

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

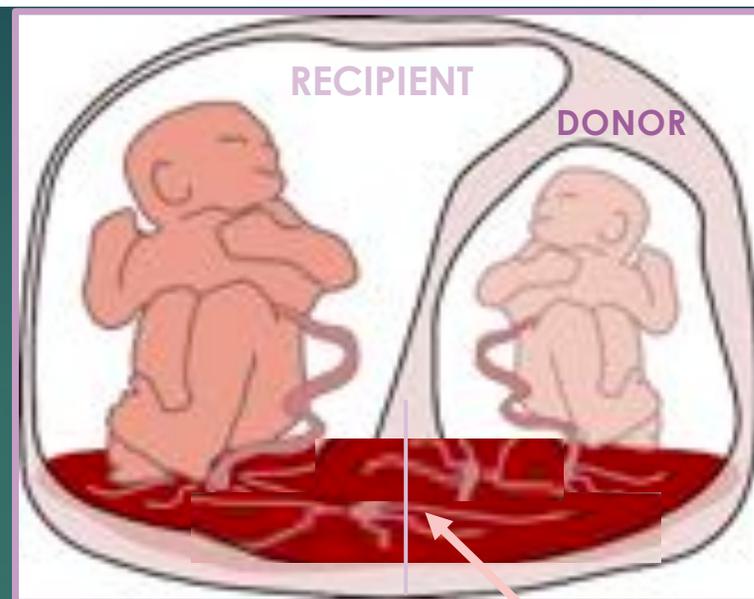
- ▶ Assisted reproductive technology is the biggest risk factor for twins
 - ▶ Risk of twins increases w/ young maternal age and # of embryos transferred
 - ▶ Rate of twins when 2 embryos transferred: 22.7% (at age 20-29) vs. 19.7% (at age 30-34)
 - ▶ Rate of twins when 3 embryos transferred: 45.7% (at 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) → 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

LASER

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 Dührssen 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%

IMPORTANT LINKS / REFERENCES

1. [PRACTICE BULLETIN 169 – MULTIFETAL GESTATION](#)
2. [COMMITTEE OPINION 553 –MULTIFETAL PREGNANCY REDUCTION](#)
3. Norowitz et al. Seminars in perinatology 2005.
4. Campbell and Templeton, Obstet Gynecol 2004.
5. Simpson LL, SMFM Guideline. AJOG Jan 2013
6. Bolger 2016. Pearls of Excellence. Management of twin delivery. <https://excellence.org/pearls-of-excellence/list-of-pearls/management-of-twin-delivery/>