認識胎兒結構性超聲波

Knowing Fetal Morphology Scan

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什麼是胎兒結構性超聲波？

進行胎兒結構性超聲波，旨在詳細檢查胎兒是否有結構異常。大部份胎兒均屬正常，得出的一個正常超聲波報告能令父母更為安心。倘若胎兒出現結構異常，能夠及早在出生前作出準確診斷，對懷孕處理是非常重要。父母、產科醫生及兒科醫生能夠對胎兒缺陷先作了解，有助為胎兒出生作最充足的準備。若胎兒有嚴重缺陷，父母或可選擇終止懷孕。

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.

結構性超聲波與一般產前檢查的超聲波有甚麼分別？

一般產前超聲波會檢查胎兒心跳、大小、胎位、羊水量及胎盤位置。結構性超聲波除作以上各項檢查外，更會仔細檢查胎兒結構及內臟器官 ； 一般會檢查的器官包括頭骨、腦、眼腔、唇、脊骨、心臟、肺、橫隔膜、胃、腎、膀胱、肚子、臍帶、四肢及性器官。

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.

結構性超聲波最適合在何時進行？

結構性超聲波一般在十八至廿二孕週進行，期間胎兒的結構及內臟器官較為清晰，容易檢查。當然，若有需要，也可在十八孕週前作結構性超聲波檢查。由於超聲波儀器愈來愈先進，很多異常結構都可以在十一至十四週時成功診斷出來；但若太早進行檢查，某些器官(如心臟)會可能因胎兒太小而未能看得清楚。在懷孕後期如足月期間(三十七孕週後)，胎兒發育完整的骨頭可能會遮擋內臟器官，亦令檢查胎兒結構較為困難；再者，即使在廿四孕週後發現胎兒有缺陷，香港法例亦不容許終止懷孕。

When is the best timing for fetal morphology scan ?

A fetal morphology scan is usually performed during 18-22 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 11-14 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.

結構性超聲波有什麼限制？

結構性超聲波會礙於許多因素，未能診斷出所有胎兒的結構異常。這些因素包括器官異常的嚴重程度及性質、胎兒位置是否理想、孕婦腹部脂肪層的厚度或有否動過手術、超聲波儀器的質素、負責進行超聲波的人員是否有足夠的訓練及經驗等等。

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.

三維 (3D) 及四維 (4D) 超聲波對檢查胎兒結構如何重要？

對例行結構性超聲波而言，二維(2D)超聲波已經足夠。三維(3D)及四維(4D) 超聲波可說是錦上添花，有助加強孕婦及家人與小生命之間的連繫；大部份孕婦都樂於觀看胎兒3D/4D圖像。倘若經2D超聲波診斷出或懷疑胎兒結構異常，3D或4D技術有助釐清及確定2D超聲波之診斷，有助孕婦及家人了解異常結構的情況。

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.

結構性超聲波對胎兒是否安全 ?

產前超聲波早於六零年代用作診斷用途。大量有關出生前接受過超聲波檢查之兒童的研究指出，現時未有任何証據顯示產前超聲波會對胎兒構成不良影響。

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.

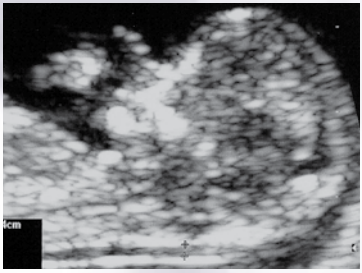
超聲波影像
Ultrasound Images

早孕期
First Trimester

懷孕六週的胎囊與卵黃囊
Gestational sac and yolk sac at 6 weeks

懷孕九週的胚胎頭臀長
The crown-rump length of the embryo at 9 weeks

懷孕十二週的胎兒頭臀長
The crown-rump length of the fetus at 12 weeks



早孕期頸皮厚度
The nuchal translucency thickness in the first trimester

早孕期側面輪廓
Facial profile in the first trimester

懷孕十二週的胎兒手掌
Fetal hand at 12 weeks

懷孕十二週的男性胎兒性器官(箭咀)
Male genital organ (arrow) at 12 weeks

懷孕十二週的女性胎兒性器官(箭咀)
Female genital organ (arrow) at 12 weeks

中孕期 - 頭及面部
Second Trimester - Head and face

中孕期的胎兒腦部
Fetal brain in the second trimester

懷孕十七週的胎兒小腦
Fetal cerebellum at 17 weeks

中孕期的側面輪廓
Facial profile in the second trimester

中孕期的鼻子與咀唇
Fetal nose and lips in the second trimester

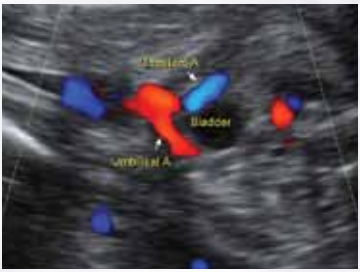
脊椎
Spine

中孕期的胎兒脊骨
Fetal spine in the second trimester

腹部
Abdomen

胎兒肚子之橫切面
Cross-sectional view of the fetal abdomen

胎兒肚子之臍帶入口
Umbilical cord insertion of the fetal abdomen



胎兒膀胱
Fetal bladder

兩個胎兒腎臟
Two fetal kidneys

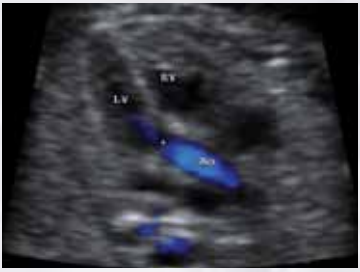
心臟
Heart

胎兒心臟四腔平面圖
The 4-chamber view of fetal heart

胎兒心臟主動脈外流道平面圖
The aortic outflow tract from the fetal heart

胎兒心臟肺動脈外流道平面圖
The pulmonary outflow tract from the fetal heart

胎兒心臟三血管平面圖
The 3 vessels' view of the fetal heart



心臟主動脈外流道以彩色顯示血流方向
Aortic outflow tract with colour indicating the flow

肺動脈與主動脈血流
Colour flow of both pulmonary artery and aorta

四肢
Limps

懷孕二十週的胎兒手掌
The fetal hand at 20 weeks

男性
Gender - Male

懷孕十八週的男性胎兒性器官(箭咀)
Male genital organ (arrow) at 18 weeks

女性
Gender - Female

懷孕二十週的女性胎兒性器官(箭咀)
Female genital organ (arrow) at 20 weeks

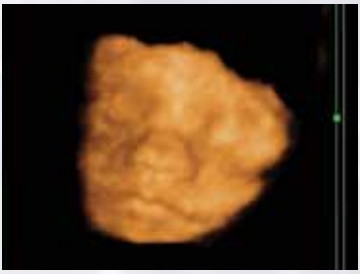
後孕期
Third trimester

後孕期的側面輪廓
Facial profile in the third trimester

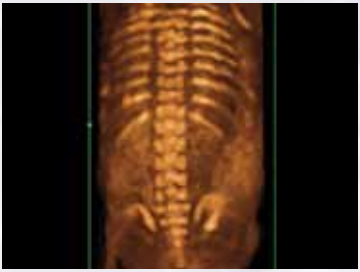
臍帶動脈多普勒檢查
Umbilical artery doppler study

三維/ 四維立體超聲波圖像
3D/4D Images

中孕期及後孕期
Second and Third Trimester



懷孕二十週胎兒面部的三維圖像
3D fetal face at 20 weeks



懷孕二十週胎兒脊骨的三維圖像
3D fetal spine at 20 weeks

懷孕二十八週男性胎兒性器官的三維圖像
3D fetal genital organ in a male fetus at 28 weeks

胎兒面部的三維圖像 - 是否所有胎兒面部外觀都一樣?
3D face – 'Do all fetuses look the same?'

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