FIRST STAGE OF LABOR
Early signs of delivery and clinical symptomatology

Małgorzata Głogiewicz
INTRODUCTION
LABOR

Normal process of **COORDINATED**, **EFFECTIVE** involuntary uterine contractions that lead to progressive **CERVICAL EFFACEMENT** and **DILATATION** and descent and delivery the newborn and placenta.
Fetus
In order to pass into the vagina, the fetus must bend its head forward and turn its back towards its mother’s stomach.

Cervix

Vagina
At the moment of expulsion, the vagina and the cervix form a single pathway.

Placenta
The expulsion of the placenta generally occurs in the half-hour following the birth and may be accompanied by temporary bleeding. There must be no placental residue in the uterus in order to avoid an infection or hemorrhage.

Expulsion
The baby is expelled when labor has sufficiently dilated the cervix in order to allow it to pass. The expulsion, facilitated by the uterine contractions and the voluntary abdominal contractions of the mother, lasts one half hour on average.
FALSE LABOR

- **IRREGULAR** (in interval and duration), brief contractions **without fundal dominance**, **cervical change**, or a lower station of the fetal vertex or breech.
FALSE LABOR

**KEEP CALM**

it's only

**BRAXTON HICKS**

"I hope that if something is ever named after me, it's not a syndrome, cancer, illness or crime... or false labor. False labor would be the worst."

- Dr. John Braxton Hicks
True Labor

- Regular contractions
- Interval shortens
- Increasing intensity
- Back to abdomen
- Walking increases pain
- No effect from mild sed.
- Bloody show
- Dilatation of the cervix

False Labor

- Irregular contractions
- Interval same
- Intensity same or less
- Felt in abdomen
- Walking decreases pain
- Sedation relieves pain
- No show
- 0-ff dilatation
COMPONENTS OF NORMAL LABOR

4 Ps

Passenger (the fetal size, presentation, position)

Pelvis (size and shape)

Powers (uterine contractions)

Placenta
STAGES OF LABOUR
**Stage 1:**
The cervix relaxes, causing it to dilate and thin out.

**Stage 2:**
Uterine contractions increase in strength and the infant is delivered.

**Stage 3:**
The placenta is expelled.
THE FIRST STAGE OF LABOR

STAGE 1

Initial Phase
- Fetus
- Uterus
- Cervix
- Vagina

Active Phase
- Fetus
- Uterus
- Vagina
- Effaced Cervix
FIRST STAGE OF LABOUR

It starts from the onset of true labor pain, and ends with the full dilatation of the cervix. Its average duration is 12 hrs. in primigravidae and 6 hrs in multiparae.

**FIRST STAGE comprises of 3 phases**

- Latent phase
- Active phase
- Transitional phase
FIRST STAGE OF LABOUR

- **LATENT PHASE**: is prior to active first stage of labor and may last 6-8hrs in first time mothers. The cervix dilates from 0 cm to 3-4 dilated and the cervical canal shortens from 3 cm to less than 0.5 cm long.

- **ACTIVE PHASE**: is the time when the cervix undergoes more rapid dilatation. This begins when the cervix is 3-4 cm dilated.

- **TRANSITIONAL PHASE**: is the stage of labor when the cervix is around 8 cm dilated until it is fully dilated – 10 cm.
Early labour

0 cm  2 cm  4 cm

25-45 Seconds duration

Ruler reflects actual centimetre size; dilation illustrations do not.

5-30 Minutes apart
Active labour

4 cm

6 cm

8 cm

Ruler reflects actual centimetre size; dilation illustrations do not.

40-60 Seconds duration

2-5 Minutes apart
Transition

8 cm

10 cm

50-90 Seconds duration

Ruler reflects actual centimetre size; dilation illustrations do not.

1-3 Minutes apart

![Diagram of labor transition with fetal illustration and percentile calculations for cervical dilation.](image-url)
FIRST STAGE OF LABOUR

[Diagram showing the stages of labor: Latent phase, Acceleration phase, Deceleration phase, and Second stage. The graph plots Cervical dilatation in cm against Time in hours.]
SIGNS OF DELIVERY
SIGNS OF TRUE LABOR:

- cervical dilation
- cervical effacement
- change in cervical mucus
- rhythmic and time-able contractions
- doesn't go away
CERVICAL EXAMINATION

- The cervical examination allows to determine whether a patient is in labor, the phase of labor, and how labor is progressing.

- **5 COMPONENTS** = Bishop score
  - dilation
  - effacement
  - station
  - cervical position
  - consistency of the cervix
**BISHOP SCORE**

**BISHOP SCORE**

to assess cervical favorability

<table>
<thead>
<tr>
<th>CERVIX</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>POSITION</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Posterior</td>
<td>Mid-position</td>
<td>Anterior</td>
<td></td>
</tr>
<tr>
<td>CONSISTENCY</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Firm</td>
<td>Medium</td>
<td>Soft</td>
<td></td>
</tr>
<tr>
<td>EFFACEMENT</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>0 - 30%</td>
<td>30 - 50%</td>
<td>60 - 70%</td>
<td>&gt;80%</td>
</tr>
<tr>
<td>DILATION</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Closed</td>
<td>1 - 2 cm</td>
<td>3 - 4 cm</td>
<td>&gt;5 cm</td>
</tr>
<tr>
<td>STATION</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1, +2</td>
</tr>
</tbody>
</table>

**BISHOP SCORE MODIFIERS**

- **Add 1 point for:**
  - Pre-eclampsia
  - Each previous vaginal delivery
- **Subtract 1 point for:**
  - Postdate pregnancy
  - Nulliparity (no previous vaginal deliveries)
  - PPROM (premature preterm rupture of membranes)

Created by Andrea Crossman, RN, www.holisticdoulanyc.com

A BISHOP SCORE GREATER THAN 8 IS CONSISTENT WITH A CERVIX FAVORABLE FOR LABOR
EFFACÉMENT
(taking up the cervix)
EFFACEMENT

- Determines how much length of the cervix is left

Effacement is the gradual thinning, shortening, and drawing up of the cervix. This is measured in percentages from 0 to 100 percent.

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>EFFACEMENT OF CERVIX</th>
</tr>
</thead>
<tbody>
<tr>
<td>No changes to cervix</td>
<td>0% Effaced</td>
</tr>
<tr>
<td>Cervix is half of the normal thickness</td>
<td>50% Effaced</td>
</tr>
<tr>
<td>Cervix is completely thinned out</td>
<td>100% Effaced</td>
</tr>
</tbody>
</table>
EFFACEMENT

Before labor
0% effacement

Early effacement
30%

Complete effacement
100%

Complete dilation
Cervical Dilation
A Visual Aid

2cm = penny
4cm = oreo
6cm = soda can
8cm = donut
10cm = roll of cheap TP
   (the good stuff is bigger)
DILATATION OF THE CERVIX

- Is the diameter of the crevical os expressed in centimeters (0-10).
DILATATION AND EFFACEMENT

- Effacement and dilatation are caused by retraction (take up) of the cervix toward the uterine corpus, not by pressure of the presenting part.
Cervical Effacement & Dilation

**Effacement** - the gradual thinning, shortening and drawing up of the cervix measured in percentages from 0 to 100%.

**Dilation** - the gradual opening of the cervix measured in centimeters from 0 to 10 cm.
**Dilation** is the opening of your cervix. Your cervix will open from 0 cm (closed) to 10 cm (fully dilated).

**Effacement** is the thinning and shortening of your cervix. It usually happens before you start to dilate.

**Station** is the position of your baby’s presenting part (lowest part) in relation to your pelvis.
THE INITIATION OF LABOR

- Is poorly understood
- Can be triggered by one or more significant endocrine or physical changes.
- The onset of labor can occur at any time after well-established pregnancy, but the likelihood increases as a term is approached.
- Labor can be induced or stimulated (augmented) by oxytocic agents (e.g., Oxytocin or prostaglandin E2).
Signs of Labor

- The baby drops (lightning)
- The mucus plug dislodges (the bloody show)
- Contractions begin
- The membranes rupture (water breaks)

Possible other signs:
- Frequent painless Braxton-Hicks contractions
- Sore abdominal area
- Dull low backache
- Sharp pains or soreness along their upper thighs
CLINICAL

Backache or pelvic pressure
Oedema swelling of hands or face
Regular contractions
Nausea, vomiting, diarrhoea and other flu-like symptoms

Mom's Bladder: Baby's First Squeeze Toy

The Laughing Stork
MUCOUS PLUG

- Immediately before or early in labor, a small amount of red-tinged mucus may be passed (bloody show or mucous plug). This is a collection of thick crevical mucus often mixed with blood and is evidence of cervical dilatation and effacement and, frequently, descent of the presenting part.
MUCOUS PLUG

THE MUCUS PLUG ANALOGY

The mucus plug is kind of like a cork...

Keeps bubbly baby goodness in, harmful bacteria out!
THE BEGINNING OF TRUE LABOR

- Is marked by increasingly frequent, forceful, prolonged, and finally, regular uterine contractions.
- Low backache may precede or accompany the uterine contractions.
Each uterine contraction starts in the fundus near one of the cornua and spreads across and downwards. Contraction lasts longest in the fundus where it is also more intense.
CONTRACTION

- Contraction is the temporary reduction in the length of the fibers.
CONTRACTION

- Starts with a gradual buildup of intensity, and a similar dissipation follows the peak.
- Normally, the contraction will be at its height before discomfort is felt.
CONTRACTION

**INTENSITY**: gradually increases with advancement of labor until it become maximum in the second stage during delivery of the baby.

**DURATION**: in the first stage the contraction last for about 30 sec., but gradually increase in duration with the progress of labor.

**FREQUENCY**: in early stage, the contraction come at intervals of 10-15 min. By the end of the second stage they occur at 2-3 min. Intervals last for 50-60 seconds and are very powerful.
CONTRACTION

Contractions: External Toco

Contractions can be measured from peak-to-peak. Here, contractions are every 2-3 mins.

One Minute
Labor pains are caused by contractions or tightening of the womb. Between contractions the womb is relaxed like this:

During contractions, the womb tightens and lifts up like this:

The contractions push the baby down farther. This causes the cervix or ‘door of the womb’ to open—a little more each time.
CONTRACTIONS

- **OXYTOCIN** (released from the hypothalamus), regulates contractions
- The uterus has oxytocin receptors which respond to oxytocin by initiating a contraction.
- Contractions start in the top of the uterus and 'wave' downwards. The cervix must be ready, before it will respond to contractions b opening.
CONTRACTIONS

Oxytocin is released in waves from the hypothalamus

Pressure on the cervix = activation of sensory nerves

Receptors in the uterus respond and the uterus contracts
When the uterus contracts the placental circulation is reduced (more so if the waters have broken), slightly decreasing the oxygen supply to the baby.
RETRACTION

- Is the phenomenon of the uterus in labor in which the muscle fibers are permanently shortened.

- **EFFECTS OF RETRACTION**
  - help in formation of lower segment
  - maintains advancement of presenting part
  - favouring separation of placenta
  - haemostasis
MECHANICAL FACTORS
Formation of Forewaters

- The sac of amniotic fluid is described as having two sections - the forewaters (in front of baby’s head) and the hind waters (behind baby’s head).  

- During labor forewaters are formed as the lower segment of the uterus stretches and the chorion (the external membrane) detaches from it.  

- The well flexed baby’s head fits into the cervix and cuts off the fluid in front of the head (forewaters) from the fluid behind (hind waters).
Formation of the fore waters

Partial Effacement

Cervix effaced and dilating

Cervix prior to effacement

Cervix nearly fully diatated (forewaters formed)
During a contraction the pressure is equalised throughout the fluid rather than directly squeezing the baby, placenta and umbilical cord. This protects the baby and his/her oxygen supply from the effects of the powerful uterine contractions.
THE FETAL MEMBRANES RUPTURE

• In 10% of gravidas, the FMR before the onset of labor. This reduces the capacity of the uterus, thickens the uterine wall, and increases uterine irritability.

• Labor usually follows.

• At term, 90% will be in labor within 24h after membrane rupture.
THE FETAL MEMBRANES RUPTURE

A gush or a leaking of fluid from the vagina
THE MECHANISM OF NORMAL LABOR
LANDMARKS OF PELVIS
DIAMETER OF PELVIS

TRANVERSE OF INLET = 13.5 cm

INTERSPINOUS = 10 cm

OBSTETRICAL COXUI = 10.5 cm
FETAL SKULL

- Sinciput
- Frontal
- Occipitofrontal (12 cm)
- Temporal
- Occipitomental (9.5 cm)
- Occipital
- Occiput
- Vertex
- Suboccipitobregmatic (9.5 cm)
LIE

- It refers to the relationship of the long axis of the fetus to the long axis of the centralized uterus or maternal spine.
<table>
<thead>
<tr>
<th>HEAD PRESENTATION</th>
<th>BREECH PRESENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(97 %)</td>
<td>(3-4 %)</td>
</tr>
<tr>
<td>CEPHALIC presentation</td>
<td>FRANK breech</td>
</tr>
<tr>
<td>FACE presentation</td>
<td>COMPLETE breech</td>
</tr>
<tr>
<td>VERTEX presentation</td>
<td>FOOTLING breech</td>
</tr>
<tr>
<td>BROW presentation</td>
<td></td>
</tr>
</tbody>
</table>
ATTITUDE

- The relation of the different parts of the fetus to one another is called attitude of the fetus.
- The universal attitude is that of flexion.
POSITION

Lie: Longitudinal or vertical
Presentation: Vertex
Reference point: Occiput
Attitude: Complete flexion
MECHANISM OF LABOR

- As the fetus descends, soft tissue and bony structures exert pressures which lead to descent through the birth canal by a series of movement.
- Collectively, this movements are called the mechanism of labor.
Principles common to all mechanism

- Descent takes place
- Whichever part leads and first meets the resistance of the pelvic floor will rotate forwards until it comes under the symphysis pubis.
- Whatever emerges from the pelvis will pivot around the pubic bone.
During the mechanism of normal labor the fetus turns slightly to take advantage of the widest available space in each plane of the pelvis.
Six considerations for normal labour

- The lie is longitudinal
- The presentation is cephalic
- The position is right or left occipitooantarior
- The attitude is one of the good flexion
- The denominator is the occiput
- The presenting part is the posterior part of the anterior parietal bone.
CARDINAL MOVEMENTS OF LABOR

1. Engagement
2. Flexion
   - Internal rotation
3. Crowning
4. Extension
   - External rotation
5. Expulsion

Descent
CARDINAL MOVEMENTS OF LABOR

1. Head floating, before engagement
2. Engagement; flexion, descent.
3. Further descent, internal rotation
4. Complete rotation, beginning extension
5. Complete extension.
7. Del. of ant. shoulder.
8. Delivery of posterior shoulder.
Descent refers to the progress of the presenting part through the pelvis. Descent depends on at least four forces:

i. Pressure exerted by the amniotic fluid.

ii. Direct pressure exerted by the contracting fundus on the fetus.

iii. Force of the contraction of the maternal diaphragm and abdominal muscles in the second stage of labor.

iv. Extension and straightening of the fetal body.

v. The effects of these forces are modified by the size and shape of the maternal pelvic planes and the size of the fetal head and its capacity to mold.
STATION OF HEAD

FETAL DESCENT (PELVIC) STATIONS

-3
-2
-1
0
+1
+2
+3

Umbilical cord
Placenta

Fetus at 0 station

0 station midway between ischial spines

+3 +2 +1 0 -1 -2 -3

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FETAL STATION
(Relationship of Fetal Head to Mother’s Pelvis)

I’m At Zero... From Here It’s All Positive... I’m On My Way Out!!!
MANAGEMENT OF NORMAL LABOR

- Aims at maximal observation with minimal intervention

- **EMOTIONAL SUPPORT**: consist of helping the mother to feel in control of herself to feel accepted whatever her reactions and behaviour may be and to complete her labor feeling that she is success, even if the outcome was not what she hoped for.

- Patient should be kept fully informed
POSITION OF THE MOTHER

- Remaining upright and leaning forward reduces this pressure while allowing your baby's head to constantly bear down your cervix.
- The result? - dilatation tends to occur more quickly.
# Position of the Mother

## Positions for Laboring Out of Bed

**Walking, Standing, and Leaning**
- All may help stimulate effective contractions
- All use gravity to help baby’s descent

**Kneeling**
- May relieve back pain
- Helps baby rotate to most favorable position: occiput anterior (OA)
- Relieves hemorrhoids

**Sitting**
- Uses gravity to help baby’s descent
- Allows rest between contractions

**Squatting**
- Uses gravity to help baby’s descent
- Operates pelvis to provide more room

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THANK YOU FOR YOUR ATTENTION