MULTIPLE GESTATION – Management

1. Background

Multiple gestation accounts for approximately 3 per cent of all births, and the incidence is increasing. Multiple gestation accounts for almost 20 per cent of all preterm births, and the perinatal morbidity and mortality is doubled compared to singletons. The average gestational age at which twins are born is 35 weeks. Poor perinatal outcomes are the result of prematurity, growth restriction, and anomalies. Monochorionic twins have significantly more adverse perinatal outcomes (preterm birth, growth restriction, preeclampsia, discordant anomalies, and perinatal death), even when corrected for gestational age at birth and complications specific to monochorionicity. Early diagnosis and heightened surveillance is important to try to optimize outcomes.

What is discordancy?
Significant discordancy is diagnosed if one twin is >20% heavier than the other twin. You can measure it this way:
…larger twin weight minus smaller twin weight divided by larger twin weight x100

When do you need to look further?
The reason to look for discordancy is to diagnose selective fetal growth restriction of one twin, so the concern would be with a twin estimated to weigh <10th%ile, and one normally grown (see dichorionic and monochorionic specific growth curves below).

In some situations, one twin is LGA, i.e., >90th %ile, while the other is normal size (e.g., 50th%ile), resulting in a calculation that show a >20% discordancy, but which would not necessarily be worrisome.

Nutrition
Twin pregnancy is also 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. 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 24 weeks and 34 weeks of gestation and at risk of delivery within 7 days, irrespective of the fetal number.

Neuroprotection
Magnesium sulfate reduces the severity and risk of cerebral palsy in surviving infants if administered when birth is anticipated before 32 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/very preterm

3. Ultrasound Diagnosis of Chorionicity

Dichorionic twins:

   a. two separate placentas
   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. genders identical
   d. “T-sign” is present in early gestation, i.e., the inter-twin membrane directly inserts into the placenta
   e. no “twin peaks” 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 confirm the diagnosis and make a management plan.

Twin-twin transfusion syndrome:

   a. result of intra-placental arterio-venous anastomoses which results in profound hemodynamic alterations and eventual death of both twins
   b. polyhydramnios (maximal vertical pocket (MVP) of amniotic fluid >8.0 cm)
about one twin, accompanied by,
c. oligohydramnios (MVP <2.0 cm) in the co-twin (the “stuck twin”).
d. occurs in 10-15% of monochorionic twins
e. prompt referral 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” (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. Twin growth ultrasound every 4 weeks starting at 24 weeks
   (see attached dichorionic twins specific growth curve)
   (Discordancy calculation as described in Background)
d. Amniotic fluid evaluation in twins is best determined by the single maximum vertical pocket (MVP) about each twin, not a 4-quadrant AFI
e. Cervical length and/or fibronectin not indicated in asymptomatic women
f. Nutrition consult to emphasize micronutrients (see Table 3)
g. Weekly non-stress tests and MVPs starting at 36 weeks
h. Referral for development of any of the complications listed above
   i. Referral to ANMC to await delivery at 32 weeks if no complications
   j. Planned cervical ripening if twin A is cephalic presentation at 38 weeks
   k. Planned cesarean delivery if twin A is non-cephalic presentation at 38 weeks

In 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.

6. Management of Monochorionic Diamniotic Twins:
a. First trimester or multiple marker screening at 15-20 weeks as higher incidence of anomalies
b. Anatomic surveys at 18-20 weeks (may also detect early twin-twin transfusion)
c. Fundal heights every 2 weeks at 18-24 weeks (rapid fundal growth may suggest development of polyhydramnios and the twin-twin transfusion syndrome)
d. Twin growth ultrasound every 4 weeks starting at 24 weeks (see attached monochorionic twins specific growth curve) (Discordancy calculation as described in Background)
e. Amniotic fluid evaluation by MVP as above
f. Cervical length and fibronectin not indicated in asymptomatic women
g. Nutrition consult to emphasize micronutrients (see Table 3)
h. Start weekly non-stress testing and MVPs at 32 weeks
i. Referral for development of complications above
j. Referral to ANMC at 32 weeks for testing and to await delivery if no problems
k. Planned cervical ripening at 37 weeks if undelivered and A cephalic
l. Planned cesarean delivery at 37 weeks if undelivered and A non-cephalic

7. Management of Monochorionic Monoamniotic twins

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


### Table 1. Twin Pregnancy Nutritional Recommendations

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

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

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.