
UNIT 6 COMPLICATIONS IN EARLY PREGNANCY

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6.0 OBJECTIVES

After reading this unit, you will be able to:

- 1 list complications of early pregnancy resulting into foetal loss;
- 1 diagnose and differentiate the different types of abortions; and
- 1 manage early pregnancy complications effectively so that you can contribute in reducing maternal morbidity and mortality.

6.1 INTRODUCTION

Pregnancy is a physiological process but it can become pathological or high risk and add to maternal and foetal morbidity and mortality. Vaginal bleeding and pain in lower abdomen in early pregnancy are causes for concern. Vaginal bleeding in early pregnancy may be due to pregnancy related complications like abortion, ectopic pregnancy and hydatidiform mole which lead to foetal loss, or causes unrelated to pregnancy like cervical erosion, polyp and cervical malignancy. Similarly pain in lower abdomen in early pregnancy can be due to pregnancy related complications like abortions, ectopic pregnancy or twisted ovarian and other surgical and medical conditions unrelated to pregnancy. 10 to 15% of all pregnancies diagnosed after six weeks amenorrhoea end in spontaneous abortion in first trimester. In 1% of women pregnancy failure is due to ectopic pregnancy. Approximately 1 in 400

pregnancies in India result in hydatidiform mole. Haemorrhage due to ectopic gestation and abortion and sepsis due to abortions are important causes of maternal mortality (see maternal mortality) and morbidity in India. Besides abortions, ectopic pregnancy and vesicular mole during 1st trimester, the woman may have hyperemesis gravidarum and retention of urine. In this unit you will learn about complications of early pregnancy.

6.2 ABORTIONS

This is the process of expulsion of products of conception before the period of viability that is 20 weeks of pregnancy or when foetus weighs less than 500 gms. In India and certain European countries, period of gestation for this purpose is taken as less than 28 weeks as chances of survival of foetus less than this are bleak.

Among women having vaginal bleeding in early pregnancy, 50% of them will have alive foetus and these are likely to continue with pregnancy; 25% are not pregnant and 25% abort. The important differential diagnosis is ectopic pregnancy which is a life threatening condition. Chances of ectopic pregnancy becomes 1 in 4 when patient has vaginal bleeding along with pain in lower abdomen after missing her periods. Ectopic pregnancy should be excluded in these cases. Abortions can be spontaneous or induced. For induced abortions see Unit on MTP Unit 5, Block 1 of this Course.

6.2.1 Etiology, Pathology and Types

a) Etiology

Cause of a particular abortion is usually not known although there are many known factors which can lead to abortion. It is important to know these causes because this will tell you that causes are so varied which lead to one or two spontaneous abortions and reasons for these may be unrelated and just chance happenings in an individual. Only few basic investigations are required besides history taking and clinical examination in a patient presenting with abortion. The causes of abortion are:

Malformations of Zygote

In first trimester half of early abortions are due to chromosomal anomalies leading to malformation of zygote.

Aneuploidy as autosomal trisomy or monosomy is most commonly identified chromosomal abnormality in first trimester abortion. Advancing maternal age is associated with these defects and so chorionic villus sampling or amniocentesis is indicated for prenatal diagnosis in women past 35 years of age. The other chromosomal anomalies can be polyploidy like triploidy, tetraploidy and structural abnormality.

Other Ovocytal Factors

Chromosomally normal abortions are usually lost later in gestation. Interference with circulation in umbilical cord by knots, low placental attachment and faulty placental formation may cause abortions. Twin and acute hydramnios can cause abortion by rapid distension of uterus leading to irritability,

Immunological Rejections

Mother is stimulated by paternal antigens in the trophoblast to produce blocking antibodies which inhibit cells mediated rejection process. If couple shares more human lymphocyte antigen (HLA), then trophoblast may not stimulate maternal blocking antibody production and pregnancy is rejected. Trials to assess the value of injecting donor lymphocytes to stimulate blocking antibodies are being conducted.

Maternal Diseases

These may be responsible in 15% of cases. These factors usually contribute to late abortions and sometimes alive foetus is expelled due to severe maternal illness.

Viral infections like rubella and cytomegalic inclusion in early pregnancy produce congenital malformation and abortion. Influenza virus and hepatitis virus produces death of foetus and expulsion. Parasitic infections like malaria and protozoal infection (Toxoplasmosis) also produce abortion. Spirochaetes rarely produce abortion before 20 weeks.

Hyperpyrexia, maternal hypoxia, shock, severe gastroenteritis, Hypothyroidism, hyperthyroidism, diabetes mellitus and corpus luteum deficiency can also lead to abortion.

Abdominal or vaginal trauma, extensive surgery, emotional upset, dietic deficiency of folic acid and Vit. E and toxic agents are implicated with increased incidence of abortions. Second trimester abortion and repeated abortions are caused by cervicouterine factors like congenital malformation of uterus (bicornuate and septate uterus), cervical incompetence, fixed retroverted uterus and uterine tumours (submucous fibroids) either due to poor implantation or increased uterine irritability. Premature rupture of membranes also leads to abortion.

External Factors

Ionising radiations and use of teratogens can cause abortions and so drugs should be avoided in early pregnancy. Unless strongly indicated.

Unknown Causes

In 25% of cases precise cause of abortion may not be known.

To summarise, first trimester abortions are mainly due to defective fertilised ovum, hormonal deficiency like progesterone deficiency, acute infections, trauma, immunological factors and unknown causes while mid-trimester abortions are due to cervico uterine factors, low lying placenta, twins, hydramnios, maternal illness in form of acute or chronic infections and chronic diseases like hypertension and diabetes.

Let us see how abortion takes place when these factors operate.

b) Pathology

Before 8 weeks embryo surrounded by chorionic villi is usually expelled out intact because attachment of chorion to decidua is delicate and strong uterine contractions cause its separation and haemorrhage into chriodecidual space, while later on foetus is expelled and placenta and membranes may be left inside uterus resulting in incomplete abortion and profuse bleeding. After 14 weeks process of expulsion is just like labour. Bleeding and painful contractions are followed by dilatation of cervix, rupture of membranes and expulsion of foetus followed by placenta and membranes.

In some cases gestational sac is retained in the uterus for weeks together after death of foetus. When it is retained for more than 3 weeks, it results in missed abortion. Layer of blood clot can surround the gestational sac and then it is called carneous mole.

In abortion there may not be visible foetus in the sac (**blighted ovum**) or foetus may become macerated. The amniotic fluid may be absorbed and foetus may become compressed and desiccated to form **foetus compressus** or becomes parchment like (**foetus papyraceus**) and this latter condition usually takes place in one foetus in twin pregnancy.

c) Types

In this section only different types of spontaneous abortion is being discussed. Induced abortions will be discussed under MTP in Unit 5, Block 1 of this Course. Spontaneous abortion could be an isolated one, recurrent (3 times or more), missed or septic. Whenever sepsis follows an abortion, it is called septic abortion. An isolated spontaneous abortion can occur sometimes. But, if patient aborts spontaneously repeatedly 3 times or more it needs to be investigated to find out the cause.

6.2.2 Spontaneous Isolated Abortion

When the abortion process has started but recovery is still possible, the abortion then is known as **threatened abortion**. In this situation, patient has all the symptoms and signs of early pregnancy (see diagnosis of pregnancy in Unit 1, Block 1 of this Course, variable period of amenorrhoea followed by spotting or slight bleeding per vaginum. Sometimes bleeding may be more when placenta is lying low. The bleeding stops on its own and colour of blood becomes brown or dark. Pain in lower abdomen is not a prominent feature and usually there is mild discomfort. On per vaginal examination:

- 1 Size of uterus corresponds to period of amenorrhoea
- 1 Internal os is closed
- 1 Bleeding is from os and slight in amount
- 1 Fornices are free of tender adnexal mass which is usually present in ectopic pregnancy.

Local lesion on cervix or vagina like cancer should be excluded by speculum examination.

If alive foetus can be demonstrated by ultrasonography then in almost 98% cases bleeding will stop and pregnancy results in normal growth of foetus.

If foetus is dead or there are strong uterine contractions then bleeding increases in amount, pain in lower abdomen also increases, internal os opens, products of conception can be felt through os and pregnancy can no longer be retained. This condition is known as **inevitable abortion**. In this sometimes external os remains closed and products of conception are retained in cervical canal resulting into ballooning of cervix. It is worth while remembering that inevitable abortion may be associated with profuse bleeding. When few products are expelled out then the condition is known as **incomplete abortion**. Size of uterus becomes smaller in incomplete abortion, os may be open or closed and few products may be lying in vagina. Usually patient has lot of bleeding in incomplete abortion.

In case of incomplete abortion, patient may have intermittent bouts of fresh bleeding and it indicates that few products are still inside the uterus. In very early abortion, the products may completely be expelled from uterus and then condition is labelled as **complete abortion**. In these cases, pain and bleeding subsides and gradually blood becomes brownish in colour. Symptoms and signs of pregnancy disappear, uterus gradually becomes normal in size and os is closed. Ultrasound examination of uterus reveals empty endometrial cavity. So it can be seen that threatened abortion can either result into normal pregnancy or can progress to either of inevitable, incomplete or complete abortion and may also end up as missed abortion which is described later in this Unit.

Diagnosis and Management

When patient comes with complaints of amenorrhoea, bleeding P.V. and/or pain in lower abdomen, detailed history of patient is taken to exclude medical illness, elicit any bad obstetrical history and to determine any etiological factor. This is followed by general and systemic examination which should elicit degree of anaemia, jaundice, oedema feet, record pulse and BP, examine chest and cardiovascular system. Abdominal examination is done for size of uterus, organomegaly, any other mass and for tenderness, guarding, rigidity and for free fluid in peritoneal cavity.

Speculum examination should be done to note the amount of bleeding and any local lesion on cervix and vagina. The amount of bleeding or discharge and whether it is purulent or foul smelling is also noted. Pelvic examination will reveal cervical os is open or closed; size and direction of uterus; any adnexal mass; tenderness, any excruciating pain; pelvic cellulitis and fullness in pouch of Douglas. Provisional diagnosis of type of abortion like threatened abortion, inevitable, incomplete or complete is made. Routine investigations are done. Patient can be sedated with 30 mg phenobarbitone or 5 mg diazepam tablet twice daily in case of threatened abortion.

There is no specific treatment and ultrasonography (USG) will show whether there is normal foetus. If ultrasound shows foetal heart activity, then most cases will require only bed rest and sedation. Bed rest is usually required for 5-7 days. Gradually bleeding stops and patient can resume activity after that. Patient should observe abstinence for three weeks. Period of rest and abstinence is extended in case of repeated pregnancy loss. Tocolytic agents like isoxsuprine is not required in first trimester and its use is controversial in second trimester, although empirically it can be given in dose of 10-20 mg tablet three times daily.

Hormone therapy is given in corpus luteum deficiency cases. These drugs are usually used empirically up to 20 weeks in form of 17-alpha hydroxyprogesterone (proluton depot) 250 mg intramuscular (IM) on alternate day or allylestrenol (gestanin) 10 mg TDS or injection chorionic gonadotrophin 5000 i.u. twice weekly. These are expensive and can lead to missed abortion if used in dead foetus. Folic acid 5 mg daily can be given safely.

In case of inevitable abortion, patient should be given 75 mg to 100 mg Pethidine IM, intravenous drip with Ringer lactate should be set up and syntocinon 5 to 10 units can be added to it to augment the abortion process. Blood is sent for cross matching and kept ready. If abortion is not quickly completed, then patient may require evacuation or suction evacuation (see unit on M.T.P. Unit 5, Block 1 of this Course to complete the process). Antibiotics like ampicillin 1 gm single dose preoperatively can be given and if patient is Rh negative, then 100 micrograms of Anti D should be given. Evacuation can be done up to 12 weeks pregnancy.

Bleeding during procedure can be minimised by adding oxytocin to drip or by giving ergometrine/prostaglandins. If patient is bleeding profusely and the Hb status is less than 7-8 gm, then blood should be transfused.

Inevitable abortion cases beyond 14 weeks require syntocinon or prostaglandin to hasten the process. If after expulsion of foetus, placenta is taking too long to come out (more than 2 hours), then it should be removed or suction evacuation can be done. Sometimes in 2nd trimester, when bleeding is profuse and abortion process cannot be completed, fast hysterectomy may be indicated in maternal interest.

When the abortion is incomplete and/or the products can be seen in uterus on USG, management depends upon the status of cervical os. If os is closed, it requires dilatation of cervix with Hegar dilator up to 8-10 number before doing evacuation. If os is open, evacuation alone is done after giving sedation and local paracervical block or G.A.

If products are not removed, the patient has risk of haemorrhage and sepsis. Brisk haemorrhage can cause shock and if patient is seen at home in collapsed state, bed end should be raised and IV drip be started with Ringer lactate or glucose saline should be used to resuscitate the patient before transferring her to hospital. IM/IV ergometrine injection can be given to control haemorrhage and if os is open, products of conception should be removed digitally as much as possible to control the bleeding.

In cases of history of long duration, products may be adherent and evacuation may be done under G.A. One should be gentle in these procedures as uterine perforation and visceral injuries can take place. If these complications are suspected, patient should undergo diagnostic laparoscopy or laparotomy under G.A. Antibiotics should be given to all cases for 5 days. In case the patient is running temperature, broad spectrum antibiotic is started before undertaking operative procedure. Late complication of incomplete abortion could be in form of placental polyp and pelvic inflammatory disease. When abortion is complete, bleeding subsides gradually in 5-7 days time. If spontaneous complete abortion has taken place, then either do curettage to ascertain its completeness or U.S. Scanning can be done to demonstrate empty uterus. In such cases no further treatment is required.

6.2.3 Missed Abortion

In missed abortion, the embryo is dead and retained in uterus for weeks or months. There is bleeding in choriodecidual space. Mild symptoms like those of threatened abortion are followed by absence of usual signs of progress of pregnancy. USG does not show growth of foetus and FHS are absent. Size of uterus becomes smaller than period of amenorrhoea, os is closed and there may be brownish discharge through os. Patient may abort spontaneously. Patients may develop hypofibrinogenaemia due to release of thromboplastins into maternal circulation if dead foetus is not expelled in 3-4 weeks time and hence, besides routine investigations, bleedings time, clotting time and clot retraction time should be noted in such patients. If the above findings are deranged, then they should be corrected first by fresh blood transfusion before undertaking evacuation of uterus. When uterus is less than 12 weeks size, suction evacuation can be done under sedation and paracervical block or G.A. after arranging one unit of blood. With more than 12 weeks size uterus, vaginal prostaglandins along with escalating doses of syntocinon or parenteral prostaglandin can be used to achieve spontaneous expulsion. Syntocinon drip is started as 10 units syntocinon in glucose saline and after every 100 ml, 10 units of syntocinon is added till patient starts pains or syntocinon concentration of 100 units is reached. Intake and output chart should be maintained and drip should be discontinued for atleast six hours in a day.

Vaginal suppository of prostaglandin E₂, 20 mg 3 hourly for four doses can be given or prostaglandin E₂ gel (Cerviprime) 5 mg may be applied to cervix, if there is no contraindication to prostaglandin (PG) use. 15 methyl PG F₂ alpha (carboprost) can be given in doses of 250 mg 3 hourly for maximum of 10 injections. It can cause vomiting and diarrhoea; this complication can be minimised by loperamide (2 mg tablet) 2 tabs three times daily.

6.2.4 Recurrent Abortion

When patient aborts spontaneously repeatedly 3 times or more it is a cause of worry and patient should have detailed investigation, to diagnose the cause. It may be primary or secondary to live birth; in latter case, cervical incompetence caused by cervical tear is a strong possibility and should be excluded. If the abortions have taken place at same period

of gestation and in similar fashion, then the underlying recurrent cause is the only possibility.

Early repeated abortions may be due to progesterone deficiency. In this condition, 17 alpha hydroxy progesterone injection 250 mg twice weekly or chorionic gonadotrophin 10000 I.U. biweekly can be given from 8th week onwards after confirming foetal heart activity ultrasonographically. Defective germ plasma can be responsible in some cases where karyotyping of parents should be done to detect chromosomally balanced translocation.

Second trimester abortion may result from previous obstetric trauma, forceful surgical dilatation, cone biopsy or cervical amputation and congenital cause resulting into cervical incompetence. In non-pregnant state it can be diagnosed by hysterosalpingogram in premenstrual phase showing funnel shaped cervical shadow or easy passage of 8 No. Hegar dilator through internal os.

During pregnancy, recurrent abortion is suspected on basis of history of mid trimester loss which is almost painless following spontaneous rupture of membranes. On examination during the current pregnancy, findings like cervical tear going up to internal os, shortening of cervical length with patulous os and membranes bulging through os suggest incompetent os. By USG, dilated os, funneling of membranes into os will help in diagnosing incompetent os. It is treated under General Anaesthesia by insertion of purse string suture of non-absorbable material in the thickness of wall of the cervix at the level of internal os (**Shirodkar operation**) after pushing the bladder up or putting the stitch below internal os (**Macdonald stitch**). Preoperatively patient should have prolonon depot 500 mg I.m which is then continued postoperatively biweekly for one week. Patient should be kept sedated for 24 hours afterwards. Stitch is removed at 38 weeks or at onset of labour. Failure to remove stitch will cause obstructed labour or annular detachment of cervix posteriorly (**bucket handle tear**) and bleeding. Patient should be told about this risk. Complications like slipping or cutting through the suture requires biweekly examination. Intrauterine infection, rupture of membranes and abortion can take place. Contraindications to stitch application are leaking, features of amnionitis, bleeding and uterine irritability.

Congenital anomalies of uterus may require operative correction; myometomy may be required for submucous fibroid; chronic maternal diseases like diabetes, hypertension and thyroid dysfunction may require appropriate treatment. Infections like syphilis, toxoplasmosis, listeriosis may require proper diagnosis and treatment. These patients should ideally be investigated during interconceptional period before attempting next pregnancy. Treatment will vary according to cause and proper treatment should be given before starting next pregnancy.

During pregnancy, repeated pelvic examination may be required at weekly interval from 10 weeks onwards in suspected cases of incompetence. In cases where no cause is detected, general advice regarding balanced diet, abstinence during critical period and assurance is given to patient. She may be hospitalised during time of previous abortions.

6.2.5 Septic Abortion

In any abortion uterine contents can become infected and then this is known as septic abortion. Infection mostly follows illegal induced or criminal abortion although it can follow spontaneous abortion. About 10% of abortions requiring admission are septic and this is an important cause of maternal morbidity and mortality. 20-30% of maternal mortality is due to septic abortions.

Products of conception and blood are good culture media for organisms. Microorganisms which are normally present in vagina can infect these (endogenous infection) or infection can be introduced in the uterus by use of infected instruments, non-observation of asepsis, injury to gut or by leaving the evacuation process incomplete. Microorganisms can be either anaerobes like bacteroides, streptococci, clostridium welchi and tetanus bacilli; or aerobes like E. coli, Klebsiella, staphylococcus, pseudomonas, proteus and haemolytic streptococci.

- a) In majority of cases, infection is confined to contents of uterus (grade I).
- b) In 15% cases infection (grade II) spreads to myometrium, parametrium, tubes, ovaries and pelvic peritoneum, i.e. infection is contained within the pelvis.
- c) In about 5% cases there is generalised peritonitis (when infection spreads to peritoneum either through fallopian tubes or directly due to uterine perforation and gut perforation) or endotoxic shock (grade III).

Clinical picture varies depending upon severity of infection and whether there is associated uterine or gut perforation.

Patient may not disclose history of interference, there is usually temperature with chills and rigors. Sometimes subnormal temperature may be present in endotoxic shock. Patient complains of pain abdomen and offensive or purulent discharge or vaginal bleeding. On examination, patient may be febrile, there may be features of septicaemia (tachycardia and increased respiratory rate) and patient may be anaemic due to haemorrhage and sepsis. There may be tenderness in lower abdomen (in pelvic peritonitis) or whole abdomen may be tender with guarding, rigidity and/or distension (features of generalised peritonitis) and mass in lower abdomen may be felt. Bowel sounds may be absent which indicate gut perforation.

Pelvic examination shows tender uterus, offensive or purulent discharge through cervix, os may be closed or open. Products of conception can be felt when os is open and sometimes foreign bodies used for abortion can also be felt. There may be cellulitis, firm and tender thickening in parametrium, tender adenexal masses in the fornices (Infected tubo-ovarian masses); or fullness or cystic fluctuating mass in the posterior or lateral fornix (pelvic abscess). Parametrial involvement or pelvic cellulitis and abscess is best felt through Per Vaginum and Rectal (PVR) examination; keeping index finger of right hand in vagina and middle finger in rectum and left hand on abdomen. In case of pelvic abscess, patient complains of high temperature, purulent discharge per vaginum, tenesmus and mucus diarrhoea. There is tenderness and guarding in lower abdomen and PVR examination reveals cystic fullness in pouch of Douglas.

When patient is diagnosed as septic abortion, investigations like Hb, TLC, DLC, ABO, Rh typing, blood urea, serum electrolytes, liver function tests and coagulation profile are done. In cases of respiratory difficulty, blood for acid, base and gas analysis should be sent. Urine should be examined microscopically and for albumin and sugar. Blood, cervical swab and urine are sent for culture and sensitivity. Culture will help in identifying the infecting organisms and determining sensitivity of these to antibiotics.

X-ray of chest and abdomen in sitting and lying position (to demonstrate gas under diaphragm following uterine or gut perforation) is taken. **Absence of gas under diaphragm does not rule out perforations.** USG can be done to demonstrate any free fluid in abdomen (blood or pus) or seeing any products in uterus or collection of fluid (pus or blood) in Pouch of Douglas.

Management

After making the diagnosis, all investigations described above should be carried out. Patient is hospitalised, broad spectrum antibiotics like ampicillin 500 mg I.m six hourly plus garamycin 80 gm twice daily and metrogyl 500 mg 8 hourly is given to patient. Pulse rate, B.P. central venous pressure (normal is 0-5 cm of water) and intake output chart is maintained. Urine output of 30 ml/hour shows adequate blood circulation and tissue perfusion. Prophylactic anti-Gasgangrene serum (8000 units) and anti-Tetanus serum (3000 units) are given to illegal abortion cases.

Analgesics and sedatives can be given and appropriate antibiotics can be prescribed following culture and sensitivity reports if patient is not responding to antibiotics started Initially.

If patient is toxic or looks very ill then higher antibiotics like 3rd generation cephalosporins can be started, intravenous drip is given and blood transfusion is given to severely anaemic patients. Evacuation of uterus is done after starting antibiotics in grade I. One should be very gentle and sharp curettage should be avoided to prevent perforation and spread of infection.

Patient should be watched for complications like:

- 1 Haemorrhage
- 1 Spread of infection outside uterus (pelvic peritonitis, generalised, peritonitis, septicaemia)
- 1 Renal failure (due to toxic cortical necrosis or tubular nephrosis)
- 1 Thrombophlebitis and embolisation
- 1 Coagulation failure
- 1 Renal shut down due to release of thromboplastins from damaged placenta and coagulation failure is due to consumptive coagulopathy.

Complications

20% of maternal mortality may be due to these above six complications. Jaundice and hepatic failure due to use of hepatotoxic drugs for inducing abortion or due to CI. welchii infection. Late complications of septic abortion are:

- 1) Secondary infertility due to tubal block
- 2) Chronic ill health and pelvic pain
- 3) Chronic pelvic inflammatory disease
- 4) Endometritis.

If infection has gone beyond uterus, then evacuation should be done 48 hours after control of infection. In case of haemorrhage, immediate evacuation is to be done. In pelvic abscess, needling through posterior fornix to diagnose abscess followed by Colpotomy (incision in posterior fornix to drain pus) is done. Mellicott catheter is left through colpotomy incision for 24 hours to facilitate drainage.

All grade II and III cases should be kept on intravenous fluids and higher antibiotics. Laparotomy is indicated when there are features of generalised peritonitis to drain pus. If no improvement on medical treatment or there is deteriorating condition, then gangrenous and infected uterus is removed or perforation site is stitched and intestinal injury repaired; and foreign bodies removed. Inferior vena cava is ligated in case of repeated embolisation.

To sum up, management of septic abortion includes (1) medical treatment in form of antibiotics, adequate fluid therapy for correction of blood volume and electrolytes, steroid therapy and vasopressor agents for ensuring adequate tissue perfusion and (2) appropriate surgical treatment depending upon diagnosis to control haemorrhage, removal of infected products and to prevent extension of sepsis.

Check Your Progress 1

- 1) Fill in the blanks:
 - a) Complications of early pregnancy are:
 - i).....ii)..... iii).....
 - b) Commonest cause of first trimester abortion is.....
 - c) One of the commonest cause for second trimester abortion and recurrent abortion is.....
 - d) When patient abortstimes, it is called habitual abortion.
 - e) Habitual abortion due to incompetent os can be diagnosed during interconceptional period by passing No. Hegar dilator through os.
 - f)stitch is applied in the cervix for incompetent os at the level of internal os.
 - g) Serious complications of septic abortion are:
 - i)..... ii)..... iii)..... iv).....
- 2) Tick the right answer.
 - i) Gut perforation is diagnosed by:
 - a) Features of generalised peritonitis
 - b) Absent bowel sounds
 - c) Gas under diaphragm
 - d) All of above
 - ii) Features of pelvic peritonitis with pelvic abscess are:
 - a) Tenesmus and mucus diarrhoea
 - b) High grade temperature

- c) Tenderness and guarding lower abdomen
- d) Cystic fullness in pouch of Douglas
- e) All of above

6.3 ECTOPIC PREGNANCY

You have learnt what happens when normally implanted products of conception are separated in early months. If due to any cause ovum is implanted outside the normal endometrial cavity, it is known as ectopic pregnancy. Let us see what happens to the pregnancy when implantation is at an abnormal site. In spite of advances in diagnostic techniques for early diagnosis of pregnancy, ectopic pregnancy still contributes to 10-12% of maternal mortality. Unfortunately incidence of ectopic pregnancy is increasing due to increase in sexually transmitted tubal infections which results in incomplete blocks of tube following medical termination of pregnancy, tubal surgery like tubal ligation, tubal recanalisation and use of assisted reproductive technology. Incidence of ectopic pregnancy is 1 in 200 pregnancies.

6.3.1 Etiology and Pathology

Etiology

High risk group for developing ectopic pregnancy is patient with PID (4% incidence of ectopic), tubal sterilisation (15-20% of pregnancies are ectopic), previous ectopic (15%), reconstructive surgery on tube, intrauterine devices (9-17% of pregnancies are ectopic), Postcoital oestrogen use, low dose progesterone use, Diethylstilboesterol exposure, infertility, 2 or more abortions, in vitro fertilization and ovulation induction.

Infections, surgery and drugs can change the physiology of tube resulting in delayed migration of fertilized ovum to uterus or trapping of fertilized ovum into tube. Normally 6 days after fertilization, ovum comes in contact with endometrium. Distortion of tube due to developmental errors or adjacent tumour also results in ectopic. External migration of ovum is sometimes responsible for ectopic.

Pathology

At ectopic sites, decidual reaction is poor and adequate muscular hypertrophy to accommodate growing foetus is not there. So, placentation is inadequate. There is haemorrhage surrounding the villi due to opening of arteriole or artery in the tubal muscularis. Pregnancy is extruded inside the tube and then expelled through tubal os into the peritoneal cavity (tubal abortion) or tube ruptures resulting into intraperitoneal haemorrhage and extrusion of products outside tube. Sometimes ovum is surrounded by blood clots and is retained in tube (Tubal mole) or tube can get distended with blood (Haematosalpinx). Blood may collect around tube and in pouch of Douglas resulting into pelvic haematocele.

Extratubal rupture into peritoneum or broad ligament is common in isthmic ectopic pregnancy as lumen here is narrow and can't distend much.

6.3.2 Clinical Features of Tubal Ectopic Pregnancy

Can you think how the patient will present when tube ruptures and there is intraperitoneal haemorrhage? This obviously will result in acute abdomen and collapsed patient. This is the **acute** variety and triad of symptoms are short period of amenorrhoea or no amenorrhoea (in 30 to 40%) as bleeding is mistaken for periods because it coincides with menstruation, acute abdomen and bleeding per vaginum. Patient is severely anaemic, hypotensive with tachycardia and abdominal tenderness and shifting dullness is present. There may be bluish discoloration of umbilicus (**Cullen sign**). Pelvic examination reveals bulky uterus with tender fornices and movement of cervix may be painful (Excitation pain). There may be fullness felt through fornices or tender adnexal mass on the side of ectopic pregnancy can be felt. **Danforth's sign** that is shoulder pain due to sub-diaphragmatic irritation by blood is present in 10% cases.

Although acute presentation demands immediate attention and is important cause of maternal mortality, it is not the commonest. In **subacute** variety patient may have short period of amenorrhoea followed by pain abdomen and bleeding per vaginum off and on.

Abnormal Pregnancy

Patient may give history of passing some fleshy piece per vaginum (decidual cast). Abdominal pain is the most constant symptom. Patient may complain of syncopal attacks. Patient may be anaemic but not collapsed. Because of slow haemorrhage which results due to tubal abortion or slow rupture, lower abdomen is tender and guarding may be there on bimanual examination. Cervix is closed, uterus is bulky and there is tenderness or tender pulsatile mass in fornices or pouch of Douglas. Cervical excitation pain, and blood stained discharge is present.

In **chronic** cases patient may be having symptoms of pain abdomen and bleeding for days and months. In long standing cases, low grade temperature due to absorption of blood may be present. Pelvic inflammatory disease (PID) has almost the similar presentation and it may be quite difficult to differentiate these two. Positive pregnancy test in urine goes in favour of diagnosis of ectopic whereas negative pregnancy test may be ectopic pregnancy or PID.

Acute variety has to be differentiated from other causes of acute abdomen like acute appendicitis, twisted ovarian tumour, ruptured corpus luteum, gut perforation and splenic rupture. Pregnancy test is negative in these cases but sometimes these complications are seen in pregnant lady also. In these cases, diagnosis will depend on history and careful physical examination and U.S.G. will show intrauterine pregnancy.

In chronic variety the other conditions which make differential diagnosis are: (1) Incomplete abortion, threatened and septic abortion (2) Tubo ovarian mass (3) Haemorrhage in Endometrial cyst (4) Urinary tract infection (5) Gastroenteritis, when women present with diarrhoea. If care is taken to elicit exact details of history and symptoms, ectopic can usually be suspected. Diagnosis depends on clinical history and not signs. Diagnosis of normal intrauterine pregnancy will exclude need for urgent intervention which is usually required for ectopic pregnancy.

6.3.3 Investigations and Diagnosis .

Keeping high index of suspicion for ectopic pregnancy, specially in high risk cases, helps in early diagnosis. Tube is precious to patients who desire further pregnancy and this can be saved only when diagnosis of ectopic is made in early unruptured state.

A positive pregnancy test without intrauterine gestational sac 2 week or more after a missed period is almost conclusive of ectopic pregnancy. Serum β HCG level can be measured by radioimmuno assay. In normal pregnancy, level of β HCG in serum doubles in 48 hours and the lowest normal value for this increase is 66%. If there is failure in this rate of increased beta HCG production, it is suggestive of ectopic pregnancy.

Transvaginal sonography (TVS) can pick up pregnancy by 5th or 6th week in intrauterine site or suspect pregnancy in adnexal region. Besides this the most important is that maternal mortality can be prevented in this group if ectopic can be diagnosed in early stages. There is no reliable test which will differentiate the ectopic pregnancy from early pregnancy and abortion.

Diagnosis of ectopic is based usually on clinical examination, urine pregnancy test and culdocentesis or laparoscopy as β HCG assay and TVS is not widely available.

When in doubt, laparoscopy or culdocentesis is indicated to reach at diagnosis. Free blood is seen in peritoneal cavity or blue mass is seen at ectopic site on laparoscopy. In culdocentesis, needling is done through pouch of Douglas and blood with small clots can be aspirated in ectopic pregnancy with blood in peritoneal cavity. In unruptured ectopic it will be negative if there is no free blood in abdominal cavity. When ectopic is strongly suspected negative culdocentesis should not deter the gynaecologist from doing laparoscopy or laparotomy. Laparoscopy is also false positive in 2% and false negative in 1.3% cases of ectopic.

6.3.4 Treatment

Patient should be hospitalised in case suspicion of ectopic. If she is collapsed, give her sedation, raise foot end, set up IV drip with Ringer lactate, send blood for cross matching and don't do vaginal examination. Transfusion with blood or plasma may be life saving. If patient is at home, rapid infusion may bring the blood pressure up and then she should be transferred to centre where facility for laparotomy under general anaesthesia is there. If she is in hospital, operation theatre should be arranged simultaneously and one should not wait for blood pressure to come up. Intravenous fluids and blood should be pushed rapidly by setting two or three IV fluid lines.

Treatment of acute ectopic is laparotomy and salpingectomy (excision of fallopian tube) of affected side. Other tube and ovary should be seen before sacrificing the tube as sometimes conservative surgery by removal of ruptured segment is possible if other tube is absent or diseased and tuboplasty can be undertaken at later date. In chronic cases also laparotomy is required. Blood clots may be covered by intestines and pseudosac due to deposit of fibrinous material. Adhesions are usually flimsy. After reaching the sac, clots are taken out and salpingectomy or salpingoophrectomy is done on diseased side. Improvements in diagnostic techniques like serum BhCG estimation and transvaginal sonography has revolutionised the treatment of ectopic and in unruptured ectopic pregnancy instead of salpingectomy one can do conservative surgery like salpingostomy, salpingotomy or segmental resection of tube to improve future fertility.

6.3.5 Ectopic Pregnancy Other than Tubal Pregnancy

Ovarian Pregnancy

Clinical picture is same as for tubal pregnancy and ruptured corpus luteum and haemorrhagic cyst make the differential diagnosis. Histopathology of excised tissue clinches the diagnosis. Mostly oophrectomy is needed for this condition.

Pregnancy in Rudimentary Horn

Pregnancy is carried for longer period as pregnancy sac is covered by myometrium, rupture of horn may take place at 14 to 20 weeks, so this is extremely dangerous condition. It can be confused with interstitial pregnancy, because here tube is surrounded by uterine musculature and rupture takes place by 12th week. Round ligament is always inserted lateral to horn pregnancy. Degenerating painful fibroid is important differential diagnosis. USG and diagnostic laparoscopy settles the diagnosis. The affected horn should be removed.

Cervical Pregnancy

Here after abortion, patient bleeds profusely as cervix does not retract. Important differential diagnosis is carcinoma cervix. In cases of severe haemorrhage emergency hysterectomy may be required.

Abdominal Pregnancy

Usually it occurs secondary to tubal pregnancy when graded disruption and extorsion of ovum and implantation of placenta in omentum and gut allows the pregnancy to continue in peritoneal cavity. After varying period, the foetus may die and get calcified. Patient may give history suggestive of tubal pregnancy and gets attacks of abdominal pain, bleeding off and on and intestinal distension may be present. Tumour is felt in abdomen and uterus be felt separate from the mass on pelvic examination. Wrong diagnosis of fibroid or ovarian tumour can be made. Many cases are missed initially and when attempt to induce labour fails then diagnosis may be made on careful examination. Lateral X-ray shows some part of fetal skeleton on plain posterior to anterior border of maternal spine or gas shadows in maternal intestines super-imposed on foetus. Treatment is laparotomy and removal of foetus. Placenta if adherent to gut, should be left behind.

Intraligamentary Pregnancy

Presentation is same as abdominal pregnancy and treatment is laparotomy and removal foetus and placenta after opening broad ligament.

6.4 HYDATIDIFORM MOLE

You have seen what happens when normally situated pregnancy is complicated with abortion and when pregnancy is situated outside normal endometrial cavity. Now we will see what happens when there is abnormal proliferation of trophoblast. This abnormal proliferation of trophoblast constitutes gestational trophoblastic disease. The milder and benign form of it is hydatidiform mole, also termed as vesicular mole. More severe variety is malignant and is known as choriocarcinoma. Intermediate between two is known as invasive mole. Incidence of hydatidiform mole is 0.2 to 2 per 1000 pregnancies.

6.4.1 Etiology and Pathology

This disease is commoner in far east, parts of West Africa and South America than in Western countries. Incidence is more in women less than 20 years and more than 40 years and in patients with past history of hydatidiform mole. Faulty nutrition and disturbed maternal immune mechanism may be contributing factors. Its incidence is more in AB blood group women or group A women and group O partner.

Cytogenetics and Pathology

Hydatidiform mole is divided into Complete mole and Partial mole, depending on cytogenetics. In complete mole, there is no trace of embryos or the amniotic sac. In partial mole there is focal molar changes along with a living foetus or amniotic sac. In complete molar pregnancies the chromosomal composition is completely of paternal origin, mostly 46XX. The original chromosomes of the ovum are either absent or inactivated. In partial mole, the karyotype is triploid with two paternal and one maternal haploid complements. Chances of developing choriocarcinoma are more in complete moles.

In moles chorionic villi shows vesicular degeneration and uterus is filled by mass of grape like structures. There is cystic degeneration and fluid accumulation in mesenchyme of villus which show no foetal blood vessels. Cytotrophoblast and syncytio-trophoblast proliferate as in contrast to hydropic degeneration of villus where there is no such proliferation. Hydropic degeneration can normally be present in abortions. Typical mole shows irregular proliferation with hyperchromatic activity and mitotic nuclei.

Trophoblast produce large amount of chorionic gonadotrophins in all forms of trophoblastic disease as compared to normal pregnancy and this is used as marker to diagnose and treat these conditions. Due to action of hCG both ovaries are enlarged with multiple theca lutein cysts.

6.4.2 Clinical Features

Patient presents with amenorrhoea of 2 to 4 months followed by bleeding off and on and sometimes pain lower abdomen. She may give history of passing grape like structures per vaginum. In first trimester patient may complain of excessive vomiting (hyperemesis gravidarum). She may have features of anaemia due to repeated haemorrhage. Features of toxæmia of pregnancy like hypertension and proteinuria may be present in 50% of cases before 20 weeks of pregnancy. Some patients may develop features of congestive cardiac failure and hyperthyroidism.

On examination, size of uterus may be more than period of amenorrhoea and uterus is doughy to feel. No external or internal ballotment can be elicited and foetal parts and foetal heart sounds are absent. Sometimes size of uterus is smaller than gestational period. In 25-50% cases bilateral ovarian enlargement is present.

Differential Diagnosis

The other conditions which can be confused with this are threatened abortion, twin pregnancy and hydramnios. Careful clinical examination can differentiate these as ballotment, foetal parts and foetal heart sound can be elicited in last three. Ultrasonography gives characteristic snow storm appearance in hydatidiform mole and is better diagnostic test than quantitative assay of β HCG as this can also be raised in twin pregnancy and early pregnancy.

6.4.3 Management

Once diagnosis of hydatidiform is made, the pregnancy is to be terminated as no useful purpose is being served by its continuation as also profuse bleeding may occur at any time. Hb, haematocrit, Total and differential count and X-ray chest to rule out secondaries should be done. Urine is examined microscopically and tested for albumin and sugar. Patient is examined to assess degree of anaemia, toxæmia and to exclude congestive cardiac failure. In case of moderate to severe anaemia blood transfusion is given and congestive cardiac failure is controlled before undertaking active treatment.

In case the molar pregnancy is in process of aborting, spontaneous expulsion can be encouraged by concentrated syntocinon drip using 5-10 units syntocinon in ringer solution. Alternatively prostaglandins can also be used if there are no contraindications to its use.

If mole is diagnosed before spontaneous expulsion begins, it should be evacuated by suction evacuated after setting up 10 units syntocinon intravenous drip in ringer lactate. Blood should be kept arranged. Any size of uterus can be evacuated by hydatidiform mole. In cases of excessive bleeding ergometrine can be given intravenously and uterus can be massaged bimanually. After evacuation, size of uterus becomes smaller and endometrial cavity is curetted with blunt curette. Uterus can easily perforate and one should be extremely gentle in these cases. USG should be done in a week's time to exclude any residual products. In case it is not available check curettage is done. All tissues removed at evacuation and subsequently should be sent for histopathological examination.

Nearly 20% complete moles develop into gestational trophoblastic neoplasia and all cases should have β hCG assays fortnightly for 2 months and then monthly for a year and 6

monthly for 2 years. Provided the β hCG levels remain normal during this period, risk of choriocarcinoma is negligible.

Beta HCG becomes normal in 3-4 weeks time or HCG curve becomes flat or decreasing. If levels are rising then possibility of choriocarcinoma or persistent trophoblastic disease is strong, and these patients require chemotherapy in the form of methotrexate. Patient should be advised to use barrier contraception although oral pills can be used once the β hCG levels become normal (less than 5 ml U/ml). Intrauterine contraceptive devices should not be used as the bleeding due to this can cause confusion.

6.4.4 Complications

Hydatidiform mole due to haemorrhage; sepsis and malignant transformation adds to maternal morbidity and mortality in females. Perforating mole can cause massive intraperitoneal haemorrhage. There is 4 to 5 times increased risk of developing hydatidiform mole in future pregnancy.

6.5 HYPEREMESIS GRAVIDARUM

You have already read about vomiting in pregnancy in Unit 1, Block 1 of this course. When the vomiting is excessive, the woman is unable to retain anything taken orally and develop metabolic acidosis. This condition is known as hyperemesis gravidarum. This is more commonly seen in primigravida, multiple pregnancy and vesicular mole. On examination, you will find she is dehydrated (dry tongue, loss of elasticity of skin, oliguria). Tachycardia may be present and urine shows presence of ketone bodies (acetone). These women need admission in a hospital, IV fluids, reassurance and counselling. IV fluids given are ringer lactate and dextrose saline. Urine examination is repeated every 4 hours till it becomes negative for ketone bodies. Occasionally, antiemetic injection stemetil 5 mg 8 hourly (24-48 hours) may be required to control vomiting. Once the vomiting stops and dehydration is corrected the woman may be discharged after 24 hours, with advice to take small frequent carbohydrate meals.

Excessive vomiting may also be caused by jaundice, meningitis, diabetes and uraemic coma and also by peritonitis caused by induced septic abortion. Hence, exclude these conditions by thorough history, clinical examination and investigations wherever required.

6.6 RETENTION OF URINE

Retention of urine during late first trimester of pregnancy is usually caused by retroverted gravid uterus. Usually, retroverted gravid uterus does not cause any symptoms and after 12 weeks, spontaneous correction of retroversion occurs and uterus rises above the pelvic brim and becomes palpable per abdomen. When it remains retroverted at 12 weeks of gestation, retention of urine occurs due to stretching of urethra. On examination, a cystic tender swelling in the lower abdomen arising from the pelvis is palpable (sometimes the swelling may reach above umbilicus). On pelvic examination, the cervix is high up behind the pelvic symphysis and is directed downwards and forwards. Uterus is retroverted, 12 weeks in size and is felt below the cervix. A cystic mass is felt in the anterior fornix.

A self retaining urinary catheter (preferably Foleys catheter) is inserted taking all aseptic and antiseptic precautions and urine is drained continuously for 48 hours. The woman is advised to lie prone. These measures allow the uterus to rise above the pelvic brim. Once the uterus is palpated above the pubis symphysis, catheter can be removed. Ensure that the woman can pass urine on her own.

Check Your Progress 2

Mark True (T) or False (F):

- 1) Transvaginal sonography (TVS) can pick up pregnancy by 5th or 6th week in intrauterine site. (T/F)
- 2) Abnormal proliferation of trophoblast cause hydatidiform mole. (T/F)
- 3) Ultrasonography findings is a better diagnostic test than quantitative assay of β hCG for diagnosing hydatidiform mole. (T/F)
- 4) Retroverted uterus with 12 weeks of pregnancy never causes retention of urine. (T/F)

