The use of three-dimensional ultrasound in predicting complex gastroschisis: a longitudinal, prospective, multicenter cohort study


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Objective

- To determine whether complex gastroschisis can prenatally be distinguished from simple gastroschisis, by fetal stomach volume and stomach-bladder distance, using 3D ultrasound.
- Complex gastroschisis: intestinal atresia, volvulus, necrosis, perforation.

Methods

- Prospective cohort study in 4 centers in The Netherlands that performed longitudinal 3D ultrasound measurements (2010-2015).
- Stomach volumes (n=223): calculated using Sonography-based Automated Volume Count.
- Stomach-bladder distances (n=241): calculated using multiplanar visualization of volume datasets.

Results

- Of 79 fetuses, 66 (84%) had been assessed with 3D ultrasound.
- 64 of these 66 were liveborn, and 9 (14%) had complex gastroschisis.
- With advancing gestational age, stomach volume increased, and stomach-bladder distance decreased (p<0.001)
- We found no differences between fetuses with simple and complex gastroschisis, neither for stomach volume, nor for stomach-bladder distance (Figure 1).

Conclusion

- Fetal stomach volume and stomach-bladder distance, measured using 3D ultrasound, cannot be used to predict complex gastroschisis.

Figure 1. Stomach volumes (above) and stomach-bladder distances (below) in fetuses with simple or complex gastroschisis during gestational age. Different colors and symbols represent different fetuses.