An opaque problem: Assessment of fetal viability with a maternal chest drain in situ

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Introduction
Cystic fibrosis and pregnancy remains a multifaceted challenge for obstetric and respiratory physicians, women with cystic fibrosis and their families. Here we present a case outlining the challenge of establishing fetal viability following chest drain insertion for maternal pneumothorax at 14 weeks gestation.

Case presentation
A 36 year old woman para 0+4 with cystic fibrosis conceived following IVF. Ultrasound dating was performed at 12 weeks. She was admitted to ICU following a spontaneous pneumothorax and community acquired pneumonia at 14 weeks gestation. Her BMI was 19. She was transferred to a tertiary level ICU following intubation and insertion of a chest drain. Transabdominal fetal viability assessment was attempted in the ICU. Initially, no pelvic or abdominal structures were visualised using a curvilinear, low frequency probe. Due to complete non-visualisation of pelvic structures, it was thought to be a hardware problem so a linear, higher frequency Voluson E8 probe was used. Transvaginal ultrasound was offered but declined by the patient. Using continuous firm pressure on the probe with a full maternal bladder, fetal viability was eventually established. Obtaining biometry of the fetus was challenging due to subcutaneous air throughout the woman’s abdomen (subcutaneous emphysema).

Due to the large difference in acoustic impedance between air and soft tissue, most of the ultrasound signal was reflected, leading to artefact (Figure 1 and Figure 2). Removal of the chest drain and resolution of subcutaneous emphysema, ultrasound images of the fetus were easily obtained (figure 3).

Conclusion
Presence of significant subcutaneous abdominal emphysema in pregnancy has rarely been reported. Determining fetal viability was challenging which was distressing for patient and her family. Point of care fetal ultrasound is an important component of management in critically ill pregnant women so awareness of possible pitfalls is important for care providers.

Figure 1. Limited views due to significant abdominal wall gas. Femur length equals 15+3.

Figure 2. Abdominal circumference equals 16+1. Anterior abdominal wall appeared normal.

Figure 3. Resolution of abdominal wall gas two weeks post chest drain removal. Gestational age 17 weeks.

References