THE Puerperium

By Dr. Ishraq Mohammed
Objectives

- To monitor physiological changes of puerperium
- To diagnose and treat any postnatal complications
- To establish infant feeding
- To advise about contraception
The puerperium refers to 6 weeks period following childbirth, when considerable changes occur before return to the pre-pregnancy state.

Physiological changes:

uterine involution:
Involution is the process by which the post-partum uterus, weighing about 1 kg, return to its pre-pregnancy state of less than 100 gm. Within 2 weeks, the uterus can no longer be palpable above the symphysis. Involution occur by process of autolysis, whereby muscle cells diminished in size with no effect on number of muscle cells. Involution appear to be accelerated by release of oxytocin in women who are breastfeed.
Signs: causes of delayed involution:
1–full bladder.
2–loaded rectum.
3–uterine infection.
4–retained product of conception.
5–fibriods.
6–broad ligament haematoma.
A delay in involution in the absence of any other signs or symptoms i.e. bleeding, is of no clinical significance.
Uterine involution

A. Immediately after delivery: fundus palpable at level of umbilicus

B. 10-14 days later, at level of the symphysis pubis.

C. 6 WKS post partum, non pregnant size
Genital tract changes:
In first few days, the cervix can readily admit two fingers, but by the end of the second weeks the internal os should be closed. However, the external os can remain open permanently, giving characteristic appearance to the parous cervix. In the first few days, the stretched vagina is smooth & oedematous, but by the third week rugae begin to reappear.
Cervix:

- It has reformed within several hours of delivery
- It usually admits only one finger by 1 week
- The external os is fish-mouth-shaped
- It returns to its normal state at 4 weeks after birth
Cervix of nulliparous woman
Cervix of multiparous woman
Lochia:

Lochia is the bloodstained uterine discharge that is composed of blood & necrotic decidua. Only the superficial layer of decidua becomes necrotic & is sloughed off. The basal layer adjacent to the myometrium is involved in the regeneration of new endometrium & this regeneration is completed by the third week.

During the first few days after delivery, the lochia is red [lochia rubra].

LOCHIA SEROSA : serous discharge in the second week after delivery.

LOCHIA ALBA : whitish or yellow white discharge appear the second week.

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

Offensive lochia suggest infection & should be treated with a broad-spectrum antibiotics.

Retained placental tissues associated with increase blood loss. management includes the use of antibiotics & evacuation of retained products.
Puerpural disorders:

1 – perineal complications:

a – perineal discomfort: 80% of patients, which last about 10 days. It is greatest in women with episiotomies or tears & instrumental deliveries. Treatment is by – local cooling.
   – topical anesthesia.
   – analgesia: paracetamol, diclofenac suppositories.

b – perineal infections: bacterial infection with signs of infections. Management by:
   – swabs for microbiological culture.
   – broad spectrum antibiotics.
   – if there is pus, drainage should be encouraged by removal of any skin sutures.

c – spontaneous opening of repaired perineal tears & episiotomies:

is the result of secondary infection. The wound should be irrigated twice daily & healing should be allowed by secondary intention. Sometimes secondary suturing may be required.
2– bladder complication:

a– voiding difficulty & over-distension of the bladder:
either due to pain or peri–urethral oedema especially in
those undergoing traumatic delivery & those with multiple
lacerations or tears & those with vulvo–vaginal haematoma.
Also voiding difficulties is common in those with regional
anesthesia (epidural/spinal) because the bladder may take
up to 8 hours to regain normal sensation. Therefore, urinary
catheter may be left in the bladder for the first 12–24
hours.

b– urinary incontinence:
either stress I. which is rare or true I. due to vesico–vaginal,
urethra–vaginal, or uretero–vaginal fistula. I due to fistula
usually appear in the second week when slough separate.
3– bowel complication:

a- constipation: may be due to interruption in the normal diet and dehydration during labor. Advice on adequate fluid intake and increase fiber intake. It may also be due to pain and fear of evacuation of the bowel.

b- fecal incontinence: due to damage of anal sphincter during delivery (occult damage). Third and fourth degree vaginal tears are also associated with anal incontinence. It may also be due to fistula (recto-vaginal fistula).
4- secondary post-partum haemorrhage: Is defined as fresh blood from the genital tract between 24 hours & 6 weeks after delivery. The most common time of secondary PPH is 7–14 days. Causes:
1- retained placental tissues treatment is evacuation of the uterus after antibiotics cover.
2- infection: endometritis.
3- hormonal contraception.
4- bleeding disorders e.g. von willbrand's disease.
5- choriocarcinoma.
5–obestetric palsy:
Is a condition in which one or both lower limbs may develop signs of a motor & sensory neuropathy following delivery. The patient present with foot drop & paraesthesia. The mechanism of injury is unknown & may be due to compression of the lumbosacral trunk as it crosses the sacroiliac joint during descent of the fetal head. Treatment is by bed rest, analgesia & physiotherapy.

6–symphysis pubis diastasis:
Separation if the symphysis pubis can occur spontaneously or surgical separation of the pubis in labor (symphysiotomy) can be performed in cases of cephalo-pelvic disproportion to increase pelvic diameter. Signs & symptoms include symphyseal pain, waddling gait, pupic tenderness & a palpable interpubic gap. Treatment includes bed rest, anti-inflammatory agents, physiotherapy & a pelvic corset.
7–thromboembolism:
There is a 5 folds increase in the risk of TE in pregnancy & puerperium especially after C/S. Management is by anticoagulant therapy.

8–puerpural pyrexia:
Is defined as temperature of 38c or higher on any two of the first 10 days postpartum, exclusive of the first 24 hours.
In about 80% of women who develop a temperature in the first 24 hours of vaginal delivery, no obvious evidence of infection can be identified. The reverse holds true for women delivering by C/S, when a wound infection should be considered.
Diagnosis & management of PP.:


2. Tonsillitis: throat swab, AB.

3. Pyelonephritis: urine M, C&S, treatment by AB.

4. Endometritis with or without retained placental tissues: diagnosed by pelvic U/S, treatment with AB & uterine evacuation.


7. Wound infection.

8. Meningitis: lumber puncture, treatment with AB.
9– chest complication: 
Chest complications are more likely to appear in the first 24 hours after delivery, particularly after general anesthesia.
1– atelactasis; prevented with early & regular physiotherapy.
2– aspiration pneumonia (mandleson's syndrome).

10– genitalic tract infection:
Genital tract infection following delivery is referred to as puerperal sepsis. The incidence of puerperal sepsis is 3%.
Aetiology of genital tract infection:

Puerperal infection is usually polymicrobial & involves contaminants from the bowel that colonize the perineum & lower genital tract. The most identified organisms were facultative gram-positive cocci, particularly group B streptococcus, frequently co-exist with Mycoplasma species.

Factors that can facilitate infection:

1. Following delivery, natural barriers to infection are temporarily removed & therefore pathogenic organisms can ascend from lower genital tract into the uterine cavity.
2. Placental separation exposes a large raw area equivalent to an open wound.
3. Retained products of conception & blood clots within the uterus can provide an excellent culture media.
4. Lacerations of the genital tract, although may not need surgical repair, they can become a focus for infection similar to iatrogenic wound such as C/S & episiotomy.

Haemolytic Streptococcus group A & staphylococcus aureus are two exogenous organisms that can cause puerperal infection. The toxin produced by these organisms can result in a rapid deterioration into septicaemic shock.
Symptoms of puerperal pelvic infection:
1–malaise, headache, fever, rigor.
2–abdominal discomfort, vomiting & diarrhea.
3–offensive lochia.
4–secondary PPH.

Signs of puerperal pelvic infection:
1–pyrexia & tachycardia.
2–uterus–boggy, tender & large.
3–infected wound–C/S, perineal.
4–peritonism, paralytic ileus.
5–indurated adnexia.
6–bogginess in pelvis.
Investigation for puerperal genital infection:
1–full blood count: anaemia, leukocytosis, thrombocytopenia.
2–urea & electrolytes.
3–high vaginal swab & blood culture: infection screen.
4–pelvic U/S: retained product, pelvic abscess.
5–clotting screen (shock): DIC.
6–arterial blood gases: acidosis & hypoxia.

The common methods of spread of puerperal infection:
1–ascending infection from the lower genital tract or spread via the fallopian tubes to the ovaries, giving rise to a salpingo-oophoritis & pelvic peritonitis.
2–infection may spread by contiguity directly into the myometrium & the parametrium.
3–infection may spread via lymphatics & blood vessels.
In contrast to PID, tubal involvement in puerperal sepsis rarely cause tubal occlusion & consequent infertility. Tubo–sepsis.
Common risk factors for puerperal infection:

1. Antenatal intrauterine infection.
2. C/S.
3. Cervical cerclage for cervical incompetence.
4. Prolonged labor.
5. Prolonged rupture of membrane.
6. Multiple vaginal examination.
7. Instrumental delivery.
10. Obesity, diabetes, HIV.
Treatment:

1– mild to moderate infection can be treated with a broad-spectrum antibiotics e.g. cephalosporin & metronidazole. Depending on the severity of infection, the first few doses should be given intravenously.

2– with severe infection, there is a release of inflammatory & vasoactive mediators, this lead to local vasodilatation & poor tissues perfusion casing septic/ endotoxic shock, & delay in appropriate management could be fatal.
Prevention of puerperal sepsis:

1–good surgical approach.
2–use of aseptic techniques.
3–use of prophylactic antibiotics during C/S in the form of a single intraoperative dose of antibiotics (cephalosporin plus metronidazole or amoxiclav) should be given after clamping of the umbilical cord to avoid unnecessary exposure of the baby to the antibiotics.
<table>
<thead>
<tr>
<th>Regimen</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clindamycin 900 mg + gentamicin 1.5 mg/kg, q8h intravenously</td>
<td>&quot;Gold standard,&quot; 90–97% efficacy, once-daily gentamicin dosing acceptable</td>
</tr>
<tr>
<td>Clindamycin + aztreonam</td>
<td>Gentamicin substitute with renal insufficiency</td>
</tr>
<tr>
<td>Extended-spectrum penicillins</td>
<td>Piperacillin, ampicillin/sulbactam</td>
</tr>
<tr>
<td>Extended-spectrum cephalosporins</td>
<td>Cefotetan, cefoxitin, cefotaxime</td>
</tr>
<tr>
<td>Imipenem + cilastatin</td>
<td>Reserved for special indications</td>
</tr>
</tbody>
</table>
The breast:

Breastfeeding:

The advantage of breast feeding:

1–readily available at the right temperature & ideal nutritional value.
2–cheaper than formula feed.
3–associated with a reduction in:
   –childhood infective illness, especially gastroenteritis.
   –fertility with amenorrhea.
   –atopic diseases e.g. eczema & asthma.
   –necrotizing enterocolitis in preterm babies.
   –juvenile diabetes.
   –childhood cancer, especially lymphoma.
   –premenopausal breast cancer.
Breast disorders:
1–bloodstained nipple discharge.
2–painful nipples.
3–calactocele.
4–breast engorgement:
Usually begins in the second or third postpartum day & if breastfeeding has not established effectively, the over-distended & engorged breast becomes very painful & can give rise to puerperal fever up to 39°C in 13% of patients. Although the fever rarely lasts more than 16 hours, other infective causes need to be excluded.
Treatment: allowing the baby easy access to the breast is the most effective method of treatment & prevention.
5–mastitis: inflammation of the breast. The affected segment of the breast is painful and red & oedematous. Flu-like symptoms develop associated with pyrexia & tachycardia. In infective mastitis, the fever developed later & persist longer. The most common infective organism is *staphylococcus aureus*. The most common sources of infection are baby's nose or throat. The milk should be sent for M&C&S & antibiotics (flucloxacillin) can be commenced while awaiting sensitivity result.

If breast abscess developed, it require drainage.
Contraception :

1– lactational amenorrhea : less than 2% in the first 6 months after delivery.
2– IUCD: it is best to wait at least 4 weeks to allow for involution.
3– COCP: increase the risk of thrombosis & affect breastfeeding but in patients who don't desire lactation it should be commenced 4 weeks postpartum.
4– progestogen–only pills (mini–pills): should be commenced about day 21 following delivery.
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.
Thank you