

## CHAPTER 4

# MANAGEMENT OF LABOUR AND OBSTRUCTED LABOUR

### MANAGEMENT OF LABOUR

#### Learning Objectives

By the end of this section, the participant will:

1. Describe and distinguish the management of normal and abnormal progress of labour.
2. Describe appropriate management of normal and abnormal labour patterns.
3. Describe proper use of a partograph including monitoring maternal and fetal signs.

#### Introduction

Even though postpartum hemorrhage and sepsis are the main causes of death, dystocia is a contributing factor in more than 70% of maternal deaths. Labour dystocia or obstructed labour is associated with significant maternal morbidity (dehydration, uterine rupture, sepsis, vesicovaginal fistulae, and postpartum hemorrhage) and neonatal morbidity (asphyxia and sepsis). In low-resource countries, the abnormal progress of labour may be due to mechanical dystocia or cephalopelvic disproportion, and abnormal presentation, primarily with primigravida. These causes are further exacerbated by endemic malnutrition (rickets or rachitis) and pregnancy before physical maturity.

Over the past few decades, there has been a dramatic increase in the number of cesarean sections being performed. Cesarean section is associated with increased maternal morbidity and mortality, increased neonatal morbidity, and increased health care costs. Dystocia and elective repeat cesarean sections account for the majority of cesarean sections. Clearly, the optimal progress of labour and appropriate management of dystocia, if it occurs, could potentially lead to a significant reduction in the cesarean section rate.

Dystocia cannot be diagnosed prior to the onset of active labour (greater than 4 cm of cervical dilation) during the latent phase of labour. Cesarean sections done for dystocia in the latent phase of labour are inappropriate.

Induction of labour is associated with an increase in the incidence of dystocia being diagnosed in latent phase. This leads to an increase in obstetrical interventions, especially in the nulliparous woman with an unfavourable cervix. See Chapter 20, Induction of Labour, for information on ripening the cervix.

#### Definitions

**Labour is**  
**regular, frequent uterine contractions**  
+  
**cervical change**  
**(dilatation and effacement)**

#### First stage of labor

- **Latent phase:** Presence of uterine activity resulting in progressive effacement and dilation of the cervix proceeding the active phase. It is complete when a nulliparous woman reaches 3–4 cm dilation and a parous woman reaches 4–5 cm. Cervical length should usually be <1 cm. The onset of the latent phase is often difficult to define.
- **Active phase:** Presence of regular, painful contractions leading to cervical dilation after 3–4 cm dilation in a nulliparous woman or 4–5 cm dilation in a parous woman until full dilatation. Fetal descent begins.

#### Second stage of labor

- **Passive:** Cervix fully dilated, fetal descent continues during the time from full dilatation until an urge to push is felt at about +2 station
- **Active:** Time from the onset of the urge to push until delivery. Presenting part of fetus reaches pelvic floor.

## **Use of the Partograph in Labour**

### **Why the partograph?**

The delivery of a healthy baby and maintenance of a safe delivery for the mother are two goals of all maternity health care providers. A simple tool called a partograph has been shown to reduce prolonged labour, the need for augmentation, emergency cesarean section, and intrapartum stillbirth rates. The partograph should be used in all labour wards and centers for maternity care. The following recommendations are adapted from the World Health Organization (WHO) recommendations on the use of the partograph. See Appendix 1A, The Modified WHO Partograph; Appendix 1B, Using the Partograph; and Appendix 1C, Sample Partograph for Normal Labour.

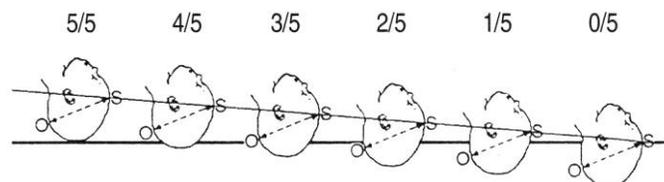
### **When should one use the partograph?**

A partograph should be started on women in active labour, who have NO complications that require immediate action, to clearly assess the progress of labour by cervical dilatation. The pattern of cervical dilatation can be helpful in determining abnormal labour patterns. A partograph is only started in the active phase when the cervix is at least 4 cm dilated. The dilation is marked with an X on the alert line and the corresponding time in the appropriate case or box.

### **What does the partograph involve?**

The partograph requires the assessment of several observations. The first set of observations relate to progress of labour: cervical dilatation, descent of the fetal head, and uterine contractions. The second set of observations focuses on the fetus: fetal heart rate, membranes and liquor, and moulding of the fetal head.

Descent may be assessed abdominally in fifths above the pelvic brim. An abdominal examination should be done before the pelvic assessment. Contractions are observed for frequency and duration. The number of contractions in 10 minutes is recorded with three ways of shading on the partograph: (a) <20 seconds, (b) 20–40 seconds, and (c) >40 seconds.



### **Actions Taken Based on the Partograph**

#### **The alert line**

A labouring mother should be referred from a health center to a hospital when the cervical dilatation moves to the RIGHT of the ALERT line. Amniotomy may be performed if the membranes are still intact, and she may be observed for a short time prior to considering transfer. In hospital, movement to the RIGHT of the ALERT line should signal the need for an amniotomy and close observation.

#### **The action line**

If the woman's partograph crosses the ACTION line in a central hospital, active intervention is required. Initially this would include rehydration, possibly including oral rehydration, the start of an intravenous line, encouraging the mother to empty her bladder or bladder catheterization, providing analgesia and augmentation of contractions using oxytocin. These measures would be carried out as long as there was no evidence of fetal distress or obstructed labour.

A vaginal examination should be carried out in 3 hours, then in 2 more hours (and every 2 hours thereafter). The dilatation rate should be 1cm/hour minimum. CHECK the FETAL HEART rate every half-hour at minimum when oxytocin is being infused. If these measures are not successful, a cesarean section would be carried out.

Fetal distress should be managed aggressively. If the woman is in a health centre without capability for operative delivery, transfer to hospital immediately. If the woman is in hospital, stop oxytocin, turn her on her left side, perform a vaginal examination to check for cord prolapse, and hydrate with IV fluids. If the fetal distress does not resolve, an immediate cesarean section is needed.

### Labour Time Frames

The mean and least normal rates of progress were historically established by Friedman in the early 1950s based on a mixed population of women, including women in spontaneous labour, women induced with oxytocin, and women with babies presenting in the breech position.

		Nulliparous	Parous
Latent Phase	Mean (time)	6.4h	4.8h
	Longest normal*	20.1h	13.6h
Active Phase	Mean (rate)	3.0cm/h	5.7cm/h
	Slowest normal* (rate)	1.2cm/h	1.5cm/h
Second Stage	Mean (time)	1.1h	0.4h
	Longest normal*	2.9h	1.1h

\* Fifth percentile

Friedman's second-stage time limits were established before the introduction of epidural analgesia. Developments since this time have led to the modification of time limits and management of second stage.

Zhang et al studied 1,329 nulliparous women with a single term vertex presentation in spontaneous labour and demonstrated a markedly different curve than Friedman (i.e. from 4 to 10 cm took 5.5 hours).<sup>6</sup> Those in the fifth percentile rate of cervical dilation were all below 1 cm per hour. Based on 2,511 women who did not receive oxytocin or epidurals, Albers determined the mean length of the active first stage was 7.7 hours for nulliparous and 5.6 hours for multiparous women.<sup>7</sup>

Peisner and Rosen found that 90% of women who had a successful vaginal birth progressed at  $\geq 1$  cm per hour after 5 cm dilatation.<sup>8</sup> They concluded that when a woman's cervix is not rapidly dilating after reaching 5 cm, her labour is probably abnormal and should be evaluated. Descent of  $< 1$ cm/hr descent in second stage is well below the fifth percentile for a population in the active phase of labour, and is associated with an increased cesarean section rate.

### Monitoring the Progress of Labour with the Partograph

#### Latent and active phases of labour

The first stage of labour is divided into the **latent** and **active** phases.

#### Starting the partograph

A partograph chart must only be started in the active phase, when the cervix is 4 cm or more dilated.

#### In the latent phase

- Contractions must be 1 or more in 10 minutes, each lasting 20 seconds or more.

#### In the active phase

- Contractions must be 2 or more in 10 minutes, each lasting 20 seconds or more.

### **Cervical dilatation**

The rate of cervical dilatation changes from the latent to the active phase of labour.

- The **latent phase** (slow period of cervical dilatation) is from 0–2 cm, with a gradual shortening of the cervix.
- The **active phase** (faster period of cervical dilatation) is from 3–4cm to 10 cm or full cervical dilatation.

In the centre of the partograph is a graph. Along the left side are the numbers 0–10 beside squares; each square represents 1 cm dilatation. Along the bottom of the graph are numbers 0–12; each square represents 1 hour.

Dilatation of the cervix is measured in centimetres (cm)

The dilatation of the cervix is plotted (recorded) with an “X”. The first vaginal examination, on admission, includes a pelvic assessment and the findings are recorded. Thereafter, vaginal examinations are made every 4 hours, unless contraindicated. However, in advanced labour, women may be assessed more frequently, particularly multiparous women who may progress more rapidly in labour.

### **Abnormal progress of labour**

#### **Prolonged latent phase**

Women should NOT be admitted to a maternity unit in the latent phase of labour unless there is a medical indication. If admission is required for a medical indication, the woman should be cared for in a non-labouring area of the health care facility.

Assessment of women in early labour should take place in a triage area or another area away from the main maternity or delivery unit. Observation, rest, and therapeutic analgesia are preferable compared to a more active approach of amniotomy and oxytocin induction. A plan must be established to meet the woman’s needs either at home or in a non-labouring area of the health care facility. The plan should include information about coping strategies, and how and when to access support from care providers. The plan should also include a specific time when the woman should return for reassessment. In settings where transportation to a higher-level health care facility is lengthy, this information needs to be considered when planning care.

The inappropriate use of active management of labour in the latent phase leads to an increase in cesarean sections performed for dystocia, especially in the nulliparous woman. Appropriate management of early labour could result in a decrease in the cesarean section rate. A Dublin study demonstrated a decrease in dystocia when active management of labour principles were followed, including the use of specific criteria to diagnose labour to avoid inappropriate intervention in the prelabour period (Driscoll, 1984).

#### **Prolonged active phase**

##### ***Moving to the right of the alert line***

In the active phase of labour, plotting of cervical dilatation will normally remain on, or to the left of, the alert line. But some will move to the right of the alert line, warning that labour may be prolonged.

When the dilatation moves to the right of the alert line and if adequate facilities are not available to deal with obstetrical emergencies, the woman must be transferred to a hospital unless she is near delivery. By transferring her at this time, it allows time for the woman to be adequately assessed for appropriate intervention if she reaches the action line.

##### ***At the action line***

The action line is 4 hours to the right of the alert line. If a woman’s labour reaches this line, a decision must be made about the cause of the slow progress, and appropriate action taken. This decision and action must be taken in a hospital with facilities to deal with obstetric emergencies.

- At the action line the woman must be carefully reassessed to determine the possible reason for lack of progress and a decision made on further management.

- All women whose cervicograph moves to the right of the alert line must be transferred and managed in an institution with adequate facilities for obstetric interventions, unless delivery is near.

### **Management of Labour: Suggested Protocol**

This protocol was used in a large multicentre trial of the WHO partograph. This protocol achieved excellent results; its use in conjunction with the partograph is recommended, although local adaptations may be made.

#### **Normal latent and active phases**

##### ***Progress in active phase remains on, or left of, the alert line***

- Do not augment with oxytocin or intervene unless complications develop.
- Artificial rupture of membranes (ARM):
  - **No ARM** in the latent phase
  - ARM at any time in the active phase

##### ***Between alert and action lines***

- *In a health centre:* The woman must be transferred to hospital with facilities for cesarean section, unless the cervix is almost fully dilated.

ARM may be performed if the membranes are still intact, and observe labour progress for a short period of time before transfer.

- *In hospital:* Perform ARM if membranes intact, and continue routine observations.

##### ***At or beyond active phase action line***

- Full assessment of maternal and fetal well-being
- Consider IV infusion, bladder catheterization, analgesia
- Options:
  - Oxytocin augmentation by intravenous infusion, if no contraindications
  - Supportive therapy, if satisfactory progress is established and dilatation is anticipated at 1cm/hour or greater
  - Delivery, normally by cesarean section, if fetal distress or obstructed labour
- Further assessment in labour:
  - Vaginal examination after 3 hours, then in 2 more hours, and then in 2 more hours
  - Monitor fetal heart at least every half-hour during oxytocin augmentation
  - Failure to make satisfactory progress, measured as a cervical dilatation rate of <1cm/hour between any of these examinations, means delivery is indicated.

#### **Prolonged latent phase (>8 hours)**

- Full assessment of maternal and fetal well-being
- Options:
  - No action. If the cervix is not 4 cm or more dilated, the woman is NOT in labour. Abandon partograph.
  - Observation, rest and therapeutic analgesia, as required
  - Establish a care plan to meet the woman's needs either at home or in a non-labouring area of the health care facility. The plan should include information about coping strategies, and how and when to access support from care providers, when to return for reassessment, and take into consideration the time required to transfer the woman to a higher-level health care facility should this become necessary.
  - Consider ARM with oxytocin if medical indications are present.
  - Deliver by cesarean section only if fetal distress or other factors are likely to lead to obstruction or the presence of other medical complications necessitating termination of labour.

- Further assessment in labour:
  - Continue vaginal examinations once every 4 hours, up to 12 hours.
  - If not in active phase after 8 hours of oxytocin, reassess and consider delivery by cesarean section.
  - If active phase is reached within or by 8 hours but progress in active phase is < 1cm/hour, consider delivery by cesarean section.
  - Monitor fetal heart at least every half-hour during oxytocin augmentation.

## **DYSTOCIA**

### **Etiology of Dystocia**

In evaluating the cause of dystocia, we can refer to the 4 Ps: Powers, Passenger, Passage, and Psychology.

#### **POWERS**

- Hypotonic or uncoordinated contractions
- Maternal expulsive efforts

#### **PASSENGER**

- Fetal
  - Position
  - Attitude
  - Size
  - Abnormalities (hydrocephalus)

#### **PASSAGE**

- Pelvic structure
- Soft tissue factors (tumours, full bladder and full rectum, vaginal septum)

#### **PSYCHOLOGY**

- Fear
- Stress and anxiety
- Lack of companion support
- Unsupportive environment

The “powers” factor, a leading cause of dystocia may be evaluated and treated. Hypotonic contractions, usually occurring in early labour, are responsible for approximately 2/3 of the dystocia in nulliparous women. The diagnosis of true or absolute cephalopelvic disproportion should be limited to the uncommon instances of real disproportion, that is, inability of the well-flexed head (suboccipital bregmatic presentation) to pass through the bony pelvis. Other presentations may lead to relative disproportion.

If inadequate labour progress is being made, attention should be directed to an assessment of the following:

1. **Adequate Powers:** In the normal progress of labour, palpation is recommended to assess uterine activity. Adequate contractions are:
  - Regular
  - Progressive, which leads to cervical dilatation
  - Frequent (2–3 minutes)
  - Lasting up to 60 seconds
2. **Passenger:** The fetus should be assessed for size and malposition. Inadequate powers in active labour may be responsible for malposition. A normal-sized infant may present an excessively large diameter to the pelvis because the head is not flexed or is acynclitic.

3. **Passage:** Clinical examination of the passage may reveal prominent spines or sacrum, a narrow pubic arch, or a space-occupying mass in the pelvis. Radiological pelvimetry has not been shown to be helpful. A trial of labour is the only real assessment of pelvic adequacy.
4. **Psychology:** “Hormones released in response to stress can also bring about dystocia. Sources of stress vary for each woman, but the pain and the absence of a support person are the two accepted factors. Confinement to bed and the restriction of maternal movement is also a source of psychological stress. Anxiety may inhibit normal cervical dilation, resulting in prolonged labour and increased pain perception. Anxiety also causes an increase in the levels of stress-related hormones ( $\beta$ -endorphin, ACTH, cortisol, and epinephrine). These hormones act on the smooth muscle of the uterus; increased levels can lead to dystocia by reducing uterine contractions.” (Piotrowski, 2001, 294) Psychological support in labour has been shown to reduce operative delivery in some populations.

## Preventing dystocia

### Accurate diagnosis of labour

Many cesarean sections performed for dystocia in nulliparous women are done in the latent phase of labour. Appropriate management of early labour could result in a decrease in the cesarean section rate. The Dublin study demonstrated a decrease in dystocia when active management of labour principles were followed, including the use of specific criteria to diagnose labour to avoid inappropriate intervention in the latent phase of labour (O’Driscoll, 1984).

### Management of prolonged latent phase

Management is controversial because of the limited number of published studies.

- Avoid admission to the labour and delivery area until active labour is established. A plan must be established to meet the woman’s needs either at home or in a non-labouring hospital unit.
- Observation, rest and therapeutic analgesia are favoured over a more active approach of amniotomy and oxytocin induction.
- Support and information from caregivers to provide coping strategies for what to do at home.

### Prepared childbirth

There is little high-quality data on the effect of prepared childbirth on the pain of labour. Advantages may include:

- Less apprehension
- Lower pain scores and less use of analgesia
- No adverse effects on labour
- Reduction in anesthetic required

For nulliparous women who have attended prenatal education, there may be more rapid progress in labour. Trials also show that prenatal education decreases the amount of analgesia used during labour. All studies show that women who were prepared for labour had a more positive experience.

### Creating a Mother-Friendly Birth Environment

In addition to allowing and encouraging women to have a supportive companion with them during labour, there are many other simple practices that humanize the birth experience for women. The negative perceptions of women and their families about the quality of care and the attitude of health care providers are barriers to seeking care in labour. The behaviour and attitude of health care providers is just as important as clinical care to the health and well-being of the mother and baby. Labour and birth is an intense and often very painful experience for women; they can be anxious, scared and overwhelmed by it. Women have a right to expect caring and helpful care providers during labour and birth. Some simple steps care providers and maternity units can take to ensure a mother-friendly environment includes:

- Provide a comfortable, clean birth environment.
- Provide seating for birth companions.
- Encourage birth companions to provide physical support, such as rubbing back, cool wash cloths, etc.



### **Analgesia**

The severity and tolerance of pain is unique to each labouring woman, and cannot be predicted reliably prior to its occurrence. Studies have suggested that labour pain is among the most severe forms of pain experienced.

Some women in labour reach the limit of their pain tolerance. Women experiencing excessive pain or anxiety have high endogenous catecholamines. This produces a direct inhibitory effect on uterine contractility and establishes a vicious circle of poor uterine progress; increased anxiety leads to increased catecholamines, which in turn leads to further impairment of progress. The relief of pain by effective analgesia may allow release of the uterus from the constraints of the endogenous catecholamines and allow progress in labour. High endogenous catecholamine levels may also adversely affect uterine blood flow and therefore fetal oxygenation. See Chapter 18 for more information about pain relief during labour.

### **Amniotomy**

Routine early use of amniotomy (i.e. ARM) after 3 cm dilation shortens the average length of labour, but does not in itself reduce the incidence of dystocia or cesarean section. Early amniotomy at <3 cm dilatation may increase the incidence of dystocia.

### **Management of the Prolonged Second Stage**

The setting of an arbitrary time limit for the second stage in the absence of suspected fetal compromise is not supported by research. Prolonged second stage of labour as defined by the American College of Obstetricians and Gynaecologists in the text that follows may be used as a guideline. These timelines are considered the maximum allowable time periods. Lack of descent in second stage with active pushing requires assessment.

Many women experience a latent period in second stage, a period of time during which they are fully dilated (10 cm) but have no urge to push. **Women should not be encouraged to push unless they feel the urge to do so.** If no urge to push occurs after 1 hour of second stage, reassess the contractions and consider the use of oxytocin augmentation, if contractions are inadequate. The routine use of oxytocin in the second stage is controversial and widely practiced. A single randomized study of routine oxytocin in second stage suggested that although the rate of spontaneous delivery was increased so was the rate of rotational forceps. The use of oxytocin in the second stage requires further study before evidence-based guidelines may be offered.

### **Prolonged second stage**

- Nulliparous women that experience lack of continuing progress for 3 hours with regional anaesthesia or 2 hours without regional anaesthesia.
- Parous women that experience lack of continuing progress for 2 hours with regional anaesthesia or 1 hour without regional anaesthesia.

### **Indication for oxytocin**

In the event of unsatisfactory progress (<0.5cm/hr for 4 hours or arrest of descent for over 1 hour) in the active phase of labour, oxytocin is indicated. Prior to the use of oxytocin, consideration should be given to the appropriate use of analgesia (if available), hydration, rest, and amniotomy. Women should be encouraged to keep their bladders empty; catheterization may be considered.

Oxytocin should be used to achieve adequate contractions before operative delivery is considered.

The principal complications that cause apprehension about the use of oxytocin are fetal compromise and uterine rupture. It must be remembered that it is not oxytocin that causes the problem, but rather excessive contractions. Correct use of oxytocin will minimize these risks.

If the fetus develops signs of fetal hypoxia with contractions, it may be due to pre-existing uteroplacental insufficiency and not to the oxytocin. Inappropriate use of oxytocin may produce hyperstimulation and decreased transplacental oxygen transport to the fetus. In the nullipara, rupture of the uterus in association with oxytocin is rare. Risk of rupture of the uterus is increased with grandmultiparity and with previous uterine surgery.

All labour and delivery units must be prepared to manage uterine hyperstimulation whether it is associated with oxytocin use or not. This is outlined in the section on induction of labour.

### Complications of oxytocin

The following are possible complications, their mechanism of occurrence and preventative management, with the use of oxytocin.

#### *Adverse effects of oxytocin and their prevention*

<u>Adverse Effects</u>	<u>Mechanism</u>	<u>Prevention</u>
Fetal compromise	Hyperstimulation	Correct dose
Uterine rupture	Hyperstimulation	Correct dose
Water intoxication	Antidiuretic hormone effect	Limit free water
Hypotension	Vasodilation	Low-dose infusion

### Sensitivity to oxytocin

Each woman's uterus varies in its sensitivity to oxytocin. Even in the same uterus, the sensitivity may change during the course of labour. The dose used must be sufficient to achieve adequate contractions. Protocols or guidelines for the administration of oxytocin vary, but may suggest starting with a low dose and small increments at intervals of 30 minutes. Starting incremental dosages for augmentation may be less than those for induction.

### Active management of labour

Active management of labour encompasses the following principles:

- Rigorous diagnosis of labour
- Close surveillance of progress of labour by partograph
- Continuous support in labour
- Early intervention to correct inadequate progress of labour:
  - Amniotomy (i.e. ARM)
  - Oxytocin

This active management has been shown to reduce the incidence of dystocia and cesarean sections.

### Augmentation of labour (SOGC Policy Statement on Dystocia No. 40, Oct. 1995)

The Society of Obstetricians and Gynaecologists of Canada (SOGC) recommended protocol:

Initial dose of oxytocin	1–2 mU/minute
Increase interval	30 minutes
Dosage increment	1–2 mU
Usual dose for good labour	8–12 mU/minute

It is important to allow adequate time for oxytocin to work. This is especially true if it is started when the cervix is <5 cm dilated. Do not expect to see immediate progress. When adequate uterine activity is achieved, the dose of oxytocin may be kept stable or reduced. Reassess if contractions decrease in frequency or labour does not progress as expected. Every labour ward or maternity must have an identified and accessible protocol that will include a starting dose increment interval and maximum dose.

For the conversion to the equivalent to drops per minute (20 drops=1ml)

<i>Oxytocin</i>	<i>Normal Saline</i>	<i>Drops</i>
10 units	500 ml	1mu = 1 drop
5 units	1 litre	1mu = 4 drops
10 units in	1 litre	1mu = 2 drops

### Management of Dystocia

#### Fetal size

Fetal size does not significantly affect the progress of labour in first and second stage.

#### Prevention of dystocia

- Prenatal education
- Labour preparation
- Avoid unnecessary induction
- Admit only women in active labour
- Continuous support to women during labour
- Use of appropriate analgesia.
- Appropriate use of partograph will help identify dystocia
- Appropriate assessment of adequate progress in labour

If an arrest disorder is suspected during labour, management includes:

- Amniotomy
- Oxytocin augmentation
- Analgesia
- Ambulation
- Consider therapeutic rest with analgesia if the woman is exhausted
- Forceps or vacuum extractor with fully dilated cervix
- Cesarean section

#### Cesarean Section

Cesarean section delivery, when indicated, can be a life-saving procedure. However, there are significant health risks for both women and their babies compared to vaginal birth. Some of the possible risks of cesarean delivery are summarized in the following table.

**Table 1 - Possible risks of cesarean delivery**

<b>For the Woman</b>	<b>For the Baby</b>
Reactions to the anesthesia	Breathing problems, including a higher incidence of neonatal respiratory distress
Surgical complications including possible bladder, bowel, and blood vessel injury	Less likely to experience early contact with mother possibly leading to poor mother–baby attachment
Hemorrhage possibly requiring blood transfusion	Less likely to be breastfed, and therefore to receive the benefits of breast milk
Longer hospital stay and increased recovery time	
Increased likelihood of readmission to hospital	
Increased risk of infection, both local at the incision site and systemic	
Increased and longer-lasting pain	

For the Woman	For the Baby
Impaired mothering experience due to later contact with baby	
Decreased likelihood of breastfeeding	
Increased incidence of postpartum depression	
Increased risk of complications in future pregnancies including ectopic pregnancy, placenta previa, placenta accreta, and uterine rupture	
Secondary infertility	

Because of the many possible risks of cesarean section, this surgical procedure should only be done when medically indicated. The following list of points should be taken into consideration when performing a cesarean section. Following these recommendations will reduce maternal morbidity and mortality.

#### Prevention of infection

- Use good scrubbing techniques.
- Use a sterile scalpel for the skin incision only.
- Administer an antibiotic at the onset of the surgical procedure, such as cefalexin (2 gr., 1 dose)
- Do NOT routinely check the permeability of the cervix with the finger or any instrument.

#### Reduction of blood loss

- Control bleeding by blunt dissection of the fat tissue.
- Immediately after delivering the baby, administer 20 units per litre of oxytocin at 500 ml/hr.

#### Abdominal incision

- Use a horizontal (Pfannenstiel) supra-pubic low-transverse incision rather than a vertical incision. It is less susceptible to dehiscence.

#### Uterine incision

- Use a low-transverse incision to enter the uterus. It is preferable to prevent subsequent uterine rupture.
- Complete the uterine opening by using digital expansion. Blunt dissection will prevent laceration to the baby.
- Enlarging the incision with fingers instead of with scissors reduces blood loss.

#### Removal of the placenta

- Remove the placenta by external massage together with cord traction instead of by manual removal. This reduces blood loss and risk of later atonia

#### Repair of the uterus

- Keep the uterus inside the abdomen. This reduces discomfort, vomiting, and blood loss.
- Avoid including the decidua in your closure. This may weaken the incision and may be a cause of parietal endometriosis.
- A two-layer closure of the uterus may reduce the risk of a uterine rupture in subsequent pregnancies.

#### Wound closure

- Closure of the bladder flap is not necessary (Grundsell 1998, Hull 1991, Irion 1996, Nagele 1996, Pietrantoni, 1991).
- Parietal peritoneal closure reduces discomfort and analgesia use, and may be beneficial to reduce adhesences.
- Check the adnexa.
- Abdominal irrigation has no benefit in a normal situation after gentle suction in paracolic gutters and cul-de-sac.
- Suture the subcutaneous tissue if abdominal fat is >2 cm deep. This reduces the risk of scar dehiscence.

#### Newborn care

- Ensure that one health care provider is present at the delivery to care for the newborn. This person should possess the basic competencies in newborn care and resuscitation, including chest compressions.

**Post-operative period**

- The woman should be encouraged to be mobile as soon as possible following the surgical procedure.
- Fluids are permitted immediately after the surgery.
- Food is permitted 12 hours after the surgery, if there are no complications. This reduces ileus and discomfort.

**Key Messages**

1. A woman in labour requires the presence of a skilled attendant who can provide good clinical and empathetic care.
2. Proper management of labour includes accurate diagnosis of active labour, correct use of a partograph, appropriate intervention when problem arises.
3. Good clinical management of labour and delivery prevents maternal and neonatal mortality and morbidity due to obstructed labour.

**Suggested Readings:**

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## OBSTRUCTED LABOUR

### Learning Objectives

**By the end of this section, the participant will:**

- Define obstructed labour.
- Describe etiology and clinical presentation of obstructed labour.
- Discuss treatment of obstructed labour.

### Definition

“Failure of descent of the fetus in the birth canal for mechanical reasons in spite of good uterine contractions”. (Philpott, 1982). Obstruction often occurs at the pelvic brim, but may occur in the pelvic cavity or in the outlet of the pelvis.

### Incidence

1%–3% of all labours.

### Risks Associated with Neglected Obstructed Labour

#### Fetal

- Asphyxia
- Sepsis
- Death

#### Maternal

- Sepsis
- Uterine rupture
- Hemorrhage
- Fistula (vesicovaginal, rectovaginal)
- Death

### Etiology of Obstructed Labour

#### Fetal: Pelvic Disproportion

- Malpresentations
  - Face
  - Brow
  - Shoulder or arm presentation - transverse lie
  - Breech
  - Compound presentation
- Malposition
  - Persistent occipito posterior
  - Persistent occipito transverse
- Malformations
  - Hydrocephalus
  - Abdominal tumours (e.g. Wilms tumor)
  - Cystic hygroma
  - Conjoined twins

#### Maternal

- Small pelvis
  - Childhood malnutrition
  - Contracted or deformed bony pelvis
- Soft tissue tumours of the pelvis
  - Uterine fibroids
  - Ovarian tumours
  - Rectal tumours

### Clinical Features of Obstructed Labour

In most cases, prolonged labour precedes obstruction. However, in the grand multiparous woman, labour may be quick and relatively silent, and in the presence of a malpresentation, such as a transverse lie, obstructed labour may rapidly occur.

### Clinical presentation of a woman with obstructed labour

#### Dehydration

Dehydration is due to muscular activity in the absence of adequate fluid intake. Signs and symptoms will include hot and dry skin with loss of tissue turgor.

**Oliguria**

Decreased urinary output occurs in association with the woman's state of dehydration.

**Keto-acidosis**

Metabolic acidosis develops from accumulation of lactic acid that is produced by the prolonged contractions of uterine and skeletal muscles. With inadequate caloric intake, endogenous tissue breakdown occurs, and the catabolism of fat in the absence of carbohydrates leads to the production of ketones that further increase the acidosis. Dehydration exaggerates the acidemia; anions accumulate because of the diminished urinary output. In a response to restore the acid–base equilibrium, potassium is mobilized from the cells and this diminishes the activity of the involuntary muscles.

The clinical signs of ketoacidosis are a rapid pulse in association with deep and rapid respiration and pyrexia. Acetone is present in the urine, and the bowel is frequently distended and atonic due to hypokalemia.

**Sepsis**

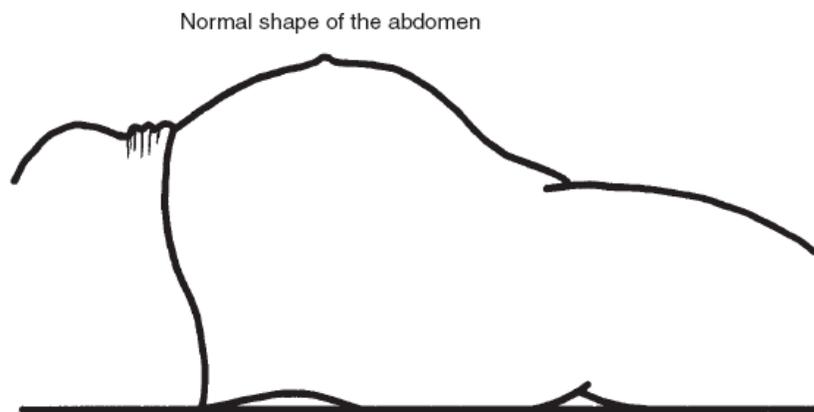
Sepsis is infection that is frequently established by the time prolonged labour has reached the stage of obstruction, particularly if the membranes have been ruptured for a long time. The introduction of pathogens often occurs with unclean vaginal examinations or manipulations. Even in the absence of vaginal examinations, infection will develop in the birth canal in association with prolonged obstructed labour.

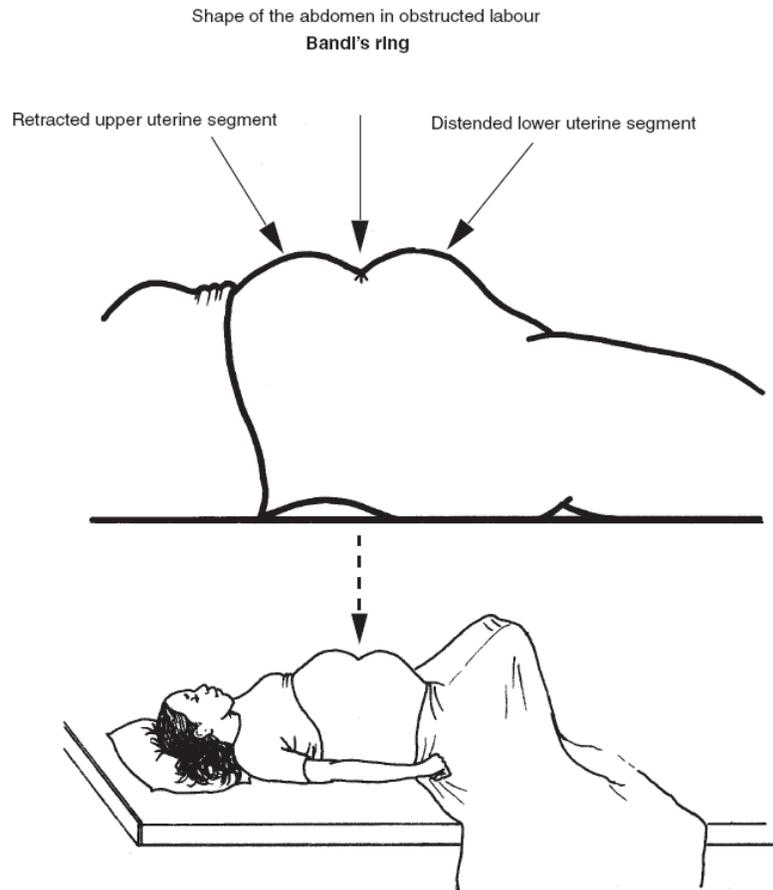
The clinical signs of infection are purulent vaginal discharge, pyrexia, and tachycardia. In advanced cases, infections due to gas-forming organisms may produce a crackling sensation when the uterus is palpated.

When the fetus has been dead for several days, significant gas may be produced from putrefaction, and the uterus becomes distended and tympanic. The terminal signs of severe intrapartum infection are septic shock with circulatory collapse, hypotension, and a rapid thready pulse with subnormal temperature.

**State of the Uterus**

The uterus reacts to obstruction by frequent and stronger contractions of the upper segment. Meanwhile, the lower segment continues to retract; already thinned by circumferential dilatation in the first stage of labour, it elongates and becomes progressively thinner. As the contractions continue, progressive retraction and thinning of the lower segment continues, and the junction ring between the lower and upper segment rises progressively, often up to the level of the umbilicus. This is called a pathological ring or Bandl's Ring.



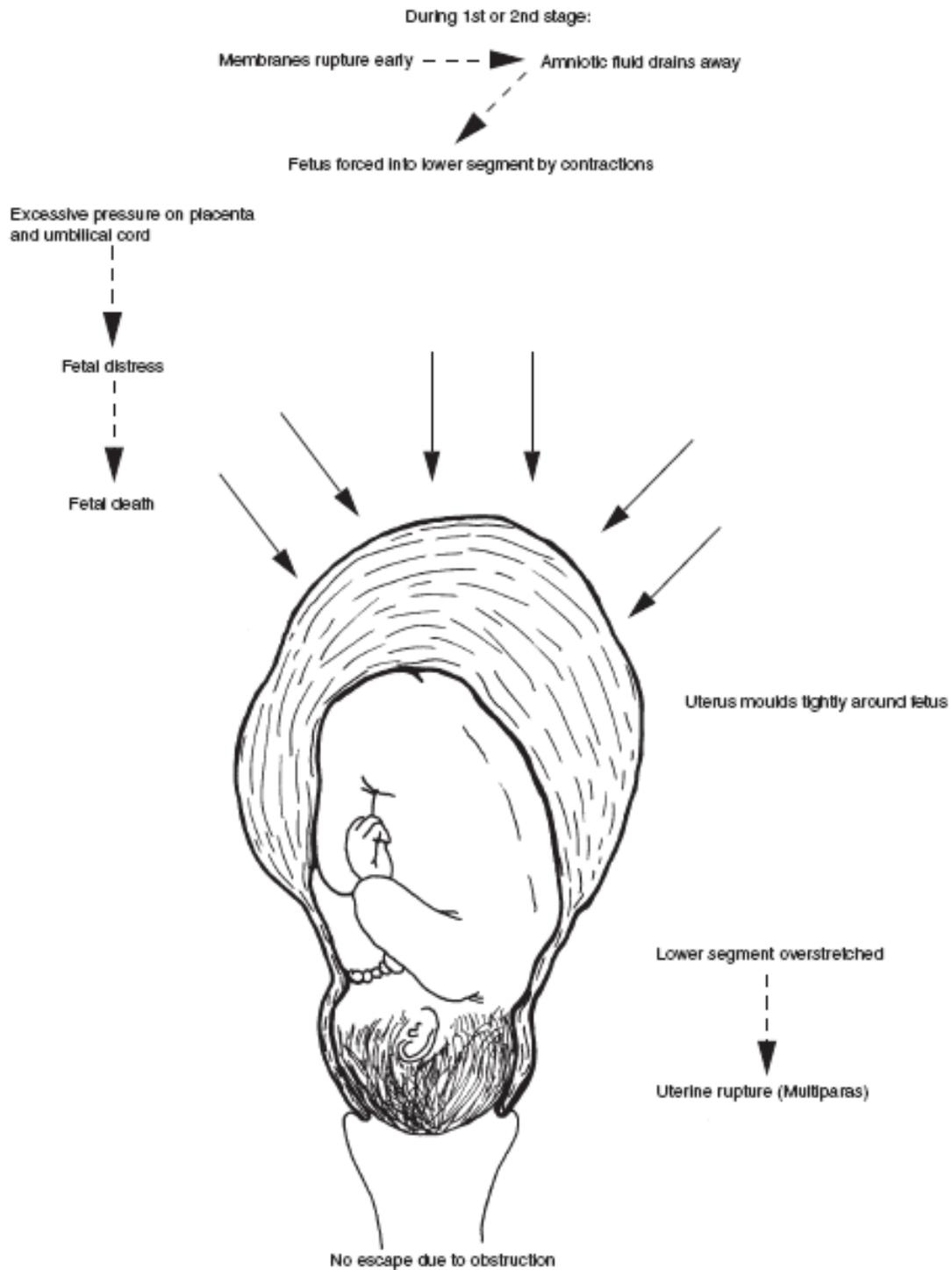


**Figure 1 - Bandl's ring**

Source: Managing prolonged and obstructed labour: Education material for teachers of midwifery, second edition. World Health Organization, 2006. p. 51. Available from: [http://whqlibdoc.who.int/publications/2006/9241546662\\_4\\_eng.pdf](http://whqlibdoc.who.int/publications/2006/9241546662_4_eng.pdf)

In the primigravid woman, obstruction will usually occur before full dilatation. If the obstruction is neglected the following sequence of events will occur:

- Prolonged uterine activity may lead to reduced intervillous blood flow and fetal asphyxia
- Fetal trauma associated with operative vaginal delivery
- Avascular pressure necrosis from the fetal presenting part (This develops in a ring formation at the obstruction site, leading to sloughing of the lower uterine segment and cervix.)



**Figure 2 - Mechanism of obstructed labour**

Source: Managing prolonged and obstructed labour: Education material for teachers of midwifery, second edition. World Health Organization, 2006. p. 51. Available from: [http://whqlibdoc.who.int/publications/2006/9241546662\\_4\\_eng.pdf](http://whqlibdoc.who.int/publications/2006/9241546662_4_eng.pdf)

Palpation of the uterus and observation of contractions provides important information. In the early stages of obstruction the uterus may contract vigorously and frequently, with little relaxation between contractions. This is followed by a continuous spasm when the uterus is hard, uniformly convex, and tender to pressure—particularly over the distended lower uterine segment. The woman is usually not in constant pain but feels continuous discomfort.

In obstructed labour, asphyxia is likely to have caused intrauterine fetal death by the time the woman presents for treatment. The asphyxia results from interference with placental exchange of gas between fetus and mother through the mechanism of strong repetitive uterine contractions over a long period of time or the development of a contracted uterus.

### **Ruptured uterus**

The clinical findings may vary from mild and non-specific to an obvious clinical crisis and abdominal catastrophe. The following signs and symptoms of impending, or early, uterine rupture are not consistent, but they can aid in early detection:

- Persistent lower uterine segment pain and tenderness between contractions
- Swelling and crepitus of lower uterine segment
- Vaginal bleeding
- Maternal tachycardia, hypotension, and syncope
- Hematuria
- Fetal heart rate abnormalities: tachycardia, variable and late deceleration. This is the most reliable warning sign.

The classic signs and symptoms of complete uterine rupture are:

- Sudden onset of tearing abdominal pain
- Cessation of uterine contractions
- Vaginal bleeding
- Recession of the presenting part
- Absent fetal heart
- Signs of intra-abdominal hemorrhage associated with hypovolaemic shock.

The lower uterine segment may rupture with few dramatic signs and symptoms. The thin avascular scar of a previous lower uterine segment cesarean section may rupture with little bleeding and labour continuing uneventfully—rupture of the uterus becoming apparent in the postpartum period.

### **State of the bladder**

During labour, the bladder is normally displaced out of the pelvis and becomes palpable above the symphysis pubis. Compression between the back of the symphysis and the presenting part may prevent the woman from emptying her bladder and make catheterization impossible. The bladder forms a tender swelling above the symphysis. This overlies the stretched lower uterine segment; the transverse depression at the junction of the superior border of the bladder and the lower segment of the uterus may be confused with a pathological retraction ring.

Prolonged compression traumatizes the bladder, so blood-stained urine is a fairly constant feature of obstructed labour, but does not necessarily mean the uterus has ruptured.

### **Vaginal findings**

Obstructed labour often produces oedema of the lower vagina and vulva. Associated sepsis often leads to a thick offensive vaginal discharge. Bleeding is of significant concern because it usually indicates the uterus has ruptured.

## Cervical findings

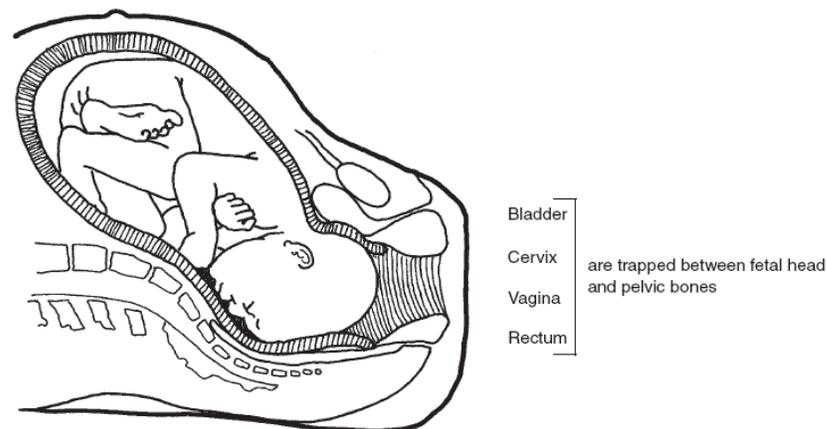
In cephalic presentations, full cervical dilation will usually occur as the moulded fetal head is driven down through the cervix. With shoulder or compound presentations, a rim of cervix usually persists because the presenting part is arrested at a higher level.

By the time obstruction has occurred, the caput succedaneum makes identification of the presentation and position very difficult. In vertex presentations, a large caput on the apex of an extremely molded head may reach the outlet when the greatest diameter is still above the brim. **Therefore, more reliance should be placed on the abdominal findings when deciding the level or station of the head.**

## Complications of Obstructed Labour

### Maternal

- Ruptured uterus
- Vesicovaginal fistulae
- Rectovaginal fistulae
- Puerperal sepsis
- Extensive sloughing heals by fibrosis, leading to almost complete stenosis of the vagina and dyspareunia and/or apareunia
- Osteitis pubis Infection of pubic bone after damage to the periosteum and superficial cortex by pressure necrosis



**Figure 3 - Fistula formation in obstructed labour**

**Source:** Managing prolonged and obstructed labour: Education material for teachers of midwifery, second edition. World Health Organization, 2006. p. 29. Available from: [http://whqlibdoc.who.int/publications/2006/9241546662\\_4\\_eng.pdf](http://whqlibdoc.who.int/publications/2006/9241546662_4_eng.pdf)

### Fetal

- Asphyxia and/or cerebral palsy
- Neonatal sepsis
- Death

### Treatment

- **Prevention:** In most cases, obstructed labour can be prevented by:
  - Good nutrition in childhood
  - Promotion of appropriate and accessible antenatal care with health care providers trained in history and physical examination skills
  - Use of a partograph in the labour ward when the woman is in labour
  - Development of appropriate and timely referral systems.

- **The standard procedure for obstructed labour is cesarean section when the diagnosis has been made.**
- **Prolonged or neglected obstructed labour with an intact uterus**
  1. If the fetus is alive: The woman should be prepared for delivery with simultaneously attention to the sequelae of prolonged labour.
    - Fluid electrolyte imbalance
    - Prevention and management of infections with broad spectrum antibiotics and tetanus prophylaxisMethod of delivery
    - Vacuum extraction in cases of mild disproportion
    - Forceps: Specialized skills are required for mid-cavity operations.
    - Symphysiotomy (see Appendix 3)
  2. If the fetus is dead: Destructive operations may be considered, particularly if the mother's condition is morbid. Resuscitation of the mother is essential before proceeding with a destructive procedure. This resuscitation should include:
    - Correction of fluid and electrolyte imbalance
    - Control infection
    - Be prepared to prevent and treat postpartum hemorrhage.
- **Prolonged or neglected obstructed labour with a ruptured uterus**
  1. Prompt management of hypovolaemia
  2. Laparotomy
    - Remove fetus and placenta
  3. Secure haemostasis
    - Deliver the uterus out of the abdominal incision. Assistant's hands may hold the uterus and with fingers and thumbs occlude the uterine vessels.
    - Control the bleeding edges of the uterine laceration with ring forceps.
    - Manual compression of the aorta will often enable the surgeon to identify the extent of the lacerations in the uterus.
    - Uterine artery ligation should be considered to reduce blood loss before proceeding to definitive surgery.
    - Internal iliac artery ligation may be necessary to control bleeding in the base of the broad ligament.

Before carrying out any surgical procedures on major vessels, the course of the ureter should be identified to avoid ureteric injury. The integrity of the bladder should always be carefully reviewed because the bladder wall may frequently be involved in a lower uterine segment rupture.

### **Surgical Options**

The choice of operative procedure is dependant on a number of factors including the woman's condition, type of rupture, facilities available, and experience of the surgeon.<sup>5</sup>

- Total hysterectomy
- Subtotal hysterectomy
- Laceration repair and tubal ligation
- Laceration repair alone

### **Destructive procedures**

- Craniotomy
- Decapitation
- Evisceration
- Cleidotomy (deliberate clavicular fracture)

Craniotomy is the most common destructive procedure and the main indication is hydrocephalus. The performance of destructive fetal operation will depend on local facilities and experience. Before performing any destructive procedure, it is important to ensure the bladder is empty. The aim of the treatment is to deliver the mother by the safest possible method. The operative vaginal delivery and destructive procedures must be performed in an operating theatre where a set of laparotomy instruments are available for immediate use.



## Key Messages

1. Proper management of normal labour is essential to prevent obstructed labour.
2. Continuous and thorough assessment of the woman and her fetus contributes to limit negative outcomes by providing opportunity for timely and appropriate treatment.
3. If obstructed labour is identified, prompt treatment is required to save the life of the woman. It is not always possible to save the life of the fetus.

### *Suggestion for Applying the Sexual and Reproductive Rights Approach to this Chapter*

Although necessary, vaginal exams are uncomfortable for women. Explain to women what vaginal exams consist of and why they are done. During labour, tell women about the frequency of vaginal exams and give her a few minutes warning when it is time to do an exam. When doing vaginal exams, talk to the woman about what you are doing, be gentle, and help her to feel relaxed. During and after the exam, provide information about your findings to her so that she knows what is going on inside her body. Try and reduce the fright and anxiety that can occur with vaginal exams—these feelings contribute to a non-progressive labour and may lead to unnecessary interventions.

## Resources

- Philpott RH. Obstructed labour. *Clinics in Obstetrics and Gynaecology*. 9(3). Dec. 1982.
- Who. Managing prolonged and obstructed labour: Education material for teachers of midwifery, second edition. World Health Organization, 2006. p. 51 available from [http://whqlibdoc.who.int/publications/2006/9241546662\\_4\\_eng.pdf](http://whqlibdoc.who.int/publications/2006/9241546662_4_eng.pdf)
- IMPAC: Managing Complications in Pregnancy and Childbirth: A Guide for midwives and doctors WHO/RHR/00.7: The Modified WHO Partograph.

**APPENDIX 1A**

**THE MODIFIED WHO PARTOGRAPH**

Name _____	Gravida _____	Para _____	Hospital number _____
Date of admission _____	Time of admission _____	Ruptured membranes _____	hours _____

	200	190	180	170	160	150	140	130	120	110	100	90	80
Fetal heart rate													

Amniotic fluid													
Moulding													

	10	9	8	7	6	5	4	3	2	1	0	
Cervix (cm) [Plot X]												
Descent of head [Plot O]												
Hours												
Time	1	2	3	4	5	6	7	8	9	10	11	12

Contractions per 10 mins												
Oxytocin U/L drops/min												

Drugs given and IV fluids												
---------------------------	--	--	--	--	--	--	--	--	--	--	--	--

	180	170	160	150	140	130	120	110	100	90	80	70	60
Pulse ●													
and ▲													
BP ▼													
Temp °C													

Urine	protein											
	acetone											
	volume											

IMPAC: Managing Complications in Pregnancy and Childbirth: A Guide for midwives and doctors  
WHO/RHR/00.7

## APPENDIX 1B

### USING THE PARTOGRAPH

This content is taken from the following document: WHO Managing Complications in Pregnancy and Childbirth (2000).

The WHO partograph is simple and easy to use. The partograph begins in the active phase when the cervix is 4 cm dilated. Record the following on the partograph:

**Patient information:** Fill out name, gravida, para, hospital number, date and time of admission, and date and time of rupture of membranes.

**Fetal heart rate:** Record every half-hour or according to your health facility protocol.

**Amniotic fluid:** Record the colour of amniotic fluid at every vaginal examination:

- I: Membranes intact
- C: Membranes ruptured, clear fluid
- M: Meconium-stained fluid
- B: Blood-stained fluid

**Moulding:**

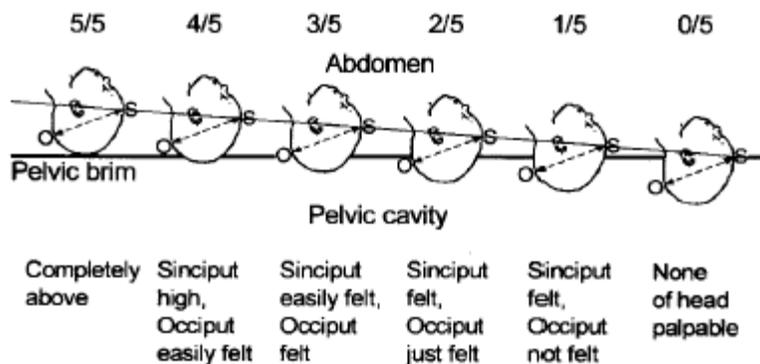
- 1: Sutures apposed
- 2: Sutures overlapped but reducible
- 3: Sutures overlapped and not reducible.

**Cervical dilation:** Assessed at every vaginal examination and marked with a cross (X). Begin plotting on the partograph at 4 cm.

**Alert line:** A line starts at 4 cm of cervical dilation to the point of expected full dilation at the rate of 1cm per hour.

**Action line:** Parallel and 4 hours to the right of the alert line.

**Descent assessed by abdominal palpation:** Refers to the part of the head (divided into 5 parts) palpable above the symphysis pubis; recorded as a circle (O) at every vaginal examination. At 0/5, the sinciput (S) is at the level of the symphysis pubis.



**Hours:** Refers to the time elapsed since onset of active phase of labour (observed or extrapolated).

**Time:** Record actual time.

**Contractions:** Chart every half-hour; palpate the number of contractions in 10 minutes and their duration in seconds.

- Less than 20 seconds: 
- Between 20 and 40 seconds: 
- More than 40 seconds: 

**Oxytocin:** Record the amount of oxytocin per volume of IV fluids in drops per minute every 30 minutes when used.

**Drugs given:** Record any additional drugs given.

**Pulse:** Record every 30 minutes and mark with a dot (•).

**Blood pressure:** Record every 4 hours and mark with arrows.

**Temperature:** Record every 2 hours.

**Protein, acetone and ketones, and volume:** Record every time urine is passed.

## **APPENDIX 1C**

A sample of partograph is provided for normal labour (see figure **A1C.1**)

- A primigravida was admitted in the latent phase of labour at 5 a.m.:
  - Fetal head is 4/5 palpable.
  - Cervix is dilated 2 cm.
  - Three contractions in 10 minutes, each lasting 20 seconds
  - Normal maternal and fetal condition

**Note:** This information is not plotted on the partograph.

- At 9 a.m.:
  - Fetal head is 3/5 palpable.
  - Cervix is dilated 5cm.

**Note:** The woman was in the active phase of labour and this information is plotted on the partograph. Cervical dilation is plotted on the alert line.

- Four contractions in 10 minutes, each lasting 40 seconds
  - Cervical dilation progressed at the rate of 1cm per hour.
- At 2 p.m.:
  - Fetal head is 0/5 palpable.
  - Cervix is fully dilated.
  - Five contractions in 10 minutes, each lasting 40 seconds
  - Spontaneous vaginal delivery occurred at 2:20 p.m.

Sample partograph for normal labour

Name Mrs. S Gravida 3 Para 2+0 Hospital number 7886

Date of admission 12.5.2000 Time of admission 5:00 A.M. Ruptured membranes 1 hours

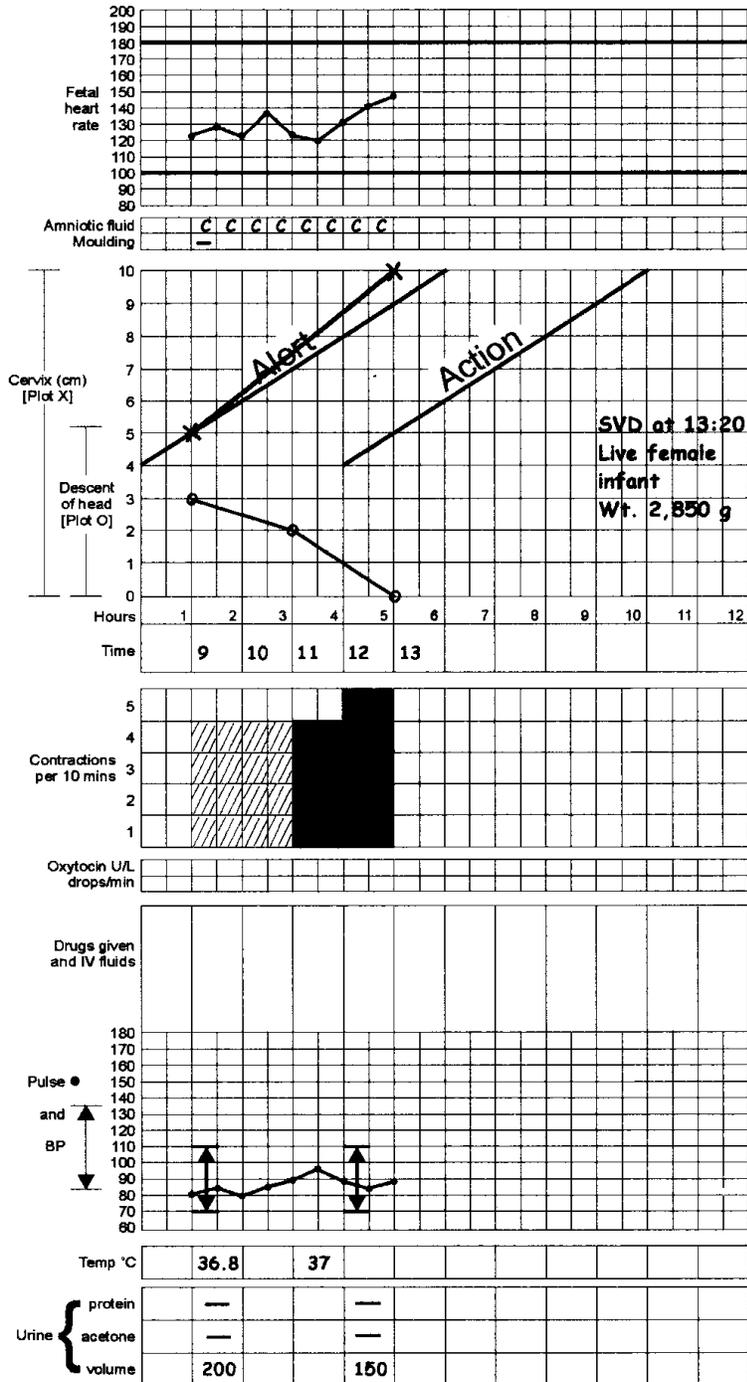


Figure A1C.1

IMPAC: Managing Complications in Pregnancy and Childbirth: A Guide for midwives and doctors  
WHO/RHR/00.7

## **APPENDIX 2**

### **PERFORMING A DELIVERY IN A VARIETY OF POSITIONS**

**Be ready to help with the delivery of the baby when it appears that the birth is imminent.**

- Increased show
- Bulging perineum
- Pouting or bulging rectum
- Woman says “baby is coming”
- Uncontrollable urge to push
- Crowning of the fetal head

**Apply the same principles to the delivery regardless of the position.**

- Control the delivery of the head.
- Check for the nuchal cord; slide it over the head, or clamp twice and cut between clamps
- Await external rotation and deliver the shoulders—first anterior and then the posterior shoulder.
- See Chapter 13, Shoulder Dystocia, for what to do if the shoulders don’t deliver—a change in position may be required.
- Grasp the baby around the upper arms and chest to deliver the rest of the baby.
- Place the baby on a safe surface, cut the cord, and obtain cord gases.
- Deliver the placenta.

#### **Technique for performing a delivery in the upright position**



- Delivery is performed in much the same way as in the dorsal position.
- It is often harder to get a full view of the perineum, so the healthcare provider should sit or kneel on a stool or mat in order to be able to visualize the perineum appropriately.
- A bedpan can be placed underneath to catch and accurately measure blood and amniotic fluid.
- If no newborn resuscitation is required, the baby can be passed to the mother once delivered.

#### **Technique for performing a delivery in the lateral position**



- The lateral position affords a very good view of the perineum, but care must be taken while examining for position as the landmarks are rotated.
- The woman’s top leg may be held by an assistant, a stool, or by the woman herself.
- The healthcare provider should find a comfortable position where the perineum can be supported and the head controlled.
- As always, the anterior shoulder (the one under the pubic symphysis) should be delivered first.

### Technique for performing a delivery in the hands and knees position



- This position provides a great view of the perineum, but care must be taken while examining for position as the landmarks are upside down.
- The head is easily controlled.
- Deliver the anterior shoulder (behind the pubic symphysis—closest to the ground) first and then the posterior shoulder (closest to the mother's back).
- Passing the baby up to the mother can be awkward—you may need a clean, dry place to put the baby down to cut the cord.

### Resources:

- SOGC. 2006. Vaginal Delivery by Nurse. *ALARM Manual 13<sup>th</sup> Edition*. Ottawa: SOGC
- Flint C. 1986. *Sensitive Midwifery*. London: Heinemann

## **APPENDIX 3**

### **SYMPHYSIOTOMY**

**SOGC recognizes that symphysiotomy may be a life-saving procedure that can be successfully used in circumstances where cesarean Sections are not available. It is for this reason that the procedure is included in the ALARM International Program Manual. A review of the world's literature by K. Bjorklund has demonstrated the effectiveness of symphysiotomy in the practice of obstetrics. It is recommended that this article be reviewed. It is cited in the references at the end of the chapter.**

Symphysiotomy results in a temporary increase in pelvic diameter (up to 2 cm) by surgically dividing the ligaments of the symphysis under local anesthesia. This procedure should be carried out only in combination with vacuum extraction. Symphysiotomy in combination with vacuum extraction is a life-saving procedure in areas where cesarean section is not feasible or immediately available. Symphysiotomy leaves no uterine scar and the risk of ruptured uterus in future labours is not increased.

These benefits must, however, be weighed against the risks of the procedure. Risks include urethral and bladder injury, infection, pain, and long-term walking difficulty. Symphysiotomy should, therefore, be carried out only when there is no safe alternative.

- Review for indications:
  - Contracted pelvis
  - Vertex presentation
  - Prolonged second stage
  - Failure to descend after proper augmentation
  - Failure or anticipated failure of vacuum extraction alone
  
- Review conditions for symphysiotomy:
  - Fetus is alive.
  - Cervix is fully dilated.
  - Head is at -2 station or no more than 3/5 above the symphysis pubis.
  - There is no overriding of the head above the symphysis.
  - Cesarean section is not feasible or immediately available.
  - Provider is experienced and proficient in symphysiotomy.

#### **Procedure**

- Review general care principles
- Provide emotional support and encouragement. Use local infiltration with lignocaine.
- Ask two assistants to support the woman's legs with her thighs and knees flexed. The thighs should be abducted no more than 45° from the midline.



Figure A3.1 - Position of the woman for the symphysiotomy

**Abduction of the thighs more than 45° from the midline may cause tearing of the urethra and bladder.**

- Perform a mediolateral episiotomy. If an **episiotomy is already present**, enlarge it to minimize stretching of the vaginal wall and urethra.
- Infiltrate the anterior, superior, and inferior aspects of the symphysis with lignocaine 0.5% solution.

**Note:** Aspirate (pull back on the plunger) to be sure that no vessel has been penetrated. If **blood is returned in the syringe with aspiration**, remove the needle. Recheck the position carefully and try again. Never inject if blood is aspirated. **The woman can suffer seizures and death if IV injection occurs.**

- At the conclusion of the set of injections, wait 2 minutes and then pinch the incision site with forceps. If the **woman feels the pinch**, wait 2 more minutes and then retest.

**Anaesthetize early to provide sufficient time for effect.**

- Insert a firm catheter to identify the urethra.
- Apply antiseptic solution to the suprapubic skin.
- Wearing high-level disinfected gloves, place an index finger in the vagina and push the catheter, and with it the urethra, away from the midline.

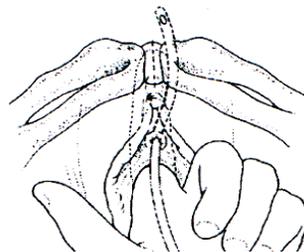
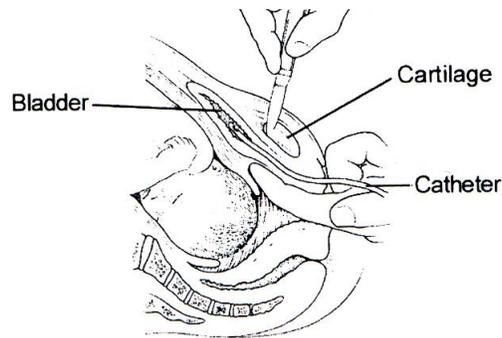


Figure A3.2 - Pushing urethra to one side after inserting the catheter

- With the other hand, use a thick, firm-bladed scalpel to make a vertical stab incision over the symphysis.
- Keeping to the midline, cut down through the cartilage joining the two pubic bones until the pressure of the scalpel blade is felt on the finger in the vagina.
- Cut the cartilage downwards to the bottom of the symphysis, then rotate the blade and cut upwards to the top of the symphysis.
- Once the symphysis has been divided through its whole length, the pubic bones will separate.



**Figure A3.3 - Dividing the cartilage**

- After separating the cartilage, remove the catheter to decrease urethral trauma.
- Deliver by vacuum extraction. Descent of the head causes the symphysis to separate 1 cm or 2 cm.
- After delivery, catheterize the bladder with a self-retaining bladder catheter.

There is no need to close the stab incision unless there is bleeding.

### Post-Procedure Care

- If **there are signs of infection** or the woman **currently has a fever**, give a combination of antibiotics until she is fever-free for 48 hours:
  - Ampicillin 2 g IV every 6 hours
  - PLUS gentamicin 5 mg/kg body weight IV every 24 hours
  - PLUS metronidazole 500 mg IV every 8 hours
  - Give appropriate analgesic drugs.
- Apply elastic strapping across the front of the pelvis from one iliac crest to the other to stabilize the symphysis and reduce pain.
- Leave the catheter in the bladder for a minimum of 5 days.
- Encourage the woman to drink plenty of fluids to ensure a good urinary output.
- Encourage bed rest for 7 days after discharge from hospital.
- Encourage the woman to begin to walk with assistance when she is ready to do so.
- If long-term **walking difficulties and pain** are reported (occur in 2% of cases), treat with physical therapy.

## **APPENDIX 4**

### **MANAGEMENT OF WOMEN WHO HAVE HAD FEMALE GENITAL CUTTING**

**Excerpts from: WHO. Management of pregnancy, childbirth and the postpartum period in the presence of female genital mutilation: Report of a WHO Technical Consultation, Geneva, October 15-17 1997. WHO Geneva 2001**

Women who have undergone type III female genital cutting (FGC) require sensitive and empathetic health care providers. They may be apprehensive about vaginal exams and about giving birth.

#### **Antenatal Care**

- Prevention of FGC and management of its complications should be included in antenatal care.
- During the antenatal period, women and their spouses should be provided with appropriate information about the timing of opening up the scar tissue of type III FGC, and possible complications in labour and at delivery.
- A supportive relationship should be developed with the woman. She should be provided with information about the appropriate care during pregnancy, and after childbirth. Careful explanations should be given about any intimate examination considered necessary, and informed consent should be obtained and documented. In some cultures, it is usual for a husband to give consent before his wife undergoes any form of treatment or investigation. In such situations, there may be a need to involve the husband or other relevant family members in pre-examination discussions.
- Depending on the cultural background of the woman, health care providers need to establish whether or not the woman has undergone FGC and if so, what type she has undergone, and the extent of damage to her genital area.

In **women having their first baby**, physical examination will establish the extent of the damage, and the degree of physical barrier present. As a general guideline, if the urinary meatus can be observed or if two fingers can be passed into the vagina without discomfort, the cutting is unlikely to cause major physical problems at delivery. Digital assessment is not always needed, as the visual appearance may provide all the information required. Providing detailed written information of the appearance of the vulva in her chart may help to avoid unnecessary examinations in the future, or to highlight when specific procedures may be difficult to carry out.

In **women who have had previous pregnancies**, the history of the deliveries will help to indicate whether she is likely to have persistent problems. It is important to find out whether resuturing has taken place following delivery. In this respect, there are major variations among communities, even within the same country. Repeated cutting and resuturing (“deinfibulation” and “reinfibulation”) leads to extensive scarring that presents significant difficulty at the time of delivery, including obstruction of labour that can result in trauma to the woman and her fetus. Where any doubt remains, the perineal area should be inspected to assess the extent of existing damage.

In areas where type III FGC is common, a small opening (opening 1 cm or less) should be regarded as a major risk factor, especially if the scar is thick. Women with this condition should be required to deliver in hospital where skilled supervision of labour should reduce the incidence of major perineal trauma—although problems may still arise if the woman presents late in labour or if the baby is born on the way to the hospital.

#### **Delivery**

##### **Small opening (1cm or less)**

- Difficult to assess the cervical dilatation and perform catheterization (if necessary).
- If assessment of cervical dilation and performance of catheterization is difficult, the scar can be opened in the midline.

**Wider opening**

- If assessment of cervical dilation and performance of catheterization is possible, anterior division of scar, with or without episiotomy, can be delayed until the second stage of labour.
- Second stage of labour may be complicated if the scar tissue prevents descent of the fetal head. The scar tissue can result in fistula, fetal asphyxia, or uncontrolled tears.
- Do not delay in performing a midline incision or cut in the anterior scar to minimize trauma to the woman. To avoid unnecessary bleeding, the incision should not be extended beyond the urethra—no extra space is created by doing so. On average, this will leave 4-5 cm of the old scar unopened as the FGC always extends to the clitoral area.

**The procedure to open up type III FGC consists of the following steps:**

- Inject local anaesthetic throughout the vulval area where you plan to cut.
- Observe aseptic technique (washing hands thoroughly, wearing gloves, etc.)
- Locate the remaining opening of the vagina and clean the surrounding area with an antiseptic.
- Lift up the scar tissue from the underlying tissues using a finger or dilator.
- Incise in the midline to expose the urethral opening. Do not incise beyond the urethra. Extending the incision forward may cause hemorrhage that is difficult to control.
- Usually there is little bleeding from the relatively avascular scar tissue. In these circumstances, suturing should be delayed until after delivery.
- If there is bleeding, suture the raw edges to secure hemostasis and prevent adhesion formation.

Healing should take place within one week.

**Once Delivery is Complete and the Placenta Delivered**

- The incision and any tears should be sutured. The edges of the anterior incision should be oversewn. The incision should not be closed to recreate a barrier at the introitus.
- Demands for resuturing to recreate a small opening (“reinfibulation”) should not be authorized nor performed. The potential future health problems of such a procedure should be explained. Ideally, this discussion should have taken place in the prenatal period.
- In areas where type III FGC is virtually universal, even if the health care provider refuses to resuture, it is likely that the woman will be resutured at a later date often due to direct or indirect pressure from her husband or from immediate family. Every effort should be made to discourage the practice.
- The health care provider should not, for any reason, resuture even under pressure.

**Postpartum Care**

- Women should be educated about how to prevent infection in the perineal wound and when to seek care if there are any signs of infection.
- Encourage the woman to seek follow-up visits in the postpartum period so that she has increased support and to allow for the identification and proper management of complications.

