MULTI-FETAL PREGNANCY [TWINS OR MORE]

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INTENDED LEARNING OBJECTIVES (ILOs)

- Understand classification of multiple pregnancies.
- Understand risk factors for multiple pregnancies and why prevalence is increasing.
- Understand the increased complications that occur in multiple pregnancies. Understand the antenatal care of women with multiple pregnancies.

INTRODUCTION

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- Rates of multiple pregnancies *continue to increase* and now constitute approximately 3% of live births.
- The high prevalence of multiple pregnancy is *explained predominantly by increasing use of assisted fertility, with rates of multiple pregnancy being directly proportional to the number of embryos transferred.*

INTRODUCTION

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- Complications in multiple pregnancies are higher than for singleton pregnancies and include:

1- preterm birth, 2- fetal growth restriction (FGR),

3-cerebral palsy and. 4-stillbirth.

- The maternal risks are also increased and include:

1- hypertensiom , 2- thromboembolic disease,

3- antepartum and 4- postpartum hemorrhage.

EPIDEMIOLOGY

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- The incidence of multiple pregnancy varies worldwide, with rates varying from approximately 6 per 1,000 births in Japan to rates of approximately 40 per 1,000 births in Nigeria.
- In the UK the rates of multiple pregnancy are approximately 16 per 1,000 births.
- The majority (97–99%) of these were twin pregnancies with the remainder being predominantly triplet pregnancies.

EPIDEMIOLOGY

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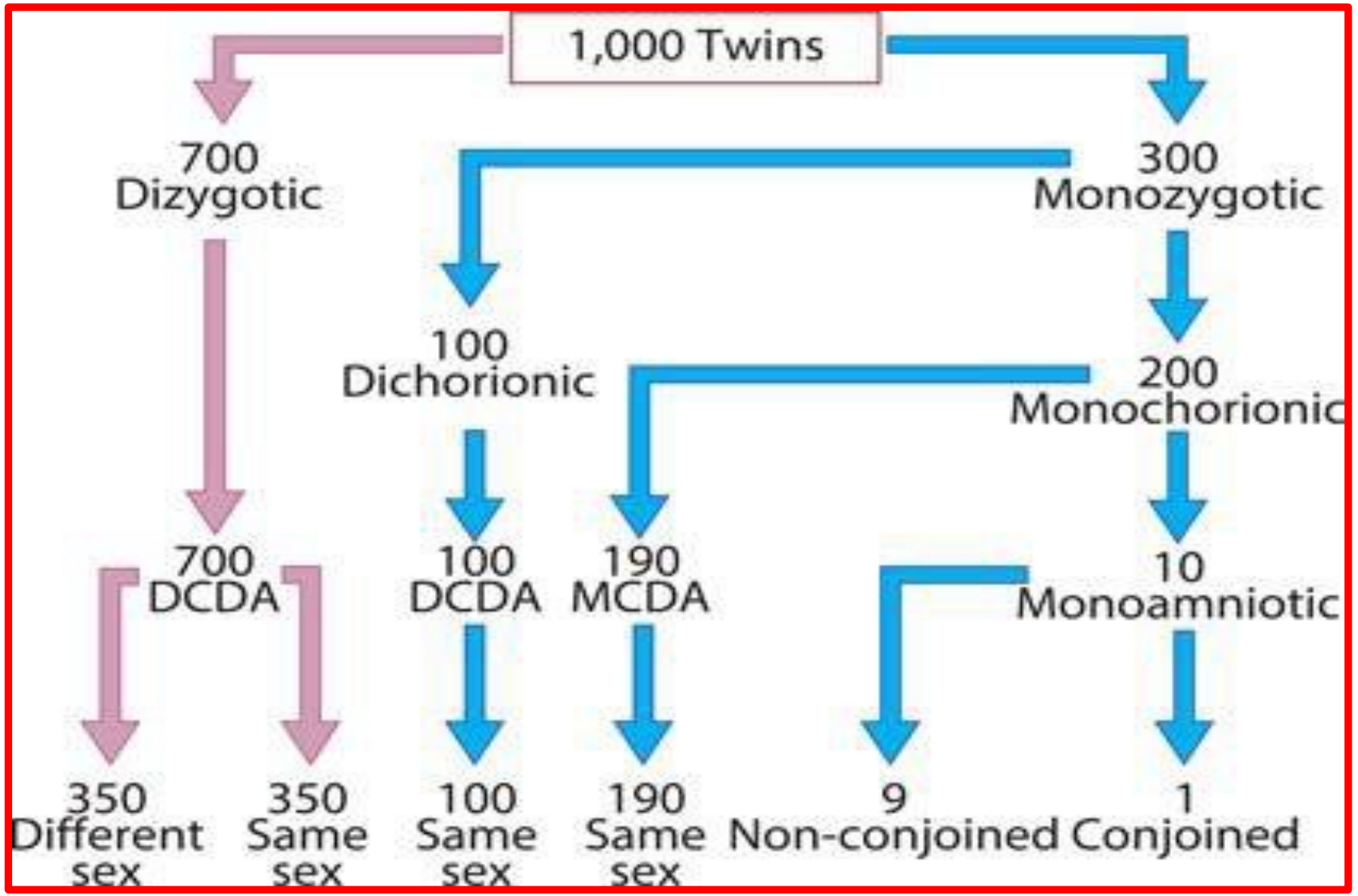
RISK FACTORS FOR TWINS:

1. *Increasing maternal age*: approximately 1 in 10 women aged over 45 giving birth to twins in the UK).
2. *Assisted conception* with approximately 1 in 5 successful *in* IVF procedures resulting in multiple pregnancy.



Incidence of monozygotic and dizygotic twin pregnancies. DCDA, dichorionic diamniotic; MCDA, monochorionic diamniotic.

ETIOLOGY

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- Multiple pregnancy may be classified according to:
  1. Number of fetuses: *twins, triplets, quadruplets*, etc.
  2. Number of fertilized eggs: *zygosity.*
  3. Number of placentae: *chorionicity.*
  4. Number of amniotic cavities: *amnionicity.*
- Twin pregnancy may be dizygotic (70%) or monozygotic (30%). Dizygotic twins (non-identical) occur from ovulation and subsequent fertilization of two oocytes. This results in dichorionic diamniotic twins, where each fetus has its own placenta and amniotic cavity.

Dizygotic Twins

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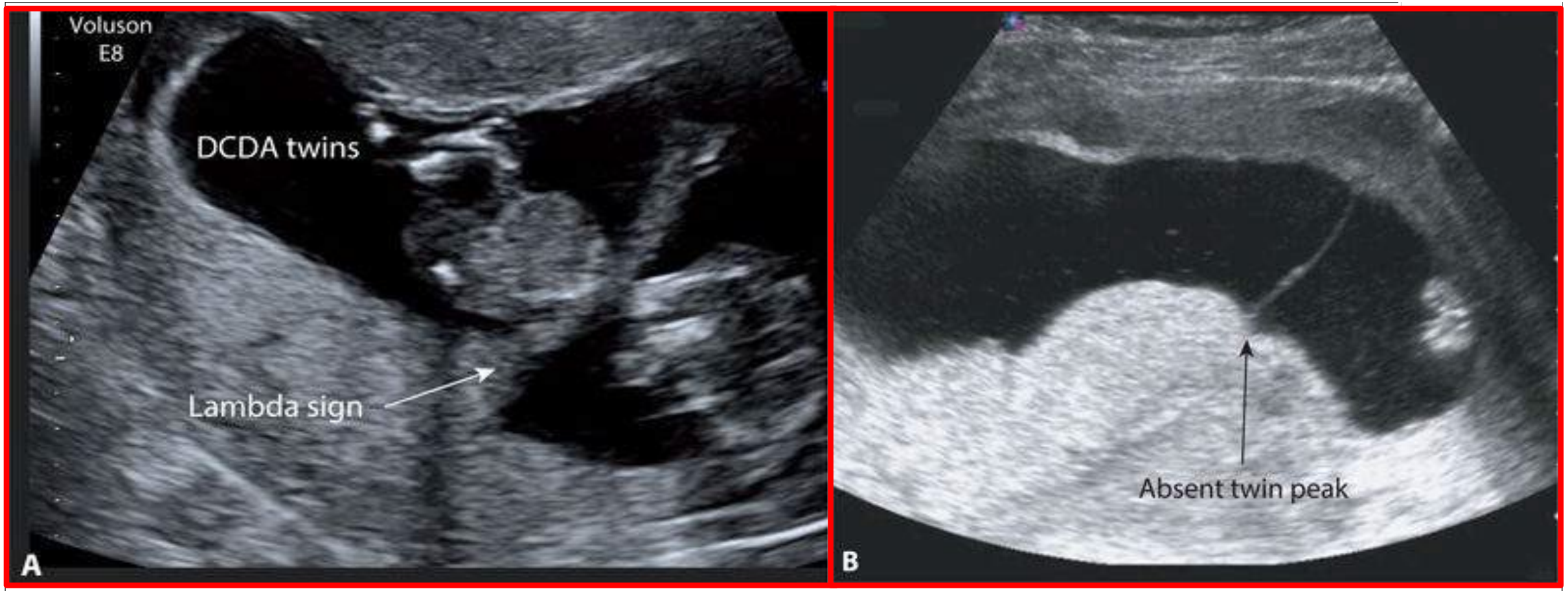
- Always have two functionally separate placentae, however, the placentae can become anatomically fused together and appear to the naked eye as a single placental mass.
- Always have separate amniotic cavities and the two cavities are separated by *a thick three-layer membrane* (fused amnion in the middle with chorion on either side).
- The fetuses can be either same-sex or different-sex pairings.



Ultrasound appearance of dichorionic (**A**) and monochorionic (**B**) twin pregnancies at 12 weeks' gestation. *Note that there appears to be a single placental mass but in the dichorionic type there is an extension of placental tissue into the base of the inter-twin membrane, forming the lambda sign.*

Monozygotic Twins

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- Monozygotic (identical) pregnancies result from fertilization of a single ovum with subsequent division of the zygote;

- If the zygote splits shortly after fertilization, the twins will each have a separate placenta and thus will be *dichorionic diamniotic.*

- *Monochorionic diamniotic (20%)* pregnancies occur when division of the zygote occurs between days 4 and 8 postfertilization.

- The vast majority of monochorionic twins have two amniotic cavities (diamniotic) but the dividing membrane is thin, as it consists of a single layer of amnion alone.

- *Monochorionic monoamniotic (1%)* pregnancy occurs when division occurs between days 8 and 12 postfertilization.

- *Conjoined twins* occur when division of the zygote happens after day 13.

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Dizygous

Fertilization of two separate ova

Monozygous

Splitting of single fertilized egg within

< 3 days

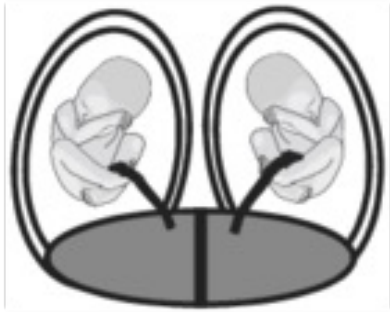
5 - 8 days

> 8 days

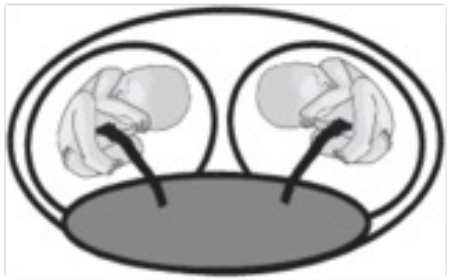
>13 D

8-12 D

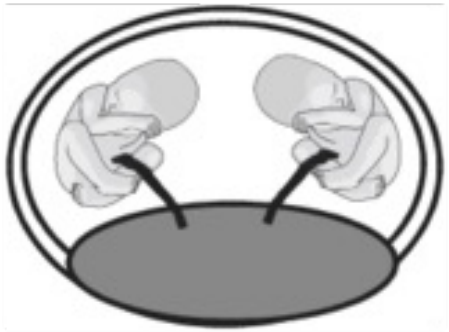
Dichorionic
Diamniotic



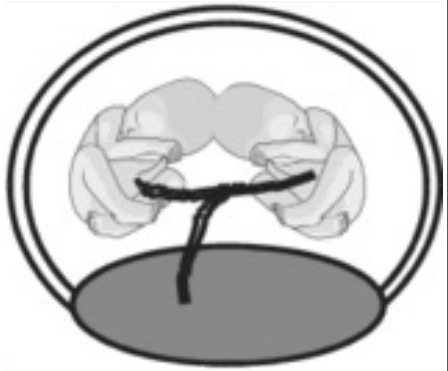
Fused
Dichorionic
Diamniotic



Monochorionic
Diamniotic



Monochorionic
Monoamniotic



Conjoined twins

MANAGEMENT

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According to the (NICE) guidelines,:

1. The woman's needs and preferences should be *respected*.
2. Women with *monoamniotic twins* should be offered *individualized care in a tertiary level* fetal medicine (high complication rate)
3. A multidisciplinary team consisting of *a specialist obstetricians & ultrasonographers*.
4. Regular ultrasound assessment is used to *date the pregnancy*, *perform first trimester screening and to monitor growth.*
5. Abdominal palpation or symphysis– fundal height (SFH) measurements should **not** be used to predict FGR.

MANAGEMENT

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According to the (NICE) guidelines: *(continued)*

6. There is no benefit in using untargeted administration of corticosteroids.
7. Gestation and mode of delivery *depends on the type of multiple pregnancy*.
8. Women with multiple pregnancies should receive the same advice about *diet, lifestyle and nutritional supplements as in routine antenatal care*.
9. Women with multiple pregnancies are at higher risk of anemia compared with singleton pregnancies and a *full blood count should be checked at 20 & 28 weeks' gestation* and supplementation with iron, folic acid or vitamin B12 initiated.

COMPLICATIONS; GENERAL

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- All the physiological changes of pregnancy are exaggerated in multiple gestations leading to much greater stresses being placed on maternal reserves. These include:

  1.increased cardiac output, *2. volume expansion,*

  3. relative hemodilution, *4. diaphragmatic splinting,*

  5.weight gain and *6. lordosis,*

- The 'minor' symptoms of pregnancy may be exaggerated, such as *nausea and vomiting and heartburn*.
- Maternal complications such as DIC have been reported, but the incidence of this appears to be very low.

COMPLICATIONS OF MULTIPLE PREGNANCY

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1. PRETERM LABOR
2. PERINATAL MORTALITY
3. SINGLE FETAL DEMISE
4. FETAL GROWTH RESTRICTION
5. TWIN-TO-TWIN TRANSFUSION SYNDROME
6. MONOAMNIOTIC TWIN PREGNANCY

COMPLICATIONS; *PRETERM LABOR*

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- One of the commonest and most serious complications of dichorionic diamniotic pregnancies is preterm delivery, either spontaneous or iatrogenic due to the occurrence of other adverse pregnancy complications such as *pre-eclampsia or FGR*.
- Approximately 60% of twin pregnancies result in spontaneous birth before 37 weeks' gestation.
- In a dichorionic pregnancy, the chance of late miscarriage is 2%.
- In 15% of cases, delivery will be very preterm .

COMPLICATIONS; ***PRETERM LABOR***

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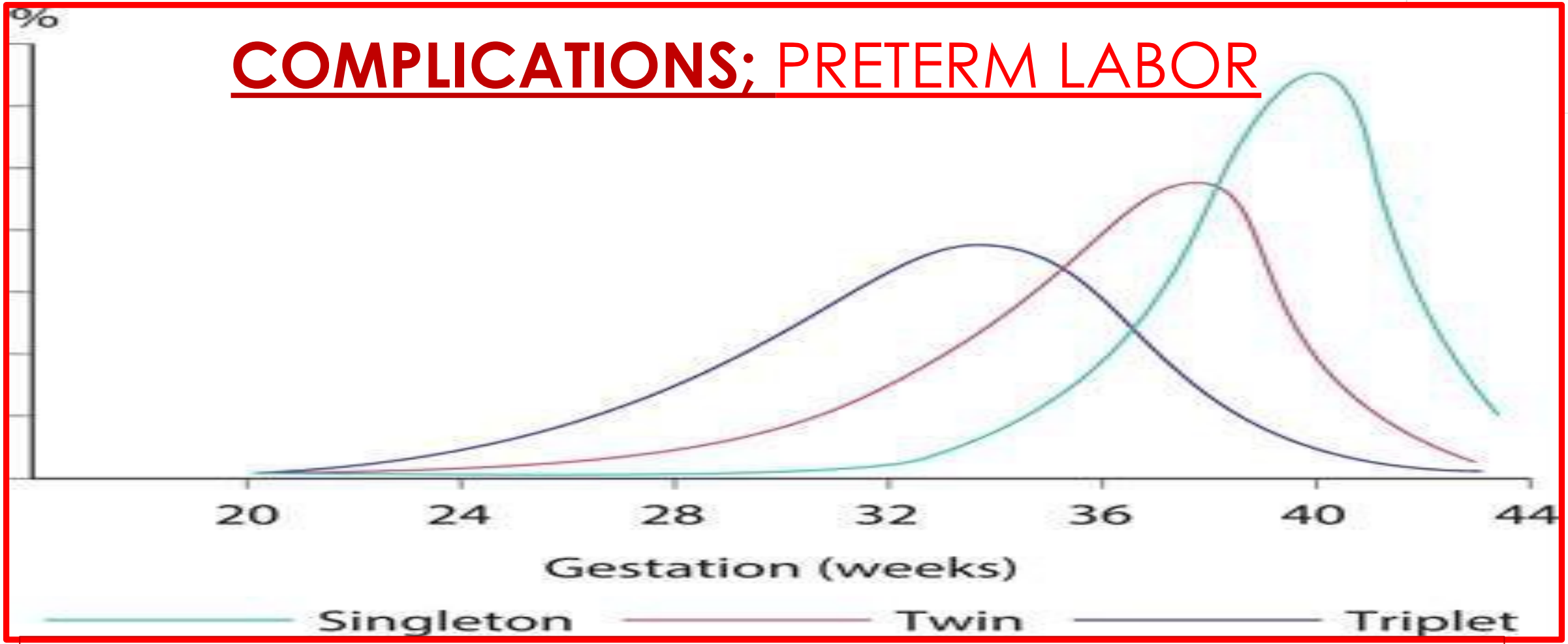
- For monochorionic twins, the chance of preterm delivery is increased with 12% born before viability and 25% delivering between 24 and 32 weeks.
- Multiple gestations account for 20–25% of Neonatal Intensive Care Unit (NICU) admissions.
- Monochorionic diamniotic pregnancies are also at risk of twin-to-twin transfusion syndrome (TTTS) and, more rarely, twin anemia–polycythemia sequence (TAPS).

COMPLICATIONS; PRETERM LABOR



Gestational age distribution at delivery of singleton, twin and triplet pregnancies.

COMPLICATIONS: *PERINATAL MORTALITY*

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- Overall perinatal mortality for monochorionic twins is estimated at 30 per 1,000 (compared with 3.8 per 1,000 among dichorionic twins).
- The overall infant mortality rate for twins is approximately 5.5 times higher than for singletons, mainly as a result of extreme prematurity.
- The survival at any given gestation is similar for singletons and multiple pregnancies.
- The stillbirth rate is 12 per 1,000 twin births and 31 per 1,000 triplet births. This compares with about 5 in 1,000 singleton pregnancies.

COMPLICATIONS: *PERINATAL MORTALITY*

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- With the increasing use of early pregnancy scanning, it has been recognized that *up to 25% of twins may suffer an early demise and subsequently 'vanish' well before they would have previously been detected.*
- After the first trimester, the intrauterine death of one fetus in a twin pregnancy may be associated with a *poor outcome for the remaining co-twin.*

COMPLICATIONS: *OTHERS*

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Single fetal demise in 2nd or 3rd trimester:

In dichorionic → Minor complication in the survivor.

In monochorionic → immediate complications in the survivor.

- Complications include:

(1).*death* or *brain damage* with subsequent neurodevelopmental handicap.

(2).*Acute hypotensive episodes*, secondary to placental vascular anastomoses between the two fetuses, result in hemodynamic volume shifts from the live to the dead fetus. *Acute release of vasoactive substances* into the survivor's circulation may also play a role.

- Death or handicap of the co-twin occurs in up to 30% of cases.

COMPLICATIONS: *OTHERS*

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Fetal Growth Restriction (FGR):

- Compared to singletons, the risk of FGR is higher in each individual twin alone and substantially raised in the pregnancy as a whole.
- This increased incidence of growth restriction creates *several management difficulties* as the interpretation of and performing detailed Doppler studies, including ductus venosus (DV) and *middle cerebral artery Dopplers*, become increasingly difficult as gestation progresses.

COMPLICATIONS: *OTHERS*

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Fetal Growth Restriction (FGR): (contd.,)

- When FGR , the main aims of antenatal care become *prediction of the severity of impaired fetal oxygenation and selecting the appropriate time for delivery.*
- In singletons, this is *a balance between the relative risks of intrauterine death versus the risk of neonatal death or handicap from elective preterm delivery.*
- The situation is much more complicated in twin pregnancies. The potential benefit of expectant management or elective delivery for the *small fetus must also be weighed against the risk of the same policy for the normally grown co-twin.*

COMPLICATIONS: *OTHERS*

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Fetal Growth Restriction (FGR): (contd.,)

- In a *dichorionic pregnancy*, each fetus runs twice the risk of a low birthweight and there is a 25% chance that at least one of the fetuses will be small for gestational age.
- The chance of suboptimal fetal growth for monochorionic twins is almost double that for dichorionic twins.
- In dichorionic twin pregnancies where one fetus has growth restriction, *elective preterm delivery may lead to iatrogenic complications of prematurity in the previously healthy co- twin.*

COMPLICATIONS: *OTHERS*

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Fetal Growth Restriction (FGR): (contd.,)

Delivery should be avoided before 28–30 weeks' gestation, even if there is evidence of imminent intrauterine death of the smaller twin; *however, this may not be applicable in the management of monochorionic twins.*

- The death of one of a monochorionic twins may result in either death or handicap of the co-twin because of acute hypotension secondary to placental vascular anastomoses between the two circulations.
- As the damage potentially happens at onset of death of the first twin, the timing of delivery may be a very difficult decision. Below 30 weeks' gestation, the aim is to prolong the pregnancy as far as possible without risking the death of the growth-restricted twin.

Complications unique to monochorionic twin pregnancy

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Twin-to-twin transfusion syndrome

- Unique to monochorionic pregnancy is a complication involving *the development of abnormal unbalanced vascular anastomoses* leading to the development of TTTS.
- Although vascular connections are found in nearly all monochorionic twins, approximately *10% of monochorionic diamniotic pregnancies and 5% of monoamniotic pregnancies will subsequently develop TTTS.*
- Four types of vascular connections have been identified in monochorionic pregnancies:

1-arteriovenous (AV), 2- venoarterial (VA),

3-arterioarterial (AA) 4- venovenous (VV).

Complications unique to monochorionic twin pregnancy

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Twin-to-twin transfusion syndrome (contd.,)

- If the connections are *unbalanced with more AV connections occurring in one direction than the other*, alterations in the hydrostatic and osmotic forces occur, resulting in the manifestations seen in TTTS.
- An equal number of *bidirectional anastomoses* results in balanced connections and TTTS does **not** occur under these circumstances.
- AA anastomoses **are protective** against the development of TTTS. TTTS is diagnosed based on the following ultrasound criteria (NEXT SLIDE)

Complications unique to monochorionic twin pregnancy

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Twin-to-twin transfusion syndrome (contd.,)

- TTTS is diagnosed based on the following ultrasound criteria:

1. Single placental mass.
2. Concordant gender.
3. Oligohydramnios with maximum vertical pool (MVP) less than 2 cm in one sac and polyhydramnios in the other sac (MVP >8 cm).
4. Discordant bladder appearances.
5. Hemodynamic and cardiac compromise.

Complications unique to monochorionic twin pregnancy

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Twin-to-twin transfusion syndrome (contd.,)

TTTS may be graded in severity according to the widely accepted Quintero staging:

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, non-visualized bladder and abnormal Dopplers. *There is absent/reversed end-diastolic velocity in the umbilical artery, reversed flow in a-wave of the DV 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.

Complications unique to monochorionic twin pregnancy

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Twin-to-twin transfusion syndrome (contd.,)

- TAPS (*twin anemia polycythemia sequence*) is a rarer chronic form of TTTS in which *a large inter-twin hemoglobin difference occurs but the oligohydramnios polyhydramnios sequence that is observed with TTTS is not seen*.
- It is thought to occur *from residual small (<1 mm) unidirectional AV anastomoses without accompanying AA anastomoses*. The small residual anastomoses lead to the gradual development of anemia in one twin and polycythemia in the other twin.

Complications unique to monochorionic twin pregnancy

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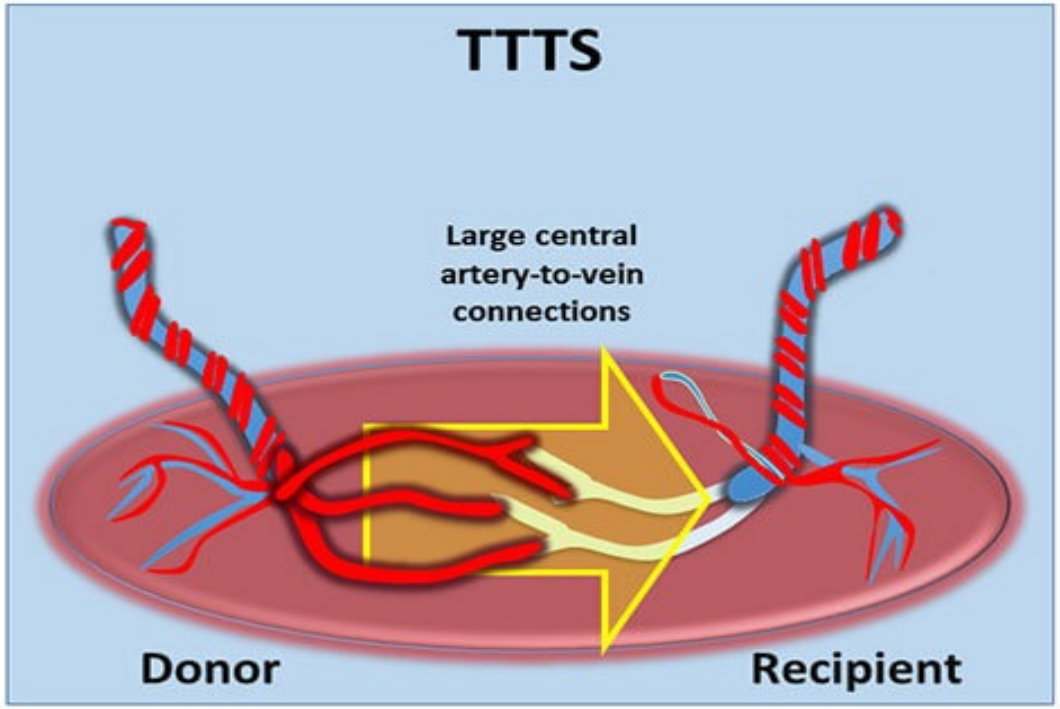
Twin-to-twin transfusion syndrome (contd.,)



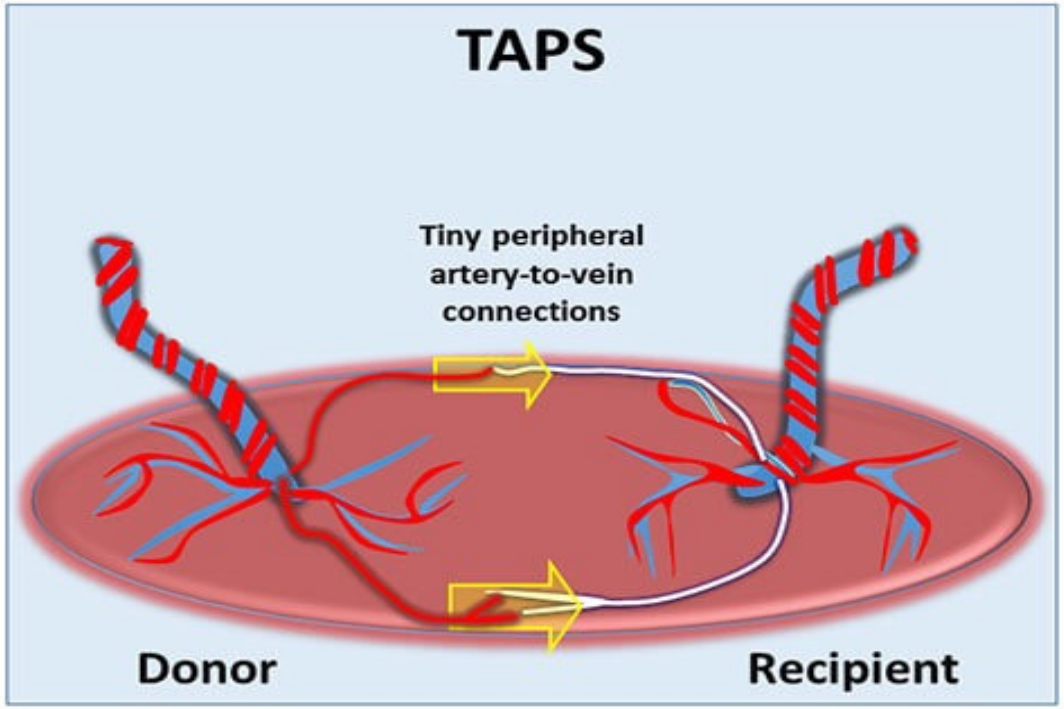


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Table 3: Antenatal US-based Staging of TAPS

Stage 1	MCA PSV of the donor is > 1.5 MoM, and MCA PSV of the recipient is < 1.0 MoM, without other signs of fetal compromise
Stage 2	MCA PSV of the donor is >1.7 MoM, and MCA PSV of the recipient is < 0.8 MoM, without other signs of fetal compromise
Stage 3	Includes the findings of stage 1 or 2, with cardiac compromise of the donor, defined as critically abnormal flow (which includes absent or reversed end-diastolic flow in the umbilical artery, pulsatile flow in the umbilical vein, increased pulsatility index or reversed flow in the ductus venosus)
Stage 4	Hydrops of the donor
Stage 5	Intrauterine demise of one or both fetuses preceded by TAPS

Complications unique to monochorionic twin pregnancy

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Twin-to-twin transfusion syndrome (contd.,)

- Monochorionic pregnancies will be assessed using ultrasound *fortnightly* from 16 weeks' gestation to at least 24 weeks' gestation.
- Although the risk of TTTS reduces after this gestation, it is still possible. However, the occurrence of discordant growth is more likely as pregnancy progresses. As a result, continued surveillance with growth assessments remains essential.

Complications unique to monochorionic twin pregnancy

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Treatment of TTTS

- When TTTS is suspected or diagnosed patients should be referred for a *tertiary referral*.
- When TTTS is confirmed, management options include:

1. *expectant management;*
2. *amnioreduction;*
3. *Septostomy;*
4. *selective feticide,*
5. *fetoscopic laser ablation of vascular anastomoses.*

Complications unique to monochorionic twin pregnancy

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Treatment of TTTS. (CONTD,.)

- *Fetoscopic laser ablation* is now generally considered the *definitive treatment for severe (defined as Quintero stage II or above) TTTS between 16 and 26 weeks' gestation.*
- Above 26 weeks, delivery may be considered.
- These recommendations are *based on the results of a meta-analysis that demonstrated that fetuses undergoing laser ablation rather than amnioreduction were twice as likely to survive and had an 80% reduction in neurological morbidity*.

Complications unique to monochorionic twin pregnancy

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Treatment of TTTS. (CONTD,.)

- The procedure is performed either under local anesthetic with intravenous sedation, with regional anesthesia or occasionally under general anesthesia.
- Under ultrasound guidance a 2–3 mm diameter fetoscope is introduced into the amniotic cavity of the recipient twin.
- The location of the dividing twin membrane between the two amniotic cavities at the placental interface and the placental insertions of the umbilical cords are visualized.
- AV anastomoses are ablated using laser energy.
- Following the laser therapy, the fetoscope is removed and an amnioreduction is performed until the amniotic fluid volume appears normal by ultrasound assessment.

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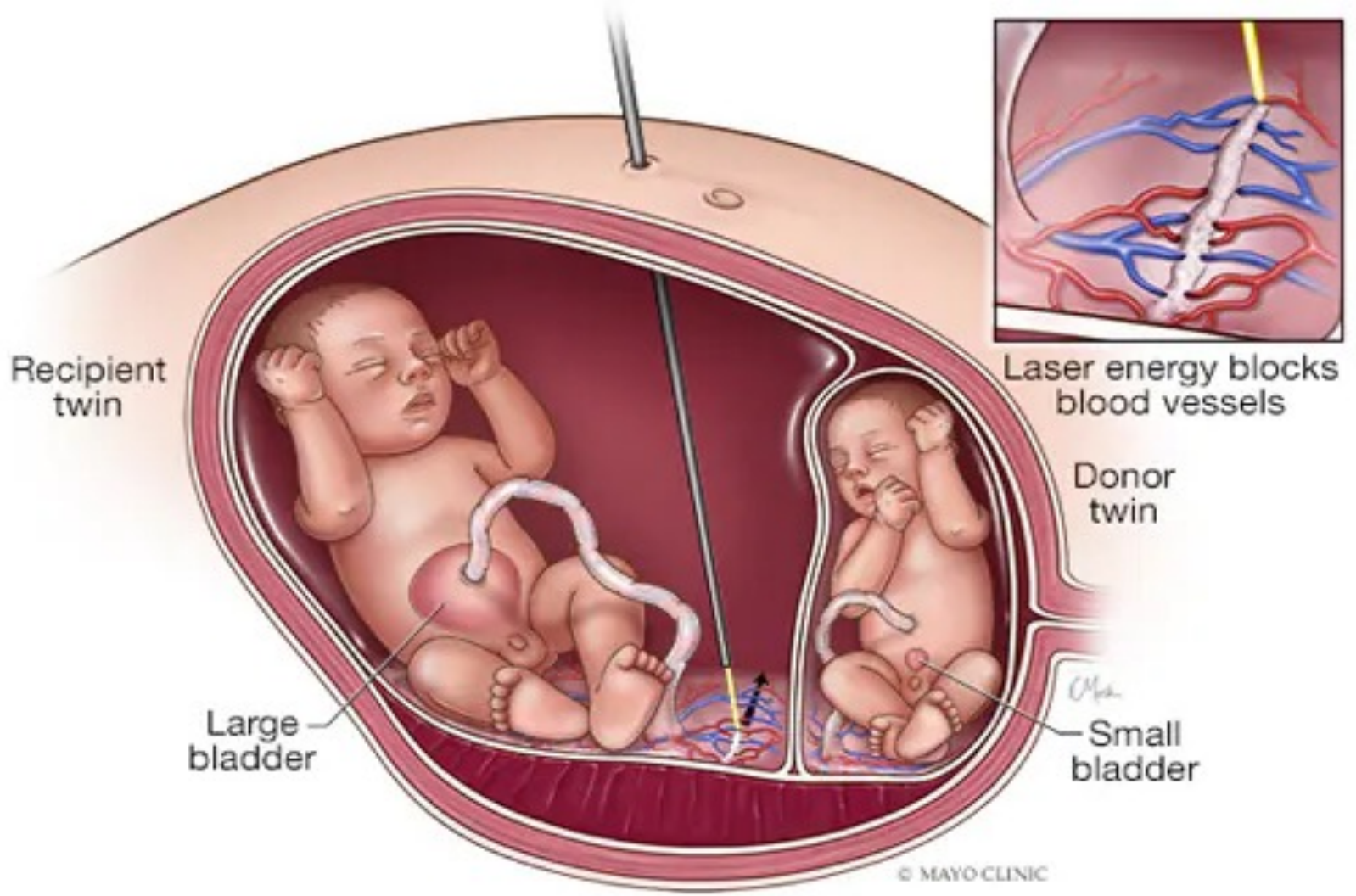

Fetal laser photocoagulation

Mono-amniotic Monochorionic Twin Pregnancy

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- Monoamniotic twin pregnancies result from division of a single fertilized oocyte.
- The incidence of monoamniotic twins is approximately 1 in 10,000 pregnancies.
- It is the least common pattern of placentation but is associated with *high morbidity and mortality due to the high rate of perinatal mortality that occurs secondary to cord entanglement resulting in fetal loss or neurological morbidity*.

Mono-amniotic Monochorionic Twin Pregnancy

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- Monochorionic monoamniotic (MCMA) twins have increased risk of congenital anomalies including *neural tube defects and abdominal wall and urinary tract malformations*.
- *Discordant birthweight* affects approximately 20% of surviving monoamniotic twin pairs without congenital anomalies. As a result, close surveillance with ultrasound is essential.

Mono-amniotic Monochorionic Twin Pregnancy

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- Monochorionic monoamniotic pregnancies are monitored closely with antenatal fetal surveillance and delivery by *caesarean section generally at 32–34 weeks' gestation.*
- The ideal method for surveillance is unclear. Generally, patients are *hospitalized from 28 weeks' gestation* and fetal heart auscultation performed several times daily using cardiotocography to detect signs of cord compression.
- Perinatal mortality occurs in approximately 20% of fetuses and infants.

ANTENATAL CARE FOR TWIN PREGNANCY

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- The NICE guidelines recommend that women with uncomplicated dichorionic twin pregnancies be offered *at least eight antenatal appointments with a health care professional from the core team (at least nine antenatal appointments for uncomplicated monochorionic diamniotic twin pregnancies).*
- Routine antenatal care for all women involves screening for hypertension and gestational diabetes as thsese complications occur more in twin pregnancy

ANTENATAL CARE FOR TWIN PREGNANCY

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- There is a higher risk of other problems *(such as antepartum hemorrhage and thromboembolic disease)*; however, the management is the same as for a singleton.
- Due to the increased fetoplacental demand for iron and folic acid, many would recommend routine (as opposed to selective) supplementation in multiple pregnancies.
- Minor symptoms of pregnancy are more common, but management is again unchanged compared to singletons.

SCREENING IN MULTIPLE PREGNANCY

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- Women with multiple pregnancy should be offered *a first trimester scan* when the crown–rump length (CRL) measures 45–84 mm, which equates to approximately *11 weeks – to- 13 weeks 6 days*. The purpose of this is threefold:
  a. *To accurately estimate gestational age.*
  b. *To determine chorionicity.*
  c. *To screen for Down's syndrome.*

SCREENING IN MULTIPLE PREGNANCY

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- Gestational age is assessed by measuring the CRL.
- Chorionicity is determined by assessing the number of placental masses and assessing for *the lambda or T- sign and membrane thickness* . (See next slide)
- At this stage the fetuses are maped and it is documented clearly which fetus is where, to ensure consistency with future scans throughout pregnancy, for example, triplet two maternal upper right side.

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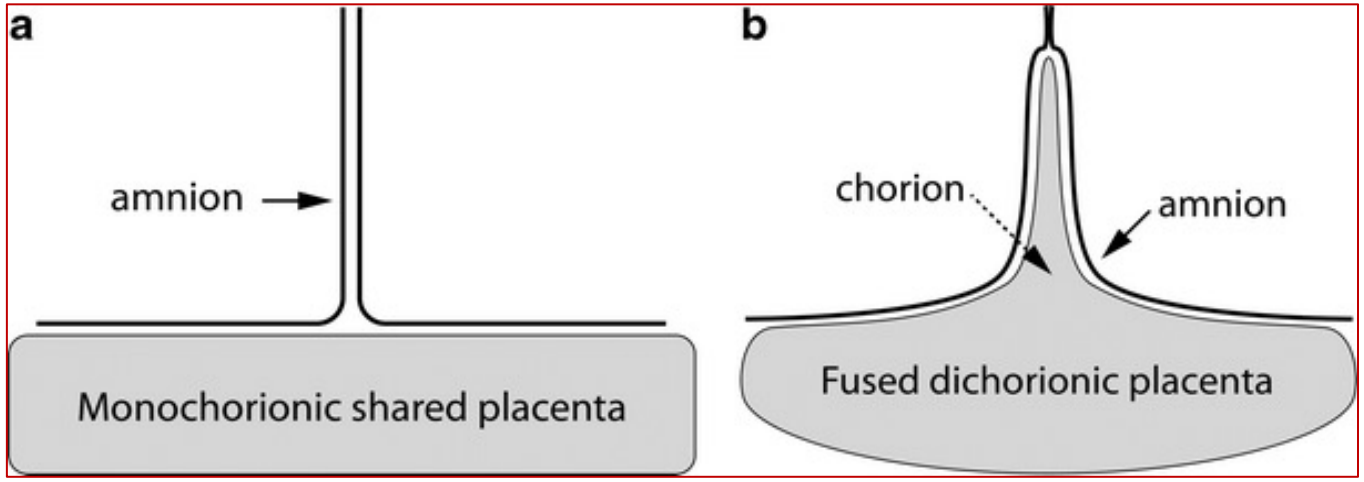
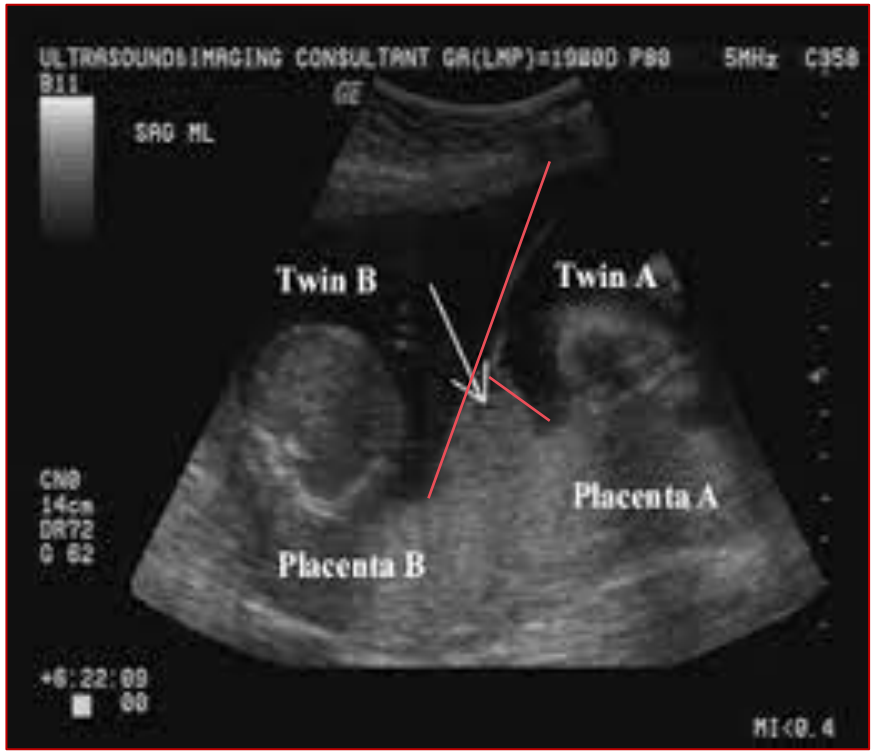


gure 2.
ating parameters. (a) Midsagittal plane of a fetus showing measurement of -rump length (CRL)-dating rameter <14 weeks GA, (b) measurement of head circumference (HC)-dating parameter >14 weeks GA.


(a)


(b)



SCREENING IN MULTIPLE PREGNANCY

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- With *dichorionic* pregnancies calculate the risk of Down's syndrome for each baby.
- With *monochorionic* pregnancies the risk of Down's syndrome is calculated for the pregnancy as a whole.
- Assessment *of the a-wave in the DV* at 11–13 weeks' gestation may help identify monochorionic pregnancies at risk of severe TTTS *as reversed a-wave is associated with an increased risk of developing severe TTTS, as well as other complications including aneuploidy.* However, due to high false positives, this is not widely advocated or must be interpreted with caution.

SCREENING IN MULTIPLE PREGNANCY

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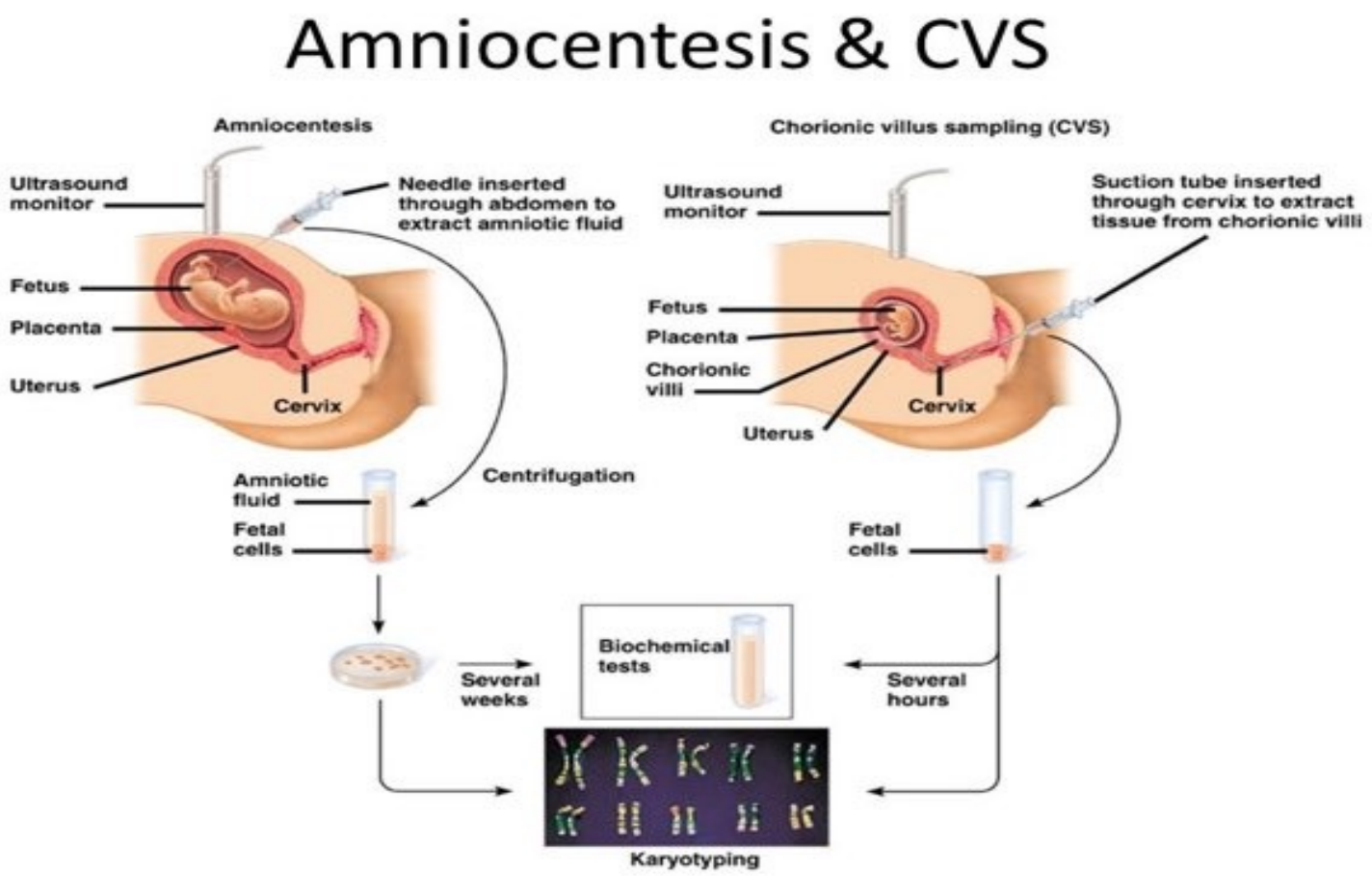

Both *amniocentesis and chorion villous sampling (CVS)* can be performed in twin pregnancies, but in dichorionic pregnancies, it is essential that both fetuses are sampled.

SCREENING IN MULTIPLE PREGNANCY

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Anomaly scan

- Fetuses of multiple pregnancies have *higher rates of congenital anomalies compared to singleton fetuses.*
- Monozygotic twins are *two to three times more* likely to have structural defects than dizygotic twins or singleton fetuses. These include *anencephaly and holoprosencephaly*.
- In general, only one fetus is affected by the congenital malformations should they occur. In 5–20% of cases the defect is present in both twins.

SCREENING IN MULTIPLE PREGNANCY

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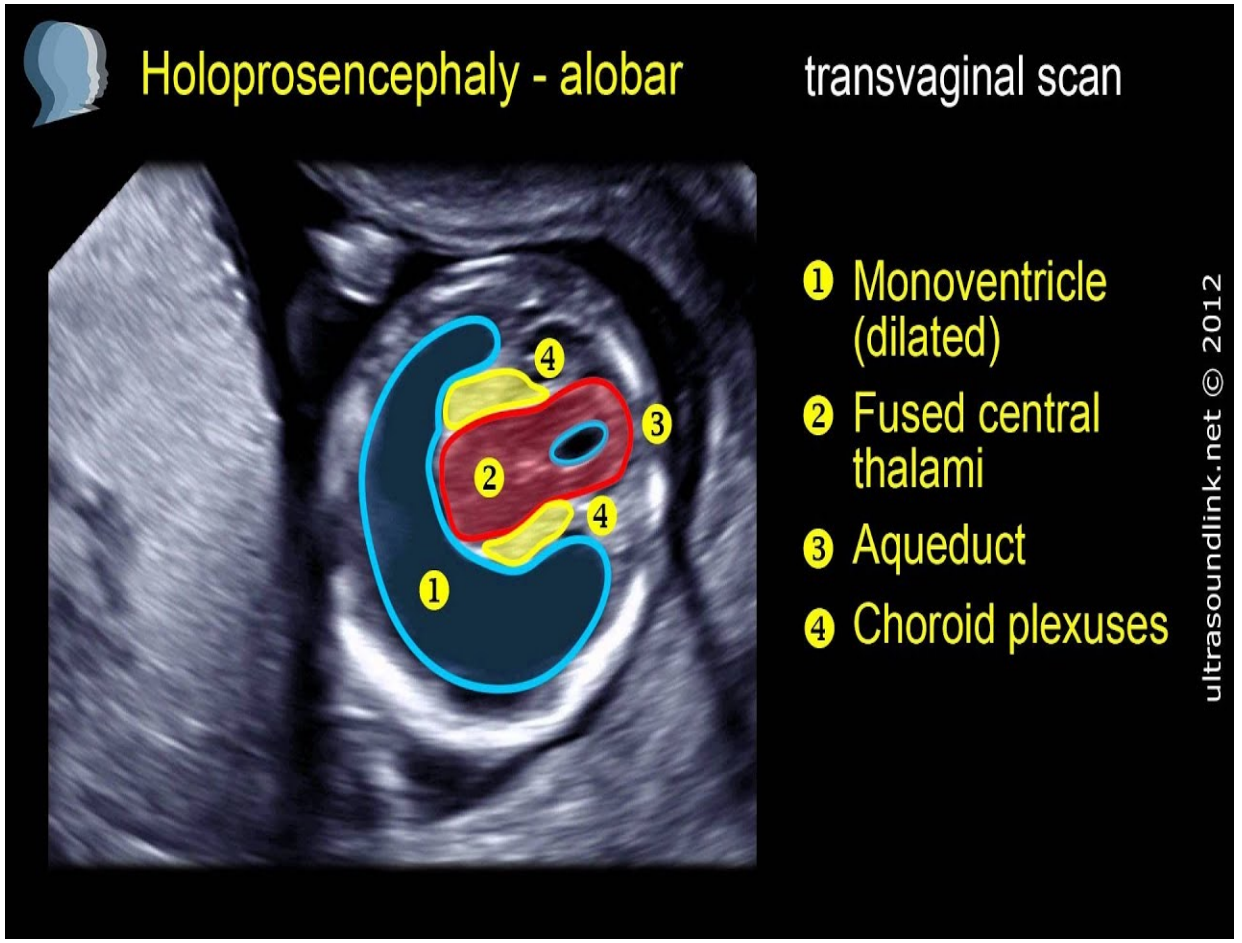

Anencephaly in one twin

SCREENING IN MULTIPLE PREGNANCY

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Anomaly scan [cont,]

- Multiple gestations with an abnormality in one fetus can be managed *expectantly or by selective fetocide of the affected twin*.
- In cases where the abnormality is non-lethal but may well result in handicap, the parents may *need to decide whether the potential burden of a handicapped child outweighs the risk of loss of the normal twin from fetocide-related complications, which occur after 5–10% of procedures.*

SCREENING IN MULTIPLE PREGNANCY

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Anomaly scan [cont,]

- In cases where the abnormality is lethal, *it may be best to avoid such risk to the normal fetus, unless the condition itself threatens the survival of the normal twin*.
- Anencephaly is a good example of a lethal abnormality that can threaten the survival of the normal twin. At least 50% of pregnancies affected by anencephaly are complicated by polyhydramnios, which can lead to the spontaneous preterm delivery of both babies.

SCREENING IN MULTIPLE PREGNANCY

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Anomaly scan [cont,]

- *Fetocide* in monochorionic pregnancies *carries increased risk and requires a different technique such as cord occlusion*.
- As there are potential vascular anastomoses between the two fetal circulations, *intracardiac injections cannot be employed*. Methods have evolved that employ *cord occlusion techniques*. These require significant instrumentation of the uterus and are therefore associated with a higher complication rate.

SCREENING IN MULTIPLE PREGNANCY

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Anomaly scan [cont,]

- In twins, as in singletons, *the risk for chromosomal abnormalities increases with maternal age.*
- The rate of *spontaneous dizygotic twinning* also increases with maternal age.
- Many women undergoing assisted conception techniques (that increase the chance of dizygotic twinning) are also older than the mean maternal age.
- Chromosomal defects may be more likely in a multiple pregnancy for various reasons, and couples should be counselled accordingly.

SCREENING IN MULTIPLE PREGNANCY

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Growth Assessment

- Multiple pregnancies are at high risk of FGR. As a result, *fetal weight should be calculated from 20 weeks' gestation at a maximum of 4 week intervals*.
- A growth discrepancy *of 25% or greater should be considered clinically significant*, a tertiary referral opinion sought and additional monitoring or delivery depending on gestation planned.
- Other indications for a tertiary level fetal medicine opinion include *discordant fetal growth, fetal anomaly, discordant fetal death or TTTS.*

DELIVERY OF MULTIPLE PREGNANCY

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A delivery plan should be discussed and made with the patient, ideally throughout pregnancy, with a clear delivery plan discussed and documented early in the third trimester.

This is essential as multiple pregnancies have a high prevalence of preterm delivery.

The discussion with the patient should *include desired mode for delivery, gestation for induction of labor if no spontaneous onset of labor, process for delivery of twin one and twin two including internal podalic version, risk of cesarean section, complications following delivery including postpartum hemorrhage and desire to breast feed or not.*

DELIVERY OF MULTIPLE PREGNANCY

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Intrapartum management

- *General management of a patient with twin pregnancy in labor involves:*
  - Antenatal education and a pre-agreed birth plan.
  - Continuous fetal heart monitoring.
  - Two neonatal resuscitation trolleys, two obstetricians and two pediatricians are available and that the special care baby unit and anesthetist are informed well in advance of the delivery.
  - Analgesia, ideally in the form of an early epidural, to allow for internal podalic version (if needed) for twin 2.
  - A standard oxytocin solution for augmentation should be prepared, run through an intravenous giving-set and clearly labelled 'for augmentation', for use for delivery of the second twin.
  - Oxytocin infusion in anticipation of postpartum hemorrhage. Portable ultrasound.

DELIVERY OF MULTIPLE PREGNANCY

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- Generally, with *dichorionic twin pregnancies* delivery from 37 weeks' gestation is advocated.
- Women with *uncomplicated monochorionic twin pregnancies* should be offered elective delivery from 36 weeks' gestation and this should be performed after a course of antenatal corticosteroids has been given.
- However, this approach carries a *1.5% risk of late in utero death for monochorionic twins*.
- Continuing uncomplicated twin pregnancies *beyond 38 weeks' gestation* increases the risk of intrauterine fetal death.
- The indications for instrumental delivery of the second twin are as for singletons.

DELIVERY OF MULTIPLE PREGNANCY

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Intrapartum management

- With uncomplicated dichorionic diamniotic pregnancies *vaginal delivery is advocated provided the presenting twin is cephalic*.
- The risk of requiring emergency cesarean section for delivery of the second twin following vaginal delivery of the first twin is approximately 4%.
- If the *second twin is non-vertex,* which occurs in about 40% of twins, a vaginal delivery can be safely considered. If the second twin is a breech, the membranes can be ruptured once the breech is fixed in the birth canal. A breech extraction may be performed if fetal distress occurs or if a footling breech is encountered, but this requires considerable expertise.

DELIVERY OF MULTIPLE PREGNANCY

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Intrapartum management

- Complications are less likely if the membranes *are not ruptured* until the feet are held by the operator.
- Where the fetus is *transverse*, external cephalic version can be successful in more than 70% of cases.
- The fetal heart rate should be closely monitored, and ultrasound can be helpful to demonstrate the final position of the baby.
- If external cephalic version is unsuccessful, and assuming that the operator is experienced, an *internal podalic version* can be undertaken

DELIVERY OF MULTIPLE PREGNANCY

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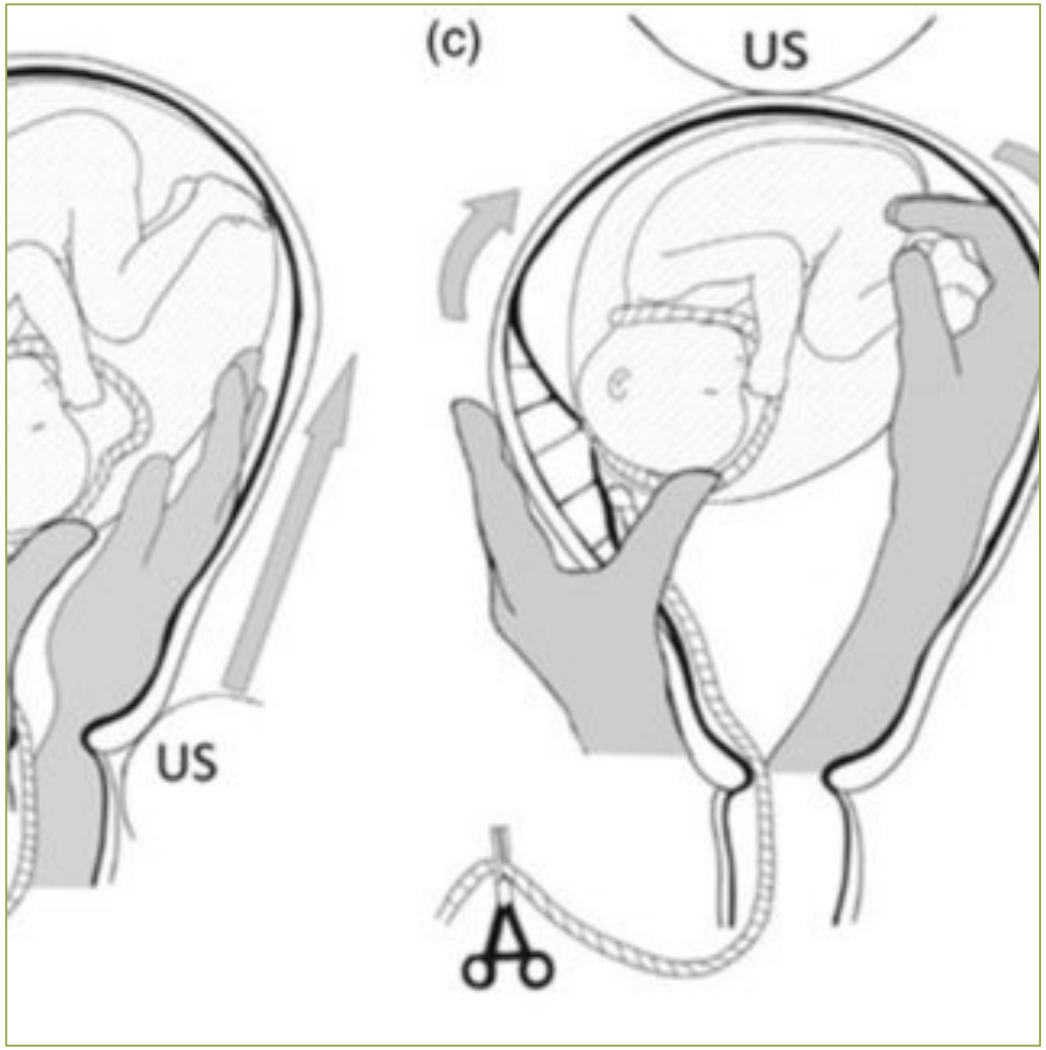
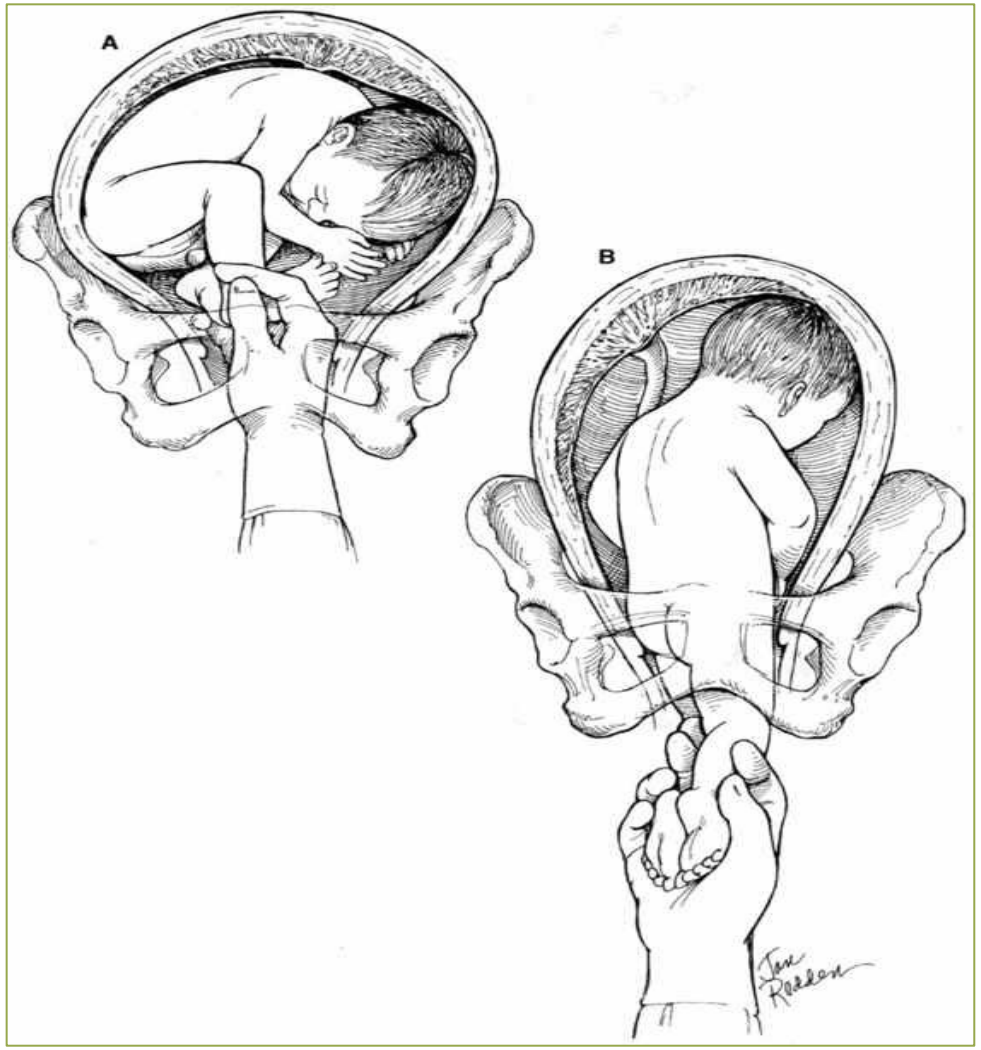
Intrapartum management

- *Internal podalic version* is performed by identifying a fetal foot through intact membranes.
- The foot is grasped and pulled gently and continuously into the birth canal.
- The membranes are ruptured as late as possible.
- This procedure is easiest when the transverse lie is with the back superior or posterior. If the back is inferior or if the limbs are not immediately palpable, ultrasound may help to show the operator where they would be found.
- This will minimize the unwanted experience of bringing down a fetal hand in the mistaken belief that it is a foot.



External cephalic version



Internal podalic version

HIGHER ORDER MULTIPLE PREGNANCY

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- The incidence of spontaneous *triplet pregnancy* is 1 in 6,000–8,000 births. This incidence may be increased due to assisted fertility.
- Triplets are associated with a high morbidity and mortality.
- According to UK data, they have an *average gestation of 34 weeks* at delivery, average birthweight of 1.8 kg and cerebral palsy rate of 26.7 per 1,000 live births.
- When performing first trimester screening in monochorionic triplet pregnancies, calculate the risk of Down's syndrome for each baby in dichorionic and tri-chorionic triplet pregnancies.

HIGHER ORDER MULTIPLE PREGNANCY

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- NICE recommends that women with *uncomplicated monochorionic tri-amniotic and dichorionic tri-amniotic triplet pregnancies be offered at least 11 antenatal appointments with a health care professional from the core team.*
- It is not recommended to prolong pregnancy beyond 36 weeks' gestation.

CONCLUSION

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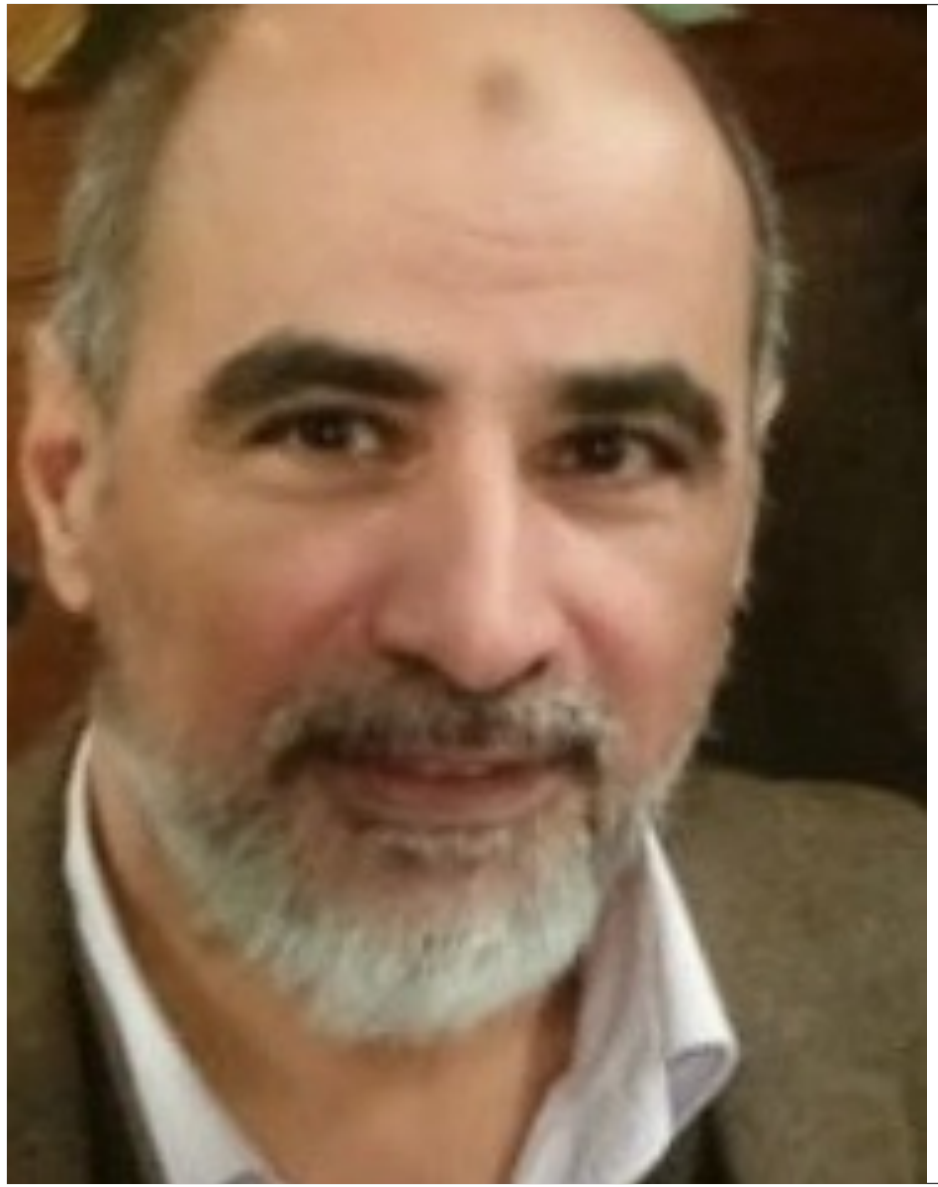
- Multiple pregnancy rates continue to *increase* worldwide.
- Multiple pregnancies are associated with *increased incidence of almost every pregnancy complication, with the exception of macrosomia and postdates pregnancy.*
- *Preterm birth, growth restriction and stillbirth are* key causes of the raised fetal morbidity and mortality associated with multiple pregnancies.
- *Maternal morbidity and mortality* is also increased in multiple pregnancies.
- Early ultrasound assessment is key in the management of multiple pregnancy as it can correctly classify the type of pregnancy according to chorionicity and amnionicity, allowing risk to be stratified.



THANK YOU