

## **The Feasibility of the Structured First Trimester Anatomical Assessment: Obstetric Ultrasound Providers Survey**

### **Background and Rationale**

Approximately 2-3% of babies are born with a congenital birth defect, 15% of which are incompatible with life. In Canada, it is standard of care to offer all pregnant women a detailed ultrasound examination between 18 –20 weeks of gestation to screen for birth defects. With improvements in ultrasound technology and better understanding of fetal development, it is now possible to perform an evaluation of fetal anatomy in the first trimester, at the same time as the first trimester screening scan, also known as the nuchal translucency scan (11-13+6 weeks gestation). In a systematic review by Rossi et al, 996 malformations (12/1000) were detected in 78,002 fetuses scanned between 11-14 weeks gestation, for an overall detection rate (DR) of 51%. (1) Many major fetal anomalies such as fetal hydrops, anencephaly, body stalk anomaly, large anterior abdominal wall defects, and megacystis are now almost universally detected in the first trimester. In Canada, the SOGC clinical practice guidelines on the use of first trimester ultrasound recommends an early anatomic assessment and nuchal translucency measurement between 12 and 14 weeks gestation (2) and an early comprehensive scan between 13 and 16 weeks for patients at increased risk of a fetal anomaly, (3) however, neither guideline specifies the structures that should be documented.

### **Research question and Objectives**

This study aims to assess obstetric ultrasound provider's (ultrasonographers, physicians (radiologists, maternal fetal medicine specialists)) current perception and knowledge of the 12–14-week structured anatomical assessment by determining 1) current practice, 2) feasibility of documenting anatomy at 12-14 weeks on a routine basis including what structures are feasible to be routinely documented, 3) barriers (equipment, time, patient characteristics), and 4) attitudes towards implementation of a 12-14 week anatomic scan, and 5) supports necessary to implement (time, education).

### **Methods**

A survey designed for health care professionals who perform and/or interpret first trimester obstetric ultrasounds has been developed and will be entered into UCalgary Qualtrics, an online survey tool.

A link/QR code for the survey (along with a reminder for individuals who do not initially respond) will be emailed to members of SonoCanada, the Canadian Association of Radiologists and the Canadian Maternal Fetal Medicine Society. As the web link is not personalized, participants must complete the survey in a single session.

### **Statistical Analysis:**

Baseline demographic variables (i.e., occupation, medical setting) will be collected from electronic surveys distributed from Qualtrics through U of C. The primary outcome is to determine the feasibility of performing an anatomic survey at 12-14 weeks on a routine basis, from the perspective of both the reporting physician and the sonographer through the incidence of anatomical structures which are currently routinely assessed in first trimester screening.

Secondary outcomes included identifying the experiences with anatomical fetal screening, current barriers to implementing anatomic fetal screening at 12-14 weeks, and suggestions for improving upon current practices. All participants will be included in the analysis when data is available. We will analyze the demographic characteristics and outcomes using a descriptive analysis with mean (standard deviation), and frequency (percentage) where appropriate. All data were analyzed using IBM SPSS statistics version 26.0. We are planning to achieve a sample size of 300 sonographers and 300 physicians based on 2 mailings of the survey over a 4 week period.

### **Expectations**

This study will provide important information regarding the current level of understanding and knowledge of the first trimester anatomical scan. Direct feedback from providers performing and/or interpreting these scans will assist in developing the checklist for the 12–14-week anatomical scan with the goal of developing practical provincial/national standards. We hope to identify the barriers, if any, and potential changes that can be made to support uptake locally and nationally. Assessing its' practicality and feasibility across provinces and disciplines will provide additional valuable information to assist in its' standardization and implementation.

### **References**

1. Rossi AC, Prefumo F. Accuracy of ultrasonography at 11-14 weeks of gestation for detection of fetal structural anomalies: a systematic review. *Obstet Gynecol.* 2013;122(6):1160-7.
2. Van den Hof MC, Smithies M, Nevo O, Oullet A. No. 375-Clinical Practice Guideline on the Use of First Trimester Ultrasound. *J Obstet Gynaecol Can.* 2019;41(3):388-95.
3. Nevo O, Brown R, Glanc P, Lim K. No. 352-Technical Update: The Role of Early Comprehensive Fetal Anatomy Ultrasound Examination. *J Obstet Gynaecol Can.* 2017;39(12):1203-11.