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Saturday: 9:00 am – 1:00 pm
Closed on Sundays and Public Holidays
Consultation by Appointment

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# Knowing Fetal Morphology Scan

養和婦產科中心
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## What is fetal morphology scan ?

A fetal morphology scan aims to carry out a thorough check of the structure of the fetus. Most babies are normal and the parents can be reassured with the normal ultrasound findings. In case a baby has some structural defects, it might be important to find out before he or she is born. By knowing the abnormalities, prenatal diagnosis might be possible and the parents, the obstetricians and the paediatricians might be better prepared for the birth of such affected child. For certain major congenital defects, the parents might have the option of a termination of the pregnancy if prenatal diagnosis can be established.

## How is this morphology scan different from the ordinary antenatal ultrasound ?

During an ordinary antenatal ultrasound, the fetal heart pulsation, fetal size and presentation, amniotic fluid volume around the fetus and the placental site are usually assessed. For a fetal morphology scan, the above parameters are checked. In addition, the fetal structures are carefully assessed. Structures that are commonly assessed during a morphology scan include: cranium, intracranial structure, orbits, lips, spine, heart, lung, diaphragm, stomach, kidneys, bladder, other structures within the fetal tummy, umbilical cord, limbs and fetal genital organ.

## When is the best timing for fetal morphology scan ?

A fetal morphology scan is usually performed during 18 to 22 weeks of gestation. At this gestation, there are usually good views of the fetal parts and internal organs. Fetal structure can also be assessed earlier than 18 weeks if indicated. With the advance of ultrasound machines, many congenital anomalies can be picked up between 11 to 14 weeks of gestation. However, assessment of some complex structures such as the fetal heart might be difficult at early gestation. Assessment of the fetal structure might be difficult at the late gestation such as after 37 weeks because the fetal bony structures are mature, causing acoustic shadow on the internal organs. Also, if it is scheduled after 24 weeks of gestation, termination of pregnancy is not permitted by law in Hong Kong even a major fetal defect is discovered.

## What are the limitations of morphology scan ?

Not all congenital defects can be picked up on a fetal morphology scan. The pick-up rate depends on a number of factors, including the severity and nature of the abnormality, whether the fetal position is optimal for scanning, women's factors such as whether the tummy is thick or there is surgical scar, the quality of the ultrasound machine and whether the medical personnel are experienced in or have received adequate training in this practice.

## What are the roles of 3D/4D ultrasound in assessing the fetal structures ?

For a routine assessment of the fetal morphology, 2D ultrasound is already adequate. The addition of 3D and/or 4D scan is a bonus and may enhance the bonding between the family and the unborn child. Most women also find it pleasurable watching the 3D/4D pictures of their babies. 3D/4D ultrasound is increasingly important when fetal abnormalities are suspected or picked up. These new modalities of ultrasound can help by clarifying the abnormalities. The 3D ultrasound pictures may also help the family appreciate to what extent the baby is affected.

## Is a morphology scan safe to the fetus ?

Diagnostic ultrasound has been used since 60's. Based on numerous follow-up studies on children who were scanned before birth, there is no evidence that in-utero exposure of antenatal ultrasound is associated with any undesirable biological effects.

# Ultrasound Images

## First Trimester

Gestational sac and yolk sac at 6 weeks

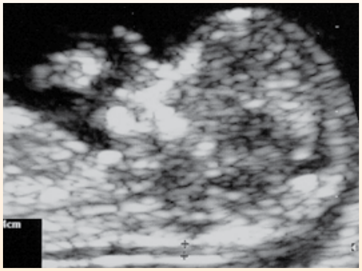
Facial profile in the first trimester

The crown-rump length of the embryo at 9 weeks

Fetal hand at 12 weeks

The crown-rump length of the fetus at 12 weeks

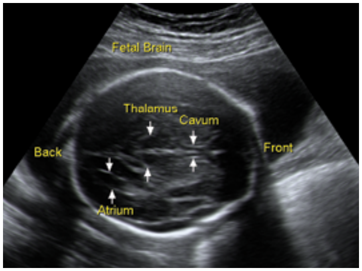
Male genital organ (arrow) at 12 weeks



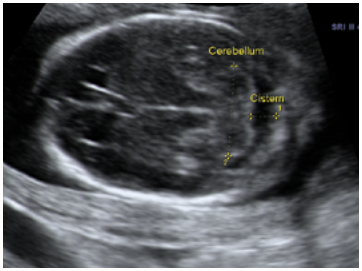
The nuchal translucency thickness in the first trimester

Female genital organ (arrow) at 12 weeks

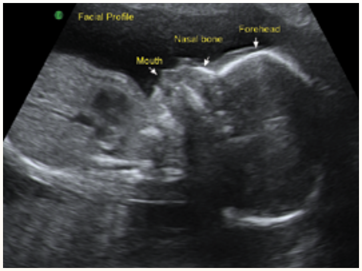
## Second Trimester - Head and Face



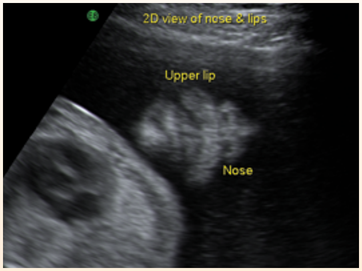
Fetal brain in the second trimester



Fetal cerebellum at 17 weeks

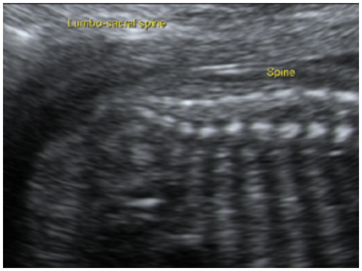


Facial profile in the second trimester



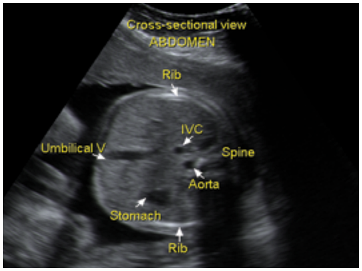
Fetal nose and lips in the second trimester

## Spine

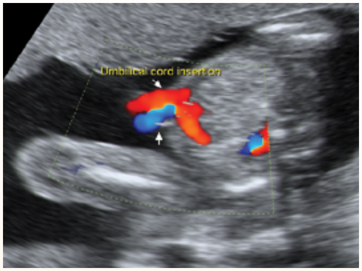


Fetal spine in the second trimester

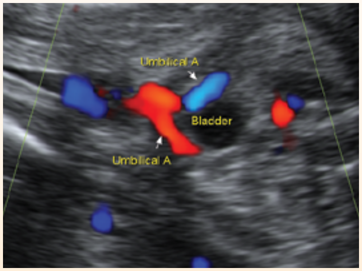
## Abdomen



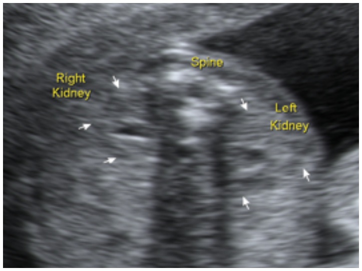
Cross-sectional view of the fetal abdomen



Umbilical cord insertion of the fetal abdomen

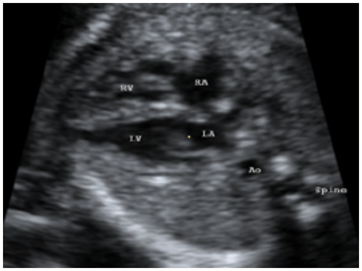


Fetal bladder



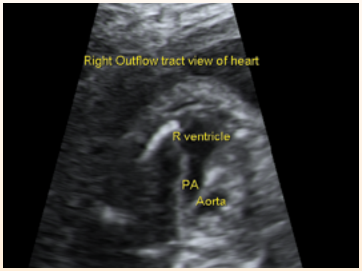
Two fetal kidneys

## Heart

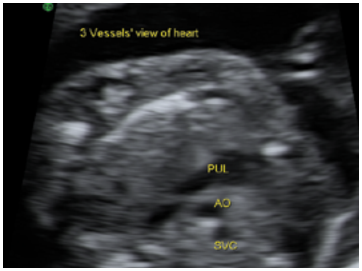


The 4-chamber view of fetal heart

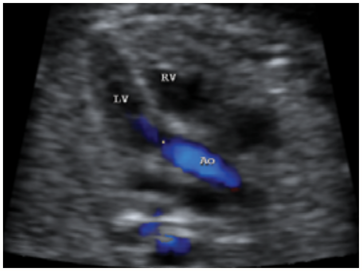
The aortic outflow tract from the fetal heart



The pulmonary outflow tract from the fetal heart



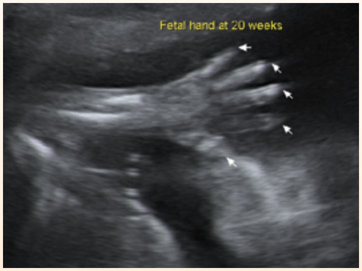
The 3 vessels' view of the fetal heart



Aortic outflow tract with colour indicating the flow

Colour flow of both pulmonary artery and aorta

## Limps

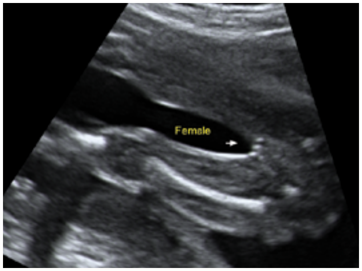


The fetal hand at 20 weeks

## Gender - Male

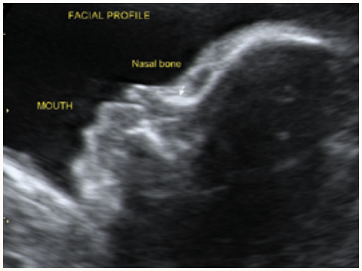
Male genital organ (arrow) at 18 weeks

## Gender - Female

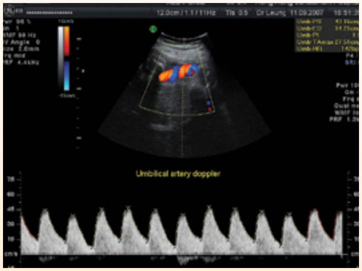


Female genital organ (arrow) at 20 weeks

## Third trimester



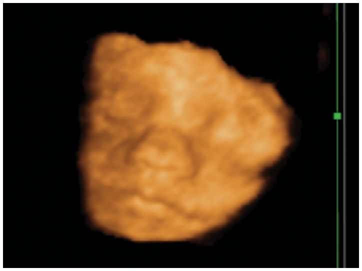
Facial profile in the third trimester



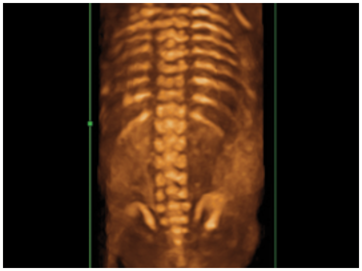
Umbilical artery doppler study

# 3D/4D Images

## Second and Third Trimester



3D fetal face at 20 weeks



3D fetal spine at 20 weeks

3D fetal genital organ in a male fetus at 28 weeks

## 3D face - Do all fetuses look the same?