Multifetal Pregnancy

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Introduction

- Twin pregnancies and higher-order multiple births are increasing due to the expanded use of fertility treatments and older maternal age at childbirth.
- Increased neonatal morbidity and mortality rates with multiple gestations .
- Increased maternal complication with multiple gestations at least two folds.

Introduction

- The number of triplet, quadruplet, and higher-order multiple births peaked in 1998 and has dropped recently.
- because of limits in the number of embryos transferred and the availability and acceptance of multifetal pregnancy reduction (MFPR) procedures.

Fetal complications

- **Prematurity, monochorionicity**, and **growth restriction** pose the main risks to fetuses and neonates in multiple gestations.
- **Stillbirth** rates increase **infant mortality rates increase**
- **infants of multiple gestations** comprise almost **one quarter of very-low-birth-weight infants.**
- The incidence of **severe handicap** among neonatal survivors of multiple gestation is also **increased.**

Maternal complications

- Hypertension
- Placental abruption
- Preterm labor
- Preeclampsia
- HELLP syndrome
- Anemia
- Preterm premature rupture of membranes (PPROM)
- Gestational diabetes
- Chorioendometritis
- Postpartum hemorrhage

Zygosity

Dizygotic (75%)	Monozygotic (25%)
resulting from the fertilization of 2 separate ova by 2 different spermatozoas 2 zygotes formed	resulting from a single fertilized ovum that subsequently div ides into two separate individuals. Same gender

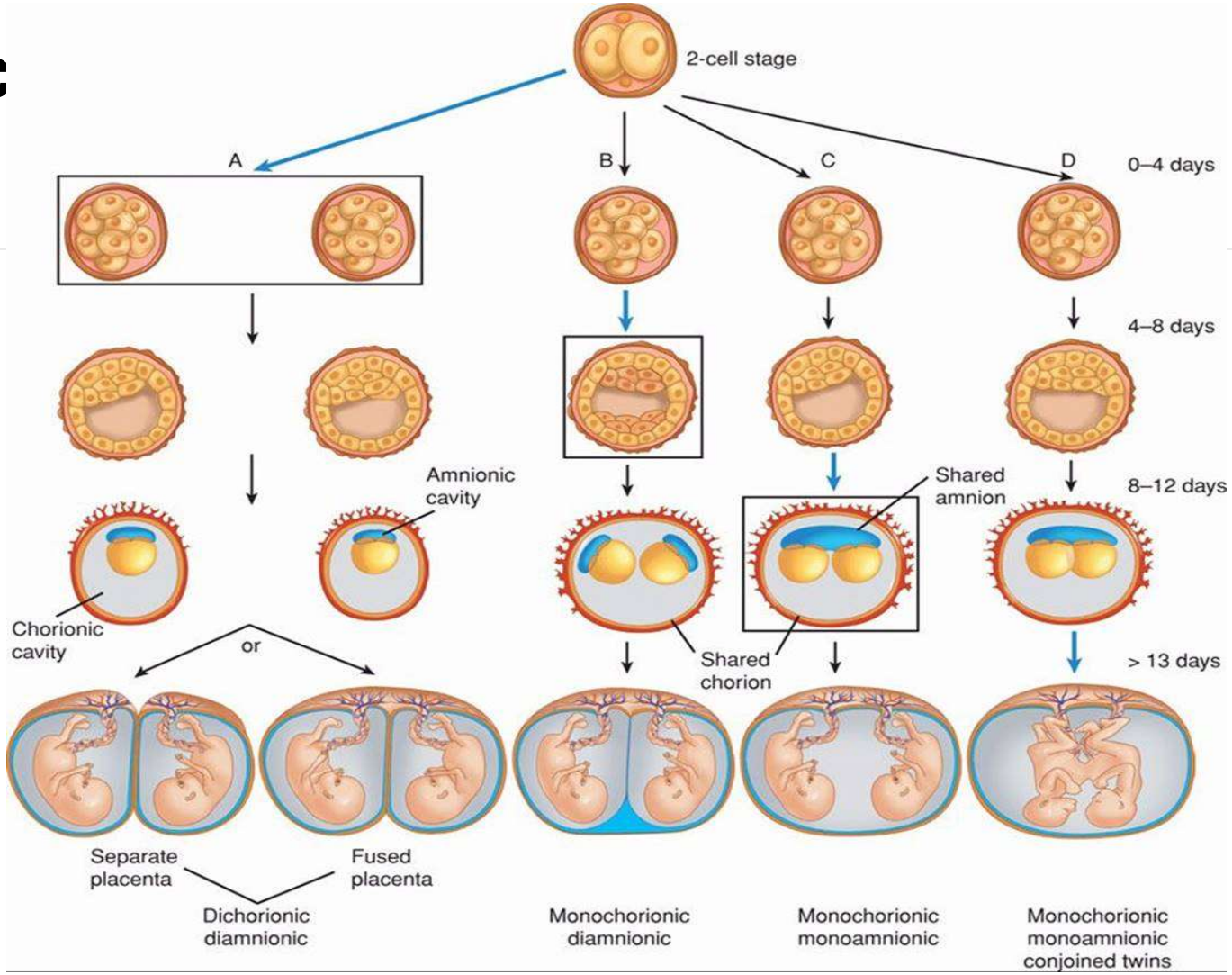
Zygosity

Dizygotic (75%)	Monozygotic (25%)
Incidence increase by : increased maternal age increased parity maternal family history of twins ovulation induction drugs (clomiphene)	Incidence remains constant 1 in 250 deliveries.
Gender of the fetuses can be the same or different .	Gender of the fetuses is always the same. They have same genetic features and DNA imprints.
Always Dichorionic , Diamniotic.	They have different fingerprints.
- -	The number of chorion and amnion depends at the time of division.

Hellin's Rule

- The Mathematical frequency of multiple gestations:
- Twins 1 in 80
- Triplets 1 in $(80)^2$
- Quadruplets 1 in $(80)^3$
- And so on...

Monozygotic Twins

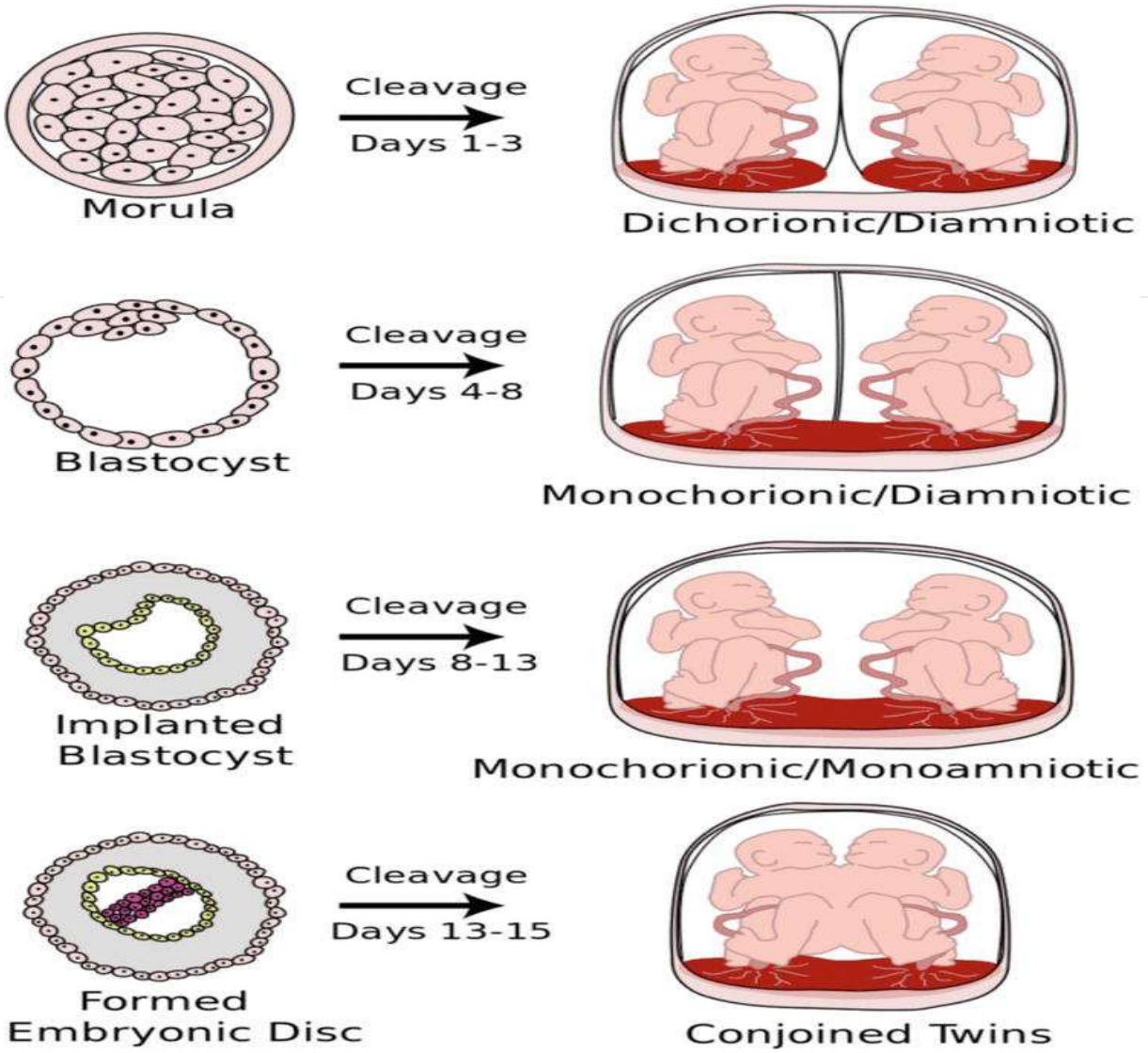


Chorionicity

- **The type of placentation.**
- **Dizygotic twins: each twin has its own placenta, chorion and amnion (dichorionic diamniotic)**
- **Monozygotic twins: it depends on the time at which the fertilized ovum divides.**

Division of a single fertilized ovum

Monochorionic twins are at increased risk of complications due to the vascular anastomosis between the two circulations.



Remember :

- **Prognosis depends on chorionicity not zygosity.**
- **Dichorionic twins have better prognosis than monochorionic twins.**
- **Use Transvaginal ultrasound to determine chorionicity.**
- **Timing of TVUS to detect chorionicity = 10-14 weeks.**

Ultrasound differentiation of chorionocity

Criterion	Monochorionic	Dichorionic
Placenta	Single	double
Fetal sex	Concordant (same)	Discordant / concordant
Membrane	<2 mm thick	>2 mm thick
Number of layers in membrane	Two (2 amnion)	Four (2amnion, 2 chorion)
Twin peak sign	Absent (T sign on US)	Present (lambda and delta sign)

Ultrasound differentiation of chorionocity

- **Number of sacs: before 10 weeks (2 sacs; dichorionic, one sac; Monochorionic).**
- **Twin peak (lambda sign and delta sign):in Dichorionic twins the presence of chorionic tissue (placental villi) between the two layers of the intertwin membrane at the placental origin.**
- **In Monochorionic twins there is no chorionic tissue and intertwin membrane is composed of 2 amnion (T sign on US).**

T sign vs. Lambda sign

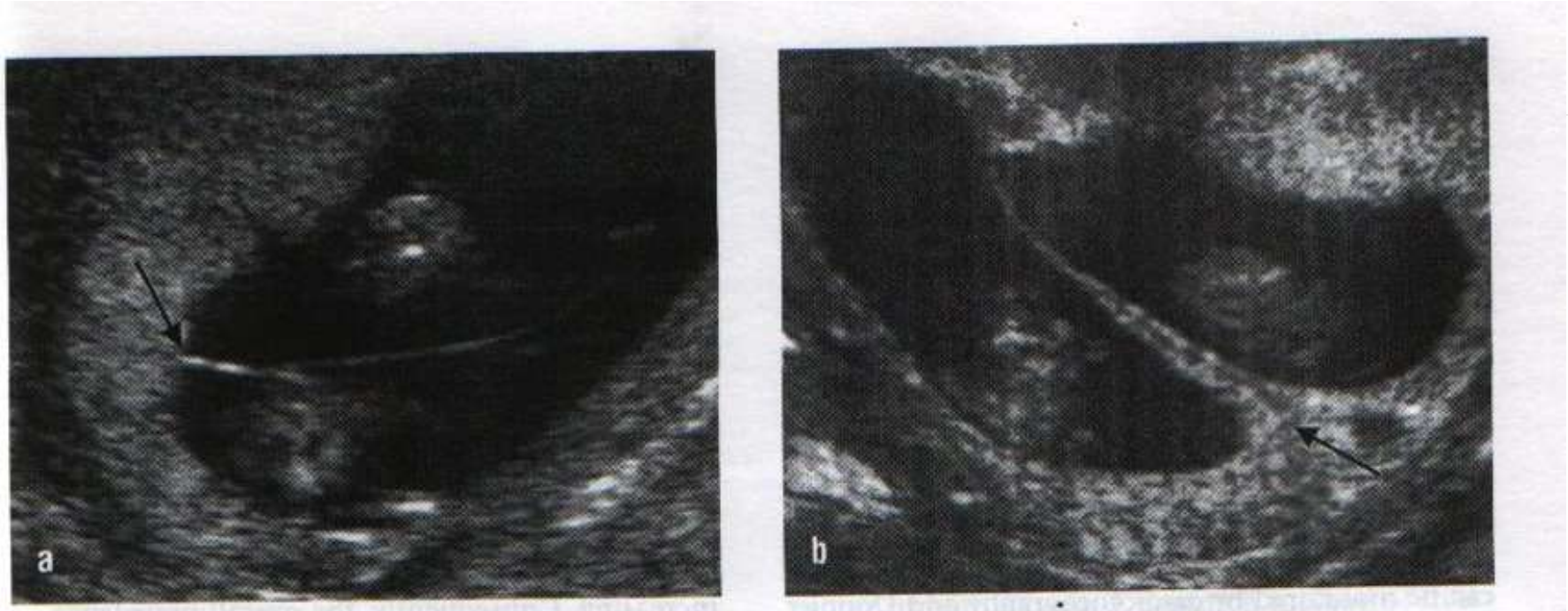
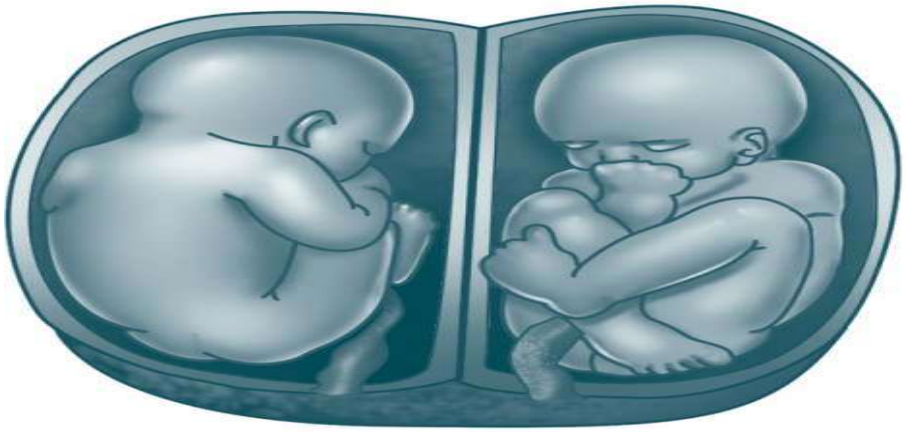


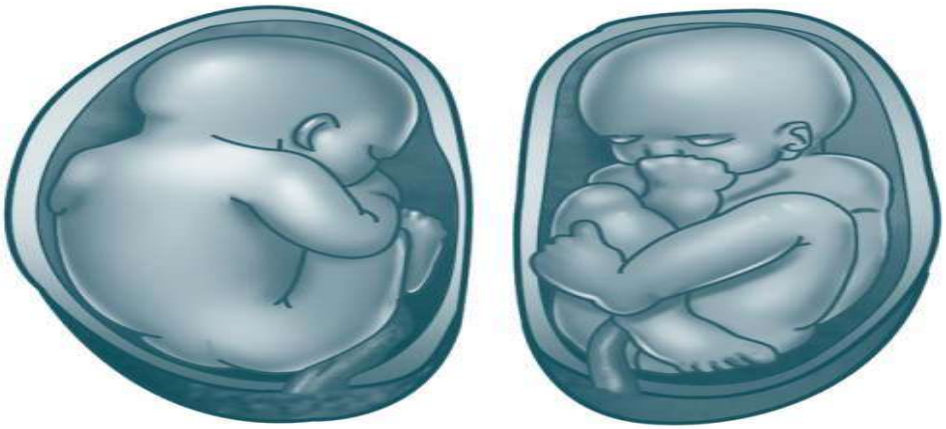
Figure 13.2 Ultrasound appearance of monochorionic (a) and dichorionic (b) twin pregnancies at 12 weeks' gestation. Note that in both types there appears to be a single placental mass but in the dichorionic type there is an extension of placental tissue into the base of the inter-twin membrane forming the lambda sign.

Monochorionic
monoamniotic

Monochorionic
diamniotic



Dichorionic diamniotic
(fused placentae)



Dichorionic diamniotic
(separate placentae)

Types of twin pregnancy

- **Dichorionic Diamniotic twins (DCDA):**
- **Most common variety of twins.**
- **Have good prognosis.**
- **Twin peak sign on US.**
- **Time of delivery 38 weeks.**
- **Four layers of membrane.**

- **Monochorionic Diamniotic twins (MCDA):**
- **Most common variety of Monozygotic twins.**
- **Bad prognosis**
- **Time of delivery 34 to 37+6 weeks.**
- **Two layers of membranes.**
- **Complicated by twin to twin transfusion syndrome.**

Types of twin pregnancy

- **Monochorionic Monoamniotic twins (MCMA):**
- **1% of cases.**
- **Bad prognosis.**
- **No Layers of membranes.**
- **Complicated by cord entanglement**
- **Congenital anomalies (18-28%); MC cardiac anomalies.**
- **Delivery by CS at 32-34 weeks.**

- **Conjoined twins:**
- **Called Siamese twins after chang and Eng Bunker of siam.**
- **1 in 200 Monozygotic twins.**
- **Delivery by CS.**

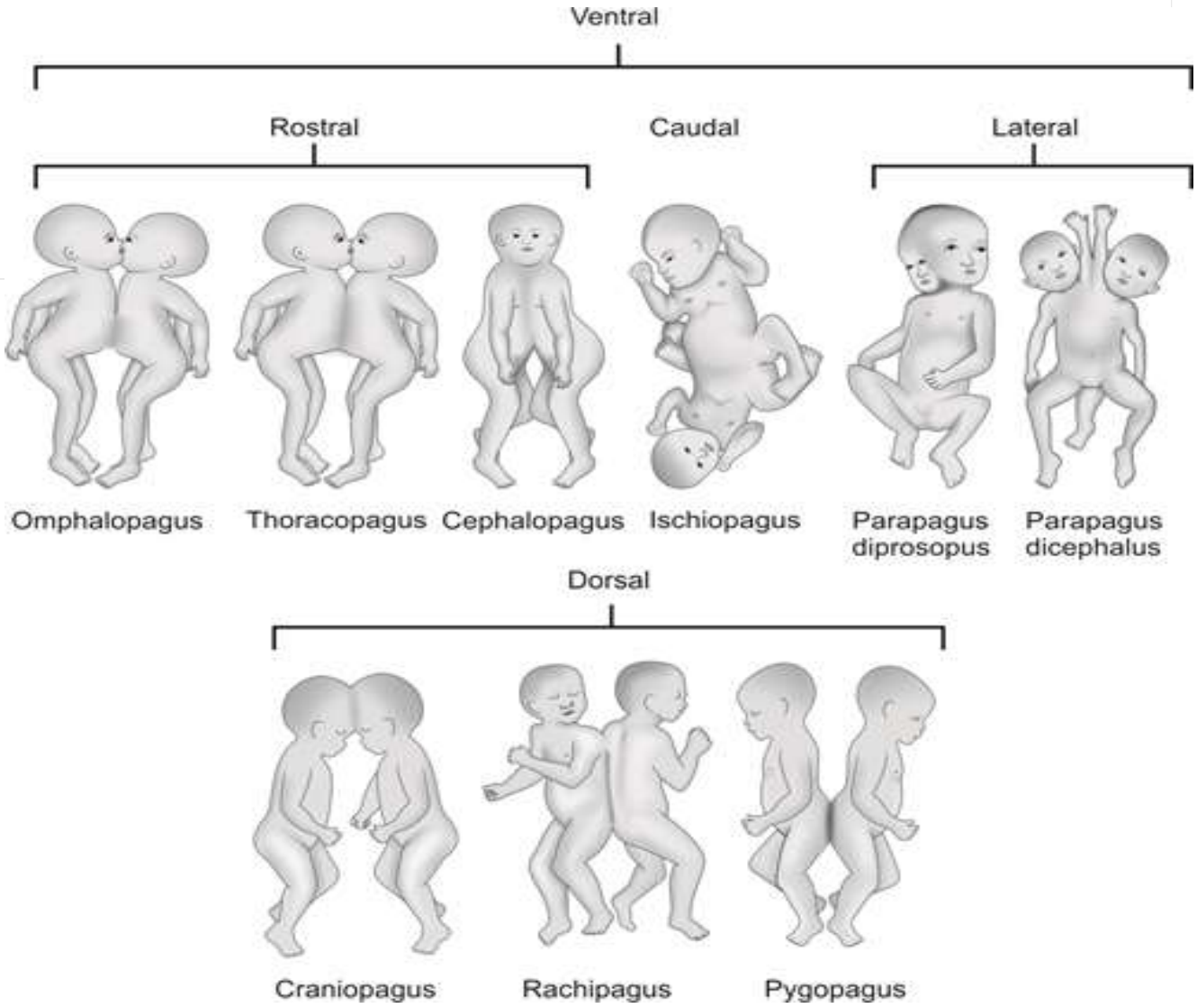
Types of conjoined twins

- Thoracopagus: fusion at the chest (40%) (most common type).
- Omphalopagus (Xiphopagus) fusion at the anterior abdominal wall (33%).
- Pyopagus: fusion at the buttocks (18%).
- Ischiopagus: fusion at the ischium (6%).
- Craniopagus: fusion of heads (2%), (least common type).

Types of conjoined twins:

On US:

- **Both twins facing each other on repeated examination heads are at same level and plane.**
- **The thoracic cages are in unusual proximity.**
- **No change in relative fetal positions with time or manipulation.**



Antenatal screening of twins for fetal anomalies:

- Biochemical tests are not used; usually elevated and unreliable.
- US screening for nuchal translucency between 11-13 weeks used for trisomies.
- Trisomies are confirmed by chorionic villus sampling in 1st trimester and amniocentesis in 2nd trimester.
  (one sample for MC twins and two samples for DC twins)
- For structural abnormalities as they can affect one or both twins :
  US scan of each twin at 20 weeks for MC and DC twins.

Ultrasound in twin pregnancy

1st trimester

- To confirm twins
- To confirm dates (CRL measurement).
- To determine chorionicity.
- To asses Nuchal translucency.

2nd trimester

- For structural fetal anomalies at 20 weeks.
- Scanning once in two weeks from 16-24 weeks in MC twins; early identification of TTTS.
- Scanning once in 3-4 weeks from 20 weeks onward for growth and fetal weigh discordance.

Twin-Twin Transfusion Syndrome (TTTS) or Twin anemia polycythemia sequence (TAPS)

- **An imbalance in blood flow** through **vascular communications in the placenta**, which leads to **overperfusion** of one twin and **underperfusion** **of its co-twin.**
- **Arterio-venous unidirectional anastomoses** result in net transfusion of blood from the donor to the recipient fetus.
- **Donor** twin becomes **anemic and pale** , **recipient** twin becomes **polycythemic and plethoric** with circulatory overload (hydrops).
- HB difference > 5g/dl.
- One portion of placenta is pale compared to the remainder.

Twin-Twin Transfusion Syndrome (TTTS)

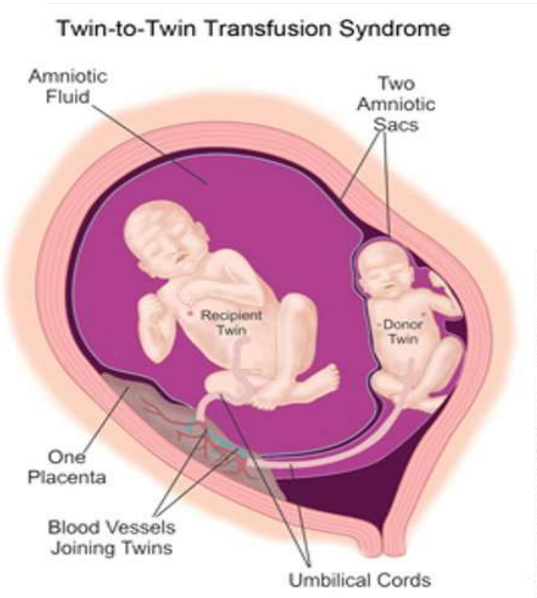
Donor twin complications	Recipient twin complications
Anemia	Polycythemia and thrombosis
Growth restriction (less weight)	More weight
Oliguria	Polyuria
Oligohydramnios	Polyhydramnios
Pulmonary hypoplasia	Preterm labor
Limb contracture	Fluid overload
Renal failure	Heart failure and hypervolemia
-	Hyper-viscosity
-	Hyperbilirubinemia and kernicterus

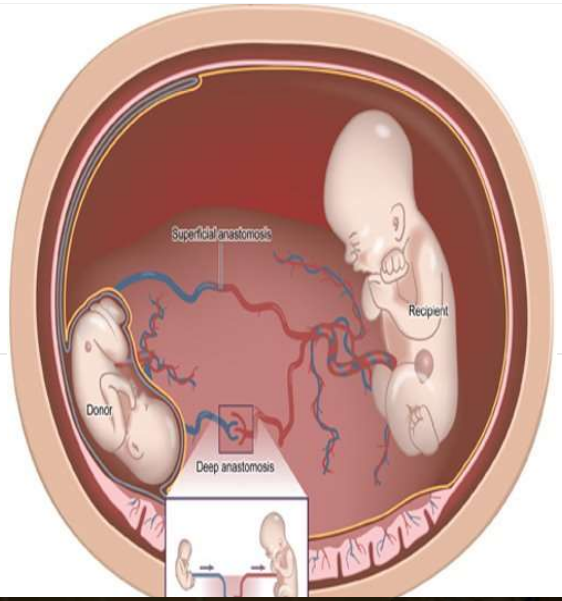
Ultrasonographic criteria for diagnosis of TTTS include :

- Presence of a single placenta
- Significant growth discordance (approximately 20%)
- Discrepancy in amniotic fluid volume between the two amniotic sacs (usually oligohydramnios and polyhydramnios)
- Presence of fetal hydrops or cardiac dysfunction
- Abnormal umbilical artery Doppler findings, such as absent end-diastolic flow in the donor fetus

Quintero 1999 staging system of TTTS:

STAGE	FEATURES	TREATMENT
I	Oligohydramnios with deepest vertical pocket (DVP) < 2 cm in donor sac and polyhydramnios in the recipient sac (DVP) > 8 cm	CONSERVATIVE
II	Bladder of the donor twin not visible	
III	Doppler studies are critically abnormal in either the donor or recipient	LASER PHOTOCOAGULATION <26 WKS
IV	Hydrops present usually in the recipient.	
V	One or both babies have died (not amenable to therapy).	


Twin-to-Twin Transfusion Syndrome
Amniotic Fluid
Two Amniotic Sacs
Recipient Twin
Donor Twin
One Placenta
Blood Vessels Joining Twins
Umbilical Cords


Superficial anastomosis
Recipient
Donor
Deep anastomosis
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WAIKATO HOSPITAL ULTRASOUND
8:37:23 am
6C2
H4.0MHz
260mm
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General
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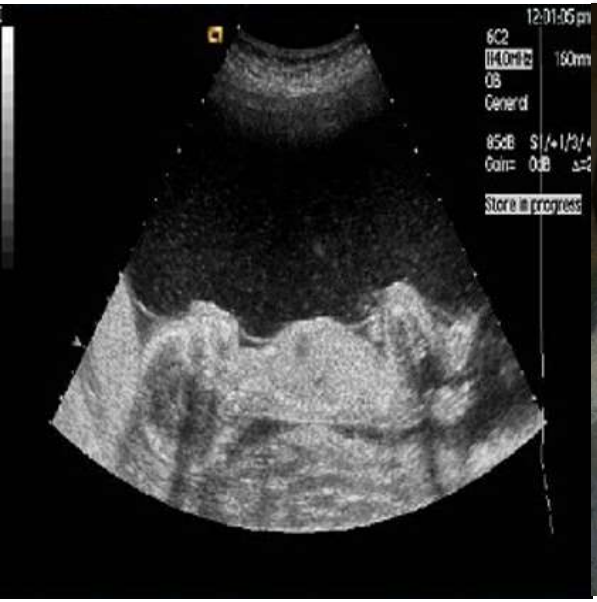
Store in progress


6C2
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General
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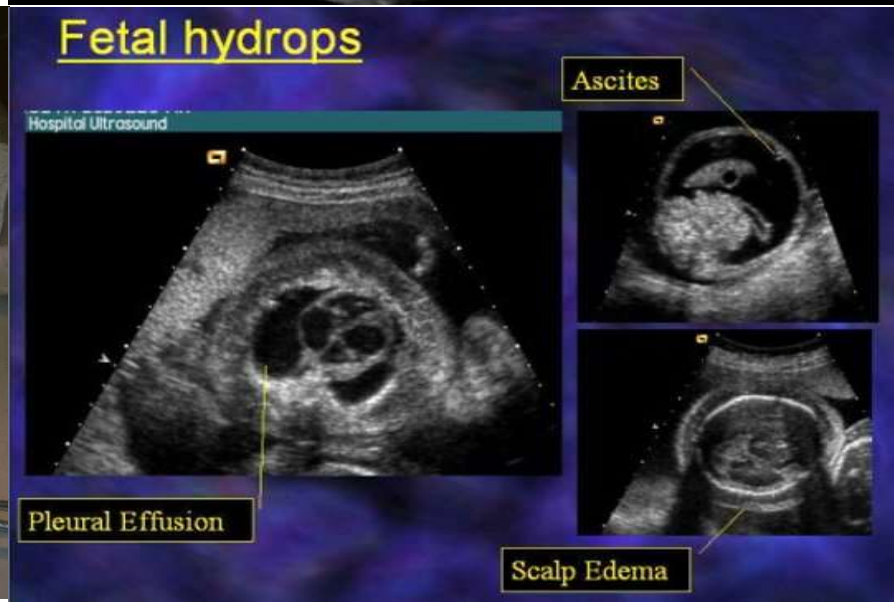
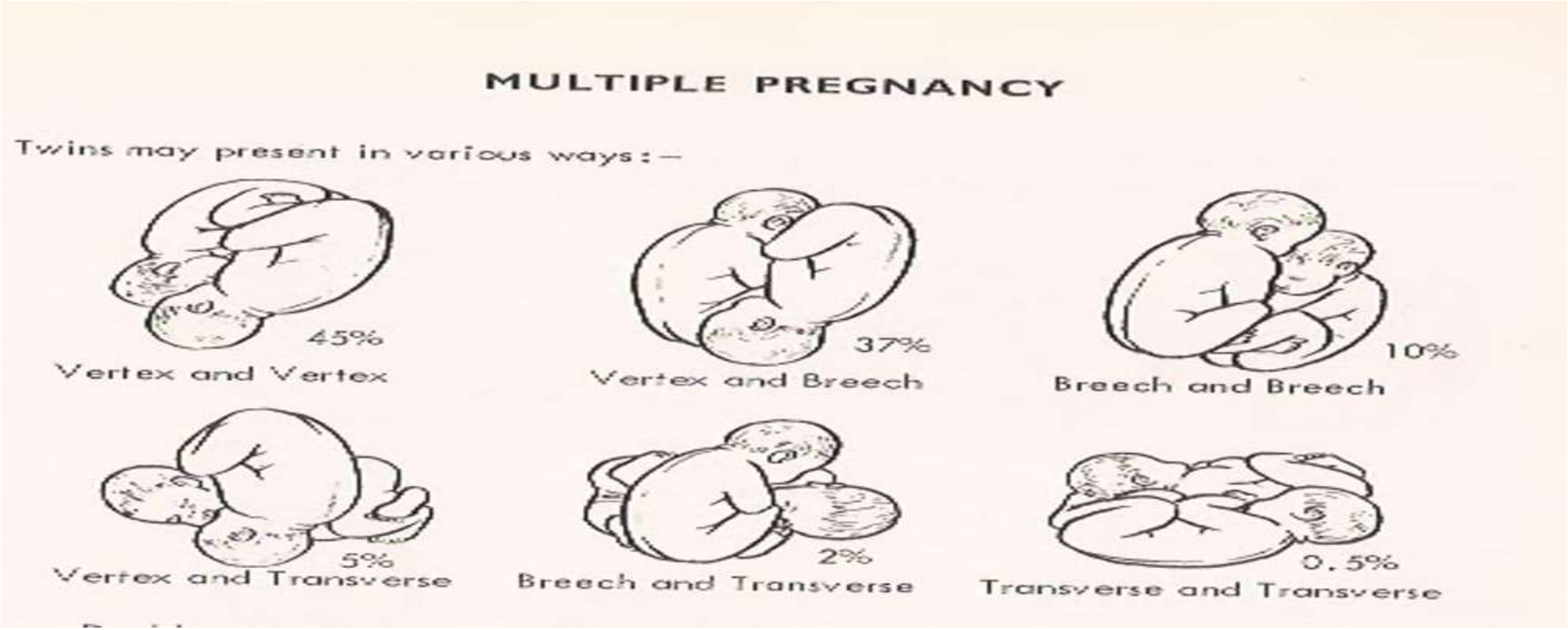

Fetal hydrops
Ascites
Hospital Ultrasound
Pleural Effusion
Scalp Edema

Timing and mode of delivery

- All **twin fetuses** should be **delivered by 39 weeks of gestation** because of the **rising perinatal morbidity and mortality** beyond that date.
- The optimal timing of delivery for **uncomplicated DC twins is 37 - 38 weeks**, and for **uncomplicated MCDA twins 36 -37 weeks.**
- For **MA twins** delivery at about **32-34 weeks** by CS because of the **increasing risk of perinatal mortality in the third trimester.**
- **Triplets pregnancy** – elective CS at 35 weeks.

Timing and mode of delivery



Indications for elective cesarean delivery in twins pregnancy:

- Conjoined twins.
- Monoamniotic twins.
- Twin- Twin transfusion syndrome.
- 1st baby breech or transverse lie.
- Fetal growth restriction in dichorionic twins.
- Placenta previa.
- CPD.
- Previous CS.

Internal Podalic Version:

- **Consists of turning the lie of the fetus by inserting hand to the uterine cavity, holding the foot of the baby and making them breech.**
- **Followed by breech extraction.**
- **Carries risk of uterine rupture.**
- **Only indication is if the 2nd twin is transverse lie.**

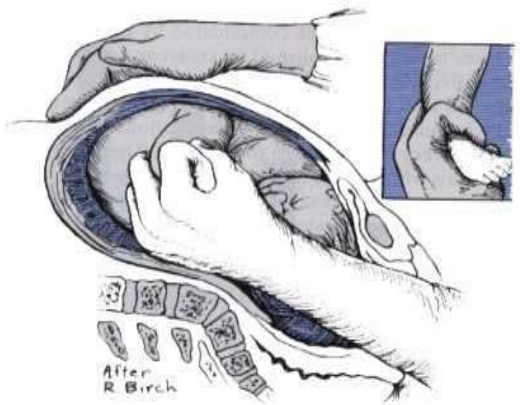


FIGURE 30–31. Internal podalic version

Thank you!