MANAGEMENT OF MULTIPLE GESTATION

FLAME LECTURE: 110
WHITE 8.12.19
LEARNING OBJECTIVES

- List the risk factors for multiple/multifetal gestation
- Describe the management of multiple gestation
- Describe the potential fetal complications associated with multiple gestation

Prerequisites:
- None

See also – for closely related topics
- FLAME 109: Diagnosis of Multiple Gestation
RISK FACTORS FOR HAVING TWINS

- Assisted reproductive technology is the biggest risk factor for twins
  - Risk of twins increases w/ young maternal age and # of embryos transferred
    - Rate of twins when 2 embryos transferred: 22.7% (at age 20-29) vs. 19.7% (at age 30-34)
    - Rate of twins when 3 embryos transferred: 45.7% (at age 20-29) vs. 39.5% (at age 30-34)
  - Even if 1 embryo is transferred, there is a ~5% risk that the zygote splits resulting in twins; this is thought to be due to the stress on the embryo during the IVF process

- Ovulation induction therapy
  - Stimulates ovaries to produce several follicles (i.e. higher risk of dizygotic twins)

- Advanced maternal age (AMA) is a risk factor for spontaneous twins
  - Elevations in serum FSH levels thought to cause ovulation of multiple follicles

- Increased frequency of dizygotic twinning in some families
  - Possible genetic factors
FETAL COMPLICATIONS

- Preterm Birth ➔ Mean GA (gestational age) at delivery:
  - Twins: 35w, Triplets: 32w, Quadruplets 29w – which all carry risks of prematurity
  - Multiples have 5x higher stillbirth rate and 4x higher infant mortality rate
  - 3x risk of cerebral palsy (w/ matching for GA at delivery)
  - Higher chance of malpresentation leading to birth trauma or C-section
  - Fetal growth restriction (all twins)
  - Twin-twin transfusion syndrome [TTTS] (for MC/DA and MC/MA)
  - Cord entanglement (for MC/MA)
  - Discordant fetal anomaly (i.e. only one fetus may have an anomaly)
  - Conjoined twins (for MC/MA)
TTTS – SIMPLE OVERVIEW

- Affects 10-15% of monochorionic pregnancies
- Characterized by vascular AV anastomoses within the shared placenta that cause one twin (Donor) to perfuse the other (Recipient)
  - Over-perfused (Recipient) twin becomes large, develops polyhydramnios and possibly polycythemia
  - Under-perfused (Donor) twin has IUGR, oligohydramnios, and possibly anemia
- Severe variant: TRAP (Twin Reversed Arterial Perfusion Sequence)
  - Donor lacks functional heart and is sustained by “pump” twin (which is the normal twin pumping blood to it) \(\rightarrow\) 100% mortality of abnormal twin & 60-100% of the normal twin

Treatment options:
- Laser ablation of anastomotic vessels
- Serial amniocentesis to decrease donor polyhydramnios provides therapeutic benefit
MULTIFETAL REDUCTION

- Given increased risks of multiple gestation (especially in higher order multiples), some women may choose to undergo fetal reduction in the 1st or 2nd trimester
  - This is most commonly performed via Potassium Chloride or Digoxin injection
    - If multiples share a placenta (monochorionic), these agents can affect both
- Benefits:
  - If reducing triplets to twins, there is a 50-70% reduction in rate of extreme PTD (~24-28wks), thereby reducing morbidity/mortality risks for remaining fetuses
  - Higher mean birthweights and delivery at later GA reported in reductions from triplets to twins and twins to singletons, decreasing risks assoc. w/ prematurity
- Drawbacks:
  - No significant difference in pregnancy loss <24 wks, preterm delivery <34 weeks, or gestational HTN / preE after reduction
  - It’s a high risk procedure → post-procedure loss rate of other fetus of 6-12%
Routine Management

- Recommend routine 1st trimester ultrasound screening for all
  - While assessing the nuchal translucency, a thickened NT in a monochorionic pair → 3X higher risk of TTTS
  - If crown-rump length (CRL) is discordant between monochorionic twins by >10 mm at <14 wks, there is a high risk of TTTS and selective fetal growth restriction (meaning only one of the twins is growth restricted)

- Consider 1st and second 2nd trimester serum genetic screens

- Multiple NIPT companies can now evaluate cffDNA in twins
  - However, if an abnormality is found, knowing which twin (in dichorionic sets) is affected is hard and amniocentesis is warranted

- Invasive genetic testing can also always be offered (amniocentesis/CVS) to all patients but is higher risk
ROUTINE MANAGEMENT

- Consider serial cervical length (CL) measurements
  - There is not great evidence that vaginal progesterone, 17-OHP, cerclage, pessary, tocolytics, or bedrest will decrease PTB in twins
  - However, given minimal risk, most will give 100-200mg vaginal prog
- All twins need a detailed anatomy scan around 18-20 weeks given there is an increased risk of having a major fetal anomaly
  - Risk in singletons: 0.6%
  - Risk in dizygotic twins: 1.0%
  - Risk in monozygotic twins: 2.7%
- All twins also need a fetal echo given increased risk for a fetal cardiac defect (1.4% in twins vs. 0.87% in singletons)
ROUTINE MANAGEMENT

- Fetal non-stress tests beginning 36 wks (if Di-Di), 32 weeks (if Mo-Di), and as early as 24-26 weeks if there is growth discordance or TTTS
- Serial ultrasounds evaluating for evidence of TTTS in monochorionic twins (poly-/oligohydramnios, absent bladder, abnormal Dopplers, or evidence of hydrops [fetal scalp edema, effusions, ascites])
- Serial growth scans q3-4 wks throughout pregnancy in ALL twins
- If severe growth discordance or TTTS in Mo-Dis are found, or Mo-Mo twins are present (which are at risk for cord entanglement):
  - Consider antepartum admission with close monitoring (as early as 24 wks)
  - Consider early steroids to promote fetal lung maturity if concerned for delivery within the next 1-2 weeks
  - Consider magnesium sulfate for neuroprotection if delivery imminent in fetuses < 32 weeks
DELIVERY TIMING / ROUTE

Delivery Timing:
- DC/DA (Di-Di): 37-38 wks, MC/DA (Mo-Di): 35-37 wks, MC/MA (Mo-Mo): 32-34 wks

Delivery Route:
- For MC/MA twins and higher order multiples, c-section recommended
- In twins, if twin A (presenting twin) is breech, c-section recommended
- If twin A is vertex and twin B is breech:
  - Breech extraction can be performed in institutions trained and equipped to perform this procedure and manage complications associated
    - I.e. Head entrapment requiring assistance w/ Piper forceps or Duhrssen incisions of the cervix, or emergent transition to cesarean section
  - Also, gestational age should be >32 weeks, EFW of the non-vertex second twin should be >1500 g, and if the presenting twin is smaller, the fetal weight discordance should be <20%
1. PRACTICE BULLETIN 169 – MULTIFETAL GESTATION
2. COMMITTEE OPINION 553 – MULTIFETAL PREGNANCY REDUCTION
5. Simpson LL, SMFM Guideline. AJOG Jan 2013