SELECTIVE GROWTH RESTRICTION IN
DICHORIONIC AND MONOCHORIONIC
TWIN PREGNANCIES

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Declaration of interest

- Luminary site General Electric
Scanning twins at 10-14 weeks: chorionicity

Lambda sign = dichorionic diamniotic

T sign = Monochorionic diamniotic

No membrane = Monochorionic Monoamniotic

Diagnose, confirm and document

ISUOG Basic Training

ISUOG Practice Guidelines: role of ultrasound in twin pregnancy
Definitions

- Growth discordance = \( \frac{\text{big} - \text{small}}{\text{big}} \)
- Selective fetal growth restriction (sFGR)
  - >25% difference
  - Smaller < p10
- Increased adverse outcome if >20% difference
Estimated fetal weight discordance ≠ birth weight discordance

- Twins (secondary / tertiary care) n = 281
- >20% discordance birth weight = 15%
- >20% discordance EFW
  - 57% sensitivity
  - 62% positive predictive value
Causes of growth discordance

- Dichorionic
  - Whatever causes IUGR
  - Velamentous insertion 23% vs 3%

- Monochorionic
  - Unequal placental sharing
  - TTTS / TRAP / sFGR

- Thus:
  - Detailed ultrasound
  - Karyotyping / infective testing if needed
Dichorionic twins with sFGR

- Monitoring as single FGR
  BUT
- Delivery generally not recommended before 32 – 34 weeks
- Therefore maternal monitoring (pre-eclampsia), but fetal monitoring not too soon
Dichorionic twins with sFGR

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i.e. NOT automatically at “viability”
Management monochorionic sFGR - fetal medicine unit

- TTTS
  - Stage I: Wait for stage II / results of TTTS-1 study
  - Stage II – IV: Fetoscopic laser occlusion
Management monochorionic sFGR - fetal medicine unit

- TTTS – low resource setting
  - Stage I  Wait for stage II
  - Stage II  Amniodrainage?
  - Stage III – IV  Umbilical cord occlusion?
A classification system for selective intrauterine growth restriction in monochorionic pregnancies according to umbilical artery Doppler flow in the smaller twin


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- **Type I** positive EDV UA small twin
  - <5% deterioration / unexpected IUFD small twin
  - Delivery 35w; 29% discordance (1688 / 2385 g)
  - IVH, parenchymal brain damage rare

- **Type II** AREDV UA small twin
  - 90% deterioration small twin; unexpected IUFD rare
  - Delivery 30w; 38% discordance (787/ 1468 g)
  - IVH, parenchymal brain damage 3% large, 14% small twin

- **Type III** iAREDV UA small twin
  - 11% deterioration small twin; unexpected IUFD 6% / 15%
  - Delivery 31w; 36% discordance (1017/ 1713g)
  - IVH 6% (small twin) parenchymal brain damage 20% (large twin)
Management monochorionic sFGR - fetal medicine unit

- Natural history / clinical progression not completely known

- Management
  - Expert based
  - Based on timing, degree, hemodynamics, amniotic fluid

Outcome in monochorionic twin pregnancies with selective intrauterine growth restriction according to the umbilical artery Doppler pattern of the smaller twin: a systematic review and meta-analysis. Buca, Pagani et al. UOG (in press)
Management monochorionic sFGR - fetal medicine unit

No TTTS:

- Type I
  - (bi)weekly evaluation
    - Growth / 2w
    - Doppler UA/mca/DV
    - Amniotic fluid volume
  - Elective delivery (34 - ) 36 w
Management monochorionic sFGR
- fetal medicine unit

No TTTS:

- Type II / III
  - Intervention / expectancy
- Severe type II / III
  - diagnosis <22 weeks,
  - estimated weight discordance >35%,
  - reversed end-diastolic umbilical artery, or
  - ductus venosus pulsatility index >95th centile
  - severe oligohydramnios

- Cord occlusion:
  - 93% delivery > 32w (median 36w, 2600g)
  - 93% survival larger infant
Management monochorionic sFGR - fetal medicine unit

No TTTS:

- Type II
  - Expectant management
    - (Twice) weekly Doppler UA/mca/DV
    - Abnormal DV flow: selective cord occlusion/ delivery
    - CTG?
    - Elective delivery?
Management monochorionic sFGR - fetal medicine unit

No TTTS:

- Type III

  - Expectant management: arbitrary – same as type II?
    - (Twice) weekly Doppler UA/mca/DV
    - Abnormal DV flow: selective cord occlusion/ delivery
    - CTG?
    - Elective delivery?
Single IUFD
- fetal medicine unit

- Risk to survivor:  MC / DC
  - Death 15% / 3%
  - Preterm birth 68% / 54%
  - Abn neurodevelop 26% / 2%

- Management:
  - Usually NOT delivery (too late)
  - Anaemia? (mca-PSV)
  - Brain imaging (US & MRI) -4w if monochorionic
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Ultrasound Obstet Gynecol 2016; 47: 247–263

ISUOG Practice Guidelines: role of ultrasound in twin pregnancy
Management: selective fetal growth restriction

- **Dichorionic**
  - *Refer for opinion*
  - *Do NOT automatically start monitoring small twin at viability*

- **Monochorionic**
  - *Refer for detailed 12w & 20w assessment*
  - *Refer for opinion:*
    - Estimated fetal weight discordance > 20%
    - Amniotic fluid discordance