Quality of Routine Fetal Anomaly Screening Service in a Low-risk Population

Poon CF, Ng WH, Kwok SL, Ng SY, So SC
Kou KO, Lau YTB, Ma WLT, Tse KT, Leung KY

Department of O&G, QEH
Background

- Congenital abnormalities at birth: ~ 3%.
- International guidelines recommend routine mid trimester anomaly scan to detect or exclude fetal abnormalities.
- However detection rate varies from 13 to 80%.
- If miss anomalies, medico-legal consequences.

Objectives

- To determine the performance of mid trimester ultrasound screening for fetal structural abnormalities in a low-risk population.
Routine Scan

- Low risk pregnancies
- Around 20-22wk by trained doctors or midwives
- Leaflets, explanation, with relatives
- High resolution ultrasound machine
- The scan results recorded in a computer database
- Trace fetal outcomes through labour ward, Paed, CMS, telephone enquires
Methodology

- Retrospective study
- From Jul 2010 to Dec 2012
- Routine scan findings
- Referral to maternal fetal medicine team
- Prevalence of malformation at birth
- Detection rate
- False positive rate
- False negative rate
Results

71 (0.9%) rescan due to date problem or suboptimal usg

7 Fetal loss
9 unknown outcomes

Routine scan
8318 women

Abnormal or suspected findings
324 (3.9%)

Other abnormalities or soft markers
(112)
Normal (12)

TOP for major anomalies (15)

Normal findings
7994 (96.1%)

Malformation at birth
185 (2.2%)

Malformation at birth
40 (0.5%)
Results

- 8318 pregnant women
- 31.4% scan by doctors, 68.6% by midwives
- 20-23 wk (94.3%), 18-19 wk (5.7%)
- Prevalence of malformations: 225 (2.7%)
- Detection rate: 82%
- False positive rate: 4%
- False negative rate: 0.5%
Referral to MFM Specialist (3.9%)

- **Fetal structural abnormalities**
- **Mild fetal renal pelvic dilatation**
- **Soft ultrasound markers**
- **Abnormality in fetal biometry, liquor or placenta**
- **Suspected fetal abnormalities but not confirmed by MFM specialist**
Anomalies Detected

- Renal anomalies: 12.4%
- Cardiac anomalies: 9.7%
- Single umbilical artery: 5.9%
- Facial anomalies: 3.8%
- CNS anomalies: 3.8%
- Skeletal anomalies: 2.2%
- GI anomalies: 1.1%
- Lung anomaly: 1.1%
- Persistent Lt umbilical vein: 6.5%
- Multiple anomalies: 53.5%
Cleft Lip
Open Spinal bifida

Lemon shaped head

hydrocephalus
Hypoplastic Lt Heart Syndrome

Over riding of aorta

Cystic adenomatoid malformation of lung

Right aortic arch
In utero therapy as an alternative to termination
Missed Abnormalities 40 cases (0.5 %)

- Detected in third trimester (5 cases)
- Detected after birth (35 cases):
  - 94.2% were minor abnormalities
  - 5.8% were major (cardiac, small meningocele)
Quality Control

- Training
  - Theoretical USG course (HA or CUHK)
  - Practical exam
    - Internal assessment (Dept)
    - External assessment (HA) same for Dr and MW
  - > 250 Fetal morphological assessments yearly

- Rotation to PDC team
- Regular educational and team meetings
- Credentialing
- Standard protocol
- Monitoring & Audit

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Maternal Fetal Medicine Postgraduate Meeting

Date: 27th April 2012 (Friday)
Time: 6:30pm – 8:00pm
Venue: Discussion Room, Ward B3, QEH
Chairman: Dr. Leung Kwok Yin, COS, Dept. of O&G, QEH
Topics & Speakers:
- A case of pheochromocytoma complicating pregnancy
  Dr. Lau Yuen Ting Betty, MFM trainee, QEH
- Premature birth of a fetus with a giant tumour: conception and birth of the cluster’s fetal surgery team
  Dr. Nicholas Chao, Paediatric Surgeon, QEH
- Impact of fetal diagnosis on neonatal management of congenital heart disease
  Dr. SH Lee, Paediatric Cardiologist, QEH

1.5 CME points for Hong Kong College of Obstetrics & Gynaecologists (pending approval)
1.5 PEM & CNE points approved

Please contact Ms Dorothy Lee at 2958 6696 for reservation of car parking space.
Standard protocol and saving images for documentation
Limitations

- The pathologies among those with undetected abnormalities were in general known to be difficult or develop in later pregnancy.
- Informed consent
Conclusion

- Our routine mid trimester scanning service is reliable and can detect ~80% of the major fetal anomalies.
- This good performance was probably related to the formal training, assessment, protocol, continuous education and audit.
- The results of this study is useful for patient counseling before the examination.