnancy, are thought to play a role in its etiology, heritability of autism has been estimated to be around 50 to 90%, showing the relevance of genetic factors in the pathogenesis of the disease. However, although several hundred genes have been implicated variably in autistic individuals, no group of genetic differences has been reproducibly linked to this disorder. Genome-wide association studies have identified gene variations statistically associated with ASD. Among the most common are deletions and duplications at the Neurexin 1 (NRXN1) locus. Whole exome sequencing has identified genetic mutations associated with autism including SNC2A, CHD8, DYRKIA, POG2, GRIN2B, and KATNAL2, cadherin (CDH9), cadherin 10 (CDH10), semaphorin 5A (SEMA5A), and taste receptor, type 2, member 1 (TAS2R1). For example, the MTHFR 677T-variant allele is associated with a 2.79-fold increased risk for autism whereas other allelic variants of this gene are shown to have a protective function against autism. Although common variants might contribute largely to autism risk, they are difficult to be recognized, as they are associated with subtle effects, and remain mostly unknown. It has been estimated that variants in more than 400 genes and several copy number variations (CNVs) (deletions and duplications events) can represent high to moderate risk variants for the disease. Reported cases of CNV in ASD individuals can be found at DECIPHER database (https://decipher.sanger.ac.uk/). The most common CNV found in ASD patients are located at 15q11-13, 16p11 and 22q11-13, which altogether have an incidence of around 3 to 5%. It is currently recommended that all autism patients should be screened for CNV through CMA since approximately 10% of the patients display a clinically significant CNV. Particularly, patients presenting with micro/macrocephaly, seizures, dysmorphic features, congenital malformations and family history of other psychiatric and neurodevelopmental disorders are found to have higher rates of clinically significant CNV. Furthermore, a careful clinical evaluation of the patient and assessment of family history, which can give some insights on the pattern of inheritance, can improve the diagnostic yield and the choice of appropriated molecular tests to be applied in each particular case. The first important step in genetic counselling for autism is the clinical evaluation of the patient and the assessment of family history. This can provide valuable information that can direct molecular test to a more appropriated choice. As a general rule, chromosomal microarray, fragile X test for males, MECP2 mutation screening for females and inborn errors screening may be recommended for all patients diagnosed with autism. Particular situations can direct the choice specifically to one of these tools. As a second-tier diagnostic tool, exome or genome sequencing can be applied. Characteristic clinical signs, pattern of inheritance or history of repeated abortions can be indicative of specific genetic alterations that can be screened with more specific molecular tools such as molecular test for specific monogenic disorders and panels for screening of X-linked genes. Although CMA and NGS Technologies have greatly improved the diagnostic yield for autism, variants that can be assigned as the etiological factors can be identified only in around 25% of the patients. Considering the clinical phenotype and family history, combined with biochemical and molecular testing for known metabolic and monogenic autism-related syndromes, the etiology of autism can be determined for approximately 30 to 40% of the cases. In cases of ASD with no identifiable cause, recurrence risk is based on empirical observations as follows: 1) For a couple with 1 affected child, the risk is usually calculated to be around 3 to 10 %. It can be considered higher (~7%) if the affected child is a female, or lower (~4%) if the affected child is a male. Also, in couples having two or more affected children, the recurrence risk rises to 33 to 50%. For now, the most concrete benefit of prenatal genetic testing may simply be to help parents better understand the likelihood of autism recurring in another child in the family. Otherwise, prenatal genetic testing for all families of autism is an ethical challenge due to the lack of certainty around prenatal genetic testing for autism.

Meta-analyses of extensive studies examining blood samples from individuals with autism reported decreased levels of antioxidants glutathione, glutathione peroxidase, and increased levels of oxidized glutathione. Immune dysfunction has also been linked to autism risk; numerous biomarkers have been shown to be correlated with autism risk such as alterations of Th1/Th2 ratio [10, 11]. Besides, Anti-ganglioside M1 antibodies, antineuronal antibodies and serum antinuclear antibodies have also been shown to correlate with the severity of autism. Serious maternal infections during pregnancy have also shown to increase the risk of ASD, research has shown that increased levels of IFN-y, IL-4, and IL-5 during pregnancy were a risk factor for autism.

On the other hand, environmental risk factors have been identified in epidemiological studies to include maternal fetal exposure to infectious disease, as well as exposure to antigenic and pro-inflammatory environmental factors. The incidence rates of several potential risk factors for autism including increased incidence of pediatric infectious disease, and increased obesity/ diabetes type-2 in parents of child-bearing age, correlates with observed increases in ASD incidence over the past several decades. Recent research has shown that increased maternal and paternal age, use of paracetamol are linked to increased autism risk. Although vaccinations during pregnancy have been a major concern for increased autism risk, recent research including nine CDC-funded or conducted studies have found no link between thimerosal-containing vaccines and autism, as well as no link between the measles, mumps, and rubella (MMR) vaccine and autism in children.

### **Precision Medicine in Obstetrics**

Carl P Weiner Professor, Molecular and Integrative Physiology University of Kansas School of Medicine

The phrase Precision Medicine refers to the ability to classify individuals into subpopulations that differ in either their susceptibility to a disease, the biology or prognosis of that disease, or their response to a specific treatment. As a result, preventive / therapeutic interventions may be focused on patients who are most likely to benefit for them, sparing the expense and side effects from those who will not. We focus on the plasma transcriptome based on the hypothesis it provides insight into how the genome is instructing remote cells / organs. These plasma RNAs (large and small, coding and noncoding) are typically not naked, but circulate in one of several vehicles that protect from degradation and enable targeted uptake by specific cells.

We developed an extraction method that increased the total RNA by 100-1000x that of existing commercial methods. We suggest that studying an inconsistent fraction of the plasma RNA pool must impact test accuracy and reproducibility, explaining why no plasma RNA test has been clinically validated despite a decade of effort. We then identified 297 differentially expressed plasma RNAs present by 20 weeks in woman destined for spontaneous preterm birth (sPTB)<32 weeks. We next statistically reduced the number to 86 mRNAs and 13 miRNAs and lastly narrowed the search to only 5 RNAs (PSME2, NAMPT, APOA1, APOA4 and Let 7g) that in silica interacted with 7 previously described myometrial preterm initiator genes. This 5 RNAs appeared to originate from the placenta and when overexpressed in human pregnant myometrial cells increased contraction frequency. Blocking the RNAs' downstream intracellular target blocked the effect of RNA overexpression. In a prospective cohort study, this panel of 5 RNA markers identified by 16 weeks the vast majority of women destined for either sPTB≤32 weeks (PSME2 + Let 7g, AUC 84.2%) or early onset preeclampsia (EOP) (NAMPT + APOA1, AUC 94%). Marker only prognostic accuracy at 12 weeks for sPTB≤32 weeks was similar in 1st trimester nullipara, except APOA1 replaced Let7g.

How does a plasma RNA prognostic for sPTB≤32 weeks at 12 weeks, APOA1 change at 16 weeks to prognosticate EOP? The RNA is unchanged, nor is its intracellular target likely changed. It must be that the RNA transporter, which determines the cell targeted, can change with placental development. sPTB≤32 weeks and EOP share increased smooth muscle contractility. We suggest that the change in phenotype reflects the change in transporter target from myometrial to vascular smooth muscle. Targeting the plasma RNA or its downstream target could potentially provide optimal preventative therapy – the phenotype never manifests.

We are at the dawn of precision medicine in obstetrics. The plasma transcriptome is a source of information on disease pathophysiology close to the time of origin providing the possibility of a

single, minimally invasive blood test performed as early as 11 weeks to identify more than 80% of women destined for one or more of the three most common causes of PTB ≤32 weeks: labor, rupture of membranes and EOP.

#### Fetal rotation

Hulda Hjartardóttir Landspítali University Hospital, Reykjavík, Iceland

Our knowledge of fetal head rotation during labor has mainly been based on a few radiological and clinical studies from the 1930'ies. Ultrasound methods have been shown to be more reliable than clinical methods to determine fetal head position and should therefore be applied for better understanding of the process of rotation.

Nulliparous women in spontaneous labor at term were studied from the diagnosis of the active phase of labor until delivery. Both transabdominal and transperineal methods were used to determine fetal head position at every examination. Occiput positions were marked on a clockface graph with 24 half-hour divisions and categorized into occiput anterior (OA) (≥10- and ≤2-óclock positions), left occiput transverse (>2- and <4-o'clock positions), occiput posterior (OP) (≥4- and ≤8 o'clock positions), and right occiput transverse positions (>8- and <10-o'clock positions). The patterns of fetal head rotation were described and related to the labor stages and level of fetal head station. Fetal head station was also assessed with ultrasound using measurements of head-perineum distance and angle of progression.

At the first examination the fetal head was in the OP position in 52 out of the 99 women studied. The OP position was the most common position until full dilatation of the cervix when the OA position was found in 66% of women. All the OA positions remained OA and 93% of the occiput transverse (OT) positions rotated to the OA position. Of the OP positions, 77% rotated to an OA position. In 6 cases the rotation was >180° as the fetal head rotated from an OT or OP position over the 6 o'clock position. The fetal head was not found to rotate from the OT or OP positions until below the ischial spines or at HPD ≤30mm or AoP ≥125°. The initial position of the fetal head did not seem to have an effect on the patterns of fetal head descent and was not associated with the mode of delivery.

In conclusion, the OP position is very common during the first stage of active labor and rotates spontaneously in the majority of cases. Finding an OP position should not be a cause for concern unless there is slow progress of labor. The main importance of the finding of an OP position is at full dilatation when the fetal head should have rotated to the OA position, especially when it has reached the midpelvic station.

## Medico-legal aspects of Intrapartum Fetal Heart Rate Monitoring

Sabaratnam Arulkumaran

Emeritus Professor of Obstetrics & Gynaecology, St George's University of London, Cranmer Terrace, London SW17 0RE

Electronic fetal monitoring is the recommended method of intrapartum fetal surveillance in high risk pregnancies and the cardiotocography (CTG) forms an integral part of intrapartum care on most modern labour wards. Despite the questions about its efficacy and controversy regarding increased rates of operative delivery associated with its use, continuous CTG remains the predominant method of intrapartum fetal monitoring. Although CTG is sensitive in detecting abnormalities of fetal heart rate (FHR), its specificity for detection of fetal hypoxia is low and therefore confirmatory tests such as fetal scalp blood sampling or analysis of fetal electrocardiography (ECG) become necessary. Medical negligence involves the prove of causation and liability. Causation is based on the neurological assessment of the infant and MRI findings of the brain to see whether it was due to prolonged partial hypoxia or acute profound hypoxia or due to other causes. Liability is determined by the duty of care judged by Bolam and Bolitho's principles based on the evidence of expert witnesses and the analysis by the judge. During this assessment the intrapartum CTG trace forms a central piece of documentary evidence related to adverse perinatal outcomes which are alleged to have arisen due to events that took place during the labour and/or delivery of the baby. The main reasons for litigation are not just for recovery of costs determined by injury, pain, loss and future care of a brain damaged child; but the parents also want to know what happened and why and expect the healthcare staff to be held accountable for their actions. Majority of medico-legal cases have similar problems which can be laid down to a few factors

such as - a) inability to interpret FHR trace, b) inappropriate action, c) technical aspects and d) record keeping. Not only can litigations have long-term consequences for the working lives of midwives or obstetricians, but they have been influential in changing practice trends such as rising caesarean rates. Unfortunately, obstetric

litigation with its huge costs is a growing problem and for the foreseeable future, the CTG is here to stay. The best defence against litigation is good clinical practice with adherence to evidence-based guidelines and regular mandatory training in the interpretation of CTG for all labour wards staff. There should be a mechanism for the rapid review of adverse obstetric events and dissemination of key learning points to all staff.

### Crux of prematurity prevention

Erich Saling, Jürgen Lüthje Berlin, Germany

Preterm birth continues to be a major global health and financial problem, not only in the field of obstetrics and perinatal medicine, but also for society as a whole.

About 15 million babies are born preterm worldwide each year – that is more than 10 % of all newborns.

Globally, prematurity is the leading cause of death in children under the age of 5 years. Every year, about 1 million children die due to complications caused by preterm birth.

Although vaginal dysbiosis and infections are responsible for a large proportion of late abortions and preterm births, too little attention is paid to them. It is important to prevent or to detect them as early as possible and to treat them appropriately. There are considerable shortcomings in this respect, which are mainly due to the fact that too many studies are not performed properly and therefore are not acceptable.

### Application of fetal heart navigation in diagnosis

Bowen Zhao, Ran Chen, Mingming Ma, Mei Pan, Xiaohui Peng, Yang Chen Department of Diagnostic Ultrasound and Echocardiography, Sir Run Run Shaw Hospital, Zhejiang University School of Medicine, No.3 East Qingchun Road, Hangzhou 310016, People's Republic of China

Objective: To compare the accuracy, efficiency, and consistency between experienced and less-experienced professionals using fetal navigation echocardiography.

**Methods:** In this prospective study, we enrolled 93 second- and third-trimester fetuses with conotruncal defects (CTD). One or more spatiotemporal image correlation volume data sets were collected per case. The fetuses with CTD were diagnosed by the following two groups of professionals (n = 20 in each) with different experience levels using intelligent navigation echocardiography and two-dimensional ultrasound: group A with 15 years of experience and group B with 1 year of experience. The diagnostic consistency and accuracy of the technologies between the two groups were analyzed. **Results:** Satisfactory consistency was noted in the two groups (group A,  $\tau = 0.855$ , P < 0.05, and group B,  $\tau = 0.821$ , P < 0.05), and no significant difference in accuracy ( $\chi$ 2 = 3.218, P>0.05) in using intelligent navigation echocardiography was reported between the two groups. However, there a significant difference in accuracy ( $\chi 2 = 0.021$ , P < 0.05) when using two-dimensional ultrasound was observed between the two groups.

Conclusion: Fetal Intelligent navigation echocardiography was found to be efficient and accurate for the diagnosis of CTD and good consistency existed in the experienced and less-experienced professionals.

## Amazing power of fetal brain

Asim Kurjak

Professor, Department of Obstetrics and Gynecology, Medical School University of Zagreb, Croatia Professor Emeritus, University Sarajevo School of Science and Technology, Sarajevo, Bosnia and Herzegovina One of the greatest challenges of obstetrical ultrasonography is the better understanding of fetal neurological function. Neurological problems, such as cerebral palsy, are poorly understood and often falsely attributed to intrapartum events, while for the majority of cerebral palsy cases it has been proven that the causative pathway starts long before delivery. Although several attempts have been made to define normal and abnormal fetal neurological function, and to develop a method to assess the integrity of the fetal nervous system, most are still without satisfactory sensitivity.

Fetal behavioral patterns directly reflect the developmental and maturational processes of the fetal central nervous system. It has been suggested that the assessment of fetal behavior during different periods of gestation may provide valuable information about normal and abnormal brain development, and contribute to the early diagnosis of various structural or functional neurological abnormalities. The introduction of three and four dimensional ultrasound (3D and 4D) allowed real time assessment of fetal behavior. Details of the fetal face, and especially movements of mouth, eyes (facial expressions) and fingers, have been made possible with the introduction of 4D ultrasound. KANET is the first method that attempted to use 4D ultrasound to assess and combine parameters of fetal behavior and form a scoring system that can assess the fetus in a comprehensive and systematic approach, in the same way that neonatologists perform a neurological assessment in newborns during the first days of their life in order to determine their neurological status. KANET appears to be able to identify functional characteristics of the fetus that predict normal and abnormal neurological development and hopefully future results of ongoing prospective multicentric studies will provide more information on fetal neurology in the next few years. Such information will be of great value in counseling mothers of high risk pregnancies, for example in cases with a previous child with cerebral palsy, as well as providing valuable evidence for cases of litigation.

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### Remarkable history of Ian Donald School – how did we start?

Asim Kurjak

Professor Emeritus, University Sarajevo School of Science and Technology, Sarajevo, Bosnia and Herzegovina Professor, Department of Obstetrics and Gynecology, Medical School University of Zagreb, Croatia

We live in a troubled world in which national, cultural, religious, and political differences separate people—sometimes to the point of disastrous wars. With all that mankind has achieved, it is amazing that such parochial differences continue to do so much harm. There is much that the leaders of the world can learn from the global success of the Ian Donald Inter-University School of Ultrasound.

This School is a living tribute to Ian Donald –the visionary physician who pioneered ultrasound in obstetrics and gynecology. The School is dedicated to the improvement of all aspects of perinatal and gynecologic care. The discovery of ultrasound has enabled us to see and care for the fetus as a patient as well as visualize pelvic organs noninvasively —and has therefore brought obstetric and gynecologic diagnosis out of the dark ages. It has been suggested—with very little exaggeration—that the three greatest contributions to modern obstetrics and gynecology have been ultrasound, ultrasound, and ultrasound.

Our school is based upon state-of-the-art science as well as a collegiality that transcends national, cultural, religious, and political differences. Teachers and students alike are united in our efforts to improve the care of women throughout the world. The international brotherhood and sisterhood that exists among physician leaders from over 70 of the world's

countries is a special bond that represents globalization at its best. Instructors donate their time without reimbursement as their educational efforts are truly a labor of love.

We are grateful to all of the doctors who have given so much of themselves to make the Ian Donald Inter-University School of Ultrasound a testament to the power of the human spirit to work collaboratively throughout the world for the betterment of mankind. We believe that Ian Donald is smiling down from heaven on the School that bears his name.

### Leaders in science – what is the role of IAPM

Asim Kurjak

Professor, Department of Obstetrics and Gynecology, Medical School University of Zagreb, Croatia Professor Emeritus, University Sarajevo School of Science and Technology, Sarajevo, Bosnia and Herzegovina

Our future mostly depends on a few scientific leaders, their originality, energy and authorial personality. These are the socalled mavericks, researchers who think and act independently and creatively, who take risks and if necessary are willing even to risk their own neck, who attract talent, radiate intellectual charm and energy needed for great acceleration, individuals prepared to embark on an adventure. Thanks to such individuals, science advances by huge leaps. We need such people more than millions of dollars in funding, but they're hard to win over because such rare individuals are always "hunted" by the most prestigious scientific institutions which can never have too many creative productive individuals.

Only talented individuals and groups can get us out of the current intellectual wasteland, those who see further and deeper than the numerous average individuals around them. But our government seems to be willingly implementing a brain waste strategy by ignoring the advice of top intellectuals. It is disastrous for our future that we don't seem to realize that creative intellectuals are not found "on the street", nor at the employment office nor are created by bureaucratic decrees. But an even greater problem is that we still don't realize that in the current state of desolation and intellectual fog only creative intellectuals are able to trace a clear path towards a more successful civilization and entering Europe proper.

Such individuals can only spread around themselves their own spirit; i.e. creativity, truth, analyticity and honesty, demanding from everyone around them the same standards in their actions. They will pass on the ability to differentiate important and real values for the general wellbeing from the unimportant and harmful politicking. They will inevitably create around themselves an atmosphere of labor, creativity and healthy competition, opposite contemporary political ambient of scheming, careerism and adulation.

Only true intellectuals and scientific leaders can contribute to healing the people from various viruses permanently destroying society; only they can be true light bringers of the spiritual healing of our people and our guides towards the horizons of a happier life.

## Fetal Cranial and Facial examination at 13 weeks pregnancy ... where are we now

Alaa Ebrashy Prof of Obstetrics and Gynecology Consultant in fetal medicine, Cairo university, Egypt Fetal anatomy at 13 weeks is now considered essential part in the 13 week scan.

A great progress have been achieved in studying and confirming normal fetal anatomy at this early age and hence and exclusion of major anomalies, More studies are now on going to demonstrate signs that are on test to diagnose or even predict more and more of major anomalies at this early age

We are demonstrating here the sonoembryology for the development of the cranium and face. Then we demonstrate the normal pattern and images of the cranium and face at 13 weeks pregnancy: Development of the brain and neural tube formation, timing of the neural tube closure and the consequences, brain development, structural organization of the brain, brain vesicles and brain cavities

CNSThe hall mark of the 10th week is the falx and the echogenic choroid plexus. Mid sagittal plane depicts tortous ventricular system Telencephalic vesicle leading to Diencephalon followed by the cephalic flexure between the Diencephalon and the meten cephalon ( cerebellum ) then the myelencephalon (medulla oblongata and finally the rhombencephalon (hindbrain

12th (11wk0d-11wk-6d)on words till the 14th week (13wk0d-13wk-6d): CRL= 54-87mm The ventricular system is obvious, cerebellum, cisterna magna (the posterior fossa) are seen. At this time the vermis is not completely closed. The complete development of the cerebellum will be completed at 17 weeks gestation.

What are the clinical application: It helped a lot in better understanding and following up this important stages of evolution to the full sized brain. By 11-13 weeks we are able now to document integrity of the cranium as well as proper cleavage of the fore brain. This enabled us to diagnosis anomalies involving theses parts eg anencephaly and holoprosencephaly

The dynamic growth of the brain limit the full diagnosis of abnormalities involving these areas specially the posterior fossa, However we are know able to highly suspect the presence of OSB by many related U/S signs. The future of U/S is still have its fascinating aspect in showing more and more of the secrets of the early scan and 13 weeks scan

Cavities appearing in the brain are mirror image to the embryological development of the CNS and allowed us to better understand sequential stages in development

We can jude on cranium intactness, proper cleavage cleavage of the forebrain with the appearance of the falx as well as looking at the development of the posterior fossa to diagnose open spina bifida

At 13 weeks: cranial and face anatomical check list according to the recent publication is established

Many signs are to be discussed: Intact cranium, butter fly sign, intact cranium, recognition of the brain cavities, cleavage of the forebrain and formation of the clear falxi mid line, comment on the posterior fossa, diagnosis of abnormalities like anencephaly - holoprosencephay, diagnosis of OSB and the recent signs for diagnosis of posterior fossa abnormalities

Face at 13 weeks: Orbits – nasal bone –prenasal space -retronasal triangle –intact Maxilla, face abnormalities that could be suggested at this age

**Conclusion:** Sonoembryology paved the way for more understanding of the embryological stages of the fetal organs including the CNS. Brain vesicles and ventricles embryological stages of development can be appreciated like mirror images in early TVS

## **Covid19 vaccination in pregnancy**

MARTA GARCIA SANCHEZ Quirón Malaga

The SARS-CoV2 pandemic, has generated in just one year the greatest scientific knowledge in the history of medicine. Hitherto unimaginable milestones have occurred such as the creation in just one year of vaccines with different technologies, effective for the immune stimulation of defenses against Covid19, tested and proven with regard to safety and efficacy throughout the world.

Pregnancy is a particular situation in two ways, since the health of the pregnant woman and that of the fetus, the future newborn, are involved in parallel. Until not more than 10 years ago, vaccination during pregnancy was a subject little treated due to ethical considerations and the potential risks associated with clinical trials due to fetal repercussions. Today, thanks to the strengthening of passive immunity through the feto-placental membrane or breast milk, it is known that it is possible to immunize the newborn even before birth. Furthermore, the application of new technologies such as mRNA for the development of new vaccines seems to have opened a promising new field in the world of immunology and vaccinology.

In recent months, we have gone through different recommendations regarding population vaccination in regards to different age groups, especially vulnerable, and subgroups such as pregnancy itself

During the exhibition, we will try to analyze and develop the current situation of vaccination against SARS-CoV2 during pregnancy and in lactation to review the safety profiles, the efficacy demonstrated for both the woman and the fetus with the different types of vaccines, as well as health policies in different countries in relation to Covid19 vaccination and pregnancy.

### Imaging orofacial clefts - Established and current concepts

Selvaraj Ravi Lakshmy Shri Lakshmi Clinic & Scan Centre, Krishnagiri.

The recommended minimum requirements at the midtrimester anomaly scan includes evaluation of the upper lip for possible cleft anomaly. Though identification of palatine cleft is not included in the guidelines, but once a cleft lip is detected, then an extended evaluation of the fetal face is necessary to assess cleft extension into the palate.

Further, if evaluation of the palate is confined to only those cases with labial cleft, isolated cleft of secondary palate cannot be diagnosed. This explains the very low detection rates of isolated cleft palate in antenatal ultrasound.

In a previous sibling with facial cleft and in syndromes associated with cleft palate, recurrence risk is one of the major concerns the parents and families have to confront. There is a need to incorporate evaluation of palate in the screening protocol for high risk cases.

Additional views which would help in evaluating anterior clefts of the palate would be the premaxillary triangle in coronal plane and the axial view depicting the alveolar arch. The visualised bony posterior margin of the hard palate formed by horizontal plate of the palatine bone seen in an axial view helps to evaluate the bony secondary palate.

The diagnosis of isolated CP in midtrimester relies on imaging the uvula. Though "the equal sign" for visualizing the uvula has been proposed, we are yet to arrive at a consensus of whether to include the sign in our routine protocol. Shadowing from premaxilla and the surrounding facial bones hinder visualization of the secondary palate.

Visualization of the secondary palate with the uvula in a sagittal plane is possible when the fetal neck is in slight extension and with presence of fluid in the oral cavity during fetal swallowing. Though a number of 3D techniques have been proposed to evaluate the secondary palate, the results are highly dependent on a good initial volume acquisition. So, most often failure to visualise the secondary palate in ultrasound is because of unfavorable fetal position.

The palate being flat in early gestation and as there is minimal shadowing from surrounding facial bones, it can be evaluated easily in late first trimester. The midsagittal facial profile is routinely done at the 11-14 weeks scan and all are familiar with the anatomical landmarks in this plane. The markers proposed in midsagittal section play a key role in the diagnosis of cleft palate.

As there is minimal soft tissue development at this period of gestation the bony landmarks of the palate serves better to diagnose orofacial cleft. The inclusion of either the axial and coronal views or both along with the midsagittal view helps to increase the detection rate of cleft palate in first trimester.

With the addition of newer markers like "superimposed line sign", there is more potential for earlier detection of isolated cleft of the secondary palate. Certainly multiplanar imaging in first trimester has a lot of advantages. An effective screening protocol for detecting cleft palate would evolve in future with more emphasis on its detection early in gestation.

### Fetoscopic meningomyelocele closure and neonatal outcomes

Jimmy Espinoza Department of Obstetrics and Gynecology Division of Fetal Therapy and Surgery **Fetal Center Steering Committee** Texas Children's Hospital-Pavilion for Women **Baylor College of Medicine** 

**Objective:** This study compared the neonatal outcomes in in utero meningomyelocele closure using a fetoscopic approach vs the conventional open hysterotomy approach.

Study design: This retrospective cohort study included all consecutive patients who underwent in utero meningomyelocele closure using open hysterotomy (n=44) or a fetoscopic approach (n=46) at a single institution between 2012 and 2020. The fetoscopic closure was composed of the following 3 layers: a bovine collagen patch, a myofascial layer, and a skin. The frequency of respiratory distress syndrome and a composite of other adverse neonatal outcomes, including

retinopathy of prematurity, periventricular leukomalacia, and perinatal death, were compared between the study groups. Regression analyses were performed to determine any association between the fetoscopic closure and adverse neonatal outcomes, adjusted for several confounders, including gestational age of <37 weeks at delivery.

**Results:** The fetoscopic closure was associated with a lower rate of respiratory distress syndrome than the open hysterotomy closure (11.5% [5 of 45] vs 29.5% [13 of 44]; P=.037). The proportion of neonates with a composite of other adverse neonatal outcomes in the fetoscopic group was half of that observed patients in the open hysterotomy group; however, this difference did not reach statistical significance (4.3% [2 of 46] vs 9.1% [4 of 44]; P=.429]. Here, regression analysis has demonstrated that fetoscopic meningomyelocele closure was associated with a lower risk of respiratory distress syndrome (adjusted odds ratio, 0.23; 95% confidence interval, 0.06-0.84; P=.026] than open hysterotomy closure.

**Conclusion:** In utero meningomyelocele closure using a fetoscopic approach was associated with a lower risk of respiratory distress syndrome than the conventional open hysterotomy meningomyelocele closure.

## Fetal endoscopic tracheal occlusion reduces pulmonary hypertension in severe CDH

Jimmy Espinoza Department of Obstetrics and Gynecology Division of Fetal Therapy and Surgery **Fetal Center Steering Committee** Texas Children's Hospital-Pavilion for Women **Baylor College of Medicine** 

**Objective:** This study evaluates the impact of fetal endoscopic tracheal occlusion (FETO) on the resolution of pulmonary hypertension (PH) in fetuses with isolated severe congenital diaphragmatic hernia (CDH).

Methods: We reviewed retrospectively the medical records of all fetuses evaluated for CDH between 2004 and 2017 at a single institution. Fetuses with additional major structural or chromosomal abnormalities were excluded. CDH cases were classified retrospectively into mild, moderate and severe groups based on prenatal magnetic resonance imaging indices (observed-to-expected total fetal lung volume and percentage of intrathoracic liver herniation). Presence of PH was determined based on postnatal echocardiograms. Logistic regression analyses were performed to evaluate the relationship between FETO and resolution of PH by 1 year of age adjusted for side of the CDH, use of extracorporeal membrane oxygenation (ECMO), gestational age at diagnosis, gestational age at delivery, fetal gender, sildenafil use at discharge and CDH severity. Resolution of PH by 1 year of age was compared between a cohort of fetuses with severe CDH that underwent FETO and a cohort that did not have the procedure (non-FETO). A subanalysis was performed restricting the analysis to isolated left CDH. Parametric and non-parametric tests were used for comparisons.

Results: Of 257 CDH cases evaluated, 72% (n = 184) had no major structural or chromosomal anomalies of which 58% (n = 107) met the study inclusion criteria. The FETO cohort consisted of 19 CDH cases and the non-FETO cohort (n = 88) consisted of 31 (35%) mild, 32 (36%) moderate and 25 (28%) severe CDH cases. All infants with severe CDH, regardless of whether they underwent FETO, had evidence of neonatal PH. FETO (OR, 3.57; 95% CI, 1.05-12.10; P = 0.041) and ECMO (OR, 5.01; 95% CI, 2.10–11.96; P<0.001) were independent predictors of resolution of PH by 1 year of age. A higher proportion of infants with severe CDH that underwent FETO had resolution of PH by 1 year after birth compared with infants with severe CDH in the non-FETO cohort (69% (11/16) vs. 28% (7/25); P = 0.017). Similar results were observed when the analysis was restricted to cases with left-sided CDH (PH resolution in 69% (11/16) vs 28% (5/18); P = 0.032).

Conclusion: In infants with severe CDH, FETO and ECMO are independently associated with increased resolution of PH by 1 year of age.

#### FREE COMMUNICATIONS ABSTRACTS

Presentation type: Poster

## The 2D ultrasound can evaluate the sub-pubic arch angle in two different hip flexion degrees supine positions

Name and surname: Marco Siccardi, Cristina Valle, Valentina Angius, Fiorenza Di Matteo.

Institution: "ApsDeha" Associazione di Promozione Sociale, Savona, Italy, EU. "S Paolo" Hospital Obstetric Department,

Savona, Italy, EU.

Email: docmarcosiccardi@gmail.com

**Objective:** The present study intends to verify the ability of 2D sonographic evaluation to show the SPAA change in two different bent-leg positions. Childbirth is a dynamic process of mutual adaptation between the maternal pelvis and the fetal part presented. Optimal pelvic mobility during labor contributes to the obstetric outcome quality. SPAA increases in amplitude during pregnancy, showing pelvic tissue adjustment. The sub-pubic arch angle (SPAA) evaluated with 2D and 3D sonography has been shown to predict the risk of dystocia in labor and, consequently, the anal sphincter trauma and incontinence after delivery. An MR research correlated the SPAA with the amplitude of the pelvic inlet's anteroposterior diameter and the pelvic midlet's transverse diameter. Studies with MR have shown the modification of pelvic diameters and SPAA with the change of maternal position in the degree of the hip joint flexion. A study with 3D computational reconstruction from ultrasound pubic images demonstrated changing of pubic rotation angle with maternal posture and a 1 mm difference in the pubic symphysis width from supine position to bent-leg positions.

Method: The cross-sectional pilot study involved 23 multiparous non-pregnant women. Patients with regular periods and without pelvic floor disorders were selected. The study fulfilled the Helsinki declaration. Patients gave their informed consent. SPAA was evaluated during a routine gynecological examination with a Sonosite Micromaxx ultrasound system equipped with a transabdominal convex 3-5 MHz probe. The transducer covered by a glove was positioned on the perineum. It was tilted 45 degrees to show the pubic symphysis and two symmetrical lower pubic branches, as described in the literature. The angle was measured between the pubic branches' lower edges that converge at the center of the pubic symphysis, M.S. performed the sonographic examination of the SPAA recorded in the supine position with the lower limbs extended (p1) and the lower limbs near 90° bent (p2). C.V. measured the angle value after the ultrasound session. The paired t-test satisfied the statistical analysis from p<0.05.

**Results:** The SPAA showed a straight-leg position value (mean±SD) 95.7°±9.8, and a bent-leg position value 99.8°±8.5. Mean p2-p1 difference 4.1°, SEM 1.2, and 95% CI 1.45-6.3 (p=0.004).

**Conclusion:** The absolute value of the sonographic measurement of the SPAA is greater than the MR measurements in the study by Reitter et al. (70°-74° and 75°-77°); conversely, the difference in shifting position agrees with it (difference 3°-5°). Assessment of SPAA mobility at different degrees of hip flexion is straightforward and comparable to MR studies. The 2D ultrasound is ordinarily available in every clinical setting. The sonographic evaluation of the sub-pubic arch angle range of motion could be proposed as an additional parameter for screening dystocia before or during labor.

Presentation type: Poster

## The postural changes of the Michaelis sacral area, not the static standing measures, are related to the operative delivery

Name and surname: Marco Siccardi, Cristina Valle, Fiorenza Di Matteo, Valentina Angius.

Institution: "ApsDeha" Associazione di Promozione Sociale, Savona, Italy, EU. "S. Paolo" Hospital, Department of

Obstetrics, Savona, Italy, EU.

Email: docmarcosiccardi@gmail.com

**Objective:** This retrospective study evaluates the measures and the mobility of the Michaelis area's transverse (TD) and longitudinal (LD) diameter as a screening test for operative delivery in labor. Nulliparous women are at-risk subjects of morbidity from operative deliveries, especially in healthy and economically low-resource countries. External static pelvic measurements have renewed interest from African and Asian authors, recognizing the prominent role of Michaelis sacral area's (Msa) transverse diameter as a screening test for dystocia in labor. Labor and delivery are dynamic processes, and the pelvic bones are also capable of mobility to change the birth canal's diameters. High-tech instrumental studies have been conducted to evaluate pelvic diameters' changes in shifting positions: low-tech manual methods suitable for daily clinical practice agree.

Method: The cohort studied was the third-trimester patients of the "osteopathy for pregnancy" outpatient clinic of the "S. Paolo" Hospital in Savona (Italy, EU). 513 medical records in the period between October 2016 and December 2019 were eligible for the study. 451 records fulfilled the inclusion criteria: low-risk full-term pregnancy, single fetus, in labor in our Obstetrics Department. Records were excluded for a high-risk pregnancy, planned cesarean section (CS), premature birth, twin pregnancy. Natural deliveries (ND) and operative deliveries (OD) were considered. ND: spontaneous or induced, vaginally, non-use of oxytocin for induction or in the dilating phase of labor. OD includes CS (unscheduled, after the onset of labor, all indications) and operative vaginal deliveries (pharmacological induction of labor and use of oxytocin from the dilating phase of labor, delivery performed with kiwi, forceps, or Kristeller's maneuver). The TD and the LD of MSA were evaluated from upright position (p1) to "all fours" position (p2) to kneeling squat position (p3). The fingers wearing the measurement tool firmly contacted the bone landmarks during shifting positions. Statistical analysis considered the measurements in shifting positions and the difference between p2 and p1, and p3 and p1 using paired t-test, t-test, chisquared test, relative risk (RR), curve fitting for ROC (receiver operator characteristics) curve, and the area under the curve (AUC). Considered statistically significant p 0.7.

Results: LD did not show any difference between groups but between positions. TD showed a difference between positions and between groups in p2 and p3 positions, not in standing positions. The mean p3-p1 value in the ND group was 7.4±5.8 mm and in the CD group 1.4±4.9 mm. The mean p2-p1 in the ND group was 8.4±3.8 mm, in the CD group 2.7±2.2 mm. The ability of the p2-p1 measure to differentiate ND from CD results in the AUC θ-value = 0.93 (SE 0.02; 95% CI 0.89-0.97). Considering the cut-off at 30th percentile: sensitivity 0.86, specificity 0.87, True Positive Rate 0.80 and True Negative Rate 0.98, Accuracy 0.95, False positive Rate 0.01, and RR 6.98 (95% CI 5.1-9.4) (chi-square test p < 0.0001). **Conclusion:** The pelvis's biomechanics affirms the sacrum's ability to rotate posteriorly (contra-nutation) between the

iliac bones affecting the inlet shape and widening the distance of the transverse diameter of the Michaelis sacral area. Posterior pelvic space accommodation allows the fetal head's engagement. The PSIS distance modification represents the posterior pelvis movement amplitude. The motion test is suitable to screen for dystocia, supporting the operators' assistance before labor onset.

Presentation type: Poster

## Is the sub-pubic arch angle correlated to the external pelvic diameters in supine patients shifting leg positions?

Name and surname: Marco Siccardi, Cristina Valle, Valentina Angius, Fiorenza Di Matteo.

Institution: "ApsDeha" Associazione di Promozione Sociale, Savona, Italy, EU. "S. Paolo" Hospital, Department of

Obstetrics, Savona, Italy, EU.

Email: docmarcosiccardi@gmail.com

**Objective:** This observational cross-sectional pilot study aims to correlate the SPAA, measured with 2D ultrasound in different hip joints' flexion degrees, with four significant external pelvic diameters. The pubis is a critical reference point to the second stage of labor. Research with MR has investigated pelvic diameters' biomechanics: the subpubic arch (SPAA) angle was related to the obstetric conjugate and the ischial bi-spines diameter. Recently, the Journal of Biomechanics reported a study about the 3D reconstruction of the pubic symphysis from ultrasound images showing differences

between maternal positions. The hip joint flexion's degree was associated with changes in SPAA, internal, and external pelvic diameters' width.

Method: Twelve multiparous, non-pregnant patients of childbearing age were recruited at our gynecological clinic referring to "S. Paolo" Hospital. SPAA was measured with a Micromaxx Sonosite ultrasound system equipped with a convex 3-5 MHz transabdominal transducer by positioning the 2D probe on the perineum at a 45-degree angle to show the pubic symphysis and two symmetrical lower pubic branches. The external pelvic diameters were measured with a BMK measuring instrument (Metrica, Italy) worn by the operator's fingers, who maintains contact with the bone landmarks during the position change. The SPAA and the base of Trillat's triangle (corresponding to the pelvic midlet) were evaluated in the supine position with legs extended (p1) and bent near 90° (p2). The transverse and hemi-longitudinal diameters of the sacral area of Michaelis (MSA) and the inter-tuberosities diameter (pelvic outlet) were measured from kneeling standing position (p1) to "all-fours" (P2) and kneeling squat (p3) position.

**Results:** The paired t-test showed significant difference (p = 0.05 or less) in the measurements between positions p1, p2, and p3 (mean ± SD, degrees or mm). The SPAA p1: 95.1° ± 11.5, p2: 99.9° ± 10; the base of Trillat's triangle p1: 122.5 ± 7.1, p2: 110  $\pm$  10; the transverse diameter of MSA p1: 127.8  $\pm$  8.2, p2: 132.6  $\pm$  10.5, p3: 136.9  $\pm$  9.5; the longitudinal hemi-diameter MSA p1:  $46.5 \pm 6.8$ , p2:  $62.2 \pm 12.5$ , p3:  $71.2 \pm 13.1$ ; the inter-tuberosities diameter p1:  $77 \pm 15.5$ , p2  $85.2 \pm 15.6$ , p3:  $97.2 \pm 16$ . The measurement of SPAA in bent-leg position showed a linear correlation with the longitudinal MSA hemi-diameter (p = 0.05).

**Conclusion:** The small sample of the study showed measurement differences between positions in agreement with larger samples. The longitudinal measurement of the MSA hemi-diameter behaves like a modified Shober test on the sacral promontory's flexion. The Schober test and the ultrasound measurement refer to a more targeted measurement on the bone landmark, avoiding incorporating the peri-skeletal soft tissues. Transverse external pelvic measurements consider soft tissues, which are of great importance in the physiology of joint mobility and the pelvic space during the childbirth process. Previous studies correlated the McRoberts and Gaskin maneuver's anatomical effectiveness on the sacral promontory and pelvic outlet: our study shows the linear correlation in bent-leg position between the SPAA and the longitudinal hemi-diameter of MSA. The non-correlation with other diameters suggests that the pelvis's soft tissues play an important role in external pelvic measurement.

Presentation type: Poster

## Confirming the role of conventional combined biochemical prenatal screening in first trimester for detection of genetically affected fetuses

Name and surname: Elena Gjorgievska Nikolovska, Aleksandra Boshku, Iskra Dukova Institution: University Clinic for obstetrics and gynecology Skopje, Macedonia

Email: nikolovska\_eli@yahoo.com

**Objective:** First trimester screening is combined test with two phases: first is ultrasound exam of the fetus, with measuring his crown ramp length and nuchal fold (the size of the clear space in the tissue at the back of the fetuses neck and second faze - blood test for measuring two pregnancy associated substances like pregnancy-associated plasma protein-A (PAPP-A) and human chorionic gonadotropin (HCG). This screening is giving early information about baby's risk of certain chromosomal conditions, specifically, Down syndrome (trisomy 21) and extra sequences of chromosome 18 (trisomy 18) and Trisomy 13. It is performed between 11 and 14th gestational week, which gives enough time for performing further diagnostic tests, management of the pregnancy and medical treatment.

**Method:** We are presenting the case of 29 years old, primigravida, with regular menstrual cycle of 28-30 days, with duration of 5-6 days. First ultrasound exam was performed in 6th gestational week, when gestational sac was with regular form and the fetus was visible with positive hearth rate. Next examination was performed in 10th gestational week, with CRL which wasn't in the adequate standard measurement for the given week of gestation. Next examination was after two weeks, when the CRL was with three weeks growth restriction, and was indicated first trimester prenatal risk evaluation,

using PRISCA software 5.0.3.1. With result for risk for Trisomy 13/18 with nuchal translucency >1:50, both biochemical parameters PAPP-A and free BHCG were low, and there adequate Corr. MoM were lower than 0,15. This indicated further genetic testing, which the patient decided to be chorionic villus sampling. The result from the genetic testing was Abnormal karyotype of a male fetus with 69 chromosomes, with additional pair of chromosomes (23), resulting in triploidy.

**Results:** The final decision for this pregnancy was terminating with standard procedure of surgical abortion.

Conclusion: Most countries worldwide support non-invasive double examination as ultrasound and biochemical serum test for detection of chromosomal abnormalities with accuracy of 97-98 %. Cell free DNA test have been introduced lately for detection of chromosomal abnormalities with accuracy of 99%, but with 100 folds higher price, which is unaffordable for everyone, and also high price of this test makes him unsittable for mass screening. Our case report shows that even rare cases of genetically affected fetuses can be adequately detected with conventional combined biochemical prenatal screening, and their relatively low price makes this type of screening suitable for mass population screening.

Presentation type: Poster

## Maternal serum pentraxin-3 levels in gestational diabetes: a comparative study

Name and surname: Burcu ARTUNC-ULKUMEN\*, Halil Gursoy PALA\*\*, Sırrı CAM\*\*\*

help to identify the etiopathogenetic changes in GDM patients.

Institution: \*Celal Bayar University, School of Medicine, Department of Obstetrics and Gynecology, Manisa, \*\*University of Health Sciences, Tepecik Training and Research Hospital, Department of Obstetrics and Gynecology, Division of Perinatology, İzmir, \*\*\*Celal Bayar University, School of Medicine, Department of Genetics, Manisa Email: gursoypala@yahoo.com

**Objective:** Gestational Diabetes (GDM) is characterised with any degree of insulin resistance resulting in malfunctioning glucose metabolism during pregnancy. GDM is characterised by subacute/chronic inflammation. Pentraxin-3 (PTX3) is recently recognised for its unique properties associated with vasculitis, inflammation, cardiovascular diseases. We hypothesised that the alteration of PTX3 expression should cause changes in maternal serum levels which further could

**Method:** This prospective case-control study is consisted of 30 pregnancies with GDM and 30 healthy singleton pregnancies matched for matenal age, gestational week and maternal weight. GDM diagnosis was made with 2 hour 75 g OGTT. PTX3 levels were compared between groups.

Results: Pentraxin-3 levels were 1.93±0.45 ng/mL in GDM group and 2.73±2.92 ng/mL in control group (p=0.025). PTX3 levels were inversely and significanty related with blood glucose levels. Obesity caused PTX3 levels to decrease. PTX3 levels were not affected by gestational week and maternal age.

**Conclusion:** PTX3 levels were significantly lower in GDM pregnancies. This may help to understand the mechanism the GDM pathogenesis. For the near future, we suggest that decreased levels of PTX3 levels may be a marker of subsequent adverse cardiovascular and metabolic process in these patients.

Presentation type: Poster

### Pregnancy complicated with serous cystadenoma - case report

Name and surname: Elena Gjorgievska Nikolovska, Ivo Kaev, N. Shabani Islami, A. Shabani

Institution: University Clinic for obstetrics and gynecology, Skopje, Macedonia

Email: nikolovska\_eli@yahoo.com

**Objective:** Adnexal masses during pregnancy are not uncommon. Approximately 0.05 to 2.4 percent of pregnan-cies are complicated by an adnexal mass, and approximately 1 to 6 percent of these masses are malig-nant. The etiologies of ovarian masses are reflective of the patient's age; and therefore, benign entities such as functional ovarian cysts, benign cystic teratomas, and serous cystadenomas predominate. The diagnosis is established by the characteristic history presenting complaints, examination findings and it is confirmed by ultrasound.

Method: Our case report is about 19-year-old primigravida who came in our hospital; for management and treat-ment of the pregnancy when she was 29+5 weeks' period of gestation. She presented with complaints of disproportionate abdominal distension, discomfort, abdominal pain and breathing difficulties. Uterus corresponded to the gestational age with single live intrauterine pregnancy of 29+5 gw /EFW 1305+-176gr/ with adequate amniotic fluid and posterior placenta was also seen. Abdominal sonography showed a large anechoic cystic mass, with dimensions 110x90mm, in the area of the right ovary and right uterine tube. Cervix length was 30 mm, measured with transvaginal ultrasound. Tumor markers consisting of carcinoembryonic antigen (CEA) and cancer antigen -125 (CA-125), were within normal values. Regular checkup were taken within a month. She was hospitalized in our Gynecology and ob-stetric clinic in Skopje when she became 39+5 gw pregnant, cesarean section and surgical intervention was indicated. The surgery was performed under spinal anesthesia and a transversal incision sec Pfanenstiel was made in abdomen. Laparotomy revealed a giant cystic mass with diameter 12x10 cm fixed to right uterine tube. It originated from the right ovary. Ascites and peritoneal seeding were ob-served and then 20ml of abdominal exudate for cytopathology examination was aspirated. The patient gave birth with cesarean section to a healthy newborn female weighing 3200 g with APGAR score 9/10. After the delivery of the baby, extirpation of the cystic mass on the right side, right salpingectomy and right ovarian partial resection with preservation of normal ovarian tissue were performed.

Results: The material was sent for histopathology analysis, and the result confirmed cystadenoma mucinous cyst of right ovary. Patient's post-operative period and early puerperium stage were uneventful. The patient was released from the hospital in the 4th post- op day. She was feeling subjectively well and stable. The lab results and the vital parameters were within the normal reference values.

**Conclusion:** Treatment of adnexal masses during pregnancy is complicated and difficult, because there should be considered wellbeing of the mother and the fetus. This decision depends on the type of cyst considered after examination, ultrasound examination, laboratory finding and clinical condition of the patient and the pregnancy. Surgery during pregnancy carries possibilities of complications intraopera-tive, and especially postoperative, increasing the risk of premature rupture of membranes and preterm delivery. That's why multidisciplinary approach of diagnosis and treatment is always a solution in this case of complicated pregnancy.

Presentation type: Poster

## Difficulties in the nutritional recovery of the newborn with digestive malformations

Name and surname: Timea Brandibur<sup>1</sup>, Aniko Maria Manea<sup>1</sup>, Daniela Cioboata<sup>2</sup>, Nicoleta Lungu<sup>1</sup>, Florina Doandes<sup>1</sup>, Mariana Boia<sup>1</sup>

Institution: 1. "Victor Babes" University of Medicine and Pharmacy Timișoara - Childcare-Neonatology Department 2. "Louis Turcanu" Emergency Clinical Hospital for Children Timisoara – Neonatology-Premature Clinic Email: timea\_brandibur@yahoo.com

**Objective:** We analyzed the following parameters: weight at admission and discharge, duration of hospitalization, postoperator diagnosis, type of milk administrated, number of days of parenteral feeding and digestive tolerance.

**Method:** This was a retrospective clinical study, for a period of 36 month (January 2018 to December 2020) in wich we introduced all newborns hospitalized in the Neonatology -Premature Section of the Emergency Clinical Hospital for Children Timisoara with the diagnosis of malformation of the digestive tract.

Results: Twenty six newborns with complete data were identified. Three (11,5%) had congenital pyloric stenosis, 5 (19,2%) had esophageal atresia with or without fistula, intestinal obstruction was 13 (50%) (duodenum, ileum), 3 (11,5%) cases of ulceronecrotic enterocolitis, and 2 (7,6%) cases of anorectal malformations. There were 2 other associated malformations. The sex ratio was: 19 males, 7 females newborns. During postoperative follow-up, abdominal distention was the most common observation, followed by repeated vomiting. Accelerated intestinal transit (12-15 stools/day) was present in 15,3% of patients; undulating weight curve in 26,9%; failure to thrive in 7,6% of patients. Macro and micronutrients must be guaranteed through the parenteral route when enteral nutrition is insufficient to meet required intakes. **Conclusion:** Early enteral feeding in neonates with congenital gastrointestinal malformation is safe. Lactose is the primary carbohydrate, providing about 40% of energies in infants fed matur human milk or a standard formula. Rapid growth during the postoperative period is sustained by the highest rate of protein and the lipid dose was increased to 4 g/kg/d. Protein intake was 2.5 g/kg/day for term infants 3.5 g /kg/day for preterm LBW and 4.5 g/kg/day for VLBW and ELBW infants. The milk used was breast milk 19,2% and special preterm formulas, respectively extensively hydrolyzed formulas for term newborns. Nutrient intakes must be adapted according to the newborn"s nutritional requirements. Hospital discharge home was scheduled when full feeds were tolerated without any other complications.

Presentation type: Poster

## Comparative study of intrathecal tramadol vs morphine after cesarean section what is the fetal outcome

Name and surname: matouk mohamed Institution: eph kouba, algeries, algeria

Email: matouk99@hotmail.com

**Objective:** Spinal anesthesia is the anesthetic technique of choice for cesarean section. Several adjuvants are used to reduce the intensity of the sympathetic block and improve the duration of analgesia. PURPOSE: To compare the intrathecal effects of tramadol versus morphine in terms of side effects and duration of analgesia.

Method: 56 parturients, ASA I or II, randomized, scheduled caesarean or delayed emergency after informed consent criteria for non-inclusion: counter indications for spinal anesthesia and urgent caesarean section spinal: Group M (n = 27): 10 mg bupivacaine isobaric at 0.5% + 12.5 μg Fentanyl + 100 μg morphine. Group T (n = 27): 10 mg bupivacaine 0.5% isobaric + 12.5µg Fentanyl + 20mg Tramadol Pre-filling 15 ml / kg of saline Regular evaluation in per and postoperative: hemodynamic and respiratory parameters (BP, HR, RR, SPO2) side effects: nausea, vomiting, pruritus, thrill, sedation score, respiratory depression Postoperative pain: EVA at HO3, 06, 12, 24, 36 the time of first request of morphine bolus and the cumulative dose of morphine / the 24 hours postoperative the delay of the resumption of the transit multimodal analgesia: paracetamol 01g / 06h in IV diclofenac 100mg / day in IM

Results: Both groups were similar in age, ASA, BMI, program / delayed urgency more Nausea and vomiting in morphine group p = 0.0007 more pruritus in tramadol Group p = 0.03 the analgesia was similar in the two groups

**Conclusion:** Intrathecal tramadol had the same analgesic effect as morphine for caesarean section, but the increased incidence of nausea and vomiting limited its use

Presentation type: Poster

### Obstetrical forceps delivery: is it still a valid option?

Name and surname: Tiago Meneses, Ana Almeida, Inês Sousa, Andrea Lebre, Jorge Braga

Institution: 1.Obstetrics Department, Centro Materno Infantil do Norte, Centro Hospitalar Universitário do Porto,

Portugal; 2. Instituto de Ciências Biomédicas Abel Salazar – ICBAS, Universidade do Porto, Portugal

Email: tiagomenesesalves@gmail.com

**Objective:** Forceps and vacuum extractors have low risk of complications, are a reasonable option when an operative intervention to complete labor is necessary and can avoid a cesarean birth and its short- and long-term morbidities. However, despite associated with a higher success rate than vacuum extraction, the number of forceps deliveries is globally decreasing. The aim of this study was to determine relevance of operative vaginal delivery with forceps in daily obstetrics practice

**Method:** This descriptive retrospective study examined all deliveries where obstetrical forceps were used at Centro Materno-Infantil do Norte, from January 2019 to December 2020. The principal parameters registered were: indications for instrumental delivery, operator (assistant or resident), maternal and neonatal complications.

**Results:** During the time interval which this study was realized, there were 6825 total deliveries, 151 (2,2%) of which were accomplished with forceps. In 150 cases (99,3%) Simpson forceps was applied and inadequate progress was the main reason (54,0%). Approximately 55.0% of these deliveries were performed by residents. There were 7 (4,6%) maternal (mostly third-degree perineal tears) and 7 (4,6%) major newborn complications (clavicle fracture was found in 4 cases), where less than half of these traumas happened in deliveries with residents. A success rate of 100% was observed when forceps was the first instrument of choice.

**Conclusion:** The high success rates verified support the importance of this instrument in the current obstetric practice and the teaching of its technique in residency programs.

Presentation type: Poster

## Resolving nuchal edema in euploid fetus- Prenatal sonographic clues for **Noonan's Syndrome**

Name and surname: Tina Verma, SS Doda

Institution: Dr. Doda's Diagnostics and healthcare, 23-B, PUSA road, New Delhi, India

Email: drtinaverma@gmail.com

**Objective:** Increased Nuchal Translucency (NT) above 95th centile merits evaluation. The risk of chromosomal abnormality when NT is 95th-99th centile is 3.7%, while with NT between 5.5 to 6.4 it is 50.5%. We present a peculiar case of increased nuchal translucency (6.4 mm) with normal karyotype and CMA who presented to us with resolving Nuchal edema. Subtle radiological clues such as webbing of neck (due to redundant nuchal skin) on 3D imaging (around 17 weeks) helped us in establishing a diagnosis of Noonan's syndrome.

Method: G3P1L1A1, 38 year old Doctor couple came to us for early pregnancy scan on self referral. She had a history of previous increased NT for which she underwent termination of pregnancy without any genetic evaluation. For her current pregnancy, she was offered first trimester screening and early anatomical survey at 11-13+6 weeks. Ultrasound was done on E8 BT15 GE Voluson machine using 2D/3D probes following the ISUOG guidelines on performance of first trimester fetal ultrasound scan.

**Results:** At CRL 70.9mm corresponding to 13 weeks, her nuchal translucency was 6.4 mm with internal septations and cystic areas. Ductus venosus showed reversal in 'a' wave while there was no evidence of tricuspid regurgitation. Nasal bone was present. She was advised genetic counselling, invasive testing and follow up at 16 weeks. Her karyotype and chromosomal microarray (CMA) did not show any abnormality. The couple reported at 17 weeks of gestation for a routine ultrasound examination. Nuchal Fold appeared normal indicating resolution of first trimester increased NT. Fetal echo was done which failed to reveal any gross structural abnormality. On further 3D-ultrasonographic examination, there was appearance of webbing of neck suggestive of redundant neck skin. A radiologic diagnosis of Noonan syndrome was kept and next generation sequencing (NGS) was advised for genetic confirmation. NGS revealed a compound heterozygous variation in LZTR1 gene consistent with the diagnosis of Noonan syndrome. Noonan syndrome is known to be associated with increased NT and major radiological abnormalities in second trimester. The index case was peculiar as the NT resolved and sonography could not reveal any major defect. However, recurrent increased NT with an unyielding cytogenetic evaluation made us suspicious about a monogenic disorder. A dedicated ultrasonographic search for subtle radiological pointers (in our case, webbing of neck) provided early clue towards the final diagnosis.

Conclusion: In cases of recurrent, increased but resolving NT with normal cytogenetic testing, a high index of suspicion should be kept for monogenic disorders such as Noonan syndrome. Detailed ultrasonographic evaluation may be highly rewarding. Search for subtle clues such as webbing of neck along with resolving NT may point towards a specific diagnosis and help in planning targeted molecular testing.

Presentation type: Poster

### Neonatal seizures - etiologic and long-term prognostic factors

Name and surname: Florina Marinela Doandes, Aniko Manea, Daniela Cioboata, Nicoleta Lungu, Timea Brandibur, Marioara Boia

Institution: University of Medicine and Pharmacy "Victor Babes" Timisoara, Romania; "Louis Turcanu" Emergency

Children's Hospital Timisoara, Romania Email: florina\_doandes@yahoo.com

Objective: Seizures are more common in the neonatal period than in any other time of life. Neonatal seizures (NS) are associated with neurological sequelae including cerebral palsy, epilepsy or developmental delay. The aim of the study is to discover the risk factors and the etiological factors of NS, affecting long-term neurological outcome of this patients.

**Method:** We enrolled in the study newborns with NS hospitalized in the Neonatology and Preterm Department of the Emergency Hospital for Children "Louis Turcanu" in Timisoara, for a period of 2 years. Patients were followed in evolution after discharge from the neonatology department and neurologically evaluated after the age of 1 year.

Results: The study included 62 patients with NS, 22 (35.4%) females and 40 (64.5%) males, 41 (66.1%) full-term newborns (gestational age ≥37 weeks), and 21 (33.8%) preterm newborns, with gestational age between 24-37 weeks. The main etiological factor of NS was perinatal asphyxia (58%), followed by intracranial hemorrhage (17%). Strong prognostic factors in neurologic outcome were: etiology, need for resuscitation at birth and mechanical ventilation, electroencephalographic pattern of 'burst suppression' and status epilepticus, poor response to antiepileptic treatment. During follow-up, global developmental delay was the most common neurological disorder (51.6%). 25.8% of patients developed cerebral palsy and 27.4% epilepsy, without correlation with gestational age or birth weight.

**Conclusion:** Neonatal seizures remain a major cause of long-term neurological sequelae. Perinatal asphyxia is the most common etiology of NS and an important long-term prognostic factor, together with abnormal background EEG activity, resistance to antiepileptic drugs and need for resuscitation at birth.

Presentation type: Poster

## Skeletal Dysplasia associated to a likely pathogenic variant in the FGFR3 gene. Case report

Name and surname: Camilo Torres, Clara Alvarado, Diana Alfonso, Marco Duque

Institution: Clínica del Country - Clínica La Colina, Bogotá - Colombia

Email: gctorresch@hotmail.com

**Objective:** To describe the ultrasound findings and its genetic and postnatal correlation in a case of a lethal skeletal dysplasia and to highlight the importance of complementary molecular genetic studies when there is a normal caryotipe but abnormal ultrasound findings that lead the clinical suspicion.

**Method:** A 30 vo. primigravida without medical history who went to her 11-13.6 weeks ultrasound that revealed an abnormal nuchal translucency, absent fetal nasal bone and frontal bossing. At 15,4 weeks an amniocentesis was performed but the FISH and the SNP microarrays were reported as normal. The second trimester ultrasound at 17 weeks showed short limbs with curved femur, severe decreased thoracic circumference and frontal bossing with a midfacial

**Results:** As ultrasound findings suggests a lethal skeletal dysplasia, a skeletal dysplasia panel was made that revealed NM\_001163213.1:c. 1954A>G, NP\_001156685.1:pLys652Glu, het, rs78311289, MAF < 0.01 as a variant in the FGFR3 gene which according with ACMG criteria is considered as likely pathogenic. The couple underwent to a voluntary interruption of pregnancy when prenatal findings were confirmed.

Conclusion: Molecular biology techniques as arrays or DNA sequencing allows the identification of pathogenic variants or likely pathogenic variants. Those are important tools to explain individual pathological fenotypes, guide de clinical assesment and genetic counseling to the couple.

Presentation type: Poster

## Comparison of maternal and neonatal outcomes in patients with early and late pre-eclampsia

Name and surname: González Alcántara MM, Pinski C, Waisman R, Ortí J, Grand B, Voto LS. Institution: OBGYN DEPARTMENT-JUAN A FERNANDEZ HOSPITAL-UNIVERSITY OF BUENOS AIRES-ARGENTINA Email: lvoto@intramed.net

**Objective:** to compare maternal and neonatal outcomes in patients with early and late preeclampsia

**Method:** It is a retrospective, longitudinal and descriptive study of pregnant patients who were entered in our hospital with a diagnosis of early and late pre-eclampsia between October 2018 and December 2019. Twenty patients with early pre-eclampsia and another 20 patients with late pre-eclampsia were successively included during the same period.

**Results:** There were no significant differences between the two groups in mean maternal age, parity, or weight gain during pregnancy. There were also no significant differences in the caesarean section rate (95% versus 70% in the lateonset group). Regarding maternal outcomes, although the differences were not significant, a greater number of patients had thrombocytopenia was observed in the early-onset group (50% vs 35% patients, p 0.5), developed HELLP and were admitted to the ICU (30% vs 10%, p 0.23). The main differences were observed in neonatal outcomes: the early-onset group had a higher number of perinatal deaths, although this difference was not significant (3 vs 0, p 0.22). However significant differences were observed between early vs late onset groups in the percentage of oligoamnios (40% vs 5%, p 0.02), a higher IUGR rate (85% vs 15%, p 0, 00001) and higher admission rate to NICU (100% versus 30%, p 0.00001). **Conclusion:** In our environment, hypertensive disorders of pregnancy are a very important cause of maternal mortality, thus we must intensify efforts for their better knowledge, prevention and management. Our results are consistent with the reported in the literature: early pre-eclampsia, which occurs less frequently, is associated with poorer maternal and perinatal outcomes. The discussion as to whether they are two evolutionary stages of the same disease, or two pathophysiologically different entities is still open and demands further research.

Presentation type: Poster

### Effects of pasteurization on macronutrients' content of donor human milk

Name and surname: M. Lithoxopoulou1, D. Rallis1, A. Karagiozi2, C. Tsakalidis1, E. Babacheva1, IL.Chatzioannidis1, E. Hatzitoliou1, E. Diamanti1

Institution: 1Papageorgiou Hospital, NICU, Thessaloniki, Greece, 2Papageorgiou Hospital, Donor Milk Bank, Thessaloniki, Greece

Email: mlithoxopoulou@yahoo.com

**Objective:** Human milk is the best choice for neonatal feeding, especially in preterm infants. In cases when maternal human milk is not available, donor human milk remains the best alternative. Pasteurization is essential for inactivating pathogens in donor human milk; however, the concentration of macronutrients and energy of donor human milk could be influenced by routine pasteurization procedures. Several studies have been performed to investigate the effects of HoP on the macronutrients of Donor Human Milk. The aim of this study was to analyze the effect of pasteurization of donor milk on the macronutrients (fat, protein, and carbohydrate) concentration and energy content.

**Method:** The samples of donor milk were collected and studied before and after pasteurization. Protein, carbohydrate, lipids (g/100 ml) and energy (kcal/100 ml) were evaluated using mid-infrared spectroscopy. Overall, 30 samples of donor milk were tested. Descriptive data were reported as the means and standard deviations (mean ± SD). Macronutrient content before and after pasteurization were compared using paired t-tests. Variations in macronutrients were also calculated as percent decreases (the ratio between the difference in macronutrients before and after pasteurization and the value of macronutrients before pasteurization). Statistical analysis was performed with SPSS 25.0.

**Results:** With the exception of carbohydrate, we could not find any significant difference between pre and post pasteurization macronutrients' content: fat was calculated at 3.85±1.1 in comparison to 3.79±0.8 (p=0.701), carbohydrate  $7.69\pm0.6$  in comparison to  $8.2\pm0.3$  (p<0.001), crude protein  $1.42\pm0.4$  in comparison to  $1.31\pm0.3$  (p=0.314), true protein 1.1±0.3 in comparison to 1.05±0.2 (p=0.346), and energy at 72.6±11.2 in comparison to 73.7±9.3 (p=0.483) The median reduction in fat was -0.01 (-0.35, 0.88), crude protein -0.07 (-0.40, 1.24), true protein -0.05 (-0.42, 1.31), whereas the median increase in carbohydrate was 0.06 (-0.07, 0.27) and energy 0.03 (-0.22, 0.23).

Conclusion: Our findings suggested that pasteurization had no significant effect on fat, protein and energy content; however, we found a significant increase in carbohydrate after donor milk pasteurization. Clinicians should be aware of potential effects of pasteurization on human milk in order to optimize neonatal feeding.

Presentation type: Poster

# A retrospective cohort study of feto-maternal morbidity derived from in vitro fertilization (IVF) gestations compare to spontaneous gestations

Name and surname: Eva Felipe Pardo Institution: Hospital 12 de Octubre Email: evafelipep@gmail.com

**Objective:** To evaluate if IVF-gestations present a higher risk of developing placental insufficiency (PI) compare to non-IVF gestations and to determine if IVF might be a risk factor ischemic placental disease (IPD).

Method: We performed a retrospective cohort study in our tertiary-care hospital including all pregnancies, 3982, that resulted in a live born infant or an intrauterine fetal demise (IUFD) greater than 20 weeks of gestation, occurred during 2019. Primary outcomes included fetal malformations and IPD considered globally but also its components individually (develop of preeclampsia, placental abruption, small for gestational age (SGA) and IUFD duo to PI). As secondary

outcome we stratified our analyses by gestational age according to the exact moment in which this PI was diagnosed (preterm<37 or at term≥37weeks) to evaluate if IVF might be associated with an earlier development of IPD. T-student and X2 test were used to analyze quantitative and categorical variables respectively. We used regression analyses to estimate risk ratios (RR) and 95% confidence intervals (CIs) results were adjusted by maternal age, parity and type of pregnancy (singleton or multiple). Different comparisons were performed: 1)among the total

**Results:** Of the 3982 deliveries during the study period, 247(6.2%) were conceived with IVF. The incidence of preterm delivery was 18.6% in IVF pregnancies and 9.8% in non-IVF pregnancies. Multiple gestations were more common in IVF pregnancies. We found no significant difference between IFV Vs. non-IVF regarding fetal malformations when the analysis was restricted to singleton pregnancies (6.2%Vs.4.6% p0,304). Multiple gestation was by itself a risk factor for malformations, preterm delivery and IPD, when compare to singleton pregnancies, regardless the type of conception. Compared to non-IVF, IVF pregnancies were more likely to develop both preterm and term IPD, after adjustment for confounding factors and when restricting for singleton pregnancies. The risk of IPD was 3.1 times higher (95% CI, 2.1–4.7) in patients who underwent IVF compared with those non-IVF. This risk remains high for each component of IPD. We observed that IVF pregnancies imply a greater risk of pre-eclampsia (aRR 2.8 IC95% (1.6-5.2)), severe

**Conclusion:** IFV has a higher risk of multiple gestation. IVF pregnancies have an increased risk of preterm birth. conception by IVF implies a higher risk of IPD and its components, especially in the preterm period. The association between IVF and IPD is stronger in preterm pregnancies. Diagnosis and termination of pregnancy due to pre-eclampsia is advanced 2 weeks in singleton IVF gestations probably related to a more severe placental insufficiency. Adverse outcomes found in multiple gestations are independent of the type of conception. The results suggest that IVF might be a risk factor for placental insufficiency.

Presentation type: Poster

## Perinatal results on attempted vaginal delivery in non-cephalic second twin

Name and surname: Inmaculada Mejía Jiménez, Elisa Serna Crespo, Laura González Calvo, Laura Forcén Acebal, Alberto Galindo Izquierdo

Institution: Hospital 12 de Octubre, Madrid.

Email: mejia.inma@gmail.com

**Objective:** Twin birth is associated with a higher adverse effect rate than singleton pregnancies. The management of second non cephalic twin is difficult to choose. There are 2 possible birth routes: planned cesarean section (c-section) versus attempted vaginal delivery. The objective of this study is to describe perinatal results among a cohort of noncephalic second twin pregnancies in which vaginal birth was attempted.

**Method:** A retrospective observational study was conducted among a cohort of second non-cephalic twin pregnancies in a tertiary Spanish Hospital between January 2017 and September 2020. The inclusion criteria were: diamniotic twin pregnancies, gestational age over 32 weeks, estimated fetal weigh above 1500 grams, cephalic first twin, alive fetuses, absence of specific c-section reason other than fetal position. The variables described were: maternal characteristics (mean age, parity, body mass index (BMI), pregnancy issues (chronicity, gestational age at delivery, mean first and second twin weigh, type of delivery of first twin, type of delivery of second twin), perinatal results (mean pH value, low APGAR test scores at 5 minutes, intensive care unit (ICU) admission rate). Statistical analysis was conducted with SPSS program. Quantitative variables were presented as mean ± standard deviation and qualitative variables were presented as a percentage.

**Results:** 40 pregnancies met the inclusion criteria. Of them, one was discarded for absence of data. Mean maternal age was 34.49±0.8 years, 20(52.6%) patients were primiparous, 18 (47%) had at least one previous vaginal birth and 6 (18.5%) had one previous c-section. Mean BMI was 25.5±0.7 kg/m2. We recorded 10 (25.6%) monochorial and 29 (74.4%) bichorial pregnancies. Mean gestational age at delivery was 38 weeks  $\pm$  9 days. The onset of labour was spontaneous in 13 (34.2%)

cases, 10 (26.3%) patients needed cervix ripening and 15 (39.5%) needed oxytocin stimulation. 9 (23.1%) c-section were performed for both twins, 24 (61.5%) vaginal births for both twins were attended and 15 (35.9%) c-sections were performed only in the second twin (after a first twin vaginal birth). Mean weight was 2553±0.1 grams and 2483±0.1 grams for first and second baby. Mean pH value was 7.29±0.01 and 7.26±0.02 for first and second twin. Low APGAR test score (≤7 at 5 minutes) was recorded in 4 (5.1%) first newborns and 1(2.6%) second newborn. 4 (5.3%) first newborns needed ICU admission compared with 5 (6.7%) second twins. No neonatal deaths were recorded.

**Conclusion:** Vaginal attempt birth in non-cephalic second twin pregnancies seem to be a safe practice. In our selected cohort, 61.5% vaginal deliveries for both babies were recorded. No perinatal deaths or severe fetal damage was observed.

Presentation type: Poster

### Morbidity among non-cephalic second twin: comparison between programmed cesarean section and attempted vaginal birth

Name and surname: Laura Forcén Acebal, Laura González Calvo, Elisa Serna Crespo, Inmaculada Mejía Jiménez, Alberto

Galindo Izquierdo

Institution: Hospital 12 de Octubre, Madrid.

Email: mejia.inma@gmail.com

**Objective:** Twin birth is associated with a higher adverse effect rate than singleton pregnancies. The management of second non cephalic twin is difficult to choose. There are 2 possible birth routes: planned cesarean section (c-section) versus attempted vaginal delivery. The objective of this study is to compare perinatal results in two different groups according to delivery route in non-cephalic second twin pregnancies: planned c-section and attempted vaginal delivery. Method: A retrospective observational case-control study was conducted among the non-cephalic second twin pregnancies in a tertiary Spanish Hospital between January 2015 and September 2020. 2 groups were considered attending to delivery route: planned c-section and attempted vaginal delivery. The inclusion criteria were: diamniotic twin pregnancies, gestational age over 32 weeks, estimated fetal weigh above 1500 grams, cephalic firs twin, non-cephalic second twin, alive twins, absence of specific c-section reason other than fetal position. The variables described were: maternal characteristics (mean age, parity, body mass index (BMI), pregnancy issues (chronicity, gestational age at delivery, mean first and second twin weigh, type of delivery of first twin, type of delivery of second twin), perinatal results (mean pH value, low APGAR test scores at 5 minutes, intensive care unit (ICU) admission rate, postpartum haemorrhage). Statistical analysis was conducted with SPSS program. Quantitative variables were presented as mean ± standard deviation and qualitative variables were presented as a percentage. T-Student test was used for mean comparison and Chi square test was used for percentage comparison in qualitative variables.

Results: 89 twin pregnancies met inclusion criteria. 50 (56.1%) planned c-section were performed and in 39 (43.9%) a vaginal birth was attempted. Both groups were comparable in terms of maternal age, BMI, gestational age at delivery, chorionicity and parity. No differences on neonatal weigh between both groups were detected (2540±0.01 and 2553±0.01 grams in first twin versus 2496±0.01 and 2483±0.01 in second twin). No differences in arterial pH value were detected between both groups  $(7.28\pm0.01 \text{ vs } 7.27\pm0.01 \text{ in the first twin } (p=0.268), \text{ and } 7.27\pm0.01 \text{ vs } 7.24\pm0.02 \text{ in the second twin } (p=0.198)).$  Low APGAR test scores (≤7 at 5 minutes) were recorded in the c-section group in 2 (3.8%) first newborns and 1 (1.9%) second newborn. Low APGAR test scores at 5 minutes were recorded in the attempted vaginal birth group in 2 (5.1%) first newborns and 2 (2.6%) second newborns. The admission to ICU in c-section and attempted vaginal birth groups was 5 (5%) and 4 (5.3%) for the first newborn and 8 (8%) and 5 (6.7%) for the second newborn. No perinatal death was recorded in any group. Puerperal hemorrhage was recorded in 3 (6%) patients in c-section group and 4 (10%) in vaginal birth attempt group.

Conclusion: No differences were detected in perinatal results between c-section and attempted vaginal birth in noncephalic second twin pregnancies. It seems a reasonable option to offer the patient a vaginal birth in a cephalic/noncephalic twin pregnancy.

#### Macrohematuria due to SARS-CoV-2 infection in pregnant patient

Name and surname: Vesna Livrinova, Rina Purrini

Institution: 1. University Clinic for Obstetrics and Gynecology, Skopje, Macedonia

Email: livrinovii@yahoo.com

**Objective:** The COVID19 infection in the pregnant population signifies a specific issue with not yet enough research. Based on data, pregnant women infected with COVID-19 are at a higher risk of a more complicated disease outcome rather than nonpregnant women. Comorbidity factors for a complex COVID-19 disease in pregnant women are age, high body mass index, preexistent diabetes or hypertension. Although SARS-CoV-2 is described as a respiratory virus, it has been shown to have multiorgan involvement as well. Around 1 out of 3 hospitalized COVID-19 patients presented with signs of acute kidney insufficiency without having any previous kidney pathology. In general, based on kidney biopsies the damage includes acute glomerulonephritis and acute tubular injury. Based on a retrospective cohort study, there is a high incidence of AKI in patients with COVID-19 that was associated with a 3-fold higher odds of death than COVID-19 without AKI and a 4-fold higher odds of death than AKI due to other causes. These data indicate that patients with COVID-19 should be monitored for the development of AKI and measures taken to prevent this. We would like to report a case of a pregnant woman with COVID-19 who developed macrohematuria

Method: case report

**Results:** A 32-year-old patient (G1P0) presented at 34+2 gestational weeks with a 3-day-history of nausea, emesis and diarrhea. On admission she had stable vital parameters including BP-130/80 mmHg, pulse – 78 bpm, O2 saturation – 96/ 98% and was afebrile. The patient had her first successful pregnancy, with twins, after three successive IVF procedures. During her prenatal history she had pregnancy-induced hypertension, controlled with antihypertensive therapy (Tbl. Methyldopa 2x250 mg), a cerclage placement at 13 gestational weeks as well as an anticoagulant therapy (Amp. Enoxaparin 40mg / 1x1). Because of her symptoms she had a Covid-19 test done at our clinic prior to admission. The nasopharyngeal swab returned positive for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. Despite the reactive NST's of both twins, without any uterine activity and an ultrasound imaging with no abnormal findings, the patient was admitted to our hospital for further investigation. Her first blood results showed high acidum uricum levels - 692 mmol/L and normal Hgb, Wbc, Hct, CRP, total proteins and albumin levels. After consulting a nephrologist, a Foley catheter was placed. Two hours later, there was 300 ml reddish transparent urine. On the next day, blood tests showed a further elevation of acidum uricum to 737 mmol/L, as well as a reduction of the total proteins to 52 g/L and albumins to 24 g/L and d-dimer levels of 8168 ngr/mL. The patient was treated with 1 unit of blood plasma, 20% albumin solution and anticoagulant therapy. Unexpectedly her condition deteriorated with massive macrohematuria, which was an indication for an urgent cesarean section, on maternal indication. She delivered twins. The first twin had a wight/height index of 2900gr/52cm, Apgar score of 8/8 and a pH of the umbilical artery of 7.36, while the second twin had a weight/height index of 2420gr/50cm, Apgar score of 8/8 and a pH of the umbilical artery of 7.35. The operation was performed in general anesthesia, but the patient was then transferred to the University Clinic for Infectious Diseases for further evaluation because of hypo saturation, with a decrease of SO2 levels up to 82%.

**Conclusion:** There is limited data on long-term effects following the development of acute kidney injury in patients with COVID-19. This disease causes multiorgan damage and it specifically affects the lungs and the kidneys. However, it is yet unclear if the AKI in patients with COVID-19 differs from AKI due to other causes. The presence of comorbidities such as high blood pressure and high body mass index increases the incidence of AKI in patients with COVID-19. However, all patients infected with SARS-CoV-2 should be closely monitored for the development of AKI and measures should be taken to prevent this, and the best clinical approach is yet to be found

#### Management of congenital heart defects

Name and surname: Authors: A.Manea1, D.Cioboata2, F.Doandes1, N. Lungu1, T. Brandibur1, M.Boia1 Institution: 1. University of Medicine and Pharmacy "V. Babes" Timisoara, Romania, Department of Puericulture and Neonatology 2. Clinical Emergency Hospital of Children "L. Turcanu" Timisoara, Romania, Neonatology Department Email: aniko180798@vahoo.com

**Objective:** The authors aimed to analyze the incidence, the associated negative prognostic factors and the importance of early diagnosis in the evolution of the studied cases.

**Method:** A retrospective study was performed in our Clinic for a period of 2 years on a group of 43 hospitalized patients diagnosed with congenital heart defects. They were diagnosed based on clinical examination (presence of a murmur at birth or immediately after birth, the presence of cyanosis), echocardiography, CT Angiography (CTA), magnetic resonance angiography(MRA).

**Results:** The majority of newborns came from controlled pregnancies 53%, 15% from partially controlled pregnancies, and 32% from uncontrolled pregnancies. In this group of patients the diagnosis was established postnatal. The most common negative prognostic factor was neonatal sepsis. The most frequent malformations found were: patent ductus arteriosus, ventricular septal defect, stenosis of the pulmonary artery, but complex heart malformations have also been diagnosed as: Tetralogy of Fallot, transposition of the great arteries, hypoplastic left heart, coarctation of the aorta, total anomalous pulmonary venous drainage into the coronary sinus drainage, respectively full form Rastelli type A atrioventricular canal and dual outlet right ventricle associated with subpulmonar ventricular septal defect. 7 newborns (16.27%) developed severe complications: pulmonary hypertension, cardio-respiratory failure, pulmonary hemorrhage, death occurring in two cases. Conclusion: Of the congenital malformations, congenital heart defects are the leading cause of neonatal morbidity and mortality. The negative factors that lead to the decrease of the prognosis were represented by the associated pathology, of which the neonatal sepsis occupies the first place. It is important to take into account all these factors: pregnancy dispensary, early diagnosis, associated pathology in order to establish an effective early management of the therapeutic process of these patients.

Presentation type: Poster

## Analysis of ratio sFlT/PlGF in twin pregnancies at 24 weeks gestation as a predictor of hypertensive disorders of pregnancy

Name and surname: CLARA MARTÍNEZ-SÁEZ, ALICIA MARTÍNEZ-VAREA, ELENA SATORRES, JULIA DESCO, MARIA HUESO, SAGRARIO MONFORT, VICENTE DIAGO-ALMELA

Institution: University and Polytechnic La Fe Hospital, Valencia, Spain

Email: claramarsa@hotmail.com

**Objective:** The objective of this study is to analyze the behavior of ratio sFlt/PlGF in twin pregnancies at 24 weeks gestation and its association with the development of hypertensive disorders of pregnancy (gestational hypertension and preeclampsia).

**Method:** This is a prospective study in which the ratio sFlt/PlGF was determined in all asymptomatic pregnant women with twin pregnancies at 24 weeks gestation that were followed-up in a tertiary hospital between March 2018 and May 2021. Other variables such as the uterine arteries pulsatility index (PI) at 24 weeks, serum pregnancy-associated plasma protein A (PAPP-A) and the  $\beta$ -human chorionic gonadotrophin (hCG) subunit at 12 weeks were obtained. Normality of the distribution was analyzed with Kolmogorov-Smirnov test. To analyze the association between ratio sFlt/PIGF and hypertensive gestational disorders a T-student test was performed. P values of < 0.05 were considered statistically significant. We also performed a descriptive statistic with percentiles. The sensitivity, specificity, positive and negative

predictive values of ratio sFlt/PIGF to predicting hypertensive gestational disorders were calculated. Summary receiveroperating characteristics (sROC) curves were plotted.

Results: A total of 103 patients were included in the study. Eighty-two were dichorionic diamniotic pregnancies, 19 monochorionic diamniotic and 2 monochorionic monoamniotic. The mean value of ratio sFlt/PlGF was 6.44, 95% confidence interval (CI) 4.14-8.73. The median was 3 and the range was 1-74. The percentile 10 was 2, the percentile 50 was 3 and the percentile 90 was 9.6. Nine patients developed gestational hypertension or preeclampsia. The mean ratio sFlt/PIGF in the group that developed hypertensive disorders compared with the group with no complications was 18.11 vs 5.32. Higher ratio values were significantly associated with the development of hypertensive disorders of pregnancy (p-value=0.002). The sROC curve showed an area under the curve of 0.637, that points out a sensitivity and specificity of sFlt/PlGF to predicting hypertensive gestational disorders of 88.5% and 36.5%, respectively. The positive and negative predictive values were 30% and 93%, respectively. Fifty percent of patients (3/6) with a ratio sFlt/PIGF > 9.6 (percentile 90) developed a hypertensive disorder of pregnancy, while only an 8% of patients with a ratio ≤9.6 (7/87) developed such disorders. Regarding the corionicity, dichorionic pregnancies had a mean ratio sFlt/ PIGF of 5.78, while in the monochorionic pregnancies was 9. The differences were not statistically significant. No statistically significant differences were seen in uterine arteries mean PI at 24 weeks between the group with hypertensive disorders and the one without complications (0.9 vs 0.86, p-value=0.812). Likewise, no statistically significant differences were seen between both groups regarding the β-hCG and the P-APPA values (122.88 vs 94.13 and 8.42 vs 9, respectively).

Conclusion: These preliminary results reveal that an increased ratio sFlt/PIGF at 24 weeks gestation in twin pregnancies is associated with a high risk of subsequent pregnancy hypertensive disorders. The ratio sFlt/PlGF shows a high sensibility and a high negative predictive value to predict these disorders in twin pregnancies. Nonetheless, it displays low specificity and low positive predictive value for these pregnancy outcomes. Further studies are required in order to confirm those findings.

Presentation type: Poster

#### Trisomy 18 with limb defect - radial aplasia

Ece ERMİN, Akif TÜFEKCİOĞLU, Alev ATIŞ AYDIN, Züat ACAR SARIYER HAMİDİYE ETFAL TRAINING AND RESEARCH HOSPITAL / İSTANBUL

Trisomy 18 is the second most common autosomal trisomy observed in live births (1/5500).

The three main types of trisomy 18 (also called Edwards syndrome) are: Trisomy 18 (47,+18) – 90 percent of cases of trisomy 18 are the result of meiotic nondisjunction, Translocation involving chromosome 18, Trisomy 18 mosaicism (47, +18/46).

As with trisomy 21, there is a relationship between advanced maternal age and the occurrence of trisomy 18 in offspring due to meiotic nondisjunction. There is a 3:1 female-to-male ratio among affected infants.

The clinical spectrum of trisomy 18 may involve any organ system. Sonographic abnormalities include limb abnormalities (upper limb reduction, clenched hands with overlapping index finger, clubbed feet, rocker bottom feetş, radial ray abnormalities). Nuchal thickening or cystic hygroma, choroid plexus cyst, abnormal cisterna magna, absent corpus callosum and/or cerebellar hypoplasia, neural tube defects, ventriculomegaly, strawberry shaped calvarium (pointed front and a flat occiput, facial defects (clefts, micrognathia, low-set ears, microphtalmus). Cardiovascular defects (omphalocele, diaphragmatic hernia). Urogenital defects (horseshoe kidney, hydronephrosis). Two-vessel umblical cord, umblical cord, umblical cord cysts. Prenatal diagnosis of Trisomy 18 is easy because there are lots of sonographic signs identified above.

Besides IUGR is detected associated with polyhydramnios, In this case here we present Trisomy 18 with limb defect (mesomelia with radial aplasia & deviation).

Case: A 43 years old, G4 P2 A1 pregnant patient at 11-14 weeks of gestation visited the perinatology outpatient clinic for a routine double test. Patient's medical anamnesis revealed no comorbidities. Her previous pregnancies were without any complications, where she delivered vaginally two healthy (one female - one male) newborns. Trisomy 18 risk was calculated >1/50 with double test. Amniocentesis was suggested and performed. Chromosome analysis result was found to be Trisomy 18. Ultrasound scan was performed by an experienced perinatologist, who reported a single intrauterine fetus with biometric measurements in accordance with 20 weeks of gestation. Fetal inlet VSD with hyperechogenic focus in right ventricle and ventriculomegaly was observed. Anatomic scan of the fetal limb revealed left mesomelia with radial aplasia, radial deviation. Also partial corpus callosum agenesis and strawberry head were reported. Following the confirmation of diagnosis with amniosentesis and ultrasonography, parents opted to continue the pregnancy. On 26 weeks of gestation IUGR was reported, biometric measurements were in accordance 21 weeks of gestation. The baby had IUGR on follow up, when end diastolic flow was absent on Doppler, in 32 weeks, she was hospitalized. On follow up, when NST showed fetal distress signs. she was planned for c-section operated by an obstetrical indication. A male baby, 900 gr, 32 cm was delivered with shortening of fore arm with radial aplasia, hypotony, undescended testis, prepitium defect, trigonal sendromic face, low set ears.

**Discussion:** Trisomy 18 is a genetic disease which includes wide-spectrum findings. In general, 50 percent of affected infants die within the first two weeks of life, and only 5 to 10 percent survive the first year. Severe intellectual disability is apparent in survivors over one year of age.

In Trisomy 18, most common structural anomaly is congenital heart diseases %90, central nervous system or spinal abnormalities %70 (agenesis of the corpus callosum < %10), intrauterine growth restriction %60-90, skelatal abnormalities (radial ray anomalies). Although there are several findings, radial aplasia is seen rare than other limb defects in Trisomy 18. In this case our findings are partial agenesis of the corpus callosum, intrauterine growth restriction, left mesomelia with radial aplasia and radial deviation.

Presentation type: Poster

### Characteristics of fetal and placental hemodynamics at gestational age beyond 40 0/7 weeks

Kateryna Shatylovych, L.B. Markin, V.O. Sklyarova Department of Obstetrics and Gynecology, Danylo Halytsky Lviv National Medical University, Lviv, Ukraine

**Objectives:** To determine the character of placental and fetal hemodynamic changes in prolonged singleton uncomplicated pregnancy.

Methods: 213 pregnant women delivered beyond 40 0/7 weeks of gestation were included in the study. Each participant underwent a Doppler measurement of the pulsatility index (PI) in the fetal umbilical artery (PI-UA), fetal middle cerebral artery (PI-MCA), cerebroplacental ratio (CPR), the type of blood flow velocity waveforms in the aortic isthmus (AoI) and cardiotocography (CTG). Ultrasound measurements were performed at least twice, the last measurements - prior to the onset or induction of labor. The median time interval of observation was 9.1±0.2 days (range 5-14). Adverse perinatal outcomes were defined as emergency cesarean section due to abnormal intrapartum cardiotocogram, Apgar score <7 at 5 min, umbilical cord arterial pH<7.1, neonatal admission to a neonatal intensive care unit.

Results: In 32/213 (15%) of cases the outcome was unfavorable. During observation significant decline of PI-CMA (below 5th percentile) was found in 32/32 (100%), low PI-UA (below 5th percentile) – in 29/32 (90.6%), the III-V type of AoI blood flow velocity waveforms - in 21/32 (65.6%) of these fetuses. There was no change or a slight increase of CPR. A low negative correlation between PI-UA and neonatal weight (Pearson r=-0.337, p<0,001) was also found. Macrosomia was diagnosed in 20/32 (62.5%) of newborns.

Conclusions: In this study we assume that if the decrease of PI-CMA is a consequence of a mild hypoxia which accompanies prolonged pregnancy, the decrease of PI-UA, especially in large fetuses, may be a sign of covert cardiac function deterioration. In such situations normal CPR does not indicate the satisfactory fetal condition. An assessment of the type of AoI blood flow velocity waveforms is a valuable adjunct to current fetal surveillance protocols used in the prolonged pregnancy. Such dynamics of changes in Doppler tests requires also an expert assessment of the fetal and neonatal cardiac function before delivery and post partum.

#### Damage-control surgery for obstetric hemorrhage: a case report

Name and surname: Liliana Voto

Institution: Juan A Fernandez Hospital, Argentina

Email: lvoto@intramed.net

**Objective:** A clinical case report of use of damage control surgery on postpartum hemorrhage

**Method:** Case description A 29-year-old patient, gravida III para II with a history of two previous cesarean section, at 23+6 weeks of gestation was admitted for preeclampsia and stage 2 fetal growth restriction (FGR). Blood pressure was controlled with oral labetalol and amlodipine. On the 10 th day of admission patient presented stage 3 FGR. After assessment of fetal prognosis, cesarean section with tubal ligation was performed by patient's decision. Newborn deceased 12 hours after birth (550g, Apgar score 5/7 for 26 weeks). Preoperative laboratory was: Hct 30%, Hb 9 g/dL. Parietovesicouterine adhesions were found during the surgery.

Results: Eight hours after surgery patient presented abdominal pain. Laboratory was: Hct 19% Hb 6.6 BE -7.9 Lactate 3.2. Abdominal ultrasound revealed free fluid in 4 quadrants. Laparotomy was decided and confirmed hemoperitoneum and atonic uterus with good response to carbetocin was found. The thromboelastography study (TEG) was reported to be normal, and the patient received 2 units of red blood cells (RBC). Five hours later, patient presented hypovolemic shock and was transferred to ICU. Laboratory: Lactate 11, TEG study: normal. Relaparotomy was performed, finding 4 quadrant hemoperitoneum without an active site of bleeding. The uterus was atonic with no response to medical treatment. DCS was implemented with abdominal packing and external uterine elastic bandage. 3 units of RBC and 2 plasma units were transfused. Patient was stabilized in ICU, presenting a normal intra-abdominal pressure. Lab: Lactate 3.4. Thirty-six hours later, relaparotomy with removal of packing and hysterectomy was performed, post-op lactate: 2.5. Patient returned to ICU and was supported with mechanical ventilation for seven days. On the day 12th patient was transferred to general ward, and hospital discharge was granted on the 18th day of hospitalization.

**Conclusion:** The cycle of coagulopathy, metabolic acidosis, hypocalcemia and hypothermia are well known causes for death, if timely and adequate intervention is not performed. Although TEG studies were normal, severe preeclampsia can be associated with coagulopathy which could have been the case in this patient. DCS is recommended especially in the following situations: when bleeding site is not found nor accessible, presence of severe clinical markers (BP 70mmHg, Body temperature 34°C, pH 7.1), need for multiple transfusions or coagulopathy. Possible complications of DCS are compartment syndrome, persistent bleeding, infections and collections; thus, prophylactic antibiotic therapy is recommended. In the present study, DCS was a satisfactory strategy with adequate patient response. Quick decision-making and working in a multidisciplinary team was essential for the resolution of the case. We propose that obstetrics surgeons explore this strategy widely in high-risk patients to reduce maternal mortality.

**Keywords:** Damage control surgery, postpartum hemorrhage

Presentation type: Video

### Evaluation of exclusive breastfeeding within the first six months in infants of mothers infected with Novel Coronavirus: 1-year experience of a single center

Name and surname: Seda Yilmaz Semerci

Institution: Health Science University Istanbul Kanuni Sultan Suleyman Training and Research Hospital

Email: sedayilmazsemerci@gmail.com

Objective: Breastfeeding during COVID-19(Novel Coronavirus Disease-2019) pandemic emerges an undeniable issue. Earlier in the pandemic mothers who had COVID-19 were separated from their babies due to insufficient data but this approach was abandoned since transmission via breastmilk was not shown. However, where mothers with COVID-19 are cohorted in the same room, they still have to be isolated from their babies following the birth. To our knowledge, there is no study regarding this subject to-date. Therefore, we aimed to evaluate rate of exclusive breastfeeding (EB) within first 6 months among mothers who were isolated from their babies due to COVID-19.

Method: In this descriptive-cross-sectional study infants and mothers who were isolated after birth due to COVID-19 in our clinic at last year were included. Mothers had a questionnaire about breastfeeding within the first 6 months. Demographic data of infants such as birth weight(BW), gestational age(GA) were recorded.Rate of breastfeeding within first 6 months, weight gain and related conditions were all evaluated.

Results: A total of 254 infants, 59 of whom were preterm and 251 mothers with COVID-19 were included. C-section were performed for 92% of mothers(n=231). Mean GW of infants was 35,2+3,36, BW was 2580,47+549g. Average isolation time was 3,4+1,1days.Rate of receiving professional support regarding breastfeeding after discharging was 9,2%(n=23).Mean time to first breastfeeding was 10.87+5,89days and rate of first feeding with breastmilk(FFwB) was 46,61%(n=117).Prolonged isolation time, delay in first breastfeeding and formula feeding were negatively correlated with the rate of EB in first 6 months (r-0,047, p <0,001). Time to begin breastfeeding was longer in preterm infants than term, rate of FFwB and EB in first 6 months were lower in preterm infants than term ones(p<0,05).

**Conclusion:** Pandemic has serious effects on the rate of EB, especially for risk groups such as preterm infants. Thus, we conclude that wards should be restructured in a way to ensure mother-infant unity as well as providing professional support in order to improve breastfeeding rate in COVID-19 era.

Presentation type: Video

### Microbiome of endometrium in multiple failures of IVF and in healthy fertile women

Name and surname: Victoria Barinova V.V. 1,2, Kuznetsova N.B. 1,2, Bushtyreva I.O. 2, Shatalov A.E. 1,2

Institution: 1 - Rostov-on-Don State Medical University, Deaprtment of Obstetrics and Gynecology. 2 - Private Maternity Hospital "Clinic of Professor Bushtyreva"

Email: victoria-barinova@yandex.ru

**Objective:** The objective of the study was to evaluate features of the endometrial microbiome in healthy fertile women and in women with multiple IVF failures.

Method: In order to assess the differences in the endometrial microbiota in 20 women with infertility and multiple unsuccessful attempts of IVF and in 15 fertile healthy women who had at least one full-term delivery in history, the endometrial microbiome was studied by new generation sequencing, NGS, of 16S rRNA.

Results: Lactobacillus (29.4%), Comamonas (16.8%) and Mesorhizobium (6.0%) were the most represented genera in the group of healthy fertile patients, and Lactobacillus (33.3%), Ralstonia (7.9%) and Pediococcus (4.8%) were mostly presented in the group of infertile patients with multiple IVF failures. The mean relative abundance of Lactobacillus did not significantly differ between groups and comprised 33.3% in the 1st group and 29.4% in the 2d group. Significantly higher mean relative abundance of bacteria of the genus Brevundimonas and Ralstonia was recorded in the group of women with infertility and repeated unsuccessful IVF attempts. At the same time, the fertile women of the 2nd group had a statistically significantly higher mean relative abundance of Acidovorax, Brevibacillus, Caulobacter, Comamonas, Delftia, Distigma, Pseudomonas, Schlegelella, Thermus.

**Conclusion:** The presented data confirm the concept of non-sterility of the endometrium and the existence of the uterine microbiome. Lactobacillus are obviously dominant genera; however, we are not talking about the absolute dominance of Lactobacillus over 90%. At the same time, the mean relative abundance of Lactobacillus in uterine microbiome in fertile patients and in patients with multiple IVF failures did not differ significantly.

Presentation type: Video

# **Bernard-Soulier Syndrome in Pregnancy**

Name and surname: Hicran Acar Şirinoğlu, Basak Cıngıllıoglu, Veli Mihmanlı, Melike Eren

Institution: Prof.Dr.Cemil Taşcıoglu City Hospital

Email: hicranacarus@yahoo.com

**Objective:** Bernard-Soulier Syndrome (BSS) is a rare autosomal recessively inherited bleeding disorder of platelet function. Pregnancy in BSS is associated with a high risk of serious bleeding for both mother and neonate, and current data show no consensual approach. The syndrome is inherited as an autosomal recessive condition and it is caused by defects within the membrane glycoprotein (GP) Ib-IX-V complex which lead to defective platelet adhesion and incapacity of platelets to bind to von Willebrand factor and thrombin(1). Failure to agglutinate with ristocetin (even after the addition of normal plasma), the hallmark of the syndrome, must be proved in order

to rule out other disorders manifesting with macrothrombocytopenia(2) Management of BSS during pregnancy is still unclear.

**Method:** A 37-year-old woman, gravida 3, para 2, was admitted to inpatient care our maternity hospital for close monitoring at 37 weeks 4 days of gestational age (calculated by first trimester obstetric ultrasonography), after her latest prenatal visit has revealed a low platelet count (PC) of 10.000 plt/ $\mu$ , a hemoglobin (Hb) of 12.4 g/dL, and a hematocrit (Hct) of 37%. Activated clotting time was 14 minutes She had received the diagnosis of Bernard-Soulier syndrome 8 years ago, suspected by the finding of thrombocytopenia with giant platelets on a routine complete blood count (CBC).In previous cesarean section surgeries, tombocytes and eritrocytes were given due to prolonged and excessive bleeding and followed up in the intensive care unit. An obstetric ultrasound revealed a polyhydroamniotic fluid index of 26.1 cm, and no signs of growth restriction or fetal distress; but contractions in non-stress test. Platelet transfusion was regarded as a necessary prophylactic measure prior to delivery. Ten units of random donor platelets were administered peroperation, after which the patient was submitted to an cesarean section delivery under general anesthesia. A healthy baby with a birthweight of 3.915 kg was delivered.

**Results:** This was necessary to prevent any excessive or unnecessary bleeding, This case report describes a successful pregnancy outcome in a woman with BSS who was closely monitored throughout pregnancy and postpartum period. once major intraoperative and postoperative hemorrhage was the primary concern.

Conclusion: Pregnancy in a woman with this uncommon syndrome must be carefully monitored, once it is a singular situation in which the patient is especially susceptible to bleeding episodes, which could translate into maternal and neonatal unfavorable outcomes (2). It is important to strictly control platelet counts and plan the birth in advance. Pregnancy in BSS is also associated with a variable course. The outcome varies among different patients and even for the same patient in different pregnancies (2,4). It may evolve in a pattern similar to that of women who do not have the syndrome, or it may be complicated by maternal and fetal morbidity of various severity degrees (1). For the mother, the increased risk of bleeding warrants the need of thorough prenatal and postnatal care. For the fetus, placental transfer of maternal antiplatelet antibodies poses a risk of alloimmune neonatal thrombocytopenia (5), for which a readily available treatment is essential. In face of these considerations, delivery at a tertiary center is advised whenever possible (2,4), inasmuch as complications during or immediately after labor may require prompt intervention. Since the best practice for safe labour in these cases remains controversial, the mode of delivery appears to be a decision that the obstetrician has to make majorly considering the patient's personal and familial history, as well as consulting a multidisciplinary team of haematologists and anesthetists in a tertiary care center. Regional analgesia and anesthesia are contraindicated because of the risk of spinal or epidural hematoma. For cesarean section, general anesthesia is recommended (3). BSS is a rare bleeding disorder that may complicate pregnancy. Pregnancy course of women affected by the syndrome is widely variable and, to some extent, unpredictable. Management of pregnancy in these cases is still controversial, and it requires a multidisciplinary team and individualized medical decisions.

#### Pregnancy complicated with serous cystadenoma - case report

Name and surname: Elena Gjorgievska Nikolovska, Ivo Kaev, N. Shabani Islami, A. Shabani

Institution: University Clinic for obstetrics and gynecology, Skopje, Macedonia

Email: nikolovska eli@yahoo.com

**Objective:** Adnexal masses during pregnancy are not uncommon. Approximately 0.05 to 2.4 percent of pregnan-cies are complicated by an adnexal mass, and approximately 1 to 6 percent of these masses are malig-nant. The etiologies of ovarian masses are reflective of the patient's age; and therefore, benign entities such as functional ovarian cysts, benign cystic teratomas, and serous cystadenomas predominate. The diagnosis is established by the characteristic history presenting complaints, examination findings and it is confirmed by ultrasound.

**Method:** Our case report is about 19-year-old primigravida who came in our hospital; for management and treat-ment of the pregnancy when she was 29+5 weeks' period of gestation. She presented with complaints of disproportionate abdominal distension, discomfort, abdominal pain and breathing difficulties. Uterus corresponded to the gestational age with single live intrauterine pregnancy of 29+5 gw /EFW 1305+-176gr/ with adequate amniotic fluid and posterior placenta was also seen. Abdominal sonography showed a large anechoic cystic mass, with dimensions 110x90mm, in the area of the right ovary and right uterine tube. Cervix length was 30 mm, measured with transvaginal ultrasound. Tumor markers consisting of carcinoembryonic antigen (CEA) and cancer antigen -125 (CA-125), were within normal values. Regular checkup were taken within a month. She was hospitalized in our Gynecology and ob-stetric clinic in Skopje when she became 39+5 gw pregnant, cesarean section and surgical intervention was indicated. The surgery was performed under spinal anesthesia and a transversal incision sec Pfanenstiel was made in abdomen. Laparotomy revealed a giant cystic mass with diameter 12x10 cm fixed to right uterine tube. It originated from the right ovary. Ascites and peritoneal seeding were ob-served and then 20ml of abdominal exudate for cytopathology examination was aspirated. The patient gave birth with cesarean section to a healthy newborn female weighing 3200 g with APGAR score 9/10. After the delivery of the baby, extirpation of the cystic mass on the right side, right salpingectomy and right ovarian partial resection with preservation of normal ovarian tissue were performed.

Results: The material was sent for histopathology analysis, and the result confirmed cystadenoma mucinous cyst of right ovary. Patient's post-operative period and early puerperium stage were uneventful. The patient was released from the hospital in the 4th post- op day. She was feeling subjectively well and stable. The lab results and the vital parameters were within the normal reference values.

**Conclusion:** Treatment of adnexal masses during pregnancy is complicated and difficult, because there should be considered wellbeing of the mother and the fetus. This decision depends on the type of cyst considered after examination, ultrasound examination, laboratory finding and clinical condition of the patient and the pregnancy. Surgery during pregnancy carries possibilities of complications intraopera-tive, and especially postoperative, increasing the risk of premature rupture of membranes and preterm delivery. That's why multidisciplinary approach of diagnosis and treatment is always a solution in this case of complicated pregnancy.

Presentation type: Video

### Relation between aspartate aminotranseferase/platelet ratio index (apri) and severity of covid-19 infection in pregnant women

Name and surname: Sule Goncu Ayhan, Deniz Oluklu, Dilek Sahin

Institution: Ankara City Hospital/ Perinatology Clinic

Email: sulegoncu@gmail.com

**Objective:** Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is well-known for a procoagulant effect on the hematologic system. Additionally, abnormal liver function tests are reported frequently in Coronavirus disease 2019 (COVID-19) patients. The aspartate aminotransferase/platelet ratio index (APRI) is used as a noninvasive tool to predict the severity of hepatic pathologies before. In this study, we aimed to determine the relation between APRI and severity of COVID-19.

Method: This study was conducted between July, 1, 2020 and November, 30, 2020, in Turkish Ministry of Health Ankara City Hospital with 478 pregnant women confirmed to SARS-CoV-2 infection. Age, gravidity, parity, gestational week, oxygen saturation, temperature, the severity of disease, hospitalization day, and laboratory parameters were noted. APRI was calculated as follows: ((AST level/upper level of normal AST)/platelet counts) x 100. The relation between APRI and the severity of disease was evaluated.

Results: Of the 478 COVID-19 pregnant women mean age 28,1±5,4 and median of gravity 2, parity 1, gestational week 28, oxygen saturation 97, temperature 36,6, hospitalization day was 2. Four hundred eighteen (87,4%) patients had a mild infection. APRI was positively and significantly correlated with the severity of the disease (p= 0,001, r= 0,233). To assess cut-off value of APRI for prediction the severity of COVID-19, ROC curve was generated, and AUC was calculated. The most sensitive (60%) and specific (63%) cut-off value for prediction of severe COVID-19 were found as 0.29.

**Conclusion:** In conclusion, APRI could predict the severity of COVID-19 infection in pregnant women and can be useful in COVID-19 follow-up.

Presentation type: Video

#### Adolescence does not worsen covid-19 infection in pregnant women

Name and surname: Sule Goncu Ayhan, Dilek Sahin Institution: Ankara City Hospital/ Perinatology Clinic

Email: sulegoncu@gmail.com

**Objective:** Coronavirus disease 2019 (COVID-19) has become the most serious global medical issue in a very brief time. COVID-19 has been associated with diverse outcomes in special populations like pregnant women. Also, adolescent pregnancy is a risk factor for increased neonatal and maternal complications. Our aim was to investigate the effect of SARS-CoV-2 on adolescent pregnancy.

**Method:** This study was conducted with pregnant women confirmed to SARS-CoV-2 infection, between July, 15, 2020 and November, 14, 2020 in Turkish Ministry of Health Ankara City Hospital. Of to 549 included pregnant women 55 of them were ≤ 19-year-old (adolescent). Adolescent group (AG) compared with >19-year-old pregnant women (NAG) in terms of demographic features and clinical outcomes.

Results: Median values of demographic features were; age 18, gravida 1, gestational week at the diagnosis 29 in AG while age 28, gravida 2, gestational week at the diagnosis 27 in NAG. There was no difference between two groups with regard to temperature, oxygen saturation, and day of hospitalization. Fifty-three patients (96,4%) in AG and 431(87,2%) in NAG had a mild infection and having the mild disease was statistically higher in AG (p< 0,05).

Conclusion: In conclusion, COVID-19 infection doesn't seem to be associated with a worse prognosis in adolescents when compared with non-adolescent pregnant patients. Identifying infection trends in different groups will be useful to manage these patients properly.

Presentation type: Video

#### two-year results of multiple pregnancies delivering in our clinic

Name and surname: ESRA CAN

Institution: KANUNI SULTAN SULEYMAN RESEARCH AND EDUCATION HOSPITAL

Email: dresraoten@yahoo.com

**Objective:** Our purpose was to retrospectively evaluate of multiple pregnancy cases encountered during the last two year in our clinic.

Method: In this study included 393 multiple pregnancy cases who have delivered in in Universty of Health Sciences Kanuni Sultan Süleyman Training and Research Hospital, Obstetrics and Gynecology Clinic during the period January 2019-December 2020. Retrospectively, 377 twin and 16 triplet pregnancies were analysed by assorted maternal and fetal characteristics.

Results: Mean age of multiple pregnancy cases were 28.4±2.8 and pregnancy ages were between 17-55. The frequency ratio of twin pregnancy in overall pregnancies was 1/47.7 and for triplet pregnancy it was 1/1058. 30 (7%) of multiple pregnancy cases were delivered vaginally with spontaneous labor, 363 (93%) were delivered by cesarean section. According to birth weights, 37 infants (9%) were below 1000 grams, 260 (66%) were between 1000-2499 grams and 96 (25%) were 2500 grams and above. In 161 (40%) of live infants had APgar score of less than 7. No statistical relationship was found between the reduced Appar score and the way the birth occurred (p>0.05).

Conclusion: The rate of twin and triplet pregnancies and perinatal mortalities were determined in our multiple pregnancy series comparable to the literature. Prenatal care taken of multiple pregnancy cases will significantly decrease high perinatal mortality rate.

Presentation type: Video

### high dose omega-3 exposure during pregnancy causes autism in male newborn offspring

Name and surname: Halil Gursoy Pala\*, Emel Ebru Pala\*\*, Burcu Artunc Ulkumen\*\*\*, Oytun Erbas\*\*\*\* Institution: \*University of Health Sciences, Tepecik Training and Research Hospital, Department of Obstetrics and Gynecology, Division of Perinatology, İzmir, Turkey, \*\*University of Health Sciences, Tepecik Training and Research Hospital, Department of Pathology, İzmir, Turkey, \*\*\*Manisa Celal Bayar University, Hafsa Sultan Hospital, Department of Obstetrics and Gynecology, Manisa, Turkey, \*\*\*\*Demiroglu Bilim University, Department of Physiology, Istanbul,

Email: gursoypala@yahoo.com

**Objective:** We aimed to investigate the influence of high dose maternal omega-3 fish oil exposure during pregnancy on neurobehavioral development of rats in newborn offspring.

Method: This study consisted 12 female rats randomly seperated into two groups (Group-1, Control, [n=6] vs Group-2, Omega-3, [n=6]). Then, these female rats were caged with a fertile male (three female/one male) for 2–3 days during oestrus period. In Group-1, 1 ml/kg tap water with oral gavage and in Group-2, 1000 mg/kg fish oil (% 60 EPA and % 40 DHA) with oral gavage were given from the 1st to last day of pregnancy (21 days). On postpartum 21st day; forty littermates (10 male control [Group-1m], 10 female control [Group-1f], 10 male omega-3 exposed [Group-2m] and 10 female omega-3 exposed [Group-2f]) were randomly separated and housed in same sex and same study group. These animals underwent behavioral testing (three-chamber sociability and social novelty test). At the end of the study, blood samples were collected by cardiac puncture for biochemical analysis and brain was removed for histopathological examination.

**Results:** The time spent with the stranger for three- chamber sociability test was significantly lower in Group-2m when compared with other groups (p < 0.001). There was no statistical difference for the open field test between groups. Plasma tryglycerid, testosterone and alanine transaminase (ALT) levels were significantly higher in Group-2m (p<0.001). And also, plasma uric acid and cholesterole levels were significantly higher in Group-2m (p<0.05). Plasma tryglycerid, uric acid and ALT levels were significantly higher in Group-2f (p < 0.05). Brain IGF-1 levels were significantly higher in Group-2m (p<0.001). Total count of neurons and Glial Fibrillary Acidic Protein (GFAP) immunostaining in CA1 region of hippocampus was significantly in Group-2m (p<0.05). There was no statistical difference for the total count of neurons and GFAP immunostaining in CA3 region of hippocampus between groups.

**Conclusion:** These results suggest a possible link between autism spectrum disorder and high dose omega-3 exposure during pregnancy in male newborn offspring. The activation of Brain IGF-1 levels by mTOR pathway and increased cholesterol levels for testosterone synthesis may have a role for omega-3 exposed male autism.

Presentation type: Video

#### Liver disease during pregnancy, prediction and treatment

Name and surname: Ana Daneva Markova

Institution: University clinic of gynaecology and Obstetrics

Email: anadaneva@yahoo.com

**Objective:** Liver disease during pregnancy is more common than expected and may require specialized intervention. For adequate surveillance of mother-fetus health outcome, liver disease during pregnancy might require intervention from a obstetrician and hepatologist.

**Method:** Liver diseases have a prevalence of at least 3% of all pregnancies in developed countries, and they are classified into two main categories: related to pregnancy; and those non-related that are present de novo or are preexisting chronic liver diseases. In addition to the literature review, we compiled the data of liver disease occurring during pregnancies attended in our country in a three-year period.

**Results:** In our tertiary referral women hospital, liver disease was present in 7,3 % of all pregnancies. Associated liver disease was found in 9.8% of all pregnancies, mainly those related to pre-eclampsia (4.9% of pregnancies). Only 0.56% was due to liver disease that was co-incidental or preexisting; the acute or chronic hepatitis C virus was the most frequent in this group (0.20%).

Conclusion: When managing pregnancy in referral hospitals in North Macedonia, it is important to discard liver alterations early for adequate follow up of the disease and to prevent adverse consequences for the mother and child.

Presentation type: Video

# Comparison of late postpartum depression prevalance of women with covid-19 disease in pregnancy and women without covid-19 disease in a high risk pregnancy clinic

Name and surname: Busra TSAKIR

Institution: Ankara City Hospital, Department of OBGYN, ANKARA, TURKEY

Email: busra\_dgn@hotmail.com

**Objective:** 1) To assess the frequency of depression in postpartum women during the COVID-19 pandemic 2) To evaluate the effect of having COVID-19 disease during pregnancy on postpartum depression 3) To determine the risk factors affecting postpartum depression scores.

**Method:** The study was conducted in a tertiary center 'Ankara City Hospital', which is the COVID-19 pandemic referral hospital in Ankara. Our study is a cross-sectional descriptive study. It was planned as a survey study. The questionnaire was applied to postpartum women who applied to the outpatient clinic between January 01, 2021 and March 01, 2021. Participation in the study was based on volunteerism. Data were collected by obtaining written and verbal consents from the patients. Questionnaires were distributed to the participants by a single researcher and they were asked to read and complete the questionnaires themselves. First the 31-question questionnaire form which we prepared for our study followed by the 'Edinburgh Postpartum Depression Scale' questions were applied, and the forms were collected 30 minutes after. Survey studies were completed within 2 months. It was calculated that a total of 210 postpartum women should be included in the study, 105 people in each group at 80% power and 0.05 error level. Women between 6th week postpartum and 6th month postpartum, who gave birth in Ankara City Hospital perinatology clinic were included in the study. Women in the first 6 weeks postpartum, illiterate women, women who has a psychiatric illness at the time of the study and using psychiatric drugs were excluded.

Results: 216 women were included in the study. Half of the women had COVID-19 disease during their pregnancy. The mean EPDS scores were 7.50±6.04 among all women, 8.39±6.30 among women who had COVID-19 disease and 6.62±5.65 among women who did not have the disease. There was a significant difference between the EPDS scores (p<0.05). When ≥12 is used as a cut-off point, 27.8% of the women had depression. Depression rates were 34.3% in women who had COVID-19 disease and 21.3% in women who had not. Women who had COVID-19 disease were more likely to be depressed (p<0.05). Women taking medication for COVID-19 had a higher rate of depression than women who did not (p<0.05). In working women, women with a previous history of psychiatric illness, with a family history of depression, who had stressful events during pregnancy/delivery who did not receive help in childcare, the rate of depression was higher (p<0.05). In depressed women, the rate of "very good" communication with their husbands and their families was lower (p0.05). When we compered women who had COVID-19 disease and women who did not, there was no significant difference between having a preterm delivery and low birth weight delivery, type of delivery, premature birth, stillbirth, and developmental abnormality (p>0.05). During the pandemic period, 97.7% of the women always washed their hands with soap, 22.7% always wore a mask at home, 55.6% avoided using common items, 21.3% separated their room with the household, 6.0% separated their homes. When asked about the duration of staying home during pregnancy, 47.2% of the pregnant women said "I have never been out". No difference was found among precautions of COVID-19, between women who had depression and women who did not (p>0.05). As a result of the multivariate logistic model; having COVID-19 disease increases depression rate 2.101 times (p<0.05), when communication with the husband is not 'very hgood' depression rate increases 1.998 times (p<0.01), having a 'family history of depression' increases depression rate 2.471 times (p<0.05), not getting help in child care increases depression rate 2.381 times (p<0.05).

Conclusion: Having COVID-19 disease increases the frequency of postpartum depression by 2.1 times. Women who have poor communication with their husband, who can not receive help in child care, and who have a family history of depression constitute the highest risk group for postpartum depression.

Presentation type: Video

### The relationship of hyperglycemia and hyperlipidemia with adverse maternal and neonatal outcomes among Asian Indians

Name and surname: Dalia Rafat, Sunita Singh, Tabassum Nawab, Tamkin Khan Institution: Jawaharlal Nehru Medical College and Hospital, A.M.U, Aligarh, India

Email: drdaliarafat.16@gmail.com

**Objective:** Diabetes and related metabolic disorders are rapidly increasing among pregnant women in India and throughout the world. Prevalence of Gestational Diabetes Mellitus (GDM) in India varies from 16% to 17.8 %. GDM has been associated with various adverse present and longterm health outcomes of both the women and their offsprings. Pregnant women with hyperglycemia also generally have poor metabolic control. Studies suggest association between hyperglycemia and hyperlipidemia in pregnancy. Also there are reports on hyperlipidemia as an independent risk factor for adverse perinatal outcomes but majority of them have not seen the combined association of both hyperglycemia and hyperlipidemia. Robust evidence is lacking on association between glycemic and metabolic alterations in pregnancy and their impact on perinatal outcomes, especially in Asian population. So we planned this study with the aim to assess the relationship between hyperglycemia and hyperlipidemia in pregnancy and to examine their impact on adverse maternal and neonatal outcomes.

Method: 500 women with confirmed singleton intrauterine pregnancy, attending antenatal clinic of our tertiary medical facility in Northern India between January 2019 to December 2020; were recruited consecutively in this prospective cohort study. After satisfying inclusion and exclusion criteria and excluding those lost to follow up, final sample of 320 motherinfant pairs was analysed. A predesigned standardized questionnaire was used for recording the patient's sociodemographic and clinical information. All women underwent a 75-grams two-hour OGTT and lipid profile assessment between 24-28 gestational weeks. Females were followed up till delivery to record fetomaternal outcomes. Statistical analyses were performed using SPSS version 22.0. Student t test, Chi-square test and linear regression analysis were performed to estimate the odds ratios and for deriving significant associations.

**Results:** The mean age of participants was  $24.93 \pm 3.58$  yr. More than 2/3rd of enrolled subjects were residing in urban population. Only 2.2% were working, rest were housewives. Majority of the females were educated till 12th class. The mean BMI was found to be 24.3 kg/m2. Majority of them were obese (39.1%). According to glycemic and lipid profile status, 320 study participants were divided into following four groups. Group A: Normal glycemic and lipid profile status [41.5%]; Group B: Hyperglycemia with normal lipid profile status [17.2%]; Group C: Normal glycemia with hyperlipidemia [16.6%]; Group D: Hyperglycemia with hyperlipidemia [24.7%]. No statistically significant difference was found between the groups regarding their sociodemographic characteristics. The proportion of obese subjects were significantly higher in Group D as compared with Group A (p<0.0001). Total weight gain during pregnancy and during first trimester were observed to be significantly higher among Group B (p=0.033) and D (p=0.002) respectively. The frequency of females having abnormal lipid profile were more among hyperglycemics (59.8%) as compared to normoglycemics (40.2%) [p<0.0001] Adverse maternal outcomes were found among 62.2% and adverse neonatal outcomes were found in 25.0% of the study subjects. The frequency of adverse maternal and neonatal outcomes were significantly higher among women with hyperglycemia and hyperlipidemia as compared to those with normal glycemic and lipid profile status. The odds of maternal complications like preterm birth (PTB), premature rupture of membranes (PROM), polyhydramnios, hypertensive disorders of pregnancy (HDP), induction of labor (IOL) and caesarean section (CS) were significantly higher among women with hyperglycemia and hyperlipidemia. The probability of PTB was increased by five times among group B and C and sixfold in group D. Also, the odd of PROM was 2.5 fold in group B and C but became 5 fold among group D. Similar trend was seen for IHCP, IOL, CS; where the odds of these adverse outcomes in group D were increased to almost double times the odds found in group B & C. The neonates born to mothers in group D had significantly greater probabilities of NICU admissions (5.9 fold) and asphyxia (3.4 fold) than group B & C.

**Conclusion:** Besides emphasizing the importance of hyperglycemia and hyperlipidemia as independent risk factors for adverse fetomaternal outcomes, our study suggest the greater

detrimental effect of their combined presence. We suggest that assessment of lipid profile in all pregnant women in general and GDM in particular will help in early detection, early diagnosis and effective treatment play an important role in the prevention of various adverse fetal and maternal outcomes and may improve the immediate and long term health of the mother and neonates. Small sample size and inability to assess confounding factors like mother's nutrition and physical activity is our limitation. Future large scale studies are required among different population to confirm or refute our findings.

Presentation type: Video

## Appropriate delivery method for cardiac disease pregnancy based on noninvasive cardiac monitoring

Name and surname: Masami Sawada

Institution: National cerebral and cardiovascular center perinatology Osaka-Japan

Email: masami.sawada.4.15@gmail.com

**Objective:** There are numerous significant physiological changes occurred in circulation during labor. To detect these rapid hemodynamic changes, the invasive and intermittent measurement techniques are not reliable. To suggest a suitable delivery method for pregnancy with cardiac disease, this study analyzed how each delivery method influences cardiac function using non-invasive and continuous measurement technique.

**Method:** A prospective study was accomplished at National Cerebral and Cardiovascular Center in Japan from October 1, 2014 to November 30, 2018. The classification of the healthy heart pregnant women was according to the delivery method; vaginal delivery (VD) without epidural anesthesia, VD with epidural anesthesia, and caesarean section (CS). The hemodynamic parameters; cardiac index (CI), stroke volume index (SI) and heart rate (HR) were evaluated regularly throughout delivery by non-invasive Electrical Cardiometry monitor.

Results: Ten cases were examined for each group. CI and HR were significantly increased before VD, while the increase in CI and HR was mild in epidural group in comparison to non-epidural group. SI was increased towards the delivery in epidural group. And it was constant in non-epidural group. But there was no alteration in the level of outcomes of the two groups. In CS, SI was increased and HR was decreased before delivery. After delivery, SI was continued increasing while HR was not changed but CI was increased.

**Conclusion:** In VD, the increase in venous circulation according to the autotransfusion is managed by increasing HR. By epidural anesthesia, the increase in HR was suppressed and SI was increased. Even though, as epidural anesthesia increases the vascular capacity, the level of SI outcome was comparable. In CS, the HR was decreased because of the spinal anesthesia and the SI was increased because of many factors like hydration. As there are many factors to control in CS, the VD with epidural anesthesia will be the first preference for most cardiac patients.

Presentation type: Video

### Automatic detection of fetal hypoxia using figo rules

Name and surname: David Lopez Ramos, Inmaculada Mejía Jiménez, Laura Pilar Castillo Rabazo, Gloria Gonzalez Tristante, Laura Alvaro Valiente, Diana Rojas Lopez, Carlos Maria Alaiz Gudin, Angela Fernandez Pascual.

Institution: Departamento de Ingenieria Informatica, Universidad Autonoma de Madrid, Servicio de Ginecologia y Obstetricia Hospital 12 de Octubre Madrid

**Objective:** The main objective of this work is to check the accuracy of FIGO guideline rules for detection of fetal hypoxia, using an automatic software implementation to avoid the influence of ex-ternal human factors. A second objective is to compare the performance of such a tool in two different cardiotocograph (CTG) trace groups: cesarean sections performed in a tertiary hos-pital and a public CTG database.

**Method:** A piece of software was developed to automatically analyze CTG traces according to FIGO guideline rules and categorize them into three groups: normal, suspicious and pathological. To check the performance of this tool, traces of deliveries that ended up in a cesarean sec-tion (for whatever reason) were collected in a tertiary hospital. In this type of deliveries, we could compare the CTG trace before delivery with the result of arterial umbilical cord pH (used as gold standard test). To prevent any possible selection bias in our results, the previ-ous experiment was also repeated using a public and richer CTG library. The proposed approach is able to classify the CTG traces at each instant of time using the three main FIGO criteria: the baseline of the fetal heart rate, its variability, and the decelera-tions of the trace. Moreover, a fourth criterion is defined as the average of the other three. In order to quantify the prediction capabilities of our method, the ROC curves, and the corre-sponding area under the curve (AUC), were computed considering only two classes of CTG traces: normal (corresponding to normal FIGO classification) and pathological (suspicious or pathological FIGO classification). The real classes are defined through a threshold on the um-bilical arterial cord blood, such that samples with pH values larger than 7.20 were considered normal, whereas those with smaller pH values were labeled as pathological.

Results: The experimental results were obtained over two different databases. The first one is com-posed by a total of 223 CTG traces of labors that ended up in a cesarean section in a tertiary hospital, collected between January 2018 and December 2019. The second one corresponds to a public CTG trace database that included 552 traces. In both cases, the real label was de-fined in function of the umbilical arterial pH cord blood, as explained above. In the cesarean-section group, the AUC of the CTG baseline criterion was 0.59, for variability was 0.58, for decelerations 0.66, and the combination of the three criteria gave an AUC of 0.62. When applied to the public CTG database, the AUC regarding the baseline was 0.59, the one of the variability was 0.59, for decelerations it was 0.66, and in the case of the average it was 0.63. **Conclusion:** Automatized CTG interpretation using FIGO guidelines is valid to detect fetal hypoxia, even over an heterogeneous sample. The results obtained over both databases are consistent, and they show how the decelerations in CTG trace seem to be the most informative aspect to detect fetal hypoxia. Our future goal is to develop a machine learning system that allow clinicians a better fetal hypoxia detection and avoid neonatal impairment as well as unnecessary intervention when a suspicious CTG trace is observed.

Presentation type: Video

# Association of Maternal Serum Ischemia Modified Albumin (IMA) with placental histopathological changes and fetomaternal outcome: A Prospective Case Control Study in normotensive and preeclamptic women in a low resource setting

Name and surname: Dr. Monica Agrawal

Institution: King George's Medical University, Uttar Pradesh, Lucknow, India

Email: dr.monikagrawal@gmail.com

Objective: Estimation and correlation of serum IMA level in normotensive and preeclamptic pregnant women; Association of serum IMA level with histopathological changes in placenta and fetomaternal outcome

Method: A prospective case control study was conducted in Department of Obstetrics and Gynaecology KGMU Lucknow in collaboration of Department of Biochemistry & Pathology, King George Medical University Lucknow for a period of one year Institutional Ethics Committee approval was taken.80 pregnant women of gestational age ≥34 weeks were recruited and divided in 2 groups. Control group included 40 normal healthy pregnant women and case group included 40 pregnant women with preeclampsia. Serum IMA levels were measured using ELISA kit of Sun Red -1043 (SB) biotechnology. Outcome of study was compared in normotensive and preeclamptic women in terms of values of systolic blood pressure, diastolic blood pressure, proteinuria, liver and renal function tests, serum LDH and Uric acid levels, level of Ischemia modified albumin [IMA] in plasma, fetomaternal outcome and placental histopathological changes. Placental histopathological assessment was done and number and types of changes were compared in both groups Association of maternal serum ischemia modified albumin[IMA] levels with fetomaternal outcome and placental histopathological changes in normotensive and preeclamptic women was noted.

**Results:** There were no differences between the two groups with respect to the maternal age, parity and dietary habits. The mean serum IMA were significantly (p<0.001) higher in preeclampsia group (115.23±49.51) as compared to the normotensive group (79.21±14.35). The optimum cut off value of IMA to detect a case was estimated to be ≥94.5 gm/dl (with sensitivity 65%, specificity 87.5). All the placental histopathological changes were observed more often in preeclampsia group (85 %) as compared to normotensive group (47.5 %). Most common histopathological finding seen in women with preeclampsia was synovial knoting (40%) The highest IMA level was in four changes (139.04±43.72) and lowest was in five changes (77.82±27.00). Placental vascular lesions, intervillous fibrin and hyalinisation which occur as an adaptive response to placental hypoxia were significantly associated with raised IMA levels which 62.5 % of preeclamptic women had preterm vaginal delivery while 60% of the normotensive women had full term vaginal delivery This association was statistically significant (p<0.01). The mean effective fetal weight in preeclamptic and normotensive group was  $2.55 \pm 0.47$  kg and  $2.10 \pm 0.42$  kg respectively. This difference in birth weight of both groups was statistically significant (p< 0.001) No significant difference (p0.05) was found in mean fetal heart rate, proportion of low birth weights, APGAR score at 1 minute and 5 minute, sex of baby between raised and normal IMA levels. However proportion of PTVD

was significantly higher in raised IMA levels (p<0.05). Amongst various fetal weight categories significant difference was found in mean IMA levels (p2.6 kg)

Conclusion: Serum IMA was found to be significantly increased in preeclamptic cases. Raised IMA levels were associated with hypoxic placental histopathological changes and increased rate of

preterm vaginal delivery and low birth weight in preeclampsia. In diseases like preeclampsia where the oxidative stress is the consequence of disease process, Ischemia Modified Albumin could be incorporated as a diagnostic test parameter to avoid future severe preeclampsia related complications. Hypoxic placental lesions may affect oxygen exchange and lead to a state of chronic fetal hypoxemia. In our study despite several placental histopathological abnormalities in 85% of cases and 47.5% of controls none of the fetuses exhibited fetal compromise indicative of high placental capacity for protecting the fetus

Presentation type: Video

## Retrospective evaluation of the pregnancies with thick meconium stained amniotic fluid beyond 34 weeks of gestation

Name and surname: Semra Yüksel, Müge Payaslı, Merve Saya, İbrahim Polat

Institution: Başakşehir Çam ve Sakura City Hospital, Istanbul

Email: drsemrayuksel@gmail.com

**Objective:** The purpose of this study was to evaluate the pregnancies beyond 34 weeks with thick meconium-stained amniotic fluid (MSAF) in terms of perinatal outcomes and possible obstetric factors related to poor perinatal outcome. **Method:** This was a retrospective study which pregnant women with thick MSAF at beyond 34 weeks' gestation in a tertiary center enrolled in the study between May 2020-May 2021. Data was obtained from medical records on system and archive files.

Results: Out of the total of 8432 deliveries during one-year period, 174 pregnant women (2.06%) fulfilled the inclusion criteria and were included in the study. The mean age of the patients was 28.2±6 years, the mean gestational age at delivery 276±10.5 days (39.4 weeks), and the mean birthweight was 3334±481g. 59 (33.9%) of newborn with MSAF was diagnosed as meconium aspiration syndrome (MAS) and 21 (12.1%) of them had acidemia (pH<7.25). 28.7% (n:50) of the patients were at 40-40+6 weeks and 23% (n:40) of them at 39-39+6 weeks at delivery. Most common obstetric complications in patients with MSAF were post-term pregnancy (33 patients, 18.9%), GDM (12 patients, 7%), and IUGR (5 patients, 2.9%). When the obstetric complications were compared in terms of neonatal outcomes, only IUGR group was found to be more prone to fetal acidemia (p=0.039)

**Conclusion:** The meconium in the amniotic fluid can be associated with fetal acidemia and MAS. Post-term pregnancy, GDM, and IUGR were found to be most common obstetric factors related to MSAF.

Presentation type: Video

### Prenatal diagnosis of agnathia-otocephaly complex with microphthalmia: A Rare Congenital Anomaly

Name and surname: sema suzen Caypinar, ibrahim polat

Institution: Basaksehir Cam and Sakura City Hospital Department of Maternal and Fetal Medicine Istanbul, Turkey

Email: sm\_\_szn@hotmail.com

**Objective:** Agnathia-otocephaly complex is a rare condition characterized by mandibular hypoplasia or agnathia, ear anomalies (melotia/synotia) and microstomia with aglossia. This severe anomaly is most often lethal and difficulties persist in the prenatal diagnosis. The estimated incidence is less than 1 in 70.000 births, This complex disorder can be attributed to both genetic and teratogenic causes, in addition to other unidentifiable factors. Otocephaly may occur as an isolated structural defect but generally in association with various other anomalies. Nonetheless, microphthalmia/ anophthalmia has rarely been described.

Method: A 21-year-old primigravid woman was referred to us at 28 weeks' gestation because of polyhydramnios and regular uterine contractions. There was no family history of congenital malformations, nor any history of teratogenic medication, recent infection, diabetes mellitus, or hypertension during this pregnancy. Two dimensional (2D) ultrasound examination revealed severe polyhydramnios (deepest single pocket 16 cm), absence of the mandible, right microphthalmia with an ocular diameter of 0.8 cm (<5th centile), lowset ventromedially displaced ears (melotia), dot shaped small mouth (microstomia), perimembranous VSD, soft tissue mass in anterior neck (considered as fetal goiter) and single umbilical artery. The other anatomical parts were unremarkable. Surface rendering 3-D ultrasonography was used to demonstrate the facial features. With the present findings, we considered agnathi autocephaly complex in the foreground.

**Results:** The family requested the termination option because of the poor fetal prognosis. Fetal cardiocentesis was performed for genetic examination followed by fetocyte with intracardiac potassium chloride. Vaginal delivery was performed with misoprostol. At postnatal autopsy, in addition to antenatal findings hypoglossia, severe pharyngeal hypoplasia and bilateral choanal atresia was detected and confirmed the diagnosis of agnathi autocephaly complex. Chromosomal analysis with karyotyping reported as normal (46, XY). A clinical microarray comparative genome hybridization (aCGH) was performed but no pathogenic copy number variations were detected. Sequencing was performed for all exons within the OTX2 and PRRX1 genes most associated with this anomaly and no point mutation in the tested genes.

**Conclusion:** Otocephaly is usually incompatible with life, so it is important to diagnose on routine antenatal fetal anatomic survey. It remains unexplained in the majority of the cases, which indicates that other factors might be involved. The present case demonstrates the association of microphthalmia with otocephaly and provides evidence that ocular abnormalities without holoprosencephaly can be coexistent abnormality of otocephaly.