Obstetrics & Gynecology

OBGYN-01

Prediction of Small-for-gestational-age Neonates of twin pregnancies at 19-24 weeks' Gestation: Role of Uterine Artery Doppler Screening

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Objectives: Small-for-gestational-age (SGA) neonates in twin pregnancies present unique challenges, with increased perinatal mortality and morbidity risks. Early identification through prenatal screening can substantially reduce these risks. Our team aims to evaluate the predictive value of maternal characteristics, fetal biometry, and uterine artery Doppler (UtA-PI) in identifying SGA neonates in twin pregnancies during the second trimester.

Methods: A retrospective cohort study involving twin pregnancies scanned between 19 and 24 weeks of gestation from November 2008 to October 2023 was conducted. The primary outcome was the prediction of preterm and term SGA neonates, with categorized into three groups: non-SGA, at least one SGA, and both SGA, defined by birthweight below the 10th, 5th, and 3rd percentiles (INTERGROWTH-21st standard). Multivariable logistic regression analysis was used to assess the predictive accuracy, focusing on maternal factors, fetal biometry, and UtA-PI values. Receiver operating characteristic (ROC) curve analysis was employed to evaluate the predictive performance.

Results: A total of 1892 twin pregnancies were included, including 723 (38.2%) that delivered at least one SGA neonates with birth weight <10th percentile, and 177 (9.4%) that delivered both SGA neonates. The areas under the receiver–operating characteristic (ROC) curves (AUC) of at least one SGA <10th in screening by UtA-PI was 0.54. Contrary to studies on singleton pregnancies, showing that UtA-PI was not a reliable predictor of SGA in twins. Previous international studies have shown conflicting results regarding the predictive value of UtA-PI in twin pregnancies. The discrepancies may be due to differences in race and fetal types.

Conclusions: In this prospective cohort, second-trimester uterine artery Doppler studies in twin pregnancies were not as useful as a clinically test for predicting small-for-gestational-age babies. While UtA-PI has been a useful tool in predicting SGA in singleton pregnancies, its application in twin pregnancies is less clear. Further research is needed to explore alternative or supplementary screening methods for this high-risk group.

OBGYN-02 Prenatal Ultrasound of Spina Bifida.

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Neural tube defect (NTD) includes acrania, exencephaly, anencephaly, cephalocele and spina bifida. Spina bifida, or spinal dysraphysm, accounts for 1 in 1000 at birth, and is detectable from prenatal ultrasound. Open spinal dysraphisms (OSD) may present with indirect signs such as obliteration of the cisterna magna, banana sign and lemon sign, which result from Chiari II malformation. These indirect signs help to reach the detection rate of OSD to 90%. However, close spinal dysraphisms (CSD) is more difficult to be seen from prenatal ultrasound, because the diagnosis relies on direct signs of the subcutaneous lesions. CSD may be associated with subcutaneous mass, including lipomyolomele, lipomyelomeningocele, meningocele and myelocystocele. The differences of these component are hardly distinguishable from ultrasound, so MRI is warrant to reach the final diagnosis and ascertain the presence of tethered cord.

Prenatal repair of open spinal bifida via open maternal-fetal surgery has been show to improve postnatal neurological outcomes, including reduction of the need for ventriculoperintoneal shunting and improvement of lower neuromotor function. Once the diagnosis is achieved at prenatal

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period, prenatal fetal therapy should be considered and offered from multidiscipline team work including obstetrician, radiologist, neurosurgeon, neonatologist and rehabilitationist.

OBGYN-03 Fetal Cardiac Screening in the Second Trimester

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Fetal cardiac screening during the second trimester is a crucial component of prenatal care, aimed at early detection of congenital heart defects (CHDs). This period, typically between 18 to 24 weeks of gestation, offers an optimal window for detailed fetal echocardiography due to the sufficient development of fetal cardiac structures. The primary objective of this screening is to identify structural anomalies that may necessitate early intervention or specialized care post-birth.

Advancements in ultrasound technology, particularly the use of two-dimensional (2D) color Doppler ultrasound (CDU), have significantly enhanced the accuracy and reliability of fetal cardiac assessments. Studies have demonstrated that combining 2D-CDU with other advanced imaging techniques improves the sensitivity and specificity of detecting CHDs compared to using traditional methods alone. This approach allows for a comprehensive evaluation of the fetal heart, including detailed views of the ductal arch, aortic arch, and aortic short-axis.

The implementation of fetal cardiac screening has shown promising results, with high detection rates for severe CHDs. However, challenges remain, such as the need for highly skilled sonographers and the potential for false positives or negatives. Despite these challenges, the benefits of early detection and the subsequent planning for delivery and postnatal care underscore the importance of routine fetal cardiac screening in the second trimester.

In conclusion, fetal cardiac screening in the

second trimester is a vital practice that leverages advanced imaging techniques to improve prenatal diagnosis of CHDs. Continued research and technological advancements are essential to further enhance the effectiveness and accessibility of this critical screening process.

OBGYN-04

Prenatal Ultrasonography of Fetal Central Nervous System Abnormalities: Diagnostic Insights and Case Studies.

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In the last decade, prenatal ultrasonography has significantly advanced, enabling earlier detection of central nervous system (CNS) and neural tube abnormalities. It has become increasingly evident that many of these anomalies can be visualized from the end of the first trimester. Between 11 to 13 weeks of gestation, several abnormalities are consistently detectable. These include acrania, alobar holoprosencephaly, exomphalos, gastroschisis, megacystis, and body stalk anomaly. Additionally, there are high detection rates for conditions such as absent hand or foot (77%), diaphragmatic hernia (50%), lethal skeletal dysplasias (50%), polydactyly (60%), major cardiac defects (34%), facial clefts (5%), and open spina bifida (14%).

As the pregnancy progresses into the second trimester, ultrasonography can further detect a range of CNS anomalies, including open spina bifida, agenesis of the corpus callosum, ventriculomegaly, and hypoplastic cerebellum. The ability to identify these abnormalities at an early stage allows for timely medical intervention and critical decision-making for healthcare providers and parents.

For cases where anomalies are suspected, it is imperative to arrange additional diagnostic

evaluations, such as fetal MRI, and schedule serial imaging follow-ups to monitor the development and progression of these conditions. This presentation will explore the detection rates and clinical implications of various fetal CNS abnormalities identified through prenatal ultrasonography. We will also present case studies that highlight the diverse spectrum of these anomalies, underscoring the importance of a multidisciplinary approach in managing pregnancies complicated by such findings.

OBGYN-05

Comprehensive Fetal Ultrasound Care Throughout Pregnancy

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This presentation will focus on the pivotal roles of third-trimester and intrapartum ultrasound in modern obstetric care. The third-trimester ultrasound is increasingly recognized for its ability to assess fetal growth, amniotic fluid volume, and placental position, providing critical information that can influence pregnancy management. Intrapartum ultrasound, on the other hand, plays a crucial role during labor by helping to assess the fetal position, descent, and well-being, guiding clinical decisions in real-time. Drawing on recent literature, we will highlight these two ultrasound modalities' distinct and complementary contributions, emphasizing their importance in optimizing maternal and fetal outcomes.

OBGYN-06

A Call to Action on General Screening for Vasa Previa and Its Review of Literature along with the Experiences from Taiji Clinic

Pei-Chen Wu Taiji Clinic Based on data from Taiji Clinic (January 2019 -February 2023), the incidence of vasa previa (where unprotected umbilical vessels traverse the membranes overlying the cervix) is approximately 1 in 2700 at birth. Historical literature has clearly demonstrated that prenatal diagnosis of vasa previa can significantly improve fetal survival rates, increasing from 56% to nearly 100%. Thus, routine screening for vasa previa and follow-up of high risk cases has the potential to be a life-saving strategy. There are three methods available for vasa previa screening:

1.Routine Assessment of Placental Cord Insertion: This method involves examining the location where the umbilical cord is inserted into the placenta.

2.Color Doppler Examination Across the Cervix: This technique uses color Doppler to visualize blood vessels in the region of the cervix and the cord insertion site.

3.Transvaginal Ultrasound Combined with Color Doppler Imaging (TVS with CDI): This approach utilizes transvaginal ultrasound along with color Doppler imaging to provide a detailed view of the cervical region. TVS with CDI has demonstrated superior diagnostic performance, with high accuracy and a low false negative rate. In summary, while all three methods are effective, transvaginal ultrasound combined with color Doppler imaging is the most accurate for diagnosing vasa previa and is recommended for its superior diagnostic performance.

OBGYN-07 Ultrasound for Ovarian Cancer Management

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Ultrasound is a reliable imaging modality with widespread availability, non-invasive nature, low cost, and no known contraindications or patient risks. According to recent evidence, the choice of imaging modality for ovarian cancer staging may depend on the availability of imaging methods and expertise, although ultrasound has been recognized as comparable to CECT, MRI, and FDG-PET-CT in abdominal staging. Similarly, for predicting non-resectability in ovarian cancer, ultrasound is considered non-inferior to CECT and MRI, and serves as an effective tool for guiding core needle biopsy in patients who are unfit for surgery. Furthermore, ultrasound is the imaging modality of choice for characterizing primary ovarian tumors. Therefore, the use of ultrasound as a first-line diagnostic and assessment tool for ovarian cancer is an indispensable skill for gynecologic oncologists.

OBGYN-08 Endometrial Pathology Diagnosis in Sonography: An Update

Hung Shen

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The incidence of endometrial cancer is increasing globally, not only in the United States and other developed countries but also in Taiwan. This growing trend underscores the importance for sonographers and gynecologists to be vigilant when examining the ultrasound characteristics of patients presenting with Traditionally, symptoms. sonographic evaluation of endometrial lesions has relied heavily on measuring endometrial thickness. Our focus will be on understanding the risk of cancer associated with varying endometrial thicknesses, particularly in asymptomatic menopausal women. Additionally, we will clarify the terminology and definitions related to the endometrium and intrauterine lesions. These new tools will enhance our ability to identify and differentiate various endometrial pathologies more effectively.

OBGYN-09 Ultrasound in Gynecological Oncology of Ovary

Chia Wei Chen Taipei Medical University- Shuang Ho Hospital

Ultrasound examination is the primary imaging modality for evaluating a wide range of female pelvic symptomatology, and is often the first imaging test to detect a gynecologic malignancy. Ultrasound imaging is particularly useful for the neoplasms of ovary evaluating and characterizing ovarian lesions. Surveillance using serial ultrasonography is a reasonable alternative that can be used to discover if changes in the ovarian abnormality will occur that favor either a malignant or benign interpretation. Several ovarian cancer screening trials have had extensive experiences with changes in subclinical ovarian abnormalities in normal women that can define growth, stability or resolution and give some idea of the time frame over which changes occur. The present report examines these experiences and relates them to the current understanding of ovarian cancer ontology, presenting arguments related to the benefits of surveillance.

OBGYN-10 Application of Ultrasound in Urogynecology

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The role of ultrasound imaging in urogynecology is not clearly defined. Despite significant developments in visualization techniques and interpretation of images, pelvic ultrasound is still more a tool for research than for clinical practice. Structures of the lower genitourinary tract and pelvic floor can be visualized from different approaches:

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transperineal, introital, transvaginal, abdominal or endoanal. According to contemporary guidelines and recommendations, the role of ultrasound in urogynecology is limited to the measurement of post-void residue. However, in many instances, including planning and audit of surgical procedures, management of recurrences or complications, ultrasound may be proposed as the initial examination of choice. Ultrasound may be used for assessment of bladder neck mobility before anti-incontinence procedures. On rare occasions it is helpful in recognition of pathologies mimicking vaginal prolapse such as vaginal cyst, urethral diverticula or rectal intussusception. In patients subjected to suburethral slings, causes of surgery failure or postsurgical voiding dysfunctions can be revealed by imaging. Many reports link the location of a tape close to the bladder neck to unfavorable outcomes of sling surgery. Some postoperative complications, such as urinary retention, mesh malposition, hematoma, or urinary tract injury, can be diagnosed by ultrasound. On the other hand, the clinical value of some applications of ultrasound in urogynecology, for example measurement of the bladder wall thickness as a marker of detrusor overactivity, has not been proved.

OBGYN-11 Ultrasound Examination of Female Pelvic Floor: What is Normal ?

Jiun-Yi Sheen National Taiwan University Hospital Bei-Hu Branch

The role of pelvic floor ultrasound in assessing urogynecology patients has rising importance in the recent years. In this presentation, we provide evidence-based markers that are crucial in the application of pelvic floor ultrasound. Common diagnosis and assessment in clinical settings would be covered, including levator ani avulsions, the normal parameters of the genital hiatus, levator-urethral gap, pelvic organ descent, bladder neck descent, and retro-vesicle angles. We aim to introduce the utilization of pelvic floor ultrasound as a routine practice in the clinic, pre-operative, and post-operative settings, starting from recognizing what is considered normal under this approach.

OBGYN-12

Detection of Stress Urinary Incontinence Using Ultrasound

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Stress urinary incontinence (SUI) is a common condition, particularly among women, characterized by the involuntary leakage of urine during activities that increase intra-abdominal pressure, such as coughing, sneezing, or physical exertion. Traditional diagnostic methods for SUI include patient history, physical examination, urodynamic studies, and pad tests. However, the use of ultrasound has emerged as a valuable, non-invasive imaging tool for diagnosing SUI.

Ultrasound offers real-time visualization of the pelvic floor anatomy and allows the assessment of bladder neck mobility, urethral support, and pelvic organ prolapse, which are key factors in SUI. It can be used both transabdominally and transperineally to evaluate the position and function of the bladder and urethra during stress maneuvers. is This imaging technique particularly advantageous because it is non-invasive, readily accessible, and can be performed dynamically in real-time, providing critical information without exposing the patient to radiation.

Recent studies have demonstrated that ultrasound may complement or even replace more invasive techniques in certain cases, offering reliable diagnostic accuracy for SUI. This abstract explores the role of ultrasound in the detection and assessment of SUI, highlighting its utility in clinical practice, and discussing its potential in the future management of patients with stress urinary incontinence.

OBGYN-P01

A Case of Detection of Anencephaly at 12 weeks' Ultrasound

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Objectives: Upon improving computer science, ultrasound has become a non-invasive tool for early detection of fetal malformations. We report a case of anencephaly detected at a 12-week by 3D ultrasound.

Materials and methods: Here we mentioned a case of the malformation of fetal head at 12 weeks.

In addition to the standard views, we apply three-dimensional surface rendering ultrasonography.

Results: In the case, absence of cranial vault (acrania) with present but abnormal brain tissue (exencephaly) was confirmed at 12 weeks. The addition of 3D ultrasound could provide additional information and improve diagnostic performance.

Conclusion: The detection of Anencephaly during a pregnant woman's 12-week ultrasound provides an opportunity for early diagnosis and management of this rare disease.

Accurate 3D ultrasound of the fetal brain structure and CNS is paramount for optimizing prenatal counseling and postnatal care.