

MULTIPLE GESTATION – Management

1. Background

Multiple gestation accounts for approximately 3 per cent of all births, and the incidence is increasing. The incidence of perinatal morbidity and mortality for twins and triplets is greatly increased compared to singleton gestations. The most common complication of a multiple gestation is the increased risk of preterm birth. The mean gestational age for delivery of a singleton gestation is about 39 weeks, and about 35 weeks for a twin gestation, and about 32 – 33 weeks for a triplet gestation. Multiple gestations are also at increased risk of fetal anomalies and growth restriction (IUGR). The risk is greater for monochorionic gestations compared to dichorionic. For this reason, early diagnosis and heightened surveillance is important to optimize outcomes.

What is growth discordancy?

Significant discordancy is diagnosed if one twin is >20% heavier than the other twin.

You can measure it this way: larger twin weight (grams) minus smaller twin weight divided by larger twin weight x 100.

The increased risk of morbidity or mortality is mainly confined to a growth discrepancy of > 20% when at least one twin has also been diagnosed with IUGR (i.e. – composite EFW less than 10th percentile).

Nutrition

Twin pregnancy is at risk for micronutrient deficiency and thus supplementation with iron, calcium, and folate beyond a typical prenatal vitamin, is recommended. Finally, w-3FA dietary intake or supplementation is also encouraged for potential neurodevelopmental benefits. (See Table 1) Although nutritional intervention may not reduce all perinatal morbidity associated with twin pregnancy, increased attention to specific nutritional needs in twin-specific prenatal care settings have been associated with improved neonatal outcomes and should be incorporated into the prenatal care of twins.

Antenatal corticosteroids

Unless a contraindication exists, one course of antenatal corticosteroids should be administered to all patients who are between $\geq 23\ 0/7$ weeks and $\leq 33\ 6/7$ weeks of gestation and at risk of delivery within 7 days, irrespective of the fetal number.

If one course of antenatal steroids has been administered and the patient remains pregnant longer than 14 days, the patient may be a candidate for a second (i.e. “rescue”) course of steroids if the gestational age is $\leq 33\ 6/7$ weeks or less.

The use of corticosteroids from $\geq 34\ 0/7$ – $\leq 36\ 6/7$ weeks does not apply to multiple gestations.

Neuroprotection

Magnesium sulfate reduces the severity and risk of cerebral palsy in surviving infants if administered when birth is anticipated $\leq 31\ 6/7$ weeks of gestation, regardless of fetal number.

Trial of labor after cesarean

Women with one previous low transverse cesarean delivery, who are otherwise appropriate candidates for twin vaginal delivery, may be considered candidates for trial of labor after cesarean delivery.

2. Diagnosis of Multiple Gestation

- a. size greater than dates
- b. two discrete fetal heart rates
- c. clinical suspicion should prompt ultrasound verification

Higher order multiples (triplets or quadruplets):

Refer at diagnosis for MFM management: much higher risk of complications and very preterm birth.

3. Ultrasound Diagnosis of Chorionicity

Dichorionic twins:

- a. two separate placentas. NB: dichorionic twins always have separate placentas, but sometimes the placentas are located immediately adjacent to each other and may appear fused on ultrasound.
- b. disparate genders
- c. two amniotic sacs with thick inter-twin membrane
- d. "twin peaks" sign (or "lambda" or "delta" or "triangle") signs.
 - represents placental tissue (chorion) dissecting between the two amnions at the membranes' insertion into the placenta.
 - the earlier in pregnancy the ultrasound is obtained, the easier it is to see the "twin peaks" and establish the chorionicity.
 - dichorionic twins may have a single fused placenta, and the twins may be of the same gender, so documentation of the "twin peaks" is the most helpful diagnostic sign (91% sensitivity and specificity), and all sonographers and radiologists should report whether this finding is, or is not, noted.

Monochorionic twins:

- a. single placental mass
- b. thin inter-twin membrane, sometimes with in-folding
- c. identical fetal gender
- d. "T-sign" is present in early gestation, i.e., the inter-twin membrane directly inserts into the placenta
- e. no "twin peaks" or "lambda" sign

Monoamniotic twins:

- a. an inter-twin membrane will not be able to be discerned
- b. the umbilical cords may be seen to be intertwined
- c. rare (0.4-1.4% of all twins)
- d. merits prompt referral to MFM to confirm the diagnosis and make a management plan.

Twin-twin transfusion syndrome (TTTS):

- a. result of intra-placental arterio-venous anastomoses which results in profound hemodynamic alterations and greatly increased risk of perinatal morbidity and mortality of both twins. The Quintero Stage is helpful to classify the severity of TTTS. (See Table 2)
- b. polyhydramnios in one twin ('recipient') (maximal vertical pocket (MVP) of amniotic fluid >8.0 cm) accompanied by oligohydramnios (MVP <2.0 cm) in the co-twin ('donor') AND small or absent bladder in donor twin.
- d. occurs in 10-15% of monochorionic twins; most cases have onset in the second trimester.
- e. prompt referral to MFM for confirmation of diagnosis and formulation of a management plan

4. Complications of Multiple Gestation

The following complications of pregnancy are significantly more common in multiple gestation and should be watched for carefully during the pregnancy:

- a. preterm labor
- b. preterm premature rupture of membranes
- c. preeclampsia
- d. gestational diabetes mellitus
- e. hyperemesis gravidarum
- f. anemia
- g. twin-twin discordancy with growth restriction of one twin
- h. demise of one twin
- i. malpresentation requiring cesarean birth
- j. postpartum hemorrhage

Please request this

As MC/DA twins are prone to more of the issues mentioned above, please include a request to have the radiologists identify the "twin peaks or lambda" (of DC twinning) at the earliest possible time in gestation on your radiology request form.

5. Management of Dichorionic Diamniotic Twins:

- a. Routine prenatal visit schedule unless a complication above develops
- b. May be co-managed with low-risk maternity provider, e.g., CNM, FP, etc
- c. Detailed ultrasound with MFM at 20 – 22 weeks for all dichorionic twins.
- d. Twin growth ultrasound every 4 weeks starting at 16 – 18 weeks
(See attached dichorionic twins specific growth curve)
(Discordancy calculation as described in Background)
- e. Amniotic fluid evaluation in twins is best determined by the single maximum vertical pocket (MVP) about each twin, not a 4-quadrant AFI
- f. Cervical length and/or fibronectin not indicated in asymptomatic women
- g. Nutrition consultation to emphasize micronutrients (see Table 3)

- h. Antenatal assessment should be reserved for those dichorionic twin pregnancies complicated by fetal anomalies, growth restriction (IUGR), or another accepted indication.
- i. Discussion of various delivery scenarios with an OB/GYN 30-34 wks
- j. Referral for development of any of the complications listed above
- k. Referral to ANMC to await delivery at ≥ 32 0/7 weeks if no complications
- l. Plan for delivery at ≥ 38 0/7 - 39 weeks gestation.

Note: In all diamniotic twin pregnancies at 32 0/7 weeks of gestation or later with a presenting fetus that is cephalic, regardless of the presentation of the second twin, vaginal delivery is a reasonable option and should be considered, provided that an obstetrician with experience in internal podalic version and vaginal breech delivery is available. If twin B is non-cephalic and a breech extraction or delivery is considered, if the second twin is significantly larger than the first, then caution is warranted.

6. Management of Monochorionic Diamniotic Twins:

- a. Consider first trimester nuchal screen, or multiple marker screening at 15-20 weeks, as higher incidence of anomalies.
- b. Ultrasound at two-week intervals, starting at 16 weeks gestation. Given the inherent risks of monochorionic twins, all ultrasounds should be performed with MFM. At four-week intervals, fetal biometry and fluid measurements should be performed. At the two-week in-between ultrasound exams, a more limited evaluation to measure the amniotic fluid in each sac and image the fetal bladder, as a screen for TTTS. A detailed anatomic evaluation (DAFUS) should be performed at about 20 weeks gestation, and a fetal echo exam should be performed at about 24 weeks gestation. Amniotic fluid is best assessed with the MVP in each sac.
- c. Cervical length and fibronectin not indicated in asymptomatic women
- d. Nutrition consultation to emphasize micronutrients (see Table 1)
- e. Fetal antenatal assessment should be reserved for the twin pregnancy complicated by fetal anomalies, TTTS, or growth restriction (IUGR).
- f. Referral for development of complications above
- g. Referral to ANMC at ≥ 32 0/7 weeks for testing and to await delivery if no problems
- h. Discussion of various delivery scenarios with an OB/GYN 30-34 wks
- i. Plan for delivery at ≥ 37 0/7 - 38 weeks gestation.

7. Management of Monochorionic Monoamniotic twins

- a. Refer to MFM upon diagnosis
- b. Anticipate cesarean delivery at 32–34 weeks of gestation.

References

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Table 1. Twin Pregnancy Nutritional Recommendations

Intervention	First Trimester	Second Trimester	Third Trimester
Maternal weight/weight gain (each)	Assess maternal pregravid BMI, determine BMI specific weight gain goals	Assess/counsel re: maternal BMI-specific weight gain (each prenatal care visit)	Assess/counsel re: maternal BMI-specific weight gain (each prenatal care visit)
Caloric requirements (kcal·kg ⁻¹ ·d ⁻¹)			
Normal BMI	40–45	Alter as necessary for weight gain goal	Alter as necessary for weight gain goal
Underweight	42–50		
Overweight	30–35		
Micronutrient Supplement (daily total intake)			
MVI with iron (30 mg elemental tablets)	1	2	2
Calcium (mg)	1,500	2,500	2,500
Vitamin D (international units)	1,000	1,000	1,000
Magnesium (mg)	400	800	800
Zinc (mg)	15	30	30
DHA/EPA (mg)	300–500	300–500	300–500
Folic Acid (mg)	1	1	1
Vitamin C/E (mg/international units)	500–1,000/400	500–1,000/400	500–1,000/400
Nutritional consultation	Yes	Repeat if not at weight gain goal, anemia, GDM	Repeat if not at weight gain goal, anemia, GDM
Laboratory nutritional Assessment	Hemoglobin ferritin folate/B12 early screen for GDM (risk factors) vitamin D	Follow up abnormalities from first trimester	Hgb ferritin GDM screen with or without vitamin D
Risk Factor appropriate exercise or reduction in activity	Screen	Screen	Screen

BMI, body mass index; MVI, multivitamin; DHA, docosahexaenoic acid; EPA, eicosapentaenoic acid; GDM, gestational diabetes mellitus.

Goodnight W, Newman R; Society of Maternal-Fetal Medicine. Optimal nutrition for improved twin pregnancy outcome. *Obstet Gynecol.* 2009 Nov;114(5):1121-34.

Table 2: Quintero stages

Quintero has proposed five stages of disease based on findings from two-dimensional ultrasound and Doppler velocimetry in the umbilical artery and vein and ductus venosus [48]:

- Stage I — Oligohydramnios and polyhydramnios sequence, and the bladder of the donor twin is visible. Dopplers in both twins are normal.
- Stage II — Oligohydramnios and polyhydramnios sequence, but the bladder of the donor is not visualized. Dopplers in both twins are normal.
- Stage III — Oligohydramnios and polyhydramnios sequence, nonvisualized bladder, and abnormal Dopplers. There is absent/reversed end-diastolic velocity in the umbilical artery, reversed flow in a-wave of the ductus venosus, or pulsatile flow in the umbilical vein in either fetus.
- Stage IV — One or both fetuses show signs of hydrops.
- Stage V — One or both fetuses have died.

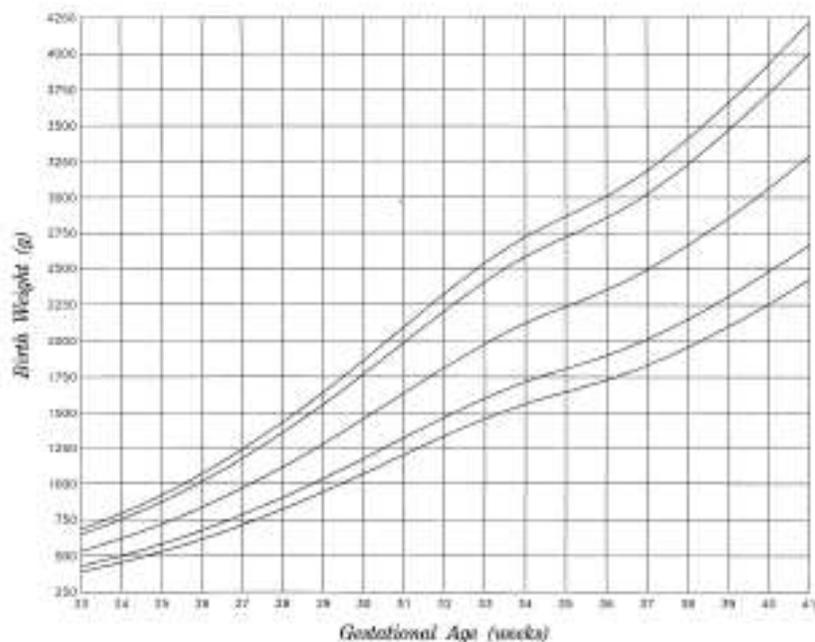


Figure 2. Birth weight percentiles (5th, 10th, 50th, 90th, and 95th) for twins with monochorionic placentation.

Figure 3. Birth weight percentiles (5th, 10th, 50th, 90th, and 95th) for twins with dichorionic placentation.

