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Obstetrics & Gynaecology - Topic 11 - Multiple pregnancies

Understanding Multiple Pregnancy

- A multiple pregnancy contains two or more fetuses developing at the same time.
- Twins are the most common form, while triplets and higher-order pregnancies carry additional risks.
- Multiple ovulation, increasing maternal age and some fertility treatments increase the frequency of dizygotic twins.
- Transfer of a single embryo during assisted reproduction reduces treatment-related multiple pregnancy, although identical twinning can still occur.

Classification by Zygosity

1. Dizygotic Twins

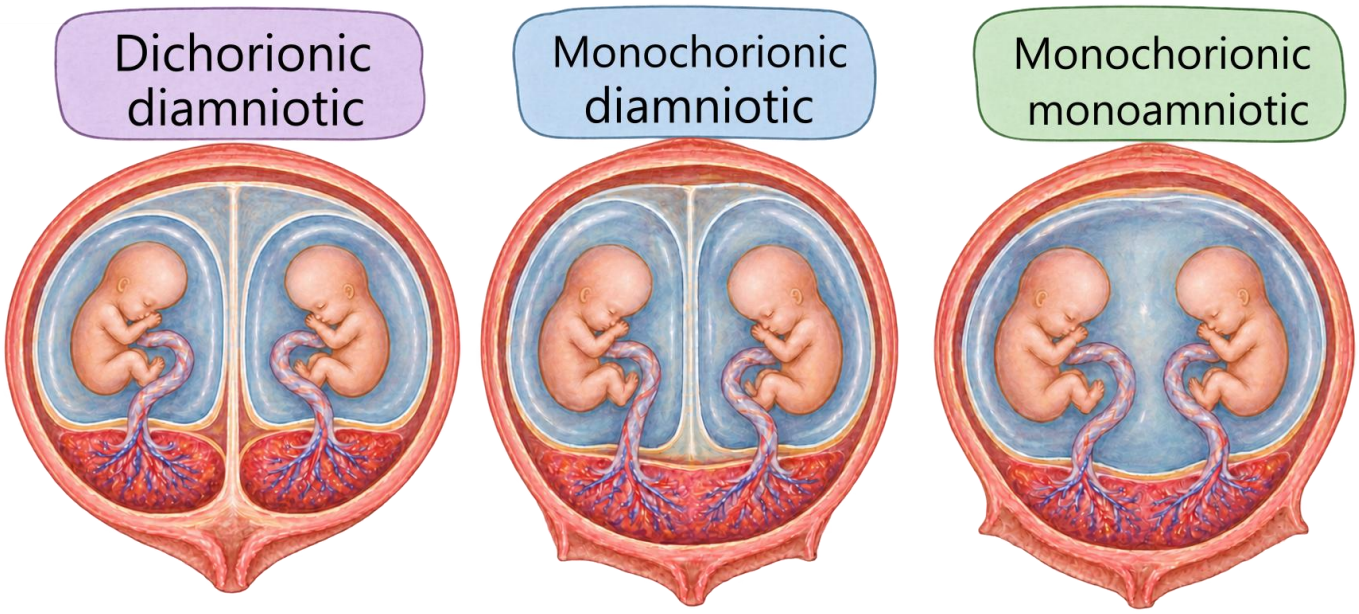
- Dizygotic twins develop when two separate ova are fertilised by two separate sperm.
- They are genetically like other siblings and may have the same or different sex.
- Each fetus has its own chorion and amnion, although the two placentas may lie together and appear fused.

2. Monozygotic Twins

- Monozygotic twins develop when one fertilised embryo separates into two developing embryos.
- Earlier separation usually produces separate chorions, while later separation can produce a shared chorion and sometimes a shared amniotic cavity.
- Very late or incomplete separation can produce conjoined twins.
- Traditional division-day ranges are a teaching model rather than a reliable way to determine an individual pregnancy's placentation.
- Ultrasound assessment of chorionicity and amnionicity guides clinical care more directly than presumed zygosity.

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Classification by Chorionicity and Amnionicity



The three main combinations of chorionicity and amnionicity in twin pregnancy

1. Dichorionic Diamniotic Twins

- Each fetus has a separate chorion and amniotic sac.
- This arrangement occurs in all dizygotic twins and in some monozygotic twins.
- There are usually no shared placental vascular connections, even when the placental discs appear fused.

2. Monochorionic Diamniotic Twins

- The fetuses share one chorion and usually one placental disc but occupy separate amniotic sacs.
- Vascular connections within the shared placenta can cause complications that do not occur in ordinary dichorionic twins.

3. Monochorionic Monoamniotic Twins

- Both fetuses share the chorion and one amniotic cavity without a dividing membrane.
- Cord entanglement and sudden cord compression are major additional risks.
- These pregnancies need specialist fetal-medicine care and a carefully planned place and time of birth.

Diagnosis and Assessment

Clinical Clues and Diagnostic Assessment

- A uterus that is larger than expected for the gestational age may suggest multiple pregnancy.
- Excessive nausea, unusually rapid uterine enlargement and palpation of several fetal poles can provide further clues.

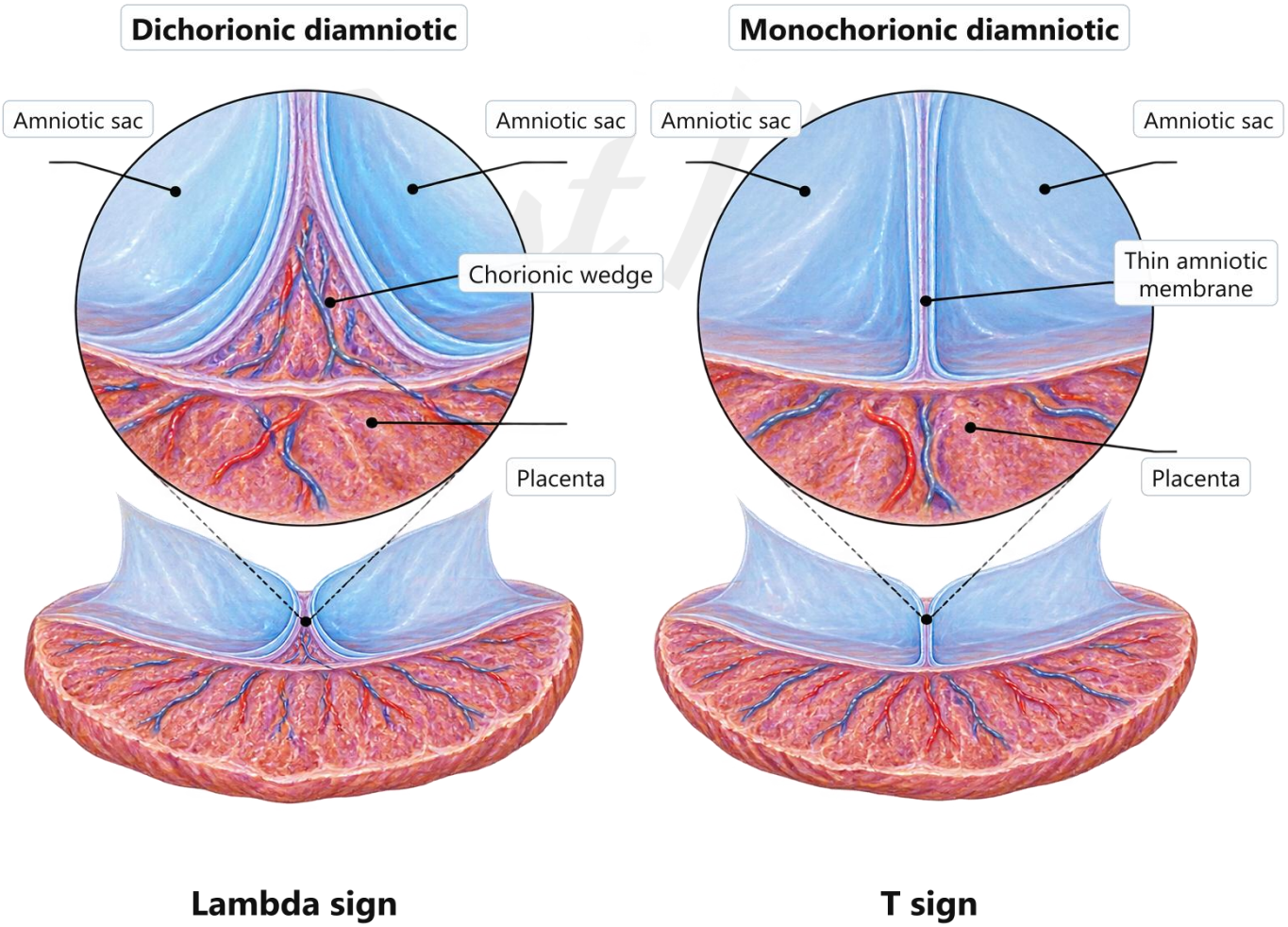
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- Anaemia, hypertension or early breathlessness may accompany the greater physiological demands.
- These findings are not diagnostic because incorrect dates, polyhydramnios and a uterine mass can produce similar findings.

Confirming the Diagnosis

- Ultrasound confirms the number of fetuses, their viability and the location of the pregnancy.
- The first-trimester scan should establish gestational age, chorionicity and amnionicity whenever possible.
- A thick membrane with a triangular placental projection at its insertion suggests the lambda or twin-peak sign of dichorionicity.
- A thin membrane joining the placenta at a right angle suggests the T sign of monochorionic diamniotic twins.

Membrane attachment and chorionicity



The chorionic wedge produces the lambda sign, while a thin intertwin membrane produces the T sign

- Placental masses, membrane characteristics and fetal sex are assessed together rather than relying on one sign alone.
- When chorionicity is uncertain, obtain expert review and use the more cautious surveillance pathway until it is resolved.

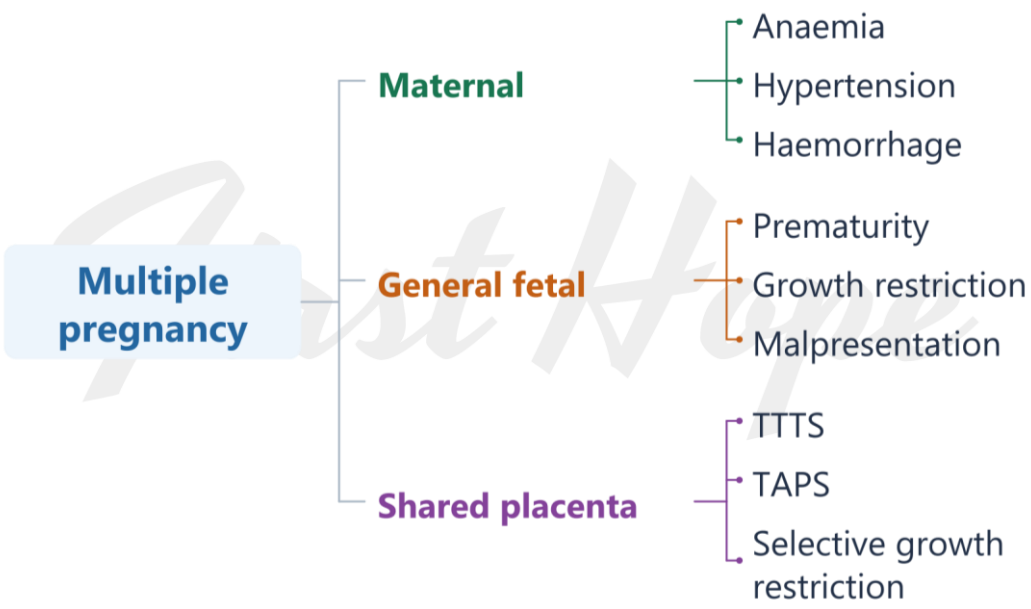
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Recording Each Fetus

- Give each fetus a consistent label based on its position, such as the fetus nearer the cervix and the upper fetus.
- Keep this identification consistent in ultrasound, growth charts, Doppler records and birth documentation.
- Record estimated fetal weight, abdominal circumference, fluid around each fetus and any structural abnormality separately.
- Screening for aneuploidy and diagnostic testing require counselling that accounts for chorionicity, test limitations and the possibility of discordant results.

Complications and Their Mechanisms

Maternal and Fetal Risks



Maternal Complications

- Greater nutritional and iron requirements increase the risk of iron-deficiency anaemia.
- Hypertensive disorders, gestational diabetes and venous thromboembolism occur more often than in uncomplicated singleton pregnancy.
- Uterine overdistension increases discomfort, preterm contractions and the risk of uterine atony after birth.
- Operative birth, postpartum haemorrhage and the practical demands of caring for more than one newborn are also more likely.

Complications Affecting Either Type of Twins

Prematurity, Growth and Discordance Calculation

- Preterm birth is a major cause of respiratory, feeding and developmental problems in twins.

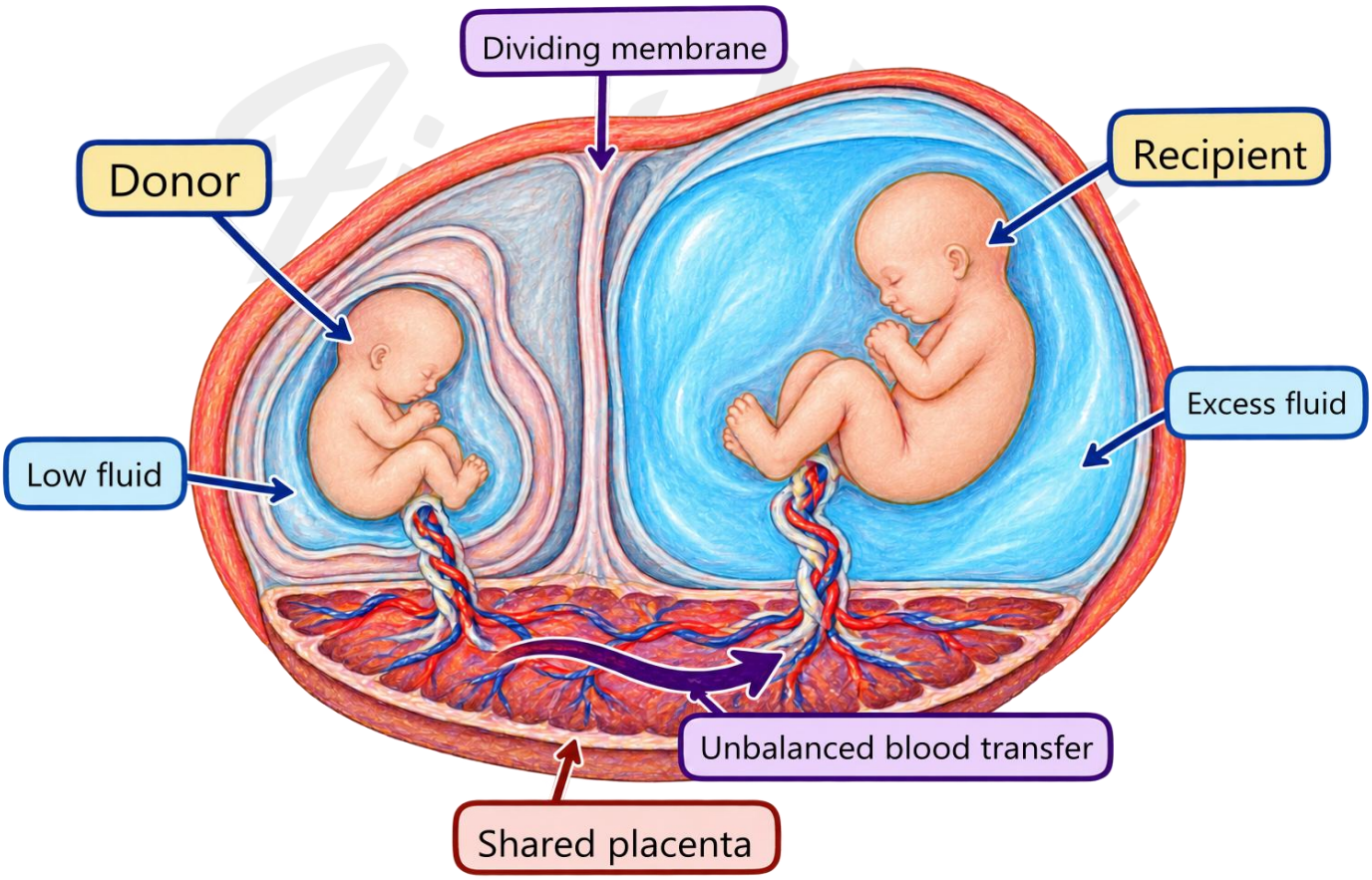
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- One or both fetuses may be small because placental support is insufficient or another disorder restricts growth.
- A difference in size needs assessment of each fetus and its growth trend rather than simply assuming the smaller fetus is healthy.
- Estimated-weight discordance is calculated as the larger estimated weight minus the smaller weight, divided by the larger weight, multiplied by 100.
- For estimated weights of 2,000 g and 1,500 g, discordance is 25%.

Interpretation and Other Fetal or Delivery Risks

- Interpret discordance with each fetus's centile, interval growth, fluid and Doppler findings, because a difference alone does not establish every form of growth restriction.
- Malpresentation, cord prolapse and problems during delivery of the second twin require skilled intrapartum care.
- Structural anomalies, stillbirth and neonatal death are more frequent than in singleton pregnancies.

Complications of a Shared Placenta



A shared placental circulation can cause low fluid around the donor and excessive fluid around the recipient twin

1. Twin-to-Twin Transfusion Syndrome

Placental Flow Imbalance and Fetal Effects

- Unbalanced blood flow through placental vascular connections can transfer blood from a donor twin to a recipient twin.

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