Multiple Pregnancy

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Definition

The presence of more than one fetus (embryo) inside the uterine cavity during the same gestation

Sometimes multiple births may involve more than 2 fetuses (Higher Multiple Pregnancy)

3 fetuses Triplets

4 fetuses quadruplets

5 fetuses quintuplets

6 fetuses sextuplets

7 fetus septuplets

And so on.....

Incidence

Hellin's Rule:

Twin: 1:80 pregnancies

Triplets: $1:80^2$ pregnancies

Quadruplets: $1:80^3$ pregnancies

Race incidence:

-African American: 1:70

-Caucasians: 1:88

-Japanese: 1:150

Chinese: 1:300

Classification

According to:

- **Number of fetus**
  - Twins
  - Triplets
  - Quadruplets
- **Number of fertilized eggs (zygosity)**
  - Monozygotic (identical or monovular)
  - Dizygotic (fraternal)
- **Number of placenta (Chorionicity)**
  - Monochorionic
  - Dichorionic
- **Number of amniotic cavity (Amnionicity)**
  - Monoamniotic
  - Diamniotic

Predisposing Factors

- ↑ Maternal age (35-45 years)
- ↑ parity
- Maternal family history (*Recessive Autosomal Trait*)
- Genetic and ethnic factors (Black race > White > Asian)
- Prior use of combined oral contraceptive agents (chances doubles if conception occurs within 1 month of stopping OCP)
- Social & economical factors (Assisted Reproductive Technology ART/Ovulation induction)

Causes of Multiple Gestation

1. Spontaneously
2. In Vitro Fertilization (IVF) [no more] protocol only one fertilized ovum
3. Intra Uterine Insemination (IUI)
4. Assisted Hatching (HCG)
5. GIFT
6. ZIFT
7. Frozen embryo transfer
8. Fertility Drugs:

-(**Oral**) Clomiphene Citrate (Clomid)

-(**Injection**) Gonadotropins (Gonal F, Puregon... etc)

Multi-fetal Gestation (Multiple Parity)

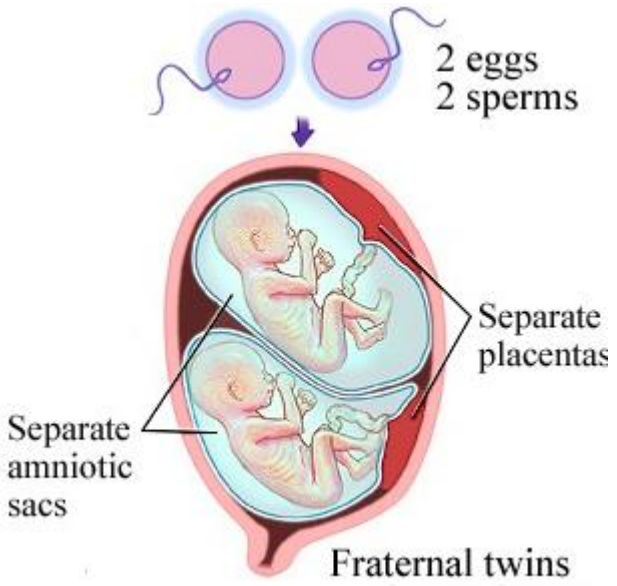
Types

Dizygotic – Fraternal – Non-identical Twins (fertilization of 2 ova by 2 sperms)

Monozygotic – Identical Twins (unknown biological mechanism of **division of the zygote** of 1 ovum fertilized by the same sperm)

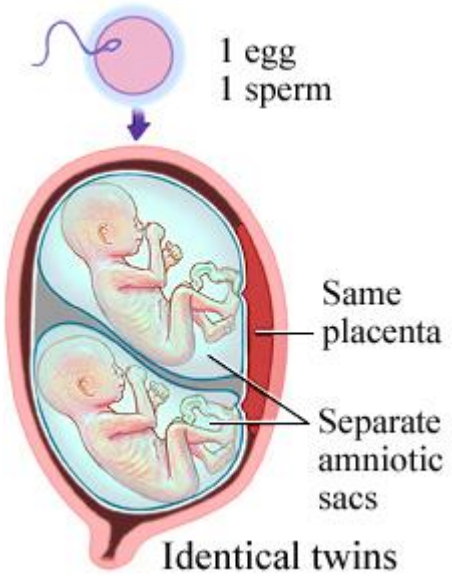
DIZYGOTIC TWINS

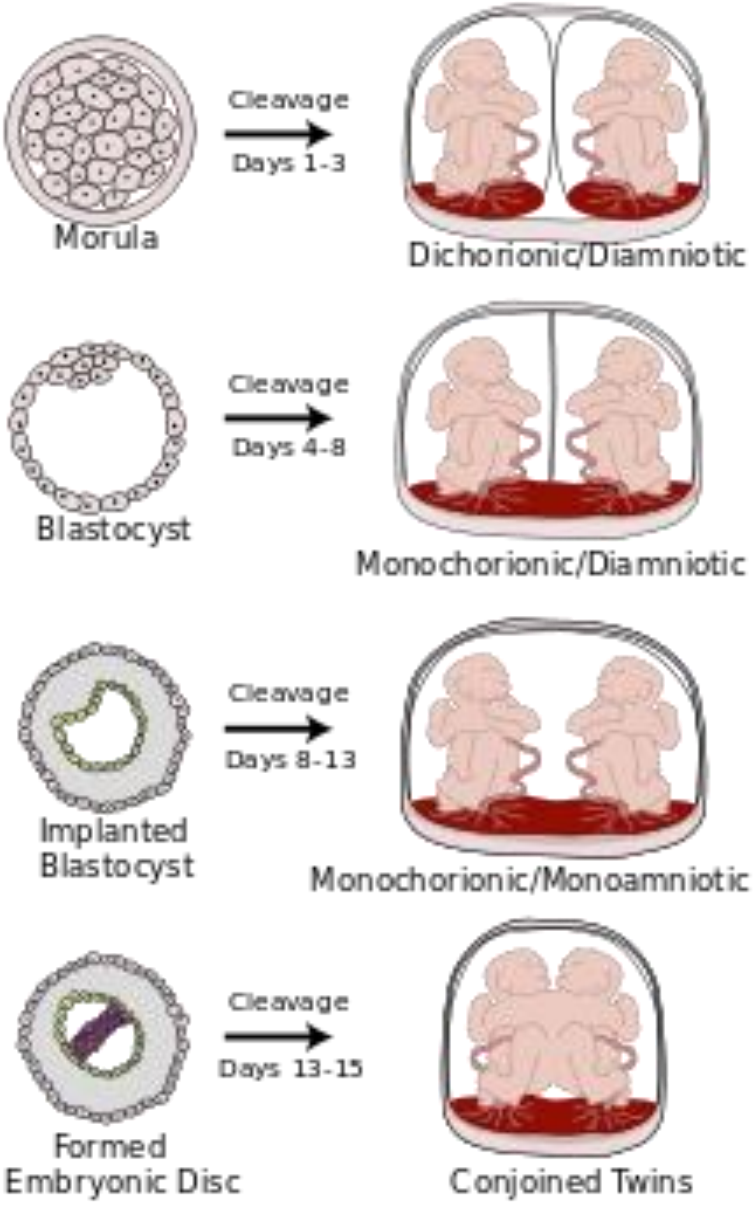
- Most common, represents 2/3 of cases.
- Fertilization of more than one egg by more than one sperm.
- Non identical (may be of same or different sex).
- Two chorions (placenta) and two amnions (sac).



MONOZYGOTIC TWINS (identical)

- Constitutes 1/3 of twins.
- Constant incidence of 1:250 births.
- Not affected by heredity (family history).
- Not related to induction of ovulation.




Morula
Cleavage
Days 1-3
Dichorionic/Diamniotic
Blastocyst
Cleavage
Days 4-8
Monochorionic/Diamniotic
Implanted
Blastocyst
Cleavage
Days 8-13
Monochorionic/Monoamniotic
Formed
Embryonic Disc
Cleavage
Days 13-15
Conjoined Twins

Twin Gestation

- **Dizygotic Twins**

- (66% of cases)
- **DCDA**
- Dichorionic : Separated chorion (placenta)
- Diamniotic: Separated amnion (amniotic sac)

- **Monozygotic Twins**

- (33% of cases)
- Zygote division:
  - < 4 days → Dichorionic Diamniotic **DCDA**
  - 4-8 days → Monochorionic Diamniotic **MCDA**
  - 8-13 days → Monochorionic Mono amniotic **MCMA**
  - >13 days → **Conjoined** twins

Rare fraternal or non identical twins

- Superfecundation

Two different ova fertilized at different times during two different sexual intercourse during same menstrual cycle

- Superfetation

Two different ova fertilized at different times during two different sexual intercourse later on during pregnancy

Conjoined Twins

Thoracopagus:
Fused at from upper thorax

Omphalopagus:
Fused at lower abdomen

Craniopagus:
Fused skulls

Cephalopagus:
Conjoined head with two faces on opposite sides

Syncephalus: One head, 4 ears and two bodies

Parapagus:

Fused side by side

Pygopagus:

Fused at the buttocks

Rachipagus:

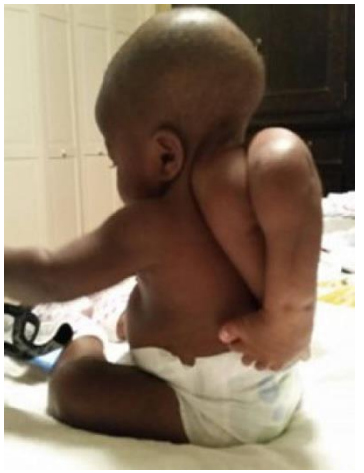
Fused at the back

Ischiopagus:

Fused at the pelvis

Parasitic Twin:

Asymmetrically conjoined (undeveloped twin conjoined to the individual twin)



DIAGNOSIS OF MULTIPLE PREGNANCY

History taking:

- +ve **family history** mainly on maternal side.
- +ve history of **ovulation induction**.
- Exaggerated early **symptoms of pregnancy** (hyperemesis gravidarum due to High BhCG).

General examination:

- Marked **edema of lower limb** (compression of venous return by heavy gravid uterus).

Abdominal examination:

- Discrepancy between date and uterine size (**SFH > POA**).
- Palpation of more than 2 **fetal poles**

Auscultation:

- Auscultation of two **fetal heart sounds** at two different sites with a difference of **10** beats/min

Investigations:

- High **BhCG** (1st trimester)
- High serum **uric acid** (3rd trimester)

- *USS*

Two sacs at 5 weeks by TVS.
Two embryos at 7 weeks by TAS.

Differential Diagnosis (SFH > POA)

1. **Multiple** pregnancy
2. Elevation of the uterus by a distended **bladder**
3. Inaccurate menstrual history (**Wrong Date**)
4. **Hydramnios**
5. **Hydatidiform mole**
6. Uterine **fibroid**
7. A closely attached **adnexal mass**
8. Fetal **macrosomia** (late in pregnancy)
9. Fetal **anomaly**
10. Placenta **previa** (late in pregnancy)

Peri-partum Risk

- Spontaneous miscarriage
- Increased anomalies
- FGR, discordant growth
- Cord prolapse
- Locked twins (twins lock heads) When 1st breech, 2nd cephalic
- Intracranial haemorrhage
- Prematurity: Major cause of neonatal death

-50% of twins

-90% of triplets

Aim of Antenatal Care
(High Risk Pregnancy)

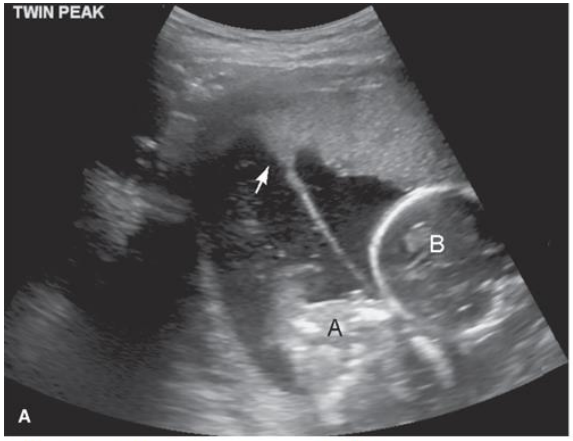
- Prolongation of gestation age, increase fetal weight.
- Decrease incidence of maternal complications.
- Improve PNM and morbidity.

Follow Up

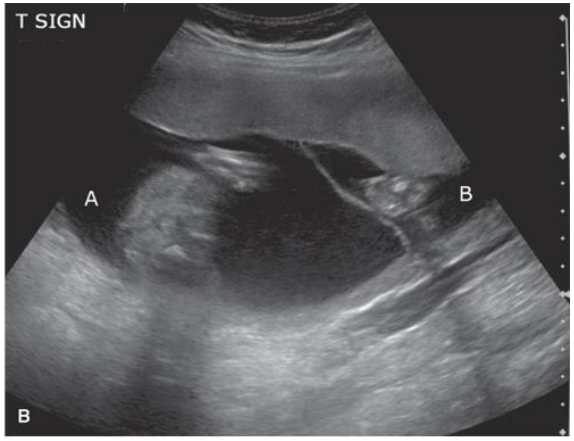
- Every **two weeks** (Monochorionic).
- **Iron** and **folic** acid to avoid anemia.
- Assess **cervical length** and competency by TVS.

Fetal Surveillance (Sabah Obstetrics Shared Care Guideline - SOSCG)

- 2nd trimester scan (**14** weeks) confirm **amniocity** and refer to specialist to determine **chorionicity** **(Appropriate W^{11+0} – W^{13+6})**



DC twins: "lambda or twin-peak "sign.



MC twins: "T sign"

- 4 weekly USS
  - **From 24** weeks to assess fetal presentation, growth, weight, DVP and urinary bladder visualization

- Delivery **plan** should be outlined in **3rd** trimester by serial assessment

Maternal complications

Antepartum

- Increased risks of miscarriage
- Exaggerated symptoms of early pregnancy (N&V)
- ↑ Minor disorders of pregnancy (backache, oedema, varicose veins, reflux, haemorrhoids etc.)
- Anaemia (Iron Deficiency)
- Hypertension (PIH) (X3)
- APH
- Polyhydramnios
- More chance of antenatal admission

Intrapartum

- Preterm labour
- Increased risks of instrumental delivery
- Increased likelihood of caesarean delivery

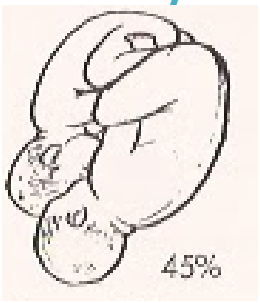
Postpartum

- Postpartum haemorrhage
- Postnatal problems (BF, Psy..)

Second Twin Risks

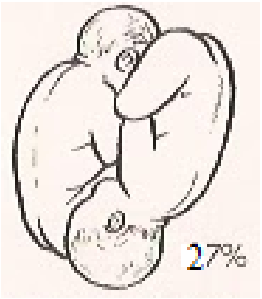
- Asphyxia and still birth due to premature separation of placenta
- Demised twin: One twin dies in utero to become flattened and mummified
- Twin to Twin Transfusion Syndrome (TTTS)
- Operative or difficult delivery

Mode Of Delivery of Twin Pregnancy



Vertex- Vertex (45%)

- Vaginal delivery



Vertex- Breech (27%)

Vaginal delivery by senior obstetrician

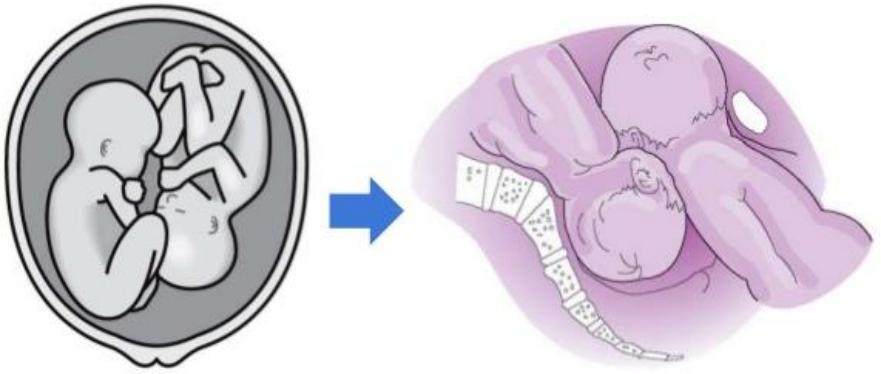
Breech-Breech(10%)

- Usually by CS.

Breech- Vertex(10%)

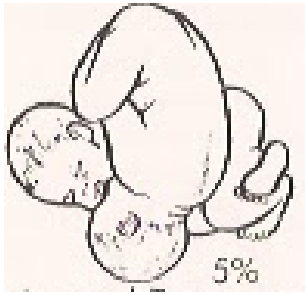
- Safer to deliver by CS to

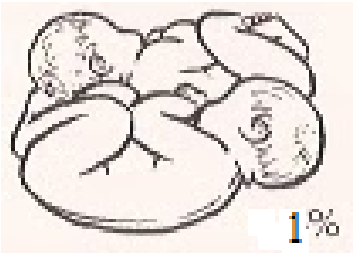
Rare locked twins (1:1000 twins).



Vx/Tr, Br/Tr, Tr/Tr (8%)

- Usually by CS.





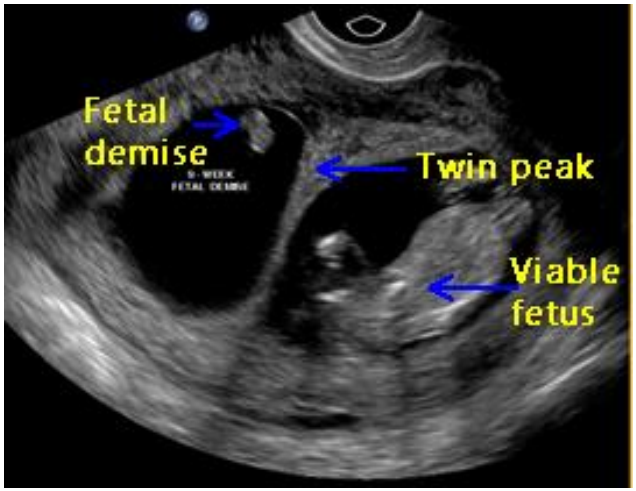
Triplets, quadruplets, conjoined…etc

- By CS

Neonatal Management of Multiple Gestation

- One paeds team for each fetus and 2 resuscitation trolleys .
- Examine for prematurity (Ballard score)and FGR.
- Examine for congenital anomalies.
- Examine placenta to confirm chorionicity and completeness.
- Assess family support.

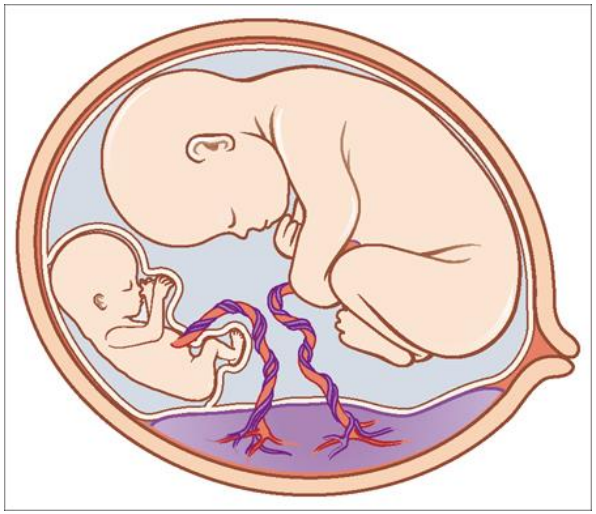
INTRAUTERINE DEATH OF ONE TWIN (Demised Twin)



➢ Early (before bones) in pregnancy usually no risk.

➢ ***In 2nd or 3rd trimester***:

- Increase risk of DIVC (> 3 weeks).
- Increase risk of thrombosis in the living twin
- Risk of demised twin is much higher in monochorionic than in dichorionic twins
- The living twin should be delivered by **32-34** weeks in monochorionic twin pregnancy

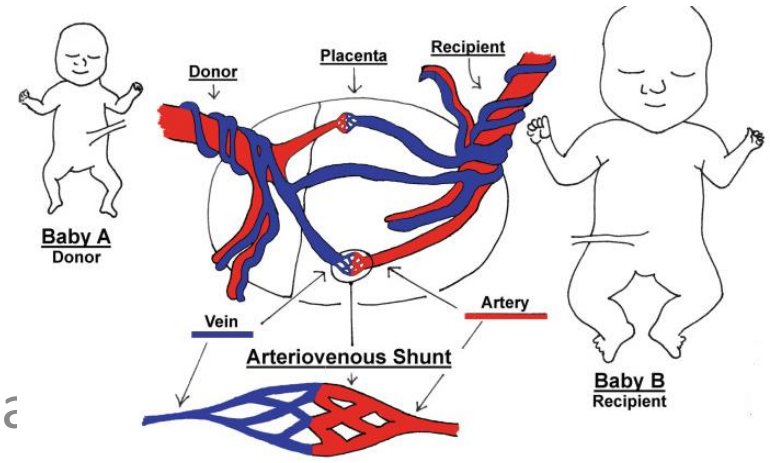


Twin to Twin Transfusion Syndrome (TTTS)

•Monozygotic twins with sharing placenta (monochorionic)

1- One placenta is shared **unequally** and one twin may have too small amount of blood

2- Two cords inserted in one placenta with AV shunt



•One baby (donor) smaller and the other is (recipient) bigger

Larger baby (recipient)

-Excrete more urine → polyhydramnios

-Hypervolaemia → Cardiomegaly → heart failure

-Hydrops fetalis (fluid retention)

Vascular anastomosis complicating Mono Chorionic twin pregnancy

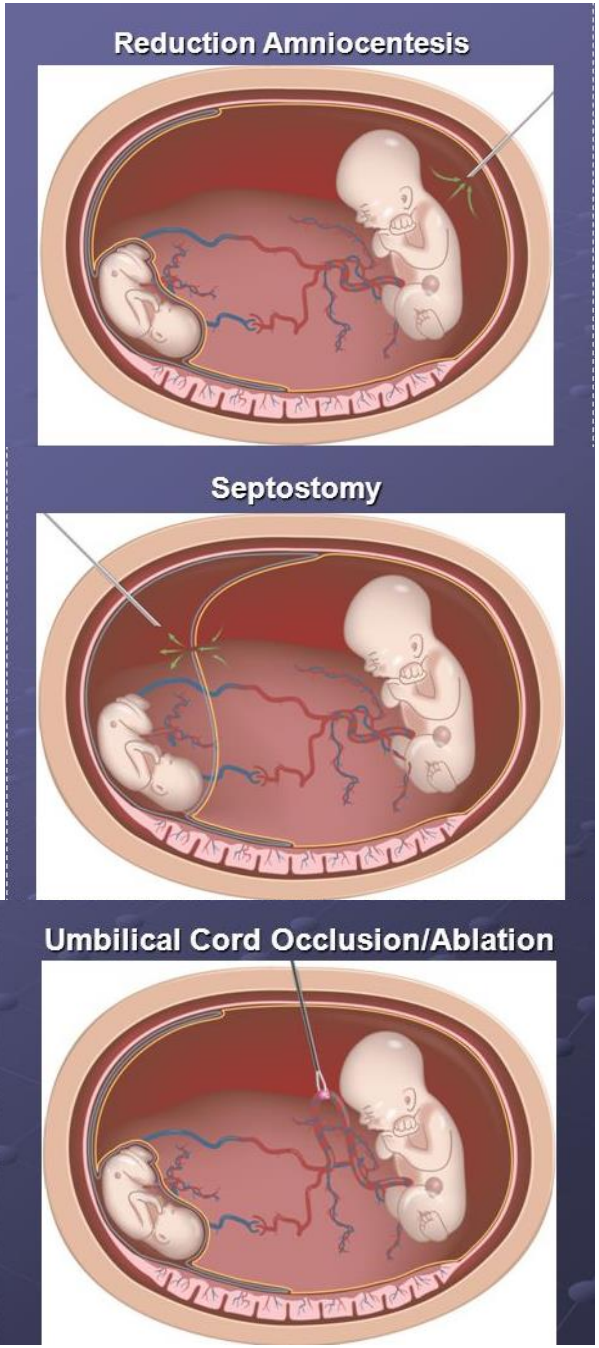
Recipient twin	Donor twin
Polycythemia	Anaemia
Polyhydramnios	Severe Oligo or anhydromnios
Hydrops fetalis	FGR

❑USG Features of TTTS

- Discordances between the two fetal parameters
  - Urinary bladder (empty in donor)
  - Amniotic fluid (DVP < 2cm in donor)
  - Cardiac size (cardiomegaly in recipient)
- Doppler assessment of the fetal circulation (Pathological UAD)

Management of TTTS

- **Serial amniocentesis** for amnio reduction of the polyhydramnios of the recipient twin
- **Septostomy** to for equilibration of the different pressure inside the two sacs and balance the amount of liquor
- **Endoscopic laser therapy** to close the AV shunt between the umbilical cord (most common procedure)
- **Selective fetocide:** (not any more) Umbilical cord occlusion of the discordant twin with lethal anomalies and endangering the other twin life



COMPLICATIONS OF MULTIPLE PREGNANCY

MATERNAL:

1. **Anemia** due to increase demand.
2. Increase incidence of **PE** (5 times).
3. **Polyhydramnios** in monochorionic.
4. Increase incidence of atonic **postpartum hemorrhage**.
5. Increase incidence of placenta **previa** and **abruptio** placenta.
6. Increase incidence of **CS** and **instrumental** delivery.
7. Increase incidence of **premature labour**.

FETAL :

1. Increase perinatal **morbidity** and **mortality**.
2. **Prematurity** with its complications (RDS, NEC, Sepsis..etc.
3. Increase incidence of **malpresentation**.
4. Increase incidence of **cord prolapse**.
5. Higher incidence of **FGR**.
6. Increase incidence of congenital **anomalies**.

Management of Twin Pregnancy

Antenatal Management

1. Manage minor symptoms of pregnancy (hyperemesis, low backache..etc).
2. Determination of amnionicity & chorionicity (Specialist) (14W) .
3. Screening for fetal abnormalities (18-22W) .
4. Monitoring fetal growth and well-being.
5. Management of threatened preterm labour (IM Dexa, MgSO4, Tocolysis..etc).
6. BP monitoring and urinalysis at 20, 24, 28 weeks and then two-weekly (MCDA/MCMA 2 weekly from 24 weeks).

Timing of delivery

For uncomplicated cases:

- **Monochorionic Monoamniotic twin MCMA / Demised Twin** elective birth from at **32-34** weeks
- **Triplet (higher multiple pregnancies)** elective birth from **35** weeks 0 days
- **Monochorionic Diamniotic twin** pregnancies MCDA elective birth from **36** weeks 0 days
- **Dichorionic twin** pregnancies DCDA elective birth from **37-38** weeks

Mode of delivery

- DCDA / MCDA: Aim for vaginal delivery if leading twin is cephalic and no contraindication for vaginal delivery (Di-chorionic + 1st twin cephalic).
- MCMA: Elective caesarean section (cord entanglement).
- Elective caesarean section if the leading twin is non-cephalic.
- Elective caesarean section if higher multiple pregnancies

➢ All elective C. Sections before 39 weeks should be offered a course of antenatal corticosteroids

Intrapartum Management (Prerequisite)

- CTG for fetal monitoring (Continuous) should be throughout labour.
- Epidural analgesia is recommended.
- Portable USG should be available.
- Two neonatal resuscitation trolleys.
- Set IV line.
- Blood group and save during labour (GSH).
- Active management of third stage CCT &

  IM oxytocin (10units) injection.
- Pre-mixed oxytocin (40units) infusion to be ready.

Delivery of Twin
(Cephalic-cephalic)

- Delivery of first twin in the usual cephalic presentation.
- Clamp the cord of the first twin.
- Second twin usually will be delivered within 15 minutes.
- After delivery of the first twin, assess the lie of the second twin (ultrasound).
- If contraction does not restart within 5-10 min after delivery of first twin → oxytocin infusion should be commenced.
- Wait until the head is descending and then perform amniotomy (ARM/Controlled ARM).
- Assisted delivery may be necessary.

If second twin is **not cephalic** (***confirm with USS***):

- If the second twin is breech → membranes can be ruptured and breech extraction may be performed.
- If the second twin is Transverse/oblique (intact membrane→ ECV (during ut Relaxation) → Successful → delivery.
- If ECV is unsuccessful → Internal Podalic Version can be undertaken / CS.

INTRAPARTUM COMPLICATIONS OF MULTIPLE PREGNANCY

- Abnormal labour pattern
- Cord prolapsed
- Placental abruption
- Retained second twin → Fetal compromise
- Locked twin → Intrapartum asphyxia

Postpartum Management

- PPH Prophylactic: 40IU Pitocin infusion after active management of 3rd stage.
- Counselling for contraception before discharge from hospital
- Extra hospital support to assist the care of babies and breast feeding (Home Visits)
- There is a need to recognize early signs of postnatal psychological disorders (increased after multiple births/CS, and offer treatment).
- After discharge from hospital, link with multiple pregnancies support groups

Thank You