# MULTIPLE GESTATION


***References:***


- ***428 OB/GYN team booklet***
- ***Hacker & Moore's essentials of Obstetrics and Gynecology***
- ***Oxford handbook of Obstetrics and Gynecology***


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# TWINS:

- 2-3% of all pregnancies.
- Because the mean age of delivery of twins is ~ 36 weeks, perinatal mortality and morbidity (PMNR) is X5times than a singleton pregnancy.

## TYPES:

- **Identical (monozygotic; 1 sperm and 1 egg)** → always same gender and have 1 placenta
- **Fraternal (dizygotic; 2 sperms and 2 eggs)** → gender is not necessarily same and have a separate placenta

## DIZYGOTIC TWINS

### INCIDENCE

- Most common twins.
- ALWAYS come with a separate placenta, 2 chorions and 2 amnions.
- Whenever there's a different gender, it is SURELY a dizygotic twins pregnancy.

### RISK FACTORS

- Ovulation induction (very high FSH → stimulate multiple follicles → 2 eggs produced).
- Old age (old ovaries → anovulatory cycles → physiological increase in FSH → 2 eggs; just like ovulation induction)
- Family history and heredity(especially maternal)
- Increases with parity
- Race (Nigerian > north American)

## MONOZYGOTIC TWINS

### INCIDENCE

- Such twins come with greater risk, **especially if they are monochorionic**.
- 1/3$^{rd}$ of all twins are monozygotic
- The incidence is constant, 1:250

### DIVISIONS

- The earlier the embryo splits, the more separate the membranes and the placenta will be.

- If occurred at first 3 days (0-72hrs); it will be:
  - Dichorionic
  - Diamniotic
  - With a ***thick, four-layered*** intervening septum (membrane)
- If it occurred at 4-8 days; it will be:
  - Monochorionic
  - Diamniotic
  - Will evolve with a ***thin, two-layered*** septum
- If it occurred at 9-12 days; it will be:
  - Monochorionic
  - Monoamniotic
  - With a single sac, and no septum (as they share a sac, the risk for umbilical cord entanglement is high)
- If it occurred after >12 days; there will be CONJOINED TWINS!

## RISK FACTORS

- Almost spontaneous
- Other factors: race and parity.
- Not:
  - Heredity
  - Ovulation induction

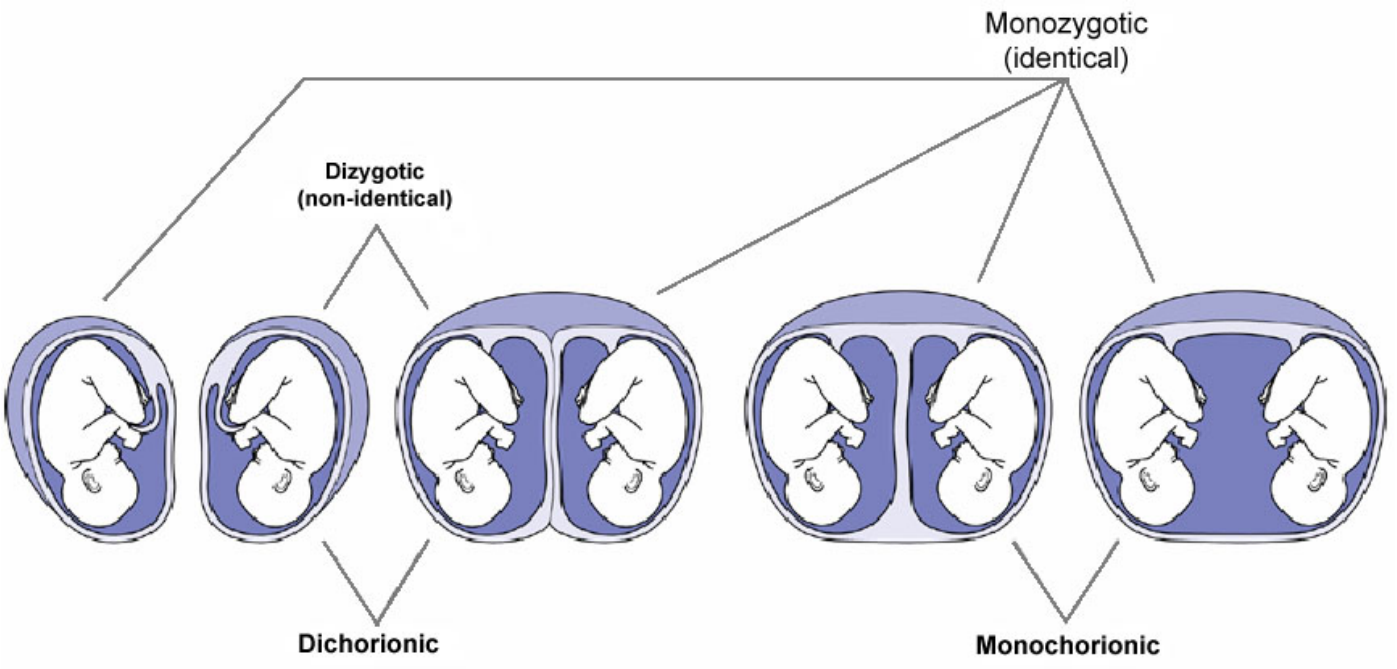


**Figure 49.3 The relationship between zygosity and chorionicity.**

## ZYGOITY DETERMINATION

### AT PREGNANCY

- **Ultrasound** evaluation is the most helpful in determining zygoity of multiple pregnancy.
- The trimester accuracy:
  - ***First trimester;*** more accurate due to:
    - Thick amnion
    - Two sacs easily seen
    - There's an amniotic membrane between the chorion
  - ***Second trimester;*** less accurate due to:
    - Thin chorion
    - The chorion is fused with the amniotic membrane

### AFTER BIRTH

- Membrane exam and Placental exam
  - Monochorionic placentas; Monochorionic.
  - Dichorionic placentas need further exam.
- Blood groups and sex (different in dizygotic and similar in monozygotic)
- If the twins have same sex, Dichorionic placentas and identical blood groups; DNA and HLA exams are used to determine zygoity (in some cases).

# COMPLICATIONS

## MATERNAL COMPLICATIONS

- It is always double whatever there is of a risk during normal singleton pregnancies.
- In Multifetal gestations, there's a X2 risk of:
  - Anemia
    (increased blood volume → increased demand for iron and folate → increased risk of anemia)
  - Hydra-amnious
    (2 babies → more fluid produced to surround them both)
  - Pre-eclampsia
    (2 placentas → X2 risk)
  - Pre-term labour
    (more distension → a pre-term pregnancy if multiple would resemble a term pregnancy through uterus distension → more uterus distension → labour initiated earlier)

- Increased risk of post-partum hemorrhage due to uterine over-distension and uterine atony
- C-section delivery prevalence increases.

## FETAL COMPLICATIONS

- Malpresentation
- IUGR (intrauterine growth restriction) and congenital anomalies (due to arterial-arterial placental anastomoses and so fetal structural malformations).
- Pre-maturity and pre-mature membrane rupture
- Abruptio Placenta (the placenta would separate when the fetus is still inside)
- Placenta Previa (a placenta that is abnormally located in the lower segment)

## MONOZYGOTIC-SPECIFIC COMPLICATIONS

### TWIN-TWIN TRANSFUSION SYNDROME (TTTS)

- The presence of unbalance anastomoses in the placenta (usually arterial-venous connections)
- One of the fetuses' circulations perfuse the other – chorionic shunt (donor twin perfuse/bleeds into recipient twin)
- **In about 10% of monozygotic twins**
- Fetal complications due to TTTS:
  - **In donor twin:**
    - Hypovolemia
    - Hypotension
    - Anemia
    - Oligohydramnious
    - IUGR
  - **In recipient twin:**
    - Hypervolemia
    - Hypertension
    - Cardiomegaly
    - Polycythemia
    - Edema
    - Congestive Heart Failure
- Diagnosis is through US where:
  - The donor twin appear smaller with Oligohydramnious, absent bladder and anemia.
  - The recipient twin is larger, with possible polyhydramnious, cardiomegaly, ascites or hydrops.
- Treatment:
  - If early gestation:
    - Serial amniocentesis and fluid reduction from recipient twin's sac
    - Indomethacin

        - Laser photocoagulation of the anastomotic vessels (via fetoscopy; performed in special centers)
    - If late gestation: Delivery
- Failure to deliver early treatment would result in death at 80-100% rates

### OTHER COMPLICATIONS IN MONOZYGOTES

- Congenital malformations
- Umbilical cord anomalies (in 3-4%)
- Conjoined twins (1:70,000 and is usually thoracopagus; majority connected through thorax)
- PMNR is X5 times in monochorionic (124:1000 in Monochorionic > 24:1000 in Dichorionic)

## MATERNAL PHYSIOLOGICAL ADAPTATION IN MULTIPLE PREGNANCIES

- Increased blood volume and cardiac output
- Increased uterine size can cause maternal respiratory embarrassment and orthostatic hypotension (supine hypotension) due to compression of the IVC and aorta
- Compromise of renal function due to compression of the ureters.
- Increased fluid retention and edema

## MANAGEMENT OF MULTIPLE GESTATIONS

### DIAGNOSIS

### CLINICAL DIAGNOSIS

- Needs confirmation by US, and only gives us a clue
- Whenever there are clues that the presentation are higher than how they should be in the gestational age, we doubt multiple pregnancy.
- Positive indications for multiple gestation:
    - Highly increased fundal height
    - Highly increased hCG hormone levels
    - Highly increased AFP levels (alpha fetoprotein)

### DEFINITIVE DIAGNOSIS

- Requires an US examination demonstrating 2 separate fetuses and heart activities.
- The US can be made as early as 6 weeks of gestation.
    - 2 sacs by 5 weeks

        - Two embryos by 7 weeks
    - Multiple pregnancy is always doubted when:
        - Primary emesis gravida (will be a molar pregnancy or a multiple one)
        - History of multiple pregnancies from the maternal side
        - History of ovulation induction
        - Exaggerated symptoms of pregnancy present (edema of lower limbs, size of uterus not compatible with date, etc.)
        - Palpation of many fetal parts (more than 2 poles)
        - Auscultation of 2 fetal heart beats.

# ANTENATAL CARE

## AIMS

- Prolong gestational age, to increase fetal weight (prematurity is the first killer)
- Lower PNMR and morbidity
- Lower maternal complications

## FOLLOW-UP

- Every 2 weeks (we need to see them more often)
- Increase supply of iron and folic acid (to avoid anemia and neural tube defects)
- Assess cervical length and competency (if the cervix is short, the delivery might be too soon and too fast, and this is advisable to give fetal steroids to allow the lungs to mature)
- Weight difference to exclude IUGR (if there's > 25% difference, then there is IUGR)
- After 24 week of gestation, US is advisable on a monthly basis
- After 26 weeks of gestation, CTG should be monitored.

# DELIVERY OF MULTIPLE PREGNANCIES

## VERTEX-VERTEX PRESENTATION

- This occurs 50% of the time (most frequent presentation; followed by vertex-breech, breech-vertex and breech-breech presentations).
- Those twins are managed similarly to a singleton vertex presentation.
- Delivery is vaginal
- The second twin is at increased risk for cord prolapse, abruptio placenta and Malpresentation. Hence, careful attention to fetal heart monitoring is necessary.

## VERTEX-BREECH PRESENTATION

- Occurs in 20% of cases
- Delivery is vaginal, if made by a good obstetrician
- Usually, the second twin can change shape and there's no significant need for a C-section

### BREECH-VERTEX AND BREECH-BREECH PRESENTATION

- Beech-vertex occurs in 20% of cases while Breech-breech occur in 10%.
- Both are usually delivered by C-section to avoid interlocking.
- Interlocking is still rare; with an incidence of 1:1000 births.

### MONOCHORIONIC TWINS

- Always delivered by C-section.

### PERINATAL OUTCOME

### MORTALITY AND MORBIDITY

- High perinatal **mortality** rate in twin gestations (30-50 per 1000 births; 5X the risk of a singleton). Usual causes attribute to:
    - Prematurity and Acute RDS (respiratory distress syndrome) is 50% of PNMR and more so in second twins.
    - Congenital anomalies; 15% of PNMR.
    - Cerebral hemorrhage and birth asphyxia, 10% of PNMR
    - Prematurity and IUGR → low birth weight.

- Compared to a singleton, death from complications of birth trauma is 4X more frequent with second-born twins and twice as frequent in first-born twins.
- Stillbirths; are 2X more in twins than singletons.
- Cerebral palsy is 4X than a singleton

### INTRAUTERINE DEATH OF ONE TWIN

- **If it happened at first trimester:** doesn't affect outcome of pregnancy
- **If it happened at 2nd, 3rd trimesters:**
    - High risk of DIC
    - Causes thrombosis in the alive baby
- In monochorionic twins:
    - Risks are higher
    - Delivery of alive baby is by 32-34 weeks

## HIGHER RANKS TWINS

### INCIDENCE AND ETIOLOGY

- The most common cause is iatrogenic from the use of ovulation induction agents
- **Triplets** incidence; 1:8000
- **Quadruplets** incidence; 1:700,000

### MORTALITY AND MORBIDITY

- Risk of PNMR is twice that risk of twins, at 50-100 per 1000 births
- Risk of C-section is highest
- Prematurity increases as the number of fetuses increases.