A Case of Multiple Pregnancy

Women’s Health

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Learning Objectives

• Be able to explain the basic principles of routine antenatal care
• To have a basic understanding of multiple pregnancy and the complications it brings to antenatal care
So the test is positive...

• What’s next???

• Patients contact their GP or a midwife

• Options
  • Termination (up to 24 weeks)
  • Continuing and adopting
  • Continuing and keeping

• If continuing with the pregnancy then ANTENATAL CARE commences...
A few key points!

• Estimate gestational age from last menstrual period (LMP)

• Estimated delivery date (EDD)
  • EDD = (LMP + 9 months) + 7 days
  • (in females with 28 day cycle)

Example:

G7P3\textsuperscript{+3} = ???

'We've got enough kids - lay off the carrots for a bit'
A few key points!

• Estimate gestational age from last menstrual period (LMP)

• Estimated delivery date (EDD)
  • EDD = (LMP + 9 months) + 7 days
  • (in females with 28 day cycle)

• Gravida = number pregnancies including current pregnancy

• Para = number births

Example:
G7P3+3
= 7th Pregnancy
= 3 previous births
= 3 miscarriages
Antenatal Care - Schedule

- Uncomplicated pregnancies are generally managed in community by midwife

- Obstetricians/MDT team involved if additional care needed

- In general, after first contact:
  - nulliparous – 10 appointments
  - parous – 7 appointments

- First contact
- Booking appointment (ideally by 10 weeks)
  - 16 weeks
  - 25 weeks – nulliparous only
  - 28 weeks
  - 31 weeks – nulliparous only
  - 34 weeks
  - 36 weeks
  - 38 weeks
  - 40 weeks – nulliparous only
  - 41 weeks
Antenatal Appointments

1st Contact + Booking Appointment
- Confirm pregnancy test +ve
- Identify risk – full history
  - PMH, obstetric hx, gynae hx
  - DH
  - Risk factors for VTE
- Advice folic acid for 1st 12 weeks
- Lifestyle advice
- Discuss screening and ultrasound offered
- Detailed discussion at booking apt.

16 Weeks Onwards
- History
- Examine + symphysis-fundal height
- BP
- Urine sample for proteinuria
- Advise symptoms of pre-eclampsia
- Refer for further investigation if abnormal growth or complications!!
Lifestyle advice
Routine Ultrasound Scanning Offered

• Gestational age assessment – 10-13 weeks
  • Crown-rump length (CRL) in mm + 6.5 = approximate gestational age (weeks)
  • Identify fetal number and if multiple determine chorionicity
  • Nuchal translucency*

• Screen for structural anomaly – 18-20 weeks
  • Fetal cardiac activity
  • Amniotic fluid volume (↓ can be 1st sign of trouble)
  • Placental location
  • Umbilical cord – number of vessels
  • Anatomic survey + estimated fetal weight
Screening Offered

- Infections – booking appointment
  - Hep B/C virus
  - HIV
  - Rubella
  - Syphilis
  - Asymptomatic bacteriuria
- Blood - booking appointment and 28 weeks
  - Anaemia – if <100g/dl
  - Haemoglobinopathies – sickle cell / thalassemia
  - red cell alloantibodies – blood group and Rhesus status
- Down’s Syndrome
- Gestational diabetes – glucose tolerance test at 24-28 weeks if at risk group
- Pre-eclampsia – throughout
Screening for Down’s syndrome

• Most common autosomal disorder – most associated with maternal age
• Determines **high risk** or **low risk**
• Either:
  • Combined test – 11-13 weeks 6 days (1\textsuperscript{st} trimester)
    • Nuchal translucency scan
    • Beta-human chorionic gonadotropin (\(\beta\)-hCG)
    • Pregnancy associated plasma protein-A (PAPP-A)
  • Quadruple test – 15-20 weeks (2\textsuperscript{nd} trimester)
    • \(\beta\)-hCG
    • Unconjugated estriol
    • AFP
    • Inhibin A
Nuchal Translucency

- Measures thickness of fluid filled space within the nuchal region of the fetus
- At 11-14 weeks >3mm is abnormal
- 50-70% of abnormal thickness will have chromosomal abnormality
Further antenatal testing – for high risk

A) Chorionic Villous Sampling
- Placental tissue
- 9-12 weeks
- Risk of miscarriage = 1 in 100

B) Amniocentesis
- Amniotic fluid
- 16-20 weeks
- Risk of miscarriage = 1 in 200
- >35 years risk of abnormality = risk of procedure

Non-invasive prenatal testing (NIPT)
- not available on the NHS!
- Sequencing fetal DNA in maternal circulation
- As early as 9 weeks
- Sensitivity of 99% and false positive rate of 0.2%
- Not considered diagnostic!
Common antenatal problems

- Nausea and vomiting
- Heartburn
- Constipation
- Haemorrhoids
- Varicose veins
- Backache
- Vaginal discharge
Complicated Pregnancy

**Maternal factors**
- Pre-eclampsia (6-8%)
- Gestational diabetes (3-5%)
- Hyperemesis Gravidarum (1-2%)
- Maternal heart disease (1%)
- Venous Thromboembolism (0.3%)
- Maternal Thyroid disease
  - hyperthyroidism (0.2%)
  - hypothyroidism (0.6%)
- Many chronic illnesses
- Drugs and medications
- Infections
- Previous events

**Fetal factors**
- Premature labour (10%)
- Disorders of fetal growth
  - Intrauterine growth restriction (4-8%)
  - Fetal macrosomia (0.5%)
- Disorders of amniotic fluid volume
  - ↓ in 5-8%
  - ↑ in 1%
- Premature rupture of membranes (2-10%)
- Antepartum haemorrhage after 24 weeks (5%)
- Malpresentation (4%)
- Hydrops fetalis (<1%)
- **Multiple pregnancy (1%)**
- Intrauterine fetal demise (still birth) - rare
Multiple pregnancy

• So, what if the first ultrasound scan reveals a multiple pregnancy???
Case Presentation

- 35 year old female
- presented at the antenatal clinic with multiple pregnancy:
  - G2P1
  - 32 +2 gestation
  - DCDA twins
  - Last smear fine
Case History

- HPC: Pregnancy Background:
  - Had mild nausea during 1st trimester but fine now
  - 12 week scan
    - Viability and Chorionicity determined – DCDA twins
    - nuchal translucency scan revealed fetus 2 had a thickened NT
  - Chose to undergo Private NIPT for Down syndrome which was negative
  - 20 week anomaly scan – fetus 2 had single umbilical artery (2 vessel cord)
  - 24 weeks – GTT revealed gestational diabetes
  - 28 weeks – Poor glucose control so started on insulin
  - 24, 28 and 30 week growth scans revealed both twins large
  - Fetal heart monitoring twice per week – all normal
  - Today: Baby movements present and no bleeding
Case History

• Obstetric History
  • 1st pregnancy 3 years ago
    • Borderline gestational diabetes; no other antenatal problems
    • Assisted vaginal delivery – forceps
    • Child has no health problems
  • This pregnancy
    • No anaemia
    • No haemoglobinopathies
    • Infection screen NAD
    • Blood group O; Rh positive

• Gynae history
  • No problems with conception
  • No previous operations
  • Smear up to date
  • Has not been on contraception

• 35 year old female
  • G2P1
  • 32 +7 gestation
  • DCDA twins
  • Last smear fine
Case History

• PMH
  • No history of hypertension

• DH
  • Currently on insulin, no other medication, NKDA

• FH
  • Maternal father has T2DM
  • No history of autoimmune disorders
  • No history of Hep B/C or HIV

• SH
  • Non smoker
  • No alcohol
  • Lives with husband of 10 years and hasn’t worked for 5 years
Examination Findings

• BMI: 32.4kg/m³
• BP: 124/84
• SFH: not measured
• Urinanalysis: No protein, no glucose
32 week scan results

• Twin 1 (presenting twin)
  • Cephalic presentation; left longitudinal lie
  • Heart normal
  • Abdominal circumference – 37 weeks
  • Head circumference/diameter – 35 weeks

• Twin 2
  • Cephalic presentation; oblique lie on top of fetus 1
  • Heart normal
  • Abdominal circumference – 36 weeks
  • Head circumference/diameter – normal

• Amniotic fluid assessment – NAD
• Colour DOPPLER assessment of vascular supply – NAD
• Placentae – fetus 1 anterior; fetus 2 right superior anterior
Plan

- Further scan and clinic appointment at 34 weeks and 36 weeks
- Reduce fetal heart monitoring to once weekly
- Induce labour at 37 weeks and plan for vaginal delivery

35 year old female
- G2P1
- 32 +2 gestation
- DCDA twins
- Last smear fine
Considerations

• Age – 35 years
• Previous vaginal (assisted) delivery
• Risk of Down’s Syndrome
• Multiple pregnancy
  • both cephalic
  • 2 vessel cord in fetus 2
  • Both large for gestational age; only large head in fetus 1
  • Placentae in safe position
• Gestational diabetes
  • Good glucose control now
Risk factors for Gestational Diabetes

- BMI > 30kg/m²
- FHx of 1st degree relative with T2DM
- Previous pregnancy borderline GD
- Age >35 years
- Anyone at risk is usually screened for GD earlier (16-20 weeks) with a glucose challenge test and often given a definitive diagnosis via 2hr OGTT between 24-28 weeks

Following diagnosis
- Monitoring glucose at home – pharmacotherapy or insulin if failure to control
- Monitoring of liquor volume and growth every 4 weeks 28-36 weeks
- Monitoring of fetal wellbeing with CTG
Single umbilical artery

- 1 umbilical artery missing (more commonly the left)
- 1 in 100 pregnancies
- 1 in 20 multiple pregnancies (at least 1 cord)
- No complications in 75%
- Other 25 %
  - More common when right artery missing
  - Fetal abnormalities – oesophagus, renal and especially heart
  - Intrauterine growth restriction
  - 5-20% perinatal mortality
- Management
  - Anomaly screening and karyotyping advised
  - Extra monitoring closer to term – growth scans
  - Echocardiography
Multiple Pregnancies

- Result when two or more ova are fertilised to form dizygotic twins or a single fertilised egg divides to form monozygotic twins.
- Dizygotic = non-identical, each fetus has its own placenta, amnion and chorion
- Monozygotic = identical, chorionicity/amnionicity depends on timing of division
Epidemiology

• Normal incidence of twins is 1 in 90
• One third will be monozygotic
• Triplets occur 1 in 8,100
• IVF; 1 in 60-74 pregnancies
Risk Factors

- Previous multiple pregnancy
- Family history (maternal)
- Increasing maternal age
- Race; West African
- Assisted conception
Presentation

• All the common signs of pregnancy but earlier and more severe; nausea, breast tenderness, pressure in pelvis, backache, constipation.

• Uterus can be palpated < 12 weeks

• Most multiple births now picked up in 1st trimester by USS
USS

• 1st trimester scan carried out between 11 + 0 weeks and 13 + 6 weeks
  - Gestational age, chronicity and DS screening carried out at same scan
  - Chorionicity should be determined using the number of placental masses, the lambda or T- sign and membrane thickness,
"T-sign" in Monochorionic Diamniotic Pregnancy

Lambda or Twin Peak Sign of Dichorionic Pregnancies
Antenatal Appointments for Twins

• Monochorionic: 9 appointments with at least 2 being with obstetrician.
  - an appointment plus an early scan between 11 – 13\(^{+6}\) weeks to estimate when babies are due DS test
  - anomaly scan between 18-20\(^{+6}\) weeks
  - Appointments + growth scans at 16, 18, 20, 22, 24, 28, 32 and 34 weeks
Antenatal Appointments for Twins

- Dichorionic twins: 8 antenatal appointments with team, at least 2 with obstetrician
  - same as monochorionic twins with regard to DS testing and anomaly scan
  - Growth scans at 20, 24, 28, 32 and 36 weeks
  - appointments without scans at 16 and 34 weeks
Prenatal Diagnosis

• Higher risk of chromosomal abnormalities
• Combined Test: **Nuchal translucency (most important)** and beta-hCG and PAPP-A between 11 + 0 weeks and 13 + 6 weeks
• Higher risk of ‘false positive’ result
• More likely to be offered amniocentesis, higher risk of complications
• Selective termination can be carried out
Twin-Twin Transfusion

• Monochorionic twins should be scanned fortnightly to detect TTT from 16-24 weeks
• Intrauterine blood transfusion from one twin to another twin due to a placental vascular anastomosis (artery to vein anastomosis through a shared placental cotyledon)
• 1st line treatment is laser surgery prior to 26 weeks, intrauterine transfusion, serial amnio-reduction or elective delivery.
Twin Pregnancy: Twin to Twin Transfusion

• **Donor twin**:
  - smaller with BW 20% less than recipients BW
  - anaemic
  - hypovolaemic
  - oliguric/anuric, - oligohydramnios develops in amniotic sac
  - failure to visualise bladder

• **Recipient twin**
  - recipient has too much Hb (difference can be > 5g/dl)
  - hypervolaemic,
  - polyuric
  - polyhydramnios.
‘Stuck Twin Phenomenon’
Intra-Uterine Growth Restriction (IUGR)

• Unborn baby smaller than expected for age, increased risk of stillbirth
• 25% or greater difference in sizes = IUGR
• IUGR should not be predicted by palpation or fundal height measurements.
• USS and measurements from 20 weeks, ideally 28 days apart
• Referral to fetal medicine
Maternal Health

• Higher risk of complications; miscarriage, anaemia, haemorrhage, early labour, CS or assisted / forceps delivery
• Pregnancy related high blood pressure in up to 25% of multiple pregnancies
• Pre-eclampsia 3X risk in twins and 9X in triplets
• 2-3X more likely to have gestational diabetes
• FBC at 20-24 weeks to see if require Fe or Folic Acid
• Aspirin 75mg from 12 weeks risk factors for HTN
Delivery

• Multiple pregnancies usually go into labour early and babies more likely to need care in SCBU
• No evidence for bed rest, cervical cerclage, IM/vaginal progesterone or oral tocolytics
• ‘Elective birth’ at 37 weeks if DC twins, 36 weeks if MC twins and 35 weeks if triplets
• Steroids for lung maturation of babies
• If ‘elective birth’ declined; weekly appointments with obstetrician.
Delivery

• If first baby is cephalic and no complicating factors vaginal delivery can proceed
• After 1st baby is born, check position of second baby, longitudinal position is preferable, rupture sac when head is engaged, if unsuccessful - CS
• Contractions can reduce after 1st baby delivers, IV syntocin, should deliver within 20-45 mins of first twin
• Two obstetricians, two paediatricians & an anesthetist
• Epidural strongly advised!
When both babies are sideways, they cannot be born through the vagina. It is very dangerous to try to deliver them at home.

When one head is down, it is a little less dangerous to deliver at home. If the head-down baby is born first, the other baby may turn.

It is even better if both babies are up and down. But a breech twin will have the same dangers as all breech babies.

It is best if both babies are head down, but it is still more dangerous than a single birth.
Delivery

• CS ??
• Second twin at increased perinatal morbidity and mortality
• NICE says evidence as to whether CS improves outcome remains uncertain
• Should not be routinely offered
Complications

- Smaller babies than singletons + monozygotic smaller than dizygotic
- Increased prematurity risk
- Congenital abnormalities occur at higher rates
- Increased cerebral palsy
- Higher rates of complications in pregnancy and labour
- Speech and language delay, general cognitive delay, motor problems, behavioral and parent-child interaction difficulties more common
Questions...
Sources

- www.rcog.org.uk
- http://www.patient.co.uk/doctor/multiple-pregnancy
- http://www.patient.co.uk/doctor/prenatal-screening-for-downs-syndrome
- NICE Guidelines, Antenatal care for women who are pregnant with twins or triplets, September 2011.
- Obstetrics and Gynecology at a Glance