**Puerperium** ****

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**LEARNING OBJECTIVES:**

**Fourth year students should be able to:**

1. Describe the physiological changes that occur in the normal puerperium
2. Summarize the important points in history, examination and investigations to reach the diagnosis common disorders of the puerperium
3. Predict the management option for different case scenarios according to their presentations and types of puerperal abnormalities.
4. To be able to recognize and manage common postpartum psychiatric disorders

**Definition:**

The puerperium refers to the 6-week period following completion of the third

stage of labour, when considerable adjustments occur before return to the

prepregnant state.

For those with complex medical problems, the early puerperium is especially dangerous and most maternal deaths occur during this time.

**Physiological changes:**

* **Uterine involution:**

Involution is the process by which the postpartum uterus, weighing about 1 kg,

returns to its prepregnancy state of less than 100 g.

Immediately after delivery, the uterine fundus lies **immediately below the umbilicus (**about 4 cm below the umbilicus or, more accurately, 12 cm above the symphysis pubis) normally is firmly contracted. However, **by 2 weeks**, the uterus becomes no longer palpable above the symphysis.

Involution occurs by a process of **autolysis,** whereby muscle cells diminish in size as a result of enzymatic digestion of cytoplasm.

Involution appears to be accelerated by the release of oxytocin in women who are **breastfeeding**, as the uterus is smaller than in those who are bottle feeding. Also Uterus is larger following **caesarean section** and in **multiparous women**

A delay in involution in the absence of any other signs or symptoms (e.g. bleeding) is of no clinical significance.

**Causes and Signs of delayed involution**

Artefact.

Full bladder.

Loaded rectum.

Retained products of conception (or clots).

Uterine infection.

Fibroids.

Broad ligament haematoma

* **Genital tract changes**

Following delivery of the placenta, the lower segment of the uterus and the cervix

appear flabby and there may be small cervical lacerations. In the first few days

the cervix can readily admit two fingers; by the end of the first week it should

become increasingly difficult to pass more than one finger, and certainly by the

**end of the second week** the internal os should be closed. However, the external os

can remain open permanently, giving a characteristic funnel shape to the parous

cervix.

**-Lochia**

Lochia is the blood-stained uterine discharge that is comprised of blood and

necrotic decidua.

Only the superficial layer of decidua becomes necrotic and is sloughed off. The basal layer adjacent to the myometrium is involved in the regeneration of new endometrium and this regeneration is complete by the third week.

**Types:**

1.**lochia rubra**; During the first few days after delivery, the lochia is red this

gradually changes to pink as the endometrium is formed,

2. **lochia serosa**: serous by the second week

3. **lochia alba** a scanty yellow-white discharge that lasts for about 1 month.

Persistent red lochia suggests delayed involution that is usually associated with infection or a retained piece of placental tissue

**Management of puerperium**:

1. **Routine observations**:

During the patient’s stay in hospital, **regular checks** are made of her pulse, temperature, blood pressure, fundal height and lochia and any complaints noted.

The **perineum** should be inspected daily if there has been any trauma. The episiotomy or other wounds as caesarean section checked for signs of infection.

It is also important that **urinary output** is satisfactory and that the bladder is being emptied completely. **Bowel motion** is observed.

These observations are necessary to give the earliest warning of any possible complications.

1. **Ambulation in the puerperium**

It is now well established that early mobilization after childbirth is extremely important. **Leg exercises** to encourage venous blood flow and prevent DVT

Exercises to the **abdominal and pelvic floor muscles** are most valuable in

restoring normal tone

1. **Perineal care**

Perineal discomfort is a common problem for mothers. About 80% complain of pain in the first 3 days after delivery, specially for tears, episiotomy and instrumental birth

**Treatment:** non-pharmacological therapies: local cooling (with crushed ice) and pharmacological: topical anaesthetics, such as 5% lignocaine gel, paracetamol, diclofenac given rectally or orally may also be added.

Codeine derivatives are best avoided, as they cause constipation in the mother and drowsiness in some breastfed babies.

The perineum should be kept clean with daily cleaning or showering using tap

water only, and with frequent changing of sanitary pads.

1. **Bladder function**

--Voiding difficulty and overdistension of the bladder are common after

childbirth, especially if regional anaesthesia (epidural/spinal) has been used. It is

now known that after epidural anaesthesia the bladder may take up to 8 hours to

regain normal sensation so a urinary catheter is left in the bladder for at least 12 hours until the woman is mobile.

--Women who have undergone a traumatic delivery, such as a difficult

instrumental delivery, or who have suffered multiple/extended lacerations or a

vulvovaginal haematoma, may find it difficult to void because of pain or

periurethral oedema. Other causes of pain, such as prolapsed haemorrhoids, anal

fissures, abdominal wound haematoma or even stool impaction of the rectum, may

interfere with voiding.

-**treatment**: Encourage frequent emptying of the bladder, warm bathing, analgesics and foley's catheter inserted if cannot pass urine and look for underlying cause.

1. **Bowel function**

Constipation is a common problem in the early puerperium, as a result of an

interruption in the normal diet, intrapartum dehydration and opiate use.

Advice on adequate fluid intake and increase in fiber intake may be all that is necessary.

However, constipation may also be the result of fear of evacuation due to pain

from a sutured perineum, prolapsed haemorrhoids or anal fissures.

1. **Postnatal visits**

In the UK, a mother who has delivered in hospital may be discharged within 6

hours of an uncomplicated birth, although she may request to stay longer.

for low risk women, 1–2 routine midwifery visits in the first 10 days and further

visits as requested. More frequent visits will be required in high-risk women or if

an abnormality has been detected, for example hypertension or maternal pyrexia.

Anti-rhesus D immunoglobulin should be given to all rhesus D-negative mothers of rhesus D positive babies, and mothers who are rubella immune should be offered

immunization.

The haemoglobin level should be checked on day 1–3 and iron offered to those who

are anaemic. Women who are particularly symptomatic or who have a

haemoglobin level of <7 g/dl should be offered a transfusion

At 2 weeks postnatally, women should be specifically asked about the

resolution of the ‘baby blues’

A formal postnatal examination is carried out at about 6 weeks postpartum by

the GP, or by the obstetrician if delivery had been complicated.

Contraception, pelvic floor exercises and infant immunizations are also discussed.

**Complications of the puerperium:**

* **Thrombosis and embolism:**is still the major cause of death in the puerperium approximately 50% of deaths occur post partum**.** Thromboprophylaxis is given

for moderate‐risk women should for 10 days and high‐risk women for 42 days.

* **Puerperal pyrexia**

Significant puerperal pyrexia is **defined as** a temperature of 38°C or higher on any

2 of the first 10 days postpartum, exclusive of the first 24 hours. A mildly elevated

temperature is not uncommon in the first 24 hours, but any pyrexia associated with

tachycardia merits investigation.

**Common sites** associated with puerperal pyrexia include chest, throat, breasts,

urinary tract, pelvic organs, caesarean or perineal wounds and legs



* **Chest complications**

Chest complications are most likely to appear in the **first 24 hours** after delivery,

particularly after **general anaesthesia**.

**Atalectasis** may be associated with fever and can be prevented by early and regular chest physiotherapy.

**Aspiration pneumonia** (Mendelson’s syndrome) must be suspected if there is a spiking temperature associated with wheezing, dyspnoea or evidence of hypoxia

following a general anaesthesia. So fasting is indicated before surgery to prevent regurgitation

* **Genital tract infection/puerperal sepsis**:

genital tract sepsis accounted for 5% of all maternal deaths, **common in Iraq**

**Aetiology**

A mixed flora with low virulence normally colonizes the vagina. Puerperal infection is usually polymicrobial and involves contaminants from the bowel that colonize the perineum and lower genital tract.

Placental separation exposes a large raw area equivalent to an open wound, and retained products of conception and blood clots within the uterus can provide an excellent culture medium for infection

**-Common risk factors for puerperal infection**

1**.Underlying conditions**:

obesity; diabetes; human immunodeficiency virus (HIV).

2.**Antenatal:**

chorioamnionitis; prolonged rupture of membranes; cervical cerclage for cervical incompetence.

3**.Intrapartum:**

prolonged labour; multiple vaginal examinations; instrumental delivery; caesarean section; manual removal of the placenta; retained products of conception.

**-Prevention**

Increased awareness of the principles of general hygiene, a good surgical

approach and the use of aseptic techniques

The risk of sepsis is higher following caesarean section, particularly emergency CS when performed after the onset of labour, but can be prevented by **routine prophylactic antibiotics**. A single intraoperative dose of antibiotics (co-amoxiclav or cephalosporin with metronidazole) is given before the skin incision.

**-Clinical presentation:**

**Symptoms of puerperal pelvic infection**

Malaise, headache, fever, rigors.

Abdominal discomfort, vomiting and diarrhoea.

Offensive lochia.

Secondary PPH.

**Signs of puerperal pelvic infection**

Pyrexia and tachycardia.

Uterus – boggy, tender and larger than expected

Infected wounds – caesarean/perineal (erythema, tenderness swelling and discharge).

Peritonism: the abdomen not moves with respiration

Paralytic ileus.

Indurated adnexae (parametritis) on pelvic examination.

Bogginess in pelvis (abscess).

**-Investigations:**



**The common methods of spread of puerperal infection are as follows**:

An ascending infection from the lower genital tract, directly into the myometrium and the parametrium, and distant sites via lymphatics and blood vessels.

**Management**

-**Mild to moderate** infections can be treated with a broad-spectrum antibiotic (e.g.

co-amoxiclav or a cephalosporin, such as cefalexin, plus metronidazole).

Depending on the severity, the first few doses should be given intravenously.

-**Severe infections**, there is a release of inflammatory and vasoactive

mediators in response to the endotoxins produced during bacteriolysis. The

resultant local vasodilatation causes circulatory embarrassment and hence poor

tissue perfusion. This phenomenon is known as **septicaemic, septic or endotoxic**

**shock,** appropriate **management:** immediate high-dose, broad-spectrum antibiotics (gentamycin and ampicillin or clindamycin IV) and resuscitation with intravenous fluids are provided on a high-dependency unit.

Close liaison with microbiologists and internal medicine specialists is vital.

-**Necrotizing fasciitis** is a rare but frequently fatal infection of skin, fascia and

muscle. It can originate in perineal tears, episiotomies and caesarean section

wounds. Perineal infections can extend rapidly to involve the buttocks, thighs and

lower abdominal wall. A variety of bacteria can be involved, but anaerobes

predominate and *Clostridium perfringens* is usually identified. In addition to general signs of infection, there is extensive necrosis, crepitus and inflammation.

**Management**: manage septic shock, wide debridement of necrotic tissue under general anaesthesia is absolutely essential to avoid mortality. Split-thickness skin grafts may be necessary at a later date.

**Any one of the following signs is present, a diagnosis of severe sepsis should be made with consideration of transfer to intensive care unit**:

1) systolic blood pressure less than 90 mmHg;

2) heart rate more than 130 bpm;

3) oxygen saturation less than 91%;

4) respiratory rate more than 25 per min;

5) responds only to pain or unresponsive.

**Management of wounds' infections (CS, Episiotomy and tears):**

1.Obtain Gram stain and **cultures** from wound material.

2.Wound should be **drained** and debrided with removal of any skin sutures. 3.**Antibiotics** should be given along with packing placed.

4.Surgical repair should **never** be attempted in the presence of infection.

5.The wound should be irrigated twice daily and healing allowed to occur by secondary intention when close spontaneously or Consider secondary repair of incision when wound healthy

**Complication of pelvic infection:**

Wound dehiscence, Pelvic abscess, Septic thrombophlebitis, Septicemia and Subsequent subfertility.

* **Breast puerperal complications**:

**-Blood-stained nipple discharge**: is typically bilateral and believed to be due to epithelial proliferation in late pregnancy or early breastfeeding and lasts for up to 1 week. Is self-limiting and the woman should be reassured.

**-Painful nipples: Cracked nipples** (small fissures in the nipple) and this is associated with an increased risk of breast abscess. The cause is usually **poor positioning** of the baby on the breast, although thrush (candidiasis) may also cause soreness.

The treatment is to correct the underlying problem, but may also require local

antibiotic ointment, analgesics, or even resting the affected nipple. The milk can

be expressed during this time and the breastfeeding restarted once the nipples

have healed.

**-Galactocele**: is a sterile, milk-filled retention cyst of the mammary

ducts following blockage by thickened secretions. It is identified as a fluctuant

swelling with minimal pain and inflammation. It usually resolves spontaneously

assisted by massage of the breast towards the nipple, but may also be aspirated;

with increasing discomfort, surgical excision may become necessary

**-breast engorgement:** commonly seen due to incomplete breast emptying begins by the **2nd or 3rd day** after delivery.

**Presentation**: **Both Breasts** are swollen, tender, tense and warm

Fever rarely exceeds 39°C and characteristically lasts no longer than 24 hours.

Axillary lymph nodes could be enlarged and painful

**Treatment:**

Manual expression of the breasts, Supportive brassiere, Ice packs

Analgesics and give medication to suppress milk production if the baby dead like cabergoline tablets.

Allowing the baby easy access to the breast is the most effective method of treatment and prevention

**-Mastitis**

Inflammation of the breast is not always due to an infective process. Mastitis is

commonly related to breastfeeding problems, and occurs when a blocked duct

obstructs the flow of milk and distends the alveoli. If this pressure persists, the

milk extravasates into the perilobular tissue, initiating an inflammatory process.

**Clinical presentation**:

The woman experiences flu-like symptoms with a tachycardia and pyrexia. In

contrast to breast engorgement, the pyrexia with infective mastitis develops later

(typically **third to fourth postpartum week**) and persists for longer. The affected segment of the breast is painful and appears red and oedematous.

The most common infecting organism is *S. aureus*, which is found in 40% of women with mastitis. Other bacteria include coagulase-negative staphylococci and *Streptococcus viridans*.

**Treatment:** Early localized mastitis can be managed with massage of the breast

(towards the nipple) and analgesia. If the mastitis worsens, then a sample of the

milk should be taken for microbiological culture and flucloxacillin commenced

while awaiting sensitivity results. Breastfeeding from normal breast should be continued during this process.

About 10% of women with mastitis develop a **breast abscess** (diagnosed

using ultrasound) when pus accumulates**, the fever is continuous with a mass is palpable**

**Erythematous segment of the breast with swelling or even fluctuation**

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**Treatment of breast abscess:**

1. Radial surgical incision and drainage under general anaesthesia
2. 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)
3. Continue breastfeeding from the normal breast,
4. Flucloxacilline can be recommended while awaiting sensitivity results.

* **Normal emotional and psychological changes during pregnancy:**

Diagnosing mental illness in pregnancy is complicated by the wide variety of

‘normal’ emotional and behavioural changes that may occur.

**-Postnatal** **‘pinks’**:

for the first 24–48 hours following delivery, it is very common for women to experience an elevation of mood, a feeling of excitement, some overactivity and difficulty sleeping.

**-Postnatal** ‘**blues’**: as many as 80% of women may experience the ‘postnatal blues’ in the first 2 weeks after delivery.

**Clinical presentation**: Fatigue, short temper, difficulty sleeping, depressed mood and tearfulness are common but usually mild, and resolve spontaneously in the majority of cases.

The following psychological disruptions should not be considered normal and require further assessment:

* panic attacks;
* episodes of low mood of prolonged duration (>2 weeks);
* low self-esteem;
* guilt or hopelessness;
* thoughts of self-harm or suicide;
* any mood changes that disrupt normal social functioning;
* ‘biological’ symptoms (e.g. poor appetite, early wakening);
* change in ‘affect’.

**-Postpartum (non-psychotic) depressive illness:**

Between 10% and 15% of women will suffer with some form of depression in the

first year after the delivery of their baby.

3–5% will suffer a severe major postnatal depressive episode. Without treatment, most women will recover spontaneously within 3–6 months;

**-Risk factors for postnatal depressive illness**

Past history of psychiatric illness. Depression during pregnancy.

Obstetric factors (e.g. caesarean section/fetal or neonatal loss).

Social isolation and deprivation. Poor relationships.

Recent adverse life events (bereavement/illness). Severe postnatal ‘blues’.

**-Symptoms of severe postnatal depressive disorder**

Early-morning wakening. Poor appetite. Diurnal mood variation (worse in the mornings).

Low energy and libido. Loss of enjoyment. Lack of interest.

Impaired concentration. Tearfulness. Feelings of guilt and failure. Anxiety.

Thoughts of self-harm/suicide. Thoughts of harm to the baby.

**-Adverse sequelae of postnatal depressive illness**

**Immediate**

Physical morbidity. Suicide/infanticide. Prolonged psychiatric morbidity.

Damaged social attachment to infant. Disrupted emotional development of infant.

**Later**

Social/cognitive effects on the child. Psychiatric morbidity in the child.

Marital breakdown. Future mental health problems.

**Treatment options** include:

Remedy of social factors.

Non-directive counselling.

Interpersonal psychotherapy.

Cognitive–behavioural therapy.

Drug therapy: tricyclic antidepressants or selective serotonin reuptake inhibitors

**-Puerperal psychosis:**

This very severe disorder affects between 1:500 and 1:1,000 women after

delivery. It rarely presents before the 3rd postpartum day (most commonly the

5th), but **usually does so before 4 weeks**. The onset is characteristically abrupt,

with a rapidly changing clinical picture.

**-Risk factors for postpartum psychosis**

Previous history of puerperal psychosis.

Previous history of severe non-postpartum depressive illness.

Family history (first/second-degree relative) of bipolar disorder/affective

psychosis.

**-Symptoms of puerperal psychosis**

Restless agitation. Insomnia. Perplexity/confusion. Fear/suspicion.

Delusions/hallucinations. Failure to eat and drink. Thoughts of self-harm.

Depressive symptoms (guilt, self-worthlessness, hopelessness). Loss of insight.

**Management**

The patient should be referred urgently to a psychiatrist and will usually require admission to a psychiatric unit.

Treatments include:

* Acute pharmacotherapy with neuroleptics, such as chlorpromazine or
* haloperidol.
* Treatment of mania with lithium carbonate.
* Electroconvulsive therapy, particularly for severe depressive psychoses.
* Antidepressants (which will take 10–14 days to be effective) as a second-line
* Recovery usually occurs over 4–6 weeks, although treatment with

antidepressants will be needed for at least 6 months.

* **Obstetric palsy**

Obstetric palsy, or traumatic neuritis, is a condition in which one or both lower

limbs may develop signs of a motor and/or sensory neuropathy following delivery.

**Presenting features** include sciatic pain, foot-drop, paraesthesia, hypoaesthesia

and muscle wasting.

The mechanism of injury is proximal nerve damage as the lumbosacral plexus and nerve tracks are stretched and compressed by the fetal head as they cross the pelvic brim. It is almost always associated with prolonged or obstructed labour and is now very rare following modern labour management.

If obstetric paralysis develops following a normal labour, then epidural

complications and/or herniation of lumbosacral discs should be excluded,

particularly if the woman has been in an exaggerated lithotomy position for

instrumental delivery.

Peroneal nerve palsy can occur when the nerve is compressed between the head of the fibula and the lithotomy pole, resulting in unilateral foot-drop.

The development of urinary and faecal incontinence is most likely due to structural damage to the anal sphincter muscle and supporting fascia.

* **Symphysis pubis diastasis**

Spontaneous separation of the symphysis pubis occurs in at least 1 in 800 vaginal

deliveries. It is usually noticed after delivery and has been associated with

forceps delivery, rapid second stage of labour or severe abduction of the thighs

during delivery.

**Common signs and symptoms** include symphyseal pain aggravated

by weight-bearing and walking, a waddling gait, pubic tenderness and a palpable

interpubic gap. **Treatment:**  includes bed rest, anti-inflammatory agents,

physiotherapy and a pelvic corset to provide support and stability.

**END O LECTURE**