MINISTRY OF HEALTH OF UKRAINE
ODESA NATIONAL MEDICAL UNIVERSITY
DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

CONFIRMED by
Vice-rector for scientific and
pedagogical work
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THE METHODICAL RECOMMENDATIONS FOR PRACTICAL CLASS

International Faculty, Course VI

Discipline "Obstetrics and Gynecology"

Practical lesson №34. Topic: Obstetrical bleedings during pregnancy, during labor and in the postnatal period. Hemorrhagic shock. DIC - syndrome. Intensive therapy and resuscitation during bleeding in obstetrics.

Approved:

Meeting of the Department of Obstetrics and Gynecology of Odesa National Medical University

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Practical lesson 34.

Obstetrical bleedings during pregnancy, during labor and in the postnatal period. Hemorrhagic shock. DIC - syndrome. Intensive therapy and resuscitation during bleeding in obstetrics.

LEARNING OBJECTIVES

The overall aim of this topic is to gain basic knowledge about the etiology, pathogenesis, clinics, diagnostics and treatment of pathological conditions that may cause obstetric haemorrhage. During the course of teaching the material, students develop clinical thinking on this topic, which allows them to further solve problems associated with obstetric haemorrhage.

Basic concepts:

Equipment

- Multimedia equipment (computer, projector, screen), TV.
- Obstetric models and obstetric instruments (pelvimeter, obstetric stethoscope, centimeter tape).
- Professional algorithms, structural-logical schemes, tables, videos.
- Results of laboratory and instrumental researches, situational tasks, patients, medical histories.

EDUCATIONAL TIME – 4 h

I. ORGANIZATIONAL STAGE

- Greetings,
- checking attendees,
- defining of educational goals,
- providing of positive motivation.

The incidence of obstetric haemorrhage is 5-10%, but it is the most common cause of maternal disease, disability and mortality (20-25%). One of the most important factors is the increase in the number of cesarean sections. The profuse

obstetrical haemorrhage during some minutes can become fatal because of belated elimination of blood and its components deficiency. During haemorrhage at the III trimester of pregnancy, the acute fetus hypoxia which requires immediate labour when there is no time for waiting of stable normalization of hemodynamic index and the fulfilment of full capacity of infusion-transfusion therapy often occurs. Physiological postnatal haemorrhage after the ending of the III labour stage should be no more than 0.5% of a woman's body weight (>0,5% - pathological).

All other bleeding during pregnancy is pathological. Massive obstetric haemorrhage is more often associated with placenta previa or premature placental abruption, anomalies of placentation, postnatal hypo- and atony of uterus, embolism by amniotic fluids, uterus rupture. The profuse obstetrical haemorrhage can lead to haemorrhagic shock or accompanied by disorders of homeostasis system.

II. CONTROL OF BASIC KNOWLEDGE (written work, written testing, online testing, face-to-face interview, etc.)

2.1. Requirements for the theoretical readiness of students to perform practical classes.

Knowledge requirements:

- Communication and clinical examination skills.
- Ability to determine the list of required clinical, laboratory and instrumental studies and evaluate their results.
- Ability to make a preliminary and clinical diagnosis of the disease
- Ability to perform medical manipulations
- Ability to determine the tactics of physiological pregnancy, physiological labor and the postpartum period.
- Ability to keep medical records.

List of didactic units:

- pathological conditions may cause obstetrical bleeding,
- evaluate laboratory researches: analysis of blood, urine, reaction to determine HCG and others and US data for extra-uterine pregnancy,

hydatidiform mole, placenta previa and premature detachment of a normally located placenta,

- learn data of clinics-laboratory researches for miscarriages, extra-uterine pregnancy, trophoblastic disease, placenta previa and premature detachment of a normally located placenta.
- make a plan for research and therapy for miscarriages, extra-uterine pregnancy, trophoblastic disease, placenta previa and premature detachment of a normally located placenta.
- pathogenesis, clinics, diagnostics and treatment of miscarriages, extra-uterine pregnancy, trophoblastic disease, placenta previa and premature detachment of a normally located placenta.
- pathogenesis, clinics, diagnostics and treatment of haemorragical shock.
- pathogenesis, clinics, diagnostics and treatment of DIC—syndrome.

2.2. Questions (test tasks, tasks, clinical situations) to test basic knowledge on the topic of the class.

Questions:

- Assess the general condition of pregnant woman
- determining the volume of blood loss (Libov's method, Nelson's formula, Algover's shock index, Moore's hematocrit method)
- management of the third stage of labor
- routine observation and evaluation of the integrity of the placenta and its membranes;
- manual removal of the placenta
- identify Kulencampf's, "phrenicus", Blumberg symptoms.
- external massage of the uterus, external maneuvers for delivering placenta.
- Catheterization of peripheral or central vein.

Test tasks

Direction: For each of the multiple-choice questions select the lettered answer that is the one best response in each case.

1. At survey of a placenta which was just allocated, presence of defect in the size 2x3 see fixed. Bleedings are not present. What tactics is most justified?

A. External massage of a uterus.

B. Assignment of uterotonic agents

C. * Manual audit of a cavity of the uterus.

D. Observation over the puerpera

E. Tool audit of a cavity of the uterus

2. Twice pregnant 25 years. In the third period of labors the bleeding without attributes of branch of a placenta has appeared. At manual branch of a placenta presence of a placenta, evolved in a myometrium fixed. Tactics of the doctor?

A. * Laparotomy, a hysterectomy.

B. Tool secretion of an afterbirth

C. Application of uterotonic agents

D. A hemotransfusion.

E. Prophylaxis of a postnatal inflammation of a uterus

3. At the puerpera a massive bleeding after a birth of two at a birth through natural patrimonial ways. The children's place and patrimonial ways are whole. The uterine fundus is higher than a an umbilicus , the uterus at a palpation soft, does not react to introduction of agents reducing a uterus. What most authentic reason of a bleeding?

A. Damage of a cervix of a uterus

B. *Atony of a uterus

C. A hysterorrhesis

D. A delay of parts of a placenta

E. A hypotonia of a uterus

4. At the parturient woman with the serious form of a preeclampsia right after the bleeding began birthes of a fetus. The afterbirth is whole, patrimonial ways are whole. The uterine fundus is lower than a umbilicus2 sm, dense. At external massage of a uterus the bleeding has amplified, a blood is liquid and without clots. What diagnosis can be assumed?

A. A hysterorrhesis.

B. A hypotonic bleeding

C. A delay in a uterus of parts of a fetus

D. *A coagulopathic bleeding, the DIC syndrome

E. An embolism amniotic waters

5. At carrying out of operation the caesarian section in connection with a complete placental presentation, after erasion of a placenta has arisen an appreciable bleeding from a site of a placental platform. The rests of a placental tissue which do not leave a napkin, a uterus soft, badly reduced are marked. The diagnosis of a true partial increment of a placenta is put. Specify the most rational tactics concerning a stopping of a bleeding.

A. To enter intravenously uterotonics.

B. To remove it is acute the rests of a placental tissue.

C. To carry out sewing together of sites of a bleeding.

D. To carry out a dressing of the main vessels.

E. * To carry out operation of a hysterectomy without appendages.

6. Primapara, 22 y.o., after delivery of a newborn, 4000 g mass, the hemorrhage form patrimonial paths has started. Bloodloss – 20 % of CBV (Circulating blood volume), BP 100/60 mm, shock index – 1. Diagnosis:

A. Hemorrhagic shock I degree

B. Hemorrhagic shock III degree

C. Thrombushemorrhagic shock

D. *Hemorrhagic shock II degree

E. Septic shock

7. In Woman-in-labor in the early puerperal period hemorrhage appeared. Bloodloss is 1500 ml (1,8 %). General state is severe, the consciousness is confused, anergic stupor, anxiety, body t˚ - 35,7˚C, pale skin, acrocyanosis. Tachicardia 130-140 b/min, CVP (Central venous pressure) – 20 mm, RR (respiration rate) 40 in min, diuresis per hour 15-20 ml/h, Ht –0, 25, shock index – 1,4, Hb –70 g/l. What should be the doctor's tactics?

A. Cold on the lower abdomen.

B. *Laparotomy. Total hysterectomy without appendages.

C. Manual revision of uterine cavity and massage of the uterus.

D. Applying of ligating clamps on parametrium.

E. Introduction of ether tampon.

8. At Multypara with placental presentation the uterine hemorrhage have appeared. Total bloodloss – 500 ml, BP 100/60 mm, Ps – 100 in 1 min, pale skin. Determine the shock index:

A. 1.5

B. 0.5

C. *1.0

D. 0.8

E. 2.0

9. At woman-in-labor in early puerperal period hemorrhage appeared from patrimonial paths have appeared. Total bloodloss –1000 ml, BP –90/70 mm, Ps – 120 b/min, pale skin, cold sweat, olyguria. Determine the grade of hemorrhagic shock:

A. 0

B. I

C. *II

D. III

E. IV

10. At woman-in-labor in early puerperal period hemorrhage appeared from patrimonial paths have appeared. Total bloodloss –1000 ml, BP –90/70 mm, Ps – 120 b/min, pale skin, cold sweat, olyguria. Determine the total volume of infusive therapy in connection with total bloodloss:

A. 2

B. * 1.5

C. 2.5

D. 1

E. 3

III. FORMATION OF PROFESSIONAL SKILLS (mastering skills, conducting curation, determining the treatment regimen, conducting a laboratory study, etc.).

3.1. Content of tasks (tasks, clinical situations, etc.).

Interactive task:

Student groups are divided into 3 subgroups of 3-4 people each. They work in the classroom, maternity ward, maternity ward, neonatal unit with pregnant women and newborns.

Task:

Student groups are divided into 3 subgroups of 3-4 people each. They work in the classroom, maternity ward, maternity ward, neonatal unit with pregnant women and newborns.

- Subgroup I – determining the volume of blood loss (Libov's method, Nelson's formula, Algover's shock index, Moore's hematocrit method)
- Subgroup II – management of the third stage of labor
- Subgroup III - to assess the responses of subgroups I and II and make adjustments.

Atypical situations of tasks:

1. Pregnant 22 years in a duration of gestation of 37 weeks; in an anamnesis a late misbirth. At night suddenly began a bleeding from sexual ways, up to 200 ml. A position of a fetus is longitudinal, the head above an input in a small pelvis. Heartbeat of a fetus is clear, rhythmical, 140 hits / minutes. At vaginal research it is revealed, that the canal of a cervix of a uterus passes 1 transversal finger. What reason of a bleeding?

Answer: I pregnancy, 37 week of gestation term. Longitudinal lie with head presentation of the fetus. Labor I , in term, first stage of labor. A placental presentation.

2. In a maternity home has arrived a pregnant with complaints to a whining back pain and spreading bloody discharge from a vagina. A duration of gestation of 36-37 weeks. Objectively: the sizes of a pelvis normal, a circle of a stomach – 102 sm, height of standing of a uterine fundus – 38 sm. Above an input in a pelvis there is a big soft part of a fetus, in a uterine fundus - more dense of the round form. Heartbeat of a fetus 160 heart-rate., is higher than a umbilicusat the left. P.V.: the cervix of a uterus dense, is open on 5 sm, the amniotic bubble, edge of a placenta is determined , presents the pelvic end. What obstetric tactics is applicable at the further conducting pregnant?

Answer: I pregnancy, 36-37 weeks of gestation term. Longitudinal lie with head presentation of the fetus. Labor I , before the term, first stage of labor. Laparotomy. Caesarian section

3. 37 weeks primigravida in term. A fetus alive. A pelvis 26-28-31-20. three days ago at absence of patrimonial activity of 50-60 ml has appeared bloody discharge from sexual ways. In two day the bleeding has repeated. A vaginal examination: the cervix of a uterus is short, the canal passes a finger. Behind internal fauces the spongiform tissue is determined. The head of a fetus is mobile above an input in a small pelvis. After research the bleeding has amplified. The diagnosis?

Answer: I pregnancy, 37 week of gestation term. Longitudinal lie with head presentation of the fetus. Labor I, in term, first stage of labor. Placental presentation

4. In a maternity home it is delivered pregnant, showing complaints to a headache and pains in epigastric area. Pulse 100 in 1 mines, BP 170/100 mm.hg., edemas of the person, a stomach, legs. The sizes of a uterus corresponds to term of the worn pregnancy, it is intense and morbid at a palpation, palpitation of a fetus is muffled,

discharge from a vagina is bloody. What obstetric tactics is applicable at the further conducting pregnant?

Answer: cesarean section urgently

5. Pregnant 25 years it is delivered in a maternity home with pregnancy of 34 weeks and complaints on bright bloody discharge with clots which have appeared after the act of a defecation. The head of a fetus at a uterine fundus. Palpitation of a fetus - 140 hits in one minutes. Patrimonial activity is absent. A vaginal examination: the cervix of a uterus in length of 3 mm, fauces passes the end of a finger, through a vagina massive formation of a soft consistence is palpated, discharge is bloody, bright. What diagnosis the most authentic?

Answer: I pregnancy, 34 week of gestation term. Longitudinal lie with head presentation of the fetus. Labor I, before the term, first stage of labor. A placental presentation.

3.2. Educational materials, recommendations (instructions) for performing tasks

Classification

1. Threat of an abortion (abortus imminens);

2. Incipient abortion (abortus incipiens) ;

3. Inevitable spontaneous abortion (abortus protrahens);

4. Incomplete spontaneous abortion;

5. Complete spontaneous abortion;

6. Abortion which did not take place (missed abortion).

Clinics-diagnostic criteria

Symptoms of a misscariage:

- pain syndrome: pain, connected to the contraction of the uterus;

- increased uterus tone;

- bleeding of different degrees of severity;

- structural changes in the uterine cervix.

The last two symptoms are the basis for the differential diagnostics of the stages of a miscarriage. During a threat of an abortion there are no bleeding and structural changes in the cervix.

Bleeding during spontaneous abortion, incipient abortion, inevitable abortion, incomplete spontaneous abortion

Clinical picture:

- cramp-like, spasmodic pain;

- bleeding of different severity.

Diagnostics:

- evaluation of the pregnant woman's general condition;

- examination of the cervix uterus with mirrors, bimanual examination;

- evaluation of the volume of blood loss.

Treatment:

- instrumental curettage of the uterus under intravenous narcosis (essential – histological test of the received material);

- preparations, which contract the uterus (10 units of oxytocin droplet i\v or 0,5 mkg methylergometrine i\v or i\m);

- if the bleeding continues - 800 mkg misoprostole rectally;

- antibacterial therapy if indicated.

Extra-uterine pregnancy (ectopic, EP) – an implantation of the fertilized ovum outside the uterine cavity. The most frequent localization of an EP – fallopian tubes.

Risk factors:

- Inflammatory diseases of the uterus and uterine appendages in the anamnesis.
- cicatrical adhesions in the organs of the small pelvis due to operations in the past on the internal genitals, pelviperitonitis, abortions.

- Hormonal dysfunction of the ovaries.
- Genital infantilism.
- Endometriosis.
- Prolonged use of intrauterine contraceptives.
- Auxiliary reproductive technologies.

Diagnostics.

Clinical signs.

1. Signs of pregnancy: delay or missed menstruation, swelling of the breasts, change in taste, smell and other sensations characteristic for pregnancy, signs of early gestosis (nausea, vomiting, etc.), positive immunological reactions to pregnancy (HCG in blood serum and urine).

2. Menstrual dysfunction: spotting, bloody vaginal discharge: - after a delay in menstruation; with the beginning of the next menstruation; before the next expected menstruation.

3. Pain syndrome: unilateral spasmodic or constant pain in the lower abdomen; sudden intensive pain in the lower abdomen; peritoneal symptoms in the lower abdomen of different degrees of severity; irradiating pains to the rectum, perineum area and sacrum.

4. Signs of intra-abdominal bleeding (in case of EP): dullness of percussion sound in the flanks and abdomen; positive Kulencampfa symptom (presence of signs of irritation of the peritoneum with the absence of local muscular pressure in the lower areas of the abdomen); when the patient is in horizontal position there is a positive bilateral "phrenicus" symptom, and in a vertical position - dizziness, loss of consciousness; in case of considerable hemoperitoneum – positive Blumberg symptom; progressing decrease in haemoglobin, erythrocytes, haematocrit from blood analysis results.

5. Decrease in the patient’s general condition (in case of EP): weakness, dizziness, loss of consciousness, cold sweats, collapse, hemodynamic dysfunction, faintness, reflex vomiting, meteorism, diarrhea.

Data from gynecologic exam: cyanosis of the mucous membrane of the vagina and cervix uterus, the sizes of the uterus are less than for the expected pregnancy term, unilateral increase and tenderness of the uterine appendages, bulging of the vaginal fornix (in the case of hemoperitoneum), acute pain during palpation of the posterior vaginal fornix ("Douglas' cry"), pain during cervical excursion.

Specific laboratory tests: qualitative or quantitative test for HCG.

Instrumental methods of examination: ultrasound (absence of the fetal egg in the uterine cavity; visualization of the embryo outside of the uterine cavity; detection of a non-uniform structure in the field of projection of the fallopian tubes; significant amount of free fluid in the Douglas pouch); laparoscopy (retor-shaped thickening of the fallopian tubes with a crimson - cyanotic colour; rupture of the fallopian tubes, bleeding from the ampular opening or from a ruptured place in the fallopian tubes, presence of coagulated or fresh blood in the abdominal cavity and in the Douglas pouch, presence of elements of the fetal egg in the abdominal cavity).

Diagnostic curettage of the walls of the uterine cavity:

- Absence of elements of the fetal egg in the curettage material;

- Presence of decidual tissue in the curettage material.

Diagnostic curettage of the walls of the uterine cavity is performed in the absence of an ultrasound and with informed consent from the patient for this manipulation.

In case of small term of delay in menstruation, and it is in interest of the woman to keep the uterine pregnancy and the absence of symptoms of an intra-abdominal bleed it is necessary to choose conservative tactics, observing the clinical signs, ultrasound in dynamics, level of HCG in blood serum.

Puncture of abdominal cavity through the posterior vaginal fornix.

It is performed when there is no ultrasound for the diagnostics of a tubal abortion. The presence of fresh blood in the punctate - one sign of EP.

In case of clinical signs of an intra-abdominal bleed, puncture of the abdominal cavity through the posterior vaginal fornix is not performed – it delays the beginning of laparotomy.

Differential diagnostics.

Diagnostics of ectopic pregnancy are simple in patients with amenorrhea, signs of pregnancy, pain in the lower abdomen and bleeding. But it is necessary to exclude the following conditions:

1. Twisting of an ovarian cyst or acute appendicitis.

2. Aborted uterine pregnancy.

3. Hemorrhage in the yellow body.

Clinical signs	Progressing pic pregnancy	Tubal abortion	Rupture of the pian tubes
Signs of gnancy	positive	positive	positive
Patient's eral condition	Satisfactory	Periodically sens, short-term es of sciousness, long ods of satisfactory eral condition	Collaptoid state, c picture for sive blood loss, gressive rioration of the eral condition
Pain	Absent	Attacks which odically repeat	Present in the n of acute attack
Discharge	Absent or gnificant bloody harge	Dark bloody harge, which ears after pain ck	Absent or gnificant bloody harge
Vaginal mination	Uterus does not the estimated gnancy term, near uterus is a retor- ed formation, tender, fornix is	The same, pain n the uterus is ted, formation out clear contours, erior fornix is oth	The same, ating uterus" ptoms, pain in uterus and uterine endages on the cted side, bulging the posterior ix
Additional	Ultrasound,	Culdocentesis,	Is not performed

nods of mination	ls of β-HCG, roscopy	roscopy	

Treatment for EP.

Principles for conducting patients with ectopic pregnancy:

1. Suspicion of ectopic pregnancy is an indication for urgent hospitalization.

2. Early diagnostics helps reduce the amount of complications and gives the possibility of alternative methods of treatment.

3. In the case of the established diagnosis of EP it is necessary to perform urgent operative intervention (laparoscopy, laparotomy). Operative treatment is the optimum. In modern practice, conservative methods of treatment are possible.

4. In the case of expressed clinical picture of ectopic pregnancy, presence of hemodynamical dysfunctions, hypovolemia the patient is to be immediately hospitalized for emergency surgical intervention using laparotomy access. If the clinical picture is not clear, there are no signs of hypovolemia and internal bleeding – ultrasound of the pelvic organs and\or laparoscopy.

5. On the pre-admission stage in case of EP the volume of urgent help is determined by the general condition of the patient and the volume of blood loss. Infusion therapy (volume, speed of introduction of solutions) depends on the stage of hemorrhagic shock.

6. Poor condition of the patient, presence of expressed hemodynamic dysfunctions (hypotonia, hypovolemia, hematocrit less than 30%) - absolute indications for operative intervention by laparotomy access with the removal of the fallopian tubes and providing antishock therapy.

7. Provide complex approach to treatment of women with extra-uterine pregnancy which includes:

a) Operative treatment;

b) Control of bleeding, hemorrhagic shock, blood loss;

c) Conducting the postoperative period;

d) Rehabilitation of reproductive function.

8. Operative treatment can be provided with laparotomy or laparoscopic access. Advantages of laparoscopic access include:

- decrease in the time of the operation;

- decrease the duration of the postoperative period;

- decrease the duration of stay in the hospital;

- decrease the amount cicatricial changes in the anterior abdominal wall;

- cosmetic effect.

9. The performance of organ-saving operations during EP is accompanied by risk in the postoperative period of development of persistence of the trophoblast, which is the result of incomplete removal from the fallopian tubes and abdominal cavity. The most effective method of prevention of this complication is careful washing of the abdominal cavity with 2-3 liters of physiological solution and unitary introduction of 7.5 - 100 mg methotrexate i\m during the first 24-48 hours after the operation.

Operations used in the case of tubal pregnancy:

1. Salpingostomy (tubotomy). Longitudinal salpingostomy is performed. After the removal of the fetal egg, salpingostomy is usually not sutured. In the case the chorionic villi do not grow into the muscular membrane of the fallopian tube, only curettage is performed.

2. Segmentary resection of the fallopian tubes. The segment of the fallopian tubes is removed where the fetal egg is located, then an anastomosis is made between two ends of the tube. If it is impossibility to perform salpingo – salpingo anastomosis then it is possible to tie off both ends and perform anastomosis later.

3. Salpingectomy. This operation is performed for a tubal pregnancy accompanied by massive bleeding. The operation and hemotransfusion is performed in that case simultaneously.

Conservative treatment of EP.

Treatment of progressing EP with methotrexate can be done only in third level institutions of public health services where it is possible to determine β – subunit of HCG in blood serum and perform a trans-vaginal ultrasound.

Indications for the use of methotrexate in the case of EP.

In order to avoid the introduction of methotrexate during a normal uterine pregnancy or an abortion which has not taken place, it is prescribed only in the following cases:

1. Increased level of β – subunit of HCG in blood serum after organ-saving operations on the fallopian tubes, performed due to progressing extra-uterine pregnancy.

2. Stabilization or increased level of β – subunit of HCG in blood serum during 12-24 hours after separate diagnostic curettage or vacuum aspiration if the size of the fetal egg at the area of the uterine appendages does not exceed 3,5 cm.

3. During trans-vaginal ultrasound it is discovered that the fetal egg has a diameter no more than 3,5 cm at the area of the uterine appendages and the level of β – subunit of HCG is 1500 IU/l, the absence of the fetal egg in the uterine cavity.

Postoperative period.

If the placenta is found in the abdominal cavity after the operation, its condition is evaluated with an US and the determining the level of subunits of HCG. In these cases, there is a very high risk of intestinal obstruction, fistula, sepsis. The use of methotrexate is counter-indicated, as it is accompanied by severe complications, first of all - sepsis. The reason for sepsis is massive necrosis of the placenta.

Bleeding during the second half of the pregnancy:

- placenta previa;

- premature detachment of a normally located placenta;

- rupture of the uterus

Placenta previa - complication during pregnancy where the placenta is located in the lower segment of the uterus lower than the presented part of the fetus, blocking fully or partially the internal uterine os. During physiological pregnancy, the lower edge of the placenta does not reach any closer than 7 cm to the internal os. Placenta previa is seen in 0,2-0,8 % of all delivers.

Classification of placenta previa

1. Complete presentation - the placenta completely blocks the internal os.

2. Incomplete presentation - the placenta partially blocks the internal os:

a) Lateral presentation - 2/3 of the area of the internal os is blocked;

b) Marginal presentation – the edge of the placenta meets the internal os.

3. Low placenta previa (placement) – the placenta is implanted in the lower uterine segment less than 7 cm from the internal os without blocking it.

In connection with migration of the placenta or its growth, the type of presentation can change as the pregnancy continues.

Clinical-diagnostic criteria:

The risk group for placenta previa is women who have transferred:

- endometritis with cicatricial dystrophic changes in the endometrium;
- abortions, complicated by inflammatory processes;
- benign uterine tumours, in particular submucous myoma nodes;
- action of chemical products on the endometrium;
- women with hypoplastic uterus.

Clinical symptoms

Pathognomonic symptom – bleeding, which can periodically repeat during the pregnancy between 12 and 40 weeks, occurring spontaneously or after physical activity, having risky character:

- with the beginning of uterine contractions at any term during the pregnancy;
- it is not accompanied by pain;
- it is not accompanied by increased tonus of the uterus.

The severity of the condition is caused by volume of blood loss:

- during complete presentation - massive;

- during incomplete - it varies from small to massive.

Anemia, as a result of bleeding, occurs, repeatedly. During this pathology, the lowest contents of haemoglobin and erythrocytes occurs in comparison with other complications during pregnancy which are accompanied by bleeding.

Frequently, incorrect positioning of the fetus occurs: diagonal, transverse, breeched presentation, incorrect insertion of the head. Premature birth is possible.

Diagnostics

1. Anamnesis.

2. Clinical displays - occurrence of repeated bleeding, not accompanied by pain and increased uterus tonus.

Obstetrical examination:

a) External examination:

- High standing of the presented part;
- Diagonal, transverse fetal position;
- The tonus of the uterus is not increased;

b) Internal examination (performed only in the conditions of an operation room):

- Doughy tissue in the fornix, swelling, pulsation of vessels;
- Impossible to palpate the presented part through the fornix.

In case of bleeding of specific character, the presentation is not meaningful because the obstetrical tactics are determined by the volume of blood loss and the condition of the woman.

US is of great importance to determine the location of the placenta and to establish a correct diagnosis.

<u>Placenta previa with bleeding is an urgent indication for hospitalization.</u>

Algorithm of examining a pregnant woman with bleeding in the hospital:

- Specify the anamnesis;
- Evaluate the general condition, volume of blood loss;

- General instrumental tests (blood type, Rhesus factor, general blood analysis, coagulogram);
- External obstetrical examination;
- Examination of the uterine cervix and vagina in an operational room with the help of vaginal mirrors to exclude such reasons for bleeding as cervical polyp, cervical cancer, rupture of a varicose node, evaluate vaginal discharge;
- Additional methods of examination (US) if indicated, if there is no need for urgent delivery.

Treatment:

Treatment tactics depend on the volume of blood loss, conditions of the patient and fetus, character of the presented part, term of the pregnancy, maturity of the fetus's lungs.

Principles for conducting patients with placenta previa:

1. In case of small blood loss (250 ml), absence of symptoms of hemorrhagic shock, fetal distress, absence of labor activity, immaturity of the fetus's lungs before 37 weeks term - waiting tactics.

2. Bleeding that has stopped - US, prepare the fetus's lungs. The purpose of waiting tactics – prolong the pregnancy to term of a viable fetus.

3. In case of progressing uncontrollable bleeding (more than 250 ml), accompanied by symptoms of hemorrhagic shock, fetal distress, regardless of the pregnancy term, condition of the fetus (live, distress, dead) - urgent (emergency) delivery.

Clinical variants:

1. Blood loss (up to 250 ml), there are no symptoms of hemorrhagic shock, fetal distress, term of pregnancy - less than 37 weeks:

- hospitalization;

- tocolytic therapy when indicated;

- quicken the maturing of the fetus's lungs before 34 weeks of pregnancy (dexamethasone 6 mg every 12 hours for 2 days);

- monitoring the woman and fetal condition.

- If bleeding progresses more than 250 ml – delivery by Cesarean section.

2. Considerable blood loss (more than 250 ml) with premature term of pregnancy – regardless of the presented part – emergency Cesarean section.

3. Blood loss (up to 250 ml) with mature pregnancy:

Under the conditions of an operational room, determine the presentation:

- In case of partial placenta previa, intact amniotic sac and cephalic presentation, active uterine contractions, perform amniotomy. If the bleeding stops, delivery can be performed vaginally. After the birth of the baby - i/m introduction 10 units of oxytocin, carefully observe the contractions of the uterus and character of vaginal discharge. If bleeding continues - Cesarean section;

- During complete or incomplete placenta previa, wrong fetal position (pelvic, diagonal or transverse) perform a Cesarean section;

- During incomplete placenta previa, dead fetus perform amniotomy, if the bleeding stops – vaginal delivery.

4. Blood loss (more than 250 ml) mature pregnancy regardless of the presentation - emergency Cesarean section.

5. Complete placenta previa: diagnosed by US, without bleeding – hospitalization till mature term for delivery, Cesarean section at 37-38 weeks.

In the early postnatal period - careful supervision of the woman’s condition. If the bleeding reoccurs after Cesarean section and the volume of blood loss is more than 1% of body weight - urgent relaparotomy, hysterectomy without the appendages, if necessary – ligation of the internal iliac arteries by an expert.

Compensation for the blood loss, treatment of hemorrhagic shock and DIC - syndrome is performed when indicated.

Postnatal secondary (late) bleeding

Main causes for late postnatal bleedings:

- delay of parts of the placenta or its membranes;

- discharge of necrotic tissue after delivery;

- separation of sutures on the wound on the uterus (after C-section or ruptured uterus).

More often late postnatal bleeding arises 7-12 days after delivery.

Algorithm for medical help:

1. Evaluation of blood loss (appendix N 1).

2. Catheterization of peripheral or central vein.

3. Instrumental revision of the uterine cavity under i\v narcosis.

4. I\v introduction of uterotonics (oxytocin 10-20 units in physiological solution - 400,0 or 0,5 mkg of methylergometrine).

5. If the bleeding continues – misoprostol 800 mkg rectally.

6. Restore blood volume.

7. If blood loss > 1,5% of the woman's body weight – laparotomy, hysterectomy, if it still continues – ligation of the internal iliac arteries.

Disorders of blood coagulation (postnatal afibrinogenemia, fibrinolysis):

- restore blood volume;

- correct hemostasis.

Prevention of postnatal bleedings:

1. During pregnancy:

- evaluate the risk factors for the occurrence of bleedings;

Factors which assist in the occurrence of bleedings in the postnatal period

Previous pregnancy	Factors, which occurred ng the pregnancy	Factors, which occurred ng the delivery
Primipara	Complete placental entation	Stimulation of delivery
More than 5 deliveries	Placental detachment	Long or difficult

namnesis		very
Pathology in chment or discharge of placenta	Hydramnion	Fast delivery
Operations on the us in the anamnesis, uding C-sections	Multiple pregnancy	Emergency Cesarean ion
Long or difficult very in anamnesis	Intrauterine fetal death	Delivery with etrical forceps
Background diseases – io-vascular diseases, etes, coagulation rders	Severe pre-eclampsia, mpsia	Chorioamnionitis
Anemia	Hepatitis	DIC – syndrome
Hysteromyoma	Conditions connected anemia	General or epidural sthesia

- Diagnostics and treatment of anemia;

- Hospitalization, readiness to give medical help to pregnant women of high risk for bleedings: antenatal bleeding, bleedings in previous deliveries, hydramnion, multiple pregnancy, large fetus.

2. During delivery:

- anesthesia during labor;

- avoidance of long deliveries;

- active conduction of the third period of labor;

- use of uterotonic preparations during the third period of labor;

- routine observation and evaluation of the integrity of the placenta and its membranes;

- prevention of traumatism during labor.

3. After labor:

- Inspection and examination of the birth canal;

- Attentive supervision throughout 2 hours after delivery;

- In woman of high risk - iv introduction of 20 units of oxytocin for 2 hours after the delivery.

Methods for determining the volume of blood loss

1. Libov's Method

Volume of blood loss is determined by weighing the napkins used, which are soaked in blood

Volume of blood loss = B / 2 x 15 % (blood loss less than 1000 ml) or x 30% (blood loss more than 1000 ml).

Where B - weight of the napkins, 15 % and 30 % - error size (amniotic fluid, physiological solution).

2. Nelson's formula

The percentage ratio of the total amount of blood loss is figured:

$$\frac{0{,}036 \times \text{original blood volume}}{\text{x hematocrit}}$$

$$\text{original blood volume (ml/kg)} = \frac{24}{0{,}86 \times \text{original hematocrit}} \times 100$$

3. Determine the blood loss by the density of blood and the hematocrit

Blood density, kg/ml	Hematocrit	Volume of blood loss,
1057-1054	44-40	Up to 500
1053-1050	38-32	1000
1049-1044	30-22	1500
Less than 1044	Less than 22	More than 1500

4. Algover's Shock index

$$\frac{\text{Heart rate}}{\text{BPs}}$$

Shock index =

Where BPs – systolic blood pressure

Normally Algovera's index = 1.

By determining the index size it is possible to conclude about the size of blood loss

Algovera's index	Volume of blood loss of blood volume)
0,8 and less	10 %
0, 9-1, 2	20 %
1, 3-1,4	30 %
1,5 and more	40 %

Note: Algovera's index is not informative in patients with hypertension

5. Moore's hematocrit method

$$BL = BV\ (n) \times (Ht\ (n) - Ht\ (a)) / Ht\ (n)$$

Where:

BL – blood loss; BV (n) – normal blood volume; Ht (n) – normal hematocrit (in woman – 42);

Ht (a) – actual hematocrit determined after blood loss is stopped and hemodynamics are stabilized

For rough amount of blood loss in pregnant women it is possible to use the modified Moore's formula:

$$BL = M \bullet 75 \bullet \frac{0,42 - Ht\ (a)}{0,42}$$

Where: BL – blood loss; (ml); M – woman's body weight (kg); Ht (a)- patient's actual hematocrit (l/l)

3.3. Requirements for the results of work.

- To perform an fetal heart tones auscultation.
- To prescribe an adequate treatment of fetal hypoxia.
- Ultrasonography assessment.
- To evaluate of fetal heart tones during electronic fetal monitoring.

3.4. Control materials for the final stage of the class: tasks, tests, etc.

1. 10 minutes after delivery a woman discharged placenta with a tissue defect 5x6 cm large. Discharges from the genital tracts were profuse and bloody. Uterus tonus was low, fundus of uterus was located below the navel. Examination of genital tracts revealed that the uterine cervix, vaginal walls, perineum were intact. There was uterine bleeding with following blood coagulation. Your actions to stop the bleeding:

A. *To make manual examination of uterine cavity

B. To apply hemostatic forceps upon the uterine cervix

C. To introduce an ether-soaked tampon into the posterior fornix

D. To put an ice pack on the lower abdomen

E. To administer uterotonics

2. A 22-year-old woman, gravida 1, para 0 arrived with complaints of sharply painful contractions that occur every 3-4 minutes and last for 35-40 seconds. Amniotic sac is intact. The fetus is in transverse lie, fetal heartbeats are not affected. Contraction ring is acutely painful, located obliquely at the level of umbilicus. What is the most likely diagnosis?

A. Excessive uterine activity during labor

B. Discoordinated labor

C. *Threatening uterine rupture

D. Uterine tetany

3. A 24-year-old patient (gravida 2, para 2) has just delivered vaginally an infant weighing 4,300 g after a spontaneous uncomplicated labor. She has had no problems during the pregnancy and labor. The placenta delivers spontaneously. There is immediate brisk vaginal bleeding of greater than 500 ml. Although all of the following can be the cause for postpartum hemorrhage, which is the most frequent cause of immediate hemorrhage as seen in this patient?

A. *uterine atony

B. retained placental fragments

C. coagulopathies

D. uterine rupture

E. vaginal and/or cervical lacerations

4. A 24-year-old woman (gravida 2, para 0, abortus 1) is seen in the emergency department because of vaginal bleeding and abdominal cramps. Her LMP was 10 weeks ago. History is unrevealing except for an induced abortion 2 years ago without complications. She presently denies instrumentation for abortion. Physical

examination reveals a BP of 110/70 mm Hg, pulse 120, and temperature 38,8°C. The abdomen is tender with slight rebound in the lower quadrants. The pelvic examination reveals blood in the vault and a foul-smelling discharge from the cervix, which is dilated to 2 cm. The uterus is 8- to 10-week size and tender, and no adnexal masses are palpated. What is the most likely diagnosis?

A. pelvic inflammatory disease (PID)

B. septic abortion

C. twisted ovarian cyst choriocarcinoma

D. *septic abortion

E. hydatidiform mole

5. A 24-year-old woman (gravida 2, para 0, abortus 1) is seen in the emergency department because of vaginal bleeding and abdominal cramps. Her LMP was 10 weeks ago. History is unrevealing except for an induced abortion 2 years ago without complications. She presently denies instrumentation for abortion. Physical examination reveals a BP of 110/70 mm Hg, pulse 120, and temperature 38,8°C. The abdomen is tender with slight rebound in the lower quadrants. The pelvic examination reveals blood in the vault and a foul-smelling discharge from the cervix, which is dilated to 2 cm. The uterus is 8- to 10-week size and tender, and no adnexal masses are palpated. Which of the following is definitive initial therapy in this case?

A. hysterectomy

B. bed rest and antibiotics

C. hysterotomy

D. outpatient antibiotics

E. *curettage after antibiotics

6. A 26-year-old woman complains of bloody discharges from the genitals for the last 14 days, abdominal pain, general fatigue, weakness, weight loss, fever, chest pain, obstructed respiration. 5 weeks ago she underwent an induced abortion in the 6-7 week of gestation. Objectively: the patient is pale and inert. Bimanual examination revealed

that the uterus was enlarged up to 8-9 weeks of gestation. In blood: Hb - 72 g/l. Urine test for chorionic gonadotropin gave the apparently positive result. What is the most likely diagnosis?

A. Uterine carcinoma

B. *Chorioepithelioma

C. Metroendometritis

D. Uterus perforation

E. Uterine fibromyoma

7. A 26-year-old woman whose last menstrual period (LMP) was 2½ months ago develops bleeding, uterine cramps, and passes tissue per vagina. Two hours later, she is still bleeding heavily. What is the indicated procedure?

A. *uterine curettage

B. vaginal packing

C. compression of the hemorrhoids

D. intravenous (IV) fibrinogen

E. hysterectomy

8. A 26-year-old woman whose last menstrual period (LMP) was 2½ months ago develops bleeding, uterine cramps, and passes tissue per vagina. Two hours later, she is still bleeding heavily. What is the most likely diagnosis?

A. inevitable abortion

B. premature labor

C. twin pregnancy

D. *incomplete abortion

E. threatened abortion

9. A 27-year-old G3P3 has delivered a 4200 g female after a 16-hour labor in which contractions were augmented with oxytocin. The placenta delivered intact. Her perineum has a second-degree laceration. After repair of the laceration, the patient continues to bleed heavily. She has lost 350 ml of blood. At this step you should assess uterine tone and do which of the following?

A. place a second large bore IV line

B. place a foley catheter

C. *do a manual exploration of the uterus for retained products of conception

D. inspect the cervix and upper vagina for lacerations

E. do a bedside ultrasound to evaluate for retained products

10. A 28-year-old female patient complains of having haemorrhage from the genital tracts for 1 month. 6 months ago she had natural delivery and gave birth to a girl weighing 3100g. Objectively: the uterus is enlarged to 9-10 weeks, mobile, painless, of heterogenous consistency. Examination reveals vaginal cyanosis, anaemia and body temperature rise up to 37, 8oC. There is a significant increase in hCG concentration in the urine. What is the likely diagnosis?

A. Uterine fibromyoma

B. *Uterine chorionepithelioma

C. Pregnancy

D. Hydatidiform mole

E. Endometritis

IV. SUMMING UP

Current control: oral examination, testing, assessment of practical skills, solving situational clinical problems, assessment of activity in the classroom.

Criteria for current assessment on the practical lesson:

5	The student is fluent in the material, takes an active part in the

	ussion and solution of situational clinical problems, confidently onstrates practical skills during the examination of a pregnant and rpretation of clinical, laboratory and instrumental studies, expresses his ion on the topic, demonstrates clinical thinking.
4	The student is well versed in the material, participates in the discussion solution of situational clinical problems, demonstrates practical skills ng the examination of a pregnant and interpretation of clinical, laboratory instrumental studies with some errors, expresses his opinion on the topic, onstrates clinical thinking.
3	The student isn't well versed in material, insecurely participates in the ussion and solution of a situational clinical problem, demonstrates tical skills during the examination of a pregnant and interpretation of ical, laboratory and instrumental studies with significant errors.
2	The student isn't versed in material at all, does not participate in the ussion and solution of the situational clinical problem, does not onstrate practical skills during the examination of a pregnant and the rpretation of clinical, laboratory and instrumental studies.

IV. Methodical support materials.

1. Zaporozhan V.M., Miwenko V.P. Collection of test tasks for clinical paints: science-medical collection. - Odessa: Odessa state medical university, 2008.- 176 p.s- Language: eng.
2. Oxford medical publications, emergencies in obstetrics and gynecology, second edition- Stergios K. Doumouchtsis, Professor Sir S. Arulkumaran.- 2016.- P. 21-63
3. WHO recommendations for the prevention and treatment of postpartum haemorrhage.-2012.-P.1-41
4. ACOG Committee Opinion No.736:Optimizing postpartum care. Obstet. Gynecol. 131(5).-2018

5. Kaplan. USMLE Step 2 CK Lecture Notes: Obstetrics and Gynecology. 2019.-pp. 767.

INTERNET SOURCES:

- https://www.cochrane.org/
- https://www.ebcog.org/
- https://www.acog.org/
- https://www.uptodate.com
- https://online.lexi.com/
- https://www.ncbi.nlm.nih.gov/
- https://pubmed.ncbi.nlm.nih.gov/
- https://www.thelancet.com/
- https://www.rcog.org.uk/
- https://www.npwh.org/