Midwifery II

NSG 323

University of Ibadan Distance Learning Centre
Open and Distance Learning Course Series Development

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Vice-Chancellor's Message

The Distance Learning Centre is building on a solid tradition of over two decades of service in the provision of External Studies Programme and now Distance Learning Education in Nigeria and beyond. The Distance Learning mode to which we are committed is providing access to many deserving Nigerians in having access to higher education especially those who by the nature of their engagement do not have the luxury of full time education. Recently, it is contributing in no small measure to providing places for teeming Nigerian youths who for one reason or the other could not get admission into the conventional universities.

These course materials have been written by writers specially trained in ODL course delivery. The writers have made great efforts to provide up to date information, knowledge and skills in the different disciplines and ensure that the materials are user-friendly.

In addition to provision of course materials in print and e-format, a lot of Information Technology input has also gone into the deployment of course materials. Most of them can be downloaded from the DLC website and are available in audio format which you can also download into your mobile phones, IPod, MP3 among other devices to allow you listen to the audio study sessions. Some of the study session materials have been scripted and are being broadcast on the university's Diamond Radio FM 101.1, while others have been delivered and captured in audio-visual format in a classroom environment for use by our students. Detailed information on availability and access is available on the website. We will continue in our efforts to provide and review course materials for our courses.

However, for you to take advantage of these formats, you will need to improve on your I.T. skills and develop requisite distance learning Culture. It is well known that, for efficient and effective provision of Distance learning education, availability of appropriate and relevant course materials is a *sine qua non*. So also, is the availability of multiple plat form for the convenience of our students. It is in fulfilment of this, that series of course materials are being written to enable our students study at their own pace and convenience.

It is our hope that you will put these course materials to the best use.

Prof. Abel Idowu Olayinka
Vice-Chancellor

Foreword

As part of its vision of providing education for "Liberty and Development" for Nigerians and the International Community, the University of Ibadan, Distance Learning Centre has recently embarked on a vigorous repositioning agenda which aimed at embracing a holistic and all encompassing approach to the delivery of its Open Distance Learning (ODL) programmes. Thus we are committed to global best practices in distance learning provision. Apart from providing an efficient administrative and academic support for our students, we are committed to providing educational resource materials for the use of our students. We are convinced that, without an up-to-date, learner-friendly and distance learning compliant course materials, there cannot be any basis to lay claim to being a provider of distance learning education. Indeed, availability of appropriate course materials in multiple formats is the hub of any distance learning provision worldwide.

In view of the above, we are vigorously pursuing as a matter of priority, the provision of credible, learner-friendly and interactive course materials for all our courses. We commissioned the authoring of, and review of course materials to teams of experts and their outputs were subjected to rigorous peer review to ensure standard. The approach not only emphasizes cognitive knowledge, but also skills and humane values which are at the core of education, even in an ICT age.

The development of the materials which is on-going also had input from experienced editors and illustrators who have ensured that they are accurate, current and learner-friendly. They are specially written with distance learners in mind. This is very important because, distance learning involves non-residential students who can often feel isolated from the community of learners.

It is important to note that, for a distance learner to excel there is the need to source and read relevant materials apart from this course material. Therefore, adequate supplementary reading materials as well as other information sources are suggested in the course materials.

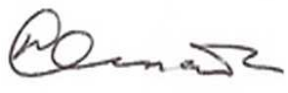
Apart from the responsibility for you to read this course material with others, you are also advised to seek assistance from your course facilitators especially academic advisors during your study even before the interactive session which is by design for revision. Your academic advisors will assist you using convenient technology including Google Hang Out, You Tube, Talk Fusion, etc. but you have to take advantage of these. It is also going to be of immense advantage if you complete assignments as at when due so as to have necessary feedbacks as a guide.

The implication of the above is that, a distance learner has a responsibility to develop requisite distance learning culture which includes diligent and disciplined self-study, seeking available administrative and academic support and acquisition of basic information technology skills. This is why you are encouraged to develop your computer skills by availing yourself the opportunity of training that the Centre's provide and put these into use.

In conclusion, it is envisaged that the course materials would also be useful for the regular students of tertiary institutions in Nigeria who are faced with a dearth of high quality textbooks. We are therefore, delighted to present these titles to both our distance learning students and the university's regular students. We are confident that the materials will be an invaluable resource to all.

We would like to thank all our authors, reviewers and production staff for the high quality of work.

Best wishes.



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COURSE INFORMATION

Course Code & Course Name: NSG 323 Midwifery 11 (Prenatal Midwifery 11, Intra partum or Perinatal Midwifery 1)

Credit points: 3 Units

Year: 300-Level; Semester: Second Semester

About the Course: The course is the midwifery aspect of nursing practice. This is the care of women in with abnormal prenatal conditions.

Lecturer Information:

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Introduction to the Course:

You are welcome to NSG 323. This is an online course that runs in the distance learning mode. It is a compulsory course open to all nursing students and it is a 3-unit course that has 45 hours of interaction among teachers and learners for the period of the course. The course focuses on High risk pregnancies, abnormalities of early pregnancies and problems of pregnancies. The other units are stages and management of normal labour and normal puerperium.

Aim: The course aims to assist the students in identifying their roles as care givers to women in pregnancy and those undergoing labour without any complication and to determine the needs of clients throughout the continuum of healthcare.

Unit I: Diagnosis of abnormalities of early pregnancies and problems of pregnancies

This unit introduces you to common signs and symptoms experienced by pregnant women who are experiencing abnormalities of early pregnancies and problems of pregnancies. You are likely to encounter patients with these common symptoms in your nursing practice. The goal of this unit is to assist you to understand how these conditions occur, and your specific roles in helping patients who are experiencing such symptoms throughout the continuum of healthcare. It consists of 7 lectures as listed below:

i. High risk pregnancies
ii. **Abnormalities of early pregnancy**: Abortion, ectopic pregnancy, Hydratidiform mole, chorio-carcinoma, Rhesus negative mothers, Retroversion of the uterus, Fibroid, Hyperemesis etc.
iii. **Problems of pregnancy:** Hypertensive disorder, Multiple pregnancy, Abdominal pain in pregnancy, Ante-partum haemorrhage, Disseminated intravascular coagulopathy, jaundice in pregnancy, Poly- hydraminous, Oligohydraminous etc.

Module1. {Diagnosis and Management of High Risk Pregnancies}

Expected duration: 4 weeks of 4 contact hours

Introduction / Getting started
In this lecture, you will learn about the high risk pregnancies

Learning Outcomes for lecture one:
When you have studied this lecture, you will be able to:

- Define high risk pregnancy
- Enumerate the different factors that can lead to high risk pregnancy.
- Explain how these factors can be controlled
- List the necessary investigations to confirm the condition
- And discuss how to promote a healthy pregnancy

TABLE OF CONTENTS

Study Session 1: Diagnosis and Management of High Risk Pregnancies

Expected Duration: 1 week of 2 contact hours

Introduction

The common signs and symptoms experienced by pregnant women who are experiencing abnormalities of early pregnancies and problems of pregnancies are numerous. You are likely to encounter patients with these common symptoms in your nursing practice on a regular basis.

Therefore, the objective of this study session is to assist you to understand how these conditions occur, and your specific roles in helping patients who are experiencing such symptoms throughout the continuum of healthcare.

Learning Outcomes for Study Session One

At the end of this study session, you should be able to:

1.1. Define high risk pregnancy
1.2. Enumerate the different factors that can lead to high risk pregnancy.
1.3. Explain how these factors can be controlled
1.4. List the necessary investigations to confirm the condition
1.5. Discuss how to promote a healthy pregnancy

1.1 Definition High-Risk Pregnancy

A high-risk pregnancy is a pregnancy that might pose challenges before, during or after delivery. When a woman has a high risk pregnancy, the woman and her baby might need special monitoring or care throughout the pregnancy.

Sometimes a high-risk pregnancy is the result of a medical condition present before pregnancy. In other cases, a medical condition that develops during pregnancy for either the mother or baby causes a pregnancy to become high risk.

BOX 1.1 DEFINITION OF HIGH-RISK PREGNANCY

A high-risk pregnancy can simply be defined as the pregnancy that threatens the health or life of the mother or her foetus.

1.2 Factors That Might Contribute to a High-Risk Pregnancy

There are lots of factors that contribute to high-risk pregnancy and among them are:

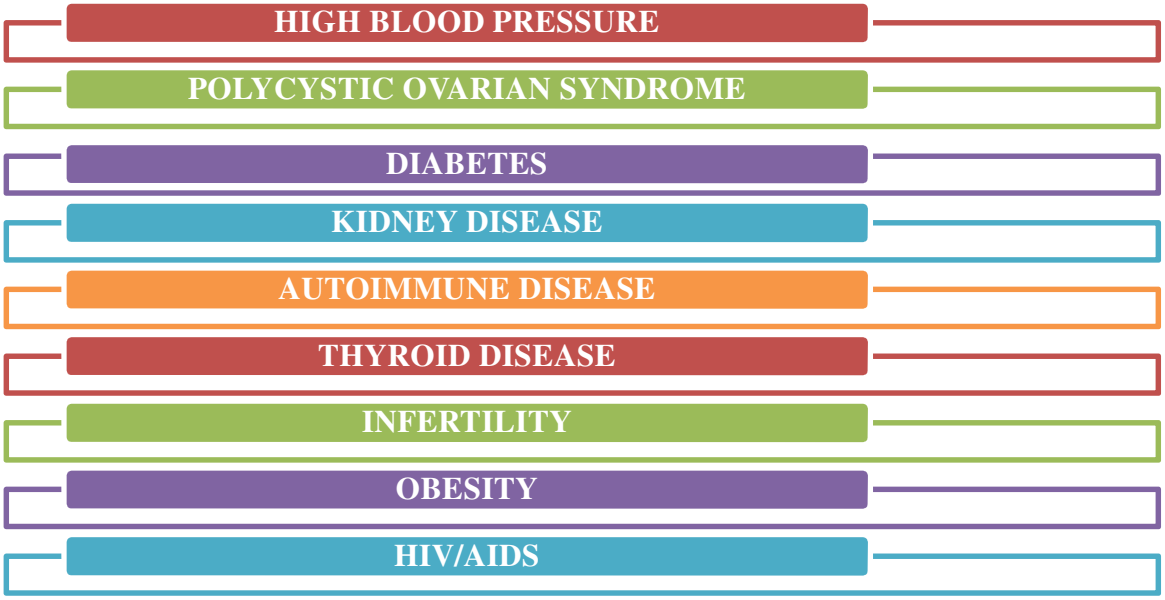

Figure 1.1: Existing Health Conditions

1. **High blood pressure:** Even though high blood pressure can be risky for mother and foetus, many women with high blood pressure have healthy pregnancies and healthy children. Uncontrolled high blood pressure, however, can lead to damage to the mother's kidneys and increases the risk for low birth weight or pre-eclampsia.
2. **Polycystic ovarian syndrome**: This is a disorder that can interfere with a woman's ability to get and stay pregnant. Polycystic ovarian syndrome as displayed in **figure 1** may result in higher rates of miscarriage (the spontaneous loss of the foetus before 20 weeks of pregnancy), gestational diabetes, preeclampsia, and premature delivery.

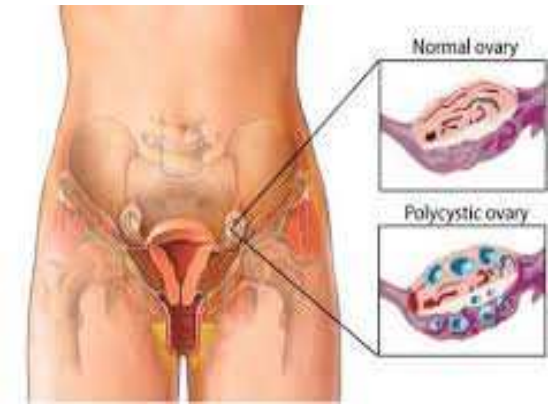

Figure 1.1: Polycystic Ovarian Syndrome
Source: http://syndromepictures.com/polycystic-ovarian-syndrome-pictures/

3. **Diabetes:** It is important for women with diabetes to manage their blood sugar levels before getting pregnant.
   High blood sugar levels can cause birth defects during the first few weeks of pregnancy, often before women even know they are pregnant. Controlling blood sugar levels and taking a multivitamin with 40 micrograms of folic acid every day can help reduce this risk.
4. **Kidney disease:** Women with kidney disease often have difficulty getting pregnant, and any pregnancy is at significant risk for miscarriage. Pregnant women with kidney disease require additional treatments, changes in diet and medication, and frequent visits to their health care provider.

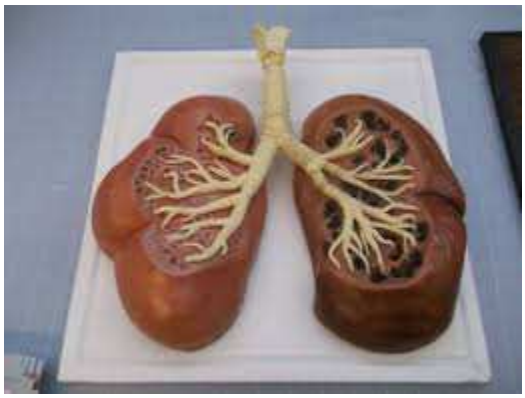

Figure 1.2: Kidney Disease
Source: https://herbalcareproductstreatment.wordpress.com/

5. **Autoimmune disease:** Autoimmune diseases include conditions such as lupus and multiple sclerosis. Some autoimmune diseases increase a women's risk for problems during pregnancy. For example, lupus can increase the risk for preterm birth and stillbirth. Some women may find that their symptoms improve during pregnancy, while others experience flare ups and other challenges. Certain medications to treat these diseases may be harmful to the foetus as well.

6. **Thyroid disease:** Uncontrolled thyroid disease, such as an overactive or underactive thyroid can cause problems for the foetus, such as heart failure, poor weight gain, and birth defects.

7. **Infertility:** Several studies have found that women who take drugs that increase the chances of pregnancy are significantly more likely to have pregnancy complications than those who get pregnant without assistance. These complications often involve the placenta and vaginal bleeding.

8. **Obesity:** Obesity as displayed in **figure 3** can make a pregnancy more difficult, increasing a woman's chance of developing diabetes during pregnancy, which can contribute to difficult births. On the other hand, some women weigh too little for their own health and the health of their growing foetus. In 2009, the Institute of Medicine updated its recommendations on how much weight to gain during pregnancy.

Figure 1.3 Obesity

Source: http://news2.onlinenigeria.com/headline/334440-nigerian-officials-with-obese-wives-and-spoilt-children.html

New recommendations issued by the American College of Obstetricians and Gynaecologists suggest that overweight and obese women may be able to gain even less than what is recommended and still have a healthy infant.

9. **HIV/AIDS:** HIV/AIDS damages cells of the immune system, making it difficult to fight infections and certain cancers. Women can pass the virus to their foetus during pregnancy; transmission also can occur during labour and giving birth or through breastfeeding. Fortunately, effective treatments exist to reduce the spread of HIV from the mother to her foetus, new-born, or infant.
   Women with very low viral loads may be able to have a vaginal delivery with a low risk of transmission. An option for pregnant women with higher viral loads is a caesarean delivery, which reduces the risk of passing HIV to the infant during labour and delivery. Early and regular prenatal care is important. Women who take medication to treat their HIV and have a caesarean delivery can reduce the risk of transmission to 2%.

Figure 1.2: Age

   A. **Teen pregnancy:** Pregnant teens are more likely to develop high blood pressure and anaemia (lack of healthy red blood cells), and go into labour earlier than women who are older. Teens also may be exposed to a sexually transmitted disease or infection that could affect their pregnancy.

      Teens may be less likely to get prenatal care or to make ongoing appointments with health care providers during the pregnancy to evaluate risks, ensure they are staying healthy, and understand what medications and drugs they can use.

B. **First-time pregnancy after age 35:** Older first-time mothers may have normal pregnancies, but research indicates that these women are at increased risk of having**:**

- ❖ A caesarean delivery
- ❖ Delivery complications, including excessive bleeding during labour
- ❖ Prolonged labour (lasting more than 20 hours)
- ❖ Labour that does not advance
- ❖ An infant with a genetic disorder, such as Down syndrome.

Figure 1.3: Lifestyle Factors

1. **Alcohol use:** Alcohol consumed during pregnancy as shown in **figure 4**, passes directly to the foetus through the umbilical cord. The Centers for Disease Control and Prevention recommend that women avoid alcoholic beverages during pregnancy or when they are trying to get pregnant. During pregnancy, women who drink are more likely to have a miscarriage or stillbirth.

   Other risks to the foetus include a higher chance of having birth defects and foetal alcohol spectrum disorder (FASD). FASD is the technical name for the group of foetal disorders that have been associated with drinking alcohol during pregnancy. It causes abnormal facial features, short stature and low body weight, hyperactivity disorder, intellectual disabilities, and vision or hearing problems.

Figure1.4: Drinking during Pregnancy

Source: http://www.express.co.uk/life-style/health/451623/Pregnant-women-drinking-a-bottle-of-wine-a-month-have-better-behaved-children-says-report

2. **Cigarette smoking:** Smoking during pregnancy puts the foetus at risk for preterm birth, certain birth defects and sudden infant death syndrome. Second-hand smoke also puts a woman and her developing foetus at increased risk for health problems.

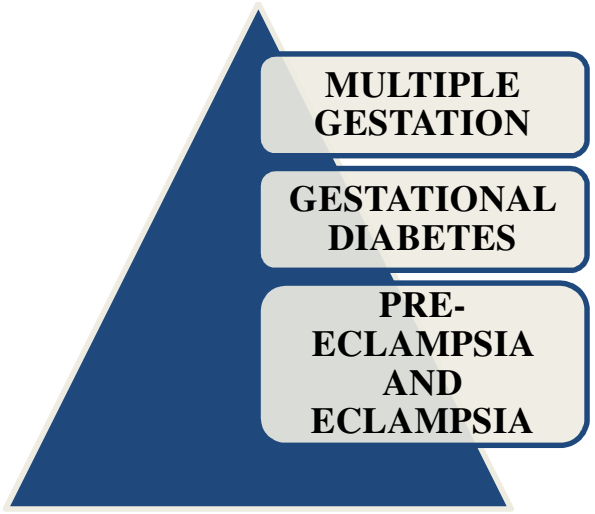

Figure 1.4: Conditions of Pregnancy

1. **Multiple gestation:** Pregnancy with twins, triplets, or more, referred to as a multiple gestation, increases the risk of infants being born prematurely (before 37 weeks of pregnancy). Having infants after age 30 and taking fertility drugs both have been associated with multiple births.
2. Having three or more infants increases the chance that a woman will need to have the infants delivered by caesarean section. Twins and triplets are more likely to be smaller for their size than infants of singleton births. If infants of multiple gestation are born prematurely, they are more likely to have difficulty breathing.

3. **Gestational diabetes:** This is also known as gestational diabetes mellitus, GDM, or diabetes during pregnancy, is diabetes that first develops when a woman is pregnant.
4. Many women can have healthy pregnancies if they manage their diabetes, following a diet and treatment plan from their health care provider. Uncontrolled gestational diabetes increases the risk for preterm labour and delivery, preeclampsia, and high blood pressure.
5. **Preeclampsia and eclampsia:** Preeclampsia is a syndrome marked by a sudden increase in the blood pressure of a pregnant woman after the 20th week of pregnancy. It can affect the mother's kidneys, liver, and brain.

   When left untreated, the condition can be fatal for the mother and/or the fetus and result in long-term health problems. Eclampsia is a more severe form of preeclampsia, marked by seizures and coma in the mother.

In Text Question

Which of these is not a factor that can contribute to high risk pregnancy?

a. Diabetes
b. High blood pressure
c. Kidney disease
d. Accident
e. Infertility

In Text Answer

Accident

1.3 How to Promote a Healthy Pregnancy

Whether the woman knows ahead of time that she will have a high-risk pregnancy or she simply wants to do whatever she can to prevent a high-risk pregnancy, the following are the basic things to do:

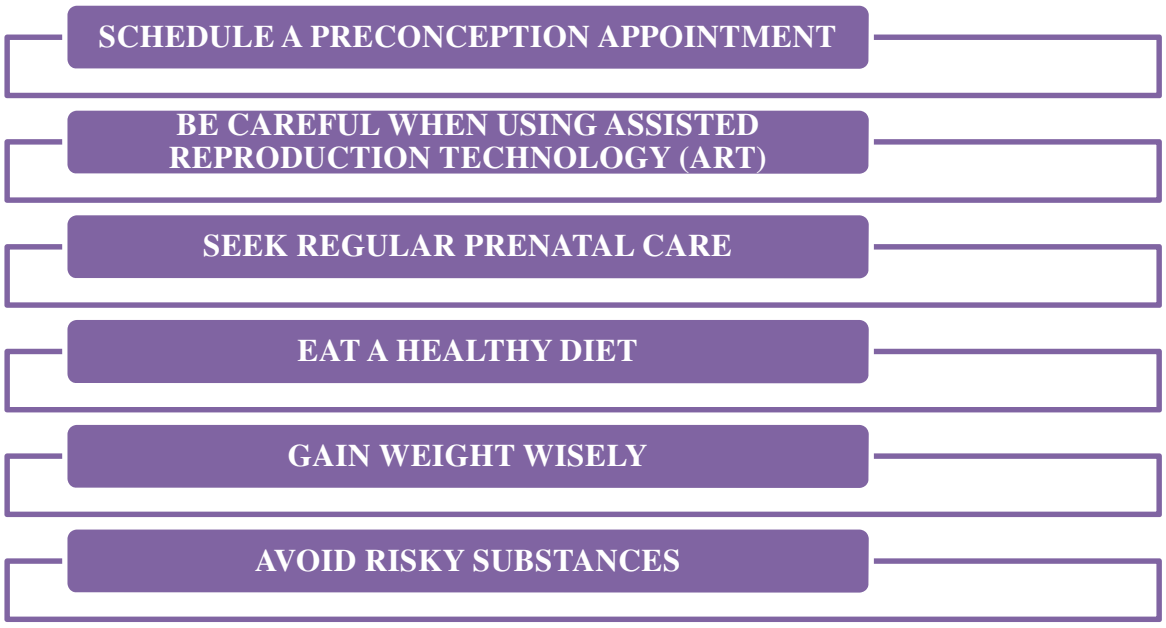

Figure 1.4: How to Promote a Healthy Pregnancy

1. **Schedule a preconception appointment:** If the woman is thinking about becoming pregnant, she should consult her health care provider. The health care practitioner might counsel the woman to start taking a daily prenatal vitamin and reach a healthy weight before becoming pregnant.

   If she has a medical condition, her treatment might need to be adjusted to prepare for pregnancy. The health care provider might also discuss the risk of the woman having a baby who has a genetic condition.
2. **Be cautious when using assisted reproductive technology (ART):** If the woman is planning to use assisted reproductive technology to get pregnant, she should consider how many embryos will be implanted. Multiple pregnancies carry a higher risk of preterm labor.
3. **Seek regular prenatal care.** Prenatal visits can help the health care provider monitor the pregnant woman's health and the unborn baby's health. Depending on the circumstances, the woman might be referred to a specialist in maternal-fetal medicine, genetics, paediatrics or other areas.
4. **Eat a healthy diet:** During pregnancy, the woman needs more folic acid, calcium, iron and other essential nutrients. A daily prenatal vitamin can help fill any gaps. Consult the health care provider if there is a special nutrition needs due to a health condition, such as diabetes.

Figure 1.5: A pregnant woman eating balance diet

Source: http://www.modernghana.com/lifestyle/5111/16/dealing-with-nutritional-issues-in-pregnancy.html

5. **Gain weight wisely:** Gaining the right amount of weight can support the baby's health and make it easier to shed the extra pounds after delivery. A weight gain of about 11 to 16 kilograms is often recommended for women who have a healthy weight before pregnancy.

   If the woman is overweight before conception, she might need to gain less weight. If she is carrying twins or triplets, she might need to gain more weight. Work with the health care provider to determine what is right for you.
6. **Avoid risky substances:** If the woman smokes, there is need to quit smoking. Alcohol and illegal drugs are off-limits, too. The pregnant woman should get the health care provider's consent before taking any medication or supplements.

In Text Question

One of the ways to promote a healthy pregnancy is to …….

In Text Answer

Seek regular prenatal care

1.4 Necessary Investigation to Confirm High-Risk Pregnancy

Investigations

If a woman reports with a high-risk pregnancy, there may be need to consider various tests or procedures in addition to routine prenatal screening tests. Depending on the circumstances, the health care provider might recommend:

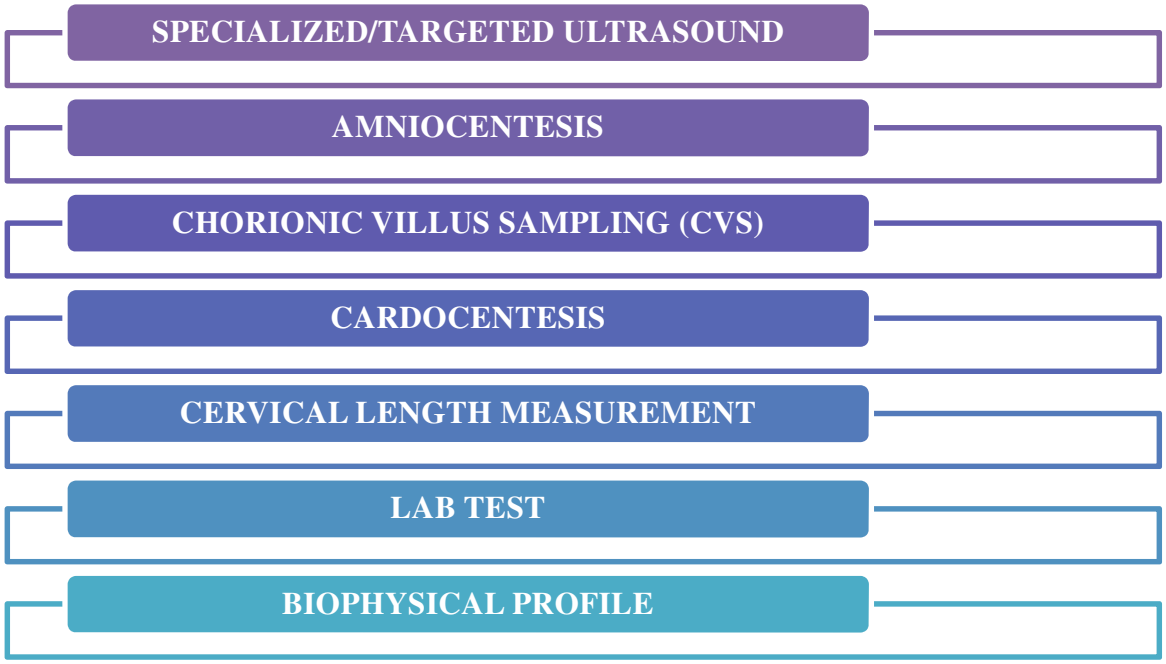

Figure 1.5: Necessary Investigation to confirm high risk Pregnancy

1. **Specialized or targeted ultrasound:** This type of fetal ultrasound — an imaging technique that uses high-frequency sound waves to produce images of a baby in the uterus — targets a suspected problem, such as abnormal development.
2. **Amniocentesis:** During this procedure, a sample of the fluid that surrounds and protects a baby during pregnancy (amniotic fluid) is withdrawn from the uterus. Typically done after week 15 of pregnancy, amniocentesis can identify certain genetic conditions, as well as neural tube defects -serious abnormalities of the brain or spinal cord.
3. **Chorionic villus sampling (CVS):** During this procedure, a sample of cells is removed from the placenta. Typically done between weeks 10 and 12 of pregnancy, chorionic villus sampling can identify certain genetic conditions.
4. **Cordocentesis:** This test, also known as percutaneous umbilical blood sampling, is a highly specialized prenatal test in which a foetal blood sample is removed

from the umbilical cord. Typically done after week 18 of pregnancy, the test can identify chromosomal conditions, blood disorders and infections.

5. **Cervical length measurement:** Your health care provider might use an ultrasound to measure the length of your cervix at prenatal appointments to determine if you're at risk of preterm labour.
6. **Lab tests:** Your health care provider might take a swab of your vaginal secretions to check for foetal fibronectin - a substance that acts like a glue between the foetal sac and the lining of the uterus. The presence of foetal fibronectin might be a sign of preterm labour.
7. **Biophysical profile:** This prenatal test is used to check on a baby's well-being. The test combines foetal heart rate monitoring (non-stress test) and foetal ultrasound.

   Some prenatal diagnostic tests — such as amniocentesis and chorionic villus sampling — carry a small risk of pregnancy loss. Ultimately, the decision to pursue prenatal testing is up to the pregnant woman and the partner.

In Text Question

One of the necessary investigations to confirm high-risk pregnancy is ……..

In Text Answer

Amniocentesis

1.5 Management of Patients with High-Risk Pregnancies

The management of patients with high risk pregnancies is highly individualized depending on what the client is presenting with and the factor/s that makes her pregnancy of a high risk. Some of these management methods include:

Figure 1.6: Management of patient with high risk pregnancy

1. **Be cautious when using assisted reproductive technology (ART):** If the woman is planning to use assisted reproductive technology to get pregnant, she should consider how many embryos will be implanted. Multiple pregnancies carry a higher risk of preterm labour.
2. **Seek regular prenatal care:** Prenatal visits can help the health care provider monitor the pregnant woman's health and the unborn baby's health. Depending on the circumstances, the woman might be referred to a specialist in maternal-foetal medicine, genetics, paediatrics or other areas.
3. **Eat a healthy diet:** During pregnancy, the woman needs more folic acid, calcium, iron and other essential nutrients. A daily prenatal vitamin can help fill any gaps. Consult the health care provider if there is a special nutrition needs due to a health condition, such as diabetes.
4. **Gain weight wisely:** Gaining the right amount of weight can support the baby's health and make it easier to shed the extra pounds after delivery. A weight gain of about 11 to 16 kilograms is often recommended for women who have a healthy weight before pregnancy.

   If the woman is overweight before conception, she might need to gain less weight. If she is carrying twins or triplets, she might need to gain more weight. Work with the health care provider to determine what is right for you.

5. **Avoid risky substances:** If the woman smokes, there is need to quit smoking. Alcohol and illegal drugs are off-limits, too. The pregnant woman should get the health care provider's consent before taking any medication or supplements.

In Text Question

One of these is not a way to manage a patient with high-risk pregnancy

a. Exercise rigorously
b. Avoid risky substances
c. Eat healthy diet
d. Gain weight wisely

In Text Answer

Exercise rigorously

Summary for Study Session 1

At the end of this study session, you have learnt:

1. The definition of high-risk pregnancy
2. The various factors that might contribute to high-risk pregnancy
3. The various methods or ways on how to promote a healthy pregnancy
4. All the necessary investigation that needed to be carried out in order to confirm patients with high-risk pregnancy
5. The various management methods that can be carried out in order to care for patients with high-risk pregnancy

Self-Assessment Question (SAQ) for Study Session 1

SAQ 1

Define high risk pregnancy

SAQ 2

Enumerate the different factors that can lead to high risk pregnancy.

SAQ 3

Explain how these factors can be controlled

SAQ 4

List the necessary investigations to confirm the condition

SAQ 5

Discuss how to promote a healthy pregnancy till delivery

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Study Session 2: Abnormalities of Early Pregnancy

Expected Duration: 1 week of 2 contact hours

Introduction

A lot of women have experienced the issue of miscarriage or abortion one time or the other in their life. Though, the issue of miscarriage is an unfortunate incident which at times happened naturally but some of them are also caused by women over-stressing themselves or by been abused either physically or psychologically by a second party.

So therefore in this study session, you will learn about the definition of miscarriage/abortion, the factors that causes it, the different types of miscarriage/abortion, the necessary investigations to confirm the condition of miscarriage/abortion and finally, how to prevent or manage the issue of miscarriage/abortion.

Learning Outcomes for Study Session

At the end of this study session, you should be able to:

2.1. Define miscarriage/abortion.
2.2. Enumerate the causes of miscarriage/abortion.
2.3. Describe the types of miscarriage/abortion.
2.4. List the necessary investigations to confirm the condition of miscarriage.
2.5. Discuss the prevention and management of miscarriage/abortion.

2.1 Definition of Abortion

Abortion or miscarriage is defined as the expulsion or extraction from its mother of a foetus or embryo weighing less than 500 grams or 24 completed weeks of gestation. Loss of pregnancy after 24 weeks is considered preterm delivery.

Abortion can also be simply defined as the deliberate termination of a pregnancy, usually before the embryo or foetus is capable of independent life. In medical contexts, this is called an induced abortion and is distinguished from a spontaneous abortion (miscarriage) or stillbirth.

Incidence

About 15- 20% of all pregnancies end in spontaneous abortion or 30% if all women who had a positive serum hCG are included. Majority prior to 13weeks gestation, 1 or 2% occur 13-24weeks.

2.2 Causes of Miscarriage/Abortion

In most case there is no definite cause. A miscarriage may be **spontaneous** or **induced**.

Figure 2.1: A miscarriage

Source: http://becuo.com/miscarriage-at-15-weeks

A Spontaneous Miscarriage can be due to:

1. **Genetic abnormalities** Embryos with chromosomal defects are seen in about 50% of all early abortions. Chromosomal defects may also be present in the placenta (for example, Hydatidiform mole or Molar pregnancy) causing death of the foetus.

2. **Fault in the Maternal Environment:**
   - Infections by toxoplasma (common), syphilis, Listeria monocytogenes.
   - Hormonal deficiencies as in progesterone deficiency in corpus luteum defect, or in hyperthyroidism or hypothyroidism.
   - Cervical Incompetence

- Rh-v pregnancy
- ABO incompatibility
- Some maternal diseases which cause high fever.
- Uterine fibroid causing improper implantation of the placenta
- Physical trauma, e.g. a blow on the abdomen or that caused by a fall.
- Surgical trauma due to any operation.
- Congenital malformations of the uterus like hypoplastic uterus, unicornuate, bicornuate uterus, septate uterus etc.

In Text Question

Loss of pregnancy after 24 weeks is called ……...

In Text Answer

Preterm delivery

2.3 Types of Abortion

Abortions can occur in two ways which are:

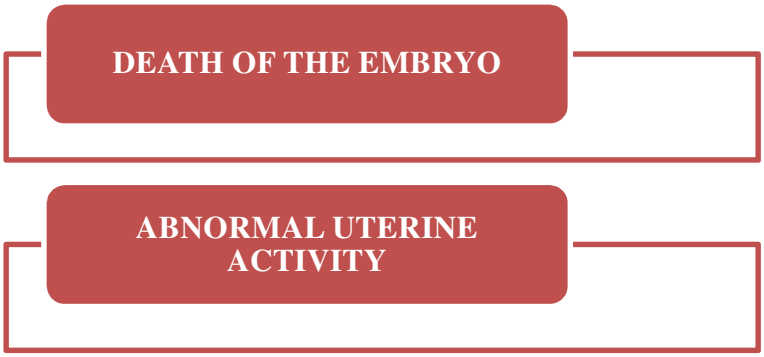

Figure 2.1: Types of Abortion

1. **Death of the Embryo:** Death of the embryo or the fetus can be the first event to occur followed by its expulsion from the uterus. This is usually seen in very early pregnancies.
2. **Abnormal Uterine Activity:** In these type of abortions, the main event is abnormal uterine activity, causing the uterus to expel a healthy foetus. This is usually a feature of abortions in the second trimester (after 13 completed weeks of pregnancy).

2.3.1 Risk Factors

Pregnancies involving more than one fetus are considered at increased risk and apart from this, there are lots of other risk factors of abortion and among them are:

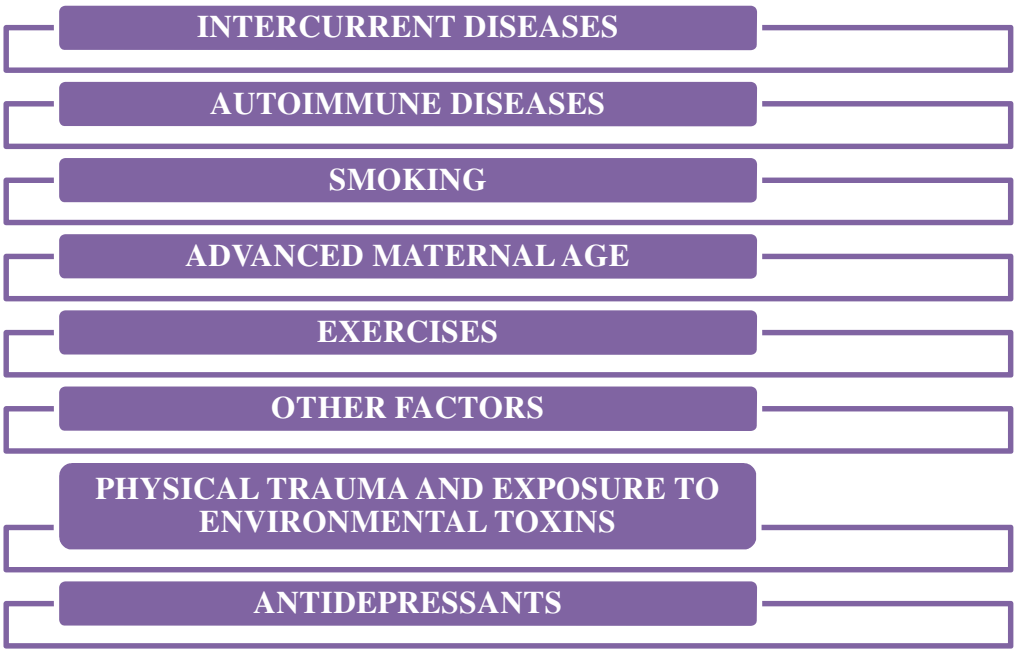

Figure: 2.2: Risk Factor

1. Intercurrent diseases

Several intercurrent diseases in pregnancy can potentially increase the risk of miscarriage, including:

- **Diabetes mellitus:** The risk of miscarriage is increased in women with poorly controlled insulin-dependent diabetes mellitus. This 1998 prospective study found that the risk increased by 3.1% (over the background risk of about 16%) for each standard deviation in glycosylated haemoglobin above the normal range.

  The risk was not found to be significantly increased in women with good glycaemic control in early pregnancy.
- **Polycystic ovary syndrome,** which may increase the risk of miscarriage.
- **Hypothyroidism**; Severe cases of hypothyroidism increase the risk of miscarriage
- **Vertical transmitted infections**; Certain vertically transmitted infections (such as rubella and chlamydia) increase the risk.

2. **Autoimmune disease**

Some research suggests autoimmunity as a possible cause of recurrent or late-term miscarriages. Autoimmune disease occurs when the body's own immune system acts against itself. Therefore, in the case of an autoimmune-induced miscarriages the woman's body attacks the growing fetus or prevents normal pregnancy progression. Further research also has suggested that autoimmune disease may cause genetic abnormalities in embryos which in turn may lead to miscarriage.

3. Smoking

Tobacco (cigarette) smokers as shown in **figure 2** have an increased risk of miscarriage. An increase in the rates also is associated with the father being a cigarette smoker. The husband study observed a 4% increased risk for husbands who smoke fewer than 20 cigarettes/day, and an 81% increased risk for husbands who smoke 20 or more cigarettes/day.

Figure 2.2 Smoking during Pregnancy

Source: http://www.thefix.com/content/prenatal-smoking-linked-kids-obesity90579

4. Advanced maternal age

The age of the mother is a significant risk factor. Miscarriage rates increase steadily with age, with more substantial increases after age 35.

5. Exercise

A study of more than 92,000 pregnant women found that most types of exercise (with the exception of swimming) correlated with a higher risk of miscarrying prior to 18 weeks.

6. Other Factors

Sexual intercourse during the first trimester has often been said or assumed by doctors to be a cause of miscarriage. However the association has never been proved or disproved (Moscrop, 2012).

7. Physical trauma and exposure to environmental toxins

Physical trauma like been physically abuse for instance, beating, assault etc and industrial wastes in the environment can cause miscarriage.

8. Antidepressants

Especially paroxetine and venlafaxine, can lead to a miscarriage.

2.3.2 Signs and Symptoms of Abortion/Miscarriage

Spontaneous abortion progresses through a number of stages with clinical symptoms of vaginal bleeding and lower abdominal pain

The chief symptoms of abortion as shown in **figure 3** are pain and bleeding. Whether pain occurs first or bleeding will depend on whether the abortion is due to death of the foetus or abnormal uterine activity.

Classification/ types of abortion/ miscarriage

Figure 1.3:Miscarriage

Source: http://waitingforamiscarriage.blogspot.com/

1. **Threatened miscarriage**

   The presence of bleeding from the uterus in an on-going early pregnancy is called threatened miscarriage. Uterine size is normally consistent with gestational age. Cervical is closed. Minimal or absence of lower abdominal pain.

Some women presenting with threatened miscarriage carry the pregnancy to term.

2. **Inevitable/ Incomplete miscarriage**

   In inevitable miscarriage, there is increasing abdominal pain associated with heavier bleeding, cervix opens and eventually products of conception are expelled. It some of the products of conception are retained, the miscarriage remains incomplete.

3. **Complete miscarriage**

   An incomplete miscarriage may eventually progress to complete, the abdominal pain subsides and involution of the uterus takes place.

4. **Miscarriage with infection**

   During a miscarriage or after therapeutic termination of pregnancy, infection may be introduced into the uterine cavity. The clinical findings may be similar to that of incomplete miscarriage. With:

   Uterine and adnexial tenderness, purulent vaginal loss, pyrexia, in some cases, overwhelming sepsis, and endotoxic shock with profound and sometimes fatal hypotension. Other manifestations include: renal failure, disseminated intravascular coagulopathy and multiple petechial haemorrhages.

   Organisms that commonly invade the uterine cavity are: Escherichia coli, streptococcus faecalis streptococcus albus and aureus klebsiella and clostridium welchii and C.perfringes.

5. **Missed miscarriage or silent miscarriage**

   This is early foetal demise in the uterus, mostly identified by ultrasound that despite foetal poles being seen, there is no foetal heartbeat. In embryonic pregnancy, a foetal sac is seen but no evidence of foetus. There is usually some pain and bleeding but no increase in uterine size.

6. **Recurrent miscarriage**

   This is the occurrence of three or more successive miscarriages without foetal viability. After 2 spontaneous miscarriages, the likelihood for a successful 3rd pregnancy is 80% and 55-75% after third miscarriage.

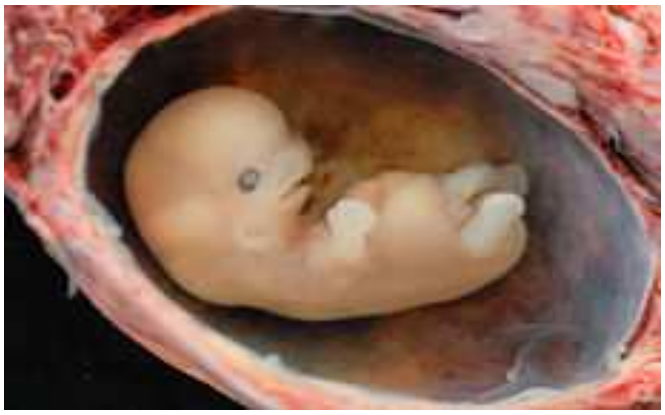

Figure 2.4: A human embryo at about six weeks after conception i.e 8weeks after LMP

In Text Question

Two ways in which abortion can occur are?

In Text Answer

1. Death of the embryo
2. Abnormal uterine activity

2.4 Diagnosis

Initial clinical assessment involves determining the haemodynamic status and general condition for evidence of blood loss, distensin of the cervical cannal by products of conception in an incomplete miscarriage may cause profound vaginal respone leading to hypotension and bradycardia (cervical shock)

Where haemodynamic compromise is present, the key differential diagnosis is ruptured ectopic pregnancy.

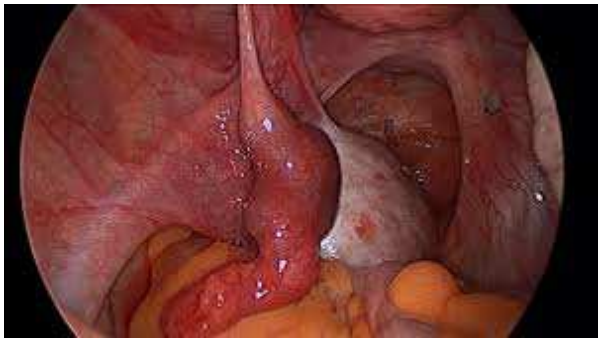

Figure 2.5: Ruptured Ectopic Pregnancy

Source:

A vagina examination is needed to assess whether the cervix is opened and to look for presence of product of conception.

Transvaginal ultrasound to confirm miscarriage

In Text Question

List the necessary investigations to confirm abortion condition

In Text Answer

Vaginal bleeding and lower abdominal pain

The chief symptoms of abortion are pain and bleeding. Whether pain occurs first or bleeding will depend on whether the abortion is due to death of the foetus or abnormal uterine activity.

2.5 Management of Abortion

The management of abortion include:

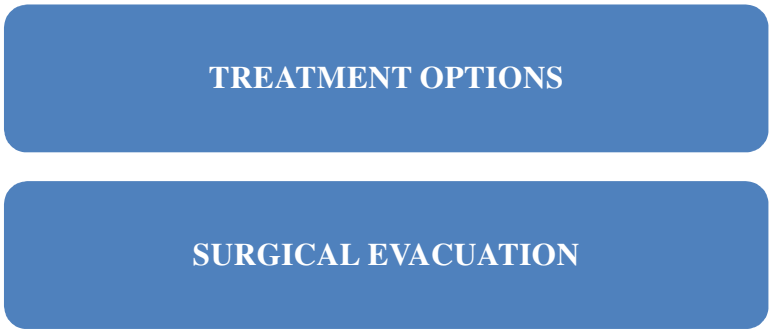

Figure 2.3: Management of Abortion

a. *Treatment options*: For women with threatened miscarriage there is no specific treatment except reassurance that once fetal viability is confirmed, the prognosis of

ongoing pregnancy is usually good. Where complete miscarriage has occurred, no further treatment is indicated. The next line of action is appropriate resuscitation and replacement of blood if indicated.

b. *Surgical Evacuation*: Surgical uterine evacuation of retained product involves the removal of tissue by suction curettage of the uterine cavity under general or local anaesthesia. This has been standard treatment for all women with miscarriage on the assumption that retained tissue increases the risk of infection.

Clinical indication for Surgical uterine evacuation includes:

- ❖ persistent excessive bleeding
- ❖ haemodynamic instability
- ❖ evidence of infected retained product
- ❖ suspected trophoblastic disease.

Where infection is suspected, antibiotic treatment should be given for 12-24hours before surgery. Perioperative treatment with prostaglandins makes it easier to dilate the cervix and reduce the risk of bleeding and cervical/uterine trauma.

1. **Expectant management of miscarriage**
   Where there is no infection or heavy bleeding, the natural history of most cases of miscarriage is spontaneous passage of product of conception. Waiting for this to happen is an effective and alternative to surgery for women.
   Complete resolution may take several weeks. Expectant management is more likely to be successful in incomplete miscarriage 80 – 100% than missed miscarriage 14-47%.
2. **Medical management**
   Various treatment using prostaglandins with or without antiprogesterone have been described effective. The success rate of medical management depends on the type of miscarriage, age of pregnancy, gestation sac size (if present), total dose of prostaglandin and route of administration.
   It has a lower rate of pelvic inflammatory disease. Potential complication is increase pain and blood loss. It can be undertaken on outpatient basis.

3. **Anti D immunoglobulin**

   Rhesus negative women who are non sensitized should receive anti D immunoglobulin following any bleeding in pregnancy after 12weeks of gestation or after medical or surgical evacuation of the uterus. This should be stated in patient's documents.

4. **Recurrent miscarriage**

   This should be investigated by examining the karyotype of both parents and if possible any foetal product. Maternal blood should be examined for lupus anticoagulant and anticardiolipin antibodies on at least 2 occasions 6weeks apart,

   if persisting positive the client should be treated with low dose aspirin and heparin in subsequent pregnancies. Those with karyotypic abnormalities should be referred to a clinical geneticist. An ultrasound scan to assess ovarian morphology for polycystic ovarian syndrome and the uterine cavity.

   Cervical cerclage carried out 14-16weeks gestation in cases of cervical incompetence reduces the incidence of preterm birth.

Organisation of care

- There is need for early pregnancy assessment
- Admission can be avoided
- Direct access of client to health care giver should be made possible
- Facilities for transvaginal ultrasound and rapid access to rhesus antibody screening and serum human chorionic gonadotropin estimation should be made available
- The psychological aspect of miscarriage should be addressed as to the medical personal miscarriage is not regarded as anything serious but to the client, anger, grief and guilt are common and in most women distress for 6 weeks following miscarriage.

Complications

Pelvic inflammatory disease

Uterine perforation

Cervical trauma

In Text Question

The management of abortion include …….. and …….

In Text Answer

1. Treatment options
2. Surgical evaluation

Summary for Study Session 2

At the end of this study session, you have learnt:

1. The definition of abortion
2. The different causes of miscarriage or abortion
3. The various types of abortion or miscarriage, it's risk factors, the signs and symptoms associated with it
4. The diagnosis to detect miscarriage or abortion
5. The various management methods administered to miscarriage or abortion patients

Self-Assessment Question (SAQ) for Study Session 2

SAQ 1

Define abortion

SAQ 2

Enumerate the causes of abortion.

SAQ 3

Describe the types of abortion

SAQ 4

List the necessary investigations to confirm the condition

SAQ 5

Discuss the prevention and management of abortion

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Study Session 3: Ectopic Pregnancy

Expected Duration: 1 week of 2 contact hours

Introduction

Detection of ectopic pregnancy in early gestation has been achieved mainly due to enhanced diagnostic capability. Despite all these notable successes in diagnostics and detection techniques ectopic pregnancy remains a source of serious maternal morbidity and mortality worldwide, especially in countries with poor prenatal care.

So therefore in this study session, you will learn about the definition and meaning of ectopic pregnancy, the different classifications of ectopic pregnancy, it's signs and symptoms and the treatment for it.

Learning Outcomes for Study Session 3:

At the end of this study session, you should be able to:

3.1 Define or explain the concept 'ectopic pregnancy'.
3.2 Discuss the various forms of ectopic pregnancy.
3.3 Describe its signs and symptoms.
3.4 Explain how to carry out its treatment.

3.1 Definition and Meaning of Ectopic Pregnancy

An ectopic pregnancy, or eccysis, is a complication of pregnancy in which the embryo implants outside the uterine cavity. With rare exceptions, ectopic pregnancies are not viable.

Furthermore, they are dangerous for the mother, since internal haemorrhage is a life-threatening complication. Most ectopic pregnancies occur in the fallopian tube (so-called tubal pregnancies), but implantation can also occur in the cervix, ovaries and abdomen.

An ectopic pregnancy is a potential medical emergency and, if not treated properly, can lead to death. In a normal pregnancy, the fertilized egg enters the uterus and settles into the uterine lining where it has plenty of room to divide and grow.

About 1% of pregnancies are in an ectopic location with implantation not occurring inside of the womb, and of these 98% occur in the Fallopian tubes.

BOX 3. 1:TYPICAL ECTOPIC PREGNANCY

In a typical ectopic pregnancy, the embryo adheres to the lining of the fallopian tube and burrows into the tubal lining. Most commonly this invades vessels and will cause bleeding. This intratubal bleeding haematosalpinx expels the implantation out of the tubal end as a tubal abortion. Tubal abortion is a common type of miscarriage. There is no inflammation of the tube in ectopic pregnancy.

The pain is caused by prostaglandins released at the implantation site, and by free blood in the peritoneal cavity, which is a local irritant. Atimes the bleeding might be heavy enough to threaten the health/life of the woman.

Usually this bleeding is due to delay in diagnosis, but sometimes, especially if the implantation is in the proximal tube (just before it enters the uterus), it may invade into the nearby Sampson artery, causing heavy bleeding earlier than usual.

If left untreated, about half of ectopic pregnancies will resolve without treatment. These are the tubal abortions. The advent of methrotrexate treatment for ectopic pregnancy has reduced the need for surgery; however, surgical intervention is still required in cases where the Fallopian tube has ruptured or is in danger of doing so. This intervention may be laparoscopic or through a larger incision, known as alaparotomy.

In Text Question

In a typical ectopic pregnancy, the embryo adheres to the lining of the fallopian tube and burrows into the tubal lining. True or false

In Text Answer

True

3.2 Classification of Ectopic Pregnancy

1. **Tubal pregnancy**

   The vast majority of ectopic pregnancies implant in the Fallopian tube as displayed in **figure 1**. Pregnancies can grow in the fimbrial end (5% of all ectopic pregnancies),

the ampullary section (80%), the isthmus (12%), and the cornual and interstitial part of the tube (2%).

Mortality of a tubal pregnancy at the isthmus or within the uterus (interstitial pregnancy) is higher as there is increased vascularity that may result more likely in sudden major internal hemorrhage.

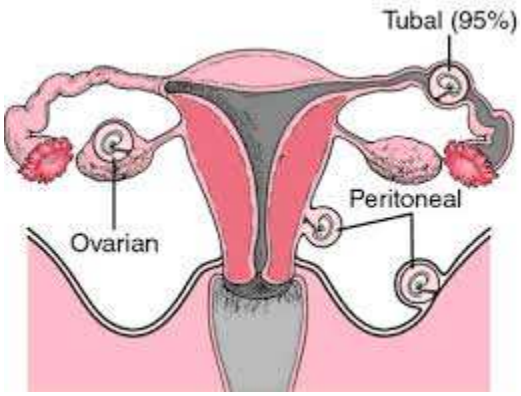

Figure 3.1: Tubal Pregnancy

Source: http://medical-dictionary.thefreedictionary.com/tubal+pregnancy

A review published in 2010 supports the hypothesis that tubal ectopic pregnancy is caused by a combination of retention of the embryo within the fallopian tube due to impaired embryo-tubal transport and alterations in the tubal environment allowing early implantation to occur,(Shaw, Dey, Critchley, Horne, 2010)

2. **Non tubal ectopic pregnancy**

   Two percent of ectopic pregnancies occur in the ovary, cervix, or are intraabdominal as displayed in **figure 2**. Transvaginal ultrasound examination is usually able to detect a cervical pregnancy.

   While a foetus of ectopic pregnancy is typically not viable, very rarely, a live baby has been delivered from an abdominal pregnancy. In such a situation the placenta sits on the intraabdominal organs or the peritoneum and has found sufficient blood supply.

   This is generally bowel or mesentery, but other sites, such as the renal (kidney), liver or hepatic (liver) artery or even aorta have been described.

Support to near viability has occasionally been described, but even in third world countries, the diagnosis is most commonly made at 16 to 20 weeks gestation. Such a foetus would have to be delivered by laparotomy.

Maternal morbidity and mortality from extra-uterine pregnancy are high as attempts to remove the placenta from the organs to which it is attached usually lead to uncontrollable bleeding from the attachment site.

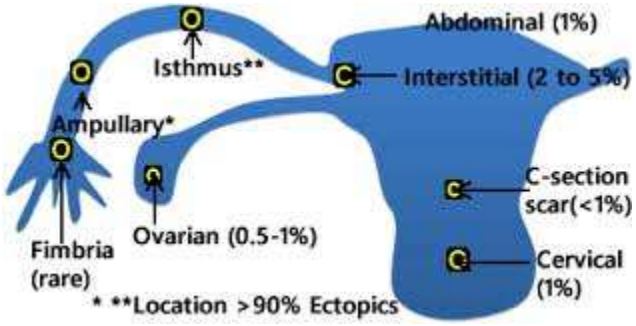

Figure 3.2: Non tubal ectopic pregnancy

Source: http://www.obimages.net/other/first-trimester-ectopic-pregnancy/

If the organ to which the placenta is attached is removable, such as a section of bowel, then the placenta should be removed together with that organ. This is such a rare occurrence that true data are unavailable and reliance must be made on anecdotal reports.

However, the vast majority of abdominal pregnancies require intervention well before fetal viability because of the risk of hemorrhage.

3. **Heterotopic pregnancy**

In rare cases of ectopic pregnancy, there may be two fertilized eggs, one outside the uterus and the other inside. This is called a heterotopic pregnancy. Often the intrauterine pregnancy is discovered later than the ectopic, mainly because of the painful emergency nature of ectopic pregnancies.

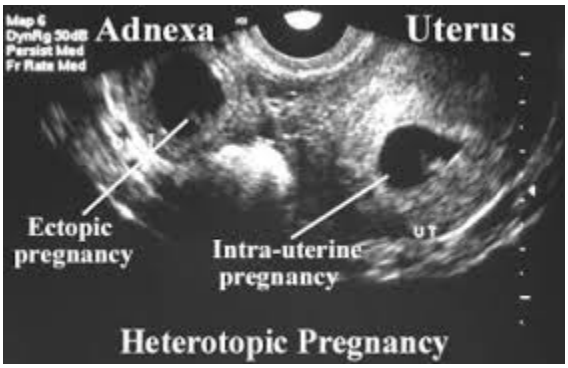

Figure 3.3 Heterotopic Pregnancy

Source: http://www.fetalultrasound.com/online/text/12-117.HTM

Since ectopic pregnancies are normally discovered and removed very early in the pregnancy, an ultrasound may not find the additional pregnancy inside the uterus.

When hCG levels continue to rise after the removal of the ectopic pregnancy, there is the chance that a pregnancy inside the uterus is still viable. This is normally discovered through an ultrasound.

Although rare, heterotopic pregnancies are becoming more common, likely due to increased use of IVF. The survival rate of the uterine foetus of an ectopic pregnancy is around 70%.

Successful pregnancies have been reported from ruptured tubal pregnancy continuing by the placenta implanting on abdominal organs or on the outside of the uterus

4. **Persistent ectopic pregnancy**

A persistent ectopic pregnancy refers to the continuation of trophoplastic growth after a surgical intervention to remove an ectopic pregnancy.

After a conservative procedure that attempts to preserve the affected fallopian tube such as a salpingotomy, in about 15-20% the major portion of the ectopic growth may have been removed.

But some trophoblastic tissue, perhaps deeply embedded, has escaped removal and continues to grow, generating a new rise in hCG levels. After weeks this may lead to new clinical symptoms including bleeding.

For this reason hCG levels may have to be monitored after removal of an ectopic pregnancy to assure their decline, also methrotrexate can be given at the time of surgery prophylactically.

In Text Question

List the classification of ectopic pregnancy and explain two

In Text Answer

Tubal ectopic, non-tubal ectopic, heterotopic, persistence ectopic.

3.3 Signs and Symptoms of Ectopic Pregnancy

Early symptoms are either absent or subtle. Clinical presentation of ectopic pregnancy occurs at a mean of 7.2 weeks after the last normal menstrual period, with a range of 4 to 8 weeks. Later presentations are more common in communities deprived of modern diagnostic ability.

Early signs include:

1. Pain in the lower abdomen, and inflammation (pain may be confused with a strong stomach pain, it may also feel like a strong cramp).
2. Pain while urinating.
3. Pain and discomfort, usually mild. (A corpus luteum on the ovary in a normal pregnancy may give very similar symptoms).
4. Vaginal bleeding, usually mild. An ectopic pregnancy is usually a failing pregnancy and falling levels of progesterone from the corpus luteum on the ovary cause withdrawal bleeding. This can be indistinguishable from an early miscarriage or the 'implantation bleed' of a normal early pregnancy.
5. Pain while having a bowel movement.

6. Patients with a late ectopic pregnancy typically experience pain and bleeding. This bleeding will be both vaginal and internal and has two discrete pathophysiologic mechanisms:
7. External bleeding is due to the falling progesterone levels.
8. Internal bleeding (haematoperitoneum) is due to haemorrhage from the affected tube.

The differential diagnosis at this point is between miscarriage, ectopic pregnancy, and early normal pregnancy. The presence of a positive pregnancy test virtually rules out pelvic infection as it is rare indeed to find pregnancy with an active pelvic inflammatory disease (PID). The most common misdiagnosis assigned to early ectopic pregnancy is PID.

- More severe internal bleeding may cause:
- Lower back, abdominal or pelvic pain.
- Shoulder pain. This is caused by free blood tracking up the abdominal cavity and irritating the diaphragm, and is an ominous sign.
- There may be cramping or even tenderness on one side of the pelvis.
- The pain is of recent onset, meaning it must be differentiated from cyclical pelvic pain, and is often getting worse.

Ectopic pregnancy can mimic symptoms of other diseases such as appendicitis, other gastrointestinal disorder, problems of the urinary system, as well as pelvic inflammatory disease and other gynaecologic problems.

Causes: There is really no main cause for ectopic pregnancy, however there are a number of risk factors for ectopic pregnancies. However, in as many as one third to one half no risk factors can be identified. Risk factors include:

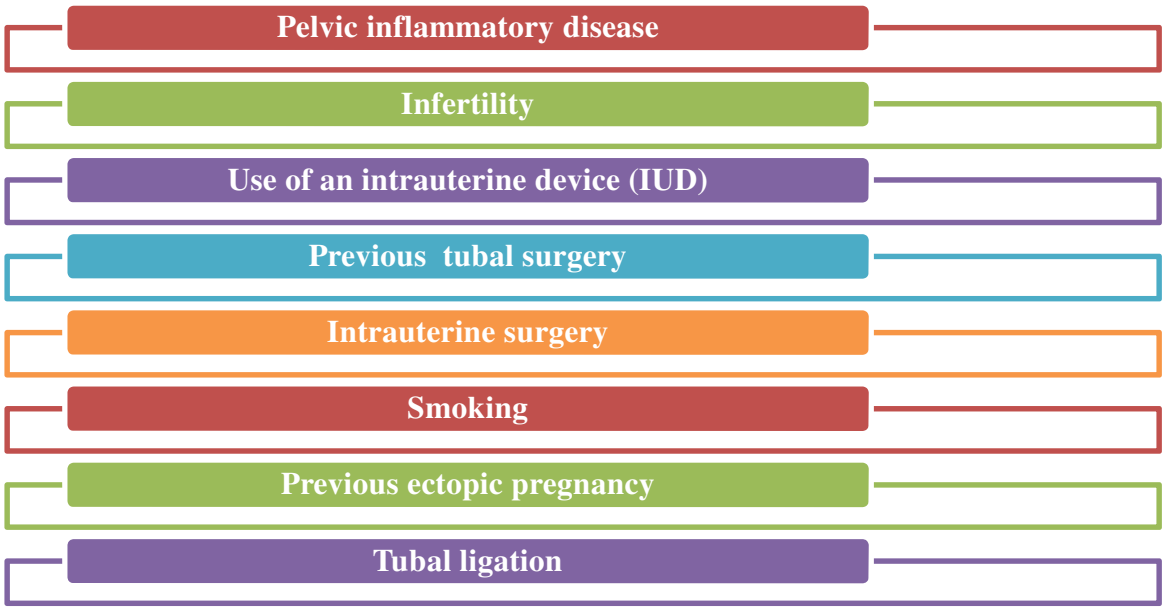

Figure 3.1: Risk Factors

1. **Cilia damage and tube occlusion:** Hair-like cilia located on the internal surface of the Fallopian tubes carry the fertilized egg to the uterus. Fallopian cilia are sometimes seen in reduced numbers subsequent to an ectopic pregnancy, leading to a hypothesis that cilia damage in the Fallopian tubes is likely to lead to an ectopic pregnancy.

Women with pelvic inflammatory disease (PID) have a high occurrence of ectopic pregnancy.

This results from the build-up of scar tissue in the Fallopian tubes, causing damage to cilia as displayed in **figure 4**. If however both tubes were completely blocked, so that sperm and egg were physically unable to meet, then fertilization of the egg would naturally be impossible, and neither normal pregnancy nor ectopic pregnancy could occur. Tubal surgery for damaged tubes might remove this protection and increase the risk of ectopic pregnancy.

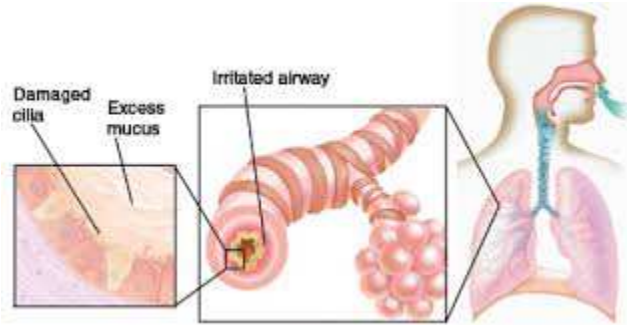

Figure 3.4 Cilia Damage
Source: http://www.fairviewebenezer.org/HealthLibrary/Article/82429

Intrauterine adhesions (IUA) present in Asherman's syndrome can cause ectopic cervical pregnancy or, if adhesions partially block access to the tubes via theostia, ectopic tubal pregnancy.

BOX 3.2 Asherman Syndrome

Asherman's syndrome usually occurs from intrauterine surgery, most commonly after uterine evacuation. Endometrial/pelvic/genital tuberculosis, another cause of Asherman's syndrome, can also lead to ectopic pregnancy as infection may lead to tubal adhesions in addition to intrauterine adhesions. Tubal ligation can predispose to ectopic pregnancy.

Seventy percent of pregnancies after tubal cautery are ectopic, while 70% of pregnancies after tubal clips are intrauterine.[1]. Reversal of tubal sterilization (tubal reversal) carries a risk for ectopic pregnancy. This is higher if more destructive methods of tubal ligation (tubal cautery, partial removal of the tubes) have been used than less destructive methods (tubal clipping).
A history of a tubal pregnancy increases the risk of future occurrences to about 10%. This risk is not reduced by removing the affected tube, even if the other tube appears normal. The best method for diagnosing this is to do an early ultrasound.

2. **Others:** Although some investigations have shown that patients may be at higher risk for ectopic pregnancy with advancing age, it is believed that age is a variable which could act as a surrogate for other risk factors.
Also, it has been noted that smoking is associated with ectopic risk. Vaginal douching is thought by some to increase ectopic pregnancies. Women exposed to diethylstilbestrol (DES) in utero also have an elevated risk of ectopic pregnancy, up to 3 times the risk of unexposed women The low socioeconomic status may be risk factors for ectopic pregnancy.

Diagnosis
An opened oviduct with an ectopic pregnancy at about 7 weeks gestational age.

An ectopic pregnancy should be considered as the cause of abdominal pain or vaginal bleeding in every woman who has a positive pregnancy test.

An ultrasound showing a gestational sac with foetal heart in the fallopian tube is clear evidence of ectopic pregnancy.
An abnormal rise in blood Beta-human chorionic gonadotropin (β-hCG) levels may indicate an ectopic pregnancy.

The presence of an adnexal mass in the absence of an intrauterine pregnancy on transvaginal sonography increases the likelihood of an ectopic pregnancy 100-fold
A laparoscopy or laparotomy can also be performed to visually confirm an ectopic pregnancy.
Often if a tubal abortion or tubal rupture has occurred, it is difficult to find the pregnancy tissue. A laparoscopy in very early ectopic pregnancy rarely shows a normal looking fallopian tube.
Cullen's sign can indicate a ruptured ectopic pregnancy.

In Text Question
List some of the symptoms of ectopic pregnancy

In Text Answer
Pain in the lower abdomen, and inflammation (pain may be confused with a strong stomach pain; it may also feel like a strong cramp).
Pain while urinating.
Pain and discomfort, usually mild. (A corpus luteum on the ovary in a normal pregnancy may give very similar symptoms).
Vaginal bleeding, usually mild. An ectopic pregnancy is usually a failing pregnancy and falling levels of progesterone from the corpus luteum on the ovary cause withdrawal bleeding. This can be indistinguishable from an early miscarriage or the 'implantation bleed' of a normal early pregnancy.
Pain while having a bowel movement.

3.4 Treatment

1. **Medical**

   Early treatment of an ectopic pregnancy with methrotrexate is a viable alternative to surgical treatment since at least 1993.

   If administered early in the pregnancy, methotrexate terminates the growth of the developing embryo; this may cause an abortion, or the developing embryo may then be either resorbed by the woman's body or pass with a menstrual period. Contraindications include liver, kidney, or blood disease, as well as an ectopic embryonic mass > 3.5 cm.

   Most side effects are mild and temporary, but the patient must be monitored after treatment. Usually the medication is injected into the muscle in a single dose, but may also be given intravenously or injected directly into the fallopian tube to dissolve the embryonic tissue.

   Methotrexate has also been used to treat ovarian, abdominal, and cervical pregnancies that are discovered in the early stages.

   Surgical: If hemorrhage has already occurred, surgical intervention may be necessary. However, whether to pursue surgical intervention is an often difficult decision in a stable patient with minimal evidence of blood clot on ultrasound

   Surgeons use laparoscopy or laparotomy to gain access to the pelvis and can either incise the affected Fallopian and remove only the pregnancy (salpingostomy) This procedure can be done without requiring the patient to stay in the hospital overnight.

   When the pregnancy has ruptured, a surgical incision into the abdomen, or laparotomy, is performed to stop the immediate loss of blood and to remove the embryo. This usually requires general anesthesia and a hospital stay.

Every effort is made to preserve and repair the injured fallopian tube. However, if the fallopian tube has already ruptured, repair is extremely difficult and the tube is usually removed.

2. **Complications**

Blood in Morrison's pouch between the liver and kidney due to a ruptured ectopic pregnancy. The most common complication is rupture with internal haemorrhage which may lead to hypovolemic shock. Death from rupture is rare in women who have access to modern medical facilities.

3. **Prognosis**

Ectopic pregnancies are the leading cause of pregnancy-related deaths in the first trimester and account for 9% of all pregnancy-related deaths in the United States. More than 1% of pregnancies are ectopic, and they are becoming more common.

The reason for this increase is not clearly understood, though it is thought that the dramatic increase in sexually transmitted disease (STD) is at least partly responsible.

The earlier an ectopic pregnancy is diagnosed and treated, the better the outcome. The chances of having a successful pregnancy are lower after an ectopic pregnancy, but depend on the extent of permanent fallopian tube damage. If the tube has been spared, chances are as high as 60%.

The chances of a successful pregnancy after the removal of one tube are 40%.

Prevention: Many forms of ectopic pregnancy cannot be prevented. However, tubal pregnancies, which make up the majority of ectopic pregnancies, may be prevented by avoiding conditions that cause damage to the fallopian tubes.

Since half of all women who experience ectopic pregnancy have a history of PID, avoiding this infection or getting early diagnosis and treatment for sexually transmitted diseases will decrease the risk of a future problem.

4. **Future fertility**

   Fertility following ectopic pregnancy depends upon several factors, the most important of which is a prior history of infertility.

   The treatment choice does not play a major role; A randomized study in 2013 came to the result that the rates of intrauterine pregnancy 2 years after treatment of ectopic pregnancy are approximately 64% with radical surgery, 67% with medication, and 70% with conservative surgery, (Fernandez, Capmas, Lucot, Resch, Panel, Bouyer, 2013).

   In comparison, the cumulative pregnancy rate of women under 40 years of age in the general population over 2 years is over 90%, (Fertility assessment 2013).

In Text Question

Can some of this ectopic pregnancy be prevented? Yes or No

In Text Answer

Yes

Definition of terms

Embryo: In humans, the developing organism from conception until approximately the end of the second month.

Fallopian tube: The tube that carries the egg from the ovary to the uterus.

Human chorionic gonadotropin (hCG): A hormone excreted during the development of an embryo or foetus.

Laparoscopy: Examination of the contents of the abdominal cavity with a fiberoptic tube inserted through a small incision.

Laparotomy: Surgical incision into the abdomen to locate, repair, and/or remove injured or diseased tissues.

Pelvic inflammatory disease (PID): Acute or chronic inflammation in the pelvic cavity, particularly inflammation of the fallopian tubes (salpingitis) and its complications.

Rupture: A breaking apart of an organ or tissue.

Salpingitis: Inflammation of the fallopian tube.

Tubal pregnancy: Pregnancy in one of the fallopian tubes.

Zygote: The fertilized egg.

Summary for Study Session 3

At the end of this study session, you have learnt:

1. The definition and meaning of ectopic pregnancy.
2. The different classifications of ectopic pregnancy.
3. The signs and symptoms associated with ectopic pregnancy patients
4. The general treatment given to ectopic pregnancy patients and how to manage it.

Self-Assessment Question (SAQ) for Study Session 2

SAQ 1

Explain an ectopic pregnancy

SAQ 2

List the classification of ectopic pregnancy and explain any two

SAQ 3

List some of the symptoms of ectopic pregnancy and explain

SAQ 4

Ectopic pregnancy be prevented. Discuss

References

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Study Session 4: Choriocarcinoma

Expected Duration: 1 week of 2 contact hours

Introduction

This study session will discuss the meaning or definition of what is meant by the term "choriocarcinoma", it's pathology, the etiology/epidemiology, the symptoms or signs and finally the treatment.

Learning Outcomes for Study Session

At the end of this study session, you should be able to:

4.1. Define the concept choriocarcinoma.
4.2. Discuss the etiology/epidemiology of choriocarcinoma.
4.3. Describe the symptoms or signs of choriocarcinoma.
4.4. Discuss the treatment of choriocarcinoma.

4.1 Introduction

Choriocarcinoma is a malignant, trophoblastic cancer, usually of the placenta. It is characterized by early hematogenous spread to the lungs. It belongs to the malignant end of the spectrum in gestational trophoblastic disease (GTD). It is also classified as a germ cell tumour and may arise in the testis or ovary.

Choriocarcinima can simply be said to be a fast growing form of cancer that occurs in a woman's uterus (womb). The abnormal cells start in the tissue that would normally become the placenta. This is the organ which now develops during pregnancy to feed the foetus.

BOX 4. 1: DESCRIPTION OF CHORIOCARCINOMA

Choriocarcinomas are cancers that develop from germ cells, cells that ordinarily turn into sperm or eggs. Choriocarcinomas resemble the cells that surround an embryo in the uterus. Most of these cancers form inside the reproductive organs. Some originate in the testes or ovaries, especially in young adults. Others develop in the uterus after a pregnancy or miscarriage - particularly often after a mole.

A few choriocarcinomas arise in sites outside the reproductive organs. Such "extragonadal" tumors are usually found in young adults and are more common in males. Choriocarcinomas are one of the most dangerous germ cell cancers. Choriocarcinomas usually grow quickly and spread widely. Occasionally, this cancer grows so fast that the original tumor outgrows its blood supply and dies, leaving behind only a small scar.

Causes

Choriocarcinoma is a type of cancer which is not common but occurs during pregnancy. It is possible for a baby to either develop or not in this type of pregnancy. This type of cancer may occur after a normal pregnancy and most often that it occurs with a complete hydatidifoam mole as shown in **figure 1**.

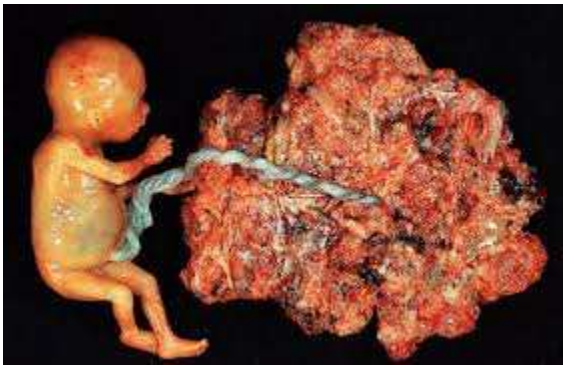

Figure 4.1: Hydatidifoam Mole

Source: http://realchoice.blogspot.com/2009/06/hydatidiform-mole.html

This abnormal tissue which is from the mole can then continue to grow after it is removed, and can then turn into cancer. Almost half of all women with a choriocarcinoma usually have a hydatidifoam mole, or molar pregnancy. Choriocarcinoma can also occur after an early pregnancy that does not continue (miscarriage), or after an ectopic pregnancy or genital tumor.

- **Pathology**

  Characteristic feature is the identification of intimately related syncytiotrophoblasts and cytotropholasts without formation of definite placental type villi. Since choriocarcinomas include syncytiotrophoblasts (beta-HCG producing cells), they cause elevated blood levels of beta-human chorionic gonadotropin.

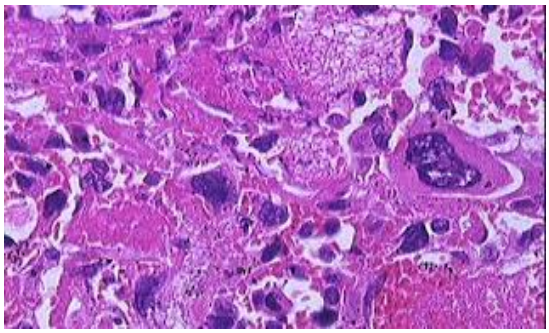

Figure4.2: Choriocarcinoma

Source: http://adlunigroupwiki.wikispaces.com/Choriocarcinoma

Syncytiotrophoblasts are large multi-nucleated cells with eosinophilic cytoplasm. They often surround the cytotrophoblasts, reminiscent of their normal anatomical relationship in chorionic villi. Cytotrophoblasts are polyhedral, mononuclear cells with hyperchromatic nuclei and a clear or pale cytoplasm. Extensive hemorrhage is a common finding.

In Text Question

Choriocarcinoma can be classified as a ……

In Text Answer

Germ cell tumour

4.2 Etiology/Epidemiology

Choriocarcinoma of the placenta during pregnancy is preceded by:

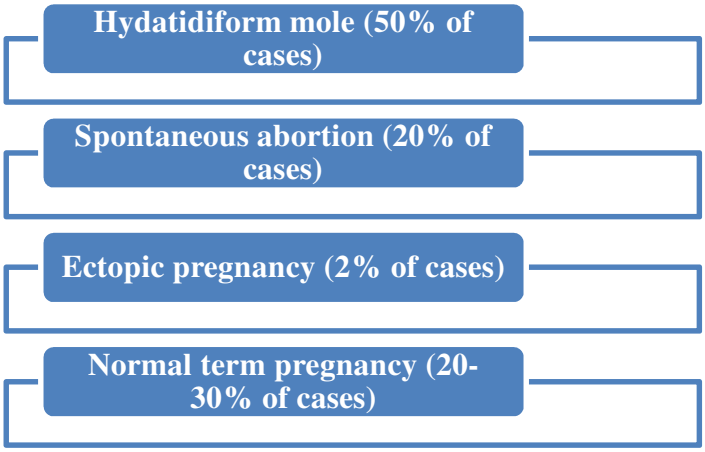

Figure 4.1: Placenta during Pregnancy

Rarely, choriocarcinoma occurs in primary locations other than the placenta; very rarely, it occurs in testicles. Although trophoblastic components are common components of mixed germ cell tumors, pure choriocarcinoma of the adult testis is rare.

Pure choriocarcinoma of the testis represents the most aggressive pathologic variant of germ cell tumors in adults, characteristically with early hematogenous and lymphatic metastatic spread.

Because of early spread and inherent resistance to anticancer drugs, patients have poor prognosis. Elements of choriocarcinoma in a mixed testicular tumor have no prognostic importance Choriocarcinomas can also occur in the ovaries.

In Text Question

Choriocarcinoma of the placenta during pregnancy is not preceded by one of the following

a. Normal term pregnancy
b. Ectopic pregnancy
c. Spontaneous abortion
d. False labour

In Text Answer

False labour

4.3 Symptoms/Signs/Labs

- ❖ Increased quantitative Beta-human chorionic gonadotrophin levels
- ❖ Vaginal bleeding
- ❖ Shortness of breath
- ❖ Haemoptysis (coughing up blood)
- ❖ Chest pain
- ❖ Chest X-ray shows multiple infiltrates of various shapes in both lungs

Presents in males as a testicular neoplasm, sometimes with skin hyperpigmentation (from excess beta hCG cross reacting with the alpha MSH receptor), gynecomastia, and weight loss (from excess beta hCG cross reacting with the TSH receptor) in males can present with increased thyroid stimulating hormone (TSH).

In Text Question

Some of the symptoms of Choriocarcinomas are …….. and ……..

In Text Answer

Vagina bleeding and chest pain

4.4 Treatment

Since gestational choriocarcinoma (which arises from a hydatidiform mole) contains paternal DNA (and thus paternal antigens), it is exquisitely sensitive to chemotherapy. The cure rate, even for metastatic gestational choriocarcinoma, is around 90-95%.

At present, treatment with single-agent methtrexate is recommended for low-risk disease, while intense combination regimens including etoposide, methotrexate, actinomycin D, cyclophosphamide and vincristine (oncovin) are recommended for intermediate or high-risk disease

Hysterectomy (surgical removal of the uterus) can also be offered to patients > 40 years of age or those for whom sterilisation is not an obstacle. It may be required for those with severe infection and uncontrolled bleeding.

Choriocarcinoma arising in the testicle is rare, malignant and highly resistant to chemotherapy. The same is true of choriocarcinoma arising in the ovary. Testicular choriocarcinoma has the worst prognosis of all germ- cell cancers.

In Text Question

Which treatment is recommended for low-risk disease?

In Text Answer

Single-agent methtrexate

Summary for Study Session 4

At the end of this study session, you have learnt:

1. The definition and meaning of the concept choriocarcinoma.
2. The etiology/epidemiology of choriocarcinoma.
3. The symptoms and signs of choriocarcinoma.
4. The treatment of choriocarcinoma.

Self-Assessment Question (SAQ) for Study Session 2

SAQ 1

Briefly describe choriocarcinima.

SAQ 2

Describe the etiology of Choriocarcinima.

SAQ 3

What are the symptoms of choriocarcinoma?

SAQ 4

What are the treatments of choriocarcinoma?

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www.wikipeadia.com

Study Session 5: Rhesus factor - Rh Incompatibility

Expected Duration: 1 week of 2 contact hours

Introduction

There are essentially four types of major blood groups in humans - A, B, AB and O. The Rhesus factor is a substance in blood by which human blood may be divided by its presence into (Rh +ve) or (Rh -ve) groups. The final identification of a blood group is thus O +ve, B –ve etc.

There is some misconception that the same blood group in both partners may be detrimental. This is not true. The actual problem may occur when the mother is Rh -ve and the husband is Rh +ve irrespective of their ABO grouping.

Therefore, this study session will be discussing the meaning of Rhesus factor, how Rh sensitization occurs in a pregnant woman, the signs and symptoms of Rh-ve in pregnancy, and lastly the precautions and general treatment.

Learning Outcomes for Study Session

At the end of this study session, you should be able to:

5.1 Discuss the meaning of rhesus factor.
5.2 Describe how Rh sensitization occurs in a pregnant woman.
5.3 Enumerate the signs and symptoms of Rh-ve in pregnancy.
5.4 Discuss the precautions and general treatment of Rhesus factor.

5.1 Meaning of Rhesus Factor

Rh-ve pregnancy is a pregnancy in which the mother's blood group is Rh-ve and the baby's blood group is Rh+ve, inherited from the father. Its importance lies in the fact that this difference in the Rh factor can produce complications in the baby.

Also known as Rhesus incompatibility, Rhesus disease, it is one of the causes of hemolytic disease of the newborn (HDN / RhD Hemolytic Disease of the Newborn). The disease ranges from mild to severe.

The Rhesus factor is a surface protein found on red blood cells. People who have this factor are said to be Rh positive while people who do not have this protein are said to be Rh negative.

BOX 5.1: DEFINITION OF RHESUS FACTOR

Rhesus (Rh) factor is an inherited trait that refers to a specific protein found on the surface of red blood cells. If your blood has the protein, you're Rh positive - the most common Rh factor. If your blood lacks the protein, you're Rh negative.

The percentage of people who have the Rh factor is more than those who do not have this factor. In the United States, about 15 percent of the white population, 5 to 8 percent of the African-American and Hispanic populations, and 1 to 2 percent of the Asian and Native American populations are Rh-negative.

The main problem with the Rh factor occurs when the blood of an Rh negative person comes in contact with the blood of an Rh positive person. This can cause the Rh negative person to develop antibodies against the Rh factor.

These antibodies never go away and the person is said to be sensitized against the Rh factor. The baby of such a union could be Rh -ve or Rh +ve. For an Rh -ve baby there will be no problems and no precautions need to be taken. For an Rh +ve baby on the other hand complications of varying severity may take place.

Reasons:

Mixing of some blood of the baby and mother occurs throughout every pregnancy but more so at the time of delivery. The mixing of Rh +ve blood (from the baby) as shown in **figure 1** in a Rh -ve mother causes the mother to build up some negative factors (antibodies) in her blood over time against the Rh +ve blood cells. These negative factors may then cross over to the baby through the placenta (afterbirth) and destroy the blood cells of the baby.

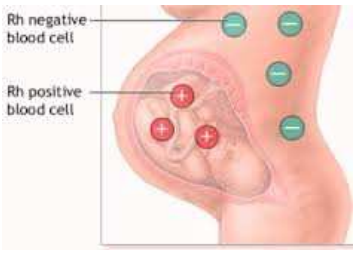

Figure 5.1: rh factor blood

Source: http://www.pinstopin.com/rh-factor-blood/

Usually the first pregnancy is spared, as a few months are needed for the negative factors to be built in the mother's body. In the subsequent pregnancies Rh +ve babies are likely to be affected by the antibodies of the mother. If the mother becomes pregnant with another Rh +ve baby, she now has a readymade supply of Anti-Rh.

The flow of large amounts of her Anti Rh into the child's blood can cause clumping and destruction of child's RBCs. This condition is called *Erythroblatosis Foetalis.* This can result in severe anemia, brain damage or even death. Such reaction takes place in about 1 in 20 cases of a Rh –ve mother and Rh +ve father.

In Text Question

Rhesus (Rh) factor is an inherited trait that refers to a specific protein found on the surface of red blood cells. True or false

In Text Answer

True

5.2 How Rh Sensitization Occurs in a Pregnant Woman

If an Rh negative woman becomes pregnant with an Rh positive baby (the baby can inherit the Rh factor from an Rh positive father), the baby's blood enters the mother's blood circulation sometime during the pregnancy, usually at around 28weeks.

The mother's blood cells recognize the foetal cells as foreign and produce Anti-Rh antibodies as shown in **figure 2** to destroy the cells. Her blood thus becomes sensitized against the Rh factor.

When this sensitized blood carrying the antibodies re-enters the baby, it can attack the baby's blood cells causing them to break down. This can cause acute problems in the baby. The symptoms are usually more acute in the baby which follows the first pregnancy, rather than in the baby which has caused the sensitization.

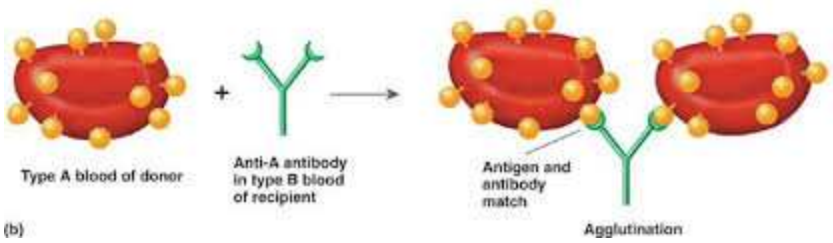

Figure 5.2: Anti-Rh antibodies

Source:http://intranet.tdmu.edu.ua/data/kafedra/internal/clinlab/classes_stud/en/pharm/prov_pharm/ptn/4/03.%20IMMUNOHEMATOLOGICAL%20RESEARCH.htm

The anti-Rh factors have no effect on the mother's cells, but can destroy the fetal red blood cells whenever they come in contact.

In Text Question

List two conditions that Rh Sensitization has occur in a pregnant Woman?

In Text Answer

A miscarriage or abortion.

A bleeding during pregnancy.

5.3 Signs and Symptoms of Rh-ve Pregnancy

Since it is the baby who is affected, there are no significant signs and symptoms in the mother.

Symptoms:

Tests may be done to estimate the amount of negative factors in the mothers' blood. (Indirect Coombs' test).

This gives us an idea of the chances the baby may be affected. If the chances of the baby being affected are high - serial tests of amniotic fluid or blood directly from the baby in the womb are done.

If the condition is mild, early delivery and treatment of the baby is done after birth. If severe, blood transfusions for the baby need to be carried out in the womb. These procedures are done in selected places by specialists and carry a high complication rate.

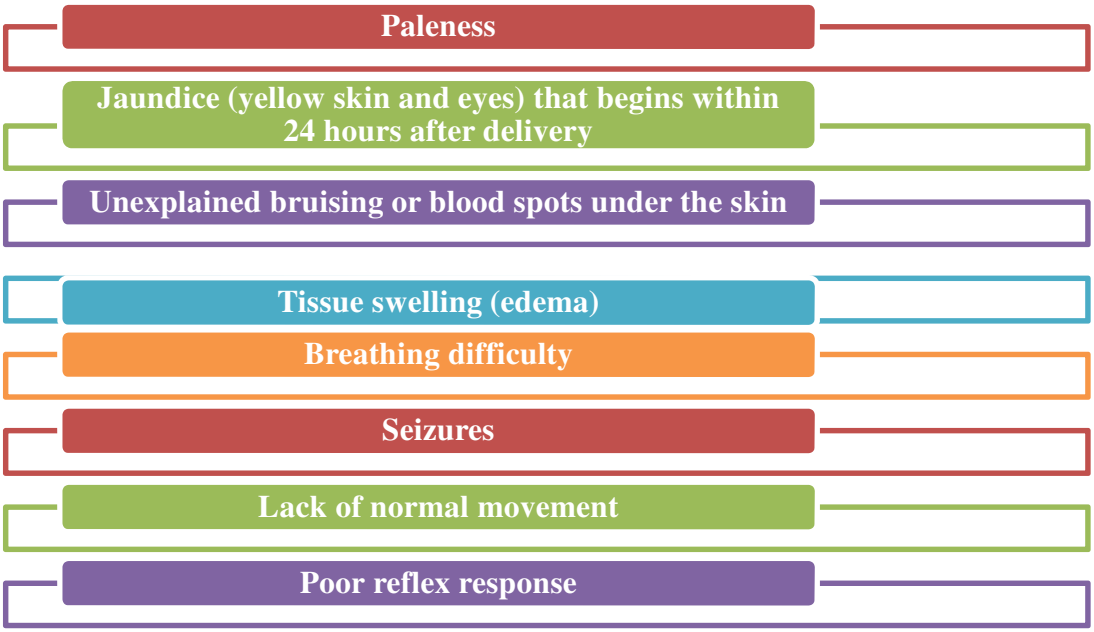

Figure 5.1: Signs in a new-born

5.4 Precaution and General Treatment

Precautions

Injections are given both during pregnancy and soon after delivery to prevent an Rh -ve mother carrying an Rh +ve baby from developing the negative factors. The same injection needs to be given after a miscarriage to neutralize the mixing of blood which occurs in those cases.

General treatment: treatment as explained above essentially depends on the severity of the condition. For severely affected babies, the chance of dying is high. Precautions include early identification of the high-risk pregnancies by checking blood groups with Rh factor for all pregnant women

In Text Question

List some sign of Rh-ve in new-born

In Text Answer

Unexplained bruising or blood spots under the skin.

Tissue swelling (edema).

Breathing difficulty.

Seizures.

Summary for Study Session 5

At the end of this study session, you have learnt:

1. The meaning of Rhesus factor.
2. How Rh sensitization occur in a pregnant woman.
3. The signs and symptoms of Rh-ve pregnancy.
4. The precaution and general treatment for Rh-ve patients.

Self-Assessment Question (SAQ) for Study Session 5

SAQ 1

Discuss the meaning of Rh factor.

SAQ 2

Explain how Rh Sensitization Occurs in a Pregnant Woman.

SAQ 3

Highlight the signs and symptoms of Rh-ve pregnancy and explain them.

SAQ 4

List some sign of Rh-ve in new-born and discuss.

References

Franser, M. D., Cooper, M. A and Nolte, A. G. W., 2009 Myles Textbook for Midwives 15th Edition. London, Elsevier Limited

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Study Session 6: Retroverted Uterus

Expected Duration: 1 week of 2 contact hours

Introduction

A retroverted uterus is the name given to a uterus that is tilted backwards inside of the pelvis. Normally, women are born with a uterus that is located in a straight up and down position inside of the pelvis, or with a uterus that tips slightly forwards, towards the stomach.

However, some women have a uterus that tilts backwards, pointing towards the spine. Commonly referred to as a tipped uterus, this condition affects more than 20% of women worldwide. Generally associated with no health complications, a retroverted uterus can occasionally cause painful symptoms or signal an underlying health disorder.

The vagina is not vertically positioned inside the pelvis. It is slanting towards the lower back. In most women, the uterus is tilted forward so that it lies over the bladder, with the top towards the abdominal wall.

Another normal distinction found in some women is the upright uterus, where the fundus is straight up. One in four women has a retroverted uterus. This translates to the uterus being tipped backwards so that its fundus is aimed toward the rectum. Some women experience symptoms including painful sex even though a retroverted uterus does not cause problems in most cases.

Learning Outcome for Study Session

At the end of this study session, you will be able to:

6.1 Define a retroverted uterus

6.2 List symptoms of a retroverted uterus

6.3 Outline the causes of a retroverted

6.4 List the effects of a retroverted uterus

4.1 Definition of Retroverted Uterus

A retroverted uterus (tilted uterus, tipped uterus) is a uterus that is tilted backwards instead of forwards. This is in contrast to the slightly anteverted uterus that most women have, which is tipped forward toward the bladder, with the anterior end slightly concave. Between 1 in 3 and 1 in 5 women (depending on the source) has a retroverted uterus, which is tipped backwards towards the spine. Other names for retroverted uterus include tipped uterus, retroflexed uterus and uterine retro displacement. A retroverted uterus is not believed to affect a woman's fertility. In most cases, a retroverted uterus doesn't interfere with pregnancy.

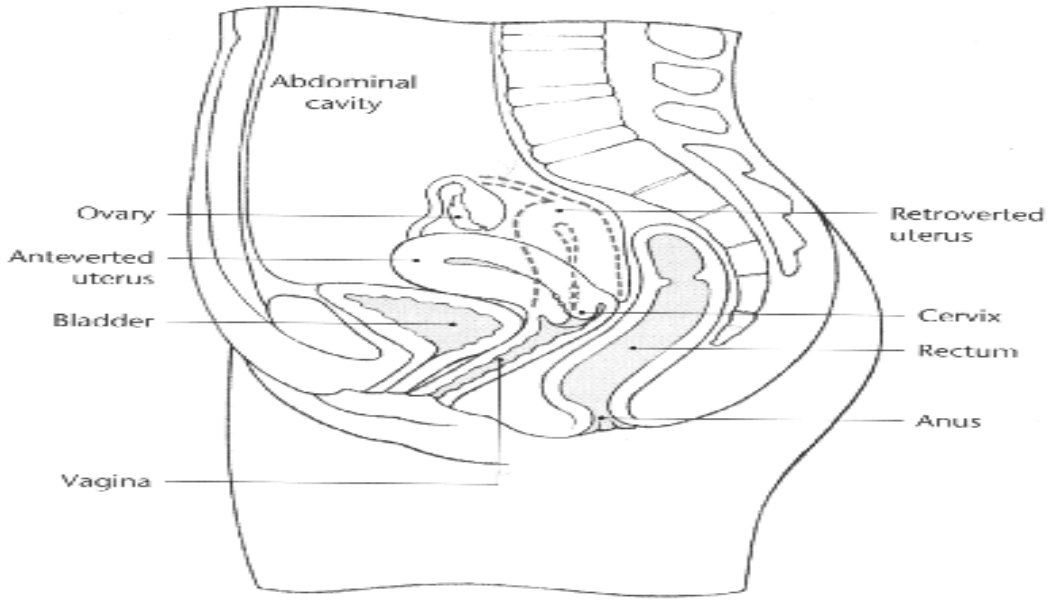

Figure 6.1: Retroverted Uterus :**Source:** http://www.womens-health.co.uk/images/uterus.gif

The vagina is not positioned vertically within the pelvis – it is angled towards the lower back. In most women, the uterus is tipped forward so that it lies over the bladder, with the top (fundus) towards the abdominal wall. Another normal variation found in some women is the right uterus, where the fundus is straight up.

Box 6.1: Definition of Retroverted Uterus
A retroverted uterus (tilted uterus, tipped uterus) is a uterus that is tilted backwards instead of forwards.

About one quarter of women have a retroverted uterus. This means the uterus is tipped backwards so that its fundus is aimed toward the rectum. While a retroverted uterus does not cause problems in most cases, some women experience symptoms including painful sex.

In-Text Question

What is the name given to a uterus that is tilled backwards inside of the pelvis?

In-Text Answer

Retroverted Uterus

6.2 Symptoms of a retroverted uterus

A pelvic exam will show the position of the uterus. However, a tipped uterus can sometimes be mistaken for a pelvic mass or a growing fibroid. A rectovaginal exam may be used to distinguish between a mass and a retroverted uterus.Generally, a retroverted uterus does not cause any problems.

If problems do occur, it will probably be because the woman has an associated disorder like endometriosis.

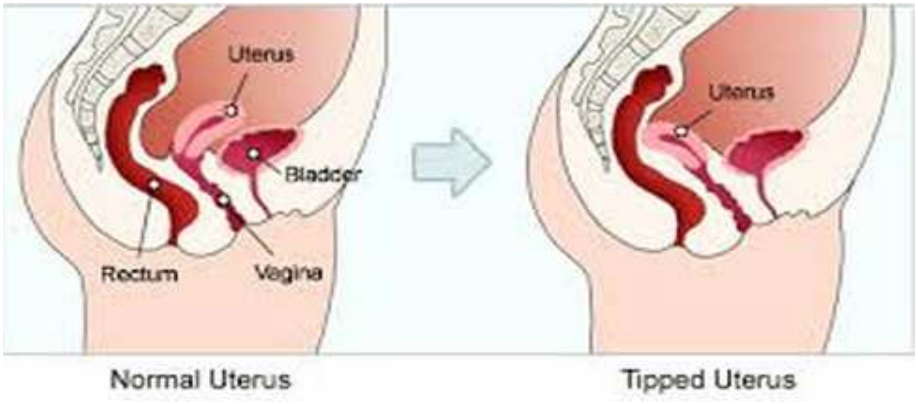

Figure 6.2: Depicting a normal and tipped uterus

Source:http://www.herballove.com/sites/default/files/images/guide/women/intercourse_pain/tipped_uterus_b.gif

In-Text Question: Which of the following is another name for a retroverted uterus?

a. Tipped Uterus
b. Retroverted Uterus

c. Uterine Retro Displacement
d. All of the above

In-Text Answer

d. – All of the above

Disorder like this could cause the following symptoms:

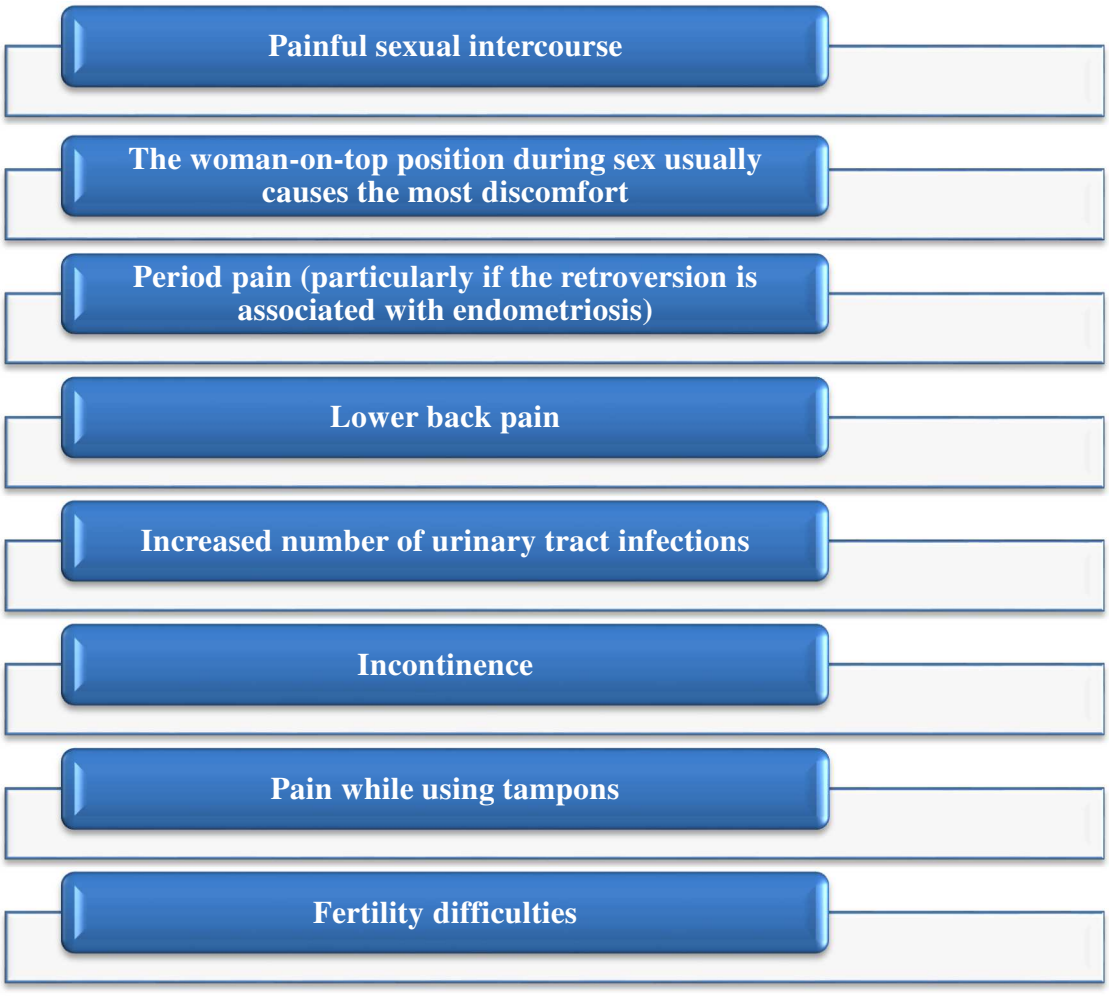

Figure 6.1: Causes of this order in the body

6.3 Causes for a Retroverted Uterus

Some of the causes of a retroverted uterus include:

1. **Natural variation**: Generally, the uterus moves into a forward tilt as the woman matures. Sometimes, this doesn't happen and the uterus remains tipped backwards.

2. **Adhesions** – an adhesion is a band of scar tissue that joins two (usually) separate anatomic surfaces together. Pelvic surgery can cause adhesions to form, which can then pull the uterus into a retroverted position. It may also result from:
   - ❖ Endometriosis
   - ❖ Pelvic inflammatory disease
   - ❖ Salpingitis
   - ❖ Pelvic surgery

3. **Endometriosis**: The endometrium is the lining of the uterus. Endometriosis is the growth of endometrial cells outside the uterus. These cells can cause retroversion by 'gluing' the uterus to other pelvic structures.

4. **Fibroids**: These small, non-cancerous lumps can make the uterus susceptible to tipping backwards.

5. **Pregnancy**: The uterus is held in place by bands of connective tissue called ligaments. Pregnancy can overstretch these ligaments and allow the uterus to tip backwards. In most cases, the uterus returns to its normal forward position after childbirth, but sometimes it does not.
   Weakening pelvic ligaments associated with menopause may cause this condition in women who previously did not have a retroverted uterus.

In-Text Question

_____ is the growth of endometrial cells outside the uterus?

In-Text Answer

Endometriosis

Activity: ***Time Allowed: 15 Minutes***

Explain a retroverted uterus?

6.4 Effects of a Retroverted Uterus

1. **Sexual problems:** In most cases of retroverted uterus, the ovaries and fallopian tubes are tipped backwards too. This means that all of these structures can be 'butted' by the head of the penis during intercourse. This is known as 'collision dyspareunia'. The woman-on-top position usually causes the most pain. It is possible for vigorous sex in this position to injure or tear the ligaments surrounding the uterus.
2. **Fertility issues**: It is thought that a retroverted uterus has no bearing on a woman's fertility.
3. **Retroverted uterus and pregnancy:** In most cases, a retroverted uterus does not interfere with pregnancy. After the first trimester, the expanding uterus lifts out of the pelvis and, for the remainder of the pregnancy, assumes the typical forward-tipped position. In a small percentage of cases, the growing uterus is 'snagged' on pelvic bone (usually the sacrum). This condition is known as 'incarcerated uterus. The symptoms usually occur somewhere between weeks 12 and 14, and can include pain and difficulties passing urine.
4. **Diagnosis of a Retroverted Uterus:** A retroverted uterus is diagnosed by routine pelvic examination. Sometimes, a woman may discover that she has a retroverted uterus during a Pap test. If you are experiencing symptoms such as painful sex, the first action taken by your doctor may include a range of tests to find out if other conditions are causing your retroverted uterus, such as endometriosis or fibroids.

   A pelvic examination reveals the position of the uterus. However, a tipped uterus can sometimes be mistaken for a pelvic mass or an enlarging fibroid. A recto-vaginal exam may be used to distinguish between a mass and a retroverted uterus.

An ultrasound examination can be used to determine the exact position of the uterus, if necessary.

In-Text Question

What kind of exam is carried out to distinguish between a mass and a retroverted uterus?

In-Text Answer

A Rectoriginal Exam

Activity ***Time Allowed: 12 Minutes***

What are the effects of a retroverted uterus?

6.4.1Treatment for a Retroverted Uterus

If a retroverted uterus is causing problems, treatment options can include:

- **Treatment for the underlying condition**: such as hormone therapy for endometriosis.
- **Exercises**: if movement of the uterus isn't hindered by endometriosis or fibroids, and if the doctor can manually reposition the uterus during the pelvic examination, exercises may help. However, the medical profession is divided over whether or not pelvic exercises are worthwhile as a long-term solution. In many cases, the uterus simply tips backwards again.
- **Pessary**: a small silicone or plastics device can be placed either temporarily or permanently to help prop the uterus into a forward lean. However, pessaries have been linked with increased risk of infection and inflammation. Another drawback is that sexual intercourse is still painful for the woman, and the pessary may cause discomfort for her partner too.
- **Surgery**: using laparoscopic ('keyhole') surgery techniques, the uterus can be repositioned so that it sits over the bladder. This operation is relatively straightforward and usually successful. In some cases, the surgical removal of the uterus (hysterectomy) may be considered.

In-Text Question

_____ is a small silicone or plastic device which can be placed either temporarily or permanently to help prop the uterus into a forward lean?

In-Text Answer

Pessary

In-Text Question

Using a _____, the uterus can be repositioned so that it sits over the bladder?

In-Text Answer

Laparoscopic (Keyhole) Surgery

A retroverted uterus is diagnosed by _____?

In-Text Answer
Routine Pelvic Examination

In-Text Question
A _____ can be used to determine the exact position of the uterus?

In-Text Answer
Ultrasound Examination

SELF ASSESSMENT QUESTION SAQs (SAQs) for Study Session 6
Now that you have completed this study session, you can assess how well you have achieved its Learning outcomes by answering the following questions. Write your answers in your study Diary and discuss them with your Tutor at the next study Support Meeting. You can check your answers with the Notes on the Self-Assessment questions at the end of this Module.

SAQ 6.1 (Testing Learning Outcomes 6.1)
Define a retroverted uterus

SAQ 6.2 (Testing Learning Outcomes 6.2)
List symptoms of a retroverted uterus

SAQ 6.3 (Testing Learning Outcomes 6.3)
Outline the causes of a retroverted

SAQ 6.4 (Testing Learning Outcomes 6.4)
List the effects of a retroverted uterus

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http://www.womens-health.co.uk/images/uterus.gif

http://www.herballove.com/sites/default/files/images/guide/women/intercourse_pain/tipped_uterus_b.gif

Study Session 7: Uterine Fibroid

Expected Duration: 1 week of 2 contact hours

Introduction

Uterine fibroids are growths of the uterus that are noncancerous which appear during the years of childbearing in women. Also called leiomyoma or myomas, uterine fibroids are not related to an increased risk of uterine cancer and most likely never develop into cancer. Uterine fibroids develop when a single cell from the smooth muscular tissue of the uterus (myometrium) divides repeatedly.

This creates a firm, rubbery mass distinct from nearby tissue. The growth patterns of uterine fibroids differ and they may grow slowly or rapidly, or they may remain the same size. Some fibroids go through growth spurts, and some may shrink on their own. Many fibroids that have been present during pregnancy shrink or disappear after pregnancy, as the uterus goes back to a normal size.

Fibroids vary in size from sizes unnoticeable by the human eye, to huge masses that can enlarge the uterus. They are extreme cases of fibroids expanding the uterus so much that it reaches the rib cage. As many as 3 out of 4 women have uterine fibroids sometime during their lives, but most are unaware of them because they often cause no symptoms. Your doctor may discover fibroids incidentally during a pelvic exam or prenatal ultrasound.

Learning Outcome for Study Session 7

At the end of this study session, you will be able to:

7.1 Define the term Uterine Fibroid
7.2 List the classification of fibroids by location
7.3 Describe the origin of extra-uterine fibroids
7.4 Identify the signs and symptoms of uterine fibroids

7.1 Uterine Fibroid

A uterine fibroid is a leiomyoma (benign tumour from smooth muscle tissue) that originates from the smooth muscle layer (myometrium) of the uterus. Fibroids are often multiple and if the uterus contains too many leiomyoma to count, it is referred to as diffuse uterine a leiomyomatosis. The malignant version of a fibroid is extremely uncommon and termed a leiomyosarcoma.

Other common names are uterine leiomyoma, myoma, fibromyoma, fibroleiomyoma.

Figure7.1 : Uterine Fibroids

Source:https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcSr1-iEynP3K4zc8tFbf9-zvfiAEQVxn6ix1Nvsjm-FzRFulVQh

Fibroids are the most common benign tumours in females and typically found during the middle and later reproductive years. While most fibroids are asymptomatic, they can grow and cause heavy and painful menstruation, painful sexual intercourse, and urinary frequency and urgency. Some fibroids may interfere with pregnancy although this appears to be very rare.

In-Text Question

What name is given to the small, non-cancerous lumps that make the uterus susceptible to tipping backwards?

In-Text Answer

Fibroids

Pathophysiology

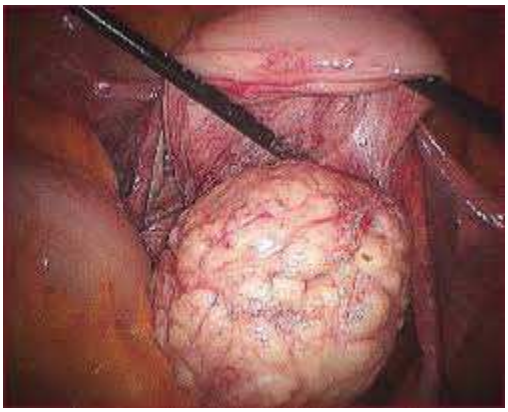


Figure 7.2: An enucleated uterine leiomyoma – external surface on left, cut surface on right.
Source: https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcTfeL0NxryWg-9CQHJBKvkDT-HwxoqdSjtRfYELEAMP32nh0V8p

Leiomyomata grossly appear as round, well circumscribed (but not encapsulated), solid nodules that are white or tan, and show whorled appearance on histological section. The size varies, from microscopic to lesions of considerable size. Typically lesions the size of a grapefruit or bigger are felt by the patient herself through the abdominal wall.
Microscopically, tumour cells resemble normal cells (elongated, spindle-shaped, with a cigar-shaped nucleus) and form bundles with different directions (whorled). These cells are uniform in size and shape, with scarce mitoses. There are three benign variants: bizarre (atypical); cellular; and mitotically active.

Box 7.1: Definition of Uterine Fibroids
Uterine fibroids are growths of the uterus that are noncancerous which appear during the years of childbearing in women.

The appearance of prominent nucleoli with perinucleolar halos should alert the pathologist to investigate the possibility of the extremely rare hereditary leiomyomatosis and renal cell cancer syndrome.

Location and classification

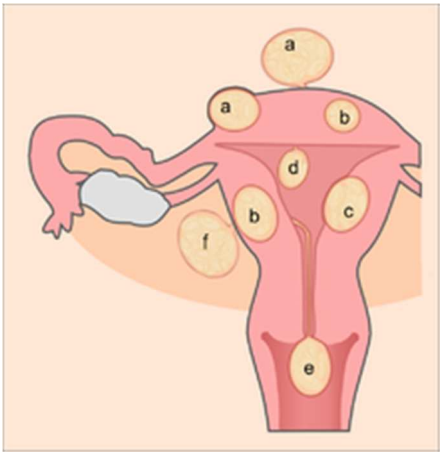


Figure 7.3: Schematic drawing of various types of uterine fibroids: a=subserosal fibroids, b=intramural fibroids, c=sub mucosal fibroid, d=pedunculated sub mucosal fibroid, e=fibroid in statu nascendi, f=fibroid of the broad ligament
Source: https://encrypted-tbn1.gstatic.com/images

Growth and location are the main factors that determine if a fibroid leads to symptoms and problems. A small lesion can be symptomatic if located within the uterine cavity while a large lesion on the outside of the uterus may go unnoticed.

In-Text Question

Which of the following is another name for uterine fibroid?

a. Uterine Leiomyoma
b. All of the above
c. Myoma
d. Fibromyoma

In-Text Answer

b. All of the above

7.2 Classification of Fibroids according to Location

Different locations are classified as follows:

Intramural fibroids: Are located within the wall of the uterus and are the most common type; unless large, they may be asymptomatic. Intramural fibroids begin as small nodules in the muscular wall of the uterus. With time, intramural fibroids may expand inwards, causing distortion and elongation of the uterine cavity.

Subserosal fibroids: Are located underneath the mucosal (peritoneal) surface of the uterus and can become very large. They can also grow out in a papillary manner to become pedunculated fibroids. These pedunculated growths can actually detach from the uterus to become a parasitic leiomyoma.

Submucosal fibroids: are located in the muscle beneath the endometrium of the uterus and distort the uterine cavity; even small lesions in this location may lead to bleeding and infertility. A pedunculated lesion within the cavity is termed an intra-cavitary fibroid and can be passed through the cervix.

Cervical fibroids: are located in the wall of the cervix (neck of the uterus). Rarely fibroids are found in the supporting structures (round ligament, broad ligament, or uterosacral ligament) of the uterus that also contain smooth muscle tissue.

Fibroids may be single or multiple: Most fibroids start in an intramural location that is the layer of the muscle of the uterus. With further growth, some lesions may develop towards the outside of the uterus or towards the internal cavity. Secondary changes that may develop within fibroids are hemorrhage, necrosis, calcification, and cystic changes.

In-Text Question

_____ fibroids are located within the wall of the uterus?

In-Text Answer

Intramural

In-Text Question

_____ fibroids are located under the mucosal surface of the uterus and can become very large?

In-Text Answer

Subserosal

7.3 Extra-Uterine Fibroids of Uterine Origin: Metastatic Fibroids

Fibroids of uterine origin located in other parts of the body, sometimes also called parasitic myomas have been historically extremely rare, but are now diagnosed with increasing frequency. They may be related or identical to metastasizing leiomyoma.

They are in most cases still hormone dependent but may cause life threatening complications when they appear in distant organs. Some sources suggest that a substantial share of the cases may be late complications of surgeries such as myomectomy or hysterectomy. Particularly laparoscopic myomectomy using a morcellator has been associated with a substantially increased risk of this complication.

Activity: ***Time Allowed: 10 Minutes***

Define a Uterine Fibroid?

7.4 Aetiology

Fibroids are monoclonal tumors and approximately 40 to 50% show karyotypical detectable chromosomal abnormalities. When multiple fibroids are present they frequently have unrelated genetic defects.

Exact aetiology is not clearly understood, but the current working hypothesis is that genetic predispositions, prenatal hormone exposure and the effects of hormones, growth factors and xenoestrogens cause fibroid growth.

Known risk factors are African descent, null parity, obesity, polycystic ovary syndrome, diabetes and hypertension.

Fibroid growth is strongly dependent on estrogen and progesterone. Although both estrogen and progesterone are usually regarded as growth-promoting they will also cause growth restriction in some circumstances. Paradoxically, fibroids rarely grow during pregnancy despite very high steroid hormone levels and pregnancy appears to exert a certain protective effect. This protective effect might be partially mediated by an interaction between estrogen and the oxytocin receptor.

7.5 Diagnosis

While a bimanual examination typically can identify the presence of larger fibroids, gynaecologic ultrasonography (ultrasound) has evolved as the standard tool to evaluate the uterus for fibroids.

Sonography will depict the fibroids as focal masses with a heterogeneous texture, which usually cause shadowing of the ultrasound beam. The location can be determined and dimensions of the lesion measured.

Also magnetic resonance imaging (MRI) can be used to define the depiction of the size and location of the fibroids within the uterus.

Imaging modalities cannot clearly distinguish between the benign uterine leiomyoma and the malignant uterine leiomyosarcoma; however, the latter is quite rare.

Fast growth or unexpected growth, such as enlargement of a lesion after menopause; raise the level of suspicion that the lesion might be a sarcoma. Also, with advanced malignant lesions there may be evidence of local invasion.

A more recent study has suggested that diagnostic capabilities using MRI have improved the ability to detect sarcomatous lesions. Biopsy is rarely performed and if performed, is rarely diagnostic. Should there be an uncertain diagnosis after ultrasounds and MRI imaging, surgery is generally indicated.

Figure 7.4: A relatively large submucosal leiomyoma; it fills out the major part of the endometrial cavity

Source:http://images.ookaboo.com/photo/m/Leiomyoma_of_the_Uterus_m.jpg

1. Coexisting Disorders

Fibroids that lead to heavy vaginal bleeding lead to anaemia and iron deficiency. Due to pressure effects gastrointestinal problems such as constipation and bloatedness are possible. Compression of the ureter may lead to hydronephrosis.

Fibroids may also present alongside endometriosis, which itself may cause infertility. Adenomyosis may be mistaken for or coexist with fibroids.

In very rare cases, malignant (cancerous) growths, leiomyosarcoma, of the myometrium can develop. In extremely rare cases uterine fibroids may present as part or early symptom of the hereditary leiomyomatosis and renal cell cancer syndrome.

Activity: ***Time Allowed: 8 Minutes***

List some symptoms of fibroid?

2. Signs and Symptoms

Fibroids, particularly when small, may be entirely asymptomatic. Symptoms depend on the location of the lesion and its size.

Important symptoms include abnormal gynaecologic haemorrhage, heavy or painful periods, abdominal discomfort or bloating, painful defecation, back ache, urinary frequency or retention, and in some cases, infertility.

There may also be pain during intercourse, depending on the location of the fibroid. During pregnancy they may also be the cause of miscarriage, bleeding, premature labour, or interference with the position of the foetus.

While fibroids are common, they are not a typical cause for infertility accounting for about 3% of reasons why a woman may not have a child.

Typically in such cases a fibroid is located in a submucosal position and it is thought that this location may interfere with the function of the lining and the ability of the embryo to implant. Also larger fibroids may distort or block the fallopian tubes.

3. Uterine Fibroid Symptoms

Most fibroids do not cause symptoms—only 10 to 20 per cent of women who have fibroids require treatment. Depending on size, location and number of fibroids, they may cause:

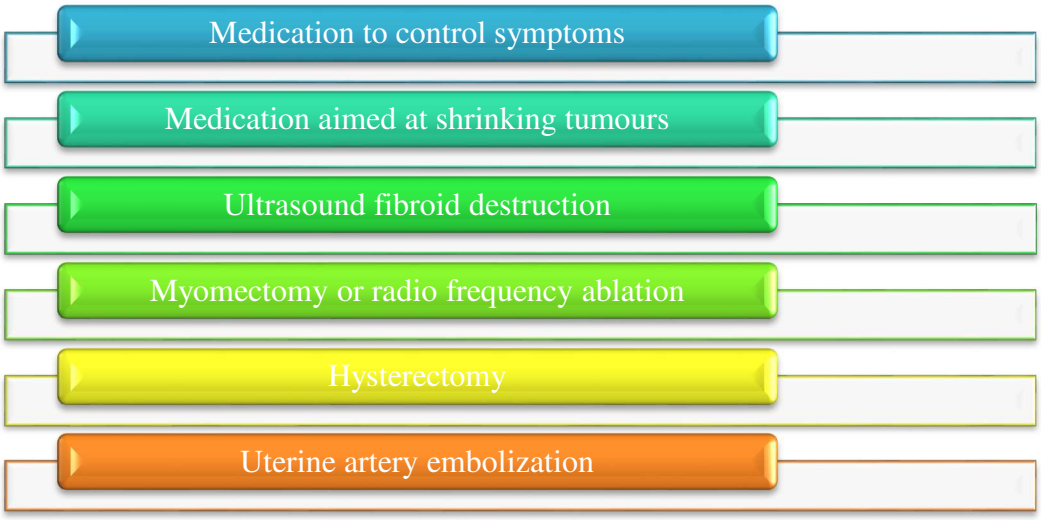
Heavy, prolonged menstrual periods and unusual monthly bleeding, sometimes with clots; **This can lead to anaemia:**

a. Pelvic pain and pressure
b. Pain in the back and legs
c. Pain during sexual intercourse
d. Bladder pressure leading to a frequent urge to urinate
e. Pressure on the bowel, leading to constipation and bloating
f. Abnormally enlarged abdomen

4. Management

Most fibroids do not require treatment unless they are causing symptoms. After menopause fibroids shrink and it is unusual for fibroids to cause problems.

5. **Symptomatic uterine fibroids can be treated by:**



In-Text Question

_____ and _____ are the main factors that determine if a fibroid leads to symptoms and problems?

In-Text Answer

Growth and Location

7.6 Medication

A number of medications are in use to control symptoms caused by fibroids. NSAIDs can be used to reduce painful menses. Oral contraceptive pills are prescribed to reduce uterine bleeding and cramps.

Anaemia may have to be treated with iron supplementation. Levonorgestrel intrauterine devices are highly effective in limiting menstrual blood flow and improving other symptoms.

Side effects are typically very moderate because the Levonorgestrel (a progestin) is released in low concentration locally. There is now substantial evidence that Levongestrel-IUDs provide good symptomatic relief for women with fibroids.

While most Levongestrel-IUD studies concentrated on treatment of women without fibroids a few reported very good results specifically for women with fibroids including a substantial regression of fibroids.

Danazol is an effective treatment to shrink fibroids and control symptoms. Its use is limited by unpleasant side effects. Mechanism of action is thought to be antiestrogenic effects.

Recent experience indicates that safety and side effect profile can be improved by more cautious dosing. Dostinex in a moderate and well tolerated dosis has been shown in 2 studies to shrink fibroids effectively. Mechanism of action is unclear.

Gonadotrophin releasing hormone analogs cause temporary regression of fibroids by decreasing estrogen levels. Because of the limitations and side effects of this medication it is rarely recommended other than for preoperative use to shrink the size of the fibroids and uterus before surgery.

It is typically used for a maximum of 6 months or less because after longer use they could cause osteoporosis and other typically postmenopausal complications. The main side effects are transient postmenopausal symptoms.

In many cases the fibroids will regrow after cessation of treatment, however significant benefits may persist for much longer in some cases.

Several variations are possible, such as GnRH agonists with add-back regimens intended to decrease the adverse effects of estrogen deficiency. Several add-back regimes are possible, tibolone, raloxifene, progestogens alone, estrogen alone, and combined estrogens and progestogens.

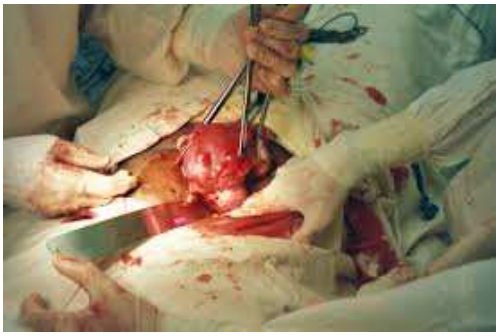


Figure 7.5: A patient undergoing surgery

Source:https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcQQJgpR4hiRkquRp-KkJs3mLLpZViK9CICIrvc96SeHGyIzreyW

1. **Surgery:** Myomectomy is a surgery to remove one or more fibroids. It is usually recommended when more conservative treatment options fail for women who want fertility preserving surgery or who want to retain the uterus. There are three types of myomectomy:

2. **Hysterectomy:** Hysterectomy was the classical method of treating fibroids. Although it is now recommended only as last option, fibroids are still the leading cause of hysterectomies in the US.

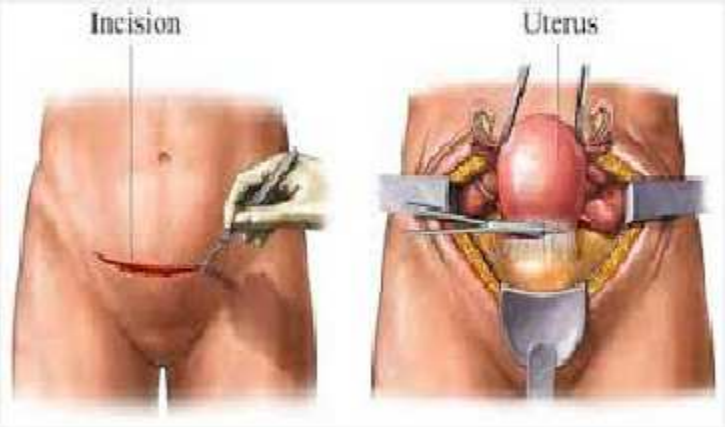


Figure 7.6: Depicts a hysterectomy procedure
Source: https://encrypted-tbn0.gstatic.com/images

3. **Endometrial Ablation:** Endometrial ablation can be used if the fibroids are only within the uterus and not intramural and relatively small. High failure and recurrence rates are expected in the presence of larger or intramural fibroids. Magnetic resonance guided focused ultrasound.

Figure 7.7: Depicts an Endometrial Ablation prcedure
Source: https://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcSd9FAS2rcqhTeDyzpD74gcFuO-ysE1CLpboWTwCG9N_jApRC7nMw

Magnetic resonance guided focused ultrasound is a non-invasive intervention (requiring no incision) that uses high intensity focused ultrasound waves to destroy tissue in combination with magnetic resonance imaging (MRI), which guides and monitors the treatment.

During the procedure, delivery of focused ultrasound energy is guided and controlled using MR thermal imaging. Patients who have symptomatic fibroids, who desire a non-invasive treatment option and who do not have contraindictions for MRI are candidates for MRgFUS. About 60% of patients qualify.

It is an outpatient procedure and takes one to three hours depending on the size of the fibroids. It is safe and about 75% effective. Symptomatic improvement is sustained for two plus years.

4. **Epidemiology**: Globally approximately 235 million people are affected with uterine fibroids as of 2010 (6.6% of females). About 20–40% of women will be diagnosed with leiomyoma at some point in their life but only a fraction of those will cause problems or require treatment.

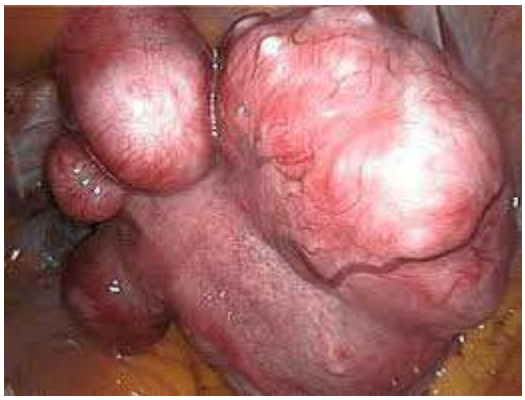


Figure 7.8: Depicts Leimyomata in an obese woman

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Leiomyomata are more common in obese women. Fibroids are dependent on estrogen and progesterone to grow and therefore relevant only during the reproductive years, they are expected to shrink after menopause.

5. **Genetic associations:** An association with fatty acid synthase has been reported

6. **Prognosis:** About 1 out of 1000 lesions is or become malignant, typically as a leiomyosarcoma on histology. A sign that a lesion may be malignant is growth after menopause. There is no consensus among pathologists regarding the transformation of leiomyoma into a sarcoma.

7. **Metastasis:** There are a number of rare conditions in which fibroids metastasize. They still grow in a benign fashion, but can be dangerous depending on their location. In leiomyoma with vascular invasion, an ordinary-appearing fibroid invades into a vessel but there is no risk of recurrence.

Activity: ***Time Allowed: 10 Minutes***

Mention some ways in which Symptomatic uterine fibroids can be treated?

In intravenous leiomyomatosis, leiomyomata grow in veins with uterine fibroids as their source. Cardiac involvement can be fatal. In benign metastasizing leiomyoma, leiomyomata grow in more distant sites such as the lungs and lymph nodes. The source is not entirely clear. Pulmonary involvement can be fatal.
In disseminated intraperitoneal leiomyomatosis, leiomyomata grow diffusely on the peritoneal and omental surfaces, with uterine fibroids as their source. This can simulate a malignant tumour but behaves benignly.

In-Text Question
_____ is a leiomyoma that originates from the smooth layer of the uterus?

In-Text Answer
Uterine Fibroid

In-Text Question
Which type of fibroid is located in the wall of the neck of the uterus?
a. Sub-mucosal Fibroid
b. Cervical Fibroid

c. None of the above
d. Intra-mural Fibroid

In-Text Answer
b. Cervical Fibroid

In-Text Question
Fibroids of uterine origin located in other parts of the body are sometimes called_____?

In-Text Answer
Parasitic Myomas

In-Text Question
_____ has evolved as the standard tool to evaluate the uterus for fibroids?

In-Text Answer
Gynaecologic Ultrasonography

SAQs (SAQs) for Study Session 7
Now that you have completed this study session, you can assess how well you have achieved its Learning outcomes by answering the following questions. Write your answers in your study Diary and discuss them with your Tutor at the next study Support Meeting. You can check your answers with the Notes on the Self-Assessment questions at the end of this Module.

SAQ 7.1 (Testing Learning Outcomes 7.1)
Define the term Uterine Fibroid

SAQ 7.2 (Testing Learning Outcomes 7.2)
List the classification of fibroids by location

SAQ 7.3 (Testing Learning Outcomes 7.3)
Describe the origin of extra-uterine fibroids

SAQ 7.4 (Testing Learning Outcomes 7.4)

Identify the signs and symptoms of uterine fibroids

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Study Session 8: Hyperemesis Gravidarum

Expected Duration: 1 week of 2 contact hours

Introduction

It can be assumed that prior to getting pregnant, you probably imagined that when you woke up in the morning, you would be nauseous, throw up and then carry on with your day. In reality it does not always play out this way.

Whoever decided to call it "morning sickness" was probably sleeping through the day, because this nausea doesn't discriminate between the morning, afternoon or evening.

The condition of Hyperemesis gravidarum is characterized by severe nausea, vomiting, weight loss, and electrolyte disturbance. Dietary changes, rest and antacids are used in treating mild cases. Staying in the hospital is often required in more severe cases so that intravenous line can be administered to the mother in order for her to receive nutrition as well as fluids.

There is no clear explanation as to why nausea occurs during pregnancy, even though it is believed that hormonal changes are the cause. In general, the nausea is not so unbearable, and by mid-pregnancy, you should be relieved of it.

Nevertheless if your nausea and vomiting are excessive, a doctor should be consulted as it may be hyperemesis gravidarum, a rare severe form of morning sickness that results in a poor intake of fluids and food or the foetus being in need of food.

Learning Outcome for Study Session 8

At the end of this study session, you will be able to:

8.1. Define the term Hyperemesis Gravidarum
8.2. List the signs and symptoms of Hyperemesis Gravidarum
8.3. Highlight the management of a woman in pregnancy

8.1 Hyperemesis Gravidarum

Hyperemesis Gravidarum (HG) is a complication of pregnancy characterized by intractable nausea, vomiting and dehydration and is estimated to affect 0.5–2.0% of pregnant women. Malnutrition and other serious complications such as fluid or electrolyte imbalances may result.

Hyperemesis is considered a rare complication of pregnancy, but because nausea and vomiting during pregnancy exist on a spectrum, it is often difficult to distinguish this condition from the more common form of nausea and vomiting experienced during pregnancy known as morning sickness.

Figure 8.1: Morning Sickness

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- **Epidemiology:** Vomiting is a common condition affecting about 50% of pregnant women, with another 25% suffering from nausea. However, the incidence of hyperemesis gravidarum is only 0.3–1.5%. After preterm labour, hyperemesis gravidarum is the second most common reason for hospital admission during the first half of pregnancy.

Factors such as infection with Helicobater pylori, a rise in thyroid hormone production, low age, low body mass index prior to pregnancy, multiple pregnancies, molar pregnancies, and a past history of hyperemesis gravidarum have been associated with the development of hyperemesis gravidarum.

Box 8.1: Definition of Hyperemesis Gravidarum (HG)

Hyperemesis Gravidarum is a complication of pregnancy characterized by intractable nausea, vomiting and dehydration and is estimated to affect 0.5–2.0% of pregnant women.

8.2 Signs and Symptoms of Hyperemesis Gravidarum

When hyperemesis gravidarum is severe and/or inadequately treated, it may result in:

i. Loss of 5% or more of pre-pregnancy body weight
ii. Dehydration, causing ketosis, and constipation
iii. Nutritional disorders such as Vitamin B1 (thiamine) deficiency, Vitamin B6 deficiency or Vitamin B12 deficiency
iv. Metabolic imbalances such as metabolic ketoacidosis or thyrotoxicosis.
v. Physical and emotional stress of pregnancy on the body
vi. Difficulty with activities of daily living.

Symptoms can be aggravated by hunger, fatigue, prenatal vitamins (especially those containing iron), and diet. Some women with hyperemesis gravidarum lose as much as 10% of their body weight.

Many sufferers of HG are extremely sensitive to odors in their environment; certain smells may exacerbate symptoms. This is known as hyperolfaction. Ptyalism, or hyper-salivation, is another symptom experienced by some women suffering from HG.

Hyperemesis gravidarum tends to begin somewhat earlier in the pregnancy and last significantly longer than morning sickness.

While most women will experience near-complete relief of morning sickness symptoms near the beginning of their second semester, some sufferers of HG will experience severe symptoms until they give birth to their baby, and sometimes even after giving birth.

Causes

While there are numerous theories regarding the cause of HG, the cause remains controversial. It is thought that HG is due to a combination of factors which may vary between women and include: genetic, body chemistry, and overall health.

One factor is an adverse reaction to the hormonal changes of pregnancy, in particular, elevated levels of beta human chorionic gonadotropin.

This theory would also explain why hyperemesis gravidarum is most frequently encountered in the first trimester (often around 8–12 weeks of gestation), as HG levels are highest at that time and decline afterward.

Another postulated cause of HG is an increase in maternal levels of estrogen (decreasing intestinal motility and gastric emptying leading to nausea/vomiting).

- **Diagnosis:** Hyperemesis gravidarum is considered an exclusion. It can be associated with serious maternal and foetal morbidity, such as Weenicke's encephalopathy, coagulopathy, peripheral neuropathy, foetal growth restriction and even maternal and foetal death.

  Women experiencing hyperemesis gravidarum often are dehydrated and lose weight despite efforts to eat. The onset of the nausea and vomiting in hyperemesis gravidarum is typically before the twenty-second week of pregnancy.

- **Investigations:** Common investigations include Blood Urea Nitrogen (BUN) and electrolytes, liver function test, urinalysis and thyroid function tests. Haematological investigations include haematocrit levels, which are usually raised hyperemesis gravidarum.

  An ultrasound scan may be needed to know gestational status and to exclude molar or partial molar pregnancy.

Activity	***Time Allowed: 10 Minutes***

What are the sign of Hyperemesis gravidarum?

8.3 Management of woman in pregnancy

The type of treatment that is required depends on how ill a woman becomes.

Possible treatments might include:

Dry bland food and oral rehydration are first-line treatments. Due to the potential for severe dehydration and other complications, Hyperemesis gravidarum is treated as an emergency. If conservative dietary measures fail, more extensive treatment such as the use of antiemetic medications and intravenous rehydration may be required.

If oral nutrition is insufficient, intravenous nutritional support may be needed. For women who require admission to the hospital, thromboprophylaxis such as thromboembolic stockings or low molecular weight heparin may be recommended.

1. **Intravenous Fluids**

   IV hydration often includes supplementation of electrolytes as persistent vomiting frequently leads to a deficiency. Likewise, supplementation for lost thiamine (Vitamin B_1) must be considered to reduce the risk of Wernicke's encephalopathy.

   A and B vitamins are depleted within two weeks, so extended malnutrition indicates a need for evaluation and supplementation.

   In addition, mineral levels should be monitored and supplemented; of particular concern are sodium and potassium.

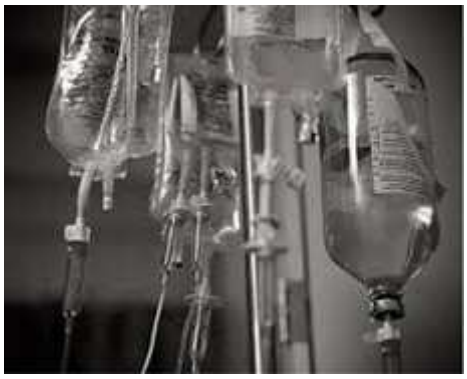


Figure 8.2: Intravenous Fluids

Source: http://www.subhralife.com/images/ivfluidspic.jpg

After IV rehydration is completed, patients in general progress to frequent small liquid or bland meals. After rehydration, treatment focuses on managing symptoms to allow normal intake of food. However, cycles of hydration and dehydration can occur, making continuing care necessary.

Home treatment is often less expensive than long-term and/or repeated hospital stays. So the client and relations are advised on how to prevent and or manage hyperemesis gravidarum at home.

2. **Medications**

   A number of antiemetics are effective and safe in pregnancy including: pyridoxine/doxylamine, antihistamines (such as diphenhydramine), and phenothiazines

(such as promethazine). With respect to effectiveness, it is unknown if one is superior to another.

Figure 8.3: Depicts Antimetics drugs which are effective against vomiting and nausea
Source: http://2.imimg.com/data2/EN/SY/MY-2049893/antiulcer-ppi-antiemetics-250x250.jpg

While pyridoxine/doxylamine, a combination of Vitamin B6 and doxylamine, is effective in nausea and vomiting of pregnancy, some have questioned its effectiveness in hyperemesis gravidarum.

Ondansetron (Zofran) may be beneficial, however, there are some concerns regarding an association with cleft palate and there is little high quality data. Metoclopramide is also used and relatively well tolerated.

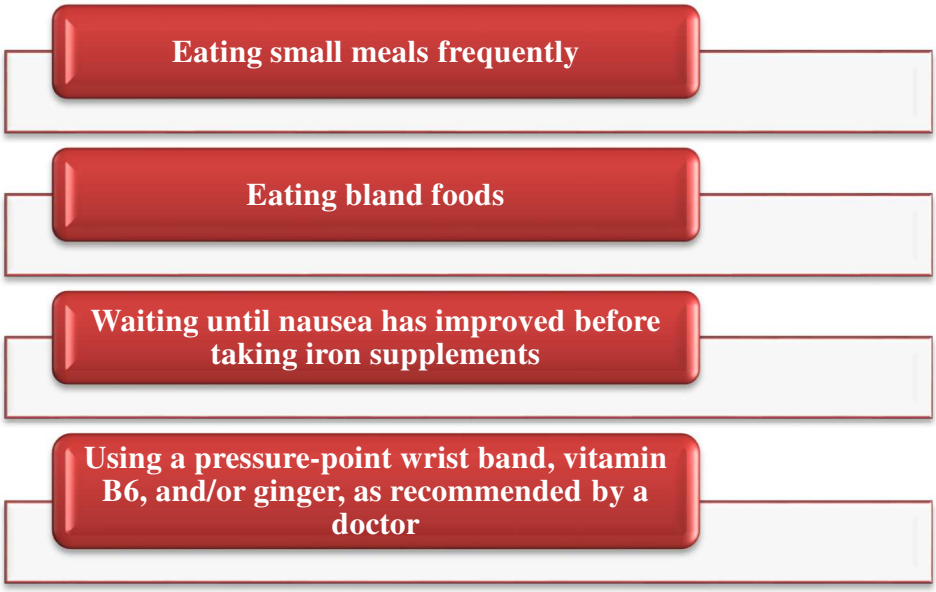
3. **Nutritional support**

Women not responding to IV rehydration and medication may require nutritional support. Patients might receive **Total parenteral nutrition**—where complex, balanced solutions of nutrients are given through an IV throughout pregnancy.

This is called total parenteral nutrition (TPN) or enteral nutrition (via a nasogastric tube or a nasojejunal tube). Vitamin B6 has been shown to improve outcome.
Hyper alimentation may be necessary in certain cases to help maintain volume requirements and allow weight gain. A physician might also prescribe Vitamin B1 (to prevent Wernicke's encephalopathy) and folic acid supplementation.

4. Prevention

Although there are no known ways to completely prevent hyperemesis gravidarum, the following measures might help keep morning sickness from becoming severe:



Complications:

- **Pregnant woman**

  If hyperemesisi gravidarum is inadequately treated, anemia, hyponatremia, Wernicke's encephalopathy, renal failure, central pontine myelinolysis, coagulopathy, atrophy, Mallory-Weiss tears, hypoglycemia, jaundice, malnutrition, pneumomediastinum, rhabdomyolysis, deconditioning, deep vein thrombosis, pulmonary embolism, splenic avulsion, or vasospasms of cerebral arteries are possible consequences.

  Depression is a common secondary complication of hyperemesis gravidarum and emotional support can be beneficial.

- **Infant**

  The effects of hyperemesis gravidarum on the foetus are mainly due to electrolyte imbalances caused by hyperemesis gravidarum in mother.

  Infants of women with severe hyperemesis who gain less than 7 kg (15.4 lb) during pregnancy tend to be of lower birth weight, small for gestational age, and born before 37 weeks gestation. In contrast, infants of women with hyperemesis who have a pregnancy weight gain of more than 7 kg appear similar to infants from uncomplicated pregnancies.

Activity ***Time Allowed: 10 Minutes***

What effect does hyperemesis gravidarum have on infant?

There is no significant difference in the neonatal death rate in infants born to mothers with hyperemesis gravidarum compared to infants born to mothers who do not have hyperemesis gravidarum.

In-Text Question

What pregnancy complication is characterized by intractable nausea, vomiting and dehydration?

In-Text Answer

Hyperemesis Gravidarum

In-Text Question

Which of the following is a factor of an infection with Helicobater pylori?

a. Molar Pregnancies
b. Multiple Pregnancies
c. A rise in thyroid hormone production
d. None of the above
e. All of the above

In-Text Answer

e. All of the above

In-Text Question

Mention four (4) factors that trigger Hyperemesis Gravidarum?

In-Text Answer

Hunger, Fatigue, Prenatal Vitamins and Diet

In-Text Question

The condition in which sufferers of hyperemesis gravidarum are sensitive to odours in their environment is known as_____?

In-Text Answer

Hyper olfaction

In-Text Question

In investigating hyperemesis, mention three (3) tests that are carried out?

In-Text Answer

Liver Function Test, Urinalysis and Thyroid Function Tests

SAQs (SAQs) for Study Session 8

Now that you have completed this study session, you can assess how well you have achieved its Learning outcomes by answering the following questions. Write your answers in your study Diary and discuss them with your Tutor at the next study Support Meeting. You can check your answers with the Notes on the Self-Assessment questions at the end of this Module.

SAQ 8.1 (Testing Learning Outcomes 8.1)

Define the term Hyperemesis Gravidarum

SAQ 8.2 (Testing Learning Outcomes 8.2)

List the signs and symptoms of Hyperemesis Gravidarum

SAQ 8.3 (Testing Learning Outcomes 8.3)

Highlight the ways in which Hyperemesis Gravidarum can be prevented

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Study Session 9: Problems of Pregnancy

Expected Duration: 1 week of 2 contact hours

Introduction

Your body has unlimited functions during pregnancy. Occasionally the changes occurring will cause irritation or discomfort, and in most cases they may seem be frightening. There is no need to be alarmed, however you should mention anything that is distressing you to doctor.

There are some conditions that arise in pregnancy and constitute problems to the woman and or the baby, they include: Hypertensive disorder, multiple pregnancy, abdominal pain in pregnancy, Ante-partum haemorrhage, disseminated intravascular coagulopathy, jaundice in pregnancy, Poly- hydraminous, Oligohydraminous etc.

Learning Outcomes for Study Session 9

At the end of this study session, you will be able to:

9.1 Define and explain hypertensive disorder in pregnancy
9.2 Enumerate Etiopathological factors for pre-eclampsia
9.3 Describe the Patients with pre existing hypertension who become pregnant
9.4 List and describe the complications
9.5 Discuss the prevention and management of hypertension in pregnancy

9.1 Gestational Hypertension

Gestational Hypertension or **Pregnancy-Induced Hypertension** (PIH) is defined as the development of new arterial hypertension in a pregnant woman after 20 weeks gestation without the presence of protein in the urine.

Hypertensive disorders in pregnancy are a major cause of maternal, foetal, and neonatal morbidity and mortality in both developing and developed countries. Hypertension is the most common medical problem in pregnancy, complicating up to 15% of pregnancies and accounting for about a quarter of all antenatal admissions in the UK.

9.1.1Classification of Pregnancy induced Hypertension

There exist several hypertensive states of pregnancy:

i. **Gestational Hypertension**

   Gestational hypertension is usually defined as having a blood pressure higher than 140/90 measured on two separate occasions, more than 6 hours apart, without the presence of protein in the urine and diagnosed after 20 weeks of gestation.

ii. **Pre-Eclampsia**

   Pre-eclampsia is gestational hypertension plus proteinuria (>300 mg of protein in a 24-hour urine sample). Severe preeclampsia involves a blood pressure greater than 160/110, with additional medical signs and symptoms.

iii. **Eclampsia**

   This is when tonic-clonic seizures appear in a pregnant woman with high blood pressure and proteinuria.

9.1.2 HELLP Syndrome

This is a dangerous combination of three medical conditions: Haemolytic anaemia, Elevated Liver enzymes and Low Platelet count.

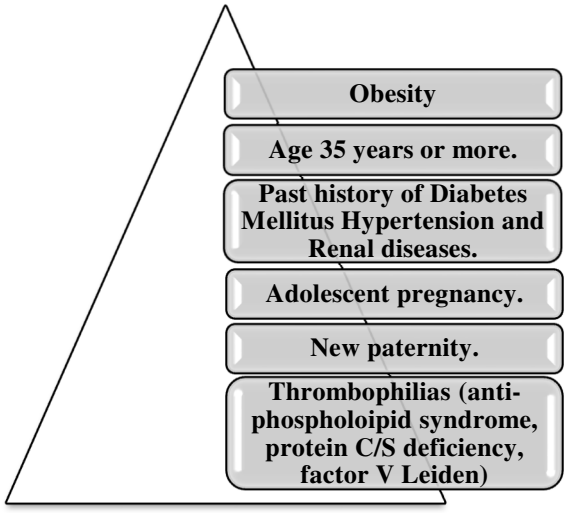
This is sometimes included in the pre-eclamptic spectrum.

Pre-eclampsia in addition to pre-existing chronic hypertension

Pre-eclampsia and eclampsia are sometimes treated as components of a common syndrome.

Classification of causes:

A. Maternal causes e.g:



B. Pregnancy:

Multiple gestations (twins or triplets, etc.)

Placental abnormalities:

1. Hyperplacentosis: Excessive exposure to chorionic villi.
2. Placental Ischemia.

C. Family History: Family history of pre-eclampsia.

9.2 Aetiopathological Factors for pre-eclampsia

i. Failure to trophoblastic invasion (abnormal placentation)
ii. Vascular endothelial damage
iii. Inflammatory mediator (cytokines)
iv. Immunological intolerance between maternal and foetal tissues
v. Coagulation abnormalities
vi. Increased oxygen free radicals
vii. Genetic predisposition (polygenic disorders)
viii. Dietary deficiency or excess

Treatment

There is no specific treatment, but is monitored closely to rapidly identify pre-eclampsia and its life-threatening complications (HELLP syndrome and eclampsia).Drug treatment options are limited, as many antihypertensives may negatively affect the foetus. Methyldopa, hydralazine, and labetalol are most commonly used for severe pregnancy hypertension.

The foetus is at increased risk for a variety of life-threatening conditions, including pulmonary hypoplasia (immature lungs). If the dangerous complications appear after the foetus has reached a point of viability, even though still immature, then an early delivery may be warranted to save the lives of both mother and baby.

An appropriate plan for labour and delivery includes selection of a hospital with provisions for advanced life support of new-born babies.

Box 9.1: Definition of Gestational Hypertension

Gestational hypertension is usually defined as having a blood pressure higher than 140/90 measured on two separate occasions, more than 6 hours apart, without the presence of protein in the urine and diagnosed after 20 weeks of gestation.

❖ **Complications**

Women with hypertension in pregnancy have a higher risk of complications such as; Abruptio placentae, Cerebrovascular accident, disseminated intravascular coagulopathy,

The foetus has an increased risk of:

i. Intrauterine growth restriction.
ii. Prematurity.
iii. Intrauterine death.
iv. Management

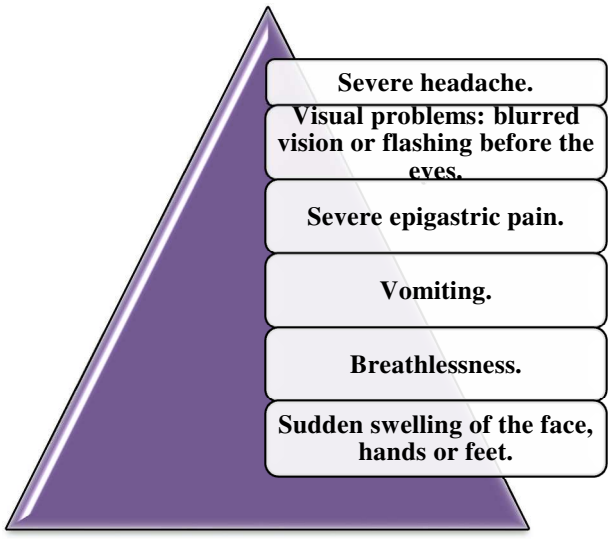
Management depends on the woman's blood pressure, gestational age and blood flow in the placenta. Non-pharmacological management is recommended for many women but is not recommended when there is the presence of associated maternal and fetal risk factors. Non-pharmacological management includes close supervision, limitation of activities, and some bed rest in the left lateral position.

All pregnant women should receive antenatal education so that they are aware of the symptoms associated with pre-eclampsia, its importance, and the need to obtain medical advice.

Box 9.2: Definition of Pre-Eclimpsia

Pre-Eclampsia is gestational hypertension plus proteinuria (>300 mg of protein in a 24-hour urine sample). Severe preeclampsia involves a blood pressure greater than 160/110, with additional medical signs and symptoms.

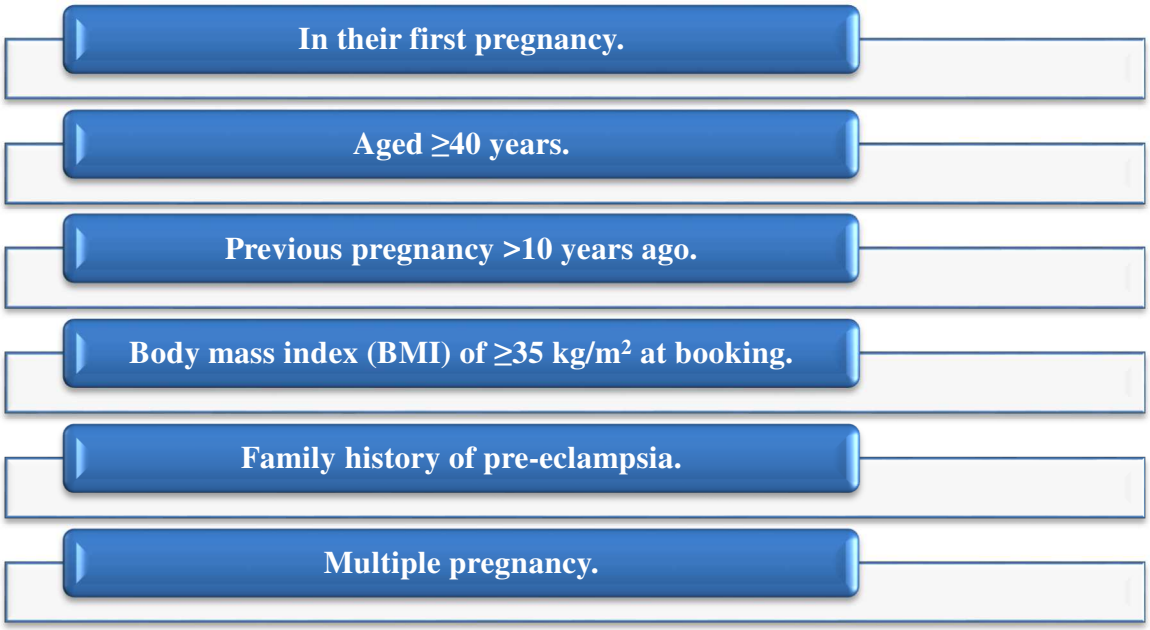
Such symptoms associated with pre-eclampsia include:



Women who are at high risk of pre-eclampsia are usually recommended to take 75 mg aspirin from 12 weeks of gestation to delivery. Such women are those with:

a. Hypertension in a past pregnancy.
b. Chronic kidney disease.
c. Autoimmune disease (eg, systemic lupus erythematosus (SLE) or antiphospholipid syndrome).
d. Diabetes mellitus (both type 1 or 2).
e. Chronic hypertension.

Women should also take aspirin -75 mg daily - from the 12th week if they have any **two** of the following features:



9.3 Patients with pre-existing hypertension who become pregnant

Review medication and inform the patient of the risks involved with some medications. Those on angiotensin-converting enzyme (ACE) inhibitors or angiotensin-II receptor antagonists (AIIRAs) should be switched from these as soon as possible, as there is an increased risk of congenital abnormalities if these drugs are taken during pregnancy.

Ideally this will have been done at a pre-pregnancy counselling session, but if not it should be done as early as possible in the pregnancy. Diuretics should be avoided, as they can reduce the blood flow in the placenta. Aim to keep BP lower than 150/100 mm Hg (140/90 mm Hg if there is target organ damage) although do not seek to lower the diastolic level below 80 mm Hg.

Test for proteinuria regularly - if this shows ≥1+ arrange a spot urinary protein: creatinine ratio or 24-hour urine collection to quantify proteinuria. There is significant proteinuria if urinary protein: creatinine ratio is >30 mg/mmol or 24-hour urine collection has >300 mg protein (treat the patient as for pre-eclampsia - see 'Pre-eclampsia (hypertension with proteinuria and oedema)', below).

Ultrasound examination is used to assess fetal growth and amniotic fluid volume (with umbilical artery Doppler velocimetry) at 28-30 weeks and 32-34 weeks.

After delivery - If methyldopa is used - switch back to the pre-pregnancy antihypertensive regime within two days of delivery.

9.3.1 Gestational Hypertension

Assess severity:

1. **Mild:** 140-149/90-99 mm Hg. For patients presenting before 32 weeks (or at high risk of pre-eclampsia), measure BP twice a week; otherwise, measure BP no more often than weekly. Check urine for protein at each visit.
2. **Moderate:** 150-159/100-109 mm Hg. Monitor BP twice a week - start labetalol (alternatives are methyldopa or nifedipine) to keep systolic BP <150 mm Hg and diastolic BP between 80-100 mm Hg. Dip urine for protein at each visit. Arrange initial blood tests for FBC, electrolytes, renal function, and LFTs. Subsequent blood tests are not necessary if there is no proteinuria.
3. **Severe:** ≥160/110 mm Hg. Admit to hospital in a very quiet room. Treat as for moderate (above) to keep systolic BP <150 mm Hg and diastolic BP between 80-100 mm Hg. Measure BP at least four times a day and check urine for protein daily.

   Weekly blood tests for FBC, electrolytes, renal function, and LFTs. Check BP and urine twice weekly (and continue weekly blood tests) when discharged (once BP is in the target range).

   Perform ultrasound examination at 34 weeks to assess fetal growth and amniotic fluid volume (with umbilical artery Doppler velocimetry) if mild or moderate gestational hypertension develops before this time. Arrange these tests and cardiotocography urgently whenever severe gestational hypertension is diagnosed.

After birth, measure BP daily for the first two days after birth, at least once between day three and day five, then as clinically indicated. Continue on antihypertensive medication, but reduce or stop if BP is seen to be falling - particularly if it falls below 130/80 mm Hg. Switch women from methyldopa to an alternative within two days of delivery.

Women with mild hypertension not requiring treatment during pregnancy should be started on antihypertensive medication postnatally if their BP is ≥150/100 mm Hg.

Pre-eclampsia (hypertension with proteinuria and oedema)

Admit and monitor the patient in hospital. Always ask about headache and epigastric pain each time BP is taken, to alert for any indication of progression towards eclampsia.

4. **Assess severity:**
5. **Mild**: 140-149/90-99 mm Hg. Monitor BP at least four times per day. Twice-weekly blood tests for FBC, electrolytes, renal function, and LFTs.
6. **Moderate**: 150-159/100-109 mm Hg or **Severe**: ≥160/110 mm Hg. Monitor BP at least four times per day. Start labetalol (or alternative) to keep systolic BP <150 mm Hg and diastolic BP between 80-100 mm Hg. Blood tests three times per week.

   Perform ultrasound examination to assess fetal growth and amniotic fluid volume (with umbilical artery Doppler velocimetry) and cardiotocography whenever pre-eclampsia is diagnosed.

   Repeat cardiotocography if there is a change in fetal movements, vaginal bleeding, abdominal pain or deterioration in maternal condition. Pre-eclampsia will usually be managed conservatively (i.e. without delivery of the baby) until at least 34 weeks.

The management plan for delivery (including thresholds for early delivery) will be discussed with the parents on an individual basis and documented in the notes.

Patients with mild or moderate pre-eclampsia are usually delivered between 34^{+0} to 36^{+6} weeks depending on assessment of risk and availability of a special care baby unit, with fetal monitoring and after a course of corticosteroids to reduce the risk of infant respiratory distress syndrome (if appropriate).

Signs of complications developing include headache, epigastric pain, papilledema, hepatic tenderness, signs of clonus (>3 beats), HELLP syndrome (= **H**aemolysis, **EL** (elevated liver) enzymes, **LP** (low platelet) count), platelet count falling (below 100 x 10^9/L), abnormal liver enzymes (ALT or AST >70 IU/L).

Consider anticonvulsants (usually intravenous magnesium sulfate).

7. **Intrapartum:** with mild and moderate hypertension (140/90-159/109 mm Hg), measure BP hourly; with more severe hypertension, measure continually.

8. After birth, stop methyldopa (if used) within two days and avoid diuretics if breast-feeding, measuring BP at least four times daily whilst in hospital. Continue to ask about headaches and epigastric pain whenever BP is taken. Measure FBC, LFT and creatinine 72 hours after birth and only repeat after this if abnormal.

   Step down care (ie to community midwives) when BP is <150/100 mm Hg and blood tests are stable or improving without any pre-eclamptic symptoms.Reduce BP treatment if BP falls to <130/80 mm Hg (consider reducing when <140/90 mm Hg).

9. Measure BP every 1-2 days for up to two weeks after transfer to community care (or until antihypertensive treatment is stopped). Continue to monitor (i.e. weekly) and arrange a medical review at two weeks postnatal if still requiring medication.

   Monitor BP at least until the 6-week check where a urine dip should also be performed (and arrange repeat FBC, creatinine and LFTs unless they have previously returned to normal).

Activity: ***Time Allowed: 15 Minutes***

What recommendation will you give a pregnancy woman with high risk of pre-eclampsia?

9.4 Prognosis

Hypertensive diseases of pregnancy remain the second leading cause of direct maternal deaths in the UK.

However, most women with pre-existing mild to moderate hypertension (BP less than 160/110 mm Hg) are at low risk of perinatal complications.

The risks of complications (e.g., pre-eclampsia, placental abruption, impaired fetal growth and premature birth) are increased in severe hypertension.

Gestational hypertension: similar risks to normotensive women, but 40% of those presenting before 34 weeks of gestation will go on to develop pre-eclampsia.

Women who develop gestational hypertension or pre-eclampsia are at increased risk of hypertension, cardiovascular disease and stroke in later adult life.

Hypertensive disorders in pregnancy are an important risk factor for cardiovascular disease in women. Therefore, lifestyle modifications, regular BP control, and control of metabolic factors are recommended after delivery, to avoid complications in subsequent pregnancies and to reduce maternal cardiovascular risk in the future.

9.4.1 Prevention

Low-dose aspirin: see recommendation in high-risk groups as detailed under 'Epidemiology', above.

Calcium supplementation: appears to reduce the risk of high BP in pregnancy, particularly for women at high risk of gestational hypertension and in communities with low dietary calcium intake.

Assess Severity:

i. **Mild**: 140-149/90-99 mm Hg. Monitor BP at least four times per day. Twice-weekly blood tests for FBC, electrolytes, renal function, and LFTs.

ii. **Moderate**: 150-159/100-109 mm Hg or **Severe**: ≥160/110 mm Hg. Monitor BP at least four times per day. Start labetalol (or alternative) to keep systolic BP <150 mm Hg and diastolic BP between 80-100 mm Hg. Blood tests three times per week.

Perform ultrasound examination to assess foetal growth and amniotic fluid volume (with umbilical artery Doppler velocimetry) and cardiotocography whenever pre-eclampsia is diagnosed. Repeat cardiotocography if there is a change in foetal movements, vaginal bleeding, abdominal pain or deterioration in maternal condition.

Activity: ***Time Allowed: 15 Minutes***

How will you treat someone hypertension with proteinuria and oedema?

SAQs (SAQs) for Study Session 9

Now that you have completed this study session, you can assess how well you have achieved its Learning outcomes by answering the following questions. Write your answers in your study Diary and discuss them with your Tutor at the next study Support Meeting. You can check your answers with the Notes on the Self-Assessment questions at the end of this Module.

SAQ 9.1 (Testing Learning Outcomes 9.1)

Define and explain hypertensive disorder in pregnancy

SAQ 9.2 (Testing Learning Outcomes 9.2)

Enumerate the risk factors of hypertension

SAQ 9.3 (Testing Learning Outcomes 9.3)

Describe the presenting signs

SAQ 9.4 (Testing Learning Outcomes 9.4)

List and describe the complications

SAQ 9.3 (Testing Learning Outcomes 9.3)

Discuss the prevention and management of hypertension in pregnancy

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Study Session 10: Abdominal Pain in Pregnancy

Expected Duration: 1 week of 2 contact hours

Introduction

Abdominal pain in pregnancy may be difficult to diagnose. Urgent hospital referral is often required, unless a benign cause can be established with certainty in the absence of maternal or foetal distress. Occasional abdominal discomfort is a common pregnancy complaint, and while it may be harmless, it can also be a sign of a serious problem. (Severe or persistent abdominal pain should never be ignored.)

In early pregnancy, ectopic pregnancy must be excluded before diagnosing any other cause of abdominal pain.

Assessment of abdominal pain is more complex in pregnant women because uterine enlargement may hide classical signs. Peritoneal signs may be absent due to lifting of the abdominal wall. Abdominal organs can change position as the pregnancy progresses, for example, the appendix is displaced upwards and laterally towards the gallbladder after the first trimester.

Learning Outcome for Study Session 10

At the end of this study session, you will be able to:

10.1 Define the term abdominal in pregnancy.
10.2 Highlight the causes of abdominal pain in pregnancy
10.3 List the initial investigations of abdominal pain
10.4 Outline the gynaecological causes of abdominal pain

10.1 Definition of Abdominal Pain in Pregnancy

Abdominal pain can be severe. It is characterized as a problem with one of the organs in the abdomen, such as appendicitis or a perforated intestine, or it may result from a fairly minor problem, such as excess build-up of intestinal gas.

The assessment must consider both maternal and foetal wellbeing, bearing in mind intra-abdominal infection or inflammation can be associated with premature labour orfoetal loss, and that acute conditions such as appendicitis carry higher risks in pregnancy. Patients may need joint assessment by both gynaecological/obstetric and surgical teams.
Where the diagnosis is unclear, the risks of exploratory surgery must be balanced against the risks of delayed diagnosis.

Emergencies

Do a 'primary survey' and start treatment following 'ABCD' resuscitation principles:

i. Do not lay a heavily pregnant woman on her back (risk of hypotension from inferior vena cava (IVC) obstruction). Resuscitate in the left lateral position if the uterus is palpable above the umbilicus.
ii. Give oxygen.
iii. Large-bore intravenous (IV) access.
iv. For hypovolaemic shock, give fluids until the radial pulse is palpable.
v. Immediate referral/transfer to hospital.

If there is heavy bleeding from an incomplete miscarriage, removal of products from the cervical os can reduce bleeding.

- **Pain relief:** IV opiate analgesia can be given - titrate small doses and monitor closely.

For eclamptic seizures, give magnesium sulphate.

Look for the most urgent/serious problems:

- Shock or haemorrhage
- Sepsis.

Pregnancy-related problems - ectopic pregnancy, incomplete miscarriage with heavy bleeding, severe pre-eclampsia, HELLP syndrome (= **H**aemolysis, **EL** (elevated liver) enzymes, **LP** (low platelet) count), Placenta abruptio or placental praevia, uterine rupture.
Surgical problems - peritonitis, obstructed or ischaemic bowel.
Medical problems - lower lobe pneumonia, pulmonary embolus, diabetic ketoacidosis, sickle cell crisis, myocardial infarction (may present with abdominal pain).
Foetal distress.

Aetiology: Acute appendicitis is the most common cause of an acute abdomen during pregnancy. Urinary tract infection (UTI) or stones and cholecystitis are also relatively common.

10.2 Causes of Pain during Pregnancy

It can be classified as follows

a. Obstetric causes

- Labour pain - premature labour or term.
- Pre-eclampsia or HELLP syndrome - epigastric or right upper quadrant pain
- Placental abruption
- Typically, sudden severe pain and a 'woody' hard, tender uterus; foetal distress, ± vaginal bleeding.

With posterior placenta, pain and shock may be less severe, with pain felt in the back; diagnose by pattern of foetal contractions (excessive and frequent) with foetal heart pattern suggesting hypoxia.

b. Uterine rupture:

- Constant pain
- Profound shock
- Foetal distress
- Vaginal bleeding

The above listed usually presents during labour and with history of uterine scar.
Rarely, occurs without labour and without uterine scar.

c. Chorioamnionitis:

This usually follows premature rupture of membranes, but can occur with membranes intact.
Acute fatty liver of pregnancy
Presents in the second half of pregnancy with abdominal pain, nausea/vomiting, jaundice, malaise and headache.
Acute polyhydraminous
Rupture of utero-ovarian vessels
Severe uterine torsion- rare; may be due to structural abnormalities in the pelvis.

Presents in the second half of pregnancy with variable symptoms, including severe abdominal pain, tense uterus, retention of urine ± shock and foetal distress; or, it may be asymptomatic; the foetus is at risk.

d. Gynaecological causes

Ectopic pregnancy.

Usually presents between 5-9 weeks' gestation.

The classical triad of bleeding, abdominal pain, and amenorrhoea is not present in many women; symptoms and signs are often nonspecific; the diagnosis can only be confirmed in secondary care.

Symptoms vary and include: syncope, dysuria (including dipstick urine findings suggesting UTI), diarrhoea and vomiting, subtle changes in vital signs; adnexal tenderness may be absent; a history of 'missed period' may be absent if vaginal bleeding is mistaken for a normal period.

- Miscarriage ± septic abortion.
- Torsion of the ovary or Fallopian tube
- Ovarian cysts - torsion, haemorrhage or rupture.
- Fibroids - red degeneration or torsion
- Ovarian hyperstimulation syndrome.

A complication of gonadotrophin-assisted conception; can occur pre-conception or in early pregnancy.

Large ovarian cysts cause abdominal pain and distention and, in severe cases, also fluid shifts, ascites, pleural effusion and shock.

- Salpingitis
- Round ligament pain

e. 'Surgical' causes

Acute appendicitis.

Presents with fever, anorexia, nausea, vomiting, right iliac fossa (RIF) pain.

After the first trimester, the pain may shift upwards towards the right upper quadrant, but does not always do so - and patients in all trimesters may have RIF pain.

With retrocaecal appendix, may have back or flank pain.

Cholecystitis and gallstones

Urinary tract - renal calculi, urinary tract obstruction (including acute urinary retention due to retroverted gravid uterus).
Intestinal obstruction - most often due to adhesions.
Peritonitis from any cause.
Abdominal trauma, including domestic violence.
Mesenteric adenitis.
Meckel's diverticulitis.
Peptic ulcer.
Inflammatory bowel syndrome.
Abdominal wall - hernias, musculoskeletal pain, rupture of rectus abdominis muscle.
Acute pancreatitis - rare and usually due to gallstones.
Mesenteric venous thrombosis (rare) - most reported cases have occurred where dehydration complicated an underlying hypercoagulable state.[1]
Rupture of visceral artery aneurysm (rare).

f. 'Medical' causes
UTI ± pyelonephritis.
Constipation.
Diabetic ketoacidosis.
Sickle-cell anaemia crisis.
Lower lobe pneumonia.
Venous thromboembolism - deep vein thrombosis or pulmonary embolus may cause lower or upper abdominal pain respectively.
Myocardial infarction.
Gastroenteritis.
Irritable bowel syndrome.

g. Musculoskeletal causes
Round ligament pain - low abdominal or groin pain due to the uterus pulling on the round ligament.
General aches - due to uterine enlargement.
Rectus muscle haematoma - due to rupture of inferior epigastric vessels in late pregnancy:

Presents with sudden severe abdominal pain, often after coughing or trauma.
Pelvic girdle pain:
Symphysis pubis dehiscence.
Osteomalacia may present in pregnancy due to increasing vitamin D requirements.

- **Assessment History:** Pain history - nature, location and radiation, onset, exacerbating or relieving factors. These will give clues about the cause.

Other abdominal symptoms - vaginal bleeding, bowel and urinary symptoms; pre-eclampsia symptoms (eg headache, visual change, nausea).
Fetal movements.
Obstetric history - last menstrual period (LMP); confirm whether the patient's last bleed was 'normal' for the patient (ectopic pregnancy may have some bleeding which can be mistaken for menstrual bleed); ascertain if there has been any difficult or assisted conception; confirm use of any contraception (coil and progestogen-only pill (POP) increase ectopic risk).
Past medical and gynaecological history, medication, allergies, last meal.

Examination
General examination - well/ill, signs of sepsis, shock or haemorrhage, blood pressure, urine dipstick protein and glucose.
Assess the pregnancy and uterus:
Palpate uterus for fundal height, contractions or hard uterus, polyhydramnios, fetal position and presentation.
Assess fetal wellbeing - movements or heartbeat (auscultate, Doppler scan or cardiotocography (CTG)).
Abdominal examination, note the differences in pregnant patients:
To distinguish extra-uterine from uterine tenderness, lie the patient on her side, thus displacing the uterus.
Clinical signs may be less distinct.
Peritoneal signs may be absent in pregnancy, as the uterus can lift the abdominal wall away from the area of inflammation.
Note the changing positions of the intra-abdominal contents as the pregnancy progresses. The appendix is located at McBurney's point in patients in the first trimester, but then

moves upward and laterally towards the gallbladder. The bowel can be displaced into the upper abdomen.
Consider whether vaginal and/or rectal examination is indicated:

10.2.1 Never do vaginal examination if placenta praevia is suspected (vaginal bleeding in the second half of a pregnancy) - it could cause a massive bleed.
Suspected rupture of membranes requires sterile examination and should be done in an obstetric unit.
For incomplete miscarriage with heavy bleeding, examine the cervical os. Products in the os may cause heavy bleeding, and also bradycardia/shock due to vagal stimulation. Remove products in the os (using sponge forceps) to reduce bleeding and pain.

10.3Investigations
Bedside Tests
Urine dipstick
Urine pregnancy test
Urine beta human chorionic gonadotrophin (beta-hCG) tests are sensitive, detecting beta-hCG at 25 IU/L (a level normally reached 9 days post-conception). A negative urine beta-hCG result does not absolutely rule out an ectopic pregnancy - if discordant with the clinical picture, arrange serum beta-hCG or an urgent assessment.
Bedside glucose test.

Initial investigations
Blood tests - depending on the clinical scenario, consider:

i. FBC.
ii. Group and save/cross-match.
iii. Rhesus blood group (if not known).
iv. Serum beta-hCG - can aid diagnosis/management decisions regarding suspected ectopic pregnancy or miscarriage
v. Biochemistry: renal and liver function, glucose, calcium, amylase, hepatitis serology.
vi. Clotting screen if haemorrhage, placental abruption or liver disease suspected.
vii. Sickle cell screen.

viii. Blood film (for evidence of haemolysis, if HELLP syndrome is suspected).

- **Urine tests:**

  Urine microscopy and culture.

  Urine protein quantification for suspected pre-eclampsia.

  ECG if atypical epigastric pain.

- **Ultrasound:**

  First trimester - can confirm whether pregnancy is intra-uterine and viable. From 5+ weeks a sac is visible and from 6 weeks the foetal heartbeat is seen. Free fluid in the pelvis suggests ectopic pregnancy.]Transvaginal ultrasound is more sensitive in early pregnancy.

- Second-third trimesters - gives information about foetal wellbeing, the uterus and placenta.

  May assist surgical diagnosis, eg acute appendicitis, ovarian cysts, gallstones.

- **Further management:**

This depends on the diagnosis, but some general points are:

- Rhesus-negative women – give anti-D immunoglobulin if indicated.
- Combined management by an obstetrician, surgeon and/or physician may be needed.
- Indications for emergency surgery are similar to non-pregnant patients.
- If non-urgent surgery is required during pregnancy, the second trimester is preferred. Laparoscopy is increasingly used for diagnosis and treatment.
- Labour pain - premature labour or term.
- Pre-eclampsia or HELLP syndrome - epigastric or right upper quadrant pain
- Placental abruption

Gynaecological causes of Abdominal Pain

- Miscarriage ± septic abortion.
- Torsion of the ovary or Fallopian tube
- Ovarian cysts - torsion, haemorrhage or rupture.
- Fibroids - red degeneration or torsion
- Ovarian hyperstimulation syndrome.

A complication of gonadotrophin-assisted conception; can occur pre-conception or in early pregnancy.

SAQs (SAQs) for Study Session 10

Now that you have completed this study session, you can assess how well you have achieved its Learning outcomes by answering the following questions. Write your answers in your study Diary and discuss them with your Tutor at the next study Support Meeting. You can check your answers with the Notes on the Self-Assessment questions at the end of this Module.

SAQ 10.1 (Testing Learning Outcomes 10.1)

Define the term abdominal in pregnancy.

SAQ 10.2 (Testing Learning Outcomes 10.2)

Highlight the causes of abdominal pain in pregnancy

SAQ 10.3 (Testing Learning Outcomes 10.3)

List the initial investigations of abdominal pain

SAQ 10.3 (Testing Learning Outcomes 10.3)

Outline the gynaecological causes of abdominal pain

Reference

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Study Session 11: Multiple Pregnancy

Expected Duration: 1 week of 2 contact hours

Introduction

Multiple pregnancy occurs when more than one fetus is developing in utero in a single pregnancy.

Different names for multiple births are used, depending on the number of offspring. Common multiples are two and three, known as twins and triplets, respectively.

Multiple birth siblings are either monozygotic or polyzygotic. The former result from a single fertilized egg or zygote splitting into two or more embryos, each carrying the same genetic material (genes). Siblings created from one egg are commonly called identical. Since identical multiples share the same genetic material, they are always of the same sex.

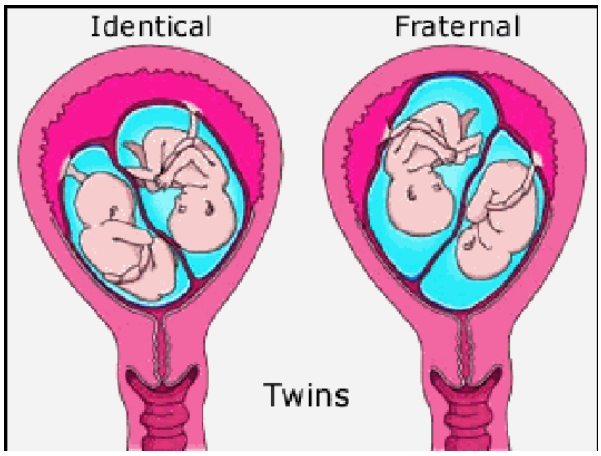

Figure 11.1: Multiple Pregnancy

Source: http://www.irishhealth.com/article.html?con=83

Polyzygotic (or fraternal) multiples instead result from multiple ova being ripened and released in the same menstrual cycle by a woman's ovaries, which are then fertilized to grow into multiples no more genetically alike than ordinary full siblings, sharing 50% of their genetic material.

Multiples called "dizygotic" represent multiples from two eggs specifically. For example, a set of triplets may be composed of identical twins from one egg and a third non-identical sibling from a second egg.

The most common form of multiple births for humans is twins. In the United States, it has been estimated that by 2011, 36% of twin births and 77% of triplet and higher-order births resulted from conception by assisted reproductive technology.

Monozygotic – multiple (typically two) fetuses produced by the splitting of a single zygote

Dizygotic – multiple (typically two) fetuses produced by two zygotes

Polyzygotic – multiple fetuses produced by two or more zygotes

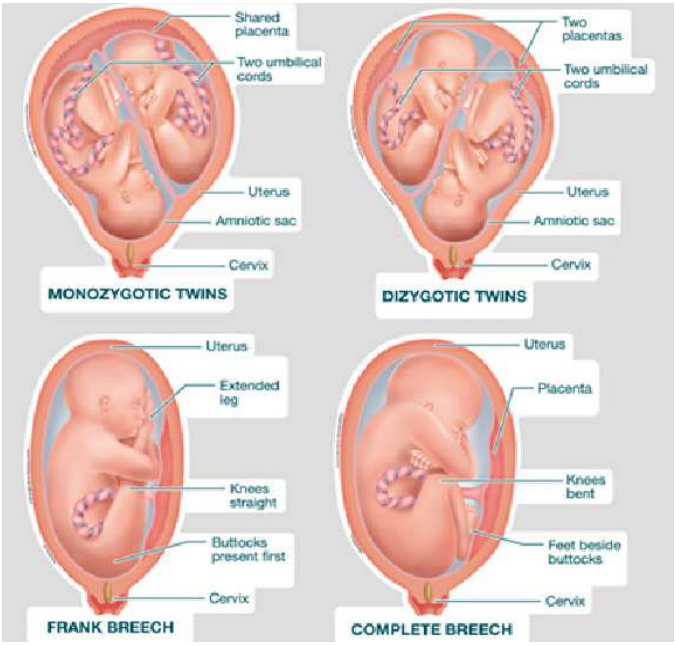

Figure 11.2: Monozygotic and Dizygotic,Polyzygotic

Source:http://www.bodypartchart.com/product/multiple-pregnancy-and-fetal-positions-labeled/multiple-pregnancy-and-fetal-positions-labeled-bpc-medium-image/

Learning Outcomes

After this study you should be able to:

11.1 Explain the Terms Used for the order of multiples

11.2 Highlight Premature birth and low birth weight

11.3 Discuss Ante-Partum Haemorrhage

11.4 Mention the Initial Appraisal of a woman with APH

11.1 Terms Used for the order of Multiple Birth

The following are the terms used for multiple birthdays:

1. Two offspring – twins
2. Three offspring – triplets
3. Four offspring – quadruplets
4. Five offspring – quintuplets
5. Six offspring – sextuplets
6. Seven offspring – septuplets
7. Eight offspring – octuplets
8. Nine offspring – nonuplets
9. Ten offspring – decaplets
10. Eleven offspring – undecaplets
11. Twelve offspring – duodecaplets

Identical triplets occur when a single fertilized egg splits in two and then one of the resulting two eggs splits again. High orders of multiple births (three or more offspring in one birth) may result in a combination of fraternal (genetically different) and identical (genetically identical) siblings.

Figure 11.3: Triplets

Source: http://www.informationng.com/tag/upcoming-artiste-fathers-triplets

The latter are also called super twins. For example, a set of triplets may consist of two identical siblings and one fraternal sibling. This happens when two eggs are fertilized and one of these subsequently divides into two fetuses. By analogy with monozygotic and dizygotic twins, such a combination is called dizygotic triplets.

Identical triplets or quadruplets are very rare and result when the original fertilized egg splits and then one of the resultant cells splits *again* (for triplets) or, even more rarely, a further split occurs (for quadruplets).

Nonidentical twins is the most common kind of multiple birth among humans, occur in about 1 out of every 80 pregnancies. Families expecting a multiple birth have different health needs requiring extra practical support and understanding throughout pregnancy, the postnatal period and early years.

Figure 11.4: Non identical Twins

Source: http://naijagists.com/in-pictures-meet-black-white-non-identical-twins-sisters-born-by-same-mother/

Information from a well informed health care giver from when the pregnancy is diagnosed multiple until delivery will help the expectant couple prepare and avoid potential problems. For reasons that are not yet known, the older a woman is, the more likely she is to have a multiple birth naturally.

It is theorized that this is due to the higher level of follicle stimulating hormone that older women sometimes have as their ovaries respond more slowly to FSH stimulation.

11.1.1 Factors influencing multiple pregnancy

Certain factors appear to increase the likelihood that a woman will naturally conceive multiples. **These include the following:**

- **Mother's age:** women over 35 are more likely to have multiples than younger women

- **Mother's use of fertility drugs:** approximately 35% of pregnancies arising through the use of fertility treatments such as drugs and IVF involve more than one child History of multiple pregnancies in the family (the woman)

In Text Question:

The factor influencing multiple pregnancies is ----------

a. Children age
b. Mother's age
c. nature of the body
d. immune system

In Text Answer:

b. Mother's age (Mother's use of fertility drugs).

11.1.2 Risks of multiple pregnancy

Exacerbation of common disorders: The presence of more than one fetus in utero and the high level of circulating hormone often exacerbates the disorders of pregnancy.

- **Anaemia:** Iron deficiency and folic acid deficiency anaemia are common due to greater demand on the maternal store.
- **Polyhydraminous:** This is common and in particular in monochorionic twins and with fetal abnormalities, this may add to any discomfort the woman is already experiencing. If acute, it can lead to miscarriage.

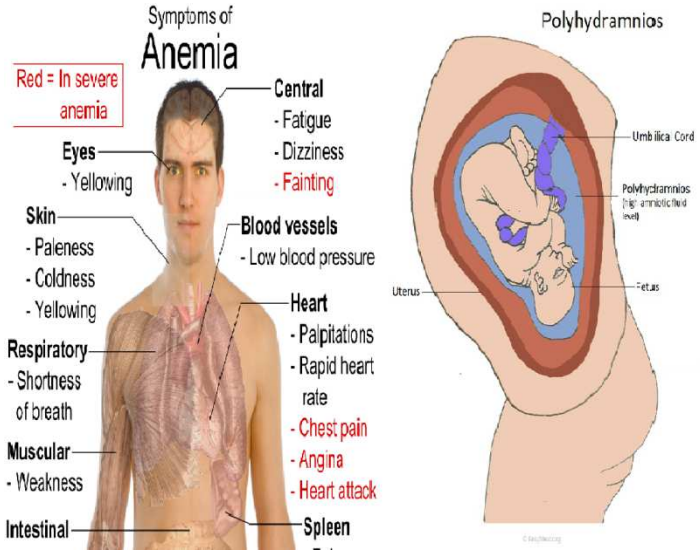

Figure 11.5: Symptoms of Anaemie and Polyhydraminous

Source: http://medicscientist.com/aplastic-anaemia-symptomes-treatment

- **Pressure symptoms**

  Due to increase weight and size of the uterus and its content, pressure symptoms may be troublesome. Impaired venous return from lower limbs increases tendency to varicose veins and increased oedema of the legs. Back ache is common, marked dyspnoea and indigestions.

In Text Question

The following are some reason that may lead to lack of iron resulting in iron-deficiency anaemia except

a. Bleeding from the gut (intestines)
b. Poor or restricted diet
c. Regulation of body system
d. Pregnancy/ childhood growth spurts

In Text Answer

c. Regulation of body system

11.2 Premature birth and low birth weight

Babies born from multiple-birth pregnancies are much more likely to result in premature birth than those from single pregnancies. 51% of twins and 91% of triplets are born preterm, compared to 9.4% in singletons 14% of twins and 41% of triplets are even born very preterm, compared to 1.7% in singletons

The preterm births also result in multiples tending to have a lower birth weight compared to singletons.

- **Cerebral palsy:** Cerebral palsy is more common among multiple births than single births. This is likely a side effect of premature birth and low birth weight.

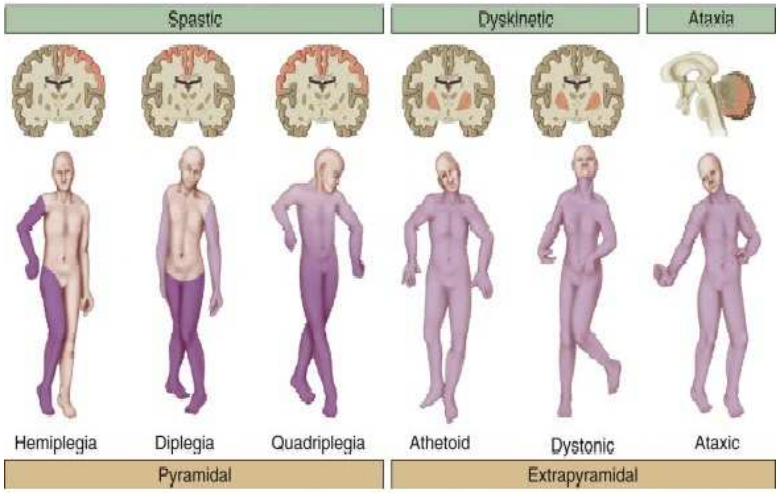

Figure 11.1: Cerebral palsy

Source: http://image.frompo.com/8c09c84a474d733e56f7dfa3270b9772

In Text Question

Multiple pregnancies are likely to leading untimely birth compare to single pregnancies Yes/No

In Text Answer

Yes

- **Incomplete separation:** Multiples may become monochorionic, sharing the same chorion, with resultant risk of twin-to-twin transfusion syndrome. Monochorionic multiples may even become monoamniotic, sharing the same amniotic sac, resulting in risk of umbilical cord compression and entanglement.

Figure 11.2: Incomplete separation of a new baby

Source: http://www.nerdygaga.com/10655/weird-twins-and-pregnancy/

In very rare cases, there may be conjoined twins, possibly impairing function of internal organs.

- **Mortality rate (stillbirth):** Multiples are also known to have a higher mortality rate. It is more common for multiple births to be stillborn, while for singletons the risk is not as high.

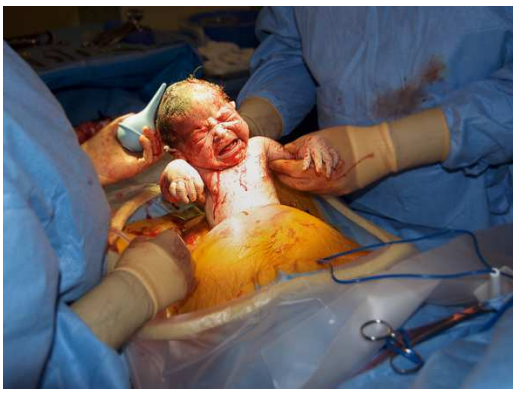

Figure 11.3: Mortality rate (stillbirth)
Source: http://www.medscape.com/viewarticle/827674

11.2.1 Diagnosis of twin pregnancy

Through ultra sound as early as 6weeks**.** Family history of twins**.** There is the vanishing twin syndrome (fetus papyraceous) –Occasionally, one of the twins may die in the second trimester and becomes a fetus papyraceous, becomes embedded in the placenta and expelled with the placenta at delivery.

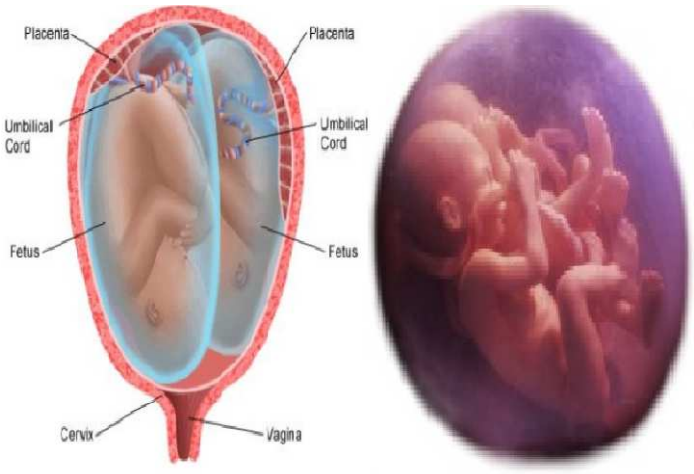

Figure 11.4: Diagnosis of twin pregnancy
Source:http://www.lifemartini.com/9-recognizable-symptoms-of-twin-pregnancy/

11.2.2 Abdominal Examination Inspection

Size of uterus may be larger than gestational age, especially at 20weeks

Uterus looks round

Fetal parts seen over a wide area

Fresh striae gravidarum and polyhydraminous are not an uncommon complication

- **Palpation**

Fundal height greater than expected for pregnancy age Presence of two fetal poles in the fundus of terus Palpable multiple fetal parts Fetal head may be small in relation to size of uterus Lateral palpation may reveal two fetal backs or limbs on both sides Pelvic palpation may give findings similar to fundal palpation.

11.2.3 Ascultation

Hearing two fetal heart beats is not diagnostic as one can often be heard over a wide area

- **The pregnancy:** A multiple pregnancy tends to be shorter in duration than a single pregnancy. Multiple pregnancies in humans are usually born prior to 38 weeks of gestation, the average length of pregnancy. Thirty-six weeks is average for twin births, thirty-three weeks for triplets and thirty weeks for quadruplets.

Figure 11.5: Pregnant Woman

Source: http://avenueclinic.co.uk/mother-baby-clinic/

- **Antenatal preparation:** Early diagnosis of a twin pregnancy and chorionicity is important in order to give the expectant parent expert advice and support.

Figure 11.5: Antenatal Preparation

Source: http://www.thecomposedpartnership.com/antenatal-preparation/

In Text Question

Initial analysis of an coming twin pregnancy is paramount to give appropriate parental care and instruction this is known as ---------- (a) paternatal (b) hospitality (c) antenatal preparation (d) Doctor Advice

In Text Answer

Antenatal preparation

- **Parent Education:** When a multiple pregnancy is diagnosed, written information on multiple pregnancies should be given to the mother. The midwife should give them opportunity to discuss their worries, fears and the problems they may have.

  Routine parent education classes should start earlier for twin mothers. Preparation for breast feeding is important as mothers will inevitably give a lot of thought to how they are going to feed their babies not only from the nutritional but also from practical point of view.

- **Labour and the birth:** The more fetuses the mother is carrying the earlier labour is likely to start. Term for twins is usually considered to be 37weeks rather than 40 and approximately 50% of twins are born pre term, the babies may be small for gestational age and so are prone to the associated complications of both conditions.

Figure 11.6: Labour and Birth

Source:http://www.essentialbaby.com.au/pregnancy/baby-essentials-guide/labour-and-birth-the-partners-role-20080506-2biu.html

If spontaneous labour begins earlier, the chances of survival outside the uterus is small the mother will usually be given drugs to inhibit uterine activity. Intravenous salbutamol and sulindac tablets are the drugs of choice. Any known cause of preterm labour should be diagnosed early and treated with antibiotics e.g. urinary tract infection.

It is very unusual for a twin pregnancy to last more than 40weeks, many obstetricians advice induction of labour at 38weeks. If the first twin is cephalic presentation, labour is allowed to progress normally to a vaginal birth, but if the first twin is presented in any other way, an elective caesarean section is usually recommended.

- **Anaemia:** Iron deficiency and folic acid deficiency anaemia are common due to greater demand on the maternal store.

- **Polyhydraminous:** This is common and in particular in monochorionic twins and with fetal abnormalities, this may add to any discomfort the woman is already experiencing. If acute, it can lead to miscarriage.

- **Pressure symptoms:** Due to increase weight and size of the uterus and its content, pressure symptoms may be troublesome. Impaired venous return from lower limbs

increases tendency to varicose veins and increased oedema of the legs. Back ache is common, marked dyspnoea and indigestions.

In Text Question: The presence of more than one fetus in utero and the high level of circulating hormone often exacerbates the disorders of pregnancy are risk in multiples pregnancies **True/ False.**

In Text Answer:
True

11.3 ANTE-PARTUM HAEMORRHAGE

In obstetrics, antepartum haemorrhage (APH), also prepartum hemorrhage, is bleeding from birth canal during pregnancy from the 24th week (sometimes defined as from the 20th week) gestational age to term. This may place the life of the mother and fetus at risk. It can be associated with reduced fetal birth weight

11.3.1 Effects on the fetus

Increase fetal mortality and morbidity
Still birth or neonatal death
Premature placental separation and consequent hypoxia may result in severe neurological damage in the baby.

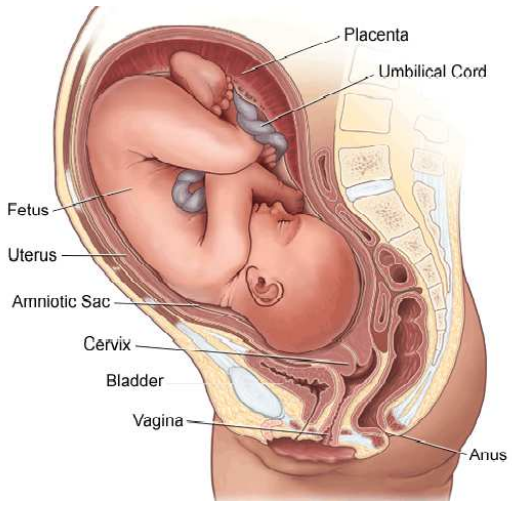

Figure 11.7: Fetus of Human body

Source:http://www.hopkinsmedicine.org/healthlibrary/test_procedures/gynecology/external_and_internal_heart_rate_monitoring_of_the_fetus_92,P07776/

- **Effects on mother:** If bleeding is severe, it may be accompanied by shock and disseminated intravascular coagulation. The mother may die or be left with permanent ill health.
- **Treatment:** It should be considered a medical emergency (regardless of whether there is pain) and medical attention should be sought immediately, as if it is left untreated it can lead to death of the mother and/or fetus.

Causes of APH: Obstetric

1. Placenta
2. Maternal blood
3. Bloody show (benign) - most common cause of APH
4. Placenta abruption - most common pathological cause
5. Placenta previa - second most common pathological cause
6. Fetal blood (can be distinguished with Apt test)
7. Vasa previa - often difficult to diagnose, frequently leads to fetal demise

11.3.2 Uterus of the human body

Uterine rupture

Non-obstetric

1. Bleeding from the lower genital tract
2. Cervical bleeding - cervisitis, cervical neoplasm,cervical polyp
3. Bleeding from the vagina itself - trauma, neoplasm
4. Bleeding that may be confused with vaginal bleeding
5. GI bleed -haemorrhoids, inflammatory bowel disease
6. Urinary tract bleed – urinary infection
7. Varicose veins.

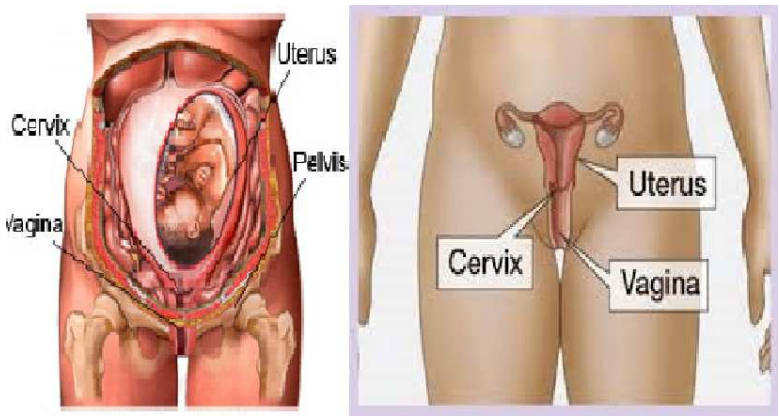

Figure 11.8: Human Uterus
Source: http://www.cdc.gov/std/hpv/pap/

11.4 Initial appraisal of a woman with APH

When a pregnant woman notices bleeding from the vagina, she may call the midwife or present herself in the hospital. She may fear she is losing her baby, the husband may be afraid he is losing both mother and child.

The role of the midwife is to be supportive and ascertain as much as possible the history and the circumstances surrounding the blood loss. This will assist both in assessing the woman's condition and making a diagnosis.

The midwife should however be aware that APH is unpredictable and the woman's condition can deteriorate rapidly at any time. She must therefore make an urgent decision on the need to get medical and paramedical attention. This is necessary as sometimes the bleeding which the woman presumed is from the uterus may be bleeding haemorrhoids.

11.4.1 Assessment of physical condition maternal condition

Assess for pallor or breathlessness which may indicate shock

Assess emotional state of the woman and her partner and calm them down by gaining their trust

Assess the amount of blood loss in order to ensure adequate fluid replacement

Carry out a gentle abdominal examination while observing for signs of labour

DO NOT CARRY OUT VAGINAL EXAMINATION as this may aggravate the bleeding.

11.4.2 Fetal condition

The mother should be asked if the baby had been moving as much as normal

The midwife must attempt to auscultate the fetal heart

Ultrasound apparatus may be used to obtain information

Factors to aid differential diagnosis

Management

Always admit the patient to hospital for assessment and management. Phone 999 if there are any major concerns regarding maternal or foetal well-being.

The mainstays of management are resuscitation and accurate diagnosis of the underlying cause. Severe bleeding or foetal distress: urgent delivery of the baby, irrespective of gestational age.

Admit to hospital, even if bleeding is only a very small amount. There may be a large amount of concealed bleeding with only a small amount of revealed vaginal bleeding.

No vaginal examination should be attempted; at least until a placenta praevia is excluded by ultrasound. It may initiate torrential bleeding from a placenta praevia.

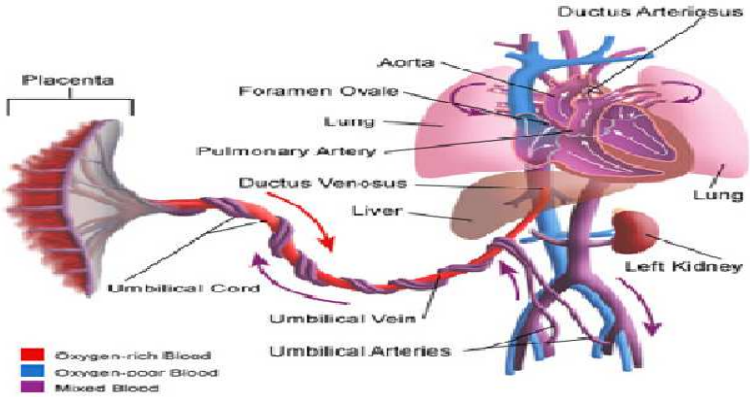

Figure 11.10: Fetal Condition of Human Body

Source: http://obgyn.ucla.edu/body.cfm?id=202

Resuscitation can be inadequate because of underestimation of blood loss and misleading maternal response. A young woman may maintain a normal blood pressure until sudden and catastrophic decompensation occurs.

Take blood for FBC and clotting studies. Cross match, as heavy loss may require transfusion.

Gentle palpation of the abdomen to determine the gestational age of the foetus, presentation and position.

Foetal monitoring.
Arrange urgent ultrasound.
With every episode of bleeding, a rhesus-negative woman should have a Kleihauer test and be given prophylactic anti-D immunoglobulin.

11.4.3 Further management

Further management will depend on foetal distress, the cause of the antepartum haemorrhage (APH), the extent of bleeding and gestation.
In slight haemorrhage with blood loss less than 500 ml and no disturbance of maternal or fetal condition, ultrasound shows the placenta not lying in the lower uterine segment, no retroplacental clots, the patient may be discharged or have the baby induced, if it is after 37 weeks and other conditions are suitable.
Complications
Premature labour.
Disseminated intravascular coagulopathy.
Renal tubular necrosis.
Post partum haemorrhage.

Placenta accreta: This complicates approximately 10% of all cases of placenta praevia but is rare in the absence of placenta praevia

In Text Question: --------- is the effect of ante-partum haemorrhage on mother?

a. irregular body pain
b. change of body metabolism
c. constant body movement
d. constant bleeding

In Text Answer:
d. Constant bleeding

Summary to study session 11
In study session 11, you have learned that:

- **Multiple births** are process of given birth to more than one baby at time which include:
  Two offspring – twins
  Three offspring – triplets
  Four offspring – quadruplets
- **Factors influencing multiple pregnancy** are mothers age, mother's use of fertility drugs,
- **Risks of multiple pregnancy** are Anaemia, polyhydraminous, pressure symptoms
- **Premature birth and low birth weight** are babies born before their normal time such as cerebral palsy, incomplete separation, mortality rate (stillbirth).
- **ANTE-PARTUM HAEMORRHAGE:** is bleeding from birth canal during pregnancy from the 24th week gestational age to term
- **Initial appraisal of a woman with APH:** When a pregnant woman notices bleeding from the vagina, she may call the midwife or present herself in the hospital.

Self-Assessment Questions to study session 11

Now that you have completed this study session, you can assess how well you have achieved its Learning outcomes by answering the following questions. Write your answers in your study Diary and discuss them with your Tutor at the next study Support Meeting. You can check your answers with the Notes on the Self-Assessment questions at the end of this

SAQ 1.1

Highlight the factors that causes Multiple Pregnancy

SAQ 2.1

Explain the of twins diagnosis

SAQ 3.1

Elaborate on Ante-Partum Haemorrhage and the effect on mother.

SAQ 4.1

Give an assessment of a physical and maternal condition of the baby and the mother

SAQ 5.1

List out the fetal condition of the mother and the baby

References

EL-Mowafi, D. 2008. Bleeding in Late Pregnancy (Antepartum Haemorrhage), Geneva *Foundation for Medical Education and Research*, 2008

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Study Session 12: Disseminated Intravascular Coagulation (DIC)

Expected Duration: 1 week of 2 contact hours

Introduction

Disseminated intravascular coagulation (**DIC**), also known as **disseminated intravascular coagulopathy** or less commonly as **consumptive coagulopathy**, is a pathological activation of coagulation (blood clotting) mechanisms that happens in response to a variety of diseases. DIC leads to the formation of small blood clots inside the blood vessels throughout the body.

As the small clots consume coagulation proteins and plateletes, normal coagulation is disrupted and abnormal bleeding occurs from the skin (e.g. from sites where blood samples were taken), the gastrointestinal tract, the respiratory tract and surgical wounds. The small clots also disrupt normal blood flow to organs (such as the kidneys), which may malfunction as a result.

DIC can occur acutely but also on a slower, chronic basis, depending on the underlying problem. It is common in the critically ill, and may participate in the development of multiple organ failure, which may lead to death. DIC is rare when the fetus is alive and it usually starts to resolve when the baby is born.

Figure 12.1: Disseminated intravascular coagulation (DIC)

Source: http://www.myvmc.com/diseases/disseminated-intravascular-coagulation/

Learning outcomes

After this study you should be able to:

12.1 Mention the causes of Disseminated Intravascular Coagulation (DIC)

12.2 Discuss Pain Management in labour

12.3 Explain Pathophysiology of pain

12.4 Elaborate on Transscutaneous Electrical Nerve Stimulation (TENS)

12.1 Causes of Disseminated Intravascular Coagulation (DIC)

DIC is never a primary disease, it always occurs as a response to another disease process. Such an event triggers widespread clotting with the formation of microthrombin throughout the circulation. Clotting factors are used up. The DIC triggers fibrinolysis and the production of fibrin degradation products.

Fibrin degradation products reduce the efficacy of normal blood clotting. A paradoxical feedback system is therefore set up in which clotting is the primary clotting, but haemorrhage is the clinical finding.

When DIC occur during or after birth, the reduced level of clotting factors and the presence of Fibrin degradation products inhibit myometrial action and prevent the uterine muscles from constricting the blood vessels in the normal way at the placental cite leading to torrential haemorrhage.

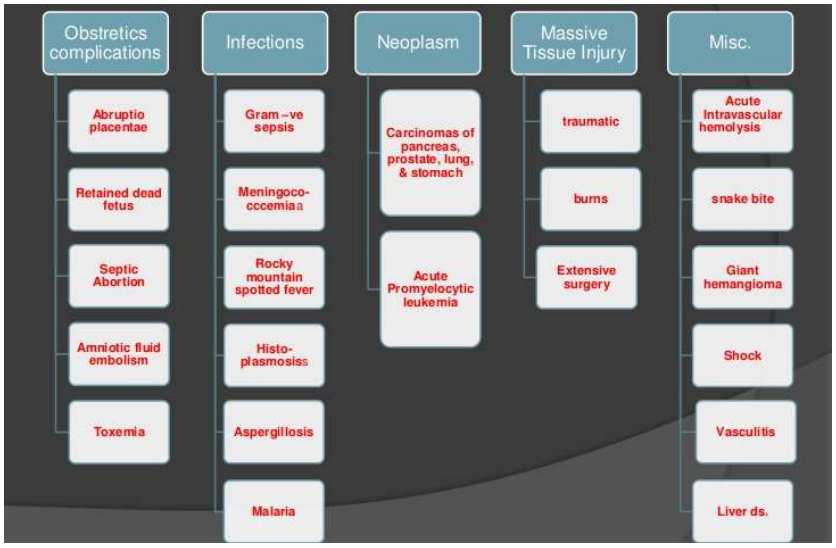

Figure 12.2: causes of disseminated intravascular coagulation (DIC)

Source:http://www.slideshare.net/amanmauryambbs/disseminated-intravascular-coagulation-dic

Visible blood loss may be observed to remain uncoagulated for several minutes and even when clotting thus occur the clot is unstable. Microthrombin may cause circulatory obstruction in the small blood vessels. The effects of this vary from cyanosis of fingers and toes to cerebrovascular accidents and multiple organ failure.

12.1.1 DIC can occur in the following conditions:

- **Placental abruption**: Owing to the damage of tissue at the placental cite, large quantity of thromboplastin are released into circulation and may cause DIC. However, if the placental is delivered as soon as possible after the abruption the risk of DIC is reduced.
- **Intrauterine fetal death**: If the dead fetus is retained in utero more than 3 - 4weeks then thromboplastin is released from the tissues of the dead fetus these enter the maternal circulation and deplete clotting factors.

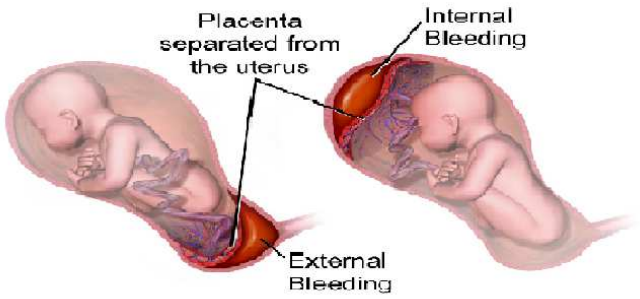

Figure 12.3: Placenta Abruption
Source: http://en.wikipedia.org/wiki/Placental_abruption

- **Amniotic fluid embolism**: If death does not occur from maternal collapse, DIC may develop. Thromboplastin in the amniotic fluid is responsible for setting up the cascade of clotting.

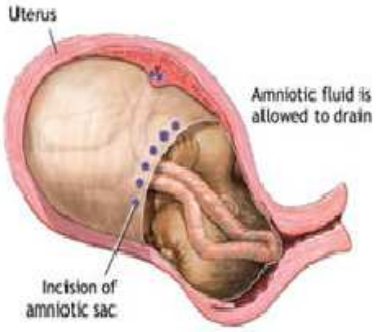

Figure 12.4: Amniotic Fluid Embolism
Source: http://uyewallpaper.com/209932-amniotic-fluid-embolism

- **Intrauterine infection**: The cause of this include septic abortion, hyatidiform mole, placenta accreta and endometrial infection before or after birth. DIC is caused by endotoxins entering the circulation and damaging the blood vessels.

  Therefore there is need to treat both the DIC and infection aggressively with antibiotics.

  Pre-eclampsia and eclampsia.

12.1.2 Diagnosis

Diagnosis is usually suggested by the following conditions:

- **Severe cases with hemorrhage:** The PT and APTT are usually very prolonged and the fibrinogen level markedly reduced. High levels of fibrin degradation products, including D-dimer, are found owing to the intense fibrinolytic activity stimulated by the presence of fibrin in the circulation.

  There is severe thrombocytopenia. The blood film may show fragmented red blood cells (schistocytes).
- **Mild cases without bleeding*:*** There is increased synthesis of coagulation factors and platelets. PT, APTT, and platelet counts are normal. Fibrin degradation products are raised.

  Definitive diagnosis depends on the result of Thrombocytopenia Prolongation of prothrombin time and activated partial thromboplastin time A low fibrinogen concentration Increased levels of fibrin degradation product.

12.1.3 Management/Aims of management of DIC

Box 12.1: The following are the aims of management of DIC:

1. To manage the underlying cause and remove the stimulus provoking DIC
2. To ensure the volume of circulating blood volume
3. To replace the used up clotting factors and destroyed red blood cells
4. The only effective treatment is the reversal of the underlying cause.
4. Anticoagulants are given exceedingly rarely, only when thrombus formation is likely to lead to imminent death (such as in coronary artery thrombosis or cerebrovascular thrombosis).
5. Platelets may be transfused if counts are less than 5,000-10,000/mm^3 and massive hemorrhage is occurring Fresh frozen plasma may be administered in an attempt to replenish coagulation factors and anti-thrombotic factors, although these are only temporary measures and may result in the increased development of thrombosis. In some situations, infusion with antithrombin may be necessary.

12.1.4 Prognosis

Prognosis varies depending on the underlying disorder, and the extent of the intravascular thrombosis (clotting). The prognosis for those with DIC, regardless of cause, is often grim: Between 10% and 50% of patients will die. DIC with sepsis (infection) has a significantly higher rate of death than DIC associated with trauma.

In Text Question: To manage the underlying cause and remove the stimulus provoking DIC to ensure the volume of circulating blood volume is known as blood transmission **True/False**

In Text Answer

False

12.2 Pain Management in Labour

It is not possible to assess how much pain a person is feeling because pain cannot be measured. Pain leads to physical exhaustion and lessens the woman's confidence. Pain threshold varies from one individual to the other so the woman in labour must be relieved from pain and baby's safety must be ensured.

Figure 12.5: A Nigeria Woman in Pain during Labour

Source: http://logbaby.com/news/why-nigerian-mothers_13299.html#.VW7PcPldWew

12.2.1 Causes of Pain in Labour

The following are the causes of pain in labour:

- Uterine contraction, the dilatation of cervix in first stage and stretching of the vagina and pelvic floor in late first stage and second stage
- Painful stimuli transmitted by thoracic, lumber and sacral nerves.

- ❖ Pain manifests itself as cramping in the abdomen, groin, and back, as well as a tired, achy feeling all over. Pain management is the alleviation or reduction of pain during labour through series of activities. This may include pharmacological and non-pharmacological interventions.

The aim of pain management in labour is to reduce stress and anxiety. The objective is to provide maximum relief while maintaining maximum safety for mother and foetus

Box 12.1: The following are other causes of pain during labour:
First stage: uterine muscle contractions
Pressure on the cervix/ Cervical stretching
Pressure on bladder and urethra
Distension of the lower uterine segment
Pressure on nerve ganglia around the uterus
Second stage: stretching of vagina and perineum
Third stage: episiotomy, lacerations, uterine contraction in placental expulsion
Fourth stage: repair of episiotomy

12.2.3 Factors that Influence Pain Perception

The following factors affect Pain Perception

Figure 12.1: Factors that influence Pain Perception

Fear and anxiety

Fear and anxiety heightens the individual's response to pain e.g fear of unknown, previous bad experience

Personality

This plays an important role in the woman's response to pain. A tense and anxious woman will respond poorly to pain and cope less

Fatigue

A woman who is fatigued will tolerate pain less e.g in prolong labour

Culture and social factors

These also play a part, while some culture encourage stoicism others encourage expression of feelings

Expectations

A woman who is realistic in her expectations is well equipped and will cope better with labour pain

12.2.4 Pain scales

These are special tools that can help caregivers measure how much pain you feel. There are many pain scales that include numbers or cartoon faces. Your caregiver may ask you to rate the pain on a scale of 0 to 10.

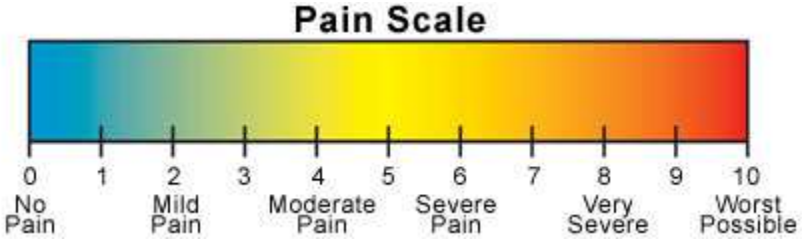

Fig. 12.2.4: Face pain scale revised

This instrument has faces depicting expression that range from contented obvious distress. The patient is asked to point to the face that most closely resembles the intensity of his her pain (Hicks, Von Bacyer, Spaford 2001) the score chosen face is 0,2,4,6,8,10, counting left to right so 0 – no pain,10 – very much pain.

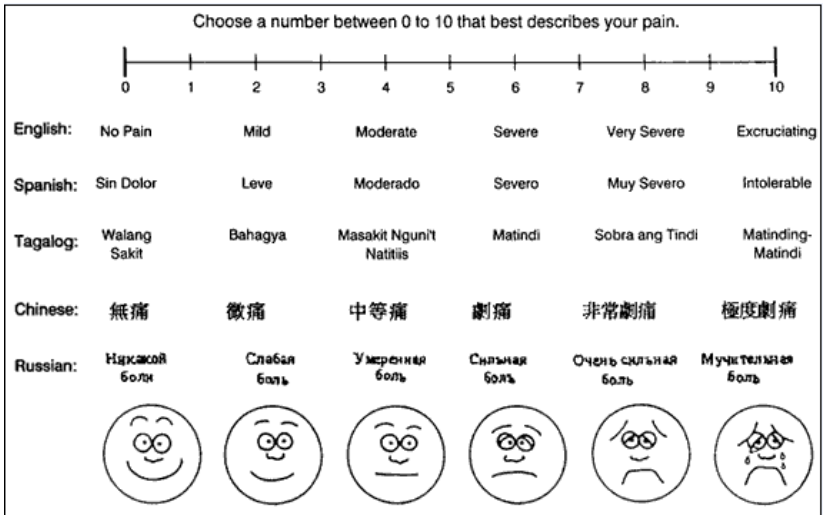

Fig. 12.2.4: Face pain scale revised (Hicks, Von Bacyer, Spaford 2001)

In Text Question: The following are causes of pain during labour except (a) uterine muscle contraction (b) regular bleeding (c) distension of the lower uterine segment (d) Pressure on bladder and urethra

In Text Answer

Regular bleeding

12.3 Pathophysiology of pain

Pain involves four physiological processes which include the following:

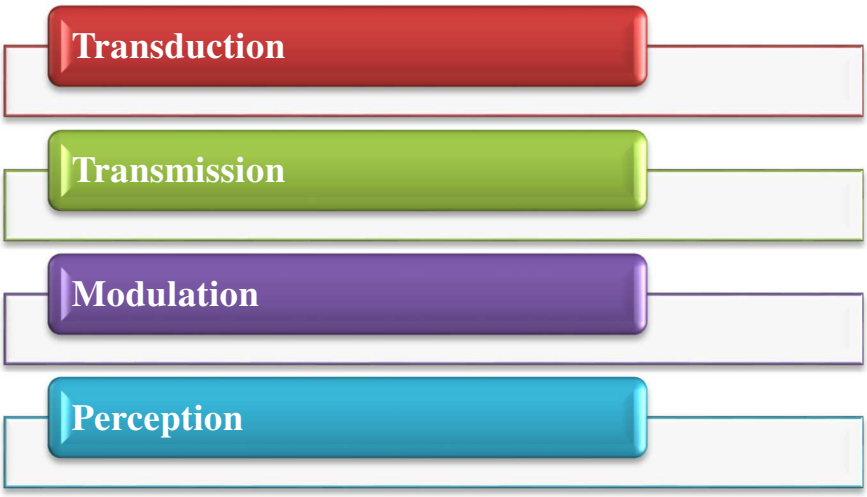

Figure 12.2: Four Physiological Processes of Pain

Pain begins when there is local tissue damage or injury which is a noxious stimulus of sensory nerve endings causing release of inflammatory substances (prostaglandin, histamine, serotonin, bradycanin and substance p) this will lead to generation of electric impulse (transduction) at peripheral sensory nerve ending.

Impulse travel to dorsal root ganglion and posterior horn of the spinal cord (known as first neuron) Second neuron from posterior horn to spinal cord transmits impulse via medulla oblongata, pons varoli and midbrain to the thalamus. Third neuron transmits to sensory cortex spinal cord.

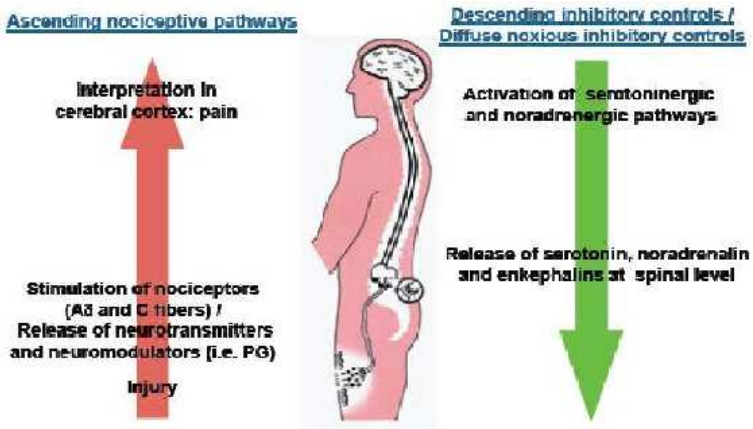

Figure 12.6: Pathophysiology of Pain

Source: http://www.slideshare.net/inojustin/pain-relief-in-labour1

In the spinal cord, fast pain and slow pain are carried to the brain via different pathways. The impulse of the fast pain goes to specific and limited areas on the surface of the brain (the cortex) allowing for relatively precise location of the pain stimulus before an individual perceive a painful stimulus (perception), (Kirk, and Ribbons' 2004).

The impulse from slow pain is distributed diffusely in the brain. Each area of the brain elicits a different response, which explains the whole range of symptoms that pain can cause such as suffering, sleeping difficulties (because the pain stimulates the "wake centre" and a depressed mood.

12.3.1 Methods of Pain Relief in Labour

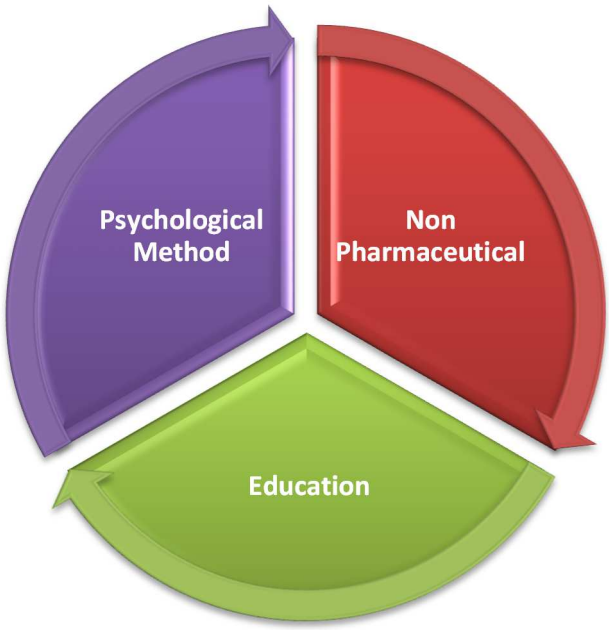

Figure 12.3: Method of Pain relief

- **Non pharmaceutical:** The most effective pain management begins long before the baby is born – with education including classes that teach relaxation techniques and breathing methods.
- **Education** is one of the best ways to manage pain, because simply knowing what to expect promotes relaxation and calms fears. Giving information will help to allay anxiety, the woman in labour is also allowed to participate in planning and meet with the staff that will take care of her before, during and after labour.
- **Psychological method** of relieving pain in labour is the most important aspect of pain relief, because a patient who is already apprehensive with labour pain will relax if she is admitted into a clean, well-organized, calm and reassuring environment.

  The Midwife must be sympathetic and understanding. These will allay her fears, relax more and be able to cope with the pain. The personality of the midwife should reflect kindness, interest in the patient with kind words and deeds as she gives care.

  Some women prefer to avoid analgesic medication during childbirth. They can still try to alleviate labour pain using psychological preparation, education, massage, acupuncture, TENS unit use, hypnosis, or water therapy in a tub or shower. Psychological Control covers preparation for labour, and support during labour.

Figure 12.7: Psychological Method pain relief Labour
Source:http://childdevelopmentinfo.com/childdevelopment/preparing_for_birth/easing_labor_pain/

Relaxed environment is highly appreciated some women like to have someone to support them during labour and birth, such as the father of the baby, a family member, a close friend or the partner also the freedom to move about during labour. The human body also has a chemical response to pain, by releasing endorphins.

Endorphins are present before, during, and immediately after childbirth. Some people believe that this hormone can induce feelings of pleasure and euphoria during childbirth, reducing the risk of maternal depression some weeks later.

Water Birth is an option chosen by some women for pain relief during labour and childbirth, and some studies have shown water birth in an uncomplicated pregnancy to reduce the need for analgesia, without evidence of increased risk to mother or newborn. Hot water tubs are available in many hospitals and birthing centres.

In Text Question
Endorphins are always present before, during and after childbirth **True/False**

In Text Answer
True

Physical Comfort Measures should be provided such as gentle exercise, breathing, posture and relaxation techniques help in early labour, massage can help to refresh muscles.

Sipping warm tea or cool water can keep the patient hydrated and energized.A warm bath, comfortable gown, oral care, comfortable position with adequate bladder and bowel care

- **Position Changes:** Some positions improve the baby's ability to navigate through the pelvis Some positions can help to reduce the pressure associated with a back labour, other positions make it easier to relax the body and rest. Some medical interventions will limit the woman's ability to change positions. Example is the use of intravenous infusion.

12.4 Transcutaneous Electrical Nerve Stimulation (TENS)

The use of TENS is effective particularly in early labour. Treatment with TENS consists of attaching electrodes to the woman's back. The low voltage electric current passed across stimulates the body to produce endogenous opioids. It can be controlled by the woman.

There is need to give information and teach the use of TENS prenatally. It takes about 30 minutes before an effect is felt. The intensity can be increased to cope with the increased pain of contractions.

Figure 12.8: A woman using Transcutaneous Electrical Nerve Stimulation (TENS)
Source: http://www.babysfirstbreath.ca/

12.4.1 Mental Relaxation Techniques

There are various mental relaxation techniques that can be used to promote relaxation during labor. Some techniques aim to focus thoughts, others to distraction/ diversion. For success to be achieved at using mental relaxation techniques during labour, the midwife should teach clients how to practice it during ante natal periods.

Examples: Cognitive or behavioural strategies, inclusive of distraction, relaxation, imagery, and breathing techniques. Meditation and mind medicine techniques are also used for pain control during labour and delivery.

These techniques are used in conjunction with progressive muscle relaxation and many other forms of relaxation for the mind and body to aid in pain control for women during childbirth. One such technique is the use of hypnosis in childbirth.

In Text Question

The following are various mental relaxation techniques except

a. running fast before delivery
b. cognitive strategy
c. imagery
d. breathing

In Text Answer

a. Running fast before delivery

There are a number of organizations that teach women and their partners to use a variety of techniques to assist with labour comfort, without the use of pharmaceuticals.

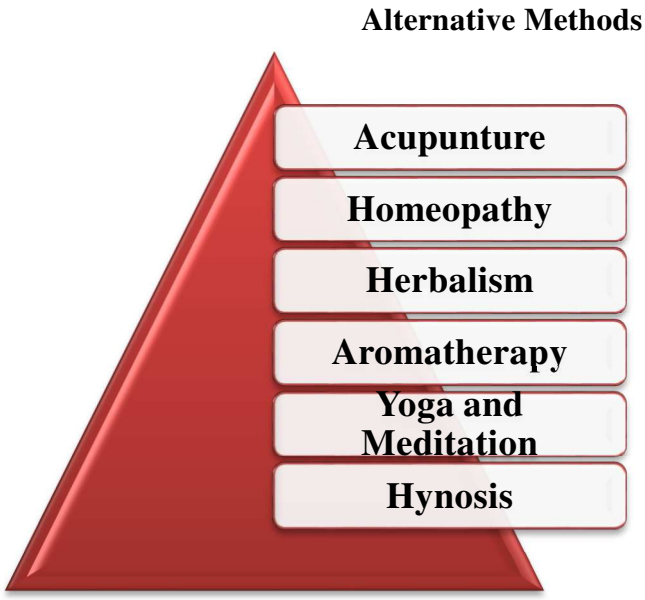

Figure 12.4: Alternative Method of Mental Relaxation

A new mode of analgesia is sterile water injection placed just underneath the skin in the most painful spots during labour. A control trial in Iran of 0.5mL injections was conducted with normal saline which revealed a statistical superiority with water over saline.

Support during labour is also necessary, the midwife should help massage the patient's back during contractions, provide hygiene and comfort positioning , bladder and bowel care.

12.4.2 Pharmaceutical Management of Pain

The Use of Drugs

Different measures for pain control have varying degrees of success and side effects to the woman and her baby.

The choice of drugs for relief of pain is based on the following:

- Progress of labour:
- The patient's need
- Effect on the uterine contraction and foetus
- Availability of drugs

1. **Anagesics:** These are drugs used in labour that are supposed to relief pain without rendering the patient unconscious. Examples are Panadol, Aspirin etc.
2. **Narcotics/Opioids:** These drugs allay anxiety and induce sleep, they are strong analgesics with some sedative effect and will reduce ability to sense pain or discomfort in the whole body.

Figure 12.9: Anagesics Drugs

Source: http://www.goldenrule.com/health-wellness/side-effects-of-narcotic-medications/

Examples are Pethidine (with or without Promethazine) may be used early in labour, as well as other opioids such as Morphine, Pethilorfan and fortal, but if given too close to birth there is a risk of respiratory depression in the infant.

3. **Amniotic fluid embolism:** These induce sleep, anti-convulsants such as chlorahydrate, Diazeperin, Omnopon etc.

In Text Question

The drugs that relieve, uneasy and bring about sleep and reduce pain is known as -------

a. Hynotics
b. narcotics
c. sedatives
d. transquillisers

In Text Answer

b. Narcotics

4. **Tranquillisers:** They help to calm the patient such as Phenegan.

5. **Sedatives:** Induce sleep – Examples are barbiturates
6. **Lyctil Cocktail:** Refers to any of various mixtures of phenothiazine derivatives and pethidine for intravenous administration. Examples are Chlopromazine (Largactil) 50mg, Pethidine 100mg, mixed and given slowly intravenously until a state of sedative , tranquility and analgesia is produced.

Figure 12.10: Tranquillisers drugs

Source:http://www.healthnsleep.com/how-use-of-tranquilizers-and-sleeping-pills-can-cause-sleep-disorders/

It is used in management of pre-eclampsia and eclampsia and for breech deliveries and caesarean section.

7. **Inhalational analgesia:** This is permitted by the Midwife Board. It is used on healthy women in late first stage of labour. Relatively safe in moderate dose as it is easily excreted from lungs, and has minimal effect on fetus and it may be used with other analgesics in primips
8. They are volatile agents which are excreted fairly quickly from the body. They include Entonox a premixed Nitrous oxide 50% and Oxygen 50% .
9. **Trilene (trichloroethylene):** This is a blue liquid that evaporates easily into the air to form a non-inflammable vapour. It is an anaesthetic agent with analgesic action. The anaesthetic effect depends on the concentration. It is administered in Emotrill Automatic inhaler apparatus.

Figure 12.11: Container for Trilene (trichloroethylene)

Source: https://anaesthesiaheritagecentre.wordpress.com/past-exhibitions/out-of-our-comfort-zone-pain-relief-in-a-crisis/out-of-our-comfort-zone-pain-relief-in-emergencies/

10. **Obstetric Anaesthesia:** Anaesthesia means absence of sensation and free from pain or reversible depression of all the senses.

    Types of anaesthesia are:

    - ❖ General anaesthesia
    - ❖ Regional anaesthesia
    - ❖ Local anaesthesia

11. **Epidural or Spinal Medication:** This is a technique whereby local anaesthesia solution is injected into the sub-arachnoid space, i.e. into CSF. It is referred to as regional blocks because the medication prevents the nerves from sending signals to the brain. It reduces pain in part of the body (from the abdomen down).

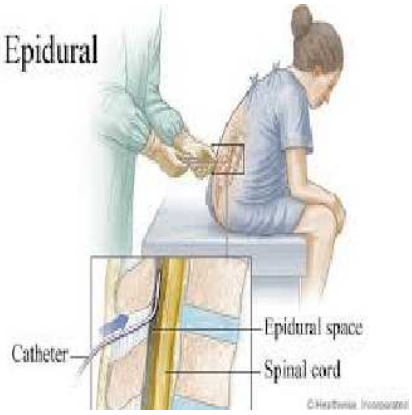

Figure 12.12: Spinal Medicaton

Source: http://orangecountypainclinics.com/services/injections/epidural/

12. Local anaesthetic agents like Lignocaine can be used for this. It is given because of various complications that could result in assisted birth.
13. **Pudenda block:** A local anaesthesia is injected adjacent to the pudenda nerves just below the ischial spines where they supply pelvic floor, vulva and perineum.
14. **Paracervical block**: This is a technique whereby the paracervical plexus are blocked. It is used in prolonged labour. Ten milliliters (10mls) of 1% lignocaine solution is injected into the lateral fornices of the vagina. It reduces pain and backache for about 2 to 3 hours. There is risk of bradycardia and foetal death may occur due to spasms of uterine vessels.

    Image of
15. **Local Anaesthesia:** Ten milliliters (10mls) of 1% lignocaine solution is infiltrated into the perineum for episiotomy. The technique used will depend on the type of episiotomy.
16. **Conclusion:** The process of labour and child birth bring about the event that the woman has been anticipating throughout her pregnancy. The forces of labour are referred to as '4P's. They are Passage, passenger, power and psyche. These important factors must work together for labour to progress normally.

    An alteration in anyone or a combination of the factors can alter the outcome of labour. The length of labour varies widely and is influenced by parity, birth interval, and psychological state of the woman in labour (psyche), presentation, position, pelvic shape and size and character of uterine contractions.

    Sound knowledge of physiology of labour aids the midwife in the course of her managing the patient.

In Text Question

The following are Types of anaesthesia except

a. Local anaesthesia
b. regional anaesthesia
c. general anaesthesia
d. central anaesthesia

In Text Answer:

d. Central anaesthesia

Summary to study session 12

In study session 12, you have learned that:

- **Causes of Disseminated Intravascular Coagulation (DIC):** The DIC triggers fibrinolysis and the production of fibrin degradation products.
- **The following are the condition of DIC:** Placental abruption, intrauterine fetal death, Amniotic fluid embolism, Intrauterine infection.
- **Prognosis** varies depending on the underlying disorder, and the extent of the intravascular thrombosis (clotting).
- **Pain Management in Labour:** Pain threshold varies from one individual to the other so the woman in labour must be relieved from pain and baby's safety must be ensured.
- **Factors that influence Pain Perception in the following:**
  Fear and anxiety, Personality, Fatigue, Culture and social factors, Expectations
- **Pathophysiology of pain:** Pain involves four physiological processes which include the following: Transduction, Transmission Modulation, Perception
- **Transcutaneous Electrical Nerve Stimulation (TENS):** The use of TENS is effective particularly in early labour. Treatment with TENS consists of attaching electrodes to the woman's back.

Self-Assessment Questions to study session 12

Now that you have completed this study session, you can assess how well you have achieved its Learning outcomes by answering the following questions. Write your answers in your study Diary and discuss them with your Tutor at the next study Support Meeting. You can check your answers with the Notes on the Self-Assessment questions at the end of this

SAQ 1.1

What is Disseminated Intravascular Coagulation (DIC)

SAQ 2.1

Explain the conditions where DIC can occur during child delivery

SAQ 3.1

Discuss Pathophysiology of pain

SAQ 4.1

Elaborate on Transcutaneous Electrical Nerve Stimulation (TENS)

SAQ 5.1

Mention the drugs use for the relief of pain during pregnancy

Reference

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Study Session 13: Normal Puerperium

Expected Duration: 1 week of 2 contact hours

Introduction

Puerperium is the first 6weeks after delivery during which the body readjusts back to the period before pregnancy. In this unit, the care of the woman during puerperium shall be discussed. There will also be a review of infant welfare clinic and family planning.

Learning Outcomes

After this study you should be able to:

13.1 Explain the analysis process of involution of the uterus
13.2 Discuss the overview of the relevant anatomy and physiology in the postpartum period.
13.3 Highlight the Natural Method of Menstrual Cycle
13.4 Mention the Physiological Changes during the period of puerperal problems
13.5 Elaborate on Post Natal Care

13.1 Analysis the process of involution of the uterus

Discuss the wellbeing of women after delivery with recognition when the lochia discharge is becoming abnormal. Guide women in making informed choice on a method of family planning and list family planning methods.

Puerperium is defined as a period which commences after the expulsion of the placenta and last up to about 6 – 8 weeks after delivery.

It is characterized by physiological and psychological changes when the reproductive organs return to their pre-gravid state lactation is initiated and established and there is recuperation from physical and emotional experiences of pregnancy and delivery.

In Text Question

The duration that start after expulsion of the placenta and last up to about

a. 2-4 weeks
b. 12-14 weeks

c. 6-8 weeks
d. 8-10 weeks

In Text Answer

c. 6-8 weeks

The foundations of the relationship between the mother and the infant are laid. The mother assumes the responsibility for care and nurturing of her infant. The process by which the generative organs return to their pre-gravid state is known as Involution.

13.2 An overview of the relevant anatomy and physiology in the postpartum period

Uterus: The pregnant term uterus (not including baby, placenta, fluids, e.t.c) weighs approximately 1000g. In the 6 weeks following delivery, the uterus recedes to a weight of 50-100 g.

After delivery of the placenta, the uterus is at the size of 20-week pregnancy, but reduces in size on abdominal examination by 1 finger-breadth each day, such that on the 12th day it cannot be palpated , at which time the uterus has shrunk enough to return to the true pelvis.. By end of puerperium it is only slightly larger than pre-pregnancy.

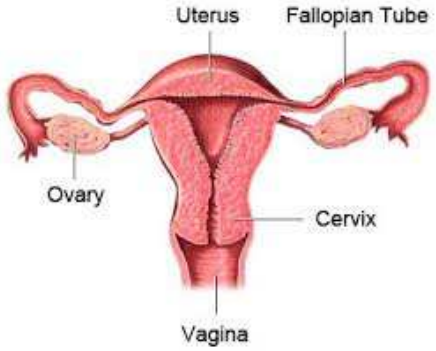

Figure 13.1: Uterus of human Body

Source: http://www.pyroenergen.com/articles11/uterine-fibroid-tumors.htm

The endometrial lining rapidly regenerates, so that by the seventh day endometrial glands are already evident. By the 16th day, the endometrium is restored throughout the uterus, except at the placental site.

The placental site undergoes series of changes in the postpartum period. Immediately after delivery, the contractions of the arterial smooth muscle and compression of the vessels by contraction of the myometrium ("physiologic ligatures") result in hemostasis.

The size of the placental bed decreases by half, and the changes in the placental bed result in the quantity and quality of the lochia that is experienced.

In Text Question

After delivery of the placenta, the uterus is at the size -------- (a) 4weeks (b) 5weeks (c) 10weeks (d) 20weeks.

In Text Answer

20weeks

Immediately after delivery, a large amount of red blood flows from the uterus until the contraction phase occurs. Thereafter, the volume of vaginal discharge (lochia) rapidly decreases. The duration of this discharge, known as lochia rubra, is variable. For the first 3-4 days, lochia comprises mainly blood and remnants of trophoblastic tissue.

The red discharge progressively changes to brownish red, with a more watery consistency (lochia serosa). Over a period of weeks, the discharge continues to decrease in amount and colour and eventually changes to yellow (lochia alba). The period of time the lochia can last varies, although it averages approximately 5 weeks.

In Text Question

Immediately after delivery, a large amount of ---------- flows from the uterus until the contraction phase occurs.

a. Red blood
b. lochia alba
c. placenta
d. postpartum

In Text Answer

a. Red blood

The amount of flow and colour of the lochia can vary considerably. Fifteen percent of women have continue to have lochia 6 weeks or more postpartum. Often, women experience an increase in the amount of bleeding at 7-14 days secondary to the sloughing of the eschar on the placental site. This is the classic time for delayed postpartum hemorrhages to occur.

13.2.1 Special Organ of a Pregnant Woman

The following are special organ of pregnant women:

1. **Cervix:** The cervix also begins to rapidly revert to a nonpregnant state, but it never returns to the nulliparous state. By the end of the first week, the external closes such that a finger cannot be easily introduced.

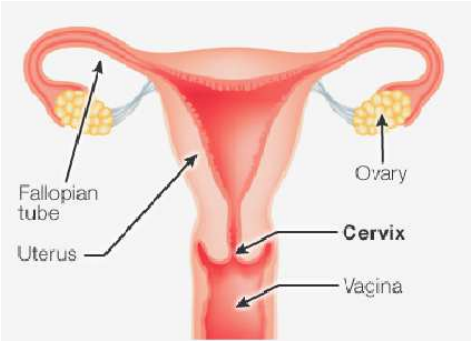

Figure 13.2: Female Reproductive Organ

Source: http://www.webmd.com/women/guide/cervicitis

2. **Vagina:** The vaginal wall is initially swollen, bluish and pouting but rapidly regains its tone but it does not completely return to its prepregnant size, although remaining fragile for 1-2 weeks. Perineal oedema may persist for some days.

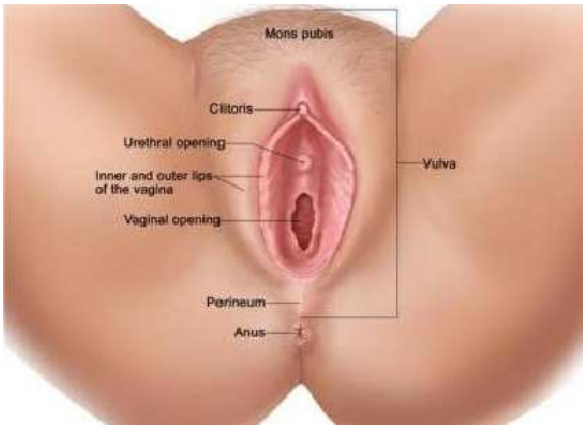

Figure 13.3: Female Vagina System

Source: http://www.womenhealthzone.com/category/womens-health/vaginal-health/

Resolution of the increased vascularity and edema occurs by 3 weeks, and the rugae of the vagina begin to reappear in women who are not breastfeeding. At this time, the vaginal epithelium appears atrophic on smear. This is restored by weeks 6-10; however, it

is further delayed in breastfeeding mothers because of persistently decreased estrogen levels.

3. **Perineum:** The perineum has been stretched and traumatized, and sometimes torn or cut, during the process of labor and delivery. The swollen and engorged vulva rapidly resolves within 1-2 weeks.

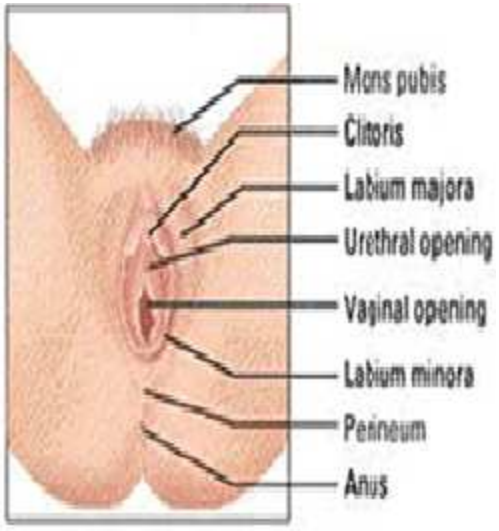

Figure 13.4: Female Perineum System
Source: http://medicalterms.info/anatomy/Perineum/

Most of the muscle tone is regained by 6 weeks, with more improvement over the following few months. The muscle tone may or may not return to normal, depending on the extent of injury to muscle, nerve, and connecting tissues.

In Text Question

The organ of the body that initially swollen with a bluish colour pouting but rapidly regains its tone is called --------

a. Perineum
b. Abdominal wall
c. Vaginal
d. Cervix

In Text Answer

c. Vaginal

4. **Abdominal wall:** The abdominal wall remains soft and poorly toned for many weeks. The return to a prepregnant state depends greatly on maternal exercise.

Image of Abdominal wall

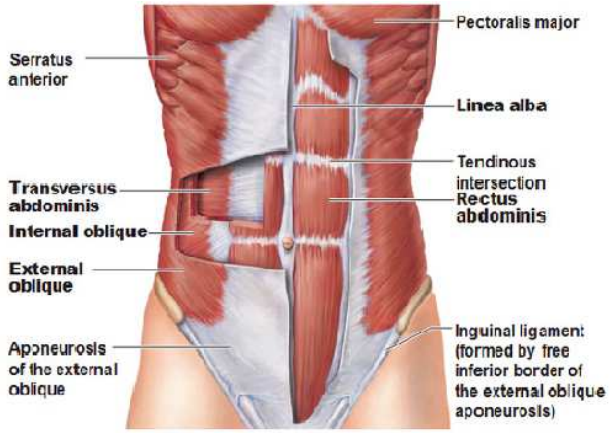

Figure 13.5: Female Abdominal Wall

Source: http://build-muscle-101.com/

5. **Ovaries:** The resumption of normal function by the ovaries is highly variable and is greatly influenced by breastfeeding the infant. The woman who breastfeeds her infant has a longer period of amenorrhea and anovulation than the mother who chooses to bottle-feed.

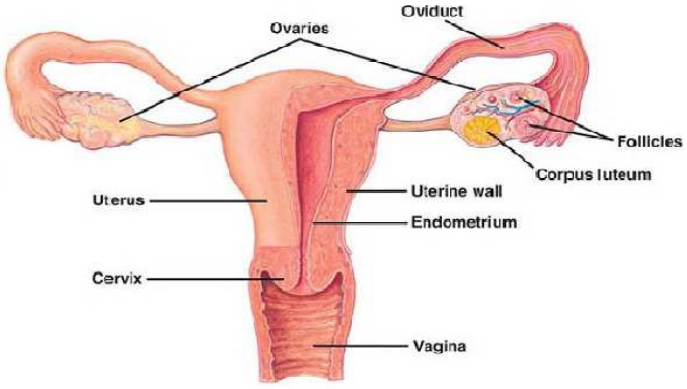

Figure 13.6: Female Ovaries

Source: http://www.ovarydisease.com/p/ovarian-cancer.html

The mother who does not breastfeed may ovulate as early as 27 days after delivery. Most women have a menstrual period by 12 weeks; the mean time to first menses is 7-9 weeks.

In the breastfeeding woman, the resumption of menses is highly variable and depends on a number of factors, including how much and how often the baby is fed and whether the baby's food is supplemented with formula.

The delay in the return to normal ovarian function in the lactating mother is caused by the suppression of ovulation due to the elevation in prolactin. Half to three fourths of women who breastfeed return to periods within 36 weeks of delivery.

6. **Breasts:** The changes to the breasts that prepare the body for breastfeeding occur throughout pregnancy. If delivery ensues, lactation can be established as early as 16 weeks' gestation. Lactogenesis is initially triggered by the delivery of the placenta, which results in falling levels of estrogen and progesterone, with the continued presence of prolactin.

   If the mother is not breastfeeding, the prolactin levels decrease and return to normal within 2-3 weeks. The colostrum is the liquid that is initially released by the breasts during the first 2-4 days after delivery. High in protein content, this liquid is protective for the newborn.

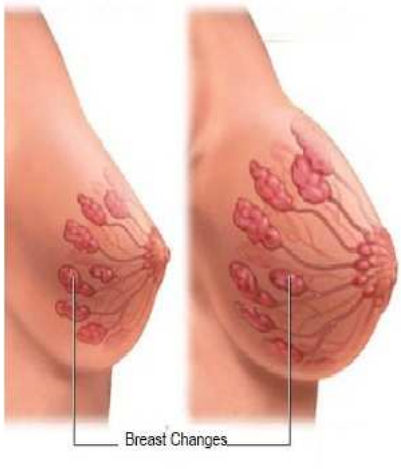

Figure 13.7: A woman Breast (Early Pregnancy before and after Delivery)
Source:http://loss-of-weight-allegiance.com/changes-during-pregnancy/#.VW_1Z_ldWew

The colostrum, which the baby receives in the first few days postpartum, is already present in the breasts, and suckling by the newborn triggers its release. The process,

which begins as an endocrine process, switches to an autocrine process; the removal of milk from the breast stimulates more milk production.

In Text Question

If the mother is not breastfeeding, the prolactin levels decrease and return to normal within ----------

a. 10-12 weeks
b. 2-3weeks
c. 2-4days
d. 5-7days

In Text Answer

b. 2-3weeks

Over the first 7 days, the milk matures and contains all necessary nutrients in the neonatal period. The milk continues to change throughout the period of breastfeeding to meet the changing demands of the baby.

The cardiovascular system reverts to normal during the first 2 weeks. The extra load on the heart from extra volume of blood disappears by the second week.

7. **Routine Postpartum Care:** The immediate postpartum period most often occurs in the hospital setting, where the majority of women remain for approximately 2 days after a vaginal delivery and 3-5 days after a caesarean delivery.

   During this time, women are recovering from their delivery and are beginning to care for the new-born. This period is used to make sure the mother is stable and to educate her in the care of her baby (especially the first-time mother).

Figure 13.8: Postpartum Care

Source: http://www.marchofdimes.org/pregnancy/the-postpartum-blues.aspx

While still in the hospital, the mother is monitored for blood loss, signs of infection, abnormal blood pressure, contraction of the uterus, and ability to void.

In Text Question

How days those a women stays in hospital after caesarean delivery

a. 14days
b. 3-5days
c. 10-12days
d. 7-8days

In Text Answer

b. 3-5days

Routine practices include a check of the baby's blood type and administration of the Rhogam vaccine to the Rh-negative mother if her baby has an Rh-positive blood type. At minimum, the mother's hematocrit level is checked on the first postpartum day. Women are encouraged to ambulate and to eat a regular diet.

8. **Vaginal delivery:** After a vaginal delivery, most women experience swelling of the perineum and consequent pain. This is intensified if the woman has had an episiotomy or a laceration. Routine care of this area includes ice applied to the perineum to reduce the swelling and to help with pain relief.

Figure 13.9: Vaginal Delivery

Source:http://www.medicstudy.com/breech-babies-have-higher-risk-of-death-from-vaginal-delivery-than-c-section/

Conventional treatment is to use ice for the first 24 hours after delivery and then switch to warm sitz baths. However, little evidence supports this method over other methods of postpartum perineum treatment.

Pain medications are helpful both systemically as nonsteroidal anti-inflammatory drugs (NSAIDs) or narcotics and as local anesthetic spray to the perineum.

In Text Question

Conventional treatment is to use ice for the second 12 hours after delivery **True/False**

In Text Answer

False

Haemorrhoids are another postpartum issue likely to affect women who have vaginal deliveries. Symptomatic relief is the best treatment during this immediate postpartum period because haemorrhoids often resolve as the perineum recovers. This can be achieved by the use of corticosteroid creams and local anaesthetics.

Tampon use can be resumed when the patient is comfortable inserting the tampon and can wear it without discomfort. This takes longer for the woman who has had an episiotomy or a laceration than for one who has not.

The vagina and perineum should first be fully healed, which takes about 3 weeks. Tampons must be changed frequently to prevent infection.

9. **Caesarean delivery:** The woman who has had a caesarean delivery usually does not experience pain and discomfort from her perineum but rather from her abdominal incision. This, too, can be treated with ice to the incision and with the use of systemic pain medication.

In Text Question

A woman that undergo caesarean birth usually experience pain from her -------

a. perineum
b. abdominal incision
c. cervix
d. ovary wall

In Text Answer

b. Abdominal incision

Women who have had a caesarean delivery are often slower to begin ambulating, eating, and voiding; however, encourage them to quickly resume these and other normal activities.

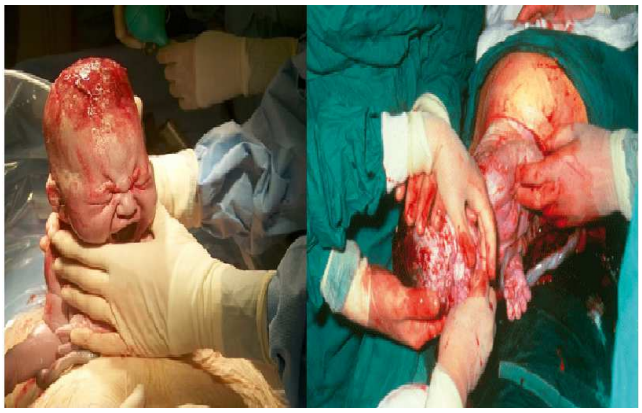

Figure 13.10: Baby Delivered during Caesarean Operation

Source:http://www.6minutes.com.au/news/latest-news/multiple-caesareans-trigger-overwhelming-health-ri

10. **Sexual intercourse:** this may resume when bright red bleeding ceases, the vagina and vulva are healed, and the woman is physically comfortable and emotionally ready. Physical readiness usually takes about 3 weeks.

Birth control is important to protect against pregnancy because the first ovulation is very unpredictable.

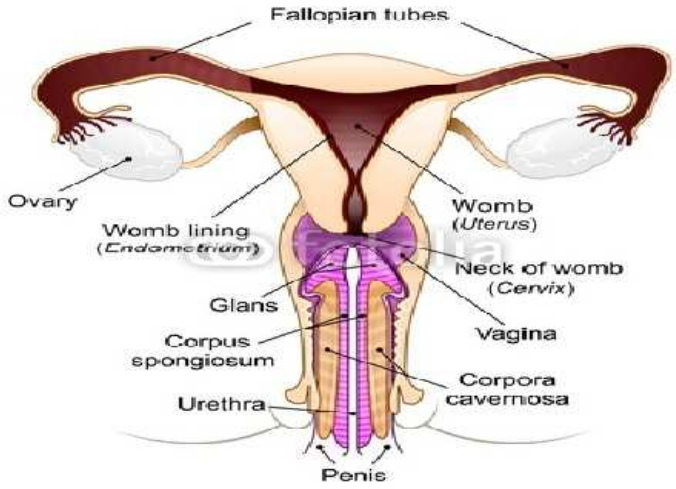

Figure 13.11: Sexual Intercourse
Source: https://www.fotolia.com/id/27220232

11. **Patient education:** Substantial education takes place during the hospital stay, especially for the first-time mother. The mother (and often the father) is taught routine care of the baby, including feeding, diapering, and bathing, as well as what can be expected from the baby in terms of sleep, urination, bowel movements, and eating.
    Provide education, support, and guidance to the breastfeeding mother. Breastfeeding is neither easy nor automatic. It requires much effort on the part of the mother and her support team.

    Breastfeeding should be initiated as soon after delivery as possible; in a normal, uncomplicated vaginal delivery breastfeeding is possible almost immediately after birth.

Figure 13.12: Nursing Mother Education
Source:http://www.gavi.org/library/news/roi/2011/rwanda-immunisation-brings-benefits-for-mothers/

Encourage the mother to feed the baby every 2-3 hours (at least while she is awake during the day) to stimulate milk production. Long feedings are unnecessary, but they should be frequent. Milk production should be well established by 36-96 hours.

In women who choose not to breastfeed, the care of the breasts is quite different. Care should be taken not to stimulate the breasts in any way in order to prevent milk production. Ice packs applied to the breasts and the use of a tight brassiere or a binder can also help to prevent breast engorgement.

In Text Question

Breastfeeding should be initiated as soon after delivery as possible **True/False**

In Text Answer

True

Acetaminophen or NSAIDs can alleviate the symptoms of breast engorgement (eg, tenderness, swelling, fever) if it occurs. Bromocriptine was formerly administered to suppress milk production; however, its use has diminished because it requires 2 weeks of administration, does not always work, and can produce adverse reactions.

12. **Discharge instructions:** The mother must be given discharge instructions. The most important information is who and where to call if she has problems or questions. She also needs details about resuming her normal activity. Instructions vary, depending on whether the mother has had a vaginal or a caesarean delivery.

    The woman who has had a vaginal delivery may resume all physical activity, including using stairs, riding or driving in a car, and performing muscle-toning exercises, as long as she experiences no pain or discomfort. The key to resuming normal activity is not to overdo it on one day to the point that the mother is completely exhausted the next day.

In Text Question

The most important information is who and where to call if she has problems or questions which is called --------

a. postpartum care
b. Preparation for breastfeeding baby
c. discharge instruction
d. patient Education

In Text Answer

c. Discharge instruction

Pregnancy, labour, delivery, and care of the newborn are strenuous and stressful, and the mother needs sufficient rest to recover. The woman who has had a caesarean delivery must be more careful about resuming some of her activities.

Figure 13.13: A Nursing Instructing a nursing Mother

Source: http://www.downstate.edu/peds/Karp/breastf1612.html

She must avoid overuse of her abdomen until her incision is well healed in order to prevent an early dehiscence or a hernia later on. Women typically return for their postpartum visit at approximately 6 weeks after delivery.

In Text Question

A woman can resume his postpartum appointment about ------- weeks after delivery

a. 2
b. 3
c. 5
d. 6

In Text Answer

d. 6 weeks

No sound reason for this exists; the time has probably become the standard so that women who are returning to work can be medically cleared to return. Anything that must be done at a 6-weeks' postpartum visit can be done earlier or later than 6 weeks.

An earlier visit can often aid a new mother in resolving problems she may be having or in providing a time to answer her questions. The mother must be counselled about birth control options before she leaves the hospital.

She may not be ready to decide about a method, but she needs to know the options. Her decision will be based on a number of factors, including her motivation in using a particular method, how many children she has, and whether she is breastfeeding.

In Text Question

A woman must be counselled on birth control option before leaving the hospital during child birth **True/False**

In Text Answer

True

A systemic review of ovulation and menses in nonlactating women found that although most women begin ovulation at least 6 weeks postpartum, with mean day of first ovulation occurring 45-94 days postpartum, a limited number ovulate sooner.
Two studies reporting earliest day of first ovulation reported it occurring on days 25 and 27 postpartum, emphasizing the need for early postpartum contraception discussion and method initiation to decrease the risk of pregnancy soon after delivery.

13.3 Natural Method of menstrual Cycle

The following are the available options, they are as follows:

Natural methods can be used in highly motivated couples, to include the use of monitoring the basal body temperature and the quality and quantity of the cervical mucus to determine what phase of the menstrual cycle the woman is in and if it is safe to have intercourse.
Barrier methods of contraception, such as condoms, are widely available, as are vaginal spermicides. Condoms are available over-the-counter, while diaphragms and cervical caps must be fitted.

In Text Question

To determine what phase of the menstrual cycle a woman undergoes in order to monitor the basal body temperature, the quality and quantity of cervical mucus --------- method must be adopted

a. artificial method
b. natural method
c. control method
d. specialised method.

In Text Answer

b. Natural Method

Hormonal methods of contraception are numerous. Combined estrogen-progestin agents are taken daily by mouth or monthly by injection. Progestin-only agents are available for daily intake or by long-acting injections that are effective for 12 weeks.

Intrauterine devices can be placed a few weeks after delivery. Permanent methods of birth control (i.e., tubal ligation, vasectomy) are best for the couple who has more than one child and who are sure that they do not want more.

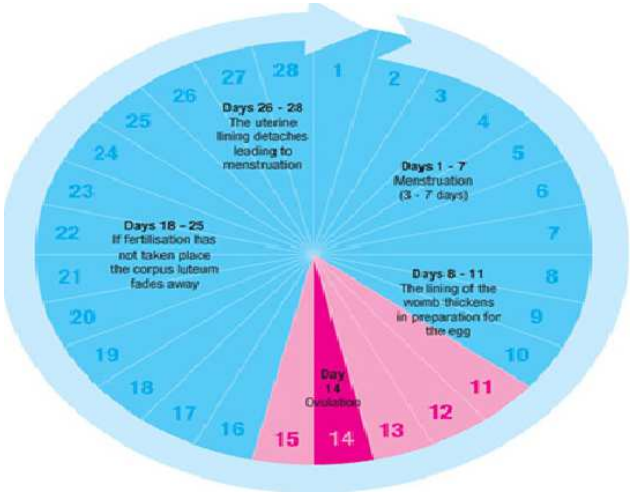

Figure 13.14: Menstrual Cycle of a Woman
Source: http://www.theovulationsymptoms.com/

The puerperium covers the 6-week period following birth, during which time the various changes that occurred during pregnancy revert to the non-pregnant state.

13.4 Physiological changes during the period of puerperal problem

Physiological changes during this time include Common puerperal problems such as:

Perineum: If the perineum has been damaged and repaired it may cause considerable pain, requiring analgesia, and women may prefer to sit on a rubber ring. If the perineum is painful, it is important to check the sutures and check for any signs of infection. Occasionally, sutures may need to be removed.

Micturition: Retention of urine can occur (possible secondary to pudendal nerve bruising) and can occasionally require catheterization Approximately 50% of women will develop some urinary incontinence and this usually takes the form of stress incontinence. This may persist after the pregnancy. Pelvic floor exercises should be taught and encouraged.

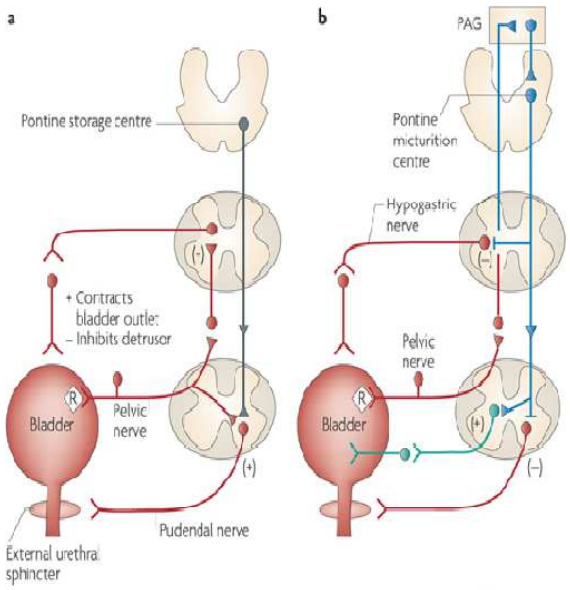

Figure 13.15: Physiological Micturition

Source: http://www.nature.com/nrn/journal/v9/n6/fig_tab/nrn2401_F5.html

Bowel problems: Constipation may be a problem for a short time and stool softeners may be useful. Haemorrhoids may be more painful after the birth than before. These can occasionally appear for the first time perinatally and these normally disappear within a few weeks.

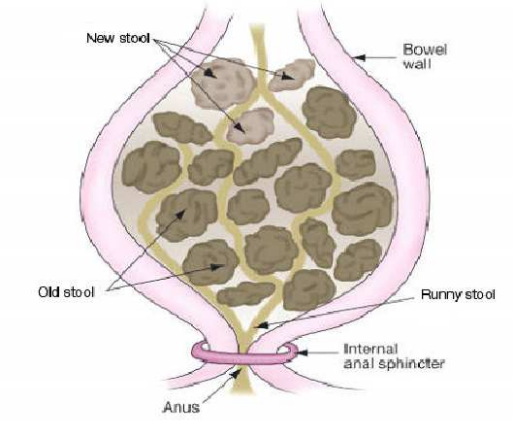

Figure 13.16: Bowel Problem

Source: http://www.sbhao.on.ca/spina-bifida/bladder-and-bowel

Mastitis: This may be due to failure to express milk from one part of the breast; it can be treated by ensuring all milk is expressed and with cold compresses. It may be complicated by infection with *Staphylococcus aureus* and require treatment with flucloxacillin. Very occasionally, a breast abscess develops and requires incision and drainage.

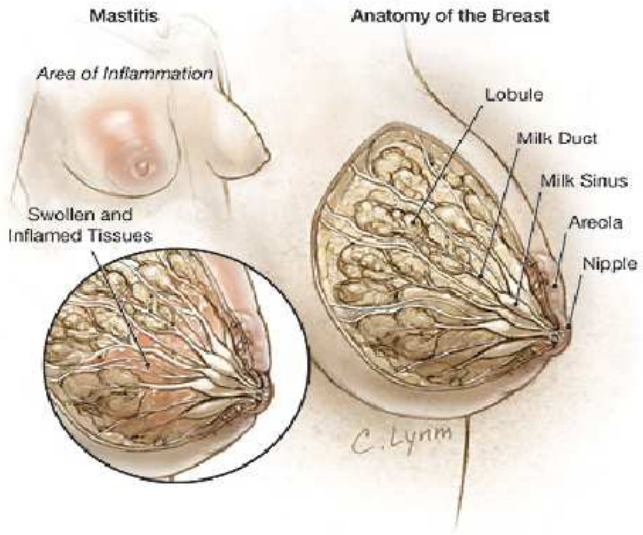

Figure 13.17: Mastitis of Nursing Mother

Source: http://jama.jamanetwork.com/article.aspx?articleid=196303

Backache: This may persist after the birth and affects approximately a quarter of women. Pain may be considerable and last for several months.

Figure 13.18: A woman with a backache after Birth

Source: http://evesmama.com/2013/01/after-birth-what-no-one-tells-you/

Psychological problems: 'Third day blues': on days 3-5, a large proportion of women become temporarily sad and emotional. Approximately 10% of women suffer from post-natal depression which may present at any time during the first year after delivery.

The precise cause of this is unknown and may involve hormonal changes, reaction to excitement of childbirth and doubts by the mother about her ability to care for the child. Management consists of reassuring the mother and explaining what is happening.

Serious maternal health problems

1. **Postnatal psychosis:** This affects 1-2/1,000 women and usually appears as mania or depression but women sometimes present with apparent schizophrenia. It usually begins abruptly at 5-15 days, initially with confusion, anxiety, restlessness and sadness. There is rapid development of delusions, e.g. baby has died or is deformed, or hallucinations with deepening melancholia.

Figure 13.19: Postnatal Psychosis Mother

Source: http://www.abc.net.au/health/library/stories/2010/10/25/3048860.htm

The woman must be admitted to hospital, preferably with her baby. There is limited evidence for the effectiveness of treatment specifically for puerperal psychosis.

In Text Question

Postnatal psychosis usually affect women from ---------- which appears as mania

a. 1-2/1000
b. 2-1/100
c. 5-3/1000
d. 5-7/10

In Text Answer

a. 1-2/1000

Treatments used for affective psychoses in general are also appropriate for puerperal psychosis, e.g. one or more drugs from the antidepressants, mood-stabilising or neuroleptic groups and, occasionally, electroconvulsive therapy (ECT).

2. **Post-partum haemorrhage:** Primary postpartum haemorrhage is defined as loss of more than 500 ml of blood during the first 24 hours. Normally, 200-600 ml blood are lost before myometrial retraction plus strong uterine contractions stop flow.

   The majority of cases are associated with either an atonic uterus or placental remnants. The rest of cases are associated with laceration of the genital tract, rarely uterine rupture or blood coagulation defect.

   Treatment in situations where the placenta is still in the uterus is combining controlled cord traction with fundal pressure. If this fails, manual removal of the placenta under general anaesthetic is carried out.

   If the placenta has already been expelled, treatment includes massaging the uterus, intravenous (IV) ergometrine or syntocinon, or misoprostol, blood treansfusion, correction of coagulation defects, bimanual compression of the uterus; urgent transfer to theatre for surgery may be required.

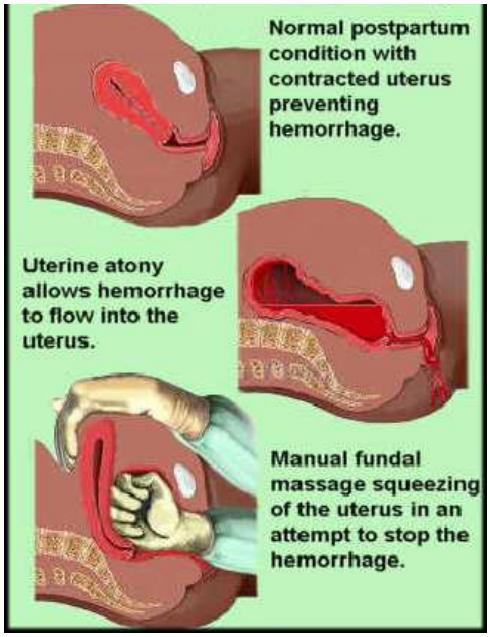

Figure 13.20: Post-partum haemorrhage

Source:http://nursingcrib.com/nursing-care-plan/nursing-care-plan-postpartum-hemorrhage/

Secondary postpartum haemorrhage is abnormal bleeding after 24 hours up until 6 weeks postpartum. **Usual causes are:**

Poor epithelialisation of placental site.

Retained placental fragment and/or blood clots (usually detected by ultrasound).

The uterus is often found to be bulky and tender with the cervix open.

Initially, it is treated with ergometrine intramuscularly plus antibiotics. Curettage is only necessary if bleeding persists despite this.

Postnatal anaemia is common and may easily be overlooked.

3. **Puerperial pyrexia:** Defined as temperature 38°C or above during the first 14 days after delivery.

   This now occurs rarely. Most cases are due to *anaerobic streptococci* that normally inhabit the vagina. Initially, they infect the placental bed and then spread either into the parametrium or via the uterine cavity to the Fallopian tubes and, occasionally, the pelvic peritoneum.

   Alternatively. There may be breast infection or UTI, or a non-infective cause such asthrombophlebitis or deep vein thrombosis.

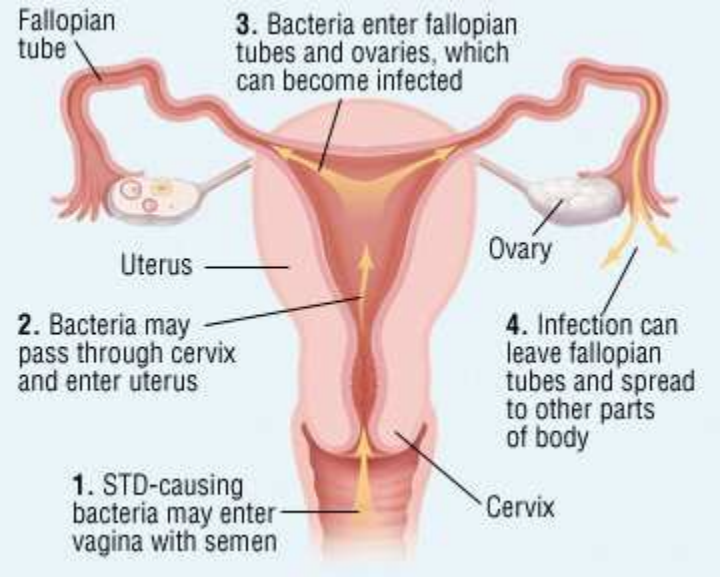

Figure 13.21: Puerperial pyrexia

Source:http://www.online-sciences.com/health/what-are-the-causes-of-puerperal-fever-sepsis/

4. **Thromboembolism:** This occurs in <1/1,000 births and is more likely to occur in women who are overweight, over the age of 35 or who have had a caesarean section.

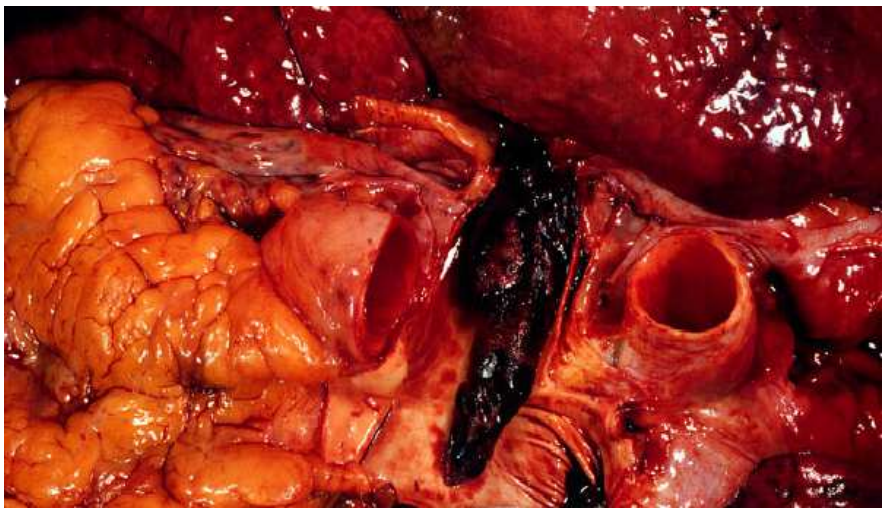

Figure 13.22: Thromboembolism of woman

Source: http://www.uaz.edu.mx/histo/pathology/ed/ch_7/c7_20.htm

5. **Deep vein thrombosis:** This is indicated by low-grade fever, raised pulse rate and a feeling of uneasiness. Calf muscles are tender and painful on firm palpation. Clinical signs are unreliable (and D-dimer cannot be used in pregnancy and puerperium), so confirmation is needed with colour Doppler ultrasound.

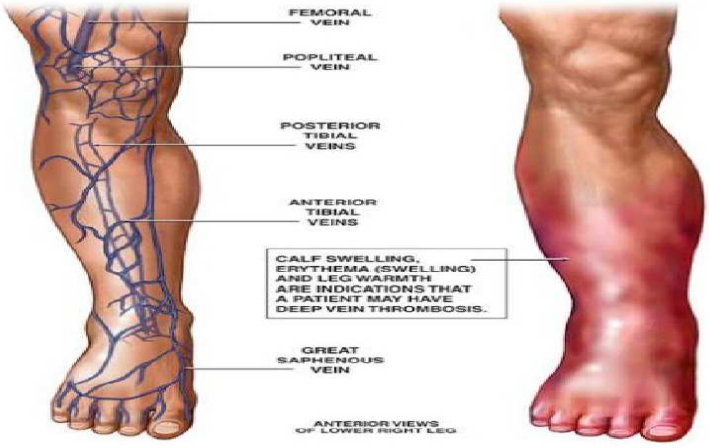

Figure 13.22: Deep Vein Thrombosis

Source:http://diseasesdefinition.com/deep-vein-thrombosis-symptoms-causes-treatment-pictures/

Treatment is with low molecular weight heparin and then oral warfarin continued for 6-12 weeks.[6]Pulmonary embolus: dyspnoea and pleural pain and cyanosis may develop later.

Friction rub is heard on the chest. Diagnosis is confirmed by a lung perfusion scan performed urgently, as women may die within 2-4 hours. Treatment is with IV heparin bolus followed by infusion.

13.5 Post-Natal care

Women should be offered information to enable them to promote their own and their baby's health and well-being and to recognise and respond to problems. At the first postnatal contact, women should be advised of the signs and symptoms, and appropriate action for potentially life-threatening conditions.

In Text Question

The advice giving to women on the sign, symtoms and appropriate action for potential life-threatening condition

a. Pre-natal care
b. Post-Natal
c. Pater-natal
d. Bater-natal

In Text Answer

b. Post-Natal

All maternity care providers should encourage breast-feeding. At each postnatal contact, women should be asked about their emotional well-being, what family and social support they have and their usual coping strategies for dealing with day-to-day matters.

Women and their families/partners should be encouraged to tell their healthcare professional about any changes in mood, emotional state and behaviour that are outside of the woman's normal pattern.

Figure 13.23: Post-Natal care

Source: http://www.smartcape.org.za/women/parenting/postnatal-care.html

At each postnatal contact, parents should be offered information and advice to enable them to:

- ❖ Assess their baby's general condition.
- ❖ Identify signs and symptoms of common health problems seen in babies.
- ❖ Contact a healthcare professional or emergency service if required.

If the perineum is painful, it is important to check the sutures and check for any signs of infection. Occasionally, sutures may need to be removed.

Constipation may be a problem for a short time and stool softeners may be useful.

Haemorrhoids may be more painful after the birth than before. These can occasionally appear for the first time perinatally and these normally disappear within a few weeks.

Summary to study session 13

In study session 13, you have learned that:

- **Puerperium** is defined as a period which commences after the expulsion of the placenta and last up to about 6 – 8 weeks after delivery.
- **Special Organ of a Pregnant Woman includes the following**: Cervix, Vagina, Perineum, Abdominal wall, Ovaries, Breasts, Routine Postpartum Care, Vaginal delivery, Caesarean delivery, Sexual intercourse.
- **Natural Method of menstrual Cycle:** Natural methods can be used in highly motivated couples, to include the use of monitoring the basal body temperature

and the quality and quantity of the cervical mucus to determine what phase of the menstrual cycle the woman is in and if it is safe to have intercourse.

- **Physiological changes during this time include Common puerperal problems such as:**
- Perineum, Micturition, Bowel problems, Mastitis, Backache.
- **Post-Natal care:** These are treatment and care shown to a nursing mother and baby after child birth.

Self-Assessment Questions to study session 13

Now that you have completed this study session, you can assess how well you have achieved its Learning outcomes by answering the following questions. Write your answers in your study Diary and discuss them with your Tutor at the next study Support Meeting. You can check your answers with the Notes on the Self-Assessment questions at the end of this

SAQ 1.1

What is Postnatal Care?

SAQ 2.1

Explain the uterus of a human body

SAQ 3.1

Discuss on Postpartum care.

SAQ 4.1

Highlight the Physiological changes during the period of puerperal problem.

SAQ 5.1

Elaborate on Deep vein thrombosis

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Study Session 14: Hydratidiform Mole

Expected Duration: 1 week of 2 contact hours

Introduction

Hydatidiform mole is a infrequent form or growth that forms inside the womb (uterus) at the start of a pregnancy. It is a kind of gestational trophoblastic disease (GTD). A cancerous form of GTD is called choriocarcinoma.

Causes

Hydatidiform mole, or molar pregnancy, consequences from over-production of the tissue that is hypothetical to develop into the placenta. The placenta feeds the fetus during pregnancy. With a molar pregnancy, the tissues grow into an irregular growth, called a form.

Learning Outcome

14.1 Molar Pregnancy
14.2 Natural History
14.3 Parental Origin
14.4 Clinical Presentation and Diagnosis

14.1 Molar pregnancy

Is an abnormal form of pregnancy in which a non-viable fertilized egg implants in the uterus and converts a normal pregnancy into an abnormal one (which will fail to come to term). A molar pregnancy is a gestational trophoblastic disease that grows into a mass in the uterus that has swollen chorionic villi.

These villi grow in clusters that resemble grapes. A molar pregnancy can develop when an egg that is missing its nucleus is fertilized and that may or may not contain fetal tissue. It is characterized by the presence of a hydatidiform mole (or hydatid mole, molar hydatidosa).

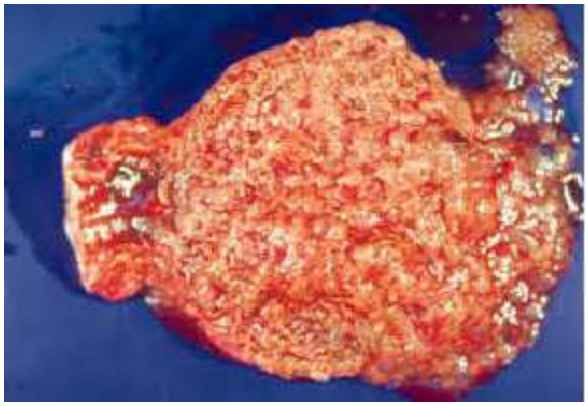

Figure 14.1: Molar Pregnancy
Source: http://jessicamalloy.blogspot.com/2013/11/molar-pregnancy.html

Molar pregnancies are categorized into partial and complete moles. Mole as used here simply indicates clump of growing tissue, or a 'growth'. A complete mole is caused by a single (90%) or two (10%) sperm combining with an egg which has lost its DNA (the sperm then reduplicates forming a "complete" 46 chromosome set).
The genotype is typically 46,XX (diploid) due to subsequent mitosis of the fertilizing sperm, but can also be 46,XY (diploid), 46,YY (diploid) is not observed. In contrast, a partial mole occurs when an egg is fertilized by two sperm or by one sperm which reduplicates itself yielding the genotypes of 69,XXY (triploid) or 92,XXXY (tetraploid).
Complete hydatidiform moles have a higher risk of developing into chorio carcinoma — a malignant tumor of trophoblast cells — than do partial moles. The etymology is derived from hydatisia (Greek "a drop of water"), referring to the watery contents of the cysts, and mole (from Latin mola = millstone/false conception).

In Text Question
A molar pregnancy is a gestational trophoblastic disease that grows into a mass in the uterus that has swollen chorionic villi. **True/False**

In Text Answer
True

The term, however, comes from the similar appearance of the cyst to a hydatid cyst. Hydatidiform mole conception may be categorized in medical terms as one type of non-induced (natural) "Missed abortion" - referred to colloquially as a "missed miscarriage",

because the pregnancy has become non-viable (miscarried) but was not immediately expelled (therefore was "missed").

One form of gestational trophoblastic disease, a molar pregnancy, results from abnormal fertilization of the ovum.

A complete hydatidiform mole, shown here, occurs when the ovum is lacking a maternal complement of chromosomes and is fertilized by a haploid sperm, usually containing an X chromosome. Duplication of this chromosome set typically yields a 46, XX karyotype that is paternally derived.

In Text Question

---------- mole are beginning are classify in medical terms as one type of non-induced

a. partial
b. incomplete
c. Pregnancy
d. Hydatidiform

In Text Answer

d. Hydatidiform

No fetus develops, but there is an abnormal placenta consisting of a mass of tissue with grape-like, swollen chorionic villi.

14.2 Natural history

A hydatidiform mole is a pregnancy in which the placenta contains grapelike vesicles (small sacs) that are usually visible with the naked eye. The vesicles arise by distention of the chorionic villi by fluid.

When inspected in the microscope, hyperplasia of the trophoblastic tissue is noted. If left untreated, a hydatidiform mole will almost always end as a spontaneous abortion (miscarriage).

Based on morphology,

14.2.1 Hydatidiform moles can be divided into two types:

- **Incomplete moles:** all the chorionic villi are vesicular, and no sign of embryonic or fetal development is present.

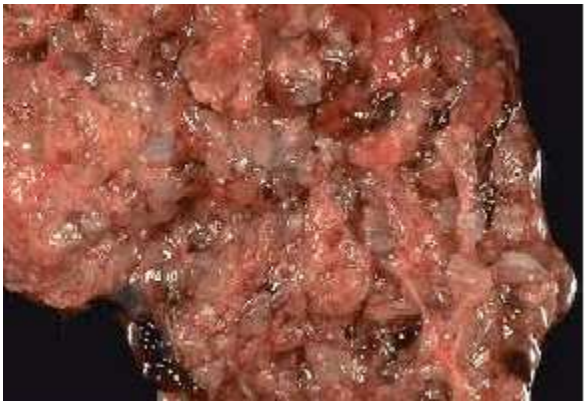

Figure 14.2: Imcomplete Moles

Sources: http://pathologyoutlines.com/topic/placentaincompletemole.html

- **partial moles:** Some villi are vesicular, whereas others appear more normal, and embryonic/fetal development may be seen but the fetus is always malformed and is never viable.

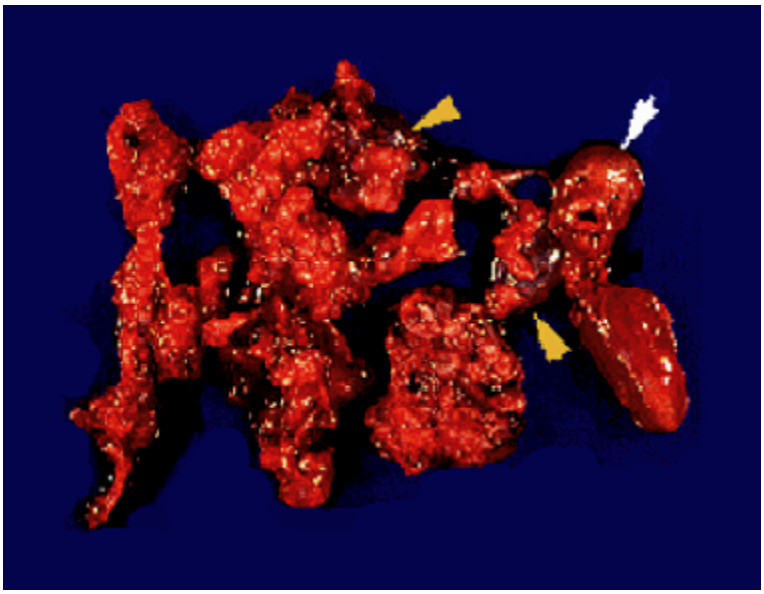

Figure 14.3: Partial Mole

Source:http://mynotes4usmle.tumblr.com/post/43941953950/partial-mole-fertilization-of-an-ovum-with#.VXFrtfldWew

- **Hydatidiform moles:** Are a common complication of pregnancy, occurring once in every 1000 pregnancies in the US, with much higher rates in Asia (e.g. up to one in 100 pregnancies in indonesia), (Di Cintio, Parazzini, Rosa, Chatenoud, Benzi, 1997).

In rare cases a hydatidiform mole co-exists in the uterus with a normal, viable fetus. These cases are due to twinning.

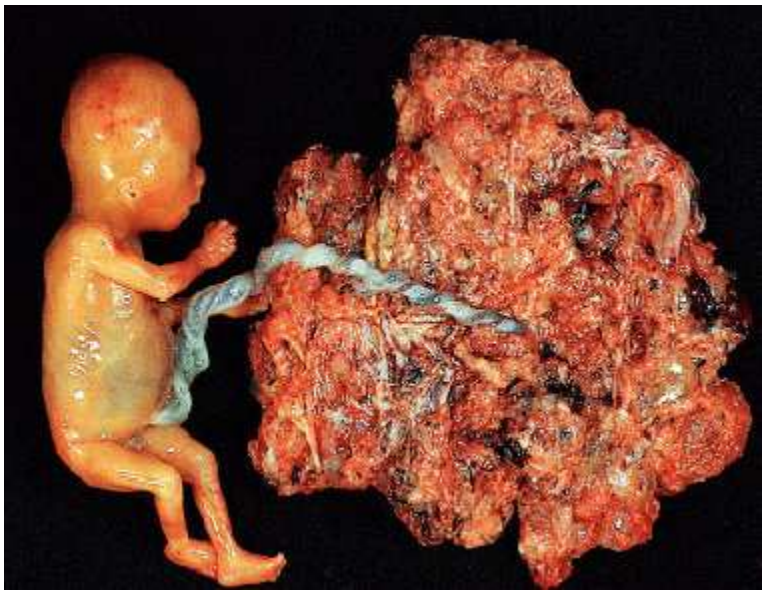

Figure 14.4: Hydatidiform moles

Source: http://realchoice.blogspot.com/2009/06/hydatidiform-mole.html

The uterus contains two conceptuses: one with an abnormal placenta and no viable fetus (the mole), and one with a normal placenta and a viable fetus. Under careful surveillance it is often possible for the woman to give birth to the normal child and to be cured of the mole.

The etiology of this condition is not completely understood. Potential risk factors may include defects in the egg, abnormalities within the uterus, or nutritional deficiencies. Women under 20 or over 40 years of age have a higher risk. Other risk factors include diets low in protein, folic acid, and carotene.

In Text Question

Partial moles can also be called ---------

a. regular mole
b. balance mole

c. embryonic
d. Hydatidiform moles

In Text Answer

c. Embryonic

The diploid set of sperm-only DNA means that all chromosomes have sperm-patterned methylation suppression of genes. This leads to overgrowth of the syncytiotrophoblast whereas dual egg-patterned methylation leads to a devotion of resources to the embryo, with an underdeveloped syncytiotrophoblast.

This is considered to be the result of evolutionary competition with male genes driving for high investment into the fetus versus female genes driving for resource restriction to maximise the number of children.

14.3 Parental origin

In most complete moles, all nuclear genes are inherited from the father only (androgenesis). In approximately 80% of these androgenetic moles, the most probable mechanism is that an empty egg is fertilized by a single sperm, followed by a duplication of all chromosomes/genes (a process called (endoreduplication).

In approximately 20% of complete moles, the most probable mechanism is that an empty egg is fertilised by two sperm. In both cases, the moles are diploid (i.e. there are two copies of every chromosome). In all these cases, the mitochondrial genes are inherited from the mother, as usual.

Most partial moles are triploid (three chromosome sets). The nucleus contains one maternal set of genes and two paternal sets. The mechanism is usually the reduplication of the paternal haploid set from a single sperm, but may also be the consequence of dispermic (two sperm) fertilisation of the egg.

In Text Question

In total moles nuclear genes are hereditary from --------

a. androgenesis
b. endoreduplication
c. fathdrogenesis
d. mothdrogenesis

In Text Answer

a. androgenesis

In rare cases, hydatidiform moles are tetraploid (four chromosome sets) or have other chromosome abnormalities.

A small percentage of hydatidiform moles have biparental diploid genomes, as in normal living persons; they have two sets of chromosomes, one inherited from each biological parent. Some of these moles occur in women who carry mutations in the gene, predisposing them towards molar pregnancy. These rare variants of hydatidiform mole may be complete or partial.

14.4 Clinical Presentation and diagnosis

Box 1.1: The following are symptoms of Molar pregnancies:
Painless vaginal bleeding in the fourth to fifth month of pregnancy,
The uterus may be larger than expected,
The ovaries may be enlarged.
There may also be more vomiting than would be expected (hyperemesis),
Sometimes there is an increase in blood pressure along with protein in the urine.
Blood tests will show very high levels of human chorionic gonadotropin (HCG).

The diagnosis is strongly suggested by ultrasound, but definitive diagnosis requires histopathological examination. On ultrasound, the mole resembles a bunch of grapes ("cluster of grapes" or "honeycombed uterus" or "snow-storm"). There is increased trophoblast proliferation and enlarging of the chorionic villi.

Angiogenesis in the trophoblasts is impaired as well. Sometimes symptoms of hyperthyroidism are seen, due to the extremely high levels of hCG, which can mimic the normal thyroid stimulating hormone (TSH).

Examinations and Tests: A pelvic examination may show signs similar to a normal pregnancy, but the size of the womb may be abnormal and the baby's heart sounds are absent. There may be some vaginal bleeding.

14.4.1 A pregnancy ultrasound will show an abnormal placenta with or without some development of a baby. Tests may include:

1. HCG blood test
2. Chest x-ray

3. CT or MRI of the abdomen
4. Complete blood count
5. Blood clotting tests
6. Kidney and liver function tests

14.4.2 Treatment

Hydatidiform moles should be treated by evacuating the uterus by uterine suction or by surgical curretage as soon as possible after diagnosis, in order to avoid the risks of choriocarcinoma. Patients are followed up until their serum human chorionic gonadotropin (hCG) level has fallen to an undetectable level.

Invasive or metastatic moles (cancer) may require chemotherapy and often respond well to methrotrexate. As they contain paternal antigens, the response to treatment is nearly 100%. Patients are advised not to conceive for one year after a molar pregnancy. The chances of having another molar pregnancy are approximately 1%.

14.4.3 Anesthesia Management

The uterine curettage is generally done under the effect of anesthesia, preferably spinal anesthesia in hemodynamically stable patients. The advantages of **spinal anesthesia** over **general anesthesia** include ease of technique, favorable effects on the pulmonary system, safety in patients with hyperthyroidism and non-tocolytic pharmacological properties.

Additionally, by maintaining patient's consciousness one can diagnose the complications like uterine perforation, cardiopulmonary distress and thyroid storm at an earlier stage than when the patient is sedated or is under general anesthesia.

Figure 14.6: anaesthesia Management

Source: http://www.agelessfitnesssystems.com/what-happens-in-an-anesthesia-department/

Management is more complicated when the mole occurs together with one or more normal fetuses. Carboprost (PGF2α) medication may be used to contract the uterus.

3.4.4 Prognosis

More than 80% of hydatidiforms moles are benign. The outcome after treatment is usually excellent. Close follow-up is essential. Highly effective means of contraception are recommended to avoid pregnancy for at least 6 to 12 months.

In 10 to 15% of cases, hydatidiform moles may develop into invasive moles. This condition is named persistent trophoblastic disease (PTD). The moles may intrude so far into the uterine wall that hemorrhage or other complications develop. It is for this reason that a post-operative full abdominal and chest x-ray will often be requested.

In Text Question

Most effective means of contraception are suggested to avoid pregnancy for -------- to ----------month

a. 5-10
b. 20-22
c. 6-12
d. 3-2

In Text Answer

c. 6-12

In 2 to 3% of cases, hydatidiform moles may develop into choriocarcinoma, which is a malignant, rapidly-growing, and matastatic (spreading) form of cancer. Despite these factors which normally indicate a poor prognosis, the rate of cure after treatment with chemotherapy is high.

Over 90% of women with malignant, non-spreading cancer are able to survive and retain their ability to conceive and bear children. In those with metastatic (spreading) cancer, remission remains at 75 to 85%, although their childbearing ability is usually lost.

The prognosis of hydatidiform moles can be estimated by scoring systems such as the Modified WHO Prognostic Scoring System, wherein scores between 1 and 4 from various parameters are summed together:

Modified WHO Prognostic Scoring System (Stage information)				
	0	**1**	**2**	**4**
Age	<40	≥40	–	–
Antecedent pregnancy	mole	abortion	Term	–
Interval months from index pregnancy	<4	4–6	7–12	>12
Pretreatment serum hCG (IU/L)	$<10^3$	10^3–10^4	10^4–10^5	$>10^5$
Largest tumor size (including uterus)	<3	3–4 cm	≥5 cm	–
Site of metastases	lung	spleen, kidney	Gastrointestinal	liver, brain
Number of metastases	–	1–4	5–8	>8
Previous failed chemotherapy	–	–	single drug	≥2 drugs

Women with a score of 7 or greater are considered at high risk.

14.4.5 Complications of molar pregnancy

Complication normal occur during molar pregnancy which hinder easy delivery of the baby and affect the mother.

The following are the Complication of a molar Pregnancy:

1. Preeclampsia
2. Thyroid problems
3. Molar pregnancy that continues or comes back.
4. Complications related to the surgery to remove a molar pregnancy include:
5. Excessive bleeding.
6. Side effects of anesthesia.

Summary to study session 14

In study session 14, you have learned that:

- **Molar pregnancy:** Is an abnormal form of pregnancy in which a non-viable fertilized egg implants in the uterus and converts a normal pregnancy into an abnormal one (which will fail to come to term).
- **Natural history:** A hydatidiform mole is a pregnancy in which the placenta contains grapelike vesicles (small sacs) that are usually visible with the naked eye.
- **Hydatidiform moles can be divided into two types:**
  - ❖ Incomplete moles
  - ❖ Partial moles

- **Parental origin**: In most complete moles, all nuclear genes are inherited from the father only (androgenesis).
- **Clinical Presentation and diagnosis contain the following symptoms:**
  Painless vaginal bleeding in the fourth to fifth month of pregnancy,
  The uterus may be larger than expected,
  The ovaries may be enlarged.
  There may also be more vomiting than would be expected (hyperemesis),
  Sometimes there is an increase in blood pressure along with protein in the urine.
  Blood tests will show very high levels of human chorionic gonadotropin (HCG).
- **Anesthesia Management:** The uterine curettage is generally done under the effect of anesthesia, preferably spinal anesthesia in hemodynamically stable patients.

Self-Assessment Questions to study session 14

Now that you have completed this study session, you can assess how well you have achieved its Learning outcomes by answering the following questions. Write your answers in your study Diary and discuss them with your Tutor at the next study Support Meeting. You can check your answers with the Notes on the Self-Assessment questions at the end of this

SAQ 1.1

Explain how molar pregnancy?

SAQ 2.1

Discuss the following type of moles:

- ❖ Incomplete moles
- ❖ Partial moles
- ❖ Hydatidiform moles

SAQ 3.1

Parental origin: In most complete moles, all nuclear genes are inherited from the father only (androgenesis).

SAQ 4.1

Mention the symptoms of molar pregnancy

SAQ 5.1

Elaborate on the test for pregnancy ultrasound that shows abnormal placenta without the development of a baby.

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