



Puerperium

د. زينب عبد الأمير جعفر

2017-2018

Objectives:

To understand what is normal & abnormal puerperium

Definition:

Refer to the 6 weeks' period following childbirth. When considerable changes occur before return to pre-pregnancy state.

Physiology of the puerperium:

The uterus:

Uterine involution: is the process by which the postpartum uterus, weighing about 1kg, returns to its prepregnancy state of less than 100g.

1. **Immediately after delivery**: the uterine fundus lies about 4cm below the umbilicus or more accurately 12cm above the symphysis pubis. The measurement should be taken after emptying the bladder
2. **2 weeks after birth**: the uterus becomes a pelvic organ.
3. **By 6 weeks**, it is usually normal size

- involution at the rate of **2 cm/day**
- Involution occurs by a process of autolysis
- Involution appears to be accelerated by the release of oxytocin in women who are breastfeeding smaller than in those who are bottlefeeding

causes of delayed involution

1. Full bladder.
2. Loaded rectum.
3. Retained products of conception (or clots).
4. Uterine infection.
5. Fibroids.
6. Broad ligament haematoma



The cervix:

It involutes along with the uterus, so that by 2 to 3 weeks, the internal os is closed, but the external os can remain open permanently, giving a characteristic appearance to the parous cervix.

The vagina:

- ☐ Vagina gradually diminishes in size.
- ☐ **In the 1st few days**, the stretched vagina is smooth & edematous
- ☐ **by the 3rd week** rugae begin to reappear.
- ☐ The hymen disappears and is represented by: several small tags of tissue which are known as carunculae myrtiformes. This is a characteristic sign of parity

Lochia:

Is the blood stained uterine discharge that is comprised of blood & necrotic decidua.

Types of lochia

- 1. Lochia rubra:** for the first 4 days, lochia is red in color. It contains blood as well as decidual debris.
- 2. Lochia serosa:** from 5th to 9th day, lochia becomes pale in color. It contains still some red cells, but predominantly leucocytes and necrotic decidua.
- 3. Lochia Alba:** after the 10th day, the lochia changes to yellowish white color. It consists now principally of serous fluid and leucocytes

- ☐ **Persistent red lochia** suggests delay involution that is usually associated with

1. Infection
2. a retained piece of placental tissue

- ☐ **offensive lochia**

which may be accompanied by pyrexia & a tender uterus, suggests infection, should be treated with broad-spectrum antibiotics.

Ovarian function:

The onset of the first menstrual period following delivery



is variable and depends on lactation

- + -Non lactating women: the mean time of ovulation is about 6 to 8 weeks
- + -lactating women: the mean time of ovulation is 6 months.

Cardiovascular & coagulation changes

- ▣ Decrease in Heart rate & cardiac output(in early puerperium)
- ▣ Increase in stroke volume & BP (due to increase peripheral resistance)so it is a time of high risk for mothers with cardiac disease.
- ▣ Increase in fibrinolytic activity (in immediate post-natal period for 1-4 days)then it returns to normal by one week.
- ▣ there is a sharp rise in platelets after delivery –there is a high risk for thromboembolic disease

Urinary tract:

- Normal pregnancy is associated with an increase in extracellular water and puerperal diuresis is a reversal of this process. Diuresis occurs between the second and fifth days.
- Dilated ureters and renal pelvis return to their prepregnant state within 8 weeks.

Puerperal pyrexia:

- Defined as a rise of temperature reaching 100.4°F (38°C) or more (measured orally by standard technique) on 2 separate occasions at 24 hours apart (excluding first 24 hours) within first 10 days following delivery

Causes of Puerperal pyrexia:

1. **Genital tract infection (puerperal sepsis).**
2. **Wound infection following caesarean section.**
3. **Urinary tract infection.**
4. **Chest complication**
5. **Tonsillitis**
6. **Thromboembolic causes:**
7. **Breast infection including mastitis or breast abscess**
8. **Meningitis**
9. **Other incidental infections**



1. Genital tract infection (puerperal sepsis):

Defined as: a genital tract infection following delivery.

Puerperal sepsis is commonly due to

1. Uterine infection (eg. endometritis)
2. Perineal wound infection (includes infection of (episiotomy wounds , repaired lacerations & repaired perineal tears)

Organisms commonly associated with puerperal genital tract infection:

1. Aerobes

- a. G+ve (B-haemolytic streptococcus, staphylococcus)
- b. G-ve (E-coli, H. influenzae)
- c. G-variable (Gardnerella vaginalis)

2. Anaerobes (Peptococcus sp., Peptostreptococcus sp., Bacteroids)

3. Miscellaneous (Chlamydia Trachomatis, Mycoplasma urealyticum).

Most of the infections in the genital tract are polymicrobial with a mixture of aerobic and anaerobic organisms.

Common risk factors for puerperal infection:

Antepartum factors

1. Obesity
2. Diabetes
3. Malnutrition and anemia
4. Human immunodeficiency virus (HIV).
5. Preterm labour
6. Chorioamnionitis;
7. Prolonged rupture of membranes >18 hrs
8. Chronic debilitating illness
9. Immunodeficiency
10. Antenatal intrauterine infection
11. Cervical cerclage for cervical incompetence



Intrapartum factors

1. multiple vaginal examinations.
2. Prolonged labor/prolonged second stage of labour
3. Instrumental delivery.
4. caesarean section.
5. uterine manipulation /manual removal of the placenta.
6. retained products of conception(Retained bits of placental tissue or membranes)
7. Internal fetal monitoring.
8. Foreign body
9. Hemorrhage – antepartum or postpartum

Symptoms of puerperal pelvic infection (puerperal sepsis):

1. Malaise, headache, fever, rigor.
2. Abdominal discomfort, vomiting & diarrhea.
3. Offensive lochia.
4. Secondary PPH.

Signs of puerperal pelvic infection

1. Pyrexia
2. Tachycardia.
3. Uterus- tender & large. (sub involution of the uterus)
4. Infected wound (perineal wound or C/S), may cause break down of wound
5. Paralytic ileus
6. Indurated adnexae (parametritis).
7. Boggy in the pelvis (pelvic abscess)

Complication of pelvic infection:

1. Wound dehiscence
2. Pelvic abscess
3. Septic thrombophlebitis
4. Septicemia
5. Subsequent subfertility.

Diagnosis



- ❑ Evaluation of a febrile postpartum patient should include a careful history & physical examination.
- ❑ Extra pelvic causes of fever should be excluded

Investigations for puerperal genital infections:

1. full blood count (FBC) :(anemia leukocytosis, thrombocytopenia)
2. Urea & electrolyte (fluid & electrolyte imbalance)
3. High vaginal swab (infection screen)
4. Blood culture
5. Pelvic u/s (retained product & pelvic abscess)

Management Depending on the severity:

❑ **the treatment of endometritis**

Gentamicin (2 mg/kg IV loading dose followed by 1.5 mg/kg IV every eight hours) and Ampicillin (1 g IV every 6 hours) or Clindamycin (900 mg IV every 8 hours) should be started

❑ **Infected episiotomy or perineal tears**

Treated with broad spectrum antibiotic (e.g.) coamoxiclav, or cephalosporin plus metronidazole

❑ **opening of repaired perineal tears & episiotomies**

The wound should be irrigated twice daily

Healing should be allowed by secondary intention

Sometimes secondary suturing may be required after granulation tissue has appeared

2. Wound infection following caesarean section:

✚ risk factors include

1. Obesity
2. corticosteroid therapy
3. poor haemostasis at surgery with subsequent haematoma

Presented with:

1. Fever
2. Wound erythema(red painful suture line)
3. Persistent tenderness
4. Purulent drainage.



Management:

- 1) Obtain Gram stain and cultures from wound material.
- 2) Wound should be drained, irrigated, and debrided.
- 3) Antibiotics should be given along with:
 - **If infections involve skin and subcutaneous tissue:** Wet-to-dry packing placed. Consider closure of incision when wound healthy.
 - **If infections involve fascia and muscle:** consider necrotizing fasciitis: may need debridement in the operating room under anesthesia.

3. Urinary tract infection:

❖ **risk factors**

1. Catheterization
2. birth trauma
3. PV examination during labor

❖ **Most common organism** involved are E-coli, proteus & klebsiella.

❖ **symptoms**

1. Increased frequency of micturition, dysuria or urgency.
2. Rigor may present in pyelonephritis.
3. loin pain & tenderness

Diagnosed urine microbiology, culture and sensitivity

Treatment: antibiotics

4. Chest complication:

It more likely to appear in the first 24 hours after delivery, particularly after general anesthesia.

❑ **Atelectasis:** may be associated with fever and prevented with early & regular physiotherapy.

❑ **Aspiration pneumonia (mandleson's syndrome):** must be suspected if there is a spiking temperature associated with wheezing, dyspnoea or evidence of hypoxia following a general anaesthetic.

❑ **Chest infections, e.g. pneumonia, bronchitis**

Present with cough, purulent sputum & dyspnoea.

Diagnosed by sputum microbiology, culture and sensitivity, chest x-ray.



Treatment by physiotherapy & antibiotic

5) Thromboembolic causes:

- 1- Superficial thrombophlebitis**
- 2- Deep vein thrombosis**
- 3- pulmonary embolism**

- ☐ The risk of thromboembolic disease rises 5-fold during pregnancy and the puerperium
- ☐ The majority of deaths occur in the puerperium and are more common after caesarean section.
- ☐ If deep vein thrombosis or pulmonary embolism is suspected, full anticoagulant therapy should be commenced and a lower limb compression ultrasound and/or lung scan should be carried out within 24–48 hours

6) Breast infection : including mastitis or breast abscess

Infection of the breast either due to:

- 1. The most common infective organism is staphylococcus aureus acquired in hospital**
- 2. Outside the hospital caused by host flora, including Staphylococcus species from baby's nose or throat, and most often the result of incomplete evacuation of the breast.**

Symptoms & sign

- 1. The affected segment of the breast is painful & reddened & swollen. usually unilateral.**
- 2. Flu-like symptoms, malaise**
- 3. tachycardia**
- 4. pyrexia & rigors : fever lasting less than 24hr due to breast engorgement while in infective mastitis, the pyrexia develops later & persists longer time, usually present in 3rd to 4th postpartum week**



5. An abscess should be suspected when:

- **Fever does not disappear within 48 to 72 hours of mastitis treatment**
- **when a mass is palpable**
- **Erythematous segment of the breast with swelling or even fluctuation**

Investigations

1. express of milk either manually or by electric pump The milk should be sent for microbiology culture and sensitivity
2. Ultrasound of the affected breast.

Treatment is:

1. Isolation of the mother & baby, ceasing breast feeding from affected breast. empty the affected breast by means of a breast pump (manual expression in such cases is not possible due to the extreme tenderness and resultant pain)
2. Continue breastfeeding from the normal breast,
3. Flucloxacillin can be recommended while awaiting sensitivity results.
4. breast abscess developed in 10% of women with mastitis; treatment is by a circumareola incision followed by drainage under general anesthesia, Leave a drain

8) Meningitis:

Present with: headache, neck stiffness, epidural/spinal anesthetic

Diagnosed: lumbar puncture

Treatment is with antibiotic

9) Tonsillitis:

Present with: sore throat

Diagnosed throat swab

Treatment antibiotic

10) Other incidental infections:

- **Tuberculosis**
- **Malaria**
- **Typhoid**



Other Abnormalities of Puerperium

1. **breast engorgement**
2. **Perineal discomfort**
3. **Bladder complication**
4. **Bowel complication**
5. **Obstetric palsy (or) traumatic neuritis**
6. **Secondary post-partum haemorrhage:** تشرح بمحضرة منفصلة
7. **Psychiatric disorders**

1) breast engorgement

usually begin by the 2nd or 3rd day if breast feeding has not been effectively established

Diagnosis:

1. Breasts are swollen, tender, tense and warm
2. Patient's temperature may be mildly elevated (15%); rarely exceeds 39°C and characteristically lasts no longer than 24 hours.
3. Axillary lymph node enlargement and painful is usually seen

Treatment:

1. Manual emptying the breasts following breastfeeding
2. Supportive brassiere
3. Ice packs
4. Analgesics

Contraindications to breast-feeding

1. Mothers with the following infections:

- I. HIV infection.
- II. Breast lesions from active herpes simplex virus.
- III. Tuberculosis (active, untreated).

Breast-feeding not contraindicated in the following infection:

- 🌈 Cytomegalovirus (CMV): Both the virus and antibodies are present in breast milk.



- ✚ Hepatitis B virus (HBV): If the infant receives hepatitis B immunoglobulin.
- ✚ Hepatitis C: 4% risk of transmission same for breast- and bottle-fed infants.

2. Medications:

Contraindicated medications

- 1) **Bromocriptine.**
- 2) **Cyclophosphamide.**
- 3) **Cyclosporine.**
- 4) **Doxorubicin.**
- 5) **Ergotamine.**
- 6) **Lithium.**
- 7) **Methotrexate.**
- 8) **Estrogen-containing oral contraceptives (OCPs).**

3. Drug abuse: Mothers who abuse drugs should not breastfeed

4. Radiotherapy: Mothers undergoing radiotherapy should not breastfeed:

2) Perineal discomfort:

Which last about 10 days.

It is greatest in women with

1. episiotomies
2. tears
3. Instrumental deliveries.

Treatment

1. Local cooling.
2. Topical anesthesia.
3. Analgesia: paracetamol, diclofenac suppositories.

3) Bladder complication

a- Voiding difficulty & over-distension of the bladder:

Either due to:

1. pain or peri-urethral oedema especially in those (traumatic delivery, multiple/extended lacerations or tears, vulva-vaginal haematoma)



2. Those with regional anesthesia (epidural/ spinal) because the bladder may take up to 8 hours to regain normal sensation.

b- Urinary incontinence:

Either

1. Stress incontinence
2. Due to vesico-vaginal, urethra-vaginal, or uretero-vaginal fistula. Pressure necrosis of bladder or urethra may occur following prolonged obstructed labour, usually appear in the second week

4) Bowel Complication:

A. Constipation:

- ☐ may be due interruption in the normal diet & dehydration during labor.
- ☐ It may also due to pain & fear of evacuation of the bowel.

B. Fecal incontinence: Due to

- ☐ Damage of anal sphincter during delivery, (occult damage).
- ☐ 3rd & 4th degree vaginal tears are also associated with anal incontinence
- ☐ It may also due to fistula (recto-vaginal fistula).

5) Obstetric palsy (or) traumatic neuritis

Is a condition in which one or both lower limbs may develop sign of a motor &/ sensory neuropathy following delivery

the patient present with

1. foot drop
2. Paresthesia.
3. Sciatic pain
4. Hypoesthesia
5. Muscle wasting

The mechanism of injury

Now it believed that it due to herniation of lumbosacral discs (usually L4 or L5)



Treatment

1. *bed rest*
2. *analgesia*
3. *Physiotherapy.*
4. *Orthopedic opinion*
5. *Firm board beneath the mattress*

8. Psychiatric Disorders

There are three clinical syndromes:

1) Postpartum Blues- Maternity blues- **“The baby blues”**;

- ☐ affects 50–70% of women
- ☐ It is a transient, self-limiting condition
- ☐ most commonly starts 3–5 days after delivery and may persist for up to 2 weeks.
- ☐ No specific metabolic or endocrine abnormalities have been detected. But lowered tryptophan level is observed. It suggests altered neurotransmitter function.
- ☐ **Manifestations are:**
 1. panic attacks
 2. episodes of low mood of prolonged duration (>2 weeks)
 3. low self-esteem;
 4. guilt or hopelessness
 5. thoughts of self-harm or suicide
 6. any mood changes that disrupt normal social functioning;
 7. ‘biological’ symptoms (e.g. poor appetite, early wakening);

☐ **Treatment is:**

1. reassurance and psychological support by the family members.
2. If the condition persists, the patient should be referred for psychiatric evaluation

2) Post-natal depression :

- This can affect up to 10–20% of mothers



- *It is more gradual in onset over the first 4–6 months following delivery or abortion.*
- *It may follow miscarriage, termination of pregnancy, live birth, or stillbirth.*
- *presents later in the postnatal period, most commonly around 6 weeks*
- *with amore gradual onset..*
- *a high recurrence rate(50–100%) in subsequent pregnancies and 70% lifetime risk of depressive illness.*

Symptoms include:

1. Early-morning wakening.
2. Poor appetite.
3. Diurnal mood variation (worse in the mornings)
4. Low energy and libido.
5. Lack of interest.
6. Impaired concentration.
7. Tearfulness.
8. Feelings of guilt.
9. Anxiety.
10. Thoughts of self-harm/suicide.
11. Thoughts of harm to the baby

Risk factors for postnatal depressive illness

1. Past history of psychiatric illness.
2. Depression during pregnancy.
3. Obstetric factors (e.g. caesarean section/fetal or neonatal loss).
4. Social isolation and deprivation.
5. Poor relationships.
6. Recent adverse life events (bereavement/illness).
7. Severe postnatal 'blues'.

■ **Management:**

- *Mild to moderate depression may respond to self-help strategies and non-directive counselling.*



- Severe depression will require antidepressants and/or psychotherapy. *Fluoxetine or paroxetine (serotonin reuptake inhibitors) is effective and has fewer side effects. It is safe for breastfeeding*

3) Puerperal psychosis

- ▣ This occurs in 1–2 out of 1000 deliveries after delivery.
- ▣ It presents usually in the 5th postpartum day but usually does so before 4 weeks. The onset is characteristically abrupt, with a rapidly changing clinical picture
- ▣ It may recur with each subsequent pregnancy.
- ▣ is defined as major depression with psychotic features
- ▣ **Symptoms of puerperal psychosis**
 1. agitation.
 2. confusion.
 3. Delusions/hallucinations.
 4. Failure to eat and drink.
 5. Thoughts of self-harm.
 6. Depressive symptoms (guilt, self-worthlessness, hopelessness).
 7. Loss of insight.

▣ **Risk factors for postpartum psychosis**

1. Previous history of puerperal psychosis.
2. Previous history of severe non-postpartum depressive illness.
3. Family history (first/second-degree relative) of bipolar disorder/affective psychosis.
4. Marital problems
5. Lack of family support.

Management:

- 1.** The patient should be admitted to a (regional mother-and-baby unit) with her newborn where she can receive (multidisciplinary care from the specialist medical, nursing and midwifery staff).
- 2.** If the condition is severe, the patient will require (psychotropic medications) (antidepressants, antipsychotics, or mood stabilizers) for at least 6 months and, in some cases, electroconvulsive therapy (ECT).



3. Most patients make a full recovery, but recurrence rates are high (60–80%) in the long term.
4. High-risk patients and those with previous history of puerperal psychosis should be referred to specialist perinatal mental health service antenatally so that an appropriate care plan can be developed and the use of prophylactic medication can be considered soon after delivery. eg. prophylactic lithium, started on the first postpartum day.

How should her breastfeeding be managed?

She should be encouraged to continue breastfeeding but the baby should be monitored for side-effects

TABLE 11.2 Three Categories of Postpartum Mood Disorders			
	Postpartum Blues	Postpartum Depression	Postpartum Psychosis
Incidence (%)	70–80	≥10	0.1–0.2
Average time	2–4 days PP	2 weeks to 12 months PP	2–3 days PP
Average duration	2–3 days, resolution within 10 days	3–14 months	Variable
Symptoms	Mild insomnia, tearfulness, fatigue, irritability, poor concentration, depressed affect	Irritability, labile mood, difficulty falling asleep, phobias, anxiety; symptoms worsen in the evening	Similar to organic brain syndrome: confusion, attention deficit, distractibility, clouded sensorium
Treatment	None; self-limited	Antidepressant pharmacotherapy; psychotherapy	Antipsychotic pharmacotherapy; antidepressant pharmacotherapy (50% of patients also meet depression criteria)

The post-natal examination

It carried out:

- at 6 weeks postpartum
- by general practitioner or by obstetrician if delivery had been complicated

The history includes

1. General well-being
2. Whether the lochia has stopped
3. Whether there are any breastfeeding difficulties



4. If the woman has any urinary or bowel symptoms, specifically incontinence
5. The mental state of the woman. Is there anxiety or depression? How is her relationship with the baby?
6. If sexual intercourse has resumed, what contraception is being used? Are there any sexual difficulties?
7. Ask about previous cervical smear result
8. Progress of the baby
9. Is she start pelvic floor exercises?

Procedure:

- **Examination of the mother**
- **Advice given to the mother**
- **Examination of the baby by a pediatrician.**

✚ Examination of the Mother:

1. Assessment of women's mental & physical health
2. Complete general examination, weight, pallor, blood pressure
3. tone of the abdominal muscles
4. examination of the breast.
5. cervical smear may be taken for exfoliative cytological examination if this has not been done previously

Laboratory investigations (e.g. hemoglobin) depending on the clinical need may be advised.

✚ Discuss with the patient the contraception

☐ **Do not wait until first menses to begin contraception; ovulation may come before first menses.**

☐ **Ovulation may occur by week 6 post-partum**

- 1- **Lactational amenorrhea:** involves exclusive breast-feeding to prevent ovulation. It can be used as a contraceptive method. It is 98% effective for up to 6 months



- 2- IUCD:** it is best to wait at least 4–8 weeks to allow for involution as it Not used while the uterus in undergoing involution due to risk of expulsion and uterine perforation
- 3- COCP:** increase the risk of thrombosis & reduce the amount of breast milk, but in patients who do not desire lactation it should be commenced 4 weeks postpartum.
- 4- Progestgen-only pills (mini-pills):** should be commenced about day 21 following delivery. If done before this, there may be puerperal breakthrough bleeding. 95% effective with typical use without substantially reducing the amount of breast milk.
- 5- Injectable contraception :** (such as depot medroxyprogesterone acetate (Depo-Provera™) given 3-monthly or norethisterone enantate (Noristerat™) given 2-monthly, & preferably be given 5-6 weeks post-partum.
- 6- Sterilization:**
 - In patients who have completed their families; it can be performed during C/S. However; it is better delayed until after 6 weeks postpartum, when it can be done by laparoscopy.

The end