MULTIPLE PREGNANCY

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MULTIPLE PREGNANCY

“HEAL US TO HEAL OTHERS”
When two or more embryos develop in the uterus at the same time the condition is known as multiple pregnancy. These are considered as complicated pregnancies because there is an appreciable increase in morbidity and mortality.
High order multiples: Three or more offspring in one birth

Zygote: Fertilized ovum for the first three weeks following conception.

Zygosity: It refers to the similarity of genes for a trait

Vanishing twin: Occasional death of one fetus and continuation of pregnancy with surviving one. The dead fetus simply vanishes by resorption.
Chorionicity: Number of chorionic membranes surrounding babies in a multiple pregnancy.

Fetus papyraceous or compress: Is a state which occurs if one of the fetus dies early. The dead fetus is flattened and compressed between the membrane of the living fetus and uterine wall.
Definition

When more than one fetus simultaneously develops in the uterus it is called as multiple pregnancy

- D.C. Dutta
Incidence

**Hellins rule:** one in about 89 pregnancies ends in the birth of twins, triplets once in 89 births, and quadruplets once in 89 births.

- It is highest in Nigeria 1 in 20
- Lowest in eastern countries
- In India the incidence is about 1 in 80
Various forms of multiple pregnancy

- Two Offspring – Twins
- Three Offspring – Triplets
- Four Offspring – Quadruplets
- Five Offspring – Quintuplets
- Six Offspring – Sextuplets
- Seven Offspring – Septuplets
- Eight Offspring – Octuplets
- Nine Offspring – Nonuplets
- Ten Offspring – Decaplets
Twins

Simultaneous development of two fetuses in the uterus. It is the commonest variety of multiple pregnancy.
Etiology

- Race
- Hereditary
- Advancing age
- Influence of parity
- Iatrogenic
# Etiology

| Race          | Highest: Negroes  
|               | Lowest: Mongolis  
|               | Intermediate: Caucasian |
| Hereditary    | More transmitted through females |
| Advancing age of mother | Peak age between 30 to 35 years |
Etiology

Influence of parity

- Incidence increases from fifth gravida onwards

Iatrogenic

- Drugs used for induction of ovulation
- Gonodotrophin therapy: 20 to 40%
- Clomiphene citrate: Lesser extent
Varieties of twins

Monozygotic twin (identical)

Dizygotic twin (fraternal)
Genesis of twins
Monozygotic twin

Otherwise called as identical or uninovular twins

Twinning may occur at different periods after fertilization and this markedly influences the process of implantation and formation of fetal membranes
Genesis of twins

Dizygotic twin

- Otherwise called as fraternal or binovular twins
- Dizygotic twins results from the fertilization of two ova by two sperms during a single ovarian cycle
- The babies bear only fraternal resemblance to each other
Monozygotic twin: On rare occasion the following possibilities may occur

- Diamniotic-Dichorionic
- Diamniotic-Monochorionic
- Monoamniotic-Monochorionic
- Co-joined twins
Monozygotic twin: On rare occasion the following possibilities may occur.
POSSIBILITIES IN MONOZYGOTIC TWINS

D/D with separate placenta

D/D with fused placenta

M/M

Conjoint twins

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**Genesis of twins**

Monozygotic twin: On rare occasion the following possibilities may occur:

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diamniotic-Dichorionic</td>
<td>If the division takes place with in 72 hours after fertilization (prior to morula stage) the resulting embryo will have two separate placenta, chorion and amnions.</td>
</tr>
<tr>
<td>Diamniotic-Monochorionic</td>
<td>If the division takes place between 4th and 8th day after the formation of inner cell mass when chorion has already developed, the resulting embryo will have single placenta and two separate amniotic sacs.</td>
</tr>
<tr>
<td>Monoamniotic-Monochorionic</td>
<td>If the division occurs after 8th day of fertilization when the amniotic cavity has already formed.</td>
</tr>
<tr>
<td>Co-joint twins</td>
<td>On rare occasion division occurs after two weeks of development of embryonic disc(s).</td>
</tr>
</tbody>
</table>
Types of dizygotic twins

Superfetation

Superfecundation

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**Rare forms of multiple pregnancy**

- **Superfecundation**: Is the fertilization of two different ova released in the same cycle by separate acts of coitus within a short period of time.

- **Superfetation**: Is the fertilization of two ova released in different menstrual cycle.

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Determination of zygosity means determining whether or not the twins are identical.
## Determination of zygosity

<table>
<thead>
<tr>
<th>Monozygotic</th>
<th>Placenta</th>
<th>Communicating vessel</th>
<th>Intervening membrane</th>
<th>Sex</th>
<th>Genetic features (Dominant blood group)</th>
<th>Skin grafting (Reciprocal)</th>
<th>Follow up</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Present</td>
<td>2 Amnions</td>
<td>Always identical</td>
<td>Same</td>
<td>Acceptance</td>
<td>Identical</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dizygotic</th>
<th>Placenta</th>
<th>Communicating vessel</th>
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<th>Genetic features (Dominant blood group)</th>
<th>Skin grafting (Reciprocal)</th>
<th>Follow up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two</td>
<td>Absent</td>
<td>4 2 Amnions 2 chorions</td>
<td>May differ</td>
<td>Different</td>
<td>Rejection</td>
<td>Not identical</td>
<td></td>
</tr>
</tbody>
</table>
Maternal physiological changes

Multiple pregnancy imposes physical changes on the mother in excess of those seen in singleton pregnancy.
Maternal physiological changes

- Increased GRF
- Increased tidal volume
- Increased cardiac output
- Increased plasma volume
- Increased fetoprotein level
- Increase in weight gain
- Exaggeration of haemodilution
Lie and presentation

The combination of presentation of fetus are

- Both vertex
- First vertex second breech
- First breech second vertex
- Both breech
- First vertex second transverse
- Both transverse

<table>
<thead>
<tr>
<th>VV</th>
<th>BB</th>
<th>TT</th>
</tr>
</thead>
<tbody>
<tr>
<td>VB</td>
<td>BV</td>
<td>TV</td>
</tr>
<tr>
<td>VT</td>
<td>BT</td>
<td>TB</td>
</tr>
</tbody>
</table>
Lie and presentation

Transverse vertex

Transverse	Transverse

Transverse breech

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Diagnosis

1. History
2. General examination
3. Abdominal examination
4. Internal examination

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Diagnosis

History collection:

- History of ovulation inducing drugs specifically gonadotrophins for infertility or use of ART
- Family history of twinning
Diagnosis

Symptoms:
- Minor ailments of normal pregnancy are often exaggerated,
- Increased nausea and vomiting
- Cardio respiratory embarrassment (palpitation, shortness of breath)
- Tendency of swelling of legs
- Varicose vein
- Haemorrhoids
- Unusual rate of abdominal enlargement
- Excessive fetal movements
Diagnosis

General examination:

- Prevalence of anaemia
- Unusual weight gain
- Evidence of pre eclampsia
Diagnosis

Abdominal examination
### Diagnosis

#### Abdominal examination

<table>
<thead>
<tr>
<th>Inspection</th>
<th>Shape: Barrel shape</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Palpation</strong></td>
<td></td>
</tr>
<tr>
<td>- Height of uterus more than the period of amenorrhoea</td>
<td></td>
</tr>
<tr>
<td>- Abdominal girth: 100cm</td>
<td></td>
</tr>
<tr>
<td>- Fetal bulk disproportionately larger in relation to the size of fetal heads</td>
<td></td>
</tr>
<tr>
<td>- Palpation of too many fetal parts</td>
<td></td>
</tr>
<tr>
<td>- Finding of two fetal heads or three fetal poles</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Auscultation</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Simultaneous hearing of two distinct fetal heart sounds located at separate spots with a silent area in between by two observers</td>
<td></td>
</tr>
<tr>
<td>- Difference in heart rate is at least 10 beats/min</td>
<td></td>
</tr>
</tbody>
</table>
Internal examination:

One head is felt deep in the pelvis, while the other one is located by abdominal examination.
Investigations

Sonography

Radiography

Biochemical test
Sonography

In multiple pregnancy it is done to obtain the following information:
- Confirmation of diagnosis as early as 10th week of pregnancy
- Viability of fetus
- Chorionicity (Lamda or twin peak sign)
- Pregnancy dating
- Fetal anomalies
- Fetal growth monitoring
- Presentation and lie of fetus
- Twin transfusion
- Placental localization
- Amniotic fluid volume
Investigations

Lambda or twin peak sign:
- Chorionicity of the placenta is best diagnosed by USG at 6 to 9 weeks of gestation.
- In dichorionic twins there is a thick septum between the chorionic sacs.
- It is best identified at the base of the membrane where a triangular projection is seen this is known as twin peak sign.
Radiography:

- Two fetal heads and spines could be seen
- Triplets and co-joint twins can be diagnosed accidently
Investigations

Biochemical test:

- Maternal serum chorionic gonadotropin
- Alpha fetoprotein
- Unconjugated oestriol

Double than those of singleton pregnancy
Differential diagnosis

- Hydramnios
- Big baby
- Fibroid or ovarian tumor with pregnancy
- Ascites with pregnancy
Management

- During labour
- During antenatal period
- During puerperium
NICE PATHWAY FOR MANAGEMENT OF MULTIPLE PREGNANCY

Womb

Womb

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Antenatal management

Diet:
Increased dietary supplement (300 kcal/day)
Increased rest

Supplement therapy:
Iron therapy: 60-100mg/day
Additional calcium, vitamins, folic acid (1mg)

Interval of antenatal visit: More frequent

Fetal surveillance:
- Is maintained by serial USG at every 3-4 week interval
- Assessment of fetal growth
- Amniotic fluid volume
- Non stress test
- Doppler velocimetry
- Hospitalization
The length of gestation decreases with each additional baby.

- Twin pregnancies 36 weeks
- Triplets 32 weeks
- Quadruplets 30 weeks
- Quintuplets 29 weeks.

Almost 60% of twins are delivered preterm, while 90% of triplets are preterm.

Higher order pregnancies are almost always preterm.
Management during labour

Place of delivery: Equipped hospital with NICU

- Skilled obstetrician
- The patient should be in bed
- Use of analgesic drugs
- Careful fetal monitoring
- Internal examination
- An intravenous line
- One unit cross matched blood
- Neonatologist
Management during labour

Delivery of the first baby:

- Liberal episiotomy
- Forceps delivery
- No IV ergomertin
- Label baby as number 1
- Clamp the cord
- At least 8 to 10 cm of cord is left behind

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Management during labour

Conduction of labour after the delivery of the first baby:
Principle:

- Expedite the delivery of the second baby
- The second baby is put under strain due to placental insufficiency caused by uterine retraction following the birth of the first baby
Indication of urgent delivery of the second baby

- Severe vaginal bleeding
- Cord prolapse
- In advent use of IV ergometrine with the delivery of anterior shoulder of the first baby
- Appearance of fetal distress
SCHEME OF MANAGEMENT OF TWINS DURING LABOUR
Indication of caesarean section for second baby

- Large second baby with non cephalic presentation
- Prompt closure of cervix after the delivery of first baby
labour

First Twin Being Born

Second Twin Being Born

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Management of third stage

- Methergin IV to reduce the risk of PPH
- Placenta is to be delivered by CCT
- A blood loss of more than average should be replaced by blood transfusion
- Careful monitoring for about 2 hours after delivery
Indication of caesarean section

Obstetric causes

For twins

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Indications for caesarean section

Obstetric indication

- Placenta praevia
- Severe eclampsia
- Previous caesarean section
- Cord prolapse of first baby
- Abnormal uterine contraction
- Contracted pelvis
Indications for caesarean section

For twins

- Both the fetus or even the first fetus with non-cephalic presentation
- Twins with complications
- Monoamniotic twins
- Monochorionic twins with TTS
- Collision of both the heads at brim preventing engagement of either head
Management of postnatal period

- Care of babies
- Care of mother

Post natal care
Management of postnatal period

**Care of babies**
- Clear airway
- Maintain body temperature
- Identification
- Admit in NICU

**Care of mother**

**Post natal assessment:**
- Involution will be slower because of increased bulk
- After pains may be troublesome
- Postnatal exercise
- Teaching parenting skills
- Contraceptives

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Breast feeding

Babies may be breast feed either simultaneously or separately

The Double Football Hold
(The Double Clutch Hold)

The Cross-Cradle Hold

A Combination of the Football Hold and Cradle Hold

The Parallel Hold
Breast feeding

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Complications

- Maternal
  - Pregnancy
  - Labour
  - Puerperium

- Fetal
Complications

Maternal complications: During pregnancy

- APH
- Malpresentation
- Preterm labour
- Hydramnios
- Nausea and vomiting
- Anaemia
- Pre-Eclampsia
- Mechanical distress
Complications

Maternal complications: During Labour

- Increased operative inference
- Cord prolapse
- Early rupture Of membrane
- Prolonged labour
- Bleeding
- PPH

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Maternal complications: During Puerperium

- Subinvolution
- Infection
- Lactation failure
Complications

Fetal complications

- Abortion
- Preterm birth
- Fetal anomalies
- Discordant growth
- Asphyxia
- Still birth
- Locked twins

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Complications of monochorionic twins

- Twin transfusion syndrome
- Dead fetus syndrome
- Twin reserved arterial perfusion
- Cord entanglement
- Interlocking twins
- Conjoint twins
- Cord compression
Twin transfusion syndrome:

One twin appears to bleed into the other through some kind of placenta vascular anastomosis.
Clinical manifestations occurs when there is haemodynamic imbalance due to unidirectional deep arteriovenous anastomoses

**Receptor twin becomes**
- Larger with hydramnios
- Polycythemic
- Hypertensive
- Hypervolaemic

**Donor twin**
- Appear stuck due to severe oligohydramnios
- Anaemic
- Hypotensive
- Hypovolaemic

Difference of haemoglobin concentration between the two usually exceeds 5gm% and estimated fetal weight discrepancy is 25% or more
Twin transfusion syndrome

Management

- Antenatal diagnosis is made by Ultrasound with Doppler blood flow study in the placental vascular bed
- Amniocentesis
- Laser photocoagulation
- Selective reduction

Smaller twin have got better outcome
- The plethoric twin runs the risk of CCF and hydrops

Mortality: 70%
Dead fetus syndrome

Death of one twin is associated with poor outcome of the co-twin

If death occurs in

**First trimester:** Vanishes

**Second trimester:** Fetus papyraceus or compressus

**Third trimester:** death of other fetus

**Causes of death**

- Cord compress
- Congenital anomalies
- Competition for nutrition
Dead fetus syndrome

Complications (for surviving twin)

- Cerebral palsy
- Microcephaly
- Renal cortical necrosis
- DIC

This is due to THROMBOPLASTIN liberated from the dead twin that crosses via placental anastomosis to living twin.
Twin reversed arterial perfusion

TRAP is characterized by an acardiac perfused twin having blood supply from a normal co-twin via large arterio-arterial anastomosis.

In majority cases the co-twin dies due to high output.
Cord entanglement

The close proximity and absence of amniotic membrane separating the two umbilical cords makes it particularly easy for the twins to become entangled in each other’s cords, hindering fetal movement and development. Additionally, entanglement may cause one twin to become stuck in the birth canal during labour and expulsion.

Management:

Sulindac a prostaglandin synthase inhibitor used to reduce the fetal urine output
Cord entanglement
Interlocking twins

The after coming head of the first baby getting locked with the fore coming head of the second baby

**Management**

- Vaginal manipulation to separate chin
- Decapitation
Cord compress

One twin may compress the other’s umbilical cord, potentially stopping the flow of nutrients and blood and resulting in fetal death.
Conjoint twins

- Division occurs after 2 weeks of developmental of embryonic disc resulting in the formation of conjoined twin.
- Perinatal survival depends upon the type of joint.
- Major cardio vascular connections leads to high mortality.
Conjoint twins

Types:

- **Thoracophagus**: Two bodies fused from the upper thorax to lower belly
- **Pyogopagus**: Two bodies joined at the
- **Craniopagus**: Fused skulls but separate bodies
- **Ischipagus**: Fused lower half of the two bodies
- **Omphalopagus**: Two bodies fused at the lower chest
- **Xiphophagus**: Two bodies fused in the xiphoid cartilage
Prognosis

- Maternal mortality is increased in twins than in a singleton pregnancy.
- Death is mostly due to haemorrhage (before, during, after).
- Pre eclampsia
- Anaemia
Theory application

Penderson Health promotion model

- Prior related behavior
- Personal biological factor
- Personal psychological factor
- Personal socio cultural factor
- Perceived benefits of action
- Perceived barrier of action
- Perceived self efficacy
- Activity related affect
- Interpersonal influences
- Situational influences
- Commitment to plan of action
- Immediate competing demands
- Health promoting behavior

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BJOG an international journal of obstetrics and Gynaecology
Nursing diagnosis

- Anxiety related to outcome of pregnancy as manifested by increased frequency in asking doubts
- Fatigue related to increased body functioning secondary to multiple pregnancy
- Body image disturbance related to increased physiological demand secondary to multiple pregnancy
- Sleep pattern disturbance related to increased fetal movements
- Imbalanced nutritional status less than the body requirement related to increased demand secondary to multiple pregnancy
Conclusion

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Thank you!

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