



Ministry of Education and Science of Ukraine
Sumy State University
Scientific and Educational Medical Institute

Obstetric phantom: Tutorial

According to the general edition
Doctor of Medical Sciences I. M. Nikitina

Recommended by the Academic Council of Sumy State University

Sumy
Sumy State University
2022

УДК 618.2(075)

О 44

Author team:

I. M. Nikitina, doctor of medical sciences, associate professor;
C. A. Smiian, candidate of medical sciences, associate professor;
N. V. Kalashnyk, candidate of medical sciences, associate professor;
A. V. Boyko, doctor of medical sciences, associate professor
T. V. Kopytsia, candidate of medical sciences, assistant
N. P. Sukhostavets, candidate of medical sciences, assistant
S. F. Herasimenko, candidate of medical sciences, assistant
T. V. Babar, candidate of medical sciences, associate professor

Reviewers:

O. I. Smiian - doctor of medical sciences, professor, head of the department of pediatrics Medical Institute of Sumy State University;
M. L. Kuzyomenska - doctor of medical sciences, professor of the Department of Obstetrics, of gynecology and family planning of the Sumy State university Medical inststute.

Recommended for publication
Academic council of Sumy State University
as a study guide
(Protokol No. 14 dated May 12, 2021)

A 44 Obstetric phantom: tutorial / *I. M. Nikitina, C. A. Smiian, N. V. Kalashnyk, A. V. Boyko, T. V. Kopytsia, N. P. Sukhostavets, S. F. Herasimenko, T. V. Babar*; accord. to the gen. edit. doc. of med. sc., *I. M. Nikitina*. – Sumy: Sumy State University, 2022. – 186 p.

The study guide is prepared for senior year students, intern doctors for specialty "Obstetrics and gynecology", young doctors. The material of the guide is presented as taking into account methodological needs, as well as modern obstetric knowledge based on principles of evidence-based medicine, which is the basis of the information provided in this publication.

УДК 618.2(075)

© *Nikitina I. M., Smiian S. A., Kalashnyk N. V., Boyko A. V., Kopytsia T. V., Sukhostavets N. P., Herasimenko S. F., Babar T. V., 2022*

CONTENT

Content.....	3
List of abbreviations	4
Introduction	5
Section 1. Childbirth of a woman	7
Section 2. The fetus as an object of childbirth	21
Section 3. Methods of external obstetric examination (Leopold's maneuvers).....	27
Section 4. Internal obstetric investigation	34
Section 5. Biomechanism of childbirth in anterior and posterior types of occipital presentation.....	37
Section 6. Biomechanism of birth with a narrowed pelvis.....	48
Section 7. Biomechanism of delivery in extensor presentation	63
Section 8. Manual obstetric care	76
Section 9. Assistance with a pelvic presentation of the fetus	91
Section 10. Obstetric rotation in the transverse position of the fetus.....	119
Section 11. Obstetric forceps	140
Section 12. Obstetric techniques in case of difficulty in removing the head during cesarean section	170
References	177

List of abbreviations

AC - abdomen circumference

HUFS - height of uterine fundus standing

KR - caesarean section.

UE - ultrasound examination.

INTRODUCTION

The implementation of the Bologna system of higher education in Ukraine, in particular medical, in the modern period of development requires the development of educational literature for students of higher medical school, taking into account the needs of this system. Obstetrics, one of the primary disciplines in training doctors of medical faculties, is currently developing rapidly in both theoretical and practical directions. The large flow of information requires analysis to introduce world-renowned evidence-based medical technologies. Evidence-based medicine is the latest technology for collecting, analyzing, synthesizing, and applying scientific medical information based on reliable research evidence.

In recent years, practical obstetrics has undergone some changes in the rethinking of care for pregnant women, mothers, and parturients, which are based on the principles of evidence-based medicine, more humanistic treatment of women, and avoidance of pharmacological and drug aggression, which contributed to a more physiological course of pregnancy and childbirth—reducing the frequency of complications and rapid psychological adaptation of women to motherhood. The reorientation of the system of obstetric knowledge to a scientifically sound / evidence base should be embodied in the method of teaching obstetrics in higher education.

The manual is prepared for senior students, interns in obstetrics and gynecology, and young doctors. We considered it necessary to create a textbook that would meet these needs. The presentation of the material, taking into account the methodological needs and modern obstetric knowledge, based on the principles of evidence-based medicine, is the basis of the information provided in this textbook.

The aim is to teach novice obstetricians and gynecologists the basic obstetric techniques, based on the firm belief that the doctor

has the right to start obstetric operations only when he has thoroughly studied and consciously mastered the biomechanism of normal childbirth with its variants, the biomechanism of childbirth in the pelvic region. Childbirth with a narrow pelvis.

For successful performance of any obstetric operation, it is necessary to be defined:

- 1) with indications before an operation,
- 2) with the corresponding conditions and technique of carrying out the operation,
- 3) with available contraindications to carrying out surgical intervention,
- 4) possible complications.

To study the indications, conditions, and techniques of obstetric surgery, it is necessary to fundamentally familiarize yourself with the course of normal childbirth, with all the options for their system and possible deviations and the development of complications. Without it, it is not necessary to start the performance of this or that obstetric operation. From these positions, before proceeding to the presentation of the basics of obstetric procedures, we will focus on the necessary data on pelvimetry and methods of external obstetric examination.

Section 1

Childbirth of a woman

A woman's birth canal is divided into bony and soft parts. To the bony part belongs the small pelvis, to the delicate position - the cervix, vagina, and musculoskeletal system of the pelvic floor.

The pelvis is formed by two pelvic bones, the sacrum, and the coccyx. The pelvis consists of the iliac, sciatic, and pubic bones (Fig. 1).

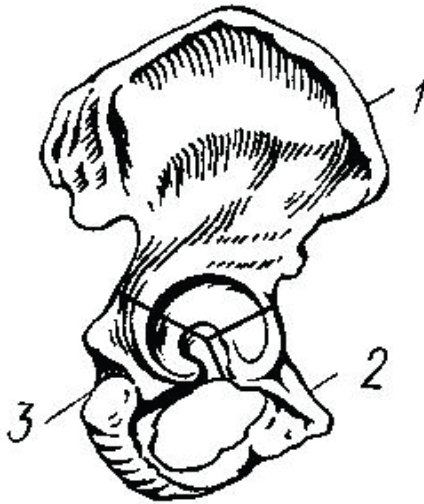


Fig. 1. Pelvic bone:
1 - iliac bone; 2 - pubic bone; 3 - sciatic bone.

The female pelvis, for obstetric reasons, is divided into two sections: large and small pelvis. The boundary between them runs along an unnamed line (*linea innominate*). The large pelvis is limited on the sides by the wings of the iliac bones, behind - the spine, front -

no wall. The small pelvis is formed in front by the branches of the pubic bones and the symphysis on the sides - the parts of the bones that make up the acetabulum, the bodies and bumps of the sciatic bones, behind - the sacrum and coccyx (Fig. 2).

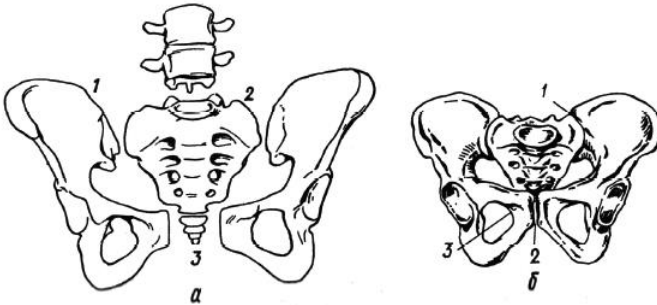


Fig. 2. Pelvic bones

(a: 1 - iliac crest; 2 - sacrum, 3 - coccyx) and its connection
 (b: 1 - sacroiliac joint; 2 - pubic symphysis; 3 - sacrococcygeal joint)

During childbirth, the small pelvis, like a dense bone tunnel, limits and determines the size, shape, and direction of the birth canal through which the fetus passes and to which it must adapt by changing the configuration of the head. In obstetric practice, the size of the pelvis is of great importance, which determines the course and completion of labor for mother and fetus. But most pelvic heights cannot be measured directly. The large pelvis is not essential for the birth of a child, but its size can indirectly judge the shape and size of the pelvis. Measurements of the pelvis are performed with a pelvimeter.

The size of the large pelvis

Four main dimensions of the pelvis are usually measured: three transverse and one straight.

Distancia spinarum - the distance between the anterior-upper axils of the iliac bones. This size is 25 cm;

Distantia cristarum - the distance between the most distant points of the iliac crests. On average, it is 28 cm.

Distantia trochanterica - the distance between the large swivels of the femurs. This size is 31 cm (Fig. 3).

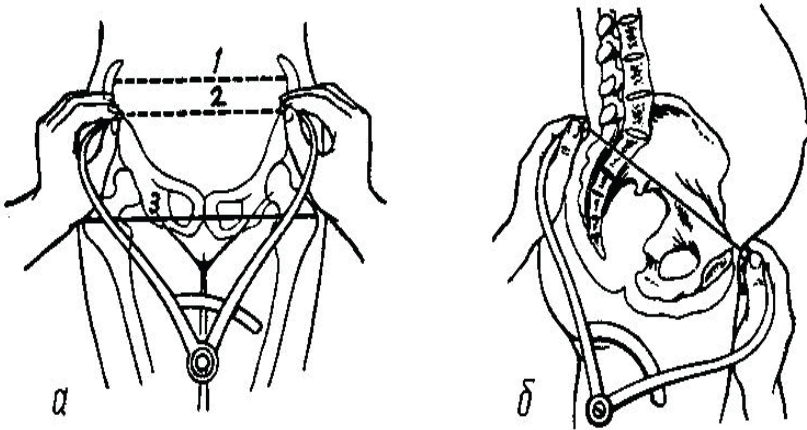


Fig. 3. External dimensions of the pelvis:

a - transverse dimensions of the pelvis: 1 - distantia cristarum; 2 – distantia spinarum; 3 - trochanteric distance; b - external conjugate

External conjugate (outer conjugate) - the direct size of the pelvis. The woman is placed on her side; the lower leg is bent at the hip and knee joints, and the other is extended. One end of the tachometer is placed in the middle of the upper outer edge of the symphysis. The other end is pressed against the suprascrural fossa, which is located between the spinous processes of the fifth lumbar vertebra and the first sacral vertebrae. The outer conjugate is 20 cm (Fig. 3 - b).

Pelvimetry

1. Invite a woman to lie on a couch on her back, legs straight.

2. Stand to her right.
3. Take the pelvimeter in your hands, so its buttons are between your index and thumbs.
4. Palpate the front upper spines of the iliac crests with your index fingers, and press the pelvimeter buttons on them.
5. Determine the distance between the anterior-upper axes of the iliac crests (distantia spinarum - 25-26 cm) on a pelvimeter scale.
6. Move the pelvimeter buttons to the farthest points of the iliac crests.
7. Determine the distance between the most distant points of the iliac crests on the pelvimeter scale (distantia cristarum - 28-29 cm).
8. Find the big swivels of the femurs with your index fingers.
9. Press the pelvimeter buttons to the large swivel.
10. Determine the distance between the large swivels of the femurs (distantia trochanterica - 30-31 cm) on a pelvimeter scale.
11. Invite the woman to lie on her left side, bend her lower leg at the knee and hip joints, and straighten her upper leg.
12. Place one pelvimeter button in the middle of the upper edge of the pubic joint and the other - on the upper corner of the Michaelis rhombus.
13. Determine the distance on the pelvimeter scale from the middle of the upper edge of the symphysis to the upper corner of the Michaelis rhombus (c. Externa - 20-21 cm). The external conjugate can determine the size of the obstetric conjugate by the formula

$$\text{obstetric conjugate} = \text{external conjugate} - 9 \text{ cm}.$$

The direct size of the pelvic outlet is the distance between the middle of the lower edge of the pubic joint and the top of the coccyx.

Measurement of the direct size of the pelvis is performed without gloves.

1. Invite a woman to lie on a couch on her back, bend her legs at the hips and knees, and spread;
2. Stand to her right;

3. Take the pelvimeter in your hands so that the buttons of the pelvimeter are between the index and thumbs;
4. One button of the pelvimeter is set in the middle of the lower edge of the pubic joint, the other on top of the coccyx;
5. The obtained size is 11 cm, 1.5 cm more than the true one.

Therefore, it is necessary to subtract 1.5 cm from the obtained figure of 11 cm to find the direct size of the exit of the pelvic cavity, which is equal to 9.5 cm.

The transverse size of the pelvic outlet is the distance between the inner surfaces of the buttocks.

Measurement of the transverse dimension of the pelvic outlet is performed without gloves.

1. Invite the pregnant woman to lie on the couch.
2. Ask the pregnant woman to bend her legs at the hips and knees and press them to the abdomen as much as possible;
3. Take a centimeter tape or a special pelvimeter with cross branches;
4. Feel the inner surfaces of the buttocks and measure the distance between them with a centimeter tape (or pelvimeter with cross branches);
5. To the obtained value (9-9.5 cm), you need to add 1-1.5 cm, given the thickness of the soft tissues. The resulting size is 11 cm

Additional pelvic dimensions

The lumbosacral rhombus (Michaelis's rhombus) is a plane on the posterior surface of the sacrum, the upper corner of which is a recess under the spinous process of the fifth lumbar vertebra. The lateral angles correspond to the posterior-upper branches of the iliac bones; lower - the tops of the buttocks; above and outside the rhombus is limited to the protrusions of the large spinal muscles, below and outside - the swells of the gluteal muscles. The rhombus of Michaelis has two dimensions: longitudinal - between its upper and lower corners (11 cm), and transverse - between the side corners (9 cm). The sum of the transverse and longitudinal dimensions of the

Michaelis rhombus corresponds to the size of the outer conjugate. (Fig. 4)

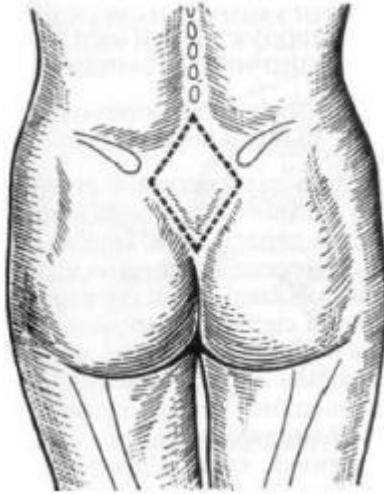


Fig. 4. Lumbar-sacral rhombus of Michaelis

The lateral conjugate is measured with a pelvimeter from the anterior-superior to the posterior superior iliac spine of the eponymous side, equal to 14.5 cm.

The oblique dimensions of the pelvis are measured to determine its asymmetry. To do this, compare the distance between the following points:

1) from the middle of the upper edge of the symphysis to the posterior-upper axis of the iliac crest on the right and left; these dimensions are 17 cm on both sides;

2) from the anterior-superior axis of one side to the posterior-upper axis of the opposite side and vice versa. This size is 21 cm;

3) from the spinous process of the fifth lumbar vertebra to the anterior-upper bone of the right and left iliac bones. This size is 18 cm.

In a symmetrical pelvis, all oblique dimensions are the same. The difference between the oblique dimensions of one side to the oblique dimensions of the opposite side greater than 1.5 cm indicates the asymmetry of the pelvis.

Oblique dimensions of the pelvis. To detect pelvic asymmetry with a pelvimeter, measure the following diagonal dimensions:

- the distance from the anterior superior iliac bone of one side to the superior posterior axis of the other side and vice versa;
- distance from the upper edge of the symphysis to the right and left posterior vertebrae;
- distance from the sacrococcygeal fossa to the right and left superior anterior spines.
- The oblique dimensions of one side are compared with the corresponding measurements of the other. In a typical structure of a pelvis, the size of pair of diagonal measures is identical. A difference greater than 1 cm indicates pelvic asymmetry.

The pubic angle is the angle between the descending branches of the pubic bone. The pubic angle is measured in the position of the pregnant woman on a gynecological chair, with the thumbs of both hands placed along the descending branches of the pubic bone. Usually, the pubic angle is 90-100°. The pelvic circumference is standard - 85 cm or more.

The height of the pubic joint is standard - 4-4.5 cm.

The lateral dimensions of the pelvis are measured with a pelvimeter in the position of the pregnant woman standing. Determine the distance between the anterior-superior and posterior-superior iliac bones of one side. Normal - 14.5-15 cm.

Planes of the pelvis and their dimensions

The cavity of the pelvis is the space between its walls, which is limited at the top and bottom planes of entry and exit of the pelvis. It looks like a cylinder that is truncated from front to back so that the front part (which faces the womb) is almost three times lower than the back (which meets the sacrum).

In the pelvic cavity, there are four planes: entrance, wide and narrow parts, and exit.

Planes of the pelvis and their dimensions:

a) the plane of the entrance to the small pelvis is limited behind the cape of the sacrum, on the sides - the boundary (arcuate) lines of the iliac bones, and in front - the upper edge of the pubic bone and symphysis.

There are four sizes (Fig. 5).

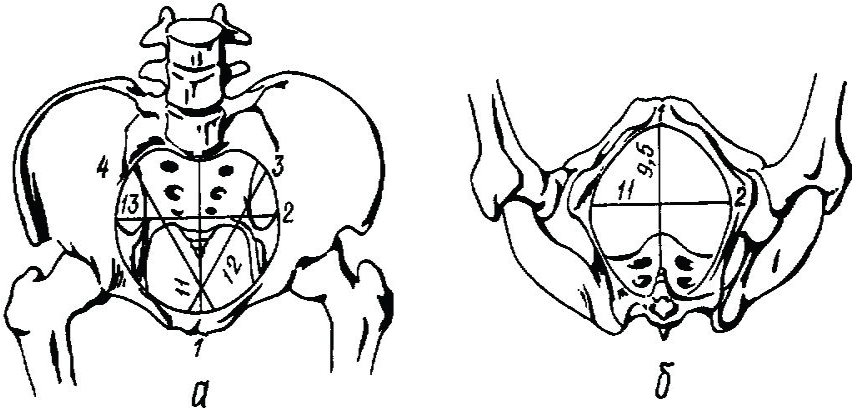


Fig. 5. The dimensions of the planes of the pelvis (1 - straight; 2 - transverse; 3, 4 - right and left oblique): a - the plane of entry into the pelvis, b - the plane of exit from the pelvis (dimensions are given in centimeters)

Direct size - the distance from the sacrum to the most protruding point of the upper inner edge of the symphysis, it is also called true, or obstetric conjugate (conjugate vera), equal to 11 cm. There is also anatomical conjugate (conjugate anatomic) - the distance from the cape of the sacrum to the upper edge of the symphysis is 0.3 cm larger than the obstetric. Transverse size - the distance between the most distant points of the arcuate lines of the iliac bones (linea innominata); is equal to 13 cm. Oblique size (left and right) - the distance from the left sacroiliac joint (articulatio sacroiliac) to the right iliac-pubic elevation (eminentia ileopubica) and vice versa; is 12 cm. b) the plane of the wide part of the pelvic cavity is limited posteriorly by the connection of II and III sacral vertebrae, on the sides - the middle of the acetabulum, in front - the middle of the inner surface of the symphysis. In the plane of a vast part of a small pelvis, distinguish two sizes - direct and cross (Fig. 6).

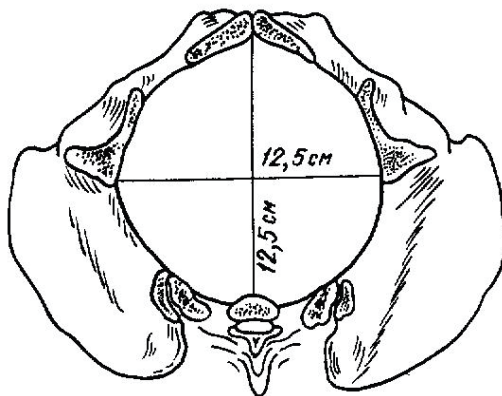


Fig. 6. The dimensions of the plane of the wide part of the pelvis (straight - from the middle of the inner surface of the symphysis to the level of the connection of the II and III sacral vertebrae; transverse - between the middle of the acetabulum)

Straight size - from the projection of the junction of the II and III sacral vertebrae to the middle of the inner surface of the symphysis; is equal to 12.5 cm.

Transverse size - between the middle of the acetabulum; is equal to 12.5 cm.

The plane of the narrow part of the pelvis is limited in front by the lower edge of the symphysis, posteriorly by the sacrococcygeal joint, and laterally by the sciatic bones. There are two dimensions of the plane of the narrow part of the pelvis: straight and transverse.

Direct size - from the sacrococcygeal joint to the middle of the lower edge of the pubic symphysis; is equal to 11 cm.

Transverse size - between the inner surfaces of the sciatic bones; is similar to 10.5 cm

The plane of exit from the pelvis is limited in front by the lower edge of the symphysis, behind - the top of the coccyx, on the sides - the inner surfaces of the buttocks.

Dimensions of the plane of exit from the pelvis: straight and transverse.

The direct size is the distance from the middle of the lower edge of the symphysis to the top of the coccyx; it is equal to 9.5 cm (during childbirth, when the head is born, the coccyx deviates 1.5 cm back, and the straight size increases to 11 cm).

Transverse size - the distance between the inner surfaces of the buttocks, equal to 11 cm

The size of the exit from the pelvis can be measured directly. To do this, the pregnant woman is placed on her back. Legs bent at the hip and knee joints, spread to the sides, and pulled up to the abdomen. Measurements are performed with a centimeter tape or a special pelvimeter. The direct size is measured between the above landmarks. When measuring the transverse size, 1.5 cm should be

added to the obtained distance between the inner surfaces of the buttocks (9.5 cm), taking into account the thickness of the soft tissues. The line passing in the middle of all straight sizes of planes is called the leading axis of a pelvis (Fig. 7). The pubic angle is 90-100 °, and the angle of inclination of the pelvis is 55-60 °. The height of the symphysis is measured during vaginal examination and is equal to 3.5-4 cm.

The most important dimension for pelvic evaluation is the true conjugate, which cannot be measured directly. Therefore, it is calculated from the dimensions available for measurement: the outer conjugate and the diagonal conjugate. To determine the true conjugate, 8 cm should be subtracted from the size of the outer conjugate when the radius of the wrist is <14 cm; 9 cm – at the circumference of the radial-carpal joint 14-16 cm; and 10 cm – at the circumference of the radial-carpal joint > 16 cm. For example: 20 cm – 9 cm = 11 cm.

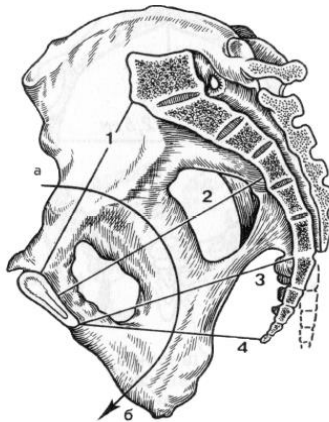


Fig. 7. The direct dimensions of the four planes of the pelvis: (1 - entrance to the small pelvis (true conjugate); 2 - wide part pelvic cavity; 3 - narrow part of the small cavity pelvis; 4 - exit from the pelvis; a - b - the leading axis

The diagonal conjugate is the distance from the lower edge of the symphysis to the most prominent point of the sacrum. The diagonal conjugate is measured by vaginal examination. When inserted into the vagina, the index and middle fingers move through the sacral cavity to the cape of the sacrum, the tip of the middle finger is fixed on its end, and the edge of the palm rests on the lower edge of the symphysis. The place where the doctor's hand touches the lower edge of the symphysis is marked with the finger of the other hand. After the fingers are removed from the vagina, measure the distance from the tip of the middle finger to the marked point of contact of the palm rib with the lower edge of the symphysis with a pelvimeter or centimeter tape (Fig. 8).

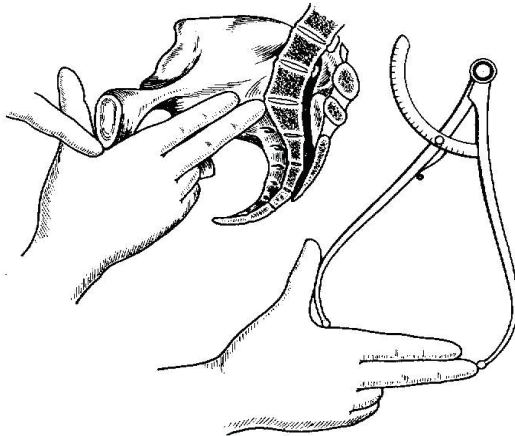


Fig. 8. Measurement of the diagonal conjugate

The diagonal conjugate is, on average, 13 cm. If the tip of the sacrum cannot be reached with the end of the extended finger, the size of the diagonal conjugate is considered to be close to normal.

To establish a true conjugate, 1.5-2 cm must be subtracted from the size of the diagonal conjugate, depending on the circumference of

the radial-carpal joint: with a circumference of 15 cm - 1.5 cm, and with 16 cm and more - 2 cm.

The primary external sizes of a pelvis and a diagonal conjugate measure, except for pregnant women and parturients. If, at research, the basic sizes do not correspond to the norm and there is a suspicion of a narrow pelvis, carry out additional measurements.

Women's perineum

The perineum forms the bottom of the pelvis, closing the exit from it. In obstetrics, the concept of the perineum is narrower than in anatomy. In particular, the perineum is the gap between the posterior adhesion of the labia and the anterior edge of the anus. Two diaphragms - pelvic and urogenital - take part in the formation of a bottom of a small pelvis. The pelvic floor muscles consist of three layers (Fig. 9).

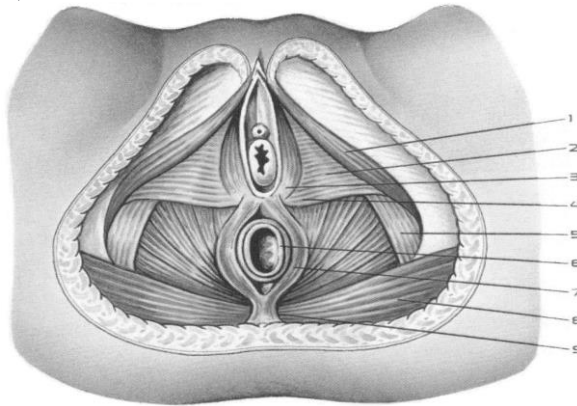


Fig. 9. Female perineal muscles:

- 1 - gluteal-cavernous muscle; 2 - urogenital diaphragm;*
- 3 - bulbous-spongy muscle; 4 - superficial transverse muscle of the perineum; 5 - internal occlusal muscle; 6 - rectum;*
- 7 - external sphincter of the anus; 8 - large gluteal muscle; 9 - anus-coccygeal ligament*

The superficial (outer) layer consists of the following muscles: gluteal-cavernous (m.ischiocavernosus) - which starts from the buttocks and intertwines with the tissues of the clitoris; bulbous-spongy (m.bulbocavernosus) - starts from the tendon center of the perineum and is attached to the walls of the vagina; an external muscle that compresses the anus (m.sphincter ani externus) - begins in the apex of the coccyx, covers the anus and is intertwined with the tendon center of the perineum; superficial transverse perineal muscle (m.transversus perinea superficial) - starts from the gluteal hump and ends at the tendon center of the perineum.

The middle layer of the pelvic floor muscles consists of the urogenital diaphragm, which is located in a triangular shape between the pubic joint pubic and sciatic bones. It is formed by the muscle that compresses the urethra (m.sphincter urethrae internum) and the deep, transverse perineal muscle (m.transversus perinei profundus).

The inner layer of the pelvic floor muscles is called the pelvic diaphragm. It is a strong paired muscle that raises the anus (m. Levator ani), which consists of muscle bundles: pubic-coccygeal (m.pubococcygeus) and iliac-coccygeal (m.ilicococcygeus). The coccygeal muscle (m.ischiococcygeus) is rudimentary, starting at the sciatic spine and attaching to the lower vertebrae of the sacrum and coccyx.

Section 2

The fetus as an object of childbirth

Signs of fetal maturity.

- 1) the growth of a mature fetus is more than 47 cm;
- 2) the body weight of a mature fetus is more than 2500 g;
- 3) the umbilical ring is located between the womb and the xiphoid process;
- 4) the skin is pink, healthy, and developed. Syrupy lubricant is found only in the inguinal and inguinal folds of the skin;
- 5) nails cover the ends of the phalanges of the fingers;
- 6) the length of hair on the head reaches 2 cm;
- 7) cartilage of the ears and nose are tight;
- 8) in boys, the testicles are lowered into the scrotum, in girls, the labia minora and clitoris are covered with large labia.

The structure of the head of the mature fetus. On the head of the fetus, there are seams: (frontal, arrow-shaped, coronal, lambdoid) and umbilicus (large, small, and two lateral on each side).

The frontal suture is located between the frontal bones. The sagittal suture is located between the parietal sutures – Coronal – between both frontal and parietal, and lambdoid – between two parietal and occipital bones.

The great temporal lobe (anterior) is located between the posterior parts of both frontal and anterior parts of both parietal bones and is a diamond-shaped connective tissue plate. The small occiput (posterior) is triangular in shape and is located between the posterior parts of both parietal bones and the occipital.

The large and small tendons are connected by an arrow-shaped seam (Fig. 10).

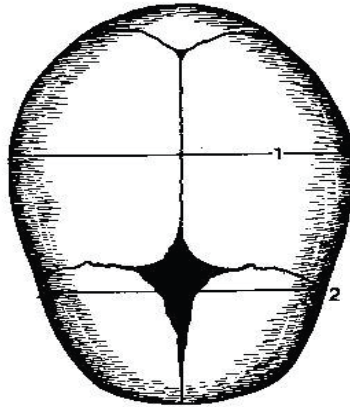


Fig. 10. Skull of the newborn (top view):
1 – biparietal diameter, 2 – bitemporal diameter

The lateral lobes are: anterior - between the frontal and temporal and wedge-shaped bones, and posterior - between the temporal, parietal and occipital bones. In a mature fetus, they are closed.

On the head of the fetus, distinguish the size and corresponding contours: (Fig. 11).

The direct size (d.fronto-occipitalis) from the nose to the most protruding point of the occiput is 12 cm, and the circumference of the head circumference front-occipitalis is 35 cm.

The large oblique size (d.mento-vertical) from the chin to the farthest point of the nape is 13.5 cm. The corresponding circumference is 41 cm.

The small oblique size (d.subboccipitobregmaticus) from the occipital fossa to the middle of the great temple is 9.5 cm. The corresponding circumference is 32 cm.

The average oblique size (d.suboccipitofrontalis) from the occipital fossa to the border of the scalp is 10 cm. The corresponding circumference is 33 cm.

The vertical size (d. Submento-bregmatic) from the middle of the big run to the hyoid bone is 15 cm; the head's circumference is 33 cm.

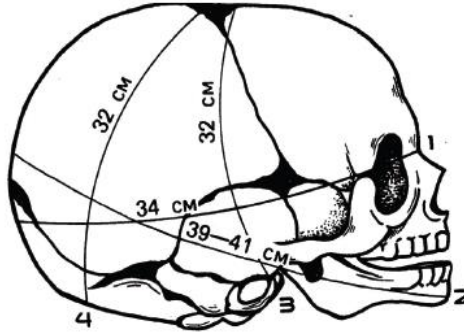


Fig. 11. Circles of the head of a newborn child according to its sizes: 1 - straight, 2 - large oblique, 3 - vertical, 4 - small oblique dimensions

The large transverse size (d.biparietalis) between the most distant points of the parietal tubercles is 9.5 cm.

The small transverse size (d.bitemporalis) between the most distant points of the coronal suture is 8 cm.

The diameter of the pelvic area (d.intertrochanterica) is 9.5 cm. The corresponding circumference is 28 cm.

The diameter of the shoulder girdle (d. Biacromialis) is 12 cm. The circumference of this size is 35 cm.

The location of the fetus in the uterine cavity

The location of the fetus in the uterine cavity in the last months of pregnancy is of great importance, because it largely depends on the course of labor. For a visual representation of the location fetus in the uterine cavity there are obstetric concepts: fetal lie, fetus position, the type of position and presentation of the fetus.

• **Fetal lie** is the relation of the longitudinal axis of fetus to the longitudinal axis of uterus. There are differentiated the following fetal lies:

- *longitudinal* — the longitudinal axis of fetus and the longitudinal axis of uterus coincide;
- *transversal* — the longitudinal axis of fetus crosses the longitudinal axis of uterus;
- *oblique* — the longitudinal axis of fetus crosses the longitudinal axis of uterus at a sharp angle.

• **Fetus position** is the relation of the fetal back to the right and left sides of uterus.

Two positions are differentiated:

- *the first* — the fetal back is turned to the left;
- *the second* — the fetal back is turned to the right.

At transversal and oblique lie the position is detected by head location: the head is on the left of the maternal stomach midline — the first position, on the right — the second.

• **The type of position** — relation of the fetal back to the anterior or posterior uterine wall. There are two types:

- *anterior* — the fetal back is turned to the front;
- *posterior* — the fetal back is turned backwards.

• **Presentation** is the relation of a big fetal part (the head or pelvis) to the inlet of small pelvis. There are differentiated cephalic and pelvic presentations. A presenting part is the part of fetus, which is located closer to the inlet and is the first to go through the maternal passages. At the bent fetal head the most low located part is the occiput. Such presentation is called *vertex* and is observed most often. Considerably less frequently the head is unbent. Depending on the level of unbending the presenting part may be the crown (*sincipital* presentation), forehead (*brow* presentation), or face (*face* presentation).

At pelvic presentation the most low located part might be the buttocks (*breech* presentation) or feet (*foot* presentation).

The concepts of large and small segments of the fetal head are of great importance for assessing the stages of advancement of the head through the birth canal.

The major segment of fetal head is understood as the largest circumference of the head, with which it goes through the planes of small pelvis depending on its fitting. At vertex presentation, when the head is fitted into the pelvis in bent position, the largest circumference is the one corresponding to the circumference of the small oblique size. At extended fitting of the head the major segment will be different (depending on the degree of deflexion).

Different options for the location of the fetus are given in Fig. 12.

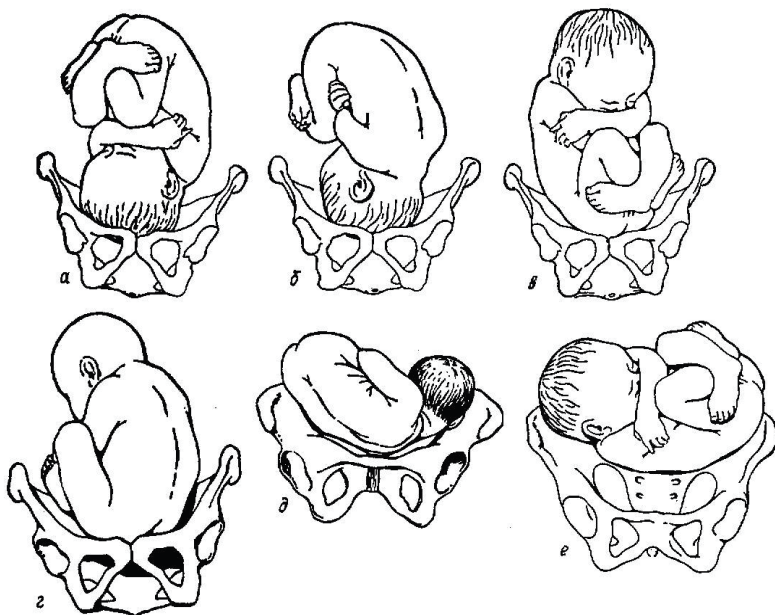


Fig. 12. The position of the fetus in the uterus:
a - occipital presentation, first position, posterior view;
b - occipital presentation, first position, anterior view;
c - pelvic presentation, second position, posterior view;
d - pelvic presentation, first position, anterior view;
e - transverse position, first position, anterior view;
f - transverse position, second position, posterior view

The minor segment of fetal head is considered by convention the part of the head smaller than the major segment, with which the head goes through the smaller pelvis planes.

Section 3

Methods of external obstetric examination (Leopold's maneuvers)

At external obstetric inspection of pregnant women and parturients four maneuvers of Leopold are consistently used (Fig. 13).

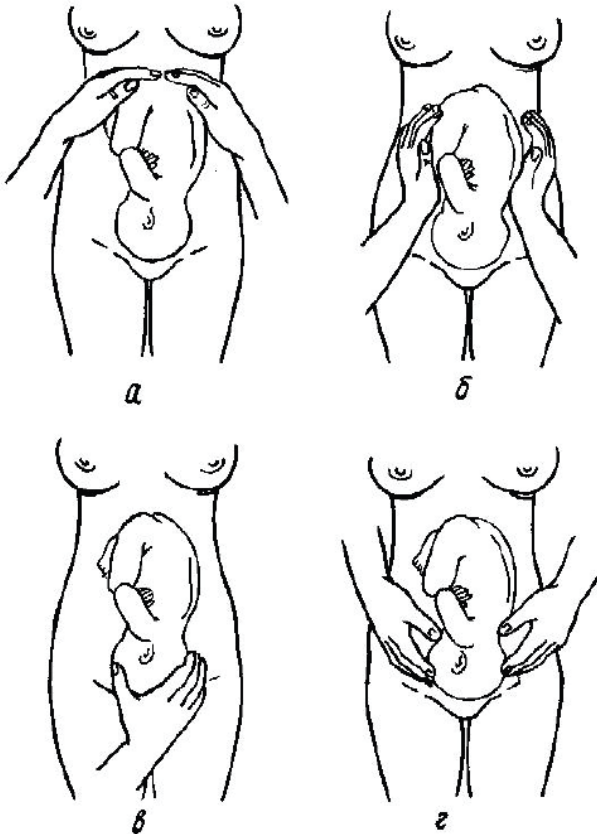


Fig. 13 – Leopold's maneuvers

Palpation of the abdomen is performed in the position of the pregnant woman on her back with the lower extremities bent at the hip and knee joints. The doctor (or midwife) stands (or sits) to the right of the pregnant woman facing her face when the first three receptions are performed and facing her lower extremities when the fourth reception is performed. The first, second and fourth techniques are performed with two hands, the third - with one (often right) hand.

The first maneuver. The purpose is to detect the standing of the fundus of uterus and the part of fetus located close to the fundus of uterus. To do this, the doctor stands on the right of the pregnant woman, facing her, puts both palms on the fundus of uterus, detects the height of its standing over the womb and the part of fetus located close to the fundus of uterus (Fig. 14).



Fig. 14. The first Leopold's maneuver

The second maneuver. The purpose is to detect the position and position type of the fetus. Both palms are removed from the fundus of uterus and in turn palpate the parts of fetus directed to the lateral uterine walls. The back and small parts of fetus are found. At irregular position the head is adjacent to one of the lateral uterine walls (Fig. 15). In the case of a longitudinal position of the fetus, one side is palpated the back of the fetus – a smooth wide surface, from the opposite side – small parts of the fruit in the form of small mobile tubercles.

Thus, with the help of the second technique, it is determined position, position, type of fetus.



Fig. 15. The second Leopold`s maneuver

The third maneuver. The purpose is to detect the character of the presenting part of fetus (presentation). With one hand, usually the right one, which is lying slightly above the pubis, the presenting part of fetus is covered, after what cautious movements are made with this hand to the right and to the left. At cephalic presentation a dense, spheric part is detected, which has well-defined contours. If the fetal

head is not yet fitted into the area of brim, it easily moves between the thumb and the rest of fingers. At pelvic presentation a voluminous soft part is detected, it is not spheric and can not move (Fig. 16). The head of the fetus is felt as a dense spherical part having clear contours. If the head the fetus has not yet settled in the entrance to the pelvis, it is easy moves, runs between the thumb and the rest of the fingers. If pelvic presentation is determined by the bulky soft part, it is not round in shape and is not able to vote. If transverse and oblique positions of the fetus, the anterior part is not can be felt So, using the third technique determine the nature of the presenting part of the fetus.



Fig. 16. The third Leopold's maneuver

The fourth maneuver. The purpose is to detect the level of presenting part standing (of the head in particular) relative to the area of brim and to the degree of its fitting. The doctor stands on the

left, with the face to the lower extremities of the pregnant woman, puts both hands with palms down on the lateral parts of the lower uterine segment and palpates accessible parts of the presenting part of fetus, trying to get with the fingertips between the presenting part and lateral parts of the area of brim (Fig. 17).



Fig. 17. The fourth Leopold's maneuver

Conducting external examination by means of the fourth Leopold's maneuver allows obtaining the following data:

- *the head is movable over the area of brim* — if fingers may be brought under the head;
- *the head is pressed to the area of brim* — fingertips do not meet over the head, but the occiput and the whole face part are palpated over the area of brim;
- *the head is in the area of brim with its minor segment* — the

occipital part of head protrudes above the area of brim by two fingers, and the face part — completely;

- *the head is in the area of brim with its major segment* — the occipital part of head is not palpated above the area of brim, and the face part protrudes by two fingers;

- *the head is in the pelvic cavity* — only the-chin is palpated or parts of fetal head are not defined at all.

External methods of investigation include measuring of the external dimensions of pelvis. It is conducted during the first examination of the pregnant woman in the antenatal clinic and maternity hospital. If it is necessary, the pelvis is measured repeatedly during delivery (see the chapter *Maternal Passages*)

Measurement of abdominal circumference and standing height the fundus of the uterus.

Abdomen circumference (AC) is measured with a measuring tape, which goes through the navel in front and through the middle of lumbar area from behind (Fig.18).

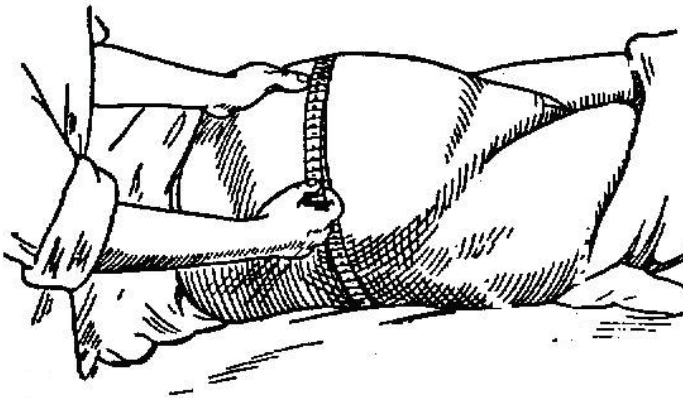


Fig. 18. Measurement of abdominal circumference

The height of uterine fundus standing (HUFS) is measured with a measuring tape from the upper margin of symphysis to the most protruding point of the fundus of uterus (Fig.19).

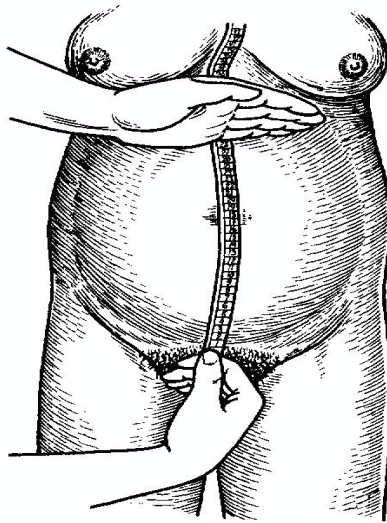


Fig. 19. Measurement of the standing height of the uterus fundus

The results of HUFS measuring are compared with a standard gravidogram (normally by the 30th week of pregnancy HUFS increase makes 0.7–1.9 cm a week; at 30–36 weeks — 0.6–1.2 cm a week; at 36 and more — 0.1–0.4 cm. If case monitoring shows lagging of dimensions by 2 cm or absence of increase during 2–3 weeks, it gives ground to suspect fetal growth inhibition).

Calculation of the estimated weight of the fetus

The foreseeable fetal body weight (FBW) is approximately calculated by the following formula:

$$FBW = AC \times HUFS.$$

More reliably fetal body weight is estimated by ultrasonic fetometry.

Section 4

Internal obstetric examination

In the physiological course of pregnancy, internal (vaginal) obstetric examination is performed at the first examination of the patient in a women's clinic in early pregnancy and in recent weeks to determine the degree of maturity of the cervix.

In the presence of indications (deviation from the normal course of pregnancy) internal examination is performed at any time, but in most cases with the onset of labor and in childbirth.

After decontamination of the doctor's hands (treatment with alcohol antiseptic or washing with soap and water), wear sterile rubber gloves. The vulva and vagina are treated with alcohol-free antiseptics. The examination is performed on a gynecological chair or in an obstetric bed.

Internal obstetric inspection gives information about the peculiarities of the soft tissues of parturient canal (elasticity, extensibility; as for the uterine neck — about its form, length, dilatation degree), fetal sac, presenting part, location of its main landmarks relative to the pelvis, about the bony pelvis (exostoses, deformations, promontory accessibility).

The internal obstetric inspection procedure:

- examination of the external genital organs, their development;
- detection of the vaginal orifice width, lumen, vaginal walls stretch, presence of scars, inflammatory alterations, tumors, condition of the perineum, filling of the rectal ampulla and urinary bladder;
- detection of the form and depth of vaults;
- position of the vaginal part of the uterine neck, its form, size, consistency, presence of scars and ruptures;
- the state of the internal and external mouths, their

- permeability (dilatation in centimetres), shortening or flatness of neck; detection of the ratio of the vaginal part of the uterine neck to the cervical canal of uterus;
- detection of fetal sac presence, form and density; its condition during and between birth pains: fills only during parodynia, remains filled after parodynia, too tense, weakens or does not fill at all during parodynia (flat sac), etc.;
- detection of the character of the presenting part (head, buttocks), location of its landmarks, establishment of the relation of the presenting part to a small pelvis plane (above the area of brim, in the area of brim with the major or minor segment, in the wide part of small pelvis, in the narrow part or in the pelvic outlet); whether within the orifice there are detected loops of cord, placental tissue, small parts of fetus, etc.;
- detection of pelvic capacity, exostoses presence, and the size of diagonal conjugate;
- the character of vaginal discharge.

Vaginal touch determines *the degree of uterine neck maturity*. The following notions are differentiated: immature, insufficiently mature, and mature uterine neck.

- To detect the readiness of the maternal organism to delivery by the data of uterine neck maturity there is evaluated the consistency of the uterine neck, the length of its vaginal part, permeability of the cervical canal of uterus, position of the neck relative to the axis of pelvis by the Bishop's Score (Table 1).

Table 1 – Uterine Neck Maturity Grading by the Bishop's Score

Feature	Maturation degree		
	0 points	1 point	2 points
Neck position	Retroposition	Anteroposition	Median
Neck length (cm)	>2	1–2	<1
Neck consistency	Dense	Macerated	Soft
External orifice	Closed	Opened by 1 cm	Opened by >2cm
Location of the presenting	Movable above the inlet	Pressed to the inlet	Pressed or fixed in the inlet

- 0–2 points — the neck is immature;
- 3–5 points — the neck is insufficiently mature;
- > 6 points — the neck is mature.

Section 5

Biomechanism of childbirth in anterior and posterior types of occipital presentation

The biomechanism of childbirth in anterior and posterior occipital presentation is an important topic in the study of obstetrics. Since the biomechanism of childbirth is the main component of childbirth, in the anterior and posterior types of occipital presentation, it determines the prognosis of childbirth for both mother and fetus. Proper knowledge of the biomechanism of childbirth allows timely preventive or curative measures, which ultimately leads to a reduction in maternal and perinatal mortality during childbirth.

The biomechanism of childbirth is a complex of translational, rotational, flexion and extension movements that the fetus makes when passing through the birth canal.

Starting to study the biomechanism of childbirth, it should be noted the following features in the position of the fetal head in occipital presentation:

1) the position of the head before childbirth is slightly bent, ie the nape and small forehead below the large;

2) the sagittal suture is placed slightly obliquely at the entrance to the pelvis, because the transverse size of the entrance to the pelvis is close to the sacrum, and the muscles slightly narrow the posterior pelvis.

The biomechanism of childbirth also depends on the structure of the pelvic ring (narrowing it in the hindquarters due to muscles) and the ability of the head to configuration.

Biomechanism of childbirth in anterior occipital presentation

Biomechanism of delivery at the anterior type of vertex presentation consists of four steps.

The first moment is bending of the head (flexio capitis) and lowering it into the plane of the entrance to the pelvis (fig. 20). It consists of a combination of movements: translational, bending and rotational. But the most striking is what determines at this time the main nature of the movement of the head - its bending. The cervical spine bends, the chin approaches the chest, and the small chin is below the large and becomes the leading point. This is the rotation of the head around its transverse axis. Due to the bending of the head, the small head is placed on the lower pole of the anterior part, approaching the leading axis of the pelvis, and becomes the "leading point". As a result, the bending of the head passes through the pelvis with the smallest circle, which passes through a small oblique size and is equal to 32 cm. Bending of the head is most easily explained by the law of two-shoulder lift. The translational movements of the head continue continuously until the birth of a child. During this time, the head is configured.

When bending the head, the leading axis of the head and pelvis coincide, while the arrow-shaped seam is at an equal distance from the womb and the cape of the buttocks. This insertion of the head is called synclitic. When the sagittal suture deviates from the conductive axis of the pelvis (closer to the cape, or to the womb) there is an asynclitic insertion, which is pathological.



Fig. 20 – Bending of the fetal head

The second point is the internal rotation of the head (*rotatio capitis internum*) (fig. 21). The rotation of the head begins at its transition from the wide to the narrow part of the pelvic cavity. The head slowly rotates around its axis so that the nape is directed to the symphysis, and the face - to the sacrum. At the same time the arrow-shaped seam gradually changes the position, passing from the cross size to oblique, then from oblique - to the direct size of an exit of a pelvis. The rotation of the head ends when the sagittal suture is installed in the direct size of the exit plane, and the occipital fossa, located under the small temporal lobe, is installed under the pubic joint. At the first position the arrow-shaped seam passes through the right oblique size, at the second - through the left oblique size of a pelvis.

The internal rotation of the fetal head is a consequence of the adaptation of its smallest size to the largest size of the pelvis, as well as resistance to translational movement of the head from the muscular apparatus of the pelvis.



Fig. 21. Internal rotation of the fetal head

The third point is the extension of the head (*deflexio capitis*) in the exit plane (fig. 22). Extension during the physiological course of labor occurs in the plane of the pelvic outlet: the sagittal suture coincides with the direct size of the pelvic outlet. The point of fixation is formed between the middle of the lower edge of the pubic joint and the occipital fossa. Around this point is the extension of the head, and clinically it is accompanied by the birth of the forehead, face, chin. During the incision and eruption of the head, the torso moves to the pelvis, and the transverse size of the shoulders enters one of the oblique dimensions of the entrance to the pelvis. At the first position the shoulders occupy the left oblique size of the entrance, at the second - the right size of the entrance to the pelvis. The birth of the head through the vulvar ring is a small oblique size (9.5 cm).



Fig. 22 – Extension of the fetal head

The fourth moment is the internal rotation of the shoulders and the external rotation of the head (rotatio trunci internum et capitis xternum) (fig. 23). During the extension of the head, the shoulders of the fetus are inserted into the transverse or one of the oblique dimensions of the entrance, then move to the oblique, and at the exit to the direct size of the pelvis. At the first position the shoulders occupy the left oblique size of the entrance, at the second - the right oblique size of the entrance to the pelvis. At the pelvic floor, the shoulder is rotated internally, similar to the rotation of the fetal head.

At the end of the turn, the shoulders are installed in a straight size in the direct size of the plane of the pelvis. This turn is transmitted to the born head, which corresponds to the fourth moment of the biomechanism of childbirth. The face of the fetus rotates to the right (in the first position) or left (in the second position) thigh of the mother.

The anterior shoulder enters the pubic arch, is fixed at the lower edge of the symphysis.



Fig. 23 – Internal rotation of the torso and external rotation fetal heads

The point of fixation is the place where the deltoid muscle attaches to the humerus. Around the point of fixation is the bending of the torso in the thoracic region and first the back shoulder is born, then the back handle. After the birth of the shoulder girdle, other parts of the fetus appear, the birth of which has no special mechanism, because their size is much smaller than the head and shoulders.

Biomechanism of childbirth with posterior occipital presentation

The first point – bending and lowering of the head does not differ from the anterior view of the occipital presentation (fig. 24).



Fig. 24 – Flexion and lowering of the fetal head

The second point is the internal rotation of the fetal head: the occiput does not rotate to the symphysis, as in the anterior view of the occipital presentation, but to the sacrum, the face faces the symphysis (fig. 25). Thus, the small temple is directed towards the sacrum, and the large – to the symphysis. Following the back of the head, the back of the fetus returns. The sagittal suture due to the

oblique size of the same name becomes the direct size of the pelvic outlet.



Fig. 25 – Internal rotation of the fetal head

The third point is additional bending (maximum) of the head. It is fixed in the middle of the lower edge of the symphysis by the area of the anterior edge of the great temple, the first fixation point is formed, around which additional bending is completed, which lasts until the second fixation point is formed (fig. 26).



Fig. 25 – Additional bending of the fetal head

The fourth point is the extension of the head. Further eruption of the head occurs due to the formation of a new, second point of fixation between the occipital fossa and the apex of the coccyx. Thus, the head is born with a face from under the symphysis, it erupts a slightly larger average oblique size of 10 cm (fig. 27).



Fig. 27 – Extension of the fetal head

The fifth moment – the internal rotation of the shoulders and the external rotation of the head does not differ from the fourth moment of the biomechanism of childbirth in the anterior view of the occipital presentation (fig. 28).



Fig. 28 – Internal rotation of the shoulders and external rotation of the

The configuration of the head in posterior occipital presentation is dolichocephalic. The etiological moments of the formation of the posterior view of the occipital presentation include changes in the shape and size of the pelvis, as well as the head of the fetus. This option is often observed in small, premature or dead fetuses.

Features of the clinic of childbirth in the occipital presentation of the posterior view: longer duration of labor than in the anterior view of the occipital presentation; greater consumption of labor for excessive bending of the head; perineal ruptures, recurrent weakness of labor, fetal distress, etc. occur most often.

The prognosis of childbirth is generally satisfactory. Childbirth is wait-and-see, but you should always be prepared for obstetric care or surgery.

Section 6

Biomechanisms of birth with a narrowed pelvis

Biomechanism of childbirth with a generally uniformly narrowed pelvis

The first point is the insertion and maximum bending of the fetal head (fig. 29). Rederer's asynclitism.



Fig. 29 – Insertion and maximum bending of the fetal head

The second moment is the internal rotation of the head (fig. 30).



Fig. 30 – Internal rotation of the fetal head

The third moment – the extension of the head, two fixation points are formed, the perineum is significantly stretched, and as a consequence of ruptures (fig. 31).



Fig. 31 – Extension of the head

The fourth moment is the internal rotation of the shoulders and the external rotation of the fetal head. During the eruption of the head on the pubic arch, two fixation points are formed – the risk of perineal injuries increases (fig. 32).



Fig. 32. Internal rotation of the shoulders and external rotation of the fetal head

Leading point – a small point.

The leading line is an arrow – shaped seam.

The configuration of the head is dolichocephalic.

Biomechanism of childbirth with a transversely contracted pelvis

The first point is the bending of the fetal head. Before the onset of labor there is a high straight standing arrow-shaped suture. The head without internal rotation falls to the pelvic floor.



Fig. 33 – Bending of the fetal head

The second moment is the extension of the fetal head around the fixation point of the occipital fossa and the lower edge of the symphysis.



Fig. 34 – Extension of the fetal head

The third moment is the external rotation of the fetal head. Inter-chrome-sized hangers are inserted into the direct size of the plane of the entrance to the small pelvis and without internal rotation are lowered to the pelvic floor. These movements cause the external rotation of the head.



Fig. 35 – External rotation of the fetal head

The fourth moment is the birth of the fetal body.

Biomechanism of childbirth with a simple flat pelvis

The first moment is the extension of the fetal head.



Fig. 36 – Extension of the fetal head

The second moment is the asynclitic insertion of the fetal head. Asynclitism of Negele, Litzman.



Fig. 37 – Asynclitic insertion of the fetal head

The third moment – the internal rotation of the fetal head occurs with a delay – low transverse position of the arrow-shaped seam.



Fig. 38 – Internal rotation of the fetal head

The fourth moment is the bending of the fetal head.



Fig. 39 – Flexion of the fetal head

The fifth moment is the extension of the head.

The sixth moment is the internal rotation of the shoulders and the external rotation of the fetal head.

Biomechanism of childbirth in flat rachitic pelvis

The first point is the extension of the fetal head.



Fig. 40 – Extension of the fetal head

The second moment is the asynclitic insertion of the fetal head. Asynclitism of Negele, Litzman.



Fig. 41 – Asynclitic insertion of the fetal head

The third moment – the internal rotation of the fetal head occurs with a delay – low transverse position of the arrow-shaped seam.



Fig. 42 – Internal rotation of the fetal head

The fourth moment is the bending of the fetal head.



Fig. 43 – Bending of the fetal head

The fifth moment is the extension of the head.

The sixth moment is the internal rotation of the shoulders and the external rotation of the fetal head.

Section 7

Biomechanism of delivery in extensor presentation

Biomechanism of childbirth in anterior cephalic presentation

Childbirth with anterior cephalic presentation has a long course. With a normal pelvis, normal fetal size and uncomplicated labor, they can end on their own.

The first moment is a moderate extension of the head (I degree). The large crown is located at the same level as the small one or below it and gradually becomes the leading point. Having reached the narrow part, she carries out.



Fig. 44 – Moderate extension of the head

The second point is the internal rotation of the head. At the end of this moment, the arrow-shaped seam is in the direct dimension of the exit, there is a large crown of the head under the pubic articulation, the back of the head is turned back.



Fig. 45 – Internal rotation of the fetal head

The third moment is the bending of the head. The point of fixation is the bridge of the nose or the border of the hairy part of the forehead, which becomes the first point of fixation. Bending of the head occurs around this point. At the same time, the occiput is cut through to the suboccipital fossa, which rests on the top of the coccyx to form a second fixation point. Bending of the head takes place around it.



Fig. 46 – Bending of the fetal head

The fourth point is the extension of the head. In this case, the point of fixation is the suboccipital fossa or the occipital tubercle, which rests on the front surface of the coccyx. At this moment, a head of straight size (12 cm) is born from under the pubic symphysis.



Fig. 47 – Extension of the fetal head

The fifth moment is the internal rotation of the shoulders and the external rotation of the head. It is carried out in the same way as in occipital presentation.



Fig. 48 – Internal rotation of the shoulders and external rotation of the head

Biomechanism of childbirth with front presentation and insertion of the fetal head

The first moment is the extension of the head (II degree). As a result, the face becomes the presenting part. In the transverse or in one of the oblique dimensions of the entrance to the pelvis, a frontal line is established, which goes from the frontal seam along the back of the nose to the chin. The leading point is the chin. In this state, the head descends into the entrance to the pelvis.



Fig. 49 – Extension of the fetal head

The second moment of the biomechanism of childbirth is the internal rotation of the head. It occurs simultaneously with the first, but is more pronounced when transitioning from the wide part of the pelvic cavity to the narrow one. The chin usually turns forward, and

the front line turns into an oblique, and then - into a straight size of the exit from the pelvis.



Fig. 50 – Internal rotation of the fetal head

The third moment is the bending of the head. The head is installed with its large segment at the exit, while it rests with the hyoid bone on the lower edge of the pubic joint, where the fixation point is formed. A head with a vertical size of 9.5 cm is born.



Fig. 51 – Bending of the fetal head

The fourth moment is the internal rotation of the shoulders and the external rotation of the head.



Fig. 52 – Internal rotation of the shoulders and external rotation of the head

Biomechanism of childbirth with frontal presentation and insertion of the fetal head

The first thing moment is a moderate extension of the head (II degree). The head is inserted in the transverse dimension of the entrance with a large oblique dimension (13.5 cm). At the same time, the forehead is located below everything, which is the leading point. Sharply configured, it reaches the wide part of the pelvic cavity.



Fig. 53 – Extension of the fetal head

The second moment of the biomechanism of childbirth is the internal rotation of the fetal head. The head performs an internal turn with the back of the head back, first obliquely, and then it is set at the exit from the pelvis with a frontal suture in a straight dimension, the upper jaw is pressed against the lower edge of the pubic joint, where the first fixation point (back view) is.



Fig. 54 – Internal rotation of the fetal head

The third moment – bending of the head occurs during cutting of the head and consists of bending and extending the head. At the same time, the alveolar process of the upper jaw rests against the lower edge of the symphysis (the first fixation point) and the head bends. At this moment, the crown of the head and the back of the head are visualized above the perineum.



Fig. 55 – Bending of the fetal head

The fourth point is the extension of the head. Later, the suboccipital fossa (the second point of fixation) rests on the top of the coccyx, the head expands and the forehead, eyes, nose, mouth, and chin appear from under the pubic joint.

The fifth moment is the internal rotation of the shoulders and the external rotation of the head.



Fig. 56 – Extension of the fetal head



Fig. 57 – Internal rotation of the shoulders and external rotation of the head

Section 8

Manual obstetric care

The essence of this technique is to prevent too rapid movement of the head along the birth canal and, if possible, so that the head cuts through its smallest size (that is, at maximum flexion - a small oblique size). Protection of the perineum consists in reducing the force with which the fetal head presses on the perineum and in regulating the correct passage of the head through the genital opening.

The first moment begins with the moment of cutting the head. In order to prevent premature extension of the head, the obstetrician stands to the right of the woman in labor and places the palm of his left hand on the pubic joint in such a way that the palm surfaces of four tightly closed fingers are placed flat on the head and, if possible, cover the entire head.

In this way, we prevent the premature extension of the head and its excessively rapid passage through the birth canal. At the same time, it is necessary to press with the entire palm surface of the fingers, while pressing only with the tips of the fingers can lead to injury to the head.

The second moment is the removal of the head from the genital slit beyond the limits. The essence of this moment is the most careful removal of the head from the genital opening. This is done by stretching the bulbar ring above the head with the thumb and index finger as soon as the effort has ended.



Fig. 58 – Prevention of premature extension of the head



Fig. 59 – Removal of the head from the genital opening beyond the limits

The third point is the reduction of perineal tension.

The goal is to make the perineum more pliable to the head at the expense of fabrics "borrowed" from neighboring areas, i.e. shifting the side fabrics, if possible, back towards the perineum.

The fourth point is the adjustment of forces during the insertion of the head by the parietal tubercles.



Fig. 60 – Adjustment of forces during head insertion

At this time, the danger of rupture of the perineum and excessive compression reaches its maximum. At this moment, the obstetrician has the task of skillfully regulating efforts. When the head is stopped by the parietal tubercles in the genital slit, and the suboccipital fossa is under the pubic joint, the parturient is suggested to breathe deeply and often with an open mouth. Then, with both hands, the advancement of the head is delayed until the force is significantly weakened.

The obstetrician's right hand squeezes the perineum above the face of the fetus without force so that it slips off the face, the left hand at this time slowly lifts the head of the fetus up and unbends it.

The fifth moment is the release of the shoulder girdle and the birth of the body.

After the birth of the head, the woman in labor is offered to push. The head is grasped with both hands so that the palms of both hands are flat against the right and left temporal-buccal areas of the fetus. At the same time, the head of the fetus is pulled down until the shoulder does not fit under the pubic joint. Then grab the head with the left hand (the palm is on the lower cheek of the fetus), lifting the head up with this hand, and pulling the crotch from the back shoulder with the right hand. The latter is carefully removed so as not to violate the integrity of the clavicles and perineum of the woman in labor.



Fig. 61 – Release of the shoulder girdle and birth of the trunk

When the shoulder girdle is released, the backs of the index fingers of the hands are inserted into the armpits of the fetus and the body is lifted up. This contributes to his quick and careful birth.

Active management of the third period of childbirth

Due to a number of advantages, active management of the third stage of labor is the most widespread tactic in the world and is recommended by the World Health Organization, the International Federation of Obstetricians and Gynecologists and the International Confederation of Midwives.

The use of the technique of active management of the third period during each delivery allows to reduce the frequency of postpartum bleeding caused by uterine atony by 60%, as well as to reduce the amount of postpartum blood loss and the need for hemotransfusion.

Standard components of active management of the third stage of labor include:

- introduction of uterotonic drugs:
- birth of the litter by means of controlled traction on the umbilical cord when the uterus is removed from the womb with the palm of the hand;
- massage of the uterus through the front abdominal wall after the birth of the litter.

Rules for the administration of uterotonic drugs: within the first minute after the birth of the child, palpate the uterus to rule out the presence of a second fetus in it, if it is not, inject 10 units of oxytocin intramuscularly (fig. 62. Step 1) When choosing uterotonics, preference should be given to oxytocin, since its effect is manifested after 2-3 minutes, it can be used in all women.

If there is no oxytocin, you can use - ergometrine - 0.2 mg.

The woman should be informed about the possible side effects of these drugs.

Ergometrine cannot be used in women with preeclampsia, eclampsia and hypertension.

Controlled traction for the umbilical cord:

- pinch the umbilical cord closer to the crotch with a clamp, hold the pinched umbilical cord and the clamp in one hand (fig. 62. Step 2);
- put the other hand directly above the woman's pubis and hold the uterus, pulling it away from the womb. Keep the umbilical cord in a state of slight tension and wait for a strong contraction of the uterus (usually 2-3 minutes after the injection of oxytocin) (fig. 62. Step 3);
- simultaneously with the strong contraction of the uterus, offer the woman to strengthen herself and very carefully pull (traction) the umbilical cord downwards so that the birth of the placenta takes place, while at the same time continue to perform countertraction with the other hand in the direction opposite to the traction (that is, pushing the uterus away from the womb). (fig. 61. Step 4);
- if the placenta does not descend (that is, is not born) within 30-40 seconds. controlled traction, you should stop the traction on the umbilical cord, but continue to carefully keep it in a state of light tension; the other hand remains above the womb, holding the uterus;
- wait until the uterus contracts well again and repeat controlled traction on the umbilical cord with countertraction on the uterus.

Never perform traction (pulling) on the umbilical cord without using countertraction (retraction) of a well-contracted uterus from the womb. Carrying out traction for the umbilical cord without uterine contraction can lead to uterine inversion.

Крок 1 Внутрішнім'язом введення окситоцину



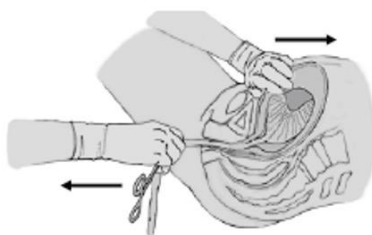
Крок 2 Накладання затискача на пуповину біля промежини



Крок 3 Розташування рук – підготовка до контрольованої тракції



Крок 4 Народження плаценти шляхом контрольованої тракції за пуповину з одночасною контракцією на матку



Крок 5 Народження оболонок шляхом „скручування”



Крок 6 Масаж матки через передню черевну стінку після народження посліду



Fig. 62 – Active management of the third period of childbirth

After the birth of the placenta, hold it with two hands and carefully turn it, twisting the membranes, slowly pull the placenta down to end childbirth (fig. 62. Step 5).

In case of rupture of membranes, the vagina and cervix are carefully examined in sterile gloves.

If shells are detected, a window clamp is used to remove their remains.

Carefully examine the placenta and make sure of its integrity. If a section of the maternal surface is absent, or there is a section of torn membranes with vessels, there is a reason to suspect retention of the placental sections and to initiate the necessary measures.

Massage of the uterus: after the birth of the litter, the uterus is immediately massaged through the front abdominal wall of the woman until it becomes dense (fig. 62. Step 6).

In the future, the uterus is palpated every 15 minutes. during the first 2 hours to be sure that after the massage the uterus does not relax, but remains tight. If necessary, repeat the massage.

A bubble with ice on the lower abdomen is not used in the early postpartum period.

Active management of the III period of labor should be offered to every woman, as it reduces the frequency of postpartum bleeding, which occurs as a result of uterine atony.

The woman in labor must be informed about the active management of the III stage of childbirth, and must give voluntary written consent to its implementation.

Expectant management of the third period of labor

After the end of pulsation of the umbilical cord, but no later than 1 min. after the birth of the child, the umbilical cord is squeezed and crossed. Careful monitoring of the general condition of the mother, signs of placental abruption, and amount of bleeding is carried out.

When signs of placental abruption appear, it is necessary to offer the woman to "exercise", which will lead to the birth of the litter.

Signs of placental abruption are:

Schroeder's sign: if the placenta has separated and descended into the lower segment or into the vagina, the bottom of the uterus rises up and is located above and to the right of the navel; the uterus takes on the shape of an hourglass.

Chukalov-Küstner's sign: when the rib of the palm is pressed on the suprapubic area in case of separation of the placenta, the uterus rises up, the umbilical cord does not retract into the vagina (fig. 63).

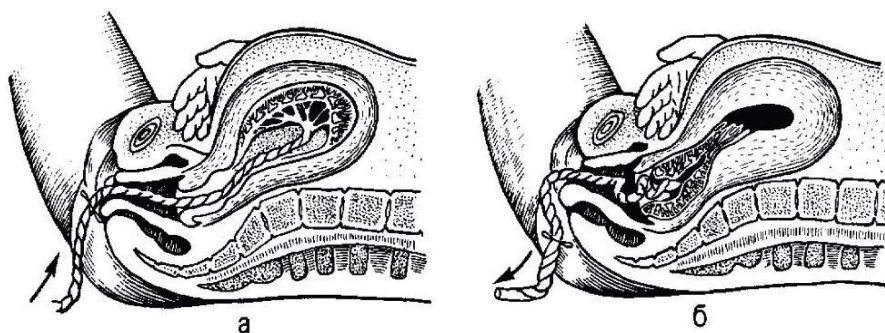


Fig. 63 – Chukalov-Küstner sign:
a – the placenta did not separate; *b* - placenta separated

Alfeld's sign: the ligature, which is located on the umbilical cord at the genital opening of the parturient, when the placenta is separated, descends 8-10 cm and below the vulvar ring.

Dovzhenka's sign: the woman is asked to breathe deeply: if the umbilical cord does not retract into the vagina when exhaling, the placenta has separated.

Klein's sign: the woman in labor is asked to exert herself, if the umbilical cord does not retract into the vagina, then the placenta has separated. External methods are used to remove the litter that has separated.

Operations and manipulations in case of non-disposal of litter or its parts

Normal separation of litter occurs within 15-30 minutes after childbirth. Litter is separated with the help of the last effort or the first litter breaks. Separation occurs over the entire surface at the same time. Bleeding (mainly due to extraplacental hemostasis) usually does not exceed 150-300 ml, rarely reaches 500 ml (the highest limit of the norm).

Each violation of the normal mechanism of litter separation (early massage of the uterus, pulling on the umbilical cord) causes bleeding due to temporary detachment of the litter.

The most common indication for interventions in litter retention (about 90% of cases) is the appearance of bleeding, and much less often (10%) – litter retention without bleeding.

Often there are cases of retention of droppings when it is attached to the bottom of the uterus or near the uterine corners. Finally, it is worth remembering about possible accretion of the placenta (placenta adhaerens, placenta accreta). The longer the litter remains in the uterus (in the absence of significant bleeding), the higher the percentage of postpartum complications. All this dictates the need to empty the uterus as soon as possible. In order to prevent postpartum bleeding, tactics of active management of the third period of labor are used. Under other conditions, the following techniques are used to remove litter:

Abuladze's method. After emptying the bladder, the front abdominal wall is taken with both hands in a fold in such a way as to tightly grasp the rectus abdominis muscles. After this the parturient is encouraged to exercise. At the same time, the litter is easily born due to a significant reduction in the volume of the abdominal cavity (fig. 64).

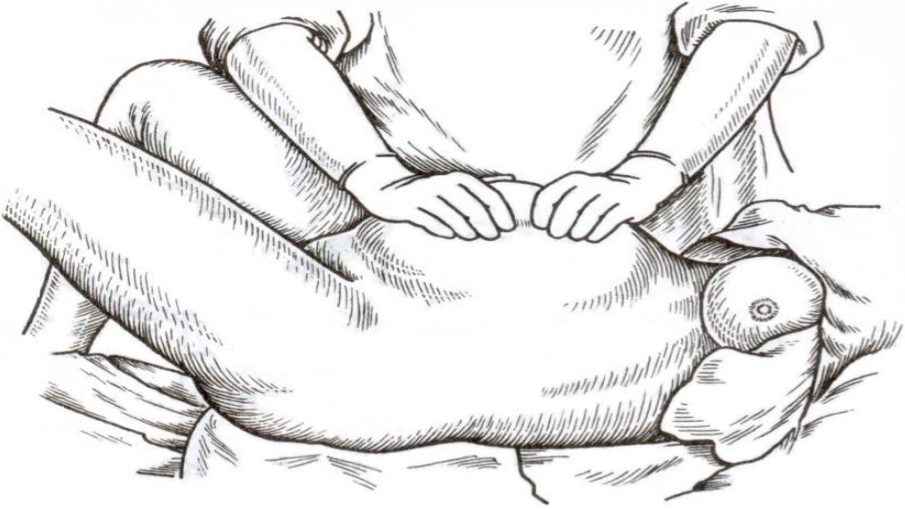


Fig. 64 – Abuladze's method

Crede-Lazarevich method. It is performed in the following sequence:

- 1) empty the bladder;
- 2) bring the bottom of the uterus to the middle position;
- 3) carry out light stroking of the uterus in order to reduce it;
- 4) grasp the bottom of the uterus with the hand in such a way that the palm surfaces of its four fingers are located on the back wall of the uterus, the palm is on the bottom of the uterus, and the thumb is on its front wall (fig. 65);
- 5) simultaneously press the uterus with the whole brush in two directions (fingers - from front to back, palm - from top to bottom) in the direction of the pubis until the litter is born from the vagina

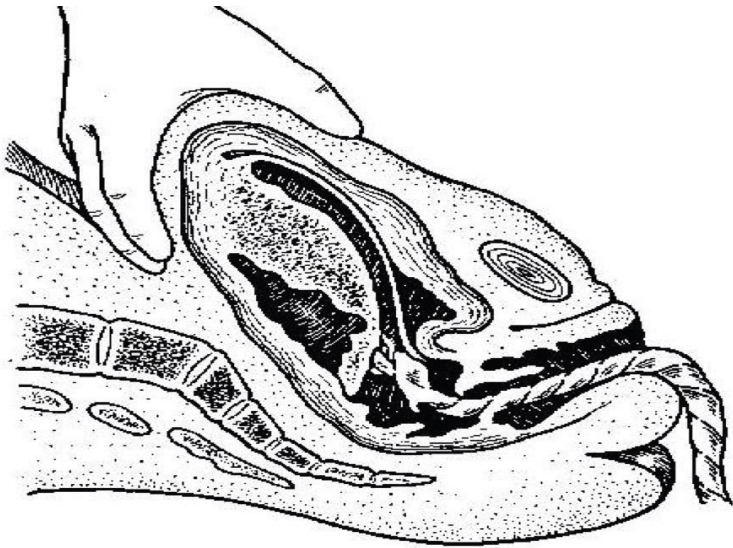


Fig. 65 – Krede-Lazarevich method

After the birth of the fetus, manual separation and separation of litter is carried out. In case of bleeding, manual separation and separation of litter should be carried out immediately under adequate anesthesia.

After the separation of the placenta, it is necessary to carefully inspect it (conviction of the integrity of the placenta with membranes).

Examination of the birth canal after childbirth (with the help of vaginal speculums) is performed only in the presence of bleeding, after an operative vaginal birth, or if the doctor is unsure about the integrity of the birth canal (rapid birth, birth outside a hospital).

Manual separation of litter and its parts (*Extractio placentae manualis*)

Manual separation of the litter with its extraction is one of the final measures used to remove the litter or its parts from the uterus.

Indications: are bleeding in the postpartum period that exceeds 300 ml in the absence of signs of separation of the placenta, entrapment of the separated litter; after surgical interventions (obstetric forceps, extraction of the fetus by the pelvic end, internal obstetric rotation, abortive operations), delay of droppings in the uterine cavity for more than 30 minutes even in the absence of bleeding.

Analgesia: inhalation or intravenous anesthesia. In the absence of a 24-hour anesthesiological service, analgesia can be performed by administering 1 ml of 1 % promedol solution, 2 ml of 50 % analgin solution and 1 ml of 1 % diphenhydramine solution.



Fig. 66 – Manual separation of litter and its parts

Preparation for childbirth: bladder catheterization; treatment of external genital organs with iodinate; cover the belly of the woman in labor with a sterile diaper. **Preparation of the obstetrician:** repeated treatment of hands with a disinfectant solution, change of sterile gloves.

Technique of the operation: with the index and thumb of the left hand, the entrance to the vagina is dilated; the right hand, folded in the form of a cone, is inserted into the vagina so that the back of the palm is facing the sacrum; along the umbilical cord, a hand is inserted into the uterine cavity, the edge of the placenta is found. At the same time, the left hand is placed on the bottom of the uterus and helps the right. Saw-like movements of the right hand, inserted between the placenta and the wall of the uterus, separate the placenta from the wall of the uterus. Pulling the umbilical cord with the left hand, the litter is pulled out, while the right hand remains in the uterus. With the right hand, the uterine cavity is once again examined to make sure that there are no remnants of the placenta. If the uterus has contracted well, the hand is removed from its cavity.



Fig. 67 – Manual separation and removal of litter

Section 9

Assisted with pelvic presentation of the fetus

The course of pregnancy in pelvic presentation does not differ from that in the main presentation, but often there are complications. The most frequent and most unfavorable consequences are early or premature ejaculation of amniotic fluid. In most cases, this happens with a foot prone.

During the 30-week pregnancy, measures are taken to promote the self-rotation of the fetus on the head. To do this, recommend: position on the side opposite the position of the fetus; knee-elbow position for 15 minutes 2-3 times a day.

From 32 to 37 weeks appoint a set of corrective gymnastic exercises according to one of the existing methods.

The *main elements of corrective gymnastics* according to I.I. Grishchenko and A.E. Shuleshova:

1) the inclination of the torso of the pregnant woman towards the back of the fetus;

2) bending of the lower extremities in the knee and hip joints with simultaneous bending of the torso towards the position of the fetus;

3) bending the back with emphasis on the crossbar of the Swedish wall;

4) bending the back in the knee-elbow position;

5) bending of the lower extremities in the knee and hip joints lying on the back, bringing the knees to the abdomen, half-rotation of the pelvis with bent limbs towards the position of the fetus.

Contraindications to gymnastic exercises: the threat of premature birth, placenta previa, low attachment of the placenta, anatomically narrow pelvis of II-III degree.

Do not carry out in the conditions of women's consultation external preventive turn of a fetus on a head (A).

In case of preservation of pelvic presentation of a fetus in the term of 37-38 weeks of pregnancy hospitalization in an obstetric hospital according to indications is carried out:

- the presence of a burdensome obstetric and gynecological history;
- complicated course of this pregnancy;
- extragenital pathology;
- the possibility of external rotation of the fetus on the head.

In the case of full-term pregnancy in a hospital of level III before delivery.

External rotation of the fetus on the head

Indications: incomplete gluteal presentation in full-term pregnancy and live fetus.

- Conditions:
- estimated fruit weight <3700.0 g;
- normal size of the pelvis;
- emptied bladder of a pregnant woman;
- the possibility of ultrasound presentation and condition of the fetus before and after the turn;
- satisfactory condition of the fetus with BPP and the absence of developmental abnormalities;
- normal fetal mobility, sufficient amniotic fluid;
- normal uterine tone, whole amniotic sac;
- readiness of the operating room to provide emergency care in case of complications;
- the presence of an experienced qualified specialist who has the technique of turning.

Contraindication:

- complications of pregnancy at the time of the decision to external rotation (bleeding, fetal distress, preeclampsia);
- burdened obstetric and gynecological history;

- high or low water;
- multiple pregnancy;
- anatomically narrow pelvis;
- the presence of scarring of the vagina or cervix;
- III degree of head extension according to ultrasound;
- placenta previa;
- severe extragenital pathology;
- scar on the uterus, joint disease;
- hydrocephalus and tumors of the fetal neck;
- abnormalities of uterine development;
- tumors of the uterus and uterine appendages.

Technique of external rotation of the fetus on the head:

- position of the woman on the side, with an inclination of 30-40° towards the back of the fetus;
- the buttocks of the fetus are removed from the entrance of the pelvis by the doctor's palms inserted between the womb and the buttocks of the fetus (fig. 68 a);
- carefully move the buttocks of the fetus towards the position of the fetus (fig. 68 b);
- move the head of the fetus in the opposite direction (fig. 68 c);
- finish the turn by moving the fetal head to the entrance of the pelvis, and the buttocks - to the bottom of the uterus (fig. 68 d).

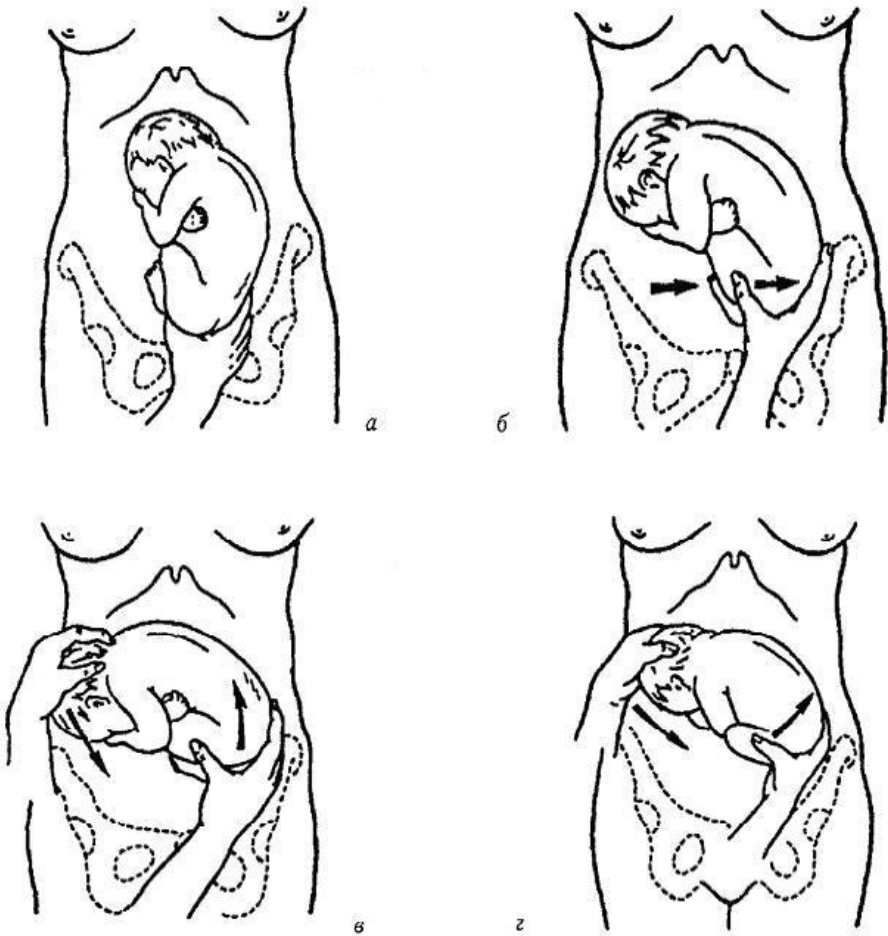


Fig. 68 – External rotation of the fetus on the head: a - the buttocks of the fetus are removed from the entrance of the pelvis by the doctor's palms inserted between the womb and the buttocks of the fetus, b - gently move the buttocks towards the fetal position, c - move the fetal head to the opposite position, d - finish the turn by moving the fetal head to the entrance of the pelvis, and the buttocks - to the bottom of the uterus.

If the first attempt to turn was unsuccessful, the second should be considered impractical. Possible complications: premature detachment of the normally located placenta, fetal distress, uterine rupture. In the case of careful qualified execution of the external rotation of the fetus on the head, the frequency of complications does not exceed 1%.

Biomechanism of childbirth with Frank breech presentation of the fetus

Childbirth with pelvic presentation takes place in three stages:
Stage 1 - the birth of the pelvic end.
Stage 2 - the birth of the shoulder girdle.
Stage 3 - the birth of the fetal head.



Fig. 69 – Elements of the biomechanism of childbirth during pelvic presentation of the fetus: *a* - lateral flexion of the spine in the lumbosacral region, *b* - internal rotation of the shoulders (from oblique to straight) and associated external rotation of the torso, *c* - bending of the head around the point fixation and her birth.

In pelvic presentation, the fetus is located in the longitudinal position, the anterior part of the fetus is the pelvic end, the head is in the area of the bottom of the uterus.

The frequency of pelvic presentation is 3-3.5% of the total number of births. The leading point is the apex of the coccyx, the leading line is intervertebral.

The first moment is the internal rotation of the buttocks. Buttocks with their transverse size (intertrochanteric line, linea intertrochanterica) are inserted into one of the oblique dimensions of the plane of entry into the pelvis, the same position. The first is the front buttocks, it is the leading point. The pelvic end is gradually lowered to the pelvic floor, where the rotation takes place, after which the intertrochanteric line becomes the direct size of the plane of exit from the pelvis. The anterior buttock erupts to form a fixation point.



Fig. 70 – Internal rotation of the buttocks

The second point is the flexion of the torso in the lumbosacral region. After completion of the rotation in the area of the iliac crest of the fetus, a fixation point is formed, by which the pelvic end rests on the lower edge of the symphysis. Around it there is a strong lateral flexion of the torso in the lumbosacral region. As a result of this flexion, the back buttocks erupts.



Fig. 71 – Flexion of the torso in the lumbosacral region

The third point is the internal rotation of the shoulders and the external rotation of the torso. After the birth of the pelvic end in the oblique size of the plane of the entrance to the pelvis (in the one through which the intervertebral line passed) with its diameter (diameter biacromialis, 12 cm) enter the coat hangers. The back of the fetus at this time returns slightly forward. The shoulders are lowered to the pelvic floor, where the rotation is performed, as a

result of which the diameter of the biacromialis becomes the direct size of the plane of exit from the pelvis.



Fig. 72 – Internal rotation of the shoulders and external rotation of the torso

The fourth moment is the lateral flexion of the torso in the cervical-thoracic spine. After the completion of the rotation of the hangers, the upper third of the front shoulder is born, on the border of the upper and middle thirds of it a fixation point is formed. After that, the spine is bent in the cervical and thoracic region, due to which the posterior shoulder is born.



Fig. 73 – Lateral flexion of the torso in the cervical and thoracic spine

The fifth point is the internal rotation of the head. The head enters with an arrow-shaped seam in the plane of the entrance to the pelvis in an oblique size, opposite to that through which the buttocks passed. At transition from a wide part of a cavity of a small pelvis to narrow the internal turn which comes to an end in the plane of an exit from a pelvis begins. The sagittal suture becomes in accordance with the straight size, the small umbilicus returns to the front.



Fig. 74 – Internal rotation of the head

The sixth moment is the bending of the head. After the formation of the fixation point in the area of the occipital fossa, the head is bent, as a result of which it erupts with a small oblique size. Above the perineum appear chin, face, forehead, crown, nape.



Fig. 75 – Bending of the head

Manual assistance according to the method of Tsovyanov I with Frank breech presentation of the fetus

In order to prevent complications, childbirth with incomplete (pure) sciatic presentation is performed by the method of Tsovyanov I. It should be emphasized that manual care is not an operation, it is the help of a doctor in the independent birth of the fetus in pelvic presentation.

Begin to provide manual assistance by the method of Tsovyanov I at the time of eruption of the buttocks; buttocks that are born are supported without any attempt to pull the fetus. The main goal is to maintain the normal position of the fetus, not to allow the legs to be born prematurely, for this purpose the thumbs keep them pressed to the body of the fetus.

1. After cutting the buttocks, place the thumbs of both hands on the legs of the fetus pressed to the abdomen, and the other four fingers are placed along the sacrum of the fetus - a grip like "binoculars", directing the torso along the axis of the birth canal (fig. 76).



Fig. 76 – Eruption of the buttocks

2. With the gradual birth of the torso, the arms are moved towards the genital slit, gently pressing the legs to the chest so that they are not born before the shoulder girdle.



Fig. 77 – Birth of the torso

3. After the birth of the lower corner of the anterior scapula, the buttocks are directed downwards towards the mother's thigh (to which the back of the fetus has returned), which facilitates the birth of the anterior handle.



Fig. 78 – Birth of the front handle

4. For the birth of the posterior handle and head, the torso of the fetus is directed upward, to the abdomen of the mother.

5. After completion of the internal rotation of the head is born independently, while the doctor raises the torso up to the womb.

6. If for 2 attempts to deduce a shoulder girdle and a head by Tsovyanov's method it is impossible, then a shoulder girdle and a head deduce, using receptions of classical manual help.

7. Entering the small pelvis in an oblique section, the fetal head completes its internal rotation, descends to the pelvic floor and during intense labor is born independently, while the obstetrician raises the body of the fetus up to the womb (removal of the head according to Bracht).



Fig. 79 – Birth of the back handle

8. At complications which can arise at a birth of a shoulder girdle and by that to provide throwing of handles, it is necessary to pass to release of a shoulder girdle and a head of a fruit by a technique of classical manual help.

Classic manual assistance in removing the shoulder girdle in pelvic presentation of the fetus

Classic manual reception. It is resorted to after the birth of the fetus to the level of the navel (passive stage). The purpose of the reception - to release the handles and head of the fetus. Carrying out the classic manual reception begins from the moment of birth of the fetus to the lower corner of the shoulder blades, until this time the handles are not available for extraction (active stage).

The classic manual reception is performed in several stages:

1) preparatory (make sure that the lower corner of the scapula is inserted into the pubic slit);



Fig. 80 – Preparatory stage

2) release of handles: - each handle is released by the corresponding hand of the obstetrician: the right handle - the right hand, the left - the left; - the rear handle is always released first; - to release the front handle, it should be moved to the rear position, for this the fetal body is rotated 180 °, and the back of the fetus should pass under the symphysis (keep the front view); - when turning the body of the fetus should not pull the fruit down (possible restrictions or throwing handles);



Fig. 81 – Release of the back handle



Fig. 82 – Torso rotation



Fig. 83 – Releasing the front handle

3) release of the head, in which it is important to have an assistant who will help to extend the head, pressing it from above through the anterior abdominal wall of the mother, the direction of traction should coincide with the leading axis of the pelvis. When passing the head through the entrance to the small pelvis, it is rational to give the mother a hanging position (according to Walcher). The inner hand of the obstetrician releases the second handle of the fetus. The fetus sits on top of the inner hand, the index finger of the inner hand the obstetrician inserts into the mouth of the fetus and helps to bend the head.

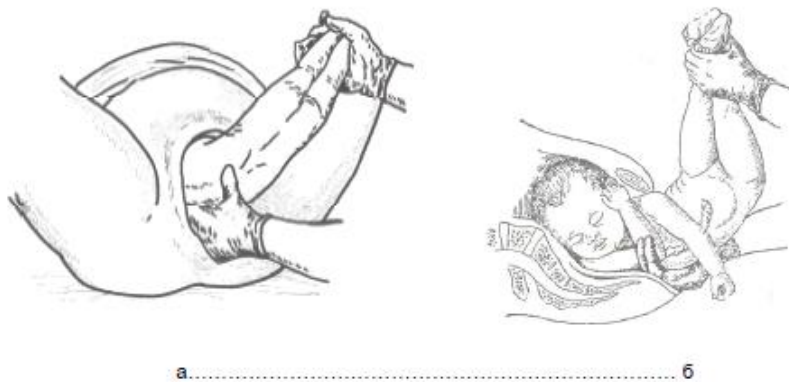


Fig. 84 – Release of a shoulder girdle: *a* - release of a back shoulder and the handle, *b* - release of the second shoulder and the handle



Fig. 85 – Release of the fetal head

Moriso-Lavre-Lachapelle head release

According to this method, the fetus is placed on top of the palm and forearm of the lower hand of the obstetrician, who previously released the second handle of the child. The nail phalanx of the index finger is inserted into the child's mouth, the lower jaw is pressed and the fetal head is gently bent. After that, the assistant at the request of the operator presses over the mother's pubis and increases the bending of the head. To remove the head from the genital slit free hand is placed on the back of the fetus, the index and middle fingers are placed on the sides of the neck of the fetus, without entering the supraclavicular fossa.

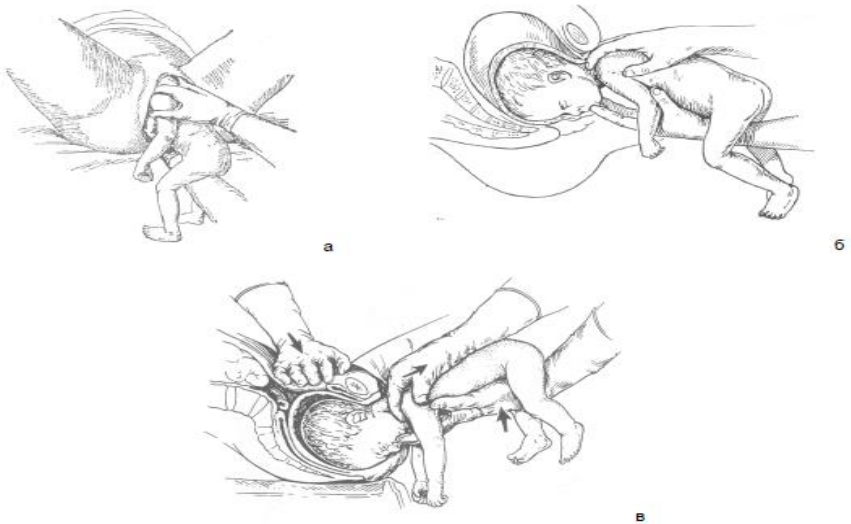


Fig. 86 – Release of the head by receiving Morisot-Levre-Lachapelle: *a* - the introduction of the hand under the torso of the fetus, *b* - the placement of the fingers and the introduction of the middle finger into the mouth of the fetus, *c* - the direction of the traction for the birth of the head



Fig. 87 – Bending of the fetal head

Pull the torso down (without pressing on the clavicle), until under the symphysis or the back border of the scalp (occipital fossa), then the traction is performed horizontally to the top. Due to this, the mouth, nose, forehead and the entire scalp appear above the perineum.



Fig. 88 – Removal of the fetal head

If necessary, the assistant protects the perineum with a third obstetric procedure or makes an episiotomy. To facilitate further removal of the fetal head, the assistant consistently presses over the mother's pubis so that the bottom of the uterus does not lag behind the baby's head.

Childbirth with foot prostrations according to the method of Tsovyanov II

If it is necessary to give birth through the natural birth canal in the case of foot presentation, provide manual assistance according to the method of NA Tsovyanova II.

Manual assistance in foot presentation by the method of Tsovyanov aims to prepare the birth canal for the passage of the subsequent head.

The purpose of manual care is to prevent the birth of the fetal legs until the cervix is fully open and thus at the same time help to enhance labor. This is achieved by delaying the birth of the legs until the full opening of the uterine eye. Delayed birth of the legs contributes to the full opening of the uterine eye and the formation of mixed sciatica. The full opening of the uterine eye is indicated by: strong protrusion of the perineum, gaping of the anus, frequent and strong attempts, the height of the contraction ring 10 cm above the symphysis and confirmation of full opening beyond the forces in internal examination.

Assistance is provided by lowering the legs into the vagina, which is possible with the discharge of amniotic fluid and the opening of the cervix by 6-7 cm.

The technique of help is that a sterile diaper covers the external genitalia of the mother and the palm, which is applied: to the vulva, prevent premature birth of the legs.



Fig. 89 – Manual assistance with foot presentation
by the method of Tsovyanov II

At the appearance of signs that indicate the full opening of the uterine eye, stop counteracting the advancement of the legs. Later, after the birth of the fetus to the lower corner of the front shoulder blade, proceed to the classic manual care.

Extraction of the fetus by inguinal fold

Extraction of the fetus by inguinal flexion with the help of a finger is considered to be the most difficult extraction. This operation begins after the index finger of the strongest hand is inserted from the outside of the back of the fetus into the inguinal fold of the front leg.



Fig. 90 – Extraction for inguinal flexion

When the crest of the anterior iliac bone fits under the symphysis, the obstetrician inserts the index finger of the other hand from the back of the fetus into the inguinal fold of the posterior buttock, and makes traction upwards and into itself.



Fig. 91 – Extraction for inguinal flexion

As a result, the torso is bent laterally, the posterior buttock is cut first, and then the anterior buttock is born. After the birth of the buttocks, the thumbs of both hands are placed on the sacrum of the fetus and the traction is performed downwards and on itself. This direction of extraction continues until the fetal body reaches the level of the navel. Check the pulsation of the umbilical cord, and depending on its condition continue extraction with varying degrees of intensity.

After the birth of the fetus to the lower corner of the anterior scapula, the lower extremities fall out of the genital slit. Withdrawal of the handles and head of the fetus is carried out with the help of hands in the classical way.

Section 10

Obstetric rotation in the transverse position of the fetus

The only method of delivery in the transverse position of the fetus, which ensures the life and health of mother and child, is a cesarean section in 38–39 weeks.

Previously, the operation of the classic combined external-internal rotation of the fetus on the leg with the subsequent removal of the fetus was often used (fig. 92). But it gives many unsatisfactory results. The operation of turning the fetus on the leg was developed in the XVI century. the famous French physician Ambroise Paré. Today, with a live fetus, it is performed only in the case of the birth of a second fetus with twins. It should be noted that the operation of the classic obstetric rotation of the fetus on the leg is very complex and therefore, given the trends of modern obstetrics, is performed very rarely.

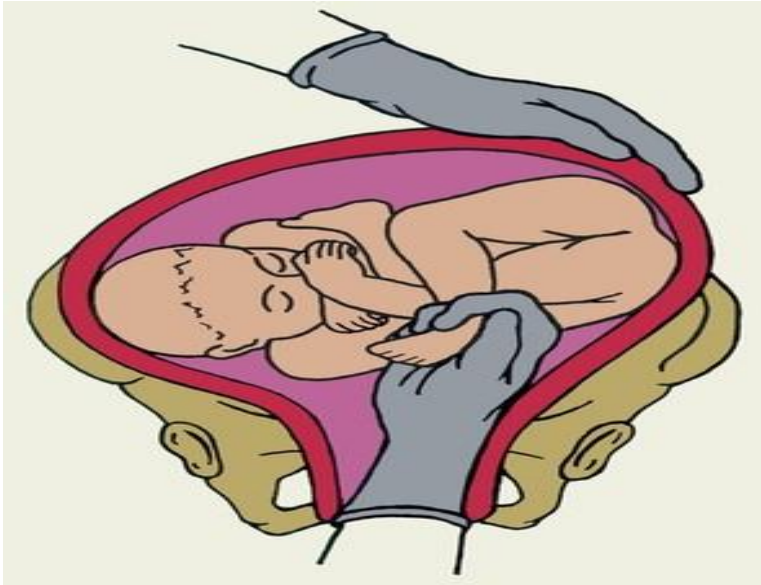


Fig. 92 – Operation of the classical combined external-internal turn of a fetus on a leg

Indication:

- transverse or oblique position of the fetus (for twin births, after the birth of the first fetus).

Conditions for the operation of obstetric classical rotation.

1. Full disclosure of the cervix.
2. Sufficient fetal mobility.
3. Correspondence between the sizes of a head of a fruit and a pelvis of mother.
4. The amniotic sac is whole or the water has just receded.
5. Live fruit of medium size.
6. Accurate knowledge of the position and position of the fetus.
7. Lack of structural changes in the uterus and tumors in the vagina.
8. Consent of the mother to turn.

Contraindications for the operation of obstetric classic rotation:

1. Launched transverse position of the fetus.
2. Threatened uterine rupture that has begun or occurred.
3. Congenital malformations of the fetus (anencephaly, hydrocephalus, etc.).
4. Real estate of the fetus.
5. Narrow pelvis (II-IV degree of narrowing).
6. Low water.
7. Large or giant fruit.
8. Scars or tumors of the vagina, uterus, pelvis.
9. Tumors that interfere with natural childbirth.
10. Severe extragenital diseases.
11. Severe preeclampsia.

Preparation for surgery

Preparation for surgery includes measures necessary for vaginal surgery. The pregnant woman is placed on the operating table in a supine position with legs bent at the hip and knee joints. Empty the bladder. Disinfection of the external genitalia, internal surfaces of the thighs and anterior abdominal wall, the abdomen is covered with a sterile diaper. The obstetrician's hands are treated as for cavitory surgery. With the help of external techniques and vaginal examination, the position, position, type of fetus and condition of the birth canal are studied in detail.

If the amniotic fluid is intact, the amniotic sac is torn just before the turn. The combined rotation should be performed under deep anesthesia, which should provide complete muscle relaxation.

The technique of operation of obstetric classical turn includes the following stages (fig. 93):

1. *Introduction of a hand into a uterine cavity.*
2. *Finding, selecting and capturing the leg.*
3. *Actually turn of a fruit and extension of a leg to a popliteal fossa.*

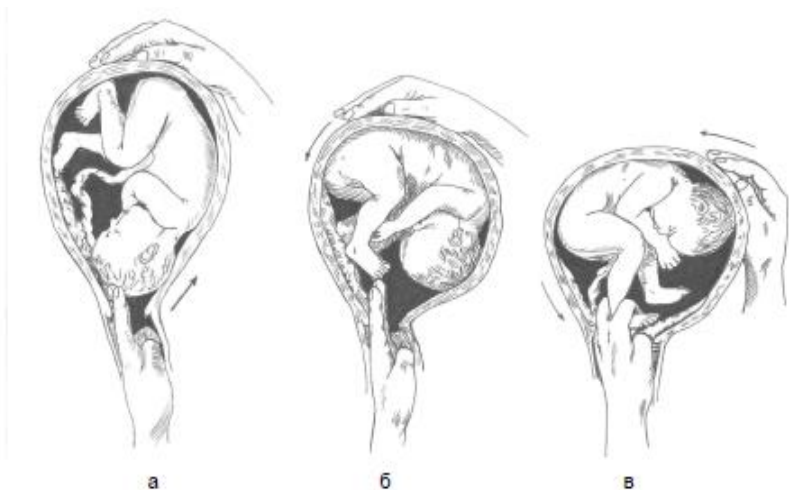


Fig. 93 – Technique of operation of obstetric classical turn:
a - insertion of the hand into the uterine cavity, б - search, selection and capture of the leg,
с - the actual rotation of the fetus and extension of the leg to the popliteal fossa.

After the turn, the fetus is removed by the leg (fig. 94).



Fig. 94 – Extraction of the fetus by the leg

Obstetric rotation in the transverse position of the fetus and the position of the rear view

I stage. The right hand is inserted into the uterus. With the other hand, dilute the genital slit. The folded inner arm is inserted into the vagina in the direct size of the pelvic outlet, then with light helical movements the hand is transferred from the direct size to the transverse one, at the same time moving to the inner pharynx. As soon as the brush of the inner hand is completely inserted into the vagina, the outer hand is moved to the bottom of the uterus.



Fig. 95 – The first stage of obstetric rotation in the transverse position of the fetus

Stage II. The inner hand of the obstetrician gradually slides along the lateral surface of the torso to the buttocks, then to the thigh and lower leg. After finding the upper leg, it is grasped with two fingers of the inner hand (index and middle) in the area of the ankles or the whole hand. When grasping the shin with the whole hand, the obstetrician places the elongated thumb along the shin muscles so that it reaches the popliteal fossa, and the other four fingers embrace the shin in front.



Fig. 96 – The second stage of obstetric rotation in the transverse position of the fetus

Stage III. The actual rotation is performed by lowering the leg after its capture. With the outer hand at the same time the head of the fetus moves to the bottom of the uterus. Traction is performed in the direction of the leading axis of the pelvis. The rotation is

considered complete when the leg is removed from the genital slit to the knee joint and the fetus has taken a longitudinal position. After that, after the turn, the fetus is removed by the leg.



Fig. 97 – The third stage of obstetric rotation in the transverse position of the fetus

Obstetric rotation in the transverse position of the fetus I position front view

I stage. The left hand is inserted into the uterus. With the other hand, dilute the genital slit. The folded inner arm is inserted into the vagina in the direct size of the pelvic outlet, then with light helical movements the hand is transferred from the direct size to the transverse one, at the same time moving to the inner pharynx. As soon as the brush of the inner hand is completely inserted into the vagina, the outer hand is moved to the bottom of the uterus.



**Fig. 98 – The first stage of obstetric rotation
in the transverse position of the fetus**

Stage II. The inner hand of the obstetrician gradually slides along the lateral surface of the torso to the buttocks, then to the thigh and lower leg. After finding the lower leg, it is grasped with two fingers of the inner hand (index and middle) in the area of the ankles or the whole hand. When grasping the shin with the whole hand, the obstetrician places the elongated thumb along the shin muscles so that it reaches the popliteal fossa, and the other four fingers embrace the shin in front.



Fig. 99 – The second stage of obstetric rotation in the transverse position of the fetus

Stage III. The actual rotation is performed by lowering the leg after its capture. With the outer hand at the same time the head of the fetus moves to the bottom of the uterus. Traction is performed in the direction of the leading axis of the pelvis. The rotation is considered complete when the leg is removed from the genital slit to the knee joint and the fetus has taken a longitudinal position. After that, after the turn, the fetus is removed by the leg.



Fig. 100 – The third stage of obstetric rotation in the transverse position of the fetus

Obstetric rotation in the transverse position of the fetus II position rear view

I stage. The right hand is inserted into the uterus. With the other hand, dilute the genital slit. The folded inner arm is inserted into the vagina in the direct size of the pelvic outlet, then with light helical movements the hand is transferred from the direct size to the transverse one, at the same time moving to the inner pharynx. As soon as the brush of the inner hand is completely inserted into the vagina, the outer hand is moved to the bottom of the uterus.



Fig. 101 – The first stage of obstetric rotation
in the transverse position of the fetus

Stage II. The inner hand of the obstetrician gradually slides along the lateral surface of the torso to the buttocks, then to the thigh and lower leg. After finding the upper leg, it is grasped with two fingers of the inner hand (index and middle) in the area of the ankles or the whole hand. When grasping the shin with the whole hand, the obstetrician places the elongated thumb along the shin muscles so that it reaches the popliteal fossa, and the other four fingers embrace the shin in front.



Fig. 102 – The second stage of obstetric rotation in the transverse position of the fetus

Stage III. The actual rotation is performed by lowering the leg after its capture. With the outer hand at the same time the head of the fetus moves to the bottom of the uterus. Traction is performed in the direction of the leading axis of the pelvis. The rotation is considered complete when the leg is removed from the genital slit to the knee joint and the fetus has taken a longitudinal position. After that, after the turn, the fetus is removed by the leg.

Obstetric rotation in the transverse position of the fetus II position front view

I stage. The right hand is inserted into the uterus. With the other hand, dilute the genital slit. The folded inner arm is inserted into the vagina in the direct size of the pelvic outlet, then with light helical movements the hand is transferred from the direct size to the transverse one, at the same time moving to the inner pharynx. As soon as the brush of the inner hand is completely inserted into the vagina, the outer hand is moved to the bottom of the uterus.



Fig. 103 – The first stage of obstetric rotation
in the transverse position of the fetus

Stage II. The inner hand of the obstetrician gradually slides along the lateral surface of the torso to the buttocks, then to the thigh and lower leg. After finding the lower leg, it is grasped with two fingers of the inner hand (index and middle) in the area of the ankles or the whole hand. When grasping the shin with the whole hand, the obstetrician places the elongated thumb along the shin muscles so that it reaches the popliteal fossa, and the other four fingers embrace the shin in front.



Fig. 104 – The second stage of obstetric rotation in the transverse position of the fetus

Stage III. The actual rotation is performed by lowering the leg after its capture. With the outer hand at the same time the head of the fetus moves to the bottom of the uterus. Traction is performed in the direction of the leading axis of the pelvis. The rotation is considered complete when the leg is removed from the genital slit to the knee joint and the fetus has taken a longitudinal position. After that, after the turn, the fetus is removed by the leg.



Fig. 105 – The third stage of obstetric rotation in the transverse position of the fetus

There may be a number of difficulties and complications when performing an obstetric rotation:

1. Rigidity of the soft tissues of the birth canal, spasm of the cervix, which are eliminated by the use of adequate anesthesia, antispasmodics, episiotomy.

2. Dropping the handle, removing the handle instead of the leg. In these cases, the adjustment of the handle is incorrect, the handle is put on a loop, with which the handle is pushed away when turning towards the head.

3. Rupture of the uterus is the most dangerous complication that can occur during a turn. Taking into account the contraindications to the operation, examination of the mother (determination of the height of the contraction ring), the use of anesthesia are necessary to prevent this formidable complication.

4. The loss of the umbilical cord loop after the turn requires mandatory subsequent removal of the fetus by the leg.

5. Acute fetal hypoxia, birth trauma, intranatal fetal death - frequent complications of internal obstetric rotation, which cause a generally unfavorable prognosis of this operation for the fetus. In this regard, in modern obstetrics, the classic external-internal rotation is rarely performed.

6. Infectious complications that may occur in the postpartum period also worsen the prognosis of internal obstetric rotation.

In the case of running the transverse position of the dead fetus, the birth ends with the help of fruit-destroying operation - decapitation. After the classic rotation of the fetus on the leg or after the destructive operation should be a manual examination of the integrity of the uterine wall.

Internal combined rotation of the fetus with incomplete opening of the uterine cervix (early rotation - Braxton-Hicks rotation)

In contrast to the classical rotation, the internal combined rotation of the fetus is performed with incomplete opening of the cervix, and therefore is called early or premature (Fig. 101). It goes without saying that with a slight opening of the cervix, it is impossible for the whole hand to penetrate into its cavity. In this case, only a few fingers of the obstetrician can enter the uterus, usually only two (two-ring turn). It is clear that the main acting hand in this case is the one outside. It is not entirely correct to call a turn combined, as in fact the typical (classic) internal turn is also combined, because two hands take part. Therefore, it is more rational to keep the name of the early turn after this turn.

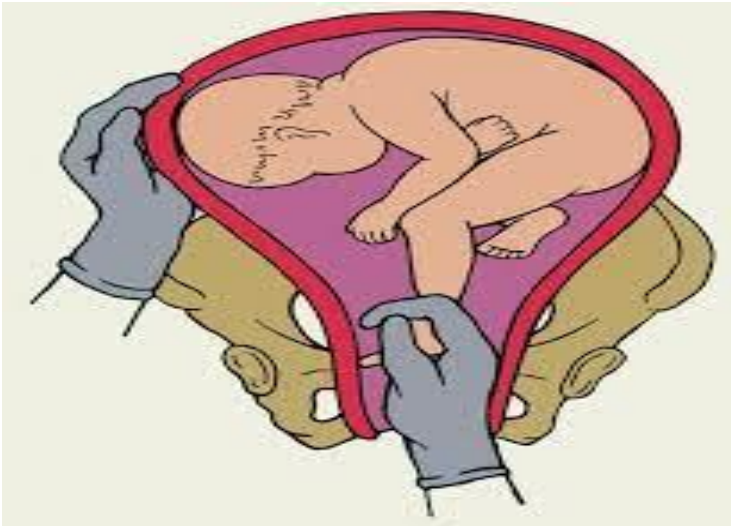


Fig. 106 – Internal combined rotation of the fetus with incomplete opening of the cervix

Theoretically, an early turn can be made both on the head and on the leg. In practice, however, it is performed only on the leg. It is used in extremely rare cases.

Indications for early reversal of placenta previa in premature (non-viable) or dead fetus.

Conditions:

1. Opening of the cervix by 2.5-3 fingers;
2. Satisfactory fetal mobility

Preparation for surgery. Preparation for surgery is common for vaginal surgery. Deep anesthesia is indicated to relax the uterus and abdominal wall. The position of the fetus and the condition of the birth canal are studied in detail by external methods and vaginal examination. The doctor performs the operation standing.

Technique of operation. The whole hand is inserted into the vagina, after which the index and middle fingers penetrate into the uterine cavity. If the amniotic sac is intact, the membranes rupture with forceps within the cervix. If the lumen of the cervix is covered from the inside with the tissue of the placenta previa (with its central presentation), the latter is also pierced with forceps. Then two fingers are inserted into the uterine cavity through this artificially created hole. The outer hand presses hard on the pelvic end of the fetus towards the entrance to the pelvis. The buttocks of the fetus are close to the fingers in the uterus. Any leg is grasped with the fingers and lowered down. Capture the leg in the area of the ankle joint. At this time, the outer arm is moved to the head and pushed up - to the bottom of the uterus.

After removing the leg from the genital slit, put a loop of gauze bandage on it, to which hang a load of 200 g.

This load is removed after eruption of the buttocks. The purpose of the operation is to press the placenta with the lowered leg and buttocks and thus stop the bleeding. Therefore, the removal of the fetus after the turn is strictly contraindicated, as it usually entails a

rupture of the lower segment of the uterus and profuse bleeding from the placental site, which is poorly reduced.

Possible complications. It is not always possible to capture the leg, and the captured leg is not always removed through the pharynx. In this case, under the control of the finger, a gauze loop is brought to the leg, and when the fetus is dead, the foot is grasped with ball forceps, which is lowered.

Results. The mother is at risk of bleeding and infection, and sometimes rupture of the lower segment. Viable fetuses die during childbirth. Therefore at a viable fruit resort to operation of cesarean section. In modern obstetrics, the Braxton-Hicks rotation is completely supplanted by cesarean section.

Section 11

Obstetric forceps

(Applicatio forcipis)

Obstetric forceps call the instrument to remove a live full-term fetus by the head. Obstetric forceps are only a traction instrument, but not rotational or compression. Obstetric forceps application is a birth operation in which a live full-term fetus is removed through the natural birth canal with the help of obstetric forceps.

The frequency of use of various birth operations in modern obstetrics is largely determined from the standpoint of perinatal protection of the fetus. The need to use obstetric forceps in a planned manner is replaced by the choice of a planned cesarean section. At the same time, for the rapid completion of the second period of childbirth, the operation of applying obstetric forceps is the operation of choice.

Obstetric forceps consist of two symmetrical parts - branches, which have differences in the structure of the left and right parts of the lock. One of the branches, which is grasped with the left hand and inserted into the left half of the pelvis is called the left branch. Another - right. In each branch there are three parts: a spoon, a lock element, a handle. The spoon is a curved plate with a wide cutout - a window. The rounded edges of the spoons are called ribs (top and bottom). The spoon has a special shape, which is dictated by the shape and size of both the fetal head and the pelvis. The main curvature is the curvature of the spoons in the frontal plane of the forceps, which reproduces the shape of the fetal head. Pelvic curvature is the curvature of the spoons in the sagittal plane of the forceps, which corresponds to the shape of the sacral cavity and to some extent the leading axis of the pelvis.

The lock is used to connect the branches of the forceps. The device of locks is different in different models of forceps. A

distinctive feature is the degree of mobility of the branches. The handle is used to grip the tongs and hold the traction. It has smooth inner surfaces, so when the branches are closed, they fit snugly together. The outer surfaces of the parts of the forceps handle have a corrugated surface that prevents the surgeon's hands from slipping during traction. At the top of the outer surface of the handle are side projections called Bush hooks. When performing traction, they provide a reliable support for the surgeon's hand.

Types of obstetric forceps:

1. a) Russian (Lazarevich) - equipped with a very mobile lock, long spoons and no pelvic curvature;
b) English (Smellie) - equipped with a fairly movable lock, spoons have a pelvic curvature;
c) German (Naegele) - have a limited movable lock;
d) French (Levret) - very long, with a fixed lock.
2. a) Simpson forceps in the modification of Phenomenon is used for traction in the anterior view of the occipital presentation;
b) Tucker-McLean forceps are used to rotate from the posterior view of the occipital to the anterior view of the occipital presentation and removal of the fetus;
c) Killand and Barton forceps - with the transverse location of the arrow-shaped suture for rotation in the anterior view of the occipital presentation;
d) Piper forceps are designed to remove the head during buttock presentation.

Simpson-Fenomenov forceps are more often used in Ukraine. Fenomenov MM made important changes to the forceps of the Simpson design, making the lock more mobile. The weight of this model of forceps makes about 500 g. The distance between the most remote points of the main curvature of spoons at closing of forceps makes 8 cm, distance between tops of spoons to 2,5 cm

Indications for the application of obstetric forceps on the side of the fetus

Intrauterine hypoxia of the fetus, which developed due to various reasons in the second period of childbirth (premature detachment of the normally located placenta, weakness of labor, late gestosis, short umbilical cord, umbilical cord entanglement around the neck, etc.).

Indications for the application of obstetric forceps from the mother

A. Severe pathology of pregnancy

1. Weakness of labor and / or weakness of efforts, which are manifested by prolonged standing of the fetal head in one plane of the pelvis for more than 2 hours, in the absence of effect from the use of drugs. Prolonged standing of the head in one plane of the pelvis leads to an increased risk of birth injuries of both the fetus (a combination of mechanical and hypoxic factors) and the mother (urogenital and intestinal fistulas).

2. Premature detachment of the placenta, when the fetal head is in the pelvic cavity.

3. Endometritis during childbirth.

4. Severe late gestosis (severe preeclampsia or eclampsia).

5. Embolism of amniotic fluid (with the head in the pelvic cavity or on the pelvic floor).

B. Severe extragenital pathology

1. Hemorrhage in the brain (stroke).

2. Diseases of the visual organs that require the exclusion of forces (threat or onset of retinal detachment).

3. Decompensated diseases of the cardiovascular system (angina, myocardial infarction, hypertensive crisis).
4. Acute respiratory, hepatic, renal failure.
5. Pulmonary artery thromboembolism.
6. Hemoptysis, pulmonary edema, etc.
7. Acute infectious diseases.
8. Severe forms of neuropsychiatric disorders
9. Intoxication or poisoning

Contraindications to the imposition of obstetric forceps

1. Dead fetus.
2. Premature (2 kg or less) or giant fetus.
3. Anomalies of fetal development (hydrocephalus, anencephaly, microcephaly, etc.)
4. Anatomically narrow pelvis (2, 3 and 4 degrees).
5. Clinically narrow pelvis.
6. Extension of the head (front view of the anterior, frontal, facial presentation).
7. The head of the fetus above the entrance to the pelvis, pressed, inserted in a small or large segment in the plane of the entrance to the pelvis.
8. Large birth tumor on the head of the fetus.
9. Incomplete dilatation of the cervix.

Conditions for application of obstetric forceps

1. Live full-term fetus without developmental abnormalities.
2. Full dilatation of the cervix.
3. Correspondence of the sizes of a head of a fruit and a pelvis of mother.
4. The head should not be too small (premature fetus or anencephaly) or too large (large, giant fetus or hydrocephalus).

5. The head must completely pass the plane of entry into the small pelvis.
6. Absence of amniotic sac.

Preparation for the operation of obstetric forceps

1. Empty the intestines and bladder, open the amniotic sac.
2. Conduct external and internal obstetric examination.
3. Carry out treatment and disinfection of the woman's genitals and obstetrician's hands.
4. Perform pudendal anesthesia or general anesthesia.
5. Place the closed tongs on a sterile table so that the tops of the spoons are facing up. The tongs are separated (each with the appropriate hand), the left spoon is placed on the left side of the table (or the one closest to the operator), and the right - on the right.
6. At internal vaginal research look for the reason which caused a delay of advancement of a head on patrimonial ways.

The position of the fetal head relative to the planes of the pelvis during occipital presentation

External determination of the location of the sagittal suture in the pelvic cavity (according to MS Malinovsky): pneumatic technique - folding the obtuse angle of the palms of the hands palms up, bringing the fingertips to the exit of the pelvis. After the direction of the plane of one or another hand coincides with the sagittal suture, determine the direction of the latter.

Internal determination of the location of the sagittal suture in the pelvic cavity (according to NA Tsovyanov): the horizontal line is taken as the transverse location of the sagittal suture and depending on which thigh the mother is inclined to this line, determine the appropriate (right or left) oblique size of the sagittal seam of the head.

Tab. 1

The position of the fetal head	Data of obstetric research (IV reception)	Data vaginal examination	Correspondence of the moment of biomechanism of childbirth
The head of the fetus is a large segment at the entrance to the small pelvis	A smaller part of the head is palpated above the entrance to the small pelvis. The fingers of the researcher's hands come together	The head covers the upper third of the pubic joint and sacrum. The cape cannot be reached. Arrow seam in one of the oblique sizes	Translational movement of the head
The head of the fetus in the wide part of the pelvic cavity	A small part of the head is palpated above the womb	Two thirds of the inner surface of the pubic joint and the upper half of the sacral cavity are occupied by the head. Buttocks are felt. The arrow-shaped seam is located in one of the oblique sizes	The beginning of the internal rotation of the head

Continue tabl.1

The position of the fetal head	Data of obstetric research (IV reception)	Data vaginal examination	Correspondence of the moment of biomechanism of childbirth
The head of the fetus in the narrow part of the pelvic cavity	Above the womb, the head is not defined	The entire inner surface of the pubic joint and two-thirds of the sacral cavity are occupied by the head. Buttocks are difficult to reach. The sagittal suture is located in one of the oblique sizes closer to the straight size	The internal rotation of the head is almost complete
The head of the fetus in the plane of exit from the pelvis (on the pelvic floor)	Above the womb, the head is not defined	The sacral cavity is completely filled with the head. Buttocks are not reached. Arrow seam in the direct size of the exit from the pelvis	The internal rotation of the head is complete

Difficulties in applying obstetric forceps and methods of their elimination

1. Impossibility to insert half-arms into the vagina. It is associated with pelvic floor muscle tension and passes after the stage of anesthesia deepens.

2. The inability to insert the fingers deep enough into a woman's vagina. This may be due to the fact that the weight of the fetus exceeds 3600 g, in which case the fingers should be inserted from the sacral cavity and only then lift up.

3. The inability to insert the spoons of obstetric forceps deep enough. This can occur when the spoon got into the fold of the vagina, on its way there was a protrusion of the sciatic bone, exostosis in the buttocks or vault. In such cases, the fingers of the hand, which is in the vagina, must be moved further, find an obstacle, go around it and only then move the spoon of the forceps under the control of the fingers.

4. Complicated closing of forceps:

- one branch of forceps is inserted into the vagina deeper than the other. The next spoon should be pulled back so that the Bush hooks are level. It is not allowed to insert another branch deeper without finger control, as this may damage the walls or vault of the vagina;
- spoons are located in different planes. It is necessary to find out which branch lies correctly, to enter in an opposite part of a vagina a half-hand and under its control to change position of other spoon;
- incorrect (reverse) placement of spoons of forceps on the head of the fetus. They must be removed and re-applied correctly.

5. The forceps are closed, but the handles diverge:

- when the weight of the fruit is more than 3600 g, to avoid pathological compression of the fetal head with spoons and the ability to adjust the elastic action of the forceps, it is necessary to put a napkin or little finger between the handles and move them to the lock depending on the size of the head;

- when the spoons are placed on the head not biparietally, but obliquely or transversely in the anterior-posterior size, it is necessary to open the forceps, pull out first the right and then the left branches and under the control of hands enter both spoons of forceps again;
- spoons are not applied deep enough. It is necessary to remove, re-enter and place the branches of the tongs to the required depth.

6. Absence or difficulty in moving the head through the birth canal:

- wrong direction of traction. It is necessary to change the direction of removal of the head;
- the branches of the forceps are inserted into the vagina so that the tops of the spoons do not turn up, but to the sacral recess. They must be removed and re-applied correctly;
- lack of correspondence between the size of the fetal head and pelvis of the mother. The forceps must be removed and another method of delivery performed.

7. Slipping forceps from the fetal head (horizontal and vertical):

- causes: very small or very large size of the head, incorrect imposition of spoons. The cause is determined by vaginal examination;
- diagnosis: the mobility of the spoons with a stationary head, during the test traction, the distance between the lock of the forceps and the head of the fetus increases;
- Tactics: stronger compression of the handles is prohibited, as it leads to serious injury to the fetus and does not prevent the spoons from slipping. You need to stop the traction, find out the cause of the slip and apply the pliers correctly.

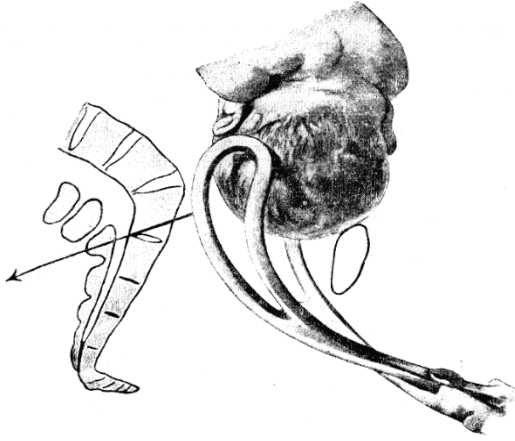


Fig. 102 – Horizontal sliding forceps. The head is captured only on the back through the forehead and nape and leans forward

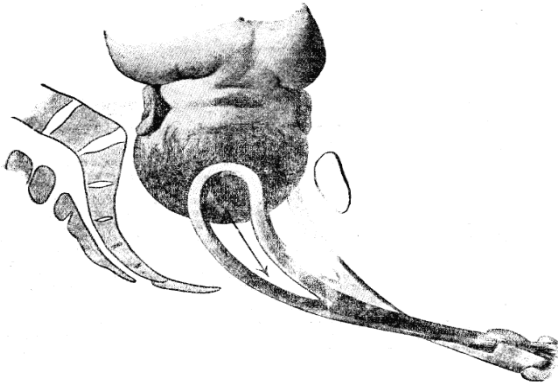


Fig. 103 – Vertical slip of forceps. The head is captured through the forehead and nape

Complications when applying obstetric forceps

1. Damage to the birth canal of the mother.
2. Rupture of the uterus and the formation of vaginal-vesical fistula.
3. Injury to the roots of the sciatic nerve, which leads to the impossibility of dorsiflexion of the foot (horse's foot), with forced insertion of forceps and fetal extraction.
4. Rupture of the pubic joint.
5. Damage to the skin, nerves, bones, brain of the fetus.

Output (typical) forceps.

(Forceps minor)

Imposition of original (typical) forceps is an operation of imposition of obstetric forceps on the head, standing with an arrow-shaped suture in the direct size of the exit plane of the pelvis, the head made an internal rotation. The forceps are superimposed biparietally, in the transverse size of the pelvic outlet.

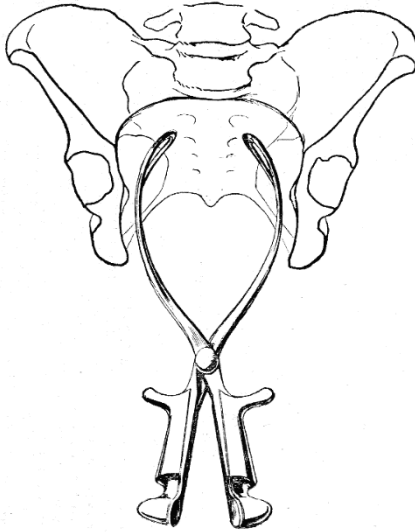


Fig. 104 – Forceps in the transverse size

When performing the operation, 3 triple rules apply:

1. The first triple rule (rule of three "L", three "R"): the first enters the left branch of the forceps with the left hand of the obstetrician in the left half of the pelvis, the second introduces the right branch of the forceps with the right hand of the obstetrician into the right half of the pelvis.
2. The second triple rule (rule of three "A"): the axis of the forceps, the axis of the head and the axis of the pelvis must coincide.
3. The third triple rule (three directions of traction): down, horizontally and upwards (on socks, a breast and the face of the sitting obstetrician).

The operation consists of 4 points:

1 moment - Selection and introduction of spoons.

Four fingers of the right hand are inserted into the vagina (according to Dederlein), the soft tissues of the mother are separated along its side wall. According to the first triple rule, the left spoon of obstetric forceps is introduced first.

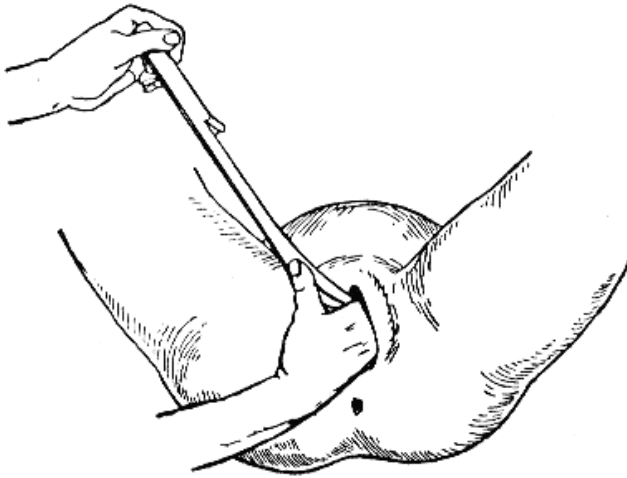


Fig. 105 – Technique of applying forceps to the fetal head: the introduction of the left spoon

The left hand takes the handle of the tongs as a pen or as a bow. The handle of the left spoon is installed parallel to the opposite inguinal bend. The top of the spoon is near the genital slit, its lower edge is near the first finger of the right hand. The spoon is introduced by directing it with one I finger without violence.

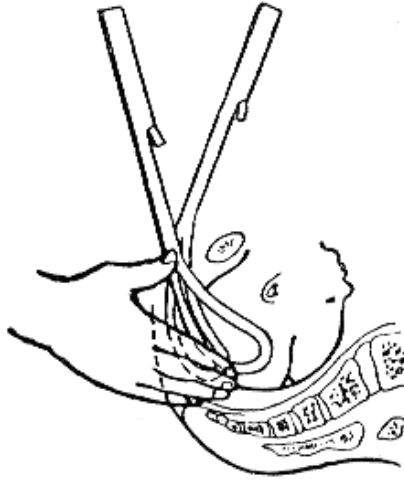


Fig. 106 – Technique of applying forceps to the head: the introduction of the left spoon

The correct location of the spoon can be judged by the fact that the Bush hook is located strictly in the transverse size of the pelvis. The handle of the left spoon is passed to the assistant. In the same way the right spoon is entered and settles down above the left.

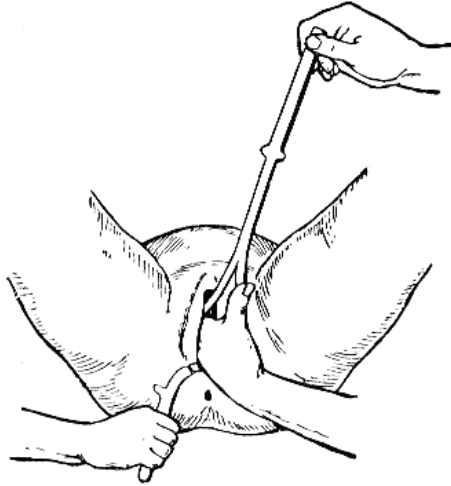


Fig. 107 – Technique of applying forceps to the head: the introduction of the right spoon

Moment 2 – Locking spoons and test traction

Each of the handles is taken by the hand of the same name, the thumbs are placed on the hooks of Bush. The handles come together and the forceps close. According to the second triple rule, with correctly applied forceps, three axes coincide: the axis of the forceps, the axis of the head and the leading axis of the pelvis. The line of the handles faces the leading point on the head.

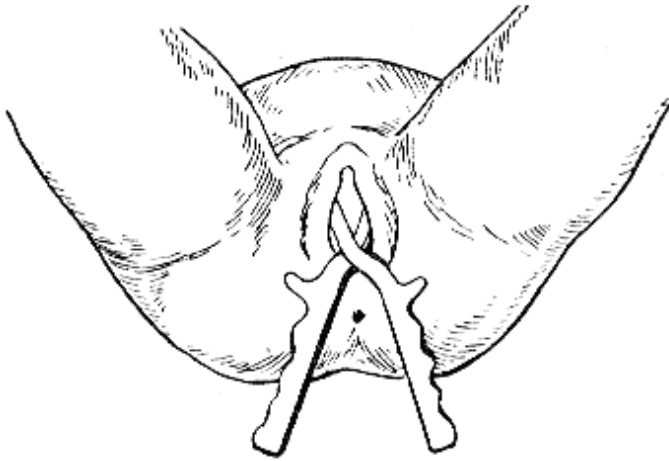


Fig. 108 – Technique of applying forceps to the head: closing forceps

Trial traction is performed to determine the correct application of forceps. Test Traction Technique: Place the right hand on top of the forceps lock so that the middle (3) finger is placed between the spoons, the index (2) and ring finger (4) rest on the Bush hooks and keep the handles tightly closed. The left hand is placed on top of the back surface of the right hand so that the thumb covers it on one side, the middle, ring finger and little finger on the other, and the outstretched index finger touches the head of the fetus. Traction is carefully performed with the right hand (the direction of the test traction corresponds to the direction of the first main traction: with the output tongs - horizontally). During the test traction, the index finger of the left hand controls whether the forceps follow the head.

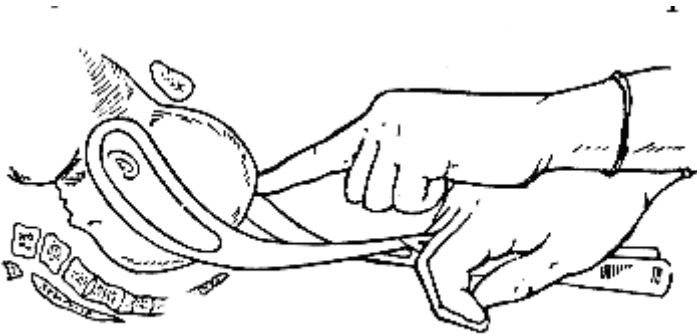


Fig. 109 – Traction in forceps: trial at initial forceps

If the distance between the head and the finger increases - the forceps are placed incorrectly and slip. It is necessary to take out spoons again to put forceps the second time.

3rd moment – Removal of the head (actually traction)

The left hand covers the handles of the forceps from below, the right remains in place. The main force of traction develops with the right hand.

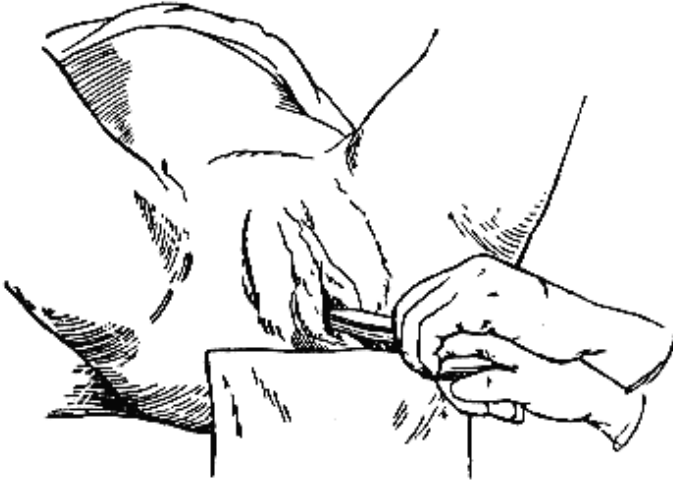


Fig. 110 – Traction in forceps: final at the original forceps

The direction of traction depends on the height of the head in the pelvis. According to the third triple rule, there are three directions of traction: down, horizontally and up (on the socks, chest and face of a sitting obstetrician). At initial forceps the first tractions are directed horizontally, until the suboccipital fossa will not appear under a pubic arch (the fixing point is formed). The obstetrician then directs the traction upward.

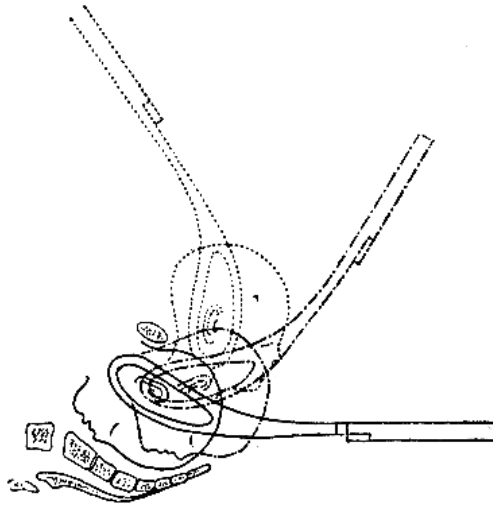


Fig. 111 – Traction in forceps: final at the original forceps

The obstetrician stands up to the side of the woman, the left hand grasps the handles of the forceps across, and the right hand protects the perineum.

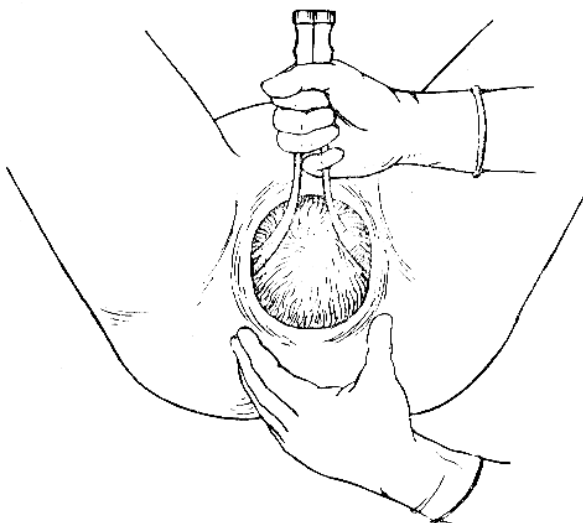


Fig. 112 – The third point

You can fix the branches of the forceps with both hands of the obstetrician (according to NA Tsovyanov). To do this, the index and middle fingers of both hands capture the side surfaces of both handles so that between them are placed Bush hooks. The fingers are intertwined and bent in the form of hooks around the handles. The main phalanges 2 and 3 fingers are placed on the outer surfaces of the handles, the middle phalanges of the same fingers - on the upper surfaces, and the nail phalanges - on the outer surfaces of the opposite side of the handles of the forceps. The ring fingers, bent in the form of hooks, capture the lateral, upper and inner surfaces of the parallel branches of the tongs extending from the lock. The flesh of the nail phalanges unbend 5 fingers advance on the upper surface of the spoons as far as possible and closer to the head. It is better if the tips of 5 fingers touch the head. The thumbs under the handles, the flesh of the nail phalanges rest on the middle third of the lower surface of the handles, leaving free its outer third

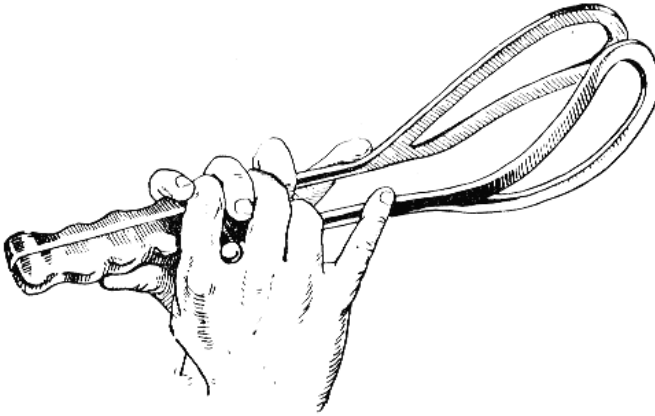


Fig. 113 – Capture of handles of forceps on NA Tsovyanov

4th moment – Opening of spoons and removal of forceps.

The forceps are removed after the head is outside the genital slit. To do this, the 2nd finger of the left hand is inserted between the handles of the spoons, the tongs open. To remove the forceps, each handle is taken with the same hand and removed in reverse order: the first - the right spoon, while the handle is taken to the left inguinal fold, the second - the left spoon, its handle is taken to the right inguinal fold.

The birth of the torso is done by hand.

Cavity (atypical) forceps.

(Forceps major)

Cavity (atypical) forceps is an operation of applying obstetric forceps to the head of the fetus, which is located in the cavity of the pelvis and has not yet completed the internal rotation. The sagittal suture is located in one of the oblique sizes of a pelvis. At the first position in front, it is in the right oblique size of the pelvic cavity. The forceps should be placed in the opposite oblique size to accommodate biparietally.

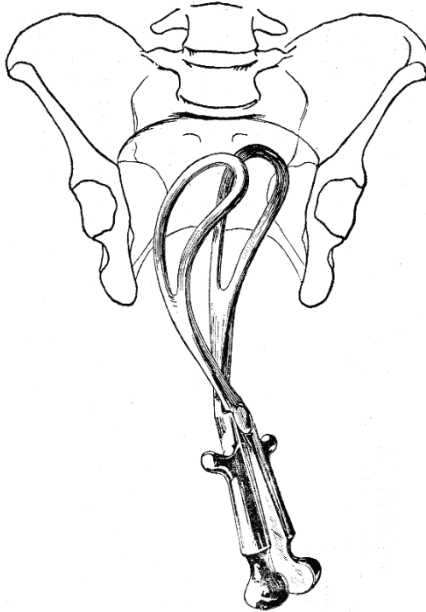


Fig. 114 – Forceps in the left oblique size

The operation consists of 4 points. When performing the operation, 4 triple rules apply:

1. The first triple rule (rule of three "L", three "D"): the first left branch of forceps is entered by the left hand of the obstetrician into the left half of a pelvis, the second the right branch of forceps is entered by the right hand of the obstetrician into the right half of a pelvis.

2. The second triple rule (rule of three "A"): the axis of the forceps, the axis of the head and the axis of the pelvis must coincide.

3. The third triple rule (three directions of traction): down, horizontally and upwards (on socks, a breast and the face of the sitting obstetrician).

4. The fourth triple rule (three "left", three "right"): if the small spring is located on the left, the forceps are placed in the left oblique size and the left spoon is fixed; if the small spring is located on the right, the forceps are applied in the right oblique size and the right spoon is fixed.

The overlay technique consists of 4 points:

1 moment. Selection and introduction of spoons.

Four fingers of the right hand are inserted into the vagina (according to Dederlein), on the side wall of the soft tissues of the mother. According to the first triple rule of the first the left spoon of obstetric forceps is entered. The left hand takes the handle of the tongs as a pen or a bow. The handle of the left spoon is installed parallel to the opposite inguinal bend. The top of the spoon is in the genital slit, the lower edge of it in the first finger of the right hand. The spoon is introduced by directing one I finger without violence. The left spoon is inserted into the posterolateral pelvis and in accordance with the fourth triple rule, it is "fixed". When applied

correctly, the Bush hook is directed to the right forward at an angle of 45°. The handle of the left spoon is passed to the assistant. In the same way the right spoon is entered, but according to the fourth triple rule, it is "wandering".

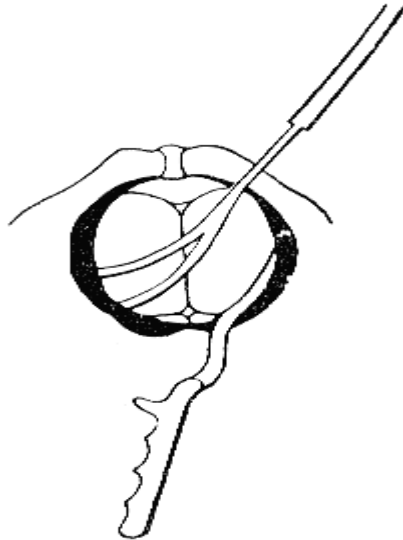


Fig. 115 – The technique of applying forceps to the head of the fetus: the introduction of the right spoon

Therefore, with the left hand inserted into the vagina, the right spoon is carefully moved forward until it is established in the area of the parietal hump, and the Bush hook will be turned to the left at the end. All movements of the "wandering" ("moving", "migrating") spoon occur gradually, without any effort.

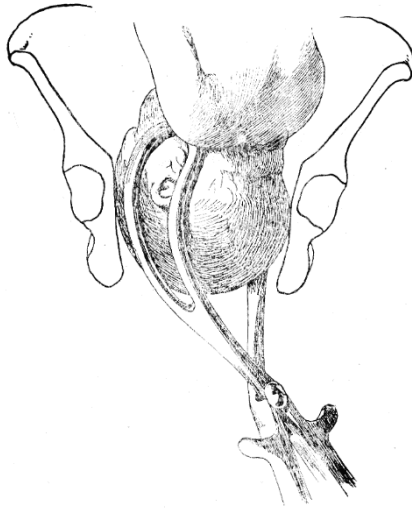


Fig. 116 – Left occipital position. Forceps in the left oblique size of the pelvis, the right spoon wanders

Moment 2 – Locking spoons and test traction.

Each of the handles is taken by the hand of the same name, the thumbs are placed on the hooks of Bush. The handles come together and the tongs close. According to the second triple rule at correctly imposed forceps three axes coincide: an axis of forceps, an axis of a head and a leading axis of a pelvis. The line of the handles faces the leading point on the head.



Fig. 117 – Closing of forceps

Trial traction is performed to determine the correct application of forceps. Test Traction Technique: Place the right hand on top of the forceps lock so that the middle (3) finger is placed between the spoons, the index (2) and ring finger (4) rest on the Bush hooks and keep the handles tightly closed. The left hand is placed on top of the back surface of the right hand so that the thumb covers it on one side, the middle, ring finger and little finger on the other, and the outstretched index finger touches the head of the fetus. Traction is carefully performed with the right hand (the direction of the test traction corresponds to the direction of the first main traction: with cavity forceps - down). During the test traction, the index finger of the left hand controls whether the forceps follow the head. If the distance between the head and the finger increases - the forceps are placed incorrectly and slip. It is necessary to take out spoons again to put forceps the second time.

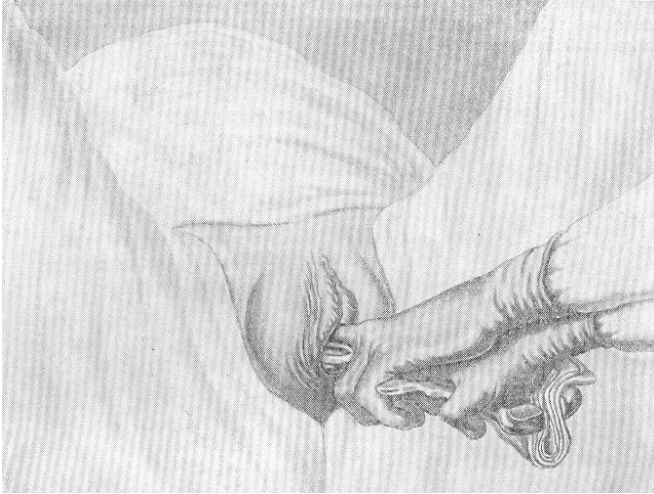


Fig. 118 – Test traction.

Location of forceps and hands of the operator

3rd moment – *extraction of the head (actually traction).*

The left hand covers the handles of the forceps from below, the right remains in place. The main force of traction develops with the right hand.

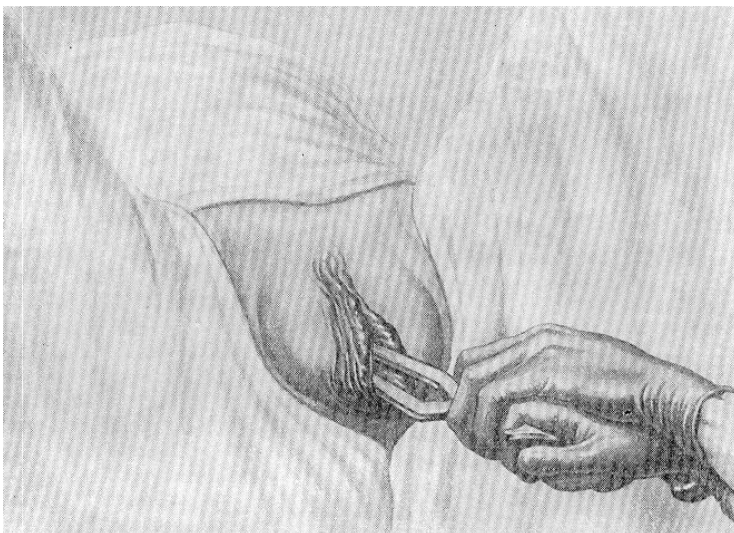


Fig. 119 – Removal of the head

The direction of traction depends on the height of the head in the pelvis. According to the third triple rule, there are three directions of traction: down, horizontally and up (on the socks, chest and face of a sitting obstetrician). At cavity forceps the first tractions are directed downwards, thus the head finishes the internal turn and the arrow-shaped seam is established in the direct size of the plane of an exit of a small pelvis. Then carry out traction horizontally until the occipital fossa is under the pubic arch (a fixation point is formed). The obstetrician then directs the traction upward. The obstetrician stands up to the side of the woman, the left hand grasps the handles of the forceps across, and the right hand protects the perineum.

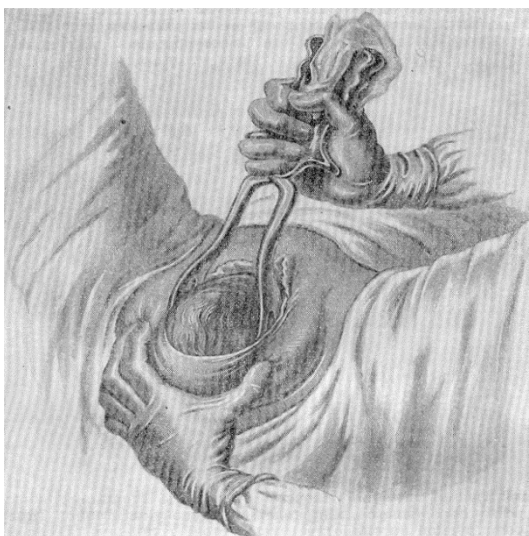


Fig. 120 – Withdrawal of the head in the forceps

You can fix the branches of the forceps with both hands of the obstetrician (according to NA Tsovyanov). To do this, the index and middle fingers of both hands capture the side surfaces of both handles so that between them are placed Bush hooks. The fingers are intertwined and bent in the form of hooks around the handles. The main phalanges 2 and 3 fingers are placed on the outer surfaces of the handles, the middle phalanges of the same fingers - on the upper surfaces, and the nail phalanges - on the outer surfaces of the opposite side of the handles of the forceps. The ring fingers, bent in the form of hooks, capture the lateral, upper and inner surfaces of the parallel branches of the tongs extending from the lock. The flesh of the nail phalanges unbend 5 fingers advance on the upper surface of the spoons as far as possible and closer to the head. It is better if the tips of 5 fingers touch the head. The thumbs under the handles, the flesh of the nail phalanges rest on the middle third of the lower surface of the handles, leaving free its outer third.

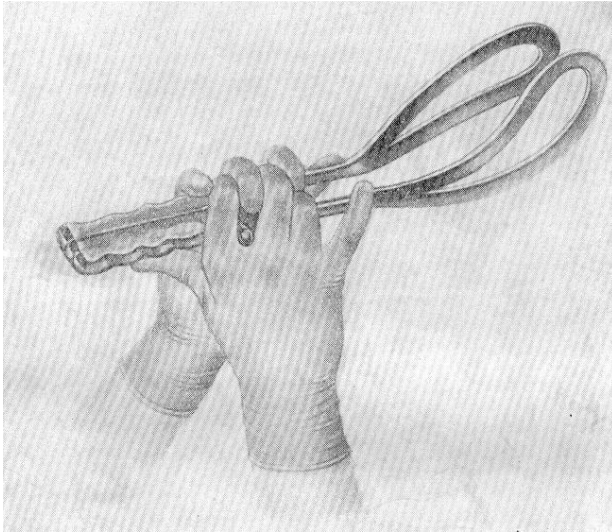


Fig. 121 – Capture of the handle of forceps on NA Tsovyanov

4th moment – *Opening of spoons and removal of forceps.*

The forceps are removed after the head is outside the genital slit. To do this, 2 fingers of the left hand are placed between the handles of the spoons, the tongs are opened and removed (the first removes the right spoon, the second - the left).

The birth of the torso is done by hand.

Section 12

Obstetric techniques in case of difficulty in removing the head during cesarean section

Repeatedly in their practice, surgeons and gynecologists face the problem of difficult removal of the head during caesarean section. One of the reasons is the low position of the head relative to the plane of entry into the pelvis, which occurs during active labor and the development of an emergency situation in childbirth, which requires emergency delivery (fetal distress, detachment of the normal placenta, severe preeclampsia, etc....)

One of the methods that allows you to get out of the situation with difficulty in removing the head is the original method of Patvardan, or the so-called "shoulders first", which reduces the frequency of complications.

Patvardan's technique of anterior occipital presentation:

1. Birth of the near (front) handle.
2. Birth of the far (back) handle.
3. Flexion and birth of the fetal torso by traction on the torso while pressing on the bottom of the uterus by the assistant.
4. Birth of the pelvic end.
5. Birth of the fetal head.

The sequence of excretion of parts of the fetus is shown in Fig. 122 and 123.



Fig.122 – Reception of Patvardan at an anterior view of occipital presentation

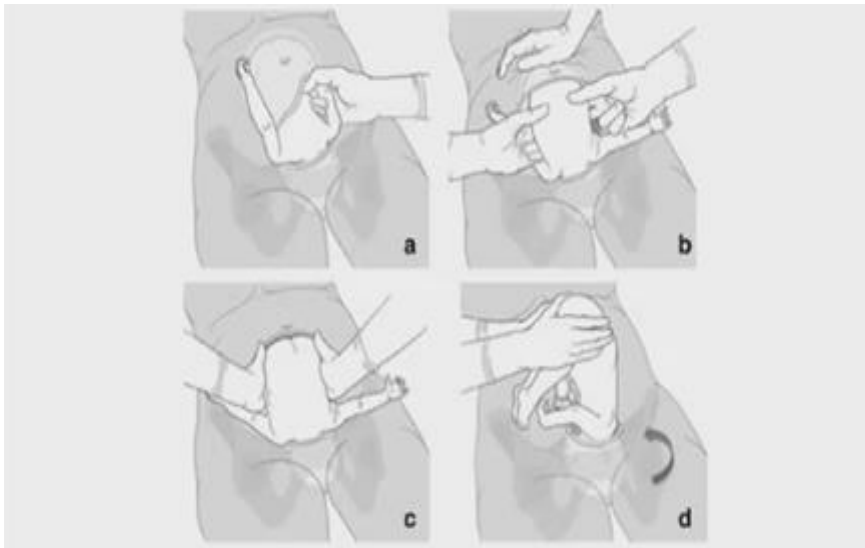


Fig. 123 – Scheme of successive actions

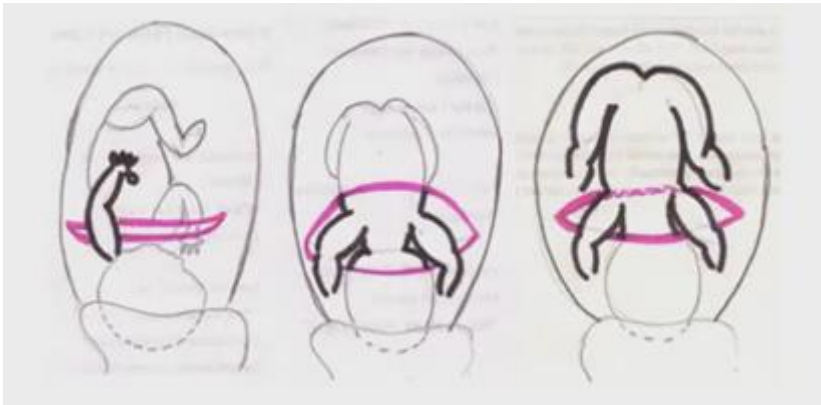


Fig. 124 – The original scheme of Patvardan

At a back view of an occipital presentation the modified reception of Patvardan or return extraction of a fruit for the pelvic end is applied.

Technique of modified reception of Patvardan or reverse extraction of the fetus for the pelvic end (modification I):

1. Finding, capturing the operator and the birth of both legs of the fetus.
2. Traction for both legs with the birth of the pelvic end and torso.
3. The birth of pens.
4. The birth of the head.

The sequence of excretion of parts of the fetus is shown in Fig. 125.



Fig. 125 – Modified Patvardan reception or reverse extraction of the fetus for the pelvic part (I)

Technique of modified reception of Patvardan or reverse extraction of the fetus for the pelvic end (modification II):

1. The birth of the middle handle.
2. Birth of the eponymous proximal leg of the fetus.
3. Birth of the second leg of the fetus.
4. The birth of the second pen.
5. Traction behind the legs gives birth to the pelvic end and torso.
6. The birth of the head.

The technique of the second modification (sequential removal of parts of the fetus in a circle) is shown in Fig. 126 and in the sequential scheme in fig. 127.



Fig. 126 – Modified Patvardan technique or reverse extraction of the fetus for the pelvic part (II)

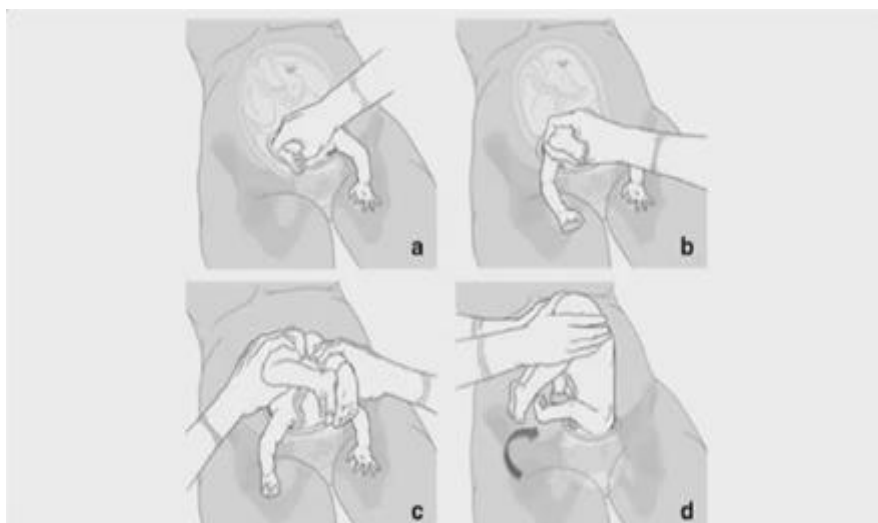


Fig. 127 – The scheme of consecutive actions at application of the modified reception of Patvardan

In case of difficulties in the application of the above techniques, the following actions are recommended:

1. Relaxation of the uterus with nitroglycerin.
2. J- or T-shaped incision on the uterus (Fig.128).
3. Preliminarily, while waiting for complicated fetal removal, a corporal incision on the uterus may be recommended instead of a transverse one (Fig. 129).



Fig. 128 – J- or T-shaped incision on the uterus

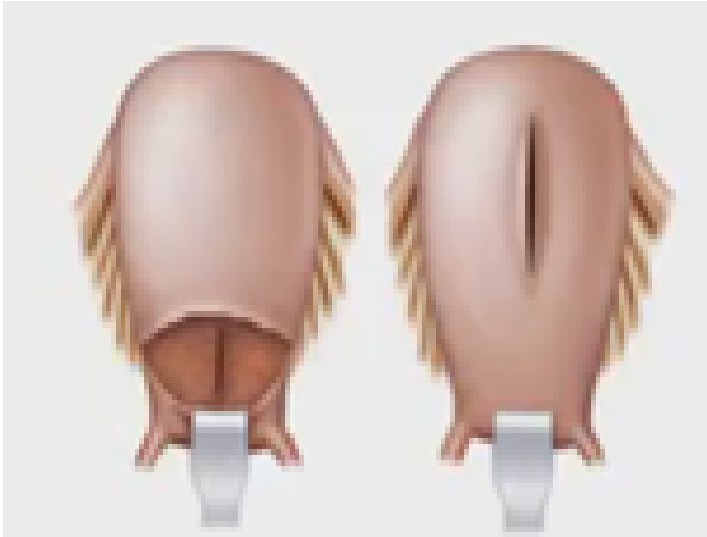


Fig. 129 – Corporal incision on the uterus

Conclusions

1. Patvardan's reception and reverse extraction for the pelvic end deserve special attention of general practitioners.
2. Used as an option to remove the fetus with a low head and difficult to remove it.
3. The proposed methods reduce the risk of uterine rupture by 6-8 times in case of difficult fetal removal.

REFERENCES

1. Basevi V, Lavender T. Routine perineal shaving on admission in labour. The Cochrane Database of Systematic Reviews, 2007, Issue 1.
2. Bloom Steven L.; Casey Brian M.; Schaffer Joseph I.; McIntire Donald D.; Leveno Kenneth J. Coached versus uncoached maternal pushing during the second stage of labour: a randomized controlled trial. *Obstet Gynecol.* 2002, 99(6), 1031-5
3. Breastfeeding counselling: Training course. WHO, UNICEF, 1993.
4. Care in normal birth: A practical guide. Report of a technical working group. WHO, 1997.
5. Carulli G, Belizan J, Stamp G. Episiotomy for vaginal birth. *Cochrane Database of Systematic Reviews*, 2003, Issue 4.
6. Cuervo LG, Rodríguez MN, Delgado MB. Enemas during labour. The Cochrane Database of Systematic Reviews, 2007, Issue 1.
7. Essential Antenatal, Perinatal and Postpartum Care. WHO EURO, Copenhagen, 2002.
8. Essential newborn Care and Breastfeeding. WHO EURO, 2002
9. Gupta JK, Hofmeyr GJ, Smyth R. Position in the second stage of labour for women without epidural anaesthesia. The Cochrane Database of Systematic Reviews, 2007, Issue 1.
10. Hodnett, E. D.; Gates, S.; Hofmeyr, G. J.; Sakala, C. Continuous support for women during childbirth. The Cochrane Database of Systematic Reviews, 2004, Issue 1.
11. International Confederation of Midwives, International Federation of Gynaecology and Obstetrics. Joint statement management of the third stage of labour to prevent post-partum haemorrhage. The Hague: ICM, London, FIGO, 2003.
12. Leah L. Albers, Kay D. Sedler; Edward J. Bedric, Dusty Teaf, Patricia Peralta. *Midwifery Care Measures in the Second Stage*

- of Labor and Reduction of Genital Tract Trauma at Birth: A Randomized Trial. *Journal of Midwifery & Women's Health*, 2005, 51(5), 365-372.
13. *Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors*. Geneva: WHO, 2000.
 14. McCandlish R, Bowler U, van Asten H et al. A randomised controlled trial of care of the perineum during second stage of normal labour. *Br J Obstet Gynaecol*, 1998, 105(12), 1262-72.
 15. Menticoglou SM et al. Perinatal outcome in relation to second-stage duration. *Am J Obstet Gynecol*. 1995, 173(3 Pt 1), 906-12.
 16. *Mother-Baby Package: Implementing safe motherhood in countries*. WHO, 1995.
 17. Muir Gray JA. *Evidence-based healthcare: how to make health policy and management decisions*. London: Churchill Livingstone, 1997.
 18. Neilson JP Symphysis-fundal height measurement in pregnancy (Cochrane Review) In: *The Reproductive Health Library*, Issue 8, 2005
 19. *Pregnancy, Childbirth, Postpartum and Newborn Care: A guide for essential practice*. WHO, Geneva, 2006.
 20. Prendiville WJ et al. Active versus expectant management in the third stage of labour. *The Cochrane Database of Systematic Reviews*, Issue 3, 2000.
 21. Prendiville WJ, Elbourne D, McDonald S. Active versus expectant management in the third stage of labour. *Cochrane Database of Systematic Reviews*. 2007, Issue 1.
 22. *Prevention and Treatment of Post-partum Haemorrhage: New Advances for Low Resource Settings*. Joint Statement. International Confederation of Midwives (ICM) International Federation of Gynaecology and Obstetrics (FIGO), 2006.
 23. RCOG Royal College of Obstetricians and Gynaecologists *The Use of Electronic Fetal Monitoring - The use and interpretation of cardiotocography in intrapartum fetal surveillance Evidence-based Clinical Guideline Number 8 – 2001*

24. Sackett DL et al. Evidence based medicine: what it is and what it isn't. *BMJ*, 1996, 312, 71- 72.
25. Thacker SB et al. Continuous electronic heart rate monitoring for foetal assessment during labour. *The Cochrane Database of Systematic Reviews*, 2002, Issue 1.
26. What is the effectiveness of antenatal care? WHO Regional Office for Europe - Health Evidence Network report 2005.
27. Guide to Effective Care in Pregnancy and Childbirth (Enkin M., Keirs M., Neilson D., etc.) - St. Petersburg: Petropolis, 2003.

Електронне навчальне видання

Нікітіна Ірина Миколаївна,
Сміян Світлана Анатоліївна,
Калашник Наталія Володимирівна,
Бойко Алеся Валеріївна,
Копиця Тетяна Володимирівна,
Сухоставець Наталія Петрівна,
Герасименко Світлана Федоррівна,
Бабар Тетяна Володимирівна

Акушерський фантом

Навчальний посібник
(англійською мовою)

За загальною редакцією доктора медичних наук
І. М. Нікітіної

Відповідальний за випуск І. М. Нікітіна
Редактори: Н. З. Клочко, С. М. Симоненко
Комп'ютерне верстання І. М. Нікітіна

Формат 60x84/16. Ум. друк. арк. 4,65. Обл.-вид. арк. 6,84.

Видавець і виготовлювач
Сумський державний університет,
вул. Римського-Корсакова, 2, м. Суми, 40007
Свідоцтво суб'єкта видавничої справи ДК № 3062

