



# Obstetric Ultrasound in Context of Coronavirus Pandemic

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## Review Article

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## Abstract

**Background:** Obstetric ultrasound has become in an essential exam in the prenatal care that could be affected by the changes resulting from currently coronavirus pandemic.

**Objective:** To examine the available evidence regarding the recommendations about obstetric ultrasound scan to prevent deterioration in the quality of antenatal care in the context of SARS-CoV-2.

**Methods:** Literature search of PubMed.

**Results and Conclusions:** Enough works have demonstrated that the routine ultrasound scan helps to evaluate fetal growth and health, detect congenital anomalies, perform screening of maternal and fetal diseases, diagnose altered placental implantation and classify multiple gestation and its complications, improving maternal and perinatal outcomes. This pandemic is an exceptional situation where every relationship could be affected, but the prenatal care should not be deteriorated. As health practitioners, we have to provide safety and efficient in the evaluations of the obstetric patients.

**Keywords:** COVID-19; Pregnancy; Ultrasonography; Malformations; Prenatal Diagnosis

## Introduction

The obstetric ultrasound has evolved considerably over the past three decades from an examination only for obstetrical indications to a routine examination in every pregnancy. Because of the minimum risk and high efficiency that the echography has to mother and fetus, this health prenatal check has become in an essential exam that every pregnant woman, and their families, await with impatience. But nowadays, in context of SARS-CoV-2, the rationalization of the ultrasound use is needed for the patients and the physicians or sonographers. Coronavirus pandemic has altered our relationships and decreased all physical contact to reduce the infectious risk. This situation could result in an excessive drop in the prenatal ultrasound scans, which would lead to a deficient antenatal care.

## Obstetric Ultrasound Development

Since the 1980s sonography has been used to monitor the pregnancy but lasted more than ten years to define its usefulness as routine screening exam during pregnancy [1]. The main change about the concept of obstetric ultrasound scan emerged from works as EUROCAT [2] and Eurofetus study [3], and other smaller works performed in each country [1,4,5]. Both European studies were able to describe how the mayor malformations could be diagnosed prenatally, and how it influenced in the termination of the pregnancy [2,3].

Previously, other studies had showed reasons to not use the ultrasound check as a routine exam [6-9]. In this sense, RADIUS study described how the routine ultrasound did not improve perinatal outcome. They did not find differences

between the group of patients who underwent two screening ultrasound scan and group where the ultrasonography only was made form medical indication about outcomes as preterm delivery, birth weight, detection of congenital anomalies and post-date complications [6]. However this study had multiple comments by scientifics from around the world [10,11].

Posteriorly, enough works have demonstrated that the routine ultrasound scan helps to evaluate fetal growth and health, detect congenital anomalies, perform screening of maternal and fetal diseases, diagnose altered placental implantation and classify multiple gestation and its complications, improving perinatal outcomes [12].

### Routine Prenatal Screening

To offer routine scan to all of pregnancies is essential because the most of congenital anomalies appears at the low-risk women [13]. It must be mentioned that detecting fetal structural malformations complicate around 2-3% of the pregnancies [2,3]. The improvement of prenatal diagnosis allows to modify antenatal care and to prepare parents to the neonatal prognosis [14]. This permits to take decisions of pregnancy terminations in some cases [12,15-17].

More benefits of ultrasound in obstetric is its safety both for the mother and her baby [18,19]. This reason has permitted that obstetric ultrasound could be realized a lot of times during pregnancy. Every day, the obstetric ultrasound improves, therefore morphological anomalies and normal variants of the fetus are detected more accurate and earlier. This is due to the quick development of the ultrasound equipment and the high specialization of the ultrasound providers. However, there are some problems about the diagnosis by sonography that it is important to mention: overdiagnosis (false positive findings) and underdiagnosis (false negative findings) [12].

Several previous researches have studied the prenatal detection rate of fetal malformations. All available scientific studies agree that the prenatal care with the introduction of ultrasound screening decrease the maternal and perinatal adverse outcomes [1-5,17]. It is described a detection rate during pregnancy by sonography from 44% to 83% for major anomalies, this variability depends on the anatomical system affected and the proficiency of the sonographer [1,4,20-23]. Additionally, some anomalies are more detectable than other at antenatal life, most of works reported that the malformations of pulmonary and central nervous systems are the most antenatally detectable [2-5,16]. The false-positive rate was placed between 1 to 8%, being hydronephrosis and pleural effusions the most common [3,4,16,22]. False positive is a problem because they are cause of family anxiety and use

valued resources of perinatal care. The most important factor associated to false-positive rate on screening ultrasound scan is the maternal obesity [24].

Currently, the search for fetal structural anomalies at early gestational ages is performed at first trimester of pregnancy how the first opportunity to fetus and mother screening [14,15,25]. Third trimester scan allows to study evolutive malformations and to prepare birth and postnatal requirements [26].

It seen clear that obstetric ultrasound scan is required during pregnancy, but it has been also enough reported that the numbers of needed scans in a low-risk pregnancy is of three [25,26]. The most of scientist studies report that the first trimester scan allows not only to date the pregnancy and to diagnose multiple gestation, but also to determinate fetal and maternal risks and some mayor fetal structural anomalies [27]; the second trimester is the principal scan to detect congenital anomalies; and third trimester scans are useful to diagnosis abnormal fetal growth [26,28,29].

### Medical Behavior Changes Caused by Coronavirus Pandemic

Based on this evidence, to determine fetal health, obstetric ultrasound exams are crucial, in every good antenatal care, also in this context of coronavirus pandemic.

It seems that Coronavirus Disease 2019 (COVID-19) affect pregnant women on the same degree as adult of the same aged and comorbidities. It is not clear if there is a vertical transmission based in the reported cases and the low concentration of virus in human blood [30-32]. In the context of context of SARS-CoV-2, the prevention measurements are fundamental to guarantee the less risk of transmission between healthcare providers and pregnant women. For this reason, the prenatal appointments should be the necessary minimum ones to ensure an adequate obstetric care. In correlation with this premise, the International Federation of Gynaecology and Obstetrics (FIGO) has issued a recommended management of the obstetric patient about her prenatal appointments [33]. This schedule included the three moments abovementioned to perform ultrasound scans and recommended the use of proper protection elements both for the mother and the sonographer [34]. It is important to mention that every pregnant woman has to be contacted before the appointment in order to know if she present any symptom of COVID-19 and complete 14 days of home isolation if she presents any of these symptoms or have had some positive contact [33,35].

Finally, the rationalization of the obstetric ultrasound includes three fundamental points that are reported at the

last ISUOG Consensus Statement: the appropriate antenatal care cannot be affected because the present coronavirus pandemic, the ultrasound scan should be time efficient without affecting the quality and unnecessary scans should be avoided [34].

### Declaration of Interest

The authors report no conflicts of interest.

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