PUERPERIUM, LACTATION AND POSTNATAL CARE

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DEFINITION

- It is the period following childbirth during which the body tissues revert back to the pre-pregnant state both anatomically and physiologically.
- Involution
- Puerperal

PHYSIOLOGICAL CHANGES

GENERAL PHYSIOLOGIC CHANGES

- Pulse
- Temperature – should not be above 37.2 C(99)F within first 24 hours. On 3rd day breast engorgement – slight rise in temp.
- Urinary tract – edematous, hyperemic bladder- over distended – uti
- Kidney/ ureter normalize in 8 weeks
- Diuresis - 2nd/3rd day
- GIT, thirst /constipation
- Weight loss – further loss of 2kg (Diuresis)
- Fluid loss – 2l in 1st week and 1.5l during next 5 weeks.
- Changes in abdominal wall, Striae gravidarum do not disappear
  Divarication of recti/ flabby abdominal wall
- RBC vol /PCV normal by end of 1st week
- Leukocytosis ( up to 30,000)
- Platelets decrease immediately but increases in 4-10 days
- ↑ fibrinogen levels persists up to 2 weeks
- ↑ ESR during puerperium
- Hypercoagulable state persists during puerperium

CVS CHANGES

- Cardiac output peaks after delivery to 80% above pre-labor value and remains elevated for about 48hours post partum
- Blood volume reduce by 20% by 5th day
  Hormonal changes
- hCG, estrogen, progesterone falls to pre-pregnant levels in 1 week time
- Menstruation and ovulation
  If patient do not breastfeed her baby- menses return by 6th week following delivery- 40%.by 12th week in 80%
  If patient breast feeds her baby then menstruation will be suspended in 70% till breast feeding stopped. In 30% variable starts even before that.
- Ovulation
  In non-lactating mothers ovulation occurs as early as 4 weeks and in lactating mothers about 10 weeks after delivery.
- Breast feeding → ↑ prolactin inhibits ovarian response to FSH less follicular growth hypo estrogenic state amenorrhea
- ↑ Prolactin suppress release of LH no LH surge anovulation

Genital Tract Changes

Uterine Involution
- Postpartum uterus returns to pre-pregnant state
- By autolysis
- Aided by release of oxytocin in breastfeeding women (contractions – occlude blood vessels formerly supplying placenta)
- Size reduces – by 10 days, no longer palpable PA
- Menstruation delayed (dt lactation) – returns by 6 weeks (if not lactating)
- Delayed involution can be due to
1. Uterine infection
2. Retained products of conception
3. Fibroids
4. Broad ligament haematoma
   - By end of 2nd week, the internal os closes
   - The external os remains open permanently (parous cervix)

Lochia
- Bloodstained uterine discharge = blood + necrotic decidua
- First few days after delivery – red
- Gradually changes to pink
- Serous by the end of 2nd week
- Persistent red lochia suggests delayed involution

PUERPERAL DISORDER

Postpartum Haemorrhage

Perineal Complications
Major problem - about 80% complain of pain after first 3 days of delivery
Discomfort is greatest in
- Spontaneous tear
- Episiotomy
- Instrumental deliveries
- Infections of the perineum
Rx: anti-inflam Voltarol

Bladder Function
- Urinary retention
  - Voiding difficulty and overdistension (complain abdo pain) of the bladder
  - Due to:
    - Especially regional anaesthesia (epidural/spinal)
    - Traumatic delivery
• GIT: prolapsed haemorrhoid, anal fissures, abdominal wound haematoma
  o Complications:
    • Infection → pyelonephritis
    • Overflow incontinence
    • Permanent voiding problem
  – Incontinence

Bowel Function
  – Constipation
    o Possible causes are
      1. Interruption in the normal diet
      2. Dehydration during labour
      3. Fear of evacuation due to pain from sutured perineum, prolapsed haemorrhoids or anal fissures
    o Important to prevent because: large and hard stool would disrupt the repaired anal sphincter and cause anal incontinence
    o Prevention: lactulose, Fybogel or methylcellulose
  – Other GIT problems:
    o haemorrhoids
    o faecal incontinence (pudendal nerve and anal sphincter damage; esp forceps delivery)
    o recto-vaginal fistula (rare; undx 3rd degree tear, inadequate suture, infection)

Secondary Postpartum Haemorrhage
  – Defined as fresh bleeding from the genital tract between 24 hours and 6 weeks after delivery
  – Most commonly due to retained placental tissue
  – Associated features are crampy abdominal pain, uterus larger than appropriate, passage of bits of placental tissue and signs of infection
  – Other causes
    1. Endometritis
    2. Hormonal contraception
    3. Bleeding disorder

Obstetric Palsy
  – One or both lower limbs develop signs of motor and/or sensory neuropathy
  – Presentation: sciatic pain, foot drop and muscle wasting
  – Mechanism of injury is unknown

Thromboembolism
  – DVT, pulmonary embolism
  – Risk increases 5 fold during pregnancy and puerperium
  – More common after Caesarean section
Genital Haematoma

- Occurs following trauma
- Classified into
  1. Infralevator haematoma (vulval, perineal and low vaginal)
  2. Supralelevator (broad ligament)

Puerpural infections

A common cause of childbirth-related death, puerperal infection is an infection of the birth canal and other structures during the postpartum period. It can result in endometritis, parametritis, pelvic and femoral thrombophlebitis, and peritonitis. In the United States, puerperal infection develops in about 6% of maternity patients. The prognosis is good with treatment.

Causes of Puerperal infection:

Microbes that commonly cause puerperal infection include:
- streptococci
- coagulase-negative staphylococci
- Clostridium pelfringens
- Bacteroidesfragilis, and Escherichia coli.

Most of these microbes are considered normal vaginal flora. Puerperal infection in the presence of certain predisposing factors:
- such as prolonged and premature rupture of the membranes:
  prolonged (more than 24 hours)
- traumatic labor, cesarean section
- frequent or unsanitary vaginal examinations or unsanitary delivery
- retained products of conception
- Hemorrhage
- maternal conditions, such as anemia or dehilitation from malnutrition.

Signs and symptoms of Puerperal infection:

A characteristic sign of puerperal infection is fever (at least 100.4 F [38 C]) that occurs on any 2 consecutive days up to the 11th day postpartum (excluding the first 24 hours). This fever can spike as high as 105° F (40.6° C) and is commonly associated with chills, headache, malaise, restlessness, and anxiety.

Accompanying signs and symptoms depend on the extent and site of infection.

1. endometritis there is heavy, sometimes foul-smelling lochia; tender, enlarged uterus; backache; severe uterine contractions persisting after childbirth.
2. Parametritis (pelvic cellulitis) symptoms are vaginal tenderness and abdominal pain and tellderness (pain may become more intense as infection spreads).

The inflammation

1. localized, may lead to abscess formation
2. spread through the blood or lymphatic:
   a) pelvic thrombophlebitis:
     - severe, repeated chills
     - swings in body temperature
     - lower abdominal or flank pain
     - a palpable tender mass over the affected area,
b) femoral thrombophlebitis:
   - pain,
   - stiffness
   - swelling in a leg or the groin
   - inflammation or shiny, white appearance of the affected leg
   - Malaise, fever; and chills, usually beginning 10 to 20 days postpartum (these signs may precipitate pulmonary embolism).

c) peritonitis is possible with its associated symptoms of fever with tachycardia (greater than 140 beats per minute), weak pulse, hiccups, nausea, vomiting, and diarrhea, and constant and possibly excruciating abdominal pain.

**Diagnosis of Puerperal infection:**
Development of the typical clinical features, especially fever within 48 hours after delivery, suggests a diagnosis of puerperal infection.

A culture of lochia, blood, incisional exudate (from cesarean incision or episiotomy), uterine tissue, or material collected from the vaginal cuff that reveals the causative organism may confirm the diagnosis.

Within 36 to 48 hours, white blood cell count usually demonstrates leukocytosis (15,000 to 30,000/ul).

Typical clinical features usually suffice for diagnosis of endometritis and peritonitis.

In parametritis, pelvic examination shows induration without purulent discharge; culdoscopy shows pelvic adnexal induration and thickening. Red, swollen abscesses on the broad ligaments are even more serious indications because rupture leads to peritonitis.

**Diagnosis of pelvic or femoral thrombophlebitis**
- clinical signs
- Venography
- Doppler ultrasonography
- Rielander's sign (palpable veins inside the thigh and calf)
- Payr's sign (pain in the calf when pressure is applied on the inside of the foot)
- Homans' sign (pain on dorsiflexion of the foot with the knee extended). Homan's sign should be elicited passively by asking the patient to dorsiflex her foot because active dorsiflexion could, in theory, lead to embolization of a clot.

Other conditions to consider are pelvic abscess, deep venous thrombophlebitis, pyelonephritis, cystitis, mastitis, atelectasis, and wound infection.

**Treatment of Puerperal infection:**
- Treatment of puerperal infection usually begins with I.V. infusion of broadspectrum antibiotics and is continued for 48 hours after fever is resolved.
- Ancillary measures:
  - analgesics for pain
  - antiseptics for local lesions
  - anti emetics for nausea and vomiting from peritonitis.
- Supportive care includes bed rest, adequate fluid intake, I.V. fluids when necessary, and measures to reduce fever. Sitz baths and heat lamps may relieve discomfort from local lesions.
- Surgery may be necessary to remove any remaining products of conception or to drain local lesions, such as an abscess in parametritis.
- Management of septic pelvic thrombophlebitis consists of heparinization for approximately 10 days in conjunction with broad-spectrum antibiotic therapy.

**Special considerations and prevention tips of Puerperal infection:**

1. Monitor vital signs every 4 hours (more frequently if peritonitis has developed), intake, and output. Enforce strict bed rest.
2. Frequently inspect the perineum. Assess the fundus, and palpate for tenderness (subinvolution may indicate endometritis). Note the amount, color, and odor of vaginal drainage, and document your observations.
3. Administer antibiotics and analgesics, as ordered. Assess and document the type, degree, and location of pain as well as the patient's response to analgesics. Give the patient an antiemetic to relieve nausea and vomiting, as necessary.
4. Provide sitz baths and a heat lamp for local lesions. Change bed linen, perineal pads, and under pads frequently. Keep the patient warm.
5. Elevate the thrombophlebitic leg about 30 degrees. Don't rub or manipulate it or compress it with bed linen. Provide warm soaks for the leg. Watch for signs of pulmonary embolism, such as cyanosis, dyspnea, and chest pain.
6. Offer reassurance and emotional support. Thoroughly explain all procedures to the patient and family.
7. If the mother is separated from her infant, provide her with frequent reassurance about his progress. Encourage the father to reassure the mother about the infant's condition as well.
8. Maintain aseptic technique when performing a vaginal examination. Limit the number of vaginal examinations performed during labor. Take care to wash your hands thoroughly after each patient contact.
9. Keep the episiotomy site clean.
10. Screen personnel and visitors to keep persons with active infections away from maternity patients.

Instruct all pregnant patients to call the health care provider immediately when their membranes rupture. Warn them to avoid intercourse after rupture or leak of the amniotic sac. Teach the patient how to maintain good perineal hygiene following delivery.
Puerperal Pyrexia
Def: temperature $\geq 38^\circ C$ on any 2 of the first 10 days postpartum, exclusive of the first 24 hours

Note: there is an image here summarizing “Investigations for puerperal Genital Infection”, but it was inappropriate for printing so it was skipped.

Genital tract infection
- Puerperal infection is usually polymicrobial
- Contaminants from the bowel that colonize the perineum and lower genital tract
- Gram-positive cocci
- Natural barrier are removed
- Placental separation, retained POC, blood clots -- culture medium

Common risk factors for puerperal infection:
- Antenatal intrauterine infection
- Caesarean section
- Cervical cerclage for cervical incompetence
- Prolonged rupture of membrane
- Prolonged labour
- Multiple vaginal examination
- Instrumental deliveries
- Retained products of conception

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 large
- Infected wound - caeserean/perineal
- Peritonism
- Paralytic ileus
- Bogginess in pelvis (abscess)

Investigations for puerperal genital infections
- FBC – anaemia, leukocytosis, thrombocytopenia
- BUSE – fluid & electrolyte imbalance
- High vaginal swabs & blood culture
  - infection screen
- Pelvic ultrasound
  - retained products, pelvic abscess
- Clotting screen (haemorrhage / shock)
  - DIVC
- Arterial blood gas (shock)
  - acidosis, hypoxia

Post Partum Psychiatric Syndromes
- Underrecognized
- Undertreated
- Underresearched
  - First recognized with publication of DSM IV because they were not felt to have distinguishable features from other psychiatric disorders
  - Most classified as mood disorder subsets

Post Partum Psychiatric Syndromes
- Epidemiology
  - Post partum psychosis
    - 1:500
    - Risk for previously affected 1:3
  - Non psychotic depression
    - 1:10-15
    - Risk of previously affected 1:2
    - In patients with history of mood disorder and previous post partum depression ~ 100%

Post Partum Psychiatric Syndromes
Post partum blues affects 50-80%
due to lack of major symptoms not classified as a disorder

Predisposing Factors
- Primiparous women
- Women with personal or family history of mood disorders
- Previous history of Postpartum depression/psychosis
- Perinatal death
Sheehan’s Syndrome

1967 Howard Sheehan described postpartum necrosis of the anterior pituitary
- blood loss during pregnancy followed by circulatory collapse of the pituitary
- causes array of multiglandular disorders
- causes agitation, hallucinations, delusions, & depression

PHYSIOLOGY OF LACTATION

Production of milk
- Suckling → afferent impulses to hypothalamic-pituitary axis → prolactin release from ant pituitary → acts on secretory cells of alveoli → stimulate synthesis of milk proteins
- Prolactin release is controlled by prolactin inhibitory factor (Dopamine)

Milk ejection reflex
- suckling → oxytocin from post pituitary → contraction of myoepithelial cells → expulsion of milk
- Can be inhibited by emotional stress

Breastfeeding

Poor positioning

Good positioning

Nipple at junction of soft and hard palate, much of the areola in baby’s mouth.
↓
prevent engorgement, mastitis, nipple trauma, insufficient milk
ADVANTAGES OF BREAST FEEDING

<table>
<thead>
<tr>
<th>To the child</th>
<th>To the mother</th>
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<tbody>
<tr>
<td>Best nutrition (protein, carbohydrate, fat, minerals)</td>
<td>Promotes mother and child bonding</td>
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<tr>
<td>Reduces risk of infections – diarrhoeas, necrotizing enterocolitis, bacterial meningitis</td>
<td>Prevents uterine bleeding after delivery</td>
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<tr>
<td>Reduces allergies – atopic dermatitis, asthma and allergic rhinitis</td>
<td>Natural form of family planning (contraception)</td>
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<tr>
<td>Optimal physical, emotional and mental development of the child</td>
<td>Reduces risk of Breast and Ovarian Cancer</td>
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Medications & Breast Feeding

- **Drugs and breast milk.** Drugs concentrated in breast milk tend to be weak bases (such as metronidazole, antihistamines, erythromycin, or antipsychotics and antidepressants).
- Drugs absolutely contraindicated in breast feeding. Chemotherapeutic or cytotoxic agents, all drugs used recreationally (including alcohol and nicotine), radioactive nuclear medicine tracers, lithium carbonate, chloramphenicol, phenylbutazone, atropine, thiouracil, iodides, ergotamine and derivatives, and mercurials.
- Drugs to strongly avoid or consider bottle feeding.
  - Antipsychotics, antidepressants, metronidazole, tetracycline, sulfonamides, diazepam, salicylates, corticosteroids, phenytoin, phenobarbital, or warfarin.
- Drugs safe to use in normal doses. Acetaminophen, insulin, diuretics, digoxin, beta-blockers, penicillins, cephalosporins, erythromycin, birth control pills, OTC cold preparations, and narcotic analgesics (short term in normal doses).
- Lactation-suppressing drugs.
  - Levodopa, anticholinergics, bromocriptine, trazodone, and large-dose estradiol birth control pills.

Breast Problems During Lactation

- Mastitis
  - **S/S**
  - **Organisms**
  - **Rx**
- Obstructed ducts
  - **S/S**
  - **Rx**
- Other
POSTNATAL CARE
- Six weeks postpartum
- Ask about urinary incontinence, dyspareunia
- Cervical smear
- Contraception
- Family Planning advice
- Rehabilitation - Pelvic floor exercise to prevent hernia and prolapse
- Breast feeding mother need suitable care. Eg : diet and emotion

Analgesics
- Acetaminophen
- Aspirin
- NSAIDs
- Codeine- complicated by high incidence of constipation & light headedness
- Afterpains especially problematic during suckling due to oxytocin release

Immunizations
- Puerperium is ideal time to administer rubella vaccine for those found non immune
- Rh- women with Rh+ baby should receive appropriate amounts of Rh immune globulin

Contraception
- Ovulation may occur by week six
- Sexual intercourse often resumed by week two-three
- Oral contraceptives may be started 1-2 weeks post partum in non lactating female

Thank you