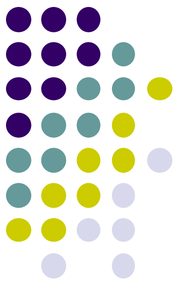
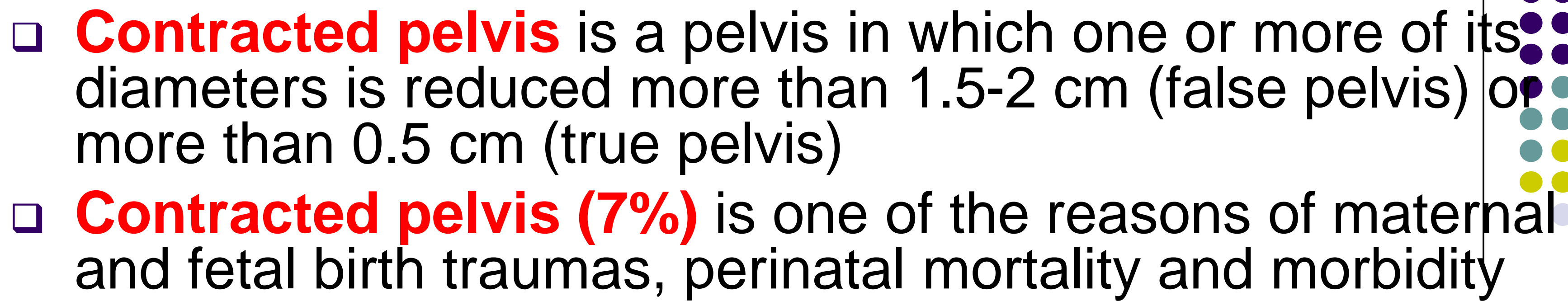


Contracted pelvis
Rupture of the uterus

Department of Obstetrics and Gynecology
Gomel State Medical University
Ph.D. Einysh E.A.



- **Contracted pelvis** is a pelvis in which one or more of its diameters is reduced more than 1.5-2 cm (false pelvis) or more than 0.5 cm (true pelvis)
- **Contracted pelvis (7%)** is one of the reasons of maternal and fetal birth traumas, perinatal mortality and morbidity

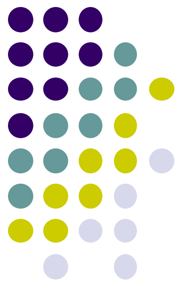
The reasons for the formation of contracted pelvis:

- ✓ Nutritional and environmental defects (rickets)
- ✓ High infection index
- ✓ Age at menarche, menstrual dysfunction
- ✓ Endocrine pathology
- ✓ Diseases or injuries affecting the bones of the pelvis - pelvic trauma (fractures), tumours, tubercular arthritis; spine - kyphosis, scoliosis, spondylolisthesis, coccygeal deformity; lower limbs - poliomyelitis, hip joint diseases
- ✓ Development defects - Naegele’s pelvis, Robert’s pelvis; high or low assimilation pelvis

Classification of contracted pelvis

On the basis of the shape of the inlet, the female pelvis is divided into four types (based on X-ray pelvimetry):

•Gynecoid(50%) •Anthropoid(25%) •Android(20%) •Platypelloid(5%)



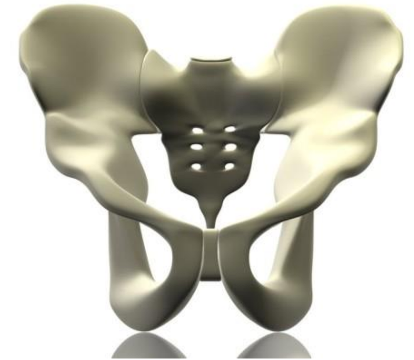
Inlet

Cavity

Outlet

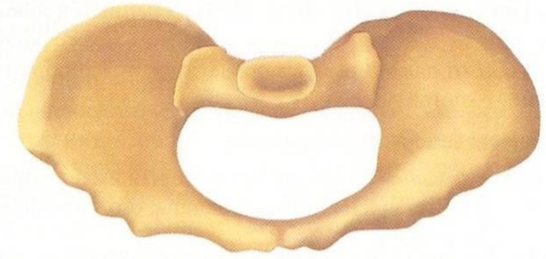
Round | Long oval | Triangular | Flat

Classification of contracted pelvis by shape

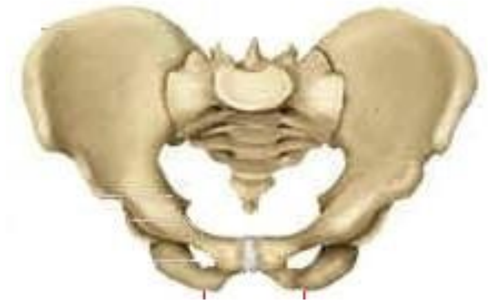


A. Common :

- **Pelvis with reduced transverse diameters** (transverse pelvic contraction) - 61,7%,
- **Pelvis with reduced antero-posterior diameters** (flat pelvis) - 19,2%
  - Simple flat
  - Flat rachitic pelvis
  - Pelvis with reduced cavity

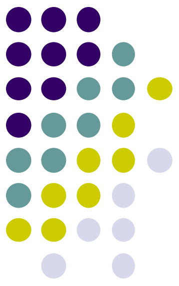


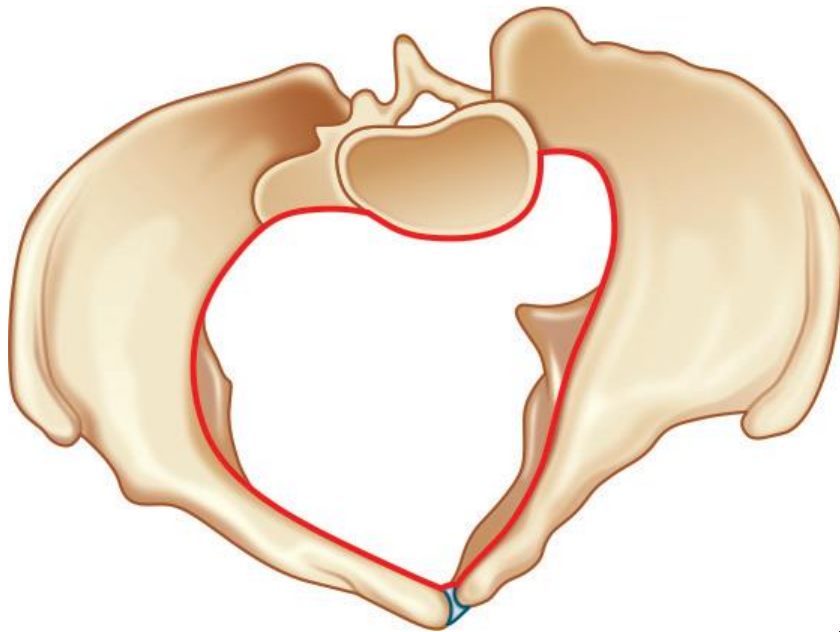
- **Pelvis with reduced antero-posterior and transverse diametres** (generally contracted pelvis) -18,8%



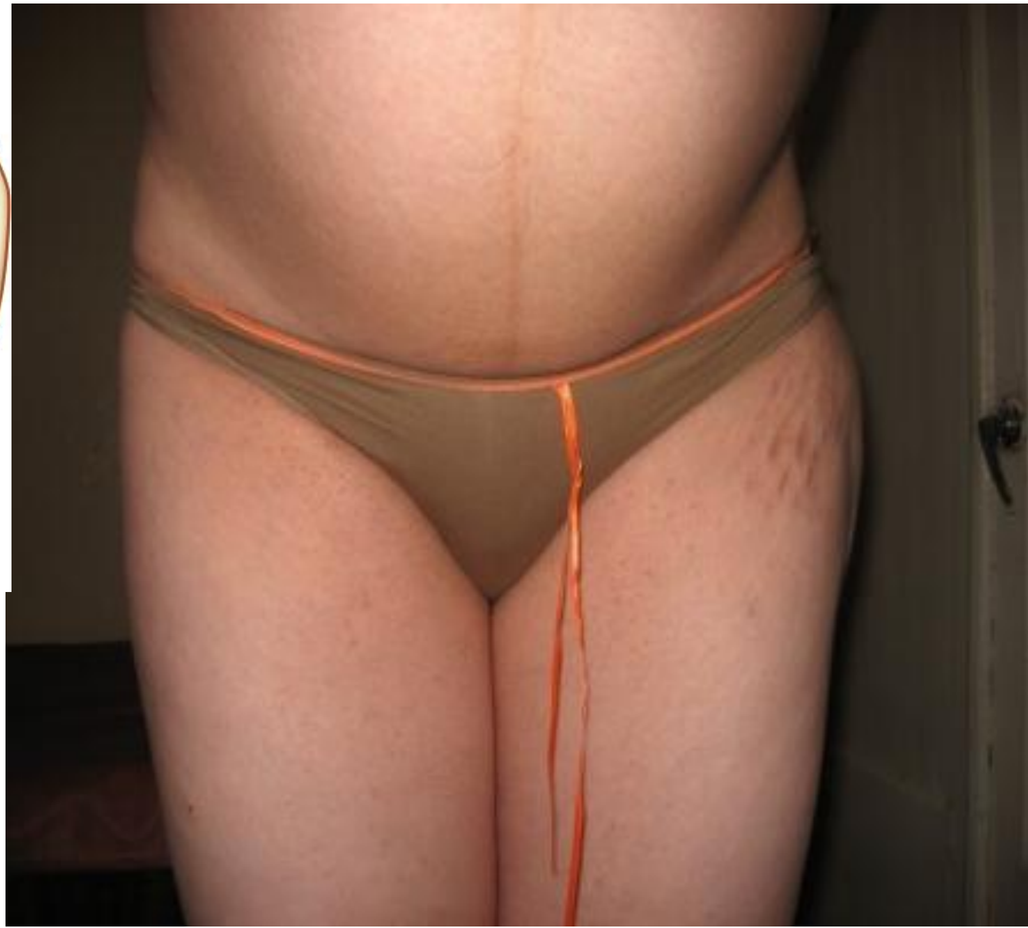
B. Rare :

- Asimmetrical and obliquely contracted pelvis - 0,3%
- Pelvis contracted with exostosis, bone tumors, fractures





Obliquely contracted pelvis



Diagnostic algorithm of contracted pelvis

Past history

Medical

- Infection index
- Age at menarche, menstrual dysfunction
- Endocrine pathology
- Diseases of the skeletal system
- Pelvic trauma
- **Obstetrical**
- Clinical course of previous pregnancies and labor (previous safe vaginal delivery, difficult instrumental delivery, difficult vaginal delivery ending in stillborn or early neonatal death following a difficult labour)

weight of the baby

evidences of maternal injuries (complete perineal tear, vesico-vaginal or recto-vaginal fistula)

Physical Examination

- Height, weight

Abdominal Examination

Assessment of the pelvis:

- Pelvimetry
- Rhombus of Michaelis,
- Diameters of the pelvic outlet

Obstetric grips (Leopold maneuvers)

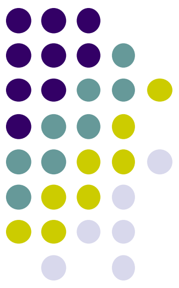
Assessment of the size of the uterus: height of the fundus and girth of the abdomen

The estimated fetal weight

Vaginal examination

Select a group of patients with anatomically contracted pelvis and cephalo-pelvic disproportion

Diagnosis of contracted pelvis: external pelvimetry



D. spinarum=25-26 см

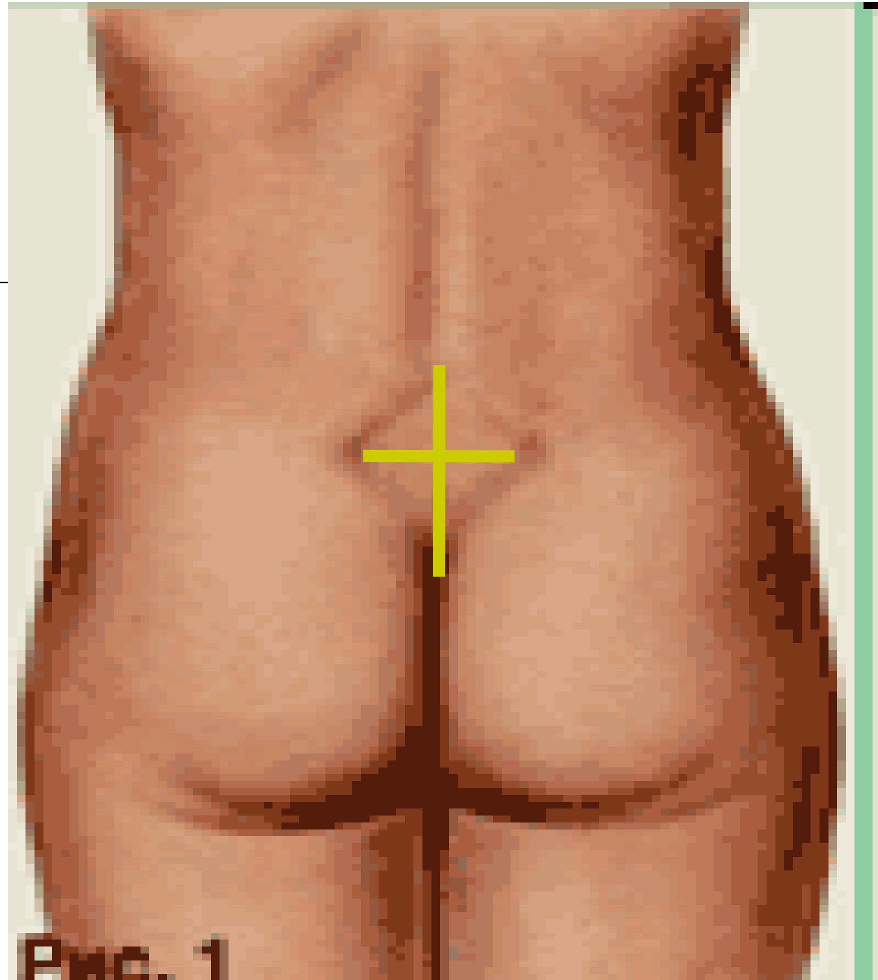
C.externa=20-21 см

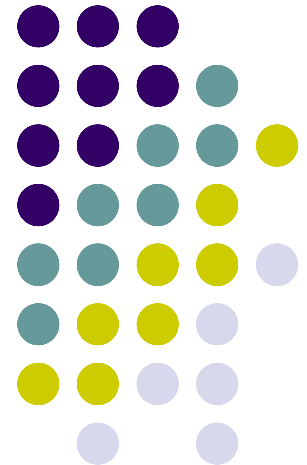
D. cristarum=28-29 см

D. trochanterica=30-31 см

TC=C.externa-9 cm

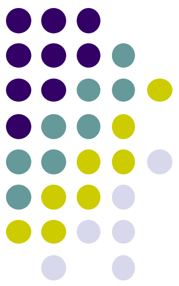
Diagnosis of contracted pelvis: rhombus of Michaelis

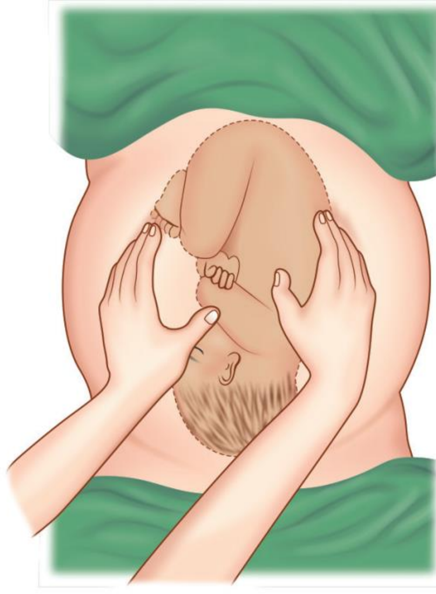




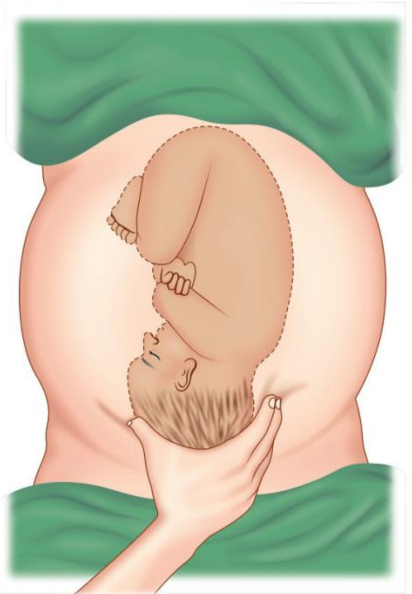
TC=the vertical size of the rhombus

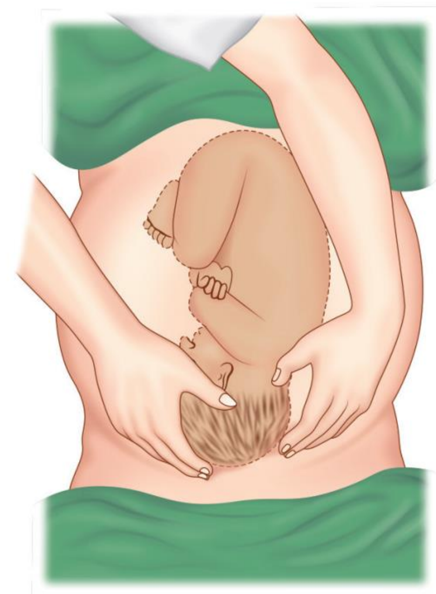
Obstetric grips (Leopold maneuvers):





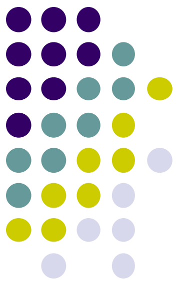
Fundal grip (first Leopold);
Lateral grip (second Leopold);
Pawlik's grip (third Leopold);
Pelvic grip (fourth Leopold)





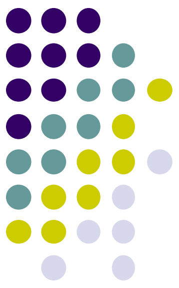
- Transverse or oblique fetal position. Pregnant women abnormal position of the fetus in 25% have contracted pelvis
- Breech presentation of the fetus in women with contracted pelvis occurs three times more often than in women with a normal pelvis

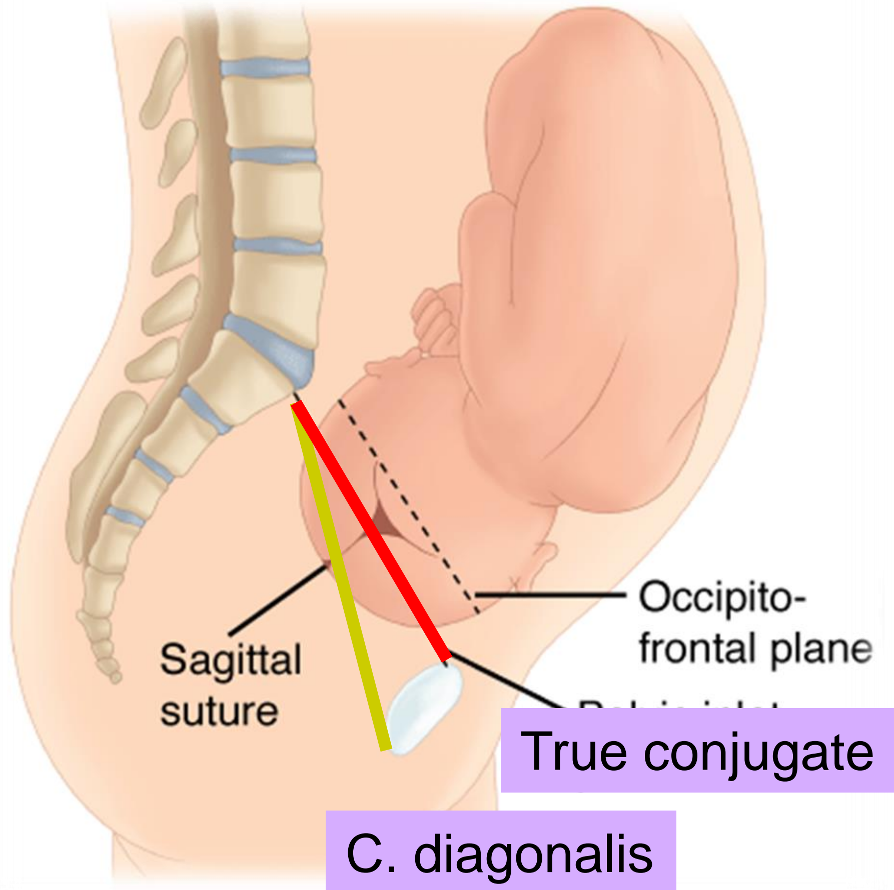
Assessment of the size of the uterus:height of the fundus and girth of the abdomen

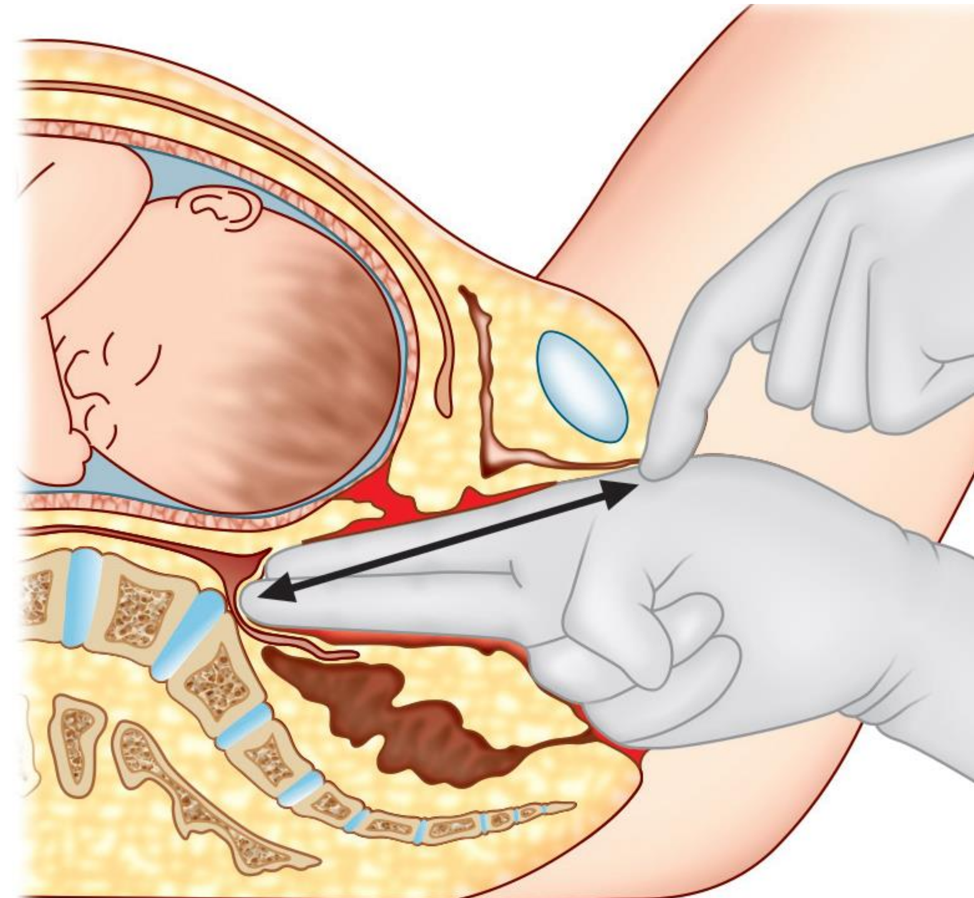


Fetus weight=height of the fundus x girth of the abdomen

Vaginal examination - measurement of diagonal conjugate

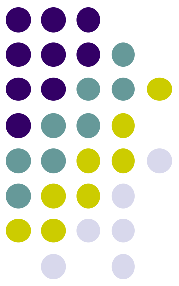






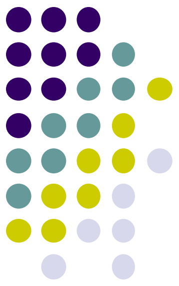
TC=C.diagonalis-1.5-2 cm

Degrees of contracted pelvis (according to true conjugate (TC):



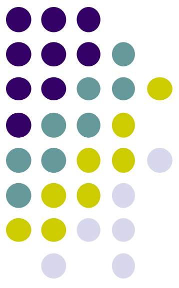
- I (minor) – TC 11-9 cm
- II (moderate) –TC 9-7,5 cm
- III (severe) –TC 7,5-6 cm
- VI (extreme) –TC less than 6 cm

Degrees of contracted pelvis (according CT, MRI)



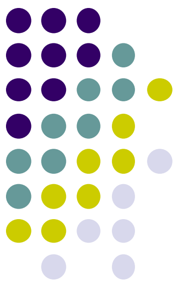
- I – 0,5 - 1 cm on any of the diameters
- II - more than 1 cm in any diameters of the pelvis

Complications of pregnancy with contracted pelvis

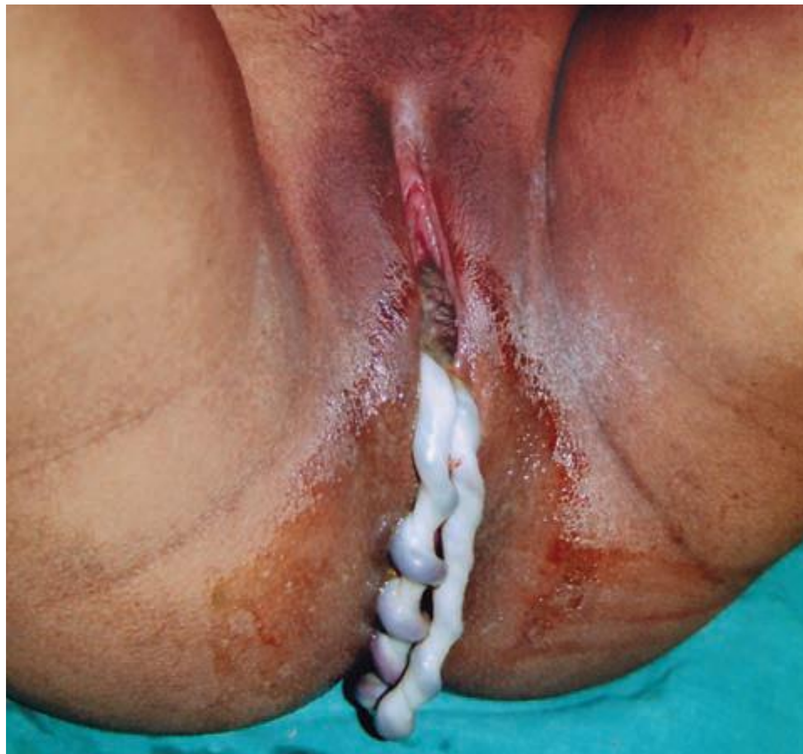


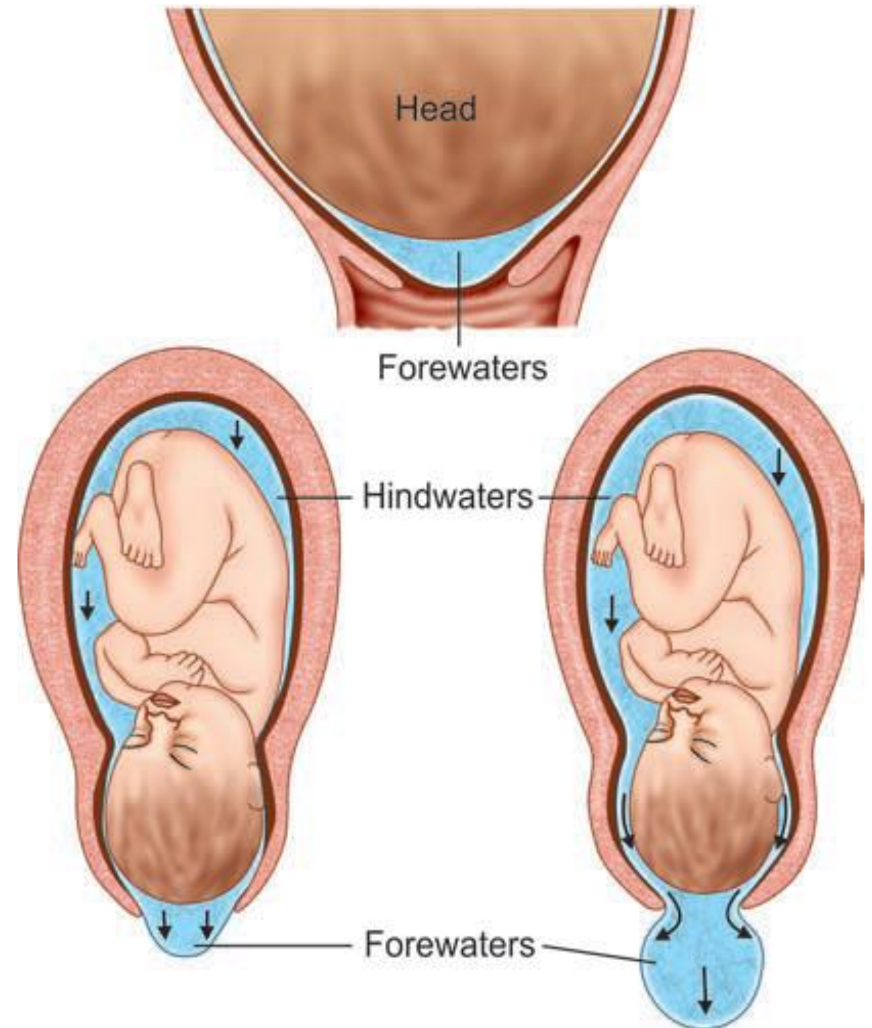
- Fetal head does not descend into the pelvis, the growing uterus rises and makes it difficult to breath – so early manifestate shortness of breath, palpitations, fatigue, and they manifestate more than in a pregnancy with normal pelvis.
- Transverse or oblique fetal position. Pregnant women abnormal position of the fetus in 25% have contracted pelvis
- Breech presentation of the fetus in women with contracted pelvis occurs three times more often than in women with a normal pelvis

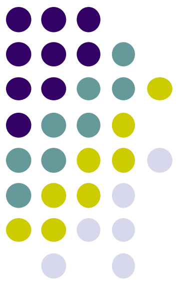
Complications of pregnancy with contracted pelvis



Fetal head does not descend into the pelvis - preterm rupture of membranes
Umbilical cord prolapse

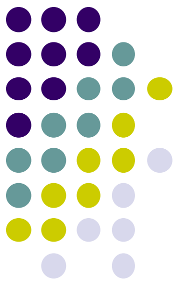






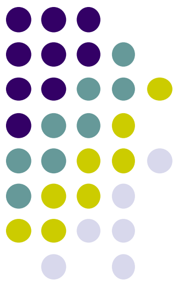
Management of pregnancy with contracted pelvis

- Pregnant women with contracted pelvis are at high risk of obstetric and perinatal pathology
- Prevention of big baby syndrome
- Timely diagnosis of abnormalities of the fetus position and their correction
- The exact definition of date of labor to prevent prolonged pregnancy
- Admission to the department of pathology of pregnancy for the diagnosis and choice of optimal way of delivery



Management of labor

- Elective cesarean section at term
- Trial labor



Indications to Cesarean section

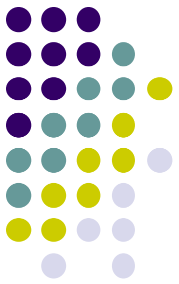
Absolute

- **anatomically contracted pelvis of II-IV degree**
- **bone tumors in the true pelvis, obstructed labor**
- **posttraumatic deformations of the pelvis**
- **rupture of symphysis pubis in previous labor**
- **rupture of perineum of III degree**

Relative

Combination of contracted pelvis of I degree with

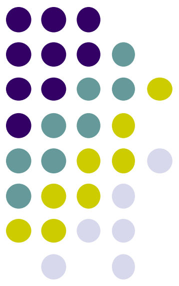
- **macrosomia**
- **prolonged pregnancy**
- **breech presentation**
- **chronic hypoxia of the fetus**
- **congenital abnormalities of reproductive organs**
- **uterine scar after previous C-section**
- **infertility**
- **primipara 30 years old and older**



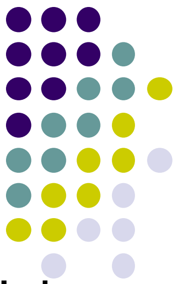
Trial labor

- **It is the conduction of spontaneous labor in a moderate degree of cephalo-pelvic disproportion with watchful expectancy**, **hoping for a vaginal delivery**
- A trial labor aims are avoiding cesarean section and delivery a healthy baby

Complications of labor with contracted pelvis

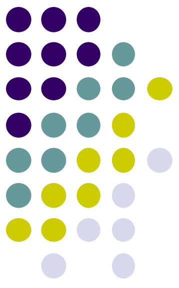


- preterm rupture of membranes (44.7%)
- acute hypoxia (22.5%) as a result of prolapse of cord or small parts of the fetus
- abnormal uterine activity (20.1%)
- cephalo-pelvic disproportion (11.0%)
- shoulder dystocia (5%)
- prolonged duration of labor
- fetal hypoxia and fetal injury
- maternal trauma (lacerations of birth canal, uterine rupture, fistulas)
- inflammatory diseases of pelvic organs in postpartum period



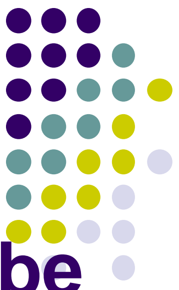
Management of trial labor

- The management of a trial labor requires careful supervision
- The labor should be spontaneous in onset. But in cases where the labor fails to start even on due date, induction of labor may be done
- Adequate analgesic is administered
- **The progress of the labor is mapped with a partograph** -progressive dilatation of the cervix and progressive descent of the head
- **To monitor the maternal health**
- Fetal monitoring is done clinically and or using CTG
- **If there is failure to progress** due to inadequate uterine contraction, augmentation of labor may be done by amniotomy along with oxytocin infusion.
- **After the membranes rupture**, pelvic examination is to be done:
- to exclude cord prolapse;
- to note the color of liquor;
- to assess the pelvis once more



Cephalopelvic disproportion: disproportion between the head of the fetus and the mother pelvis

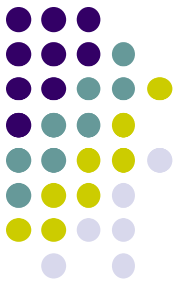
- **Causes of cephalopelvic disproportion**: Normal size baby with a narrow pelvis
- Big baby with normal size pelvis
- Combination of both the factors
- Malpresentations
- Malformations



When cephalopelvic disproportion tests must be established?

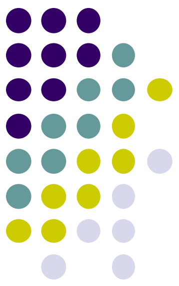
- Active phase of the 1 stage or the second stage of labor
- Full or almost full dilatation of the cervix
- Ruptured membranes
- Adequate uterine contractions
- Evacuated bladder
- Nowadays there is a tendency to shorten the duration of trial: 3-4 hours in the active phase of the first stage, 1 hour in the second stage

Symptoms of cephalopelvic disproportion

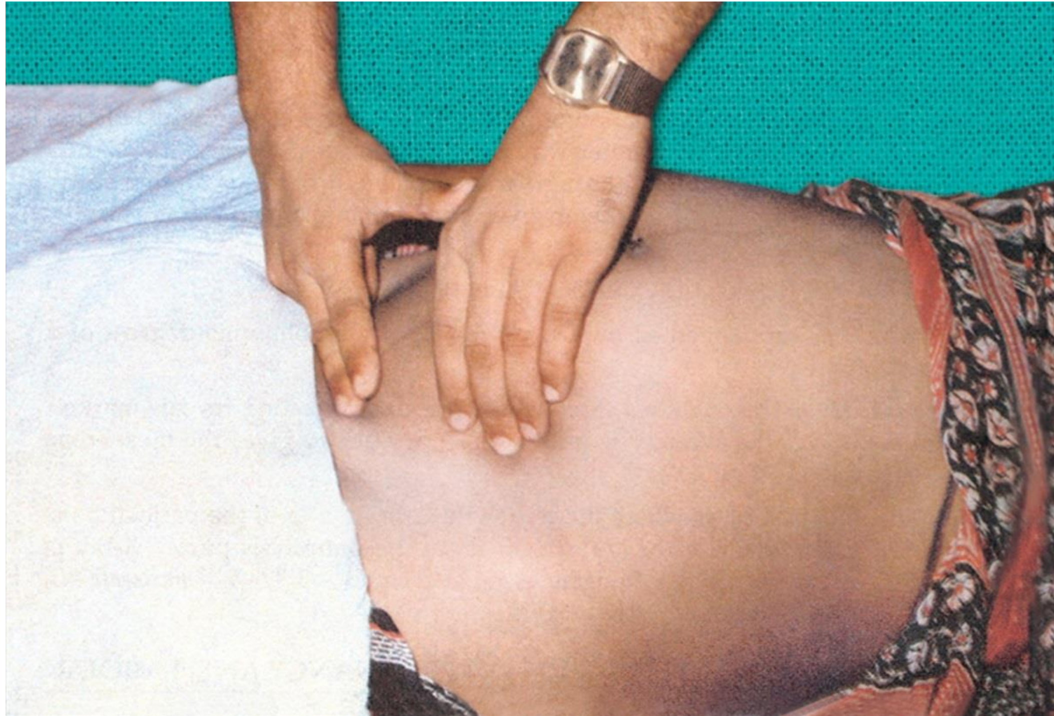


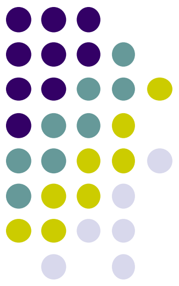
- Hypertonic disfunction of uterus
- Bearing down efforts in engaged to inlet head
- Particularities of engagement of fetal head: configuration, moulding, abnormal succedaneum, asynclitism,
- Absence of descent of the fetal head during uterine contraction
- Secondary uterine inertia
- Positive Vasten's and Zangemeister signs, which show the ratio of the head to the pelvic brim
- A distended tender lower segment
- Bandl’s ring may be visible
- Evidences of fetal distress
- Edema of internal and external genitalia

Positive Vasten's sign, which show the ratio of the head to the pelvic brim



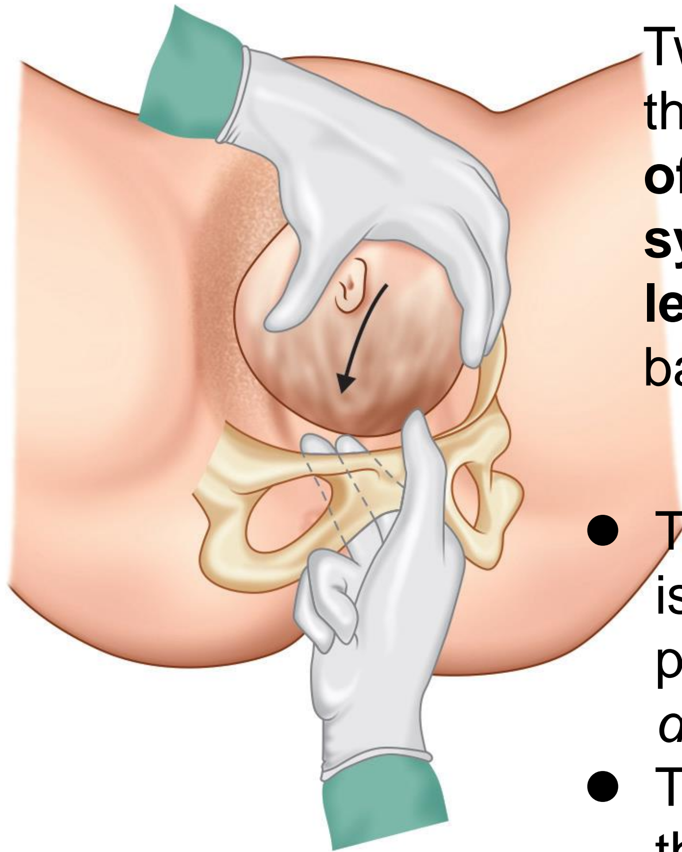
Abdominal method





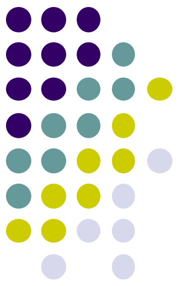
- The head can be pushed down in the pelvis without overlapping of the parietal bone on the symphysis pubis - *no disproportion*
- Head can be pushed down a little but there is slight overlapping of the parietal - *moderate disproportion*
- Head cannot be pushed down - *severe disproportion*

Abdominovaginal method (Muller-Munro-Kerr):

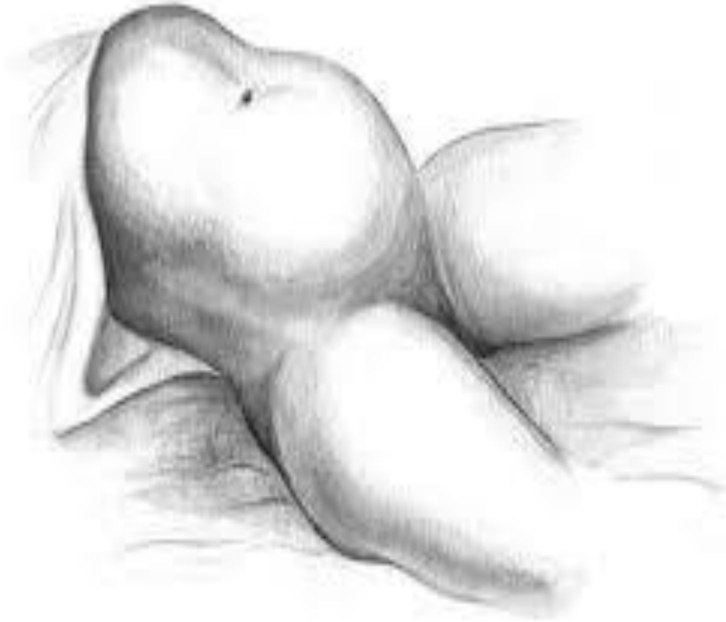


Two fingers of the right hand are introduced into the vagina with the **finger tips placed at the level of ischial spines and thumb is placed over the symphysis pubis. The head is grasped by the left hand and is pushed** in a downward and backward direction into the pelvis

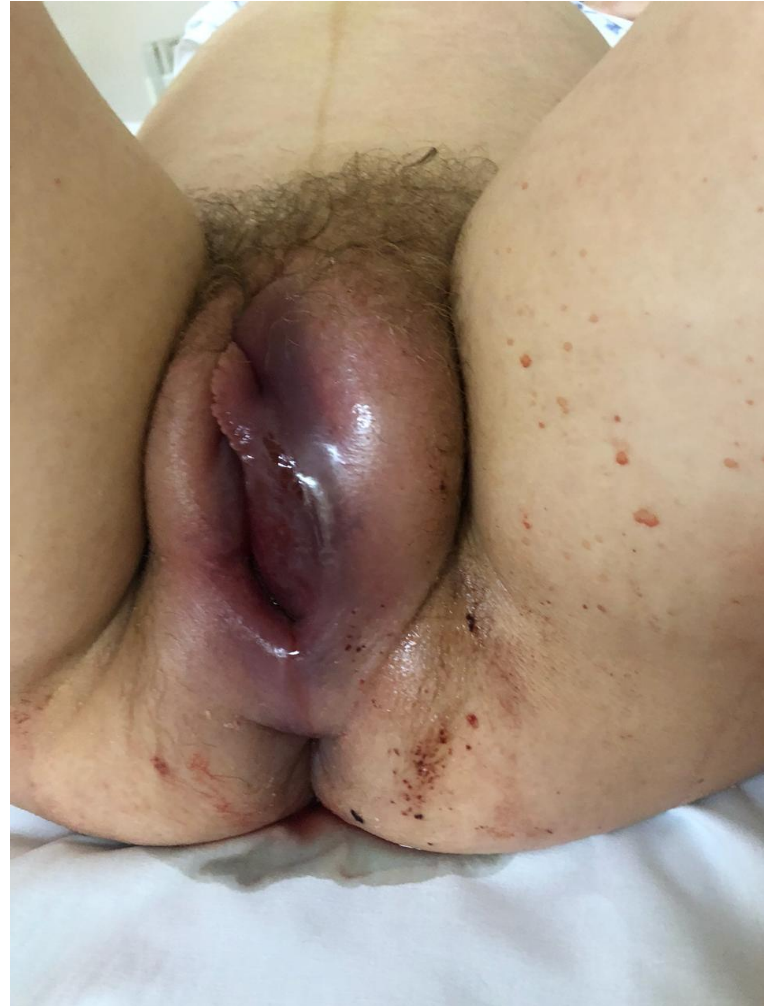
- The head can be pushed down up to the level of ischial spines and there is no overlapping of the parietal bone over the symphysis pubis - *no disproportion*
- The head can be pushed down a little but not up to the level of ischial spines and there is slight overlapping of the parietal bone - *slight or moderate disproportion*
- The head cannot be pushed down and instead the parietal bone overhangs the symphysis pubis displacing the thumb - *severe disproportion*

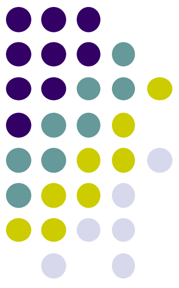


Edema of external genitalia

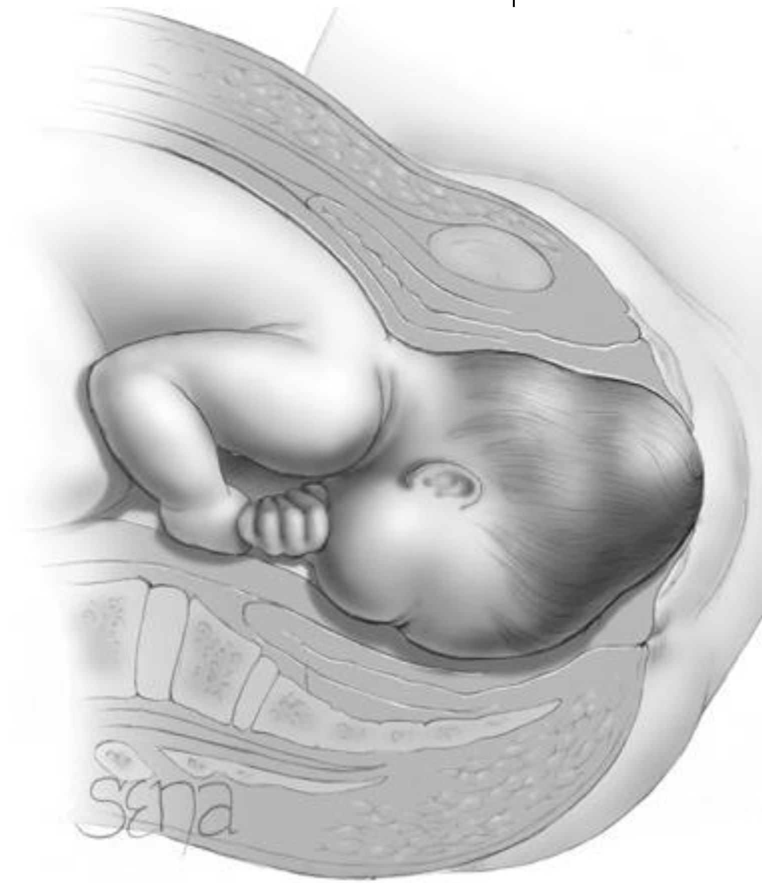


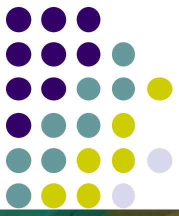
Bandl's ring



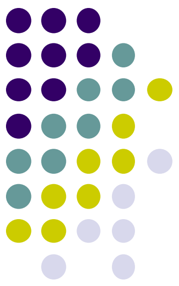


Particularities of engagement: moulding, abnormal succedaneum





- **Symptoms of cephalopelvic disproportion - emergency CS**

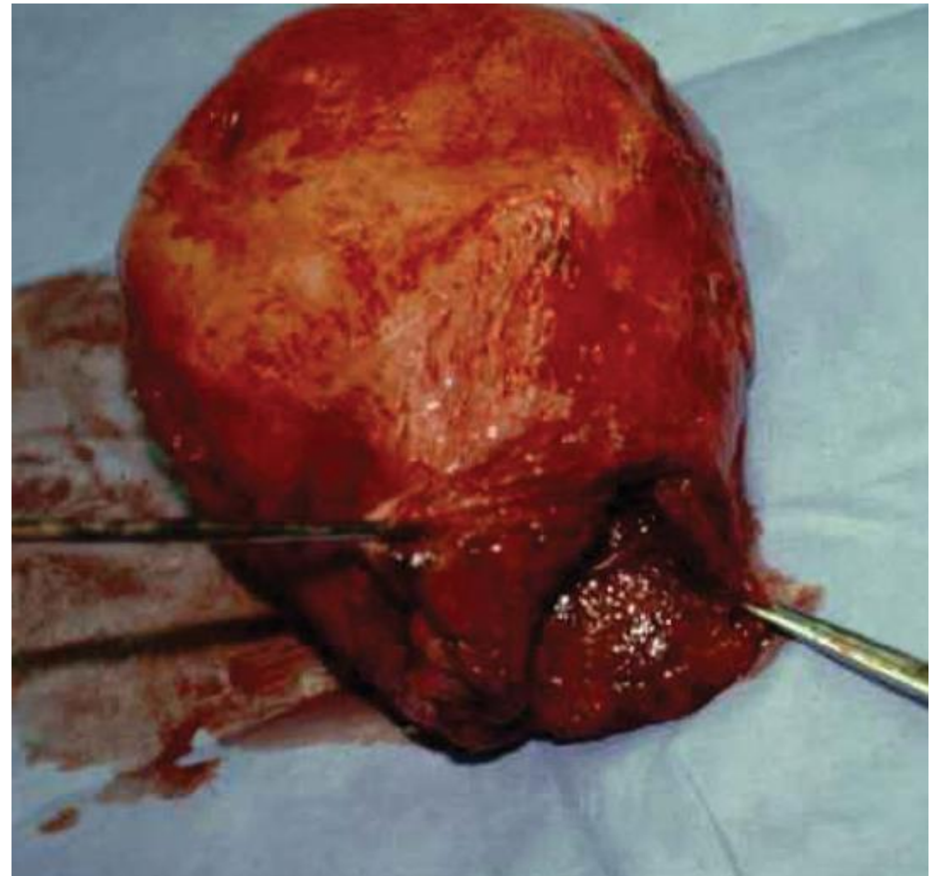


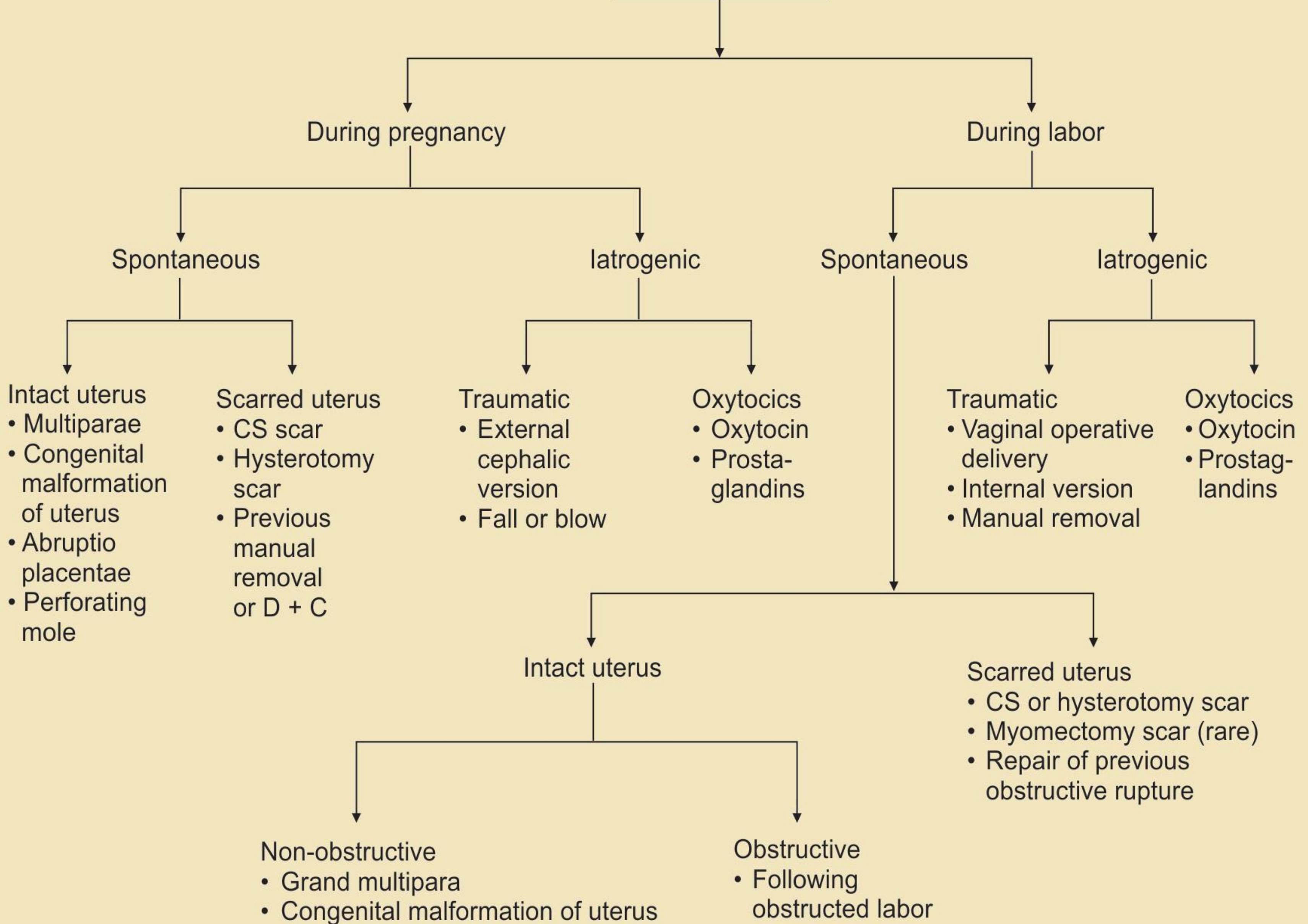
Rupture of the uterus

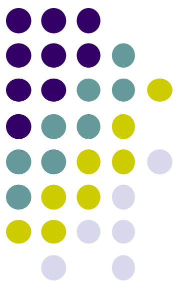
Rupture of the uterus is violation of the integrity of its walls

Frequency is 0,015% - 0,1

- Mortality is 3-4%
- Fetal death is up to 100%

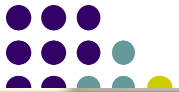



SCHEME SHOWING ETIOLOGY OF RUPTURE UTERUS
Rupture uterus
During pregnancy
During labor
Spontaneous
Iatrogenic
Spontaneous
Iatrogenic
Intact uterus
• Multiparae
• Congenital malformation of uterus
• Abruptio placentae
• Perforating mole
Scarred uterus
• CS scar
• Hysterotomy scar
• Previous manual removal or D + C
Traumatic
• External cephalic version
• Fall or blow
Oxytocics
• Oxytocin
• Prosta-glandins
Traumatic
• Vaginal operative delivery
• Internal version
• Manual removal
Oxytocics
• Oxytocin
• Prostag-landins
Intact uterus
Scarred uterus
• CS or hysterotomy scar
• Myomectomy scar (rare)
• Repair of previous obstructive rupture
Non-obstructive
• Grand multipara
• Congenital malformation of uterus
Obstructive
• Following obstructed labor

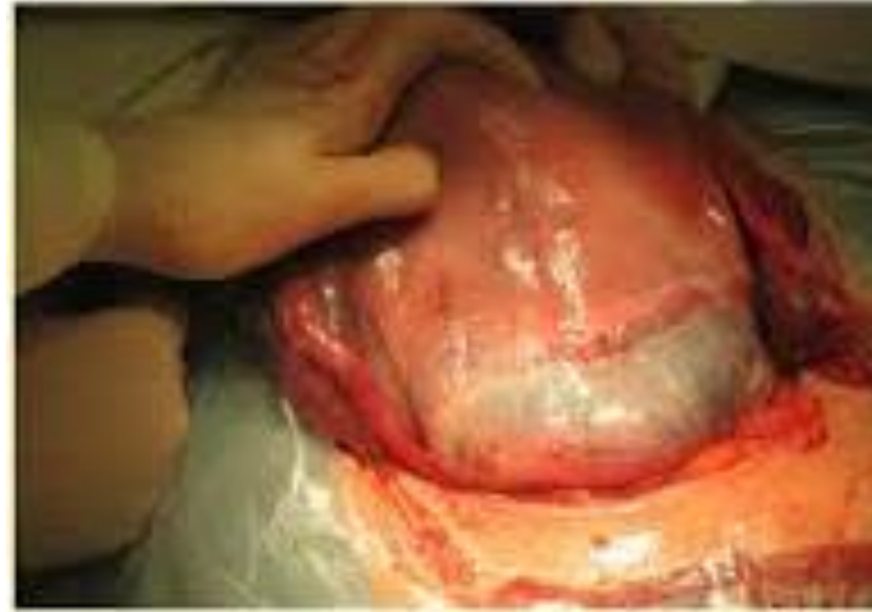


Group of high risk of uterine rupture

- uterine scar after prior cesarean delivery, conservative myomectomy, uterine perforation during the abortion;
- complicated obstetric history (multipara, who had several abortions, complicated course of post-abortion period);
- cephalopelvic disproportion (big fetus, contracted pelvis, abnormal fetal presentation or position, fetal hydrocephalus);
- abnormal labor with oxytocics



During pregnancy

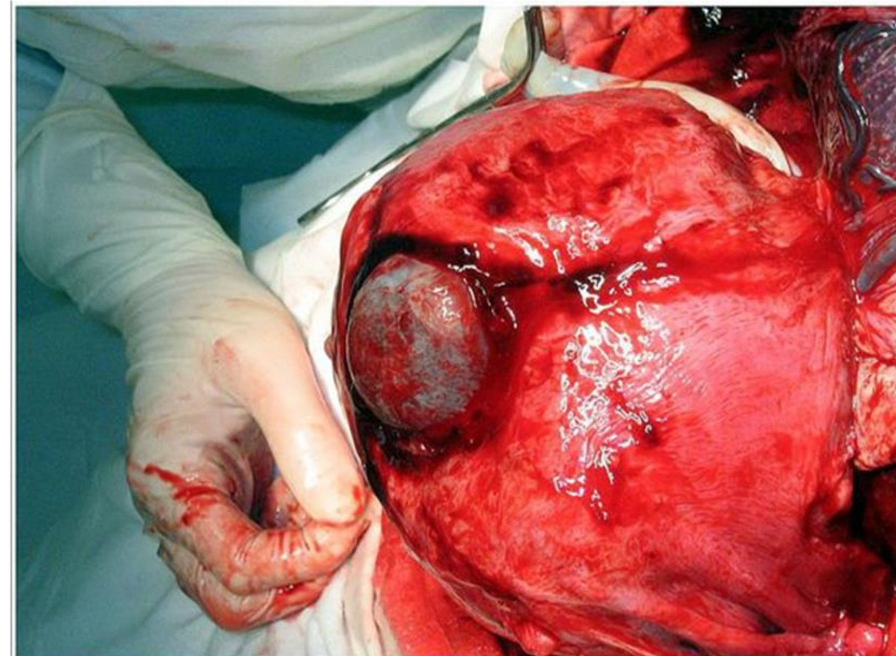


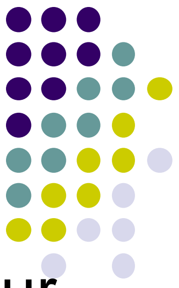
***Scar rupture*:**

- dull abdominal pain over the scar area
- slight vaginal bleeding
- tenderness of uterus during palpation
- FHS may be irregular or absent

***Spontaneous rupture in uninjured uterus*:**

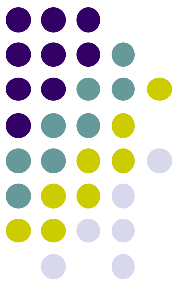
- acute pain in abdomen
- collapse, features of shock
- acute tenderness on abdominal examination
- palpation of superficial fetal parts, if the rupture is complete
- absence of fetal heart rate





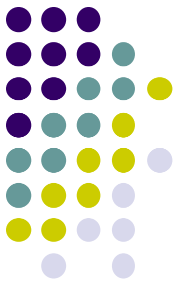
During labor

- ***Scar rupture*: The features are the same as those occur during pregnancy**
- ***Spontaneous obstructive rupture*:**
  - **Premonitory phase:**
- See symptoms of cephalopelvic disproportion
  - **Phase of rupture:**
- acute pain in abdomen
- collapse, features of shock
- acute tenderness on abdominal examination
- palpation of superficial fetal parts, if the rupture is complete
- absence of fetal heart rate



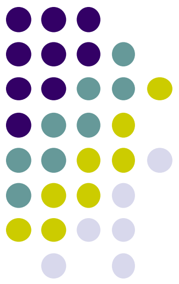
In *premonitory phase* - prevent the rupture

- immediate reduction of uterine activity (general anesthesia)
- emergency cesarean section



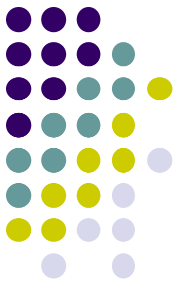
Treatment of uterine rupture:

- Lower midline laparotomy,adequate analgesia,infusion and transfusion (correction of blood coagulation, anemia)
- Revision of pelvic and abdominal organs
- Plan of operation is strictly individual and solved during the operation
- Suturing the rupture on the uterus (in the absence of infection, shock and DIC, normal contraction activity of the uterus)
- Hysterectomy with tubes (for big lesions of the lower segment, rupture of the cervix, rupture of the uterus from the vaginal part, peritonitis, DIC).
- Abdominal drainage



Lacerations of the birth canal

- Ruptures of the uterus, cervix, vagina, external genital organs, perineum
- Hematomas of vagina and external genital organs
- Inversion of the uterus
- Ruptures of pelvic junctions
- Fistulas



Thank you for your attention!