


Special consideration in twins' delivery

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TUMS

TIMING OF DELIVERY

- **Uncomplicated twin pregnancies** :

depends on chorionicity and amnionicity

spontaneous or medically indicated preterm birth complicates over 50 percent of twin pregnancies;

scheduling the timing of delivery is not at the discretion of the obstetrician in most cases

Dichorionic/diamniotic

For uncomplicated dichorionic/diamniotic twin pregnancies, Uptodate authors suggest planned delivery at 38+0 to 38+6 weeks of gestation, in agreement with recommendations from ACOG and SMFM,

planned delivery at 37+0 to 37+6 weeks is a reasonable alternative based on the limited data of the meta-analysis based on review of available data regarding the risks of unanticipated stillbirth with expectant management and the risks of neonatal mortality and morbidity with delivery.

There are no high quality data from randomized trials on which to base a recommendation for the optimal time for delivery of dichorionic/diamniotic twins

Monochorionic/diamniotic

- Uptodate authors suggest delivery of uncomplicated monochorionic/diamniotic twins at 36+0 weeks of gestation or soon thereafter and by 36+6 weeks.
- delivery at this gestational age is optimal after review of available data regarding the risks of unanticipated stillbirth with expectant management and the risks of neonatal mortality and morbidity with delivery.
- the guideline of ACOG and the SMFM suggests delivery of monochorionic/diamniotic twins at 34+0 to 37+6 weeks of gestation
- the North American Fetal Therapy Network suggests delivery at 36+0 to 37+6 weeks of gestation.
- The Royal College of Obstetricians and Gynaecologists (RCOG) and National Institute for Health and Care Excellence (NICE) recommend uncomplicated MCDA twins to be delivered between 36 and 37 weeks and DCDA twins to be delivered between 37 and 38 weeks
- Some authorities have argued for delivery as early as 32 weeks of gestation

Monochorionic/monoamniotic

- Monochorionic/monoamniotic twin pregnancies are delivered between 32+0 and 34+0 weeks of gestation because of the high prospective risk for stillbirth compared with neonatal death, despite intensive fetal surveillance.
- Available evidence is insufficient to allow a strong recommendation about the optimal gestational age for planned delivery of these pregnancies; no randomized trials have been performed

Delivery setting and environment for planned twin delivery

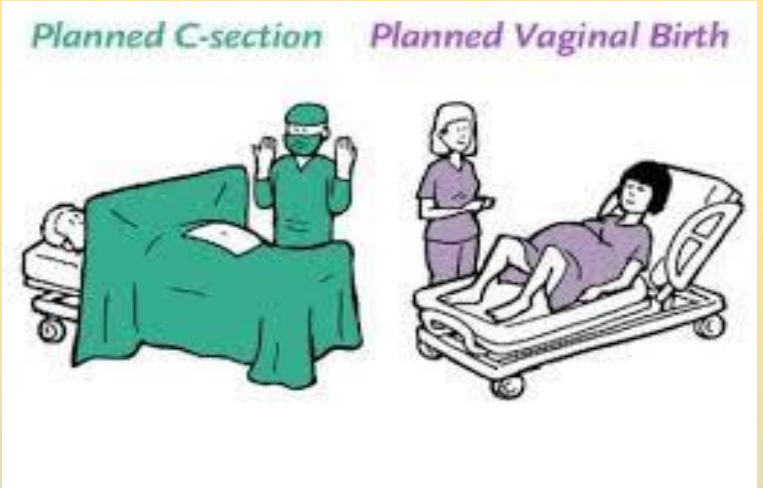
- As risks are increased in these deliveries, appropriate personnel should be available at the time of birth.
- If the option of breech extraction or internal or external version of the second twin is planned, obstetric staff with appropriate training and expertise should be available.
- Anesthesia should be available in case emergency cesarean becomes necessary.
- Pediatric staff should be available for assisting the transition of each infant, including resuscitation if needed, and the facility should be able to provide the risk-appropriate level of care for the newborn infants

Twin checklist: team members to inform	Pt name: D.O.B: Hospital number:	
Team members:	**Tick :**	**Comments:**
Coordinating midwife		
Senior Obstetrician		
Neonatal team		
Anaesthetist		
Theatre team		

Twin checklist: For babies	Pt name: D.O.B: Hospital number:	
Equipment:	**Tick :**	**Comments:**
2x resuscitaires		
2x nappies		
2x hats		
2x dry towels		

Twin checklist: Checklist for labour and vaginal birth	Pt name: D.O.B: Hospital number:	
Equipment:	**Tick :**	**Comments:**
IV access (large bore cannula)		
Bloods taken: FBC, Group + Save		
Bedside ultrasound scan		
CTG fetal monitoring x2		
Lithotomy leg supports		
Amnihook		
Birth pack: additional cord clamps		
Instrumental delivery trolley: forceps and ventouse		
Episiotomy scissors		
Oxytocin infusion for 2nd stage		
Oxytocic drugs for 3rd stage an possible PPH		

Choosing the route of delivery



- **Amnionicity** and **fetal presentation** at the onset of labor affect the choice of delivery route in twin pregnancies.
- At the onset of labor, **approximately 80 percent of first twins are cephalic** (42 percent cephalic/cephalic, 38 percent cephalic/noncephalic), and 20 percent are noncephalic (7 percent noncephalic/cephalic, 13 percent noncephalic/noncephalic)

Vaginal delivery

- It is preferred for diamniotic twins in which the presenting twin is cephalic at the onset of labor if appropriate expertise in internal and external version and/or vaginal breech delivery is available
- In a series including nearly 20,000 women with twin pregnancies >32 weeks of gestation and the first twin cephalic, 80.0 percent achieved planned vaginal delivery of both twins, 14.6 percent delivered both twins by unplanned cesarean, and 5.13 percent delivered by combined vaginal/cesarean birth
- Approximately 30 percent of the second twins were noncephalic at baseline, and 72 percent of these pregnancies achieved planned vaginal birth compared with 84 percent of twins cephalic-cephalic at baseline.
- Of note, the position of the second twin can change intrapartum

Cesarean

- Cesarean delivery is preferred for all monoamniotic twins, diamniotic twins with a noncephalic-presenting twin, and for pregnancies with standard obstetric indications for cesarean delivery

Diamniotic twins with cephalic-presenting twin

- Uptodate authors favor a trial of labor for diamniotic twins with the first twin in cephalic presentation. **With appropriate intrapartum monitoring and management,** the second twin is not at increased risk of neonatal mortality or morbidity with a planned trial of labor versus planned cesarean delivery, even when remote from term and in a noncephalic presentation
- the obstetric provider should be comfortable with **potential internal or external version or breech extraction when conducting vaginal delivery.**

Special Consideration

for cephalic/noncephalic presentation

- If the patient does not wish to attempt breech extraction of the second twin, we give her the option of external cephalic version of the second twin to cephalic presentation or undergoing cesarean delivery of both twins.
- **We do not offer a trial of labor in cephalic/noncephalic presentations when the gestational age is less than 28 weeks or the estimated fetal weight of the second twin is less than 1500 grams. Under these circumstances, authors recommend cesarean delivery of both twins.**

generally do not offer the option of breech extraction in the following settings because of concerns about head entrapment

- If EFW of the second twin is ≥20 percent more than the presenting twin before labor authors would plan to perform an external cephalic version of the noncephalic second twin after delivery of the first twin.

- If the second stage of labor of the first twin suggests that the pelvis may not be adequate for a breech delivery, authors would not attempt breech vaginal delivery. Under these circumstances, we would offer the options of external version or cesarean delivery for the second twin

- When discussing the options of breech extraction or internal and external version with patients, the obstetrician should include information about his or her experience and comfort level with these procedures.
- Many obstetricians may feel more comfortable performing cesarean delivery. Under these circumstances, cesarean delivery of both twins is recommended
- This approach is consistent with that of the ACOG, which considers vaginal delivery a reasonable option in diamniotic twin pregnancies at >32 weeks of gestation with a cephalic-presenting fetus, regardless of the presentation of the second fetus, **provided that an obstetrician with experience managing a noncephalic second twin is available**

Diamniotic twins with noncephalic-presenting twin

- Uptodate authors suggest cesarean delivery
- A unique potential complication of vaginal delivery of a breech-presenting twin with a cephalic second twin is the possibility of interlocking chins but this is rare.
- **The general consensus in the obstetric community is against vaginal delivery of the breech-presenting fetus.** However, some clinicians believe that planned vaginal delivery in carefully selected patients by obstetricians experienced in breech vaginal delivery is not associated with a higher risk of neonatal mortality and morbidity for either first or second twins than planned cesarean delivery and should be an option that is seriously considered

Special populations

- **1- Trial of labor after previous cesarean delivery** :
- It is our practice to offer a trial of labor to women with diamniotic twin pregnancies with a cephalic-presenting twin and one prior cesarean delivery, **provided they go into spontaneous labor**.
- Because the most common initial sign of uterine rupture is fetal heart rate changes, we continuously monitor both fetuses. If this is not technically possible, then cesarean delivery is performed.
- While we offer TOLAC to women with twins and one prior cesarean delivery, there are few data to evaluate the safety of TOLAC with twins and ≥2 prior cesarean deliveries. We suggest repeat cesarean delivery for these patients, but some providers may make this decision on a case-by-case basis, allowing a trial of labor selectively and with very close maternal-fetal monitoring

2- Very low birth weight twins

- We do not consider very preterm gestational age or very low birth weight alone a factor in choosing the route of birth. We deliver these pregnancies vaginally unless there is some other indication for cesarean birth (eg, breech presentation, previous classical cesarean).
- Although no randomized trials have evaluated the optimum route of delivery for these pregnancies, the body of evidence from observational studies suggests that cesarean birth performed because of very preterm gestational age in twins does not improve neonatal morbidity and mortality compared with vaginal birth

3- Monochorionic/monoamniotic twins

- Monochorionic/monoamniotic twins are delivered by cesarean, with rare exceptions, to avoid complications during labor from cord entanglement.

MANAGEMENT OF LABOR

- **Preparation:** appropriate preparation for possible transfusion should be ensured with adequate intravenous access and blood product availability. Generally, **a type and screen** should be sent at the time of delivery admission.

regarding oral intake during labor no restrictions until active labor and then restrict to clear liquids, is not different in twin pregnancies.

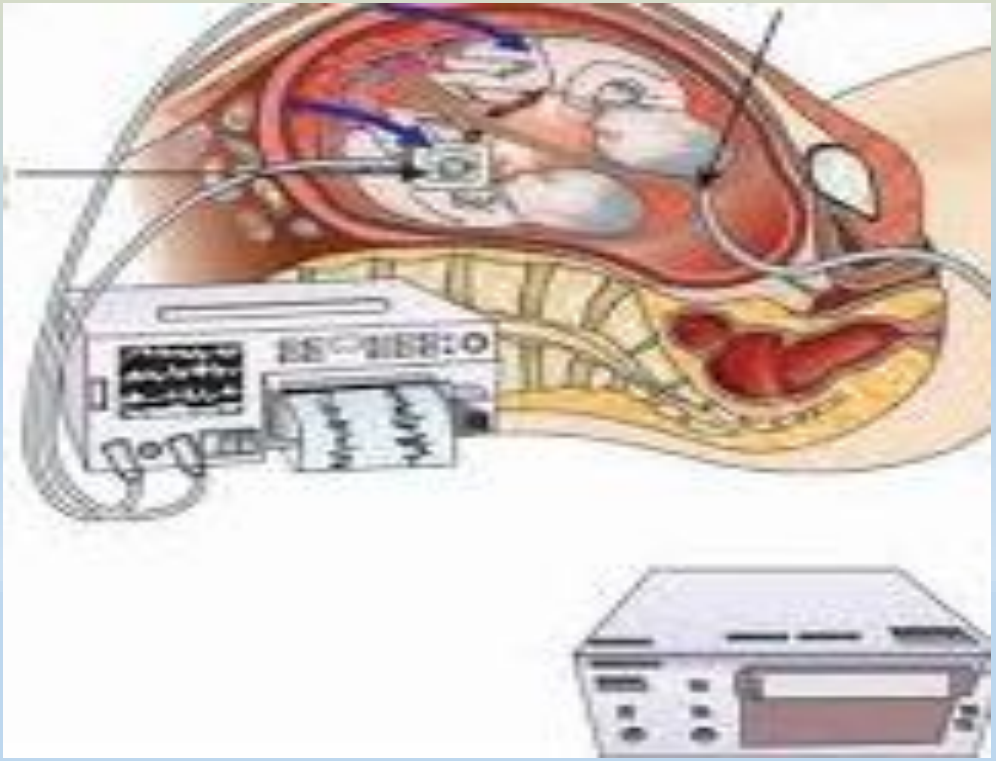
Ideally, a portable ultrasound machine can be kept readily available to check fetal positions and heart rates and to visualize the fetus during internal or external version or breech extraction, as needed.

- Cervical ripening and oxytocin: Twin pregnancy is not a contraindication to use of cervical ripening agents as they appear to be as safe in these pregnancies as in singleton pregnancies The approach to cervical ripening is the same as in singleton pregnancies.
- When indicated, Oxytoscin for induction or augmentation of labor appears to be effective and safe. The oxytocin regimen is the same as in singleton pregnancies.

- Assessing progress: It is not clear whether multiple gestation has an effect on the progress of labor; studies have reported conflicting results.

No information is available on use of an intrauterine pressure catheter in multiple gestations. It could be used to gauge the frequency of contractions if this information was needed clinically and could not be obtained with an external device, but information about contraction intensity may not be as accurate as in singleton gestations. There is also the possibility of rupturing the second sac; ultrasound visualization during insertion might reduce this risk.

- Electronic fetal heart rate monitoring: Multiple gestations are at increased risk of intrapartum complications; therefore, we monitor both twins continuously during labor. Intermittent auscultation is not practical and may not reliably distinguish one twin from the other. Electronic fetal heart rate monitoring is particularly useful for assessing the well-being of the second twin during the high-risk period after delivery of the first twin



- The fetal heart rate of each twin can be monitored using a single machine with dual-channel capability. The rates are often synchronous, thus requiring frequent careful review of the tracing to make sure each fetus's heart rate is being monitored.
- It is important to be aware that the maternal heart rate may be recorded and misinterpreted as the second fetal heart rate, and this has been identified as a contributing cause in some antepartum and intrapartum fetal deaths.
- Some monitoring systems utilize alarms to alert providers that only one fetal heart rate is being recorded by two transducers, and when available these should be utilized. Ultrasound can also be used to assist in ensuring that both fetal heart rates are traced. **If two separate monitors are used, their internal clocks must be synchronized, paper speeds must be identical, and contractions must be displayed on both fetal heart rate tracings**

- Analgesia and anesthesia : Neuraxial analgesia/anesthesia is generally recommended because it provides good pain relief, does not cause neonatal depression, and is a suitable anesthetic if uterine manipulation or operative delivery becomes necessary

Delivery of the first twin

- **Location:** It is our practice to deliver all twin pregnancies in an operating room where cesarean delivery can be performed, if needed. In our hospital, patients laboring with twins are moved to the operating room during the second stage upon complete dilation. However, delivery of cephalic/cephalic twins in a labor room is not unreasonable if the patient can be transported to an operating room rapidly if cesarean delivery is needed
- There are additional advantages to delivery in an operating room. Because these rooms are typically larger than labor rooms, they better accommodate the extra obstetric, pediatric, and nursing personnel who are present for delivery of two infants, as well as anesthesia personnel. They also tend to have better lighting than standard labor rooms

- **Procedure :** Indications for episiotomy and operative vaginal delivery, and the procedure for delivery of the cephalic infant, are the same as in singleton deliveries.
- **Cord clamping:** Monochorionic twins are not appropriate candidates for delayed cord clamping because acute and large inter-twin blood transfusion may occur during labor and delivery, and the direction of transfusion is not predictable. Signs of acute peripartum twin-twin transfusion syndrome include bradycardia or a sinusoidal fetal heart rate pattern and may necessitate urgent delivery.
- Acute anemia has been reported in 2.5 percent of first-born monochorionic twins delivered vaginally, but second-born twins are also at risk if the cord of the first twin is not clamped promptly after its delivery.
- For dichorionic twins, we concur with the ACOG recommendation for a delay in umbilical cord clamping for at least 30 to 60 seconds after birth in vigorous term and preterm infants
- In monochorionic/monoamniotic twin pregnancies, clamping and cutting a tight nuchal cord on the first twin should be avoided since it may be the umbilical cord of the undelivered twin

- Delivery of the first twin of a diamniotic pair is similar to delivery of a singleton except the umbilical cords should be marked with progressive numbers of clamps (eg, one for the first twin birth, two for the second twin birth). If surgical clamps are used initially, they should be replaced with the same number of plastic umbilical cord clamps prior to sending the placenta for formal pathologic examination. Recall that "twin A" on ultrasound may not be the first born at delivery (especially if the delivery is by cesarean), and this infant is typically called "baby A" by delivery room and nursery personnel

Delivery of the second twin

- **Assessment:** The heart rate and position of the second twin should be evaluated using physical examination, ultrasound, and electronic fetal monitoring.
- **Interval between delivery of first and second twin**: Studies undertaken after the universal routine use of electronic fetal monitoring during labor suggest that there does not have to be a specific finite interval between delivery of the first and second twin as long as the fetal heart rate tracing is reassuring . Electronic fetal monitoring and the availability of real-time ultrasound have enabled obstetricians to identify those second twins who would benefit from expedited delivery, while allowing most cases to be managed expectantly

Cephalic presentation of the second

- after delivery of the first twin, oxytocin augmentation of labor is sometimes necessary due to a temporary reduction in contraction frequency after the first birth. When the head is engaged, we perform artificial rupture of membranes during a contraction to facilitate delivery.
- One approach used by some providers when the head is not engaged is to perform a controlled needle puncture of the amniotic sac between contractions to allow slow leaking of amniotic fluid and facilitate descent while preventing prolapse of the umbilical cord.

Cephalic presentation of the second

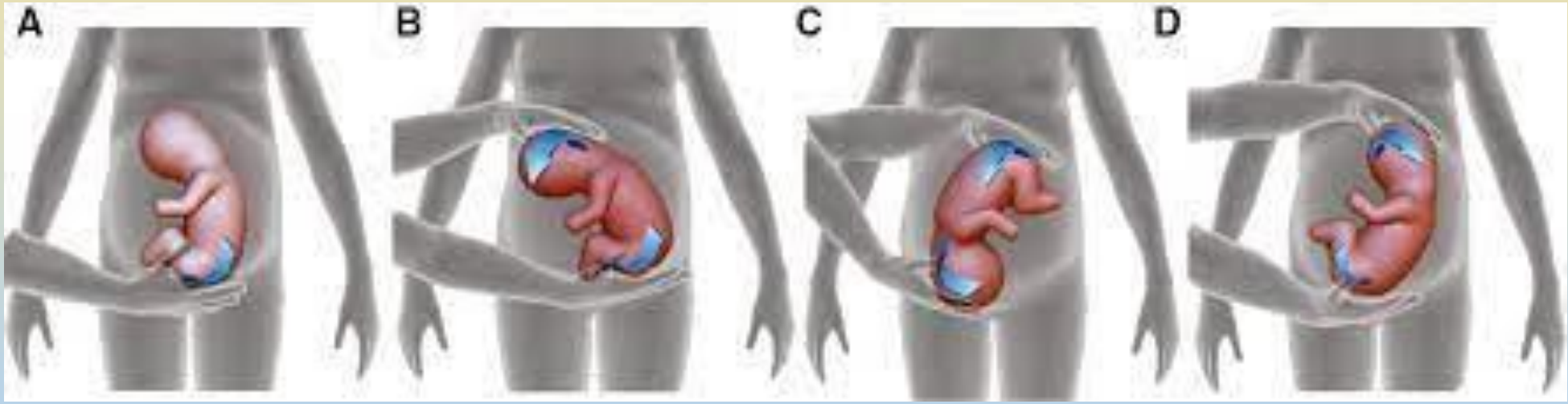
- If the second twin is cephalic but unengaged after delivery of the first twin, some providers perform internal podalic version and breech extraction. The rationale is that active management of delivery reduces the chance of complications, such as prolapse of the cord or a hand, or abruption, which would require emergency cesarean delivery; however, an improvement in neonatal outcome with internal version versus pushing was not demonstrated by the best available data regarding this issue

- we do not support a policy of routine internal podalic version and breech extraction for the unengaged cephalic-presenting second twin, despite a reduced risk of cesarean delivery for the second twin.
- The operator places a hand through the dilated cervix to elevate the fetal head higher into the uterine cavity. The other hand or an assistant holds the head in position abdominally. One and then the other foot is grasped; pulling the feet caudally somersaults the fetus to breech presentation, and the breech extraction is completed. The membranes should be left intact until the feet are at the vaginal introitus, though spontaneous rupture during these maneuvers is common

Noncephalic presentation of the second twin

- If the second twin is not in a cephalic presentation our preference is breech extraction if there are no contraindications to this procedure.
- Intrauterine manipulation is aided by ultrasonographic visualization of the orientation between the physician's hands and fetal parts and can be facilitated by administering nitroglycerin (50 mcg intravenously, may repeat in 60 seconds to a maximum total dose of 250 mcg) or inhalational anesthesia, both of which relax uterine muscle . Effective maternal analgesia is also crucial. Extraction is performed as soon as feasible to reduce the risk that the cervix will contract, potentially entrapping the head.
- The fetal feet are grasped, and firm downward traction is used. If both feet cannot be grasped, traction on one foot is usually effective until there is sufficient room to grasp the second foot.

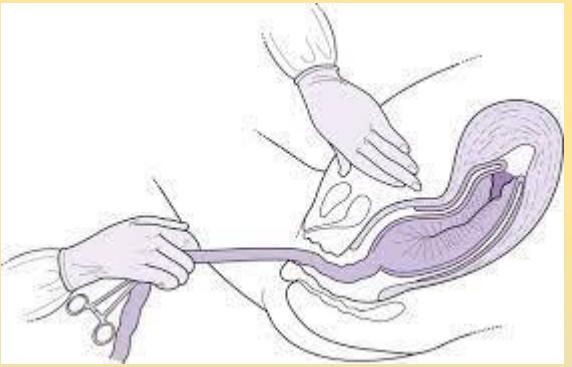
- If external version to cephalic presentation is preferred to breech extraction, the procedure is performed in standard fashion. Membranes should be left intact during attempted external cephalic version. Data confirming the safety of an attempt at version with ruptured membranes are not available, though with fetal monitoring and the capability to perform breech extraction or cesarean delivery immediately, we consider it an option.
- When the fetus is in the desired cephalic presentation for delivery, oxytocin is administered if labor has not resumed. Amniotomy is not performed until after the head is engaged


A
B
C
D

Unplanned cesarean delivery

- An unplanned cesarean for delivery of the second twin is not uncommon, occurring in approximately 4 to 10 percent of planned vaginal births and is associated with an increased risk of fetal/neonatal death or serious neonatal morbidity compared with vaginal delivery of both

MANAGEMENT OF THE THIRD STAGE



- Twin pregnancies are at increased risk for atony because of increased uterine distention compared with singletons. Our protocol for managing the third stage does not differ in twins compared with singletons, though our threshold to intervene with a second uterotonic medication in these patients is lower, as they are at higher risk for postpartum hemorrhage
- Examination of the placenta may help to determine zygosity in same-sex twins and the pathogenesis of neonatal findings (eg, discordant growth, structural anomalies, or infection).

SELECTING CANDIDATES for delayed delivery

- when delivery of some fetuses of a multiple gestation is indicated because of maternal, obstetric, or fetal factors and concurrent delivery of fetuses unaffected by these factors would likely result in their death or severe morbidity
- . There are no high-quality data on which to select or exclude candidates for delayed-interval delivery and no generally accepted, published guidelines for selection of appropriate pregnancies
- the best candidates for delayed-interval delivery are patients with a multiple gestation at an early gestational age (<24 weeks) in which only the first (presenting) fetus spontaneously delivers vaginally due to preterm labor, cervical insufficiency, prelabor rupture of membranes, or intrauterine demise

Contraindications

- **Pregnancies ≥28 weeks of gestation**. Neonatal outcome at our institution, and similar institutions with an appropriate level of neonatal care, is generally good at this gestational age.
- **Pregnancy complications associated with a high risk of serious maternal or fetal morbidity/mortality in ongoing pregnancies**, such as preeclampsia with severe features,

In our practice, the finding of intraamniotic infection involving the first fetus or the requirement for oxytocin augmentation to facilitate its delivery does not exclude the patient as a candidate for a delayed-interval delivery; however, laboratory evidence of amniotic fluid infection (obtained by amniocentesis) of the undelivered fetus(es) would be a contraindication to this approach and would require delivery of the entire pregnancy.

- **Monochorionicity** with fetus that has delivered. Vascular anastomoses in the retained placenta may cause complications of the undelivered fetus(es), although successful delayed-interval delivery has been reported in this setting.
- **Operative birth of the first fetus** is a relative contraindication;

INFORMED CONSENT

- Delayed-interval delivery is one option, but not the only option. Regardless of gestational age, parents may choose to deliver the entire pregnancy when one fetus of a multiple gestation delivers.
- Delaying delivery increases the risk for maternal, fetal, and/or neonatal infection and, in turn, the potential sequelae of infection (eg, maternal: sepsis, localized infection, infertility; pediatric: periviable or preterm birth, neurodevelopmental impairment, death
- The potential benefit of delaying delivery depends on both the gestational age at birth of the first fetus and latency duration. For instance, a predicted median three-week latency interval is of considerable value if the first fetus is born at 23 weeks but not if born at 17 weeks.
- The possibility of extending the pregnancy from a previable to a periviable gestational age is a concern that should be raised in the counseling and consent process.

  A neonatology consultation may assist in providing the best information for this issue.
- Since we generally perform a cerclage, we review the risks of cerclage.

PROCEDURE

- Delivery of the presenting fetus — The presenting fetus usually delivers spontaneously.
- Rarely, the pregnancy is induced. This clinical scenario could occur in a multiple gestation with prelabor rupture of membranes at 22 weeks with evidence of intraamniotic infection of the presenting fetus but no evidence of infection in the other fetus(es). Waiting for spontaneous active labor may increase the risk of development of infection in the other fetus(es) and maternal systemic signs of chorioamnionitis. Therefore, we would induce/augment labor with oxytocin, as needed, and then inhibit uterine activity after the delivery of the first twin, as described

- If oxytocin was administered for induction or augmentation of labor for the presenting fetus, it is discontinued as soon as this fetus delivers. Nitroglycerin is administered intravenously to promptly initiate uterine quiescence . A tocolytic, such as indomethacin, is administered and continued for 24 to 48 hours postoperatively, depending on uterine activity
- After the first fetus has delivered, its umbilical cord is clamped, cut, and ligated with absorbable suture as close to the placental insertion site as possible. Cord traction is avoided and the placenta is left in situ. We do not obtain cord cultures.

- After delivery, the lower uterine segment is irrigated with 500 to 1000 mL of an antibiotic solution (eg, 1 gram of cefazolin per liter of saline) using an irrigating syringe. The cervix is grasped with ring forceps (in preparation for cerclage), and the solution is directed purposefully into the lower uterine segment while placing the patulous cervix on gentle traction.
- Broad-spectrum antibiotics (eg, gentamicin and clindamycin or ampicillin-sulbactam) are administered intravenously for a three-day course, followed by a cephalosporin (eg, cephradine 500 mg orally every six hours) plus metronidazole 500 mg orally every eight hours orally for four days.

- Because it is usually impossible to exclude the possibility that cervical insufficiency was a contributing factor to the early delivery of the first fetus, we generally perform a cerclage in all patients attempting delayed-interval delivery.
- Even if cervical insufficiency was not initially a contributing factor, reapproximation of the cervix after delivery of the first fetus may prevent future prolapse of fetal membranes and decrease the risk of development of intraamniotic infection. However, there are numerous reports of successful delayed-interval deliveries without placement of a cerclage.
- If membranes from an undelivered fetus are prolapsed, they are gently retracted cephalad using standard maneuvers We place a McDonald cerclage using #2 monofilament nonabsorbable suture swaged onto a medium taper needle.

- A course of antenatal glucocorticoids is administered to pregnancies ≥23+0 weeks of gestation since only a few primitive alveoli are present below this gestational age. Earlier administration in the 22nd week is reasonable if delivery at 23 weeks is anticipated and aggressive neonatal intervention is planned after thorough counseling by the neonatology service

- We administer a rescue (salvage) course after a two-week latency interval from the first course, if clinical factors suggest delivery may be imminent; otherwise, we wait until approximately 31 weeks of gestation.
- RhD-negative patients — Anti-D immune globulin is administered to RhD-negative patients after delivery of the first fetus.

- Maternal and fetal monitoring

●The patient is kept in the hospital for a minimum of seven days as many unsuccessful attempts at delayed delivery will declare themselves within this seven-day period

●In fetuses in whom urgent delivery for an abnormal fetal heart rate pattern would be considered, we perform electronic fetal heart rate monitoring for at least 30 minutes, three times daily, while the patient is in the hospital. Abnormal findings (such as recurrent decelerations, persistent loss of previous heart rate variability, or tachycardia) should prompt assessment and/or intervention, such as ultrasound, delivery, or amniocentesis, and retesting for intraamniotic infection.

PRACTICE RECOMMENDATIONS

- Mode of delivery in twin pregnancies should be discussed in advance, taking in account pregnancy complications, fetal wellbeing, presentation of first twin, parity and women's choice.
- Delivery by cesarean section is recommended for all monochorionic monoamniotic twins, triplets and higher number multiples, conjoined twins and twins complicated by selective growth restriction or when the presenting twin not in cephalic presentation.
- When vaginal birth is the option of choice, continuous monitoring of both babies is recommended as well as attendance by expert personnel confident in the delivery of twins. A multidisciplinary approach with involvement of midwife, obstetrician, anesthetist and neonatologist is recommended.

Thank you