Title: Twins: Diagnosis and Antepartum Management

SUMMARY: (1) The principal complication encountered with multifetal gestations is spontaneous preterm birth and the resultant infant morbidity and mortality. Although multiple interventions have been evaluated in the hope of prolonging these gestations and improving outcomes, none has been shown to be effective and thus should be avoided. (2) Medical complications are more common in multiple gestations and should be managed as in singleton gestations.

Rationale: The incidence of multifetal gestations in the US has increased dramatically over the past 30 years. This is primarily attributable to older maternal age and increased use of assisted reproductive technology (ART), both of which can also independently increase maternal and fetal risk regardless of fetal number. Medical complications including hyperemesis, gestational diabetes mellitus, hypertension, anemia, hemorrhage, cesarean delivery, and postpartum depression are more common in multiple gestation. Many of the adverse outcomes and high costs associated with multifetal gestation are the direct result of prematurity and its complications. Women with multifetal gestations are six times more likely to give birth preterm and 13 times more likely to give birth before 32 weeks of gestation than women with singleton gestations. Stillbirth, neonatal death, high-grade intraventricular hemorrhage, periventricular leukomalacia, and cerebral palsy, are all increased. Potential interventions are limited.

Eligible patients: All patients with twins, regardless of membrane status.

Clinical considerations:

1. Fetal risk is largely dependent on chorionicity:
   a. The optimal timing for determination of chorionicity by ultrasonography is in the late first trimester or early second trimester. Chorionicity should be established by 14 weeks.
   b. Ultrasound demonstration of two placentas or differing fetal sex is diagnostic of a dichorionic pregnancy.
   c. When only one placenta is visualized, the best ultrasonographic characteristic to distinguish chorionicity is the “twin peak sign,” a triangular projection of tissue with the same echogenicity as the placenta that extends from the surface of the placenta beyond the chorion and between the two amniotic membranes, and is indicative of a dichorionic gestation. Conversely, a thin intertwin membrane without an intervening triangular projection is the “T-sign” and is indicative a monochorionic-diamniotic gestation.
   d. Failure to identify a dividing membrane by 12-14 weeks may represent a monochorionic-monoamniotic gestation and warrants referral to a Maternal-Fetal Medicine specialist.

2. Spontaneous preterm birth is more common in multifetal gestation.
a. Screening with transvaginal ultrasonographic cervical length, digital examination, fetal fibronectin, and home uterine monitoring have not been shown to prevent spontaneous preterm delivery in asymptomatic women and are not recommended.

b. Interventions, such as prophylactic cerclage, routine hospitalization, bed rest, prophylactic tocolytics, and prophylactic pessary, have not been proven to decrease neonatal morbidity or mortality and, therefore, should not be used.

c. History indicated cerclage for prior demonstration of cervical insufficiency is accepted.

d. Progesterone treatment does not reduce the incidence of spontaneous preterm birth in women with twin or triplet gestations when administered prophylactically as 17α-hydroxyprogesterone caproate or given vaginally in response to short cervical length determined by transvaginal ultrasonography. Progesterone should not be used in multiple gestations.

3. Aneuploidy screening is more complex in multiple gestations, but should be offered.
   a. Detection rates are lower, often with a higher false positive rate.
   b. First-trimester screening that combines maternal age, nuchal translucency, and serum analytes has been used in twins.
   c. Noninvasive prenatal testing using cell free fetal DNA is also available for twins.
   d. Amniocentesis and chorionic villous sampling are diagnostic options and in some cases can be used in higher order multiples.

Interventions:

1. Tocolytic therapy may provide short-term prolongation of multifetal pregnancy.
   a. As in singleton gestation, the goals of tocolysis are the administration of antenatal corticosteroids to promote fetal lung maturity and transport to a tertiary care facility.
   b. Calcium channel blockers or nonsteroidal anti-inflammatory drugs should be first-line treatment. Use is confined to 48 hours in the setting of acute preterm labor.
   c. Maternal risks associated with tocolytic use include pulmonary edema.

2. Based on the improved outcomes reported in singleton gestations, in the absence of contraindications, 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 to decrease the incidence of neonatal death, respiratory distress syndrome, intraventricular hemorrhage, and necrotizing enterocolitis. Although data are lacking, antenatal corticosteroids may be considered as early as 23 weeks gestation and a single rescue course is acceptable. (See appropriate toolbox documents)

3. Fetal neuroprotection: Accumulated available evidence suggests that 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. It should be given by standing protocol. (See appropriate toolbox document)
4. Antenatal Surveillance - Dichorionic Twins:
   a. Establish chorionicity by ultrasound in the first or early second trimester.
   b. Anatomic survey by targeted ultrasound at 18 weeks and 22 weeks.
   c. Consider baseline TVCL at this time for comparison later if symptoms of preterm labor develop.
   d. Serial growth every 4-6 weeks in the absence of other maternal or fetal complications.
   e. Fetal ECHO at 24 weeks for pregnancy resulting from IVF or ICSI.
   f. Consider NST twice weekly starting at 36 weeks

5. Antenatal Surveillance - Monochorionic Twins:
   a. Establish chorionicity in the first or early second trimester
   b. Basic anatomic survey at 16 weeks
   c. Begin q 2 week fluid checks at 16 weeks for Twin-twin Transfusion Syndrome (TTTS) surveillance
   d. Targeted ultrasound at 18-20 weeks. Consider baseline TVCL at this time for comparison later if symptoms of preterm labor develop.
   e. Serial growth every 4 weeks (alternating with fluid check only)
   f. Fetal ECHO at 24 weeks
   g. NST twice weekly starting at 32 weeks

Special Considerations:

1. Intertwin discordance is calculated by subtracting the smaller ultrasound estimate of fetal weight from the larger and dividing by the larger.
   a. A difference of at least 20% is considered discordant.
   b. Although twin discordance alone does not appear to increase neonatal morbidity or mortality, the addition of fetal growth restriction, fetal anomalies or oligohydramnios in this setting may be a risk factor.
   c. Referral to a maternal-fetal medicine specialist is warranted.

2. Rare complications such as high order multiple gestation, monoamniotic twins, acardiac twin pregnancy, and conjoined twins should be managed in collaboration with a maternal–fetal medicine specialist.

3. Delivery Timing:
   a. Deliver uncomplicated dichorionic–diamniotic twin gestations by 38+0 weeks
   b. Deliver uncomplicated monochorionic–diamniotic twin gestations by 37+6 weeks
   c. Deliver monochorionic–monoamniotic twin gestations between 32+0 and 34+0 weeks

4. Delivery Route: Optimal route of delivery depends on the type of twins, fetal presentations, gestational age, and experience of the clinician performing the delivery.
   a. A twin gestation in and of itself is only an indication for cesarean delivery in monoamniotic twins.
b. Women with one previous low transverse cesarean delivery, who are otherwise appropriate candidates for twin vaginal delivery, are candidates for trial of labor if desired.

c. Neuraxial analgesia is encouraged in women delivering multiple fetuses.


Reviewed: 12/22/17