NEET SS

OBSTETRICS

PART 2

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PUERPERIUM

Introduction 00:00:09

Definition : Period after childbirth.

Now called as 4th trimester (ACOG Guidelines).

4th trimester : childbirth upto 12 weeks.

Puerperium : Till 4 to 6 weeks after delivery.

Post Natal Visits:

ACOG recommendations	Government Of India recommendations 4 post natal visits
• Initial visit : 3rd week. • Final visit : 12 weeks. • Between this time : Number of visits depends on need	• First visit : 1st day after delivery. • Second visit : 3rd day after delivery. • Third visit : 7th day after delivery. • Fourth visit : 6 weeks after delivery.

Anatomical & Physiological changes :

Organ/ site	Change	Special note
Uterus :		
Immediately after delivery.	At the level of umbilicus. cricket ball consistency. Fundal height ↓ by 1 cm/day (1 finger breath per day).	Weight of uterus : 1000 g. 2 days after delivery : Fundal height will be 2 finger breaths below the umbilicus.

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Organ/site	Change	Special note
After 1 week. After 2 weeks After 4 weeks	Midway between umbilicus & pubic symphyis. Not palpable. Involution complete.	Weight of uterus : 500 g. Weight of uterus : 300 g. Weight of uterus : 100 g. • Sonographically, uterus returns to pre pregnant state by 8 weeks. • Involution is due to decrease in size of muscle fibers & not their number. • Involution is faster in nulliparous > multiparous.
Lower uterine segment	Contracts & becomes isthmus.	
Cervix	10 cm dilated at delivery. Remains 2 to 3 cm dilated for few days & then contracts.	
External OS	Multiparous : Transverse slit. Nulliparous : Pinpoint/circular.	

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Organ/site	Change	Special note
Endometrium	During pregnancy, placenta produces progesterone which supports endometrium (Decidua). After delivery, placenta is delivered. ↓ Decreased progesterone. ↓ Support to decidua lost. ↓ Decidua shed (lochia).	Lochia : Shedding of decidua after delivery. Components : Decidua, blood, leucocytes, exudates. Sequence : Lochia rubra (red) ↓ Lochia serosa (≥ 4 days). ↓ Lochia alba(≥ 10 days). Average duration of lochia discharge : 24 to 36 days.
Placental site involution	Takes 6 weeks. Immediately after delivery, placental site = size of palm. By the end of 2nd week = 3 to 4 cm in diameter.	Placental site is the last to involute. Hence endometritis begins from this site.

Ovarian function

00:06:50

Ovarian function	Partially/non breast feeding female	Breast feeding female
Menstruation	Returns by 6-8 weeks.	Delayed.

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Ovarian function	Partially/non breast feeding female	Breast feeding female
Ovulation	Occurs by 5-11 weeks (mean : 7 weeks). Earliest : 28 days	Delayed, Risk of pregnancy- 4%/year
Contraception Rule of 3	By 3 weeks after delivery	by 3rd month after delivery.

Normal changes in females after delivery :

- Marked leucocytosis (Not more than 25000/microliter).
- Marked thrombocytosis.
- Increase in granulocytes.
- Relative lymphopenia.
- Absolute eosinopenia.
- Hemoglobin & hematocrit decreases.
- Increased fibrinogen of pregnancy is maintained in first week postpartum.
- Post partum diuresis (due to retention of sodium and potassium in pregnancy).

Return of parameters to normal levels	
Blood volume	1 week after delivery.
Cardiac output & HR	10 days after delivery (in initial 24 to 48 hours, it is elevated hence maximum chances of Heart failure).
GFR	2 weeks.
Dilated ureter & renal pelvis	2 to 8 weeks. Urinary retention is common.
Weight loss	Weight loss of 5 to 6 kg (Immediately after delivery) + subsequent weight loss of 2 to 3 kg (due to postpartum diuresis).

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After pains :

- Due to uterine contractions which occur at irregular intervals after delivery.
- Seen in multiparous females.
- Increases with suckling of breast due to release of oxytocin.
- Decrease in intensity and becomes mild by day 3.
- Females with postpartum uterine infection : Pains are severe and persistent.

Sub involution :

Due to

1. Incompletely remodelled spiral arteries.
2. Retained placental products.
3. Infection.

C/o excessive uterine bleeding or prolonged lochia.

On bimanual examination : Uterus is bigger than expected.

D/d : Retained placental products.

IOC : Pelvic USG.

- Thick endometrium with vascularity : Retained placental products.
- Enlarged uterus with tubular hypoechoic areas in myometrium : Neovascularization & dilated vessels i.e subinvolution (incompletely remodelled spiral arteries.)

Mx : Uterotonic drugs.

If it fails, then gentle curettage done : Carries the risk of developing Asherman's syndrome.(intrauterine adhesions)

Monitoring in postpartum period 00:15:00

Uterine tone	every 15 minutes for 2 hours after delivery.
Blood pressure & pulse rate	every 15 minutes for 2 hours after delivery.
Temperature	Every 4 hours for first 8 hours and then every 8 hours.
Orally allowed	2 hours after vaginal delivery.

Voiding	Female should void within 4 hours after delivery. If not, do USG. ↓ Residual volume > 200 ml & patient unable to void. ↓ Catheterize for 24 hours

Discharge :

- Uncomplicated vaginal delivery : 48 hours of delivery.
- Caeseran section : 96 hours after caeserean.

Sexual activity can be resumed by 2 weeks after delivery.

Contraindications of breast feeding :

maternal causes :

- Drug abusers.
- Uncontrolled alcoholic.
- Active/ untreated TB.
- Active herpes infection with lesions on breast.
- Undergoing breast cancer treatment.
- On drugs like cyclophosphamide, cyclosporine, doxorubicin, methotrexate & mycophenolate.

Infant causes :

- Galactosemia.

Breastfeeding is not contraindicated in :

- Covid 19 infection.
- HIV +ve patients (NACO guidelines).
- Hepatitis B + ve : If infant has received immunoprophyiaxs.
- Herpes Simplex : If no breast lesions present.
- After gadolinium MRI.

Puerperal pyrexia

00:18:33

Definition : Temperature (oral) ≥ 38°C or 100.4°F on 2 occasions within first 10 days of delivery excluding first 24 hours.

most important risk factor : Caeserean section.

Therefore a single dose of peri operative antibiotics is recommended in all females undergoing Caeserean sections.

Microbiology : Polymicrobial.

Pathogenesis :

Risk factors : C section, PROM, Prolonged labor, multiple vaginal examination.
micro organisms in cervix & vagina.

↓

most important cause :
Infection of placental site (last to involute).
OR
Wound infection : Uterine incision infection.

↓

Endometritis

Fever.
Tachycardia with parallel rise of fever.
midline lower abdominal pain.
Uterine tenderness.

↓

Spread to :
myomterium, Parametrium.
Pelvis/ Peritoneum, Bloodstream : septicemia.

Investigations :

- Increased WBC (15000 to 30000) : normal during puerperium.
- Blood culture : Depending on patient's condition.
- Endometrial culture : Not done in endometritis.

Management :

- Mild endometritis following vaginal delivery :
  Oral amoxiclav + oral metronidazole.

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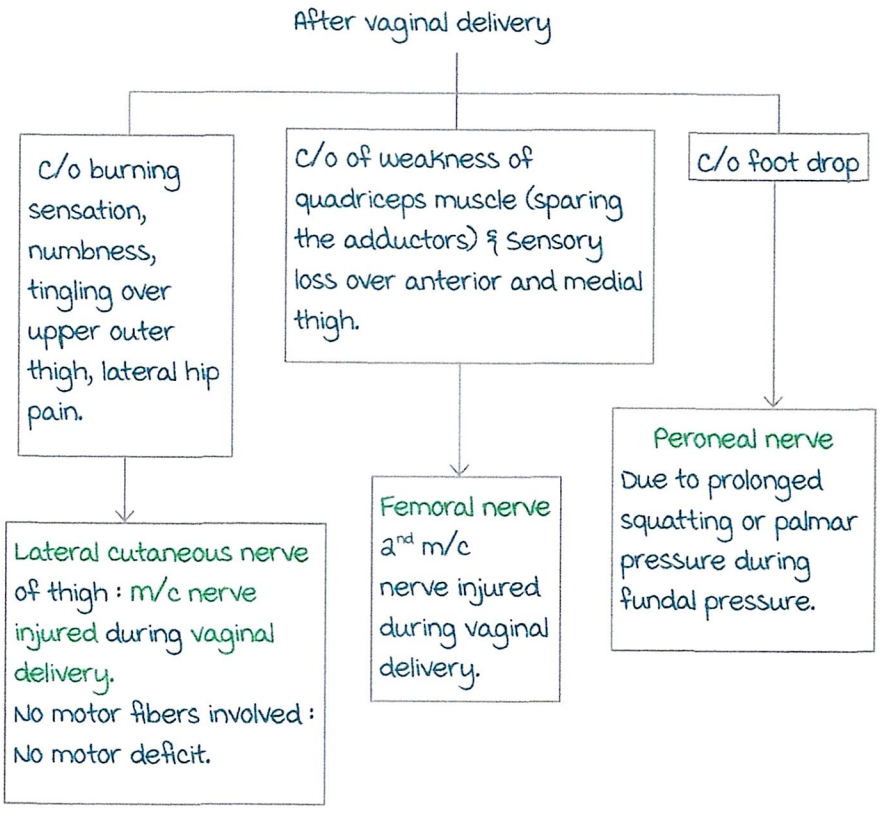
- Infection following caeserean section :
  IV Ampicillin + Gentamycin.

When afebrile for 24 hours : switch to oral antibiotics.

Most persistent fever after childbirth caused by : Genital tract infections.
First 24 hours are excluded as generally low grade fever present and resolves.
If fever ≥39°C within first 24 hours : Group A streptococcal infection.

Breast fever :

- Occurs in non breast feeding female due to breast engorgement.
- Rarely ≥ 39°C.
- Lasts < 24 hours.



- m/c nerve injured after caeserean section :
  Ilioinguinal nerve & iliohypogastric nerve.
- m/c nerve injured during McRobert's maneuver :
  Lateral cutaneous nerve of thigh

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ANTEPARTUM HAEMORRHAGE

Antepartum haemorrhage 00:00:52

Any bleeding that occurs into or from the genital tract beyond the period of viability (28 weeks in India, 20 weeks in USA).

Causes :

most important :

- Placenta previa (1/300 pregnancies).
- Abruptio placenta (1/200 pregnancies) (m/c).

Less important :

- Vasa previa.
- Preterm labor (show).
- Rupture of uterus.

Abruptio placenta : Premature separation of normally situated placenta before the delivery of the baby.

Inciting factors (trauma/ pregnancy induced hypertension) → Rupture of spiral arteries in decidua basalis leads blood collection behind placenta → ↑in intervillous space pressure → Bleeding and release of tissue thromboplastin (an uterotonic agent lead to induction of labor and DIC).

Chances of DIC : Concealed type > Revealed type.

Placenta previa : Placenta is in lower uterine segment (normally in upper segment).

Uterine contraction/ cervical changes → Shearing force applied to the inelastic placental attachment site → Opening of venous sinuses → Bleeding from intervillous space.

No thromboplastin releases → Soft and nontender uterus.
Vaginal examination & intercourse : C/I (cause bleeding).
Transvaginal USG : Not C/I (probe kept 2 cms below OS).

Vasa previa : Velamentous insertion of umbilical cord in which vessels are traversing over the internal os (fetal blood).

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Steps in management of APH

00:12:27

Pregnant female having c/o vaginal bleeding at ≥ 28 weeks

Next step

Maternal resuscitation

2 large bore IV cannulas (14 : orange, 16 : grey).
Obtain samples for ABO, Rh type, CBC, BT, CT, coagulation profile.
Start ringer lactate/ normal saline and give O_2 by mask.
Maintain airway, breathing and circulation.

History and per abdominal examination :

- Abruptio placenta : Tense, tender, and rigid abdomen.
- Placenta previa : Non tender and soft abdomen.

Vitals unstable/ fetal distress → Emergency C-section

Vitals stable → Transabdominal scan (Screening test)

- Placenta is in lower segment → Placenta previa → Transvaginal sonography
- Retroplacental hematoma/placental thickening/Jell-O sign (shimmering of the placenta on maternal/transducer movement) → Abruptio placenta (clinical diagnosis)

USG : Non diagnostic to r/o abruptio placenta.
Per vaginal examination : C/I in APH unless placenta previa is ruled out.

Placental migration :
Accurate detection of placenta previa/ low lying placenta can be done by USG : At 16 weeks of pregnancy.
But, diagnosis of it is not made at this time as in 90% of cases, trophotropism of placenta occurs.
Trophotropism : migration of placenta from lower uterine

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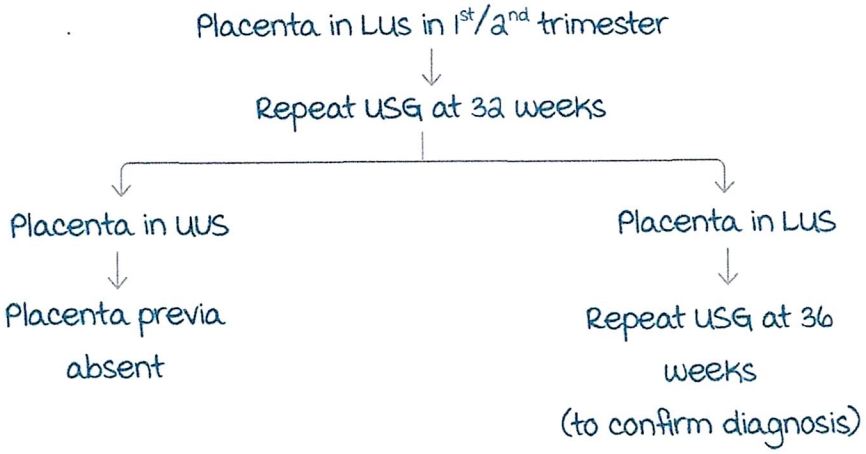
segment (LUS) → upper uterine segment (UUS) during 3rd trimester.

Reason : Differential growth of the uterus (growth : LUS > UUS).

Length of the LUS (LUs form from isthmus) in the 1st trimester : 5 mm, In the 3rd trimester : 5 cm.

Best time to do USG for localizing placenta : 3rd trimester.



Risk factors for placenta previa

00:22:23

most important : Past h/o of placenta previa (recurrence rate : 5%)	
Large Placenta	Twin pregnancy
	Placenta succenturiata
	Placenta bilobata
	Smoking (placental hypertrophy due to CO hypoxemia)
Prevention of placental migration	C-section scar
	Hysterotomy scar
	↑ number of C-section
	Present h/o placenta previa + Previous h/o C-section is an important risk factor for placenta accreta syndrome (r/o by doing doppler).
Others	↑ maternal age
	↑ maternal parity
	↑ maternal serum α feto protein
	ART/IVF (↑ maternal age, twins)

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Classification of placenta previa

00:28:34

New classification :

	Placenta previa	Low lying placenta
Location of placenta	At the level of internal os or above it.	Within 2 cm of the internal os.
Covering of internal os by placenta	Yes (partial/complete)	No (does not touch)

Older classification :

	Type 1	Type 2	Type 3	Type 4
Name	Lateral placenta previa	marginal placenta previa	Partial placenta previa	Complete placenta previa
Covering of internal os by placenta	No (within 2 cm of internal os but in LUS)	Edge reaches margin of os without covering it	Partially	Completely

Type 1 — Anterior, Posterior } minor degree of placenta previa.

Type 2 — Anterior, Posterior } major degree of placenta previa.

Type 3 and Type 4

Type 2 posterior : Dangerous variety of placenta previa.

Note : Stollworthy's sign : Seen in posterior type 1 & 2 placenta previa.

When the foetal head is pushed into pelvis → Cord compression → Foetal distress.

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Clinical features

00:33:18

	Placenta previa	Abruptio placenta
Bleeding	≥ 28 weeks.	≥ 28 weeks.
Pain in abdomen	Painless (except in preterm labor).	Painful d/t thromboplastin.
Blood color	Bright red.	Dark red
Causes	No.	Trauma/ high BP.
Recurrent bleeding	Yes.	No.
Warning haemorrhage	Present (followed by excessive bleeding).	Absent.
Blood pressure	Normal (hypotension if severe bleeding).	Hypo/hypertension.
Per abdominal examination		
Uterus	Relaxed, soft, and non tender.	Tense, rigid and tender.
Placental detachment	Not occur → thromboplastin not released → Relaxed uterus.	Occurs → Release of tissue thromboplastin → Increased basal tone of uterus.
Fetal heart sound	Easily heard.	Not heard.
Fetal parts	Easily palpable.	Nonpalpable.
Fundal height	Same as the period of gestation (< than period of gestation in transverse lie).	> than the period of gestation (concealed type).
Mal-presentations	common (Transverse lie > breech).	Uncommon.

	Placenta previa	Abruptio placenta
Per vaginal examination		
	Contraindicated.	Not a C/I. To check the cervical dilatation for progressive labor (only after r/o placenta previa).
DIC	Uncommon.	Common (Thromboplastin).

m/c cause of transverse lie at term : Placenta previa.

m/c obstetrical cause of DIC : Abruptio placenta.

Per speculum examination : c/I in placenta previa.

H/o of trauma, non-reassuring FHS, on CTG - sinusoidal heart rate, late deceleration or bradycardia ⟶ Always suspect abruptio.

Management of placenta previa 00:39:56

If incidental finding on 2nd trimester USG and patient has no bleeding,

in 90% of cases, placenta migrates to UUS in 3rd trimester.

Signs on USG that indicate placenta will not migrate :

1. Posterior placenta.
2. Placenta covers ≥ 25 mm of internal os.

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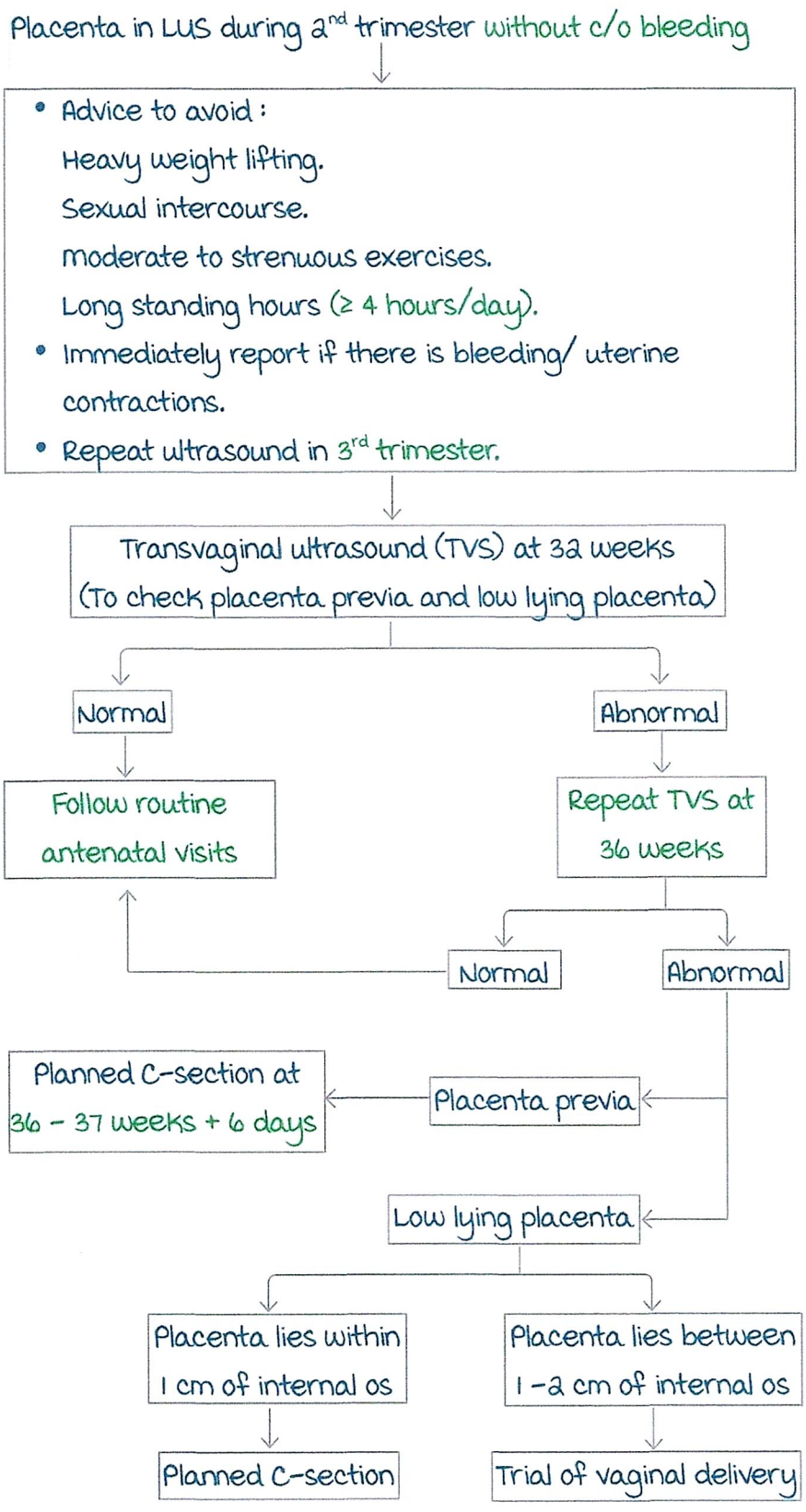
Management of placenta previa without bleeding :



Importance of USG in patients with placenta previa :

- To confirm the diagnosis.
- To diagnose malpresentations.
- R/o placenta accreta spectrum (PAS) (a/w prior h/o C-section).

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Note :
Anaesthesia for C-section(in antepartum haemorrhage mx) :
Generally, In emergency C-section → Neuraxial anaesthesia.
If DIC present → General anaesthesia.

In all patients of placenta previa : Do USG color doppler to exclude placenta accreta.

Management of placenta previa with bleeding :

Placenta previa with c/o bleeding
↓
Maternal resuscitation
↓
Assessment of delivery
↓
Need Immediate delivery by C- section. → Active mx
Prolong the pregnancy. (to attain fetal lung maturity) → Expectant mx

	Active management	Expectant management
Hemo-dynamical stability	Unstable	Stable
Bleeding	Severe & persistent (Even when stable vital)	Absent
CTG	category 3 tracing/ fetal distress	Normal
Gestational age	≥ 34 weeks with significant blood loss.	< 34 weeks
		≥ 34 weeks and no significant blood loss.
USG	Gross congenital anomalies (incompatible with life) irrespective of gestational age.	congenital anomalies (compatible with life).
	Patient in active labor.	

Active space