

## **Novel 3-Dimensional Extended Imaging to Evaluate Fetal Abnormalities**

2-Dimensional Ultrasound (2DUS) is the most common means to detect fetal abnormalities. Nevertheless, it is difficult to detect certain fetal anomalies, including cleft palate and cardiac septal defect, using 2DUS. It is also difficult to assess the severity of certain fetal abnormalities such as spina bifida. Images generated from 2DUS are not easily understood and thus making explanation of fetal abnormalities to the parents difficult.

3-Dimensional Ultrasound (3DUS) has been introduced several years ago. It provides unique images in both planar and rendered format which cannot be visualized with 2DUS. However, most conventional 3DUS machines cannot show images in multiple sequential parallel planes, nor can they display a sectional plane across a curved structure. In fact, planar images are usually more useful than rendered images for doctors' interpretation of fetal anomalies.

3-Dimensional Extended Imaging (3DXI) is the latest technology used in detecting fetal abnormalities. The Department of Obstetrics & Gynaecology, HKU Li Ka Shing Faculty of Medicine, has conducted an evaluation on the effectiveness of 3DXI. It was found that 3DXI facilitates systematic examination of the fetus and allows examination of the fetal palate and cardiac interventricular septum.

3DXI allows simultaneous display of multiple sequential parallel planes, thus offering additional and more accurate information on fetal abnormalities. This technique may be further applied on the examination of single kidney, neck or armpit tumour.

On clinical applications, 3DXI is complementary to 2DUS. When 2DUS examination shows possible signs of fetal abnormalities, 3DXI can be employed to make further investigation. For pregnant women at high risk of carrying abnormal fetus, doctor can also use 3DXI to conduct systematic examination and make recommendations for further assessment.