LABOUR AND DELIVERY

Malpresentation in pregnancy:

Definitions

- Vertex 'normal' presentation ➔ **cephalic-presenting foetus in the occipito-anterior position** → foetal head diameter minimise to fit through pelvic brim
- ***Malpresentation***: any position **other than** the vertex presentation

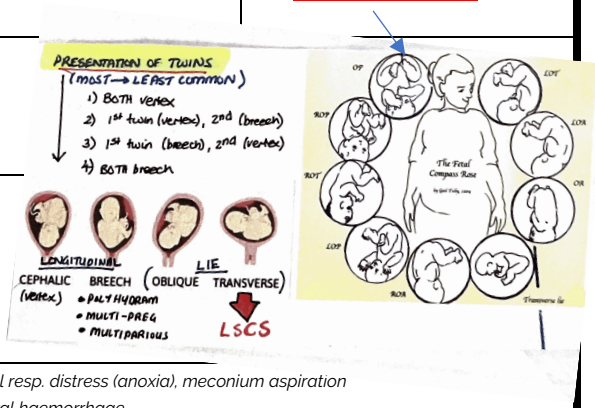
	BREECH PRESENTATION (< 5% of pregnancies by 37 wks)	SHOULDER PRESENTATION	FACE/BROW PRESENTATION	COMPOUND PRESENTATION

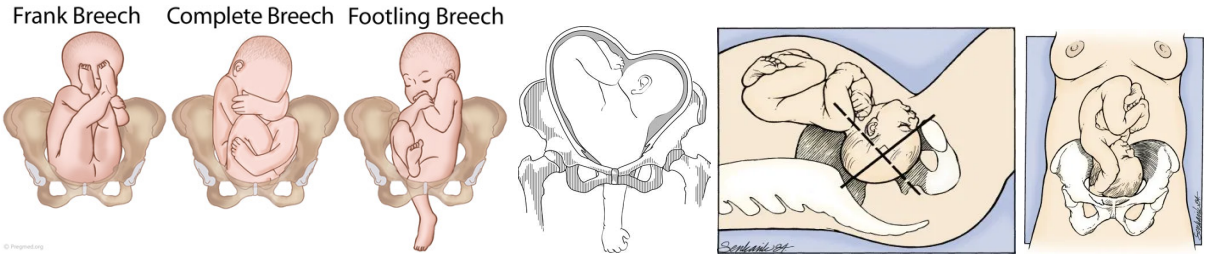
Cause	• When presenting part of fetus to pelvis is feet or buttocks
	• **Often rotates from cephalic to breech before 28 wks gA**
	  ○ **Frank/extended** – *hip flexed, knees extended*
	  ○ **Complete** – *hips, knees flexed*
	  ○ **Footling** (one or both feet flexed or extending out)
		Result of an oblique and transverse lie	• ***Face*** - when foetal neck is extended and face from forehead to chin is presenting
			• ***Brow*** = presenting part extending from the anterior fontanelle to the orbital ridge
				• foetal extremity precedes or is adjacent to the presenting part (i.e. hand/arm next to head
				WORST POSITION

RF	• **Small fetus (preterm, IUGR, SGA, LBW,** ancephaly**)** • **Big fetus (GDM baby)** (cephalopelvic disproportion, macrosomia, hydrocephaly,) • **Compliant uterus** (multiparity, oligo/polyhydramnios), • **Obstructions** (pelvic tumours, placenta previa, prior breech delivery) • black race/ethnicity,			

Ix	• *Abdo palpation with Leopold maneuvers at 36wks GA (feel head superiorly) → mother may feel subcostal discomfort*
	• *If suspected non-cephalic presentation → confirm on TVUS*
	• **Vag examination in 2nd stage of labour:**
	  ○ **Face only (cannot palpate anterior fontanelle) → brow**
	  ○ ***buttocks and/or feet*** *→ breech*
	  ○ ***ribs / shoulder / prolapsed arm*** *→ shoulder*			

Comp.	• **Cord prolapse + prolonged cord compression → fetal hypoxia →** *infection risk, fetal resp. distress (anoxia), meconium aspiration* • **Head/shoulder entrapment and birth trauma →** *clavicle #, DDH, erb's palsy, cerebral haemorrhage* • **Foetal trauma =** *to a prolapsed arm, bruising and oedema at the presenting part* • **Maternal trauma =** *uterine rupture. Perineal tears*			
Mx	1) ***NVD (see below for technique)*** *- if no footling + head small enough to fit through pelvis* 2) ***ECV –*** *if expertise available > 36% success rate if near term)* 3) ***LSCS –*** **if all else fails or elected by patient** 4) ***6 wk USS outpatients***	• *ECV **before** rupture of membranes* • *LSCS is indicated if active labor or rupture of membranes is present*	• *Most deliver spontaneously,* • *early consideration for LSCS for prolonged labour*	• ***Expectant mx*** *because foetal extremity often retract as head descends* • *LSCS for obstructed labour*





External Cephalic Version in pregnancy:

Indication	• **Breech presentation or incorrect lie after 36 weeks** • **50% success rate**
Abs. CI	• Abnormal CTG • ROM • Contracted pelvis • Fetal death • Placental abruption

Process	1) Consent needed
	2) Vitals + USS assessment for 40 mins→ check for absolute CI
	3) If CTG reactive → give **tocolytics (TERBUTALINE) to relax uterus**
	4) **Perform ECV 30mins after tocolytics OR when maternal pulse > 100**
	5) Arrange Kleihauer
	  ○ **Anti-D for Rh-ve women (prevent fetalis hydrops in 2nd child)**
	6) **If successful ECV:**
	  ○ Routine antenatal care w/ referring team/clinic in 1 week
	7) If unsuccessful ECV:
	  ○ Refer to Obstetrics Registrar to discuss mode of delivery (e.g. NVD vs elective LSCS)

Comp.	• Placental abruption • Uterine rupture • ROM with umbilical cord prolapse • Amniotic fluid embolism • Fetal distress • Fetomaternal haemorrhage

Mx of breech babies:

1. Hands OFF
2. Bring legs out
3. Place Breech towel around hip
4. **For upper limbs → Lovset's manoeuvre** (Hold hips and rotate foetus to either 10 or 2 o'clock position and bring down each anterior shoulder)
5. Let go and led baby dangle
6. **For obstructed head** → **Mauriceau manoeuvre** (extend baby's head upwards towards mum in "J" shape position to deliver)

Additional help

- ➢ Suprapubic pressure
- ➢ Use forceps

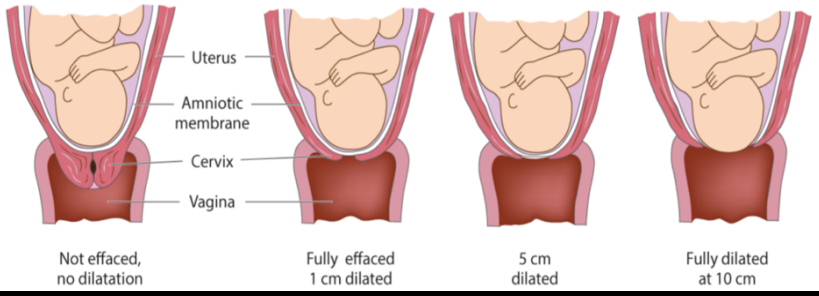
Stages of labour (37-42 weeks GA – term labour)

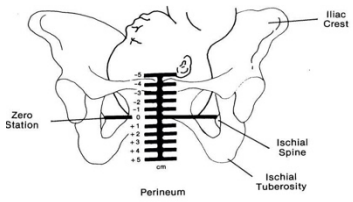
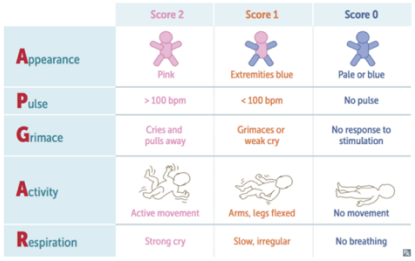
	Score			
	0	1	2	3
Position	Posterior	Middle	Anterior	--
Consistency	Firm	Medium	Soft	--
Effacement	0-30%	40-50%	60-70%	80%+
Dilation	Closed	1-2cm	3-4cm	5+cm
Station	-3	-2	-1/0	+1/+2

Additional factors: +1 point for each previous vaginal birth, -1 point for first time birth givers

Add the score for each factor.

Scores lower than 5 suggest labour will not begin without induction.
Scores 9 and higher indicate labour will likely begin spontaneously.
Scores 3 and lower may indicate that an induction would not be successful



Stage	Define	Key event	Clinical Issues
Alvarez-waves	Physiological; ***after 20 GA***	Low intensity, high frequency contractions	• Reassurance • Assess bishop score to indicate whether labour will begin spontaneously (score 8 = yes) *Red flags:* • Vaginal discharge (fluid, blood) • Strong regular contraction unable to "walk through" • Reduced foetal movement *If pre-term → delay labour* ➢ Tocolytics = nifedipine
Braxton Hicks contractions	Physiological; ***2nd or 3rd trimester***	• **Irregular, uncoordinated uterine** contractions of **moderate** intensity + **NO PAIN** • *Typically stop* with rest, walking, and/or a change in position.	
Prelabor	**3–4 days before birth**	**Irregular contractions of high intensity** → every 5–10 min to correctly position fetal head in pelvis 1. **Baby descent** = Increased cortisol = increased estriol = stimulate contraction 2. **Prostaglandin release** = initiate labour (breakdown collagen in cervix)	
1st stage (latent)	**0 to 3cm cervix dilation (0.5cm/hr)**	• **Irregular** Painful **contractions** • **The show** – (eject protective cervical mucus plug) • **CERVICAL DILITATION AND EFFACEMENT (MUST know)** • **Rupture of membranes**	• **Analgesia – GAS (NO) or opioids** • **Fetal HR** • **Check fetal position** (abdo/pelvic exam or USS) • **Regular assessment of cervical dilation** and **descent of fetal head (cm, + 0 –)**
1st stage (active)	**3 to 7cm cervix dilation (1.0cm/hr)**	**BOTH** ➢ **Regular** Painful contractions ➢ Changes to cervix effacement and dilatation	
1st stage (transition)	**7 to 10cm cervix dilation (1.0cm/hr)**		
2nd stage	**10cm to delivery of baby**	**Cardinal movement** • Engagement • Descent • Flexion • Internal rotation of the head • Extension of the head • External Rotation/Restitution • Internal rotation of the shoulders • Lateral flexion  **Foetal station (+2 = time to push)** **Apgar score**  ***Immediate things to do → paeditrics:*** 1. Hepatitis + Vit K inject. 2. Skin-skin ➔ Begin 1st BF. 3. Measure Wt, Length, HC	***Things to do*** ➢ **Analgesia – EPIDURAL (bupivacaine)** ➢ Check descent or foetla station (-5 to +5) = **(+2 = time to push)** ➢ Warm compresses and perineal massage ➢ **Consider episiotomy?** → *mediolateral incision to enlarge vaginal opening (cuts through bulbospongiosus muscle)* ○ **C-section = foetal distress (CTG, scalp pH)** ○ **McRoberts's = shoulder dystocia** ○ **Oxytocin = contractions** ***Success depends on three P's*** **Power** – Strength of contractions **Passenger** • **Size** = esp. head (CPD) ○ **ED LSCS → if CPD or IoL w/ gel pessary** • **Posture** = flexed head/limbs? • **Lie** = longitudinal (up/down) vs transverse (side/side) or oblique • **Presentation** = cephalic (head), shoulder, breech (legs) ○ **Complete breech –** hips and knees flexed (cannonball) ○ **Frank –** bottom 1st, hips flexed, knees extended ○ **Footling** - foot hanging through cervix **Passage** **Size / shape of passageway** ➢ Pelvic inlet diameter ➢ Cervical stenosis ➢ Masses
3rd stage	**From birth to placenta delivery** 1) Blood gush (50-100mL) 2) Cord lengthens 3) Uterus rise 4) Placental removed	**Physiological Mx** – Placenta delivered by maternal effort **without medications or cord traction** **Active Mx** shorten 3rd stage to: 1) reduce risk of PPH ➢ **IM 10IU oxytocin injection** to help uterus contract and expel placenta ➢ **Controlled cord traction** to guide placenta out while uterus pushed upwards to prevent uterine prolapse ➢ Massage uterus until firm/contracted **Perineal Tears** **Minimise by:** ➢ Hydrate, verbal guidance, ➢ Perineal massage or epino (dilating balloon to help expand the perineum)	• *Uterus fundal massage*: induce contractions and stop bleeding + minimise tearing ○ PPH = check maternal BP • *Asses perineal tears* ○ 1st deg = fourchette skin ○ 2nd deg = " + perineum + perineal body ○ **3rd deg** -= " + anal sphincter ○ **4th deg** = " + rectal mucosa *For 3rd + 4th deg tear ➔ needs sterile OR to **re-stitch (to minimise risk of faecal/anal incontinence)**
4th stage (After pain)	**12 hr recovery stage**	• Irregular contractions • Expel remaining contents • uterine involution and bleeding cessation • **Delayed Cord clamping for 1min (esp. if pre-term)** ○ **Reduce IVH, NEC, Anaemia, infections**	*Monitor BP, HR + temp to rule out:* • PPH (tone → trauma → tissue → thrombin) • preeclampsia *Inspect perineum* • Vulva haematoma vs PPH

BENEFITS OF NVD

- ➢ Sense of accomplishment
- ➢ **Natural** – shorter labour time
- ➢ **Skin-skin contact immediate** → encourages breastfeeding and increase oxytocin and decreases cortisol (↓stress)
- ➢ **Impart natural immunity (IgA)**
- ➢ **Shorter recovery**

Note: Multiparous women will have shorten time during each stage

PRE-TERM LABOUR: PPROM and PREMATURE LABOUR

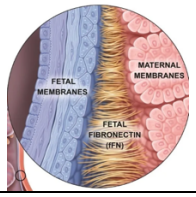
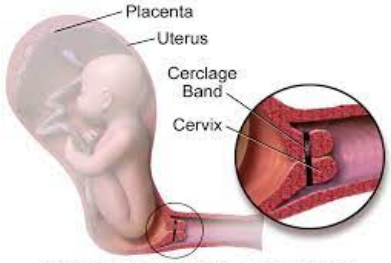
- ROM = rupture of amniotic sac
- ARM = artificial rupture of membranes
- PROM = **pre-labour** rupture of membranes (≥ 37 weeks GA)
- PROM = **prolonged** rupture of membranes (>18 hrs before delivery)
- Spontaneous labour (after PROM) = 24 hrs (70%), 48hrs (85%), 96 hrs (95%) → Planned early birth w/ IoL to prevent infection (chorioamnionitis)
- PPROM = preterm premature rupture of membranes

Important Hx Questions:

- **PV loss** (when?, trigger/trauma, colour, qty, smell, blood) → view pad
- **Confirm GA, ABO, GxPy**
- PMHx + Co-morbidities
- Foetal lie + position → breech, transverses → admit + IoL
- **Signs of threatened premature labour** -
  - Abdo cramp + mild irregular uterine tightening / contractions (3:10 contractions in past 2 hours)
  - Changes in PV discharge
  - Backache or pelvic/vag pressure
  - loose bowel motions
- **Signs of infections** (e.g. maternal tachycardia, fever, uterine tenderness)

Important Exams (if uncertain dx)

- **Baseline vitals, CTG, Urinalysis (M/C/S - rule out UTI)**
- **Sterile speculum exams (AVOID is suspected PRAEVIA = Increased infection risk!)**
  - **Cervico-vaginal swabs** for ***culture*** (low vaginal and ano-rectal swabs for GBS)
  - Estimate ***cervical dilatation*** + **Exclude** cord prolapse
  - Confirm pre-term labour
    - **progressive cervical dilatation from 4cm w/ regular contractions**
  - Confirm ROM
    - ***presence of liquor*** (pooled amniontic fluid) → ask patient to cough and observe
    - pH based testing vaginal fluid (e.g. Nitrazine)
    - **Amniotic fluid proteins** in vaginal fluid (e.g. Amnisure)
- **GBS +ve** ➔ recommend prophylactic BenPen AND early induction
- **Inform women** w/ PROM of expectant vs active Mx

	PROM *(at term >37 wks GA)*	PPROM (Preterm premature rupture of membranes) ➢ *50% = enter labour within 1 week*	Pre-term birth (PTB) (Birth < 37 wks GA) MOST Common cause of neonate mortality	Post-term Pregnancy
Cause	➢ ***Cord prolapse*** *(poly)* ➢ ***Cord compression*** *(Infection, oligo)* ➢ ***Placental abruption*** ➢ ***Substance abuse***	➢ ***30% - Previous pre-term*** ➢ ***25% - Infection (UTI, GBS, chorioamnionitis)*** ➢ ***Multiple pregnancies*** ➢ ***Smoking + substance abuse*** ➢ *Shorter cervix* ➢ *Placental abruption – APH*	➢ ***Previous Pre-term (Main RF)*** ➢ ***Infection (UTI, GBS, chorioamnionitis)*** ➢ ***Multiple pregnancies*** ➢ ***Smoking + substance abuse*** ➢ *Shorter cervix* length < 42mm at 20 wks GA – higher risk of PTB ➢ *Late maternal age* ➢ *Previous D+C and cone biopsy*	**Idiopathic** 
Ix	➢ ***Vitals + bloods*** ***(***screen for infections, COAGs, Group +hold***)*** ➢ ***CTG, doppler*** *Avoid PV exam (reduce infection risk)	➢ +ve litmus test, +ve fern test (confirm amniotic fluid) ➢ Maternal = CRP, WCC, COAG, Kleihauer ➢ ***Foetus*** = CTG + Doppler	**fFN levels > 50 ng/mL after 22/40 GA in vag secretions** ➢ Suggests separation of foetal membrane from maternal membrane ➢ **high risk of PTB** *'**fetal fibronectin** – normally present at 18GA AND rises as term approaches*	➢ **Regular CTG** ➢ **Regular Obs**
Mx	**Consult O+G consultant** **Expectant management** ➢ monitor obs qid ➢ Screen UTI, STI, GBS → BenPen + macrolide coverage ➢ Deliver ED if fetal distress or chorioamnionitis **Benefits of early birth:** ➢ ++ maternal satisfaction ➢ ↓maternal (chorioamnionitis) and neonate sepsis ➢ *Less ABx and SCN admission*	**(1) Admit for obs in first 48 hrs** → start PPROM pathway (local hospital) → **Consult O+G reg for help** 1. Antenatal CS 2. MgSO4 (neuroprotection) 3. **Prophylactic ABx** (see below) 4. Daily CTG 5. 2x weekly FBC + CRP ***If pre-term labour begins*** 1. tocolysis + MgSO4 → delay better than infection 2. **LVS if labour begins** 3. **Delayed cord clamping** 4. ***Active pre-term labour*** = *IV BenPen for 48 hrs plus PO erythromycin for 10 days* 5. ***Chorioamnionitis*** ➔ IV amp + gent + metronidazole ***If NO Pre-term labour*** 1. ***Unknown GBS status*** → *Early Rx w/ 10day 250mg erythromycin PO OR single-dose 1g azithromycin PO* 2. ***Educate women*** *about* ***personal hygiene and frequent pad changes*** 3. ***Compression stockings*** *worn at all times* 4. *Plan IOL or LSCS from 34 /40*	**Consult O+G consultant for help** **If cervical length < 25mm and 16-24/40 consider:** **Medical ➔ Vaginal progesterone** ▪ ↓ risk than surgery **+/- repeat VE to check** ▪ *Reduce activity of myometrium to prevent cervix remodelling* ▪ ↓↓↓ risk of PTB < 34 GA by 34% **Surgical ➔ Cerclage band/stitch** ▪ *↑Risk of ARM, infection* ▪ *Cut stitch at 36-37 weeks +/- IoL*  Cerclage Correction of the Cervix	**Consult O+G consultant for help** *Discuss Birth plans* • **GA 39-40** ➔ IoL (reduces stillbirth risk) • **GA 40-41** ➔ expectant (most labour spontaneous before 42 weeks) • **GA > 41** ➔ **INDUCTION OF LABOUR** (if NVD CI e.g. macrosomia baby) • ***Consider LSCS** ***Red flags:*** GA > 42 wks = 2-3 x INCREASED perinatal mortality **Higher risk of:** • Stillbirth • Perinatal Infection (GBS) *Placental insuff causing:* • Asphyxia (HIE) • Fetal distress • MAS **Worse prognosis if mother** – GDM, HTN, IUGR, Abruption, multi-gest

Drugs	When	Delivery	Purpose	A/E
MgSO4	< 30./40 GA (PPROM)	• T/F to tertiary → **IV MgSO4**	• reduce risk of CP (protects gross motor function)	• Reduced RR and BP • Absent tendon reflexes
Steroids	24-34 wks GA OR PPROM	• **11.4 mg betamethasone IM daily** or 12mg dexamethasone	• **++ optimise baby lung, brain, GI - Lung maturation (↓ARDS, ↓NEC)** • monitor signs of puerperal sepsis (INFECTION IN MUM) after steroids given	• Immunosuppression
Tocolytics	PPROM, PTB • Delay birth > delivery risks • 24 – 34 wks	• **Nifedipine 20mg PO STAT** → repeated at 30 min intervals if contractions persist after 1 hr • Terbutaline (for hypertonic uterus)	Delay PTB for up to 48 hours for: • Maternal CS or MgSO4 therapy to be given • Maternal t/f for higher level care (tertiary) • Monitor for hypoTN → feeling flushed	Nb: Temporary measure ONLY

Induction of Labour (FAILURE to progress & prolonged labour): Bishop Score

Define

- **Induction = Stimulation of uterus to BEGIN labour using meds**
- **Augmentation = Stimulation of uterus to increase frequency, duration and strength of contractions (once labour has started)**
- Good labour pattern = established when there are 3 contractions in 10 minutes, lasting > 40s

Consent

- IOL is more painful
- Women's preference and individual needs
- Discuss risks, benefits, comp., alt.

Ind

- ***Elective Induction > 39 wks GA*** (reduce maternal/foetal comp. and LSCS risk + control delivery time)
- ***Prolonged pregnancy***: Post-term pregnancy (≥42+0 GA) → higher risk of stillbirth and neonatal death
- ***Maternal issues*** (PPROM, HTN, GDM, advance age, obstetric cholestasis, maternal fever, pre-eclampsia (PET))
- ***Fetal issues*** (IUGR, stillbirth, chorioamnionitis, oligohydramnios, twins, pre-term, hydrops or congenital defects)

CI

Maternal

- Previous LSCS (VBAC)
- Prior uterine rupture
- Active **genital HSV infection**
- Placenta previa or vasa previa
- **Unfavourable cervix < 4**

Placental + Foetal

- **Cord prolapse**
- **Malpresentation** (transverse lie)
- **Category III FHR tracing**
- Avoid Elective induction < 37 wks (lung, heart and brain damage)

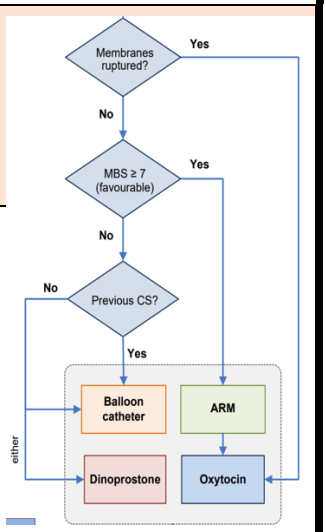
Assess

1. Review history
2. Baseline maternal obs
3. **Abdominal palpation** (presentation and engagement)
4. **Assess membrane status**
5. Vag exam to assess cervix (**Bishop Score**)
6. **FHR, CTG** = Foetal assessment + uterine contractions
7. Encourage to empty bladder

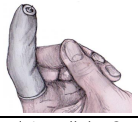
Bishop scoring system:

Score	Dilation (cm)	Position of cervix	Effacement (%)	Station (-3 to +3)	Cervical Consistency
0	Closed	Posterior	0-30	-3	Firm
1	1-2	Mid position	40-50	-2	Medium
2	3-4	Anterior	60-70	-1, 0	Soft
3	5-6	--	80	+1, +2	--

- ***Unfavourable cervix*** → low Bishop score → cervical ripening
- **Favourable cervix MBS ≥ 7** → high Bishop score → syntocinon



Mx

Steps		MoA	Indications	C/I
1. Cervical ripening (MBS ≤6)	a) **Membrane sweep**	PGE release → SROM	Reduce RISK of post-term birth	bleeding and discomfort
	b) **Dinoprostone** (gel 2mg PV or pessary 10mg PV)	PGE2 → dilates cervix and progress labour • **RELEASED over 24 hrs**	• MBS ≤ 6 • No or minimal effect with balloon catheter	• Previous LSCS or uterine surgery • ROM • Malpresentation, • HTN • Abnormal CTG or HR
	c) **Balloon transcervical catheter**	Apply pressure on internal cervical canal → ++ PGE **Left for 12-18 hours**	• MBS ≤ 6 • Previous LSCS • No response to dinoprostone	• ROM • Polyhydramnios • Abnormal CTG/FHR • Low lying placenta
2. ARM or amniotomy	Artificial rupture of membranes After cervical ripening **Before** oxytocin		• MBS ≥ 7	• Malpresentation • Fetal head not engaged • Syntocinon given
3. Syntocinon infusion	**($t_{1/2}$ in 3-6 mins)** *IV in isotonic NS at 2.5mLIU/hr*	++ intracellular Ca → SMC contraction → induce labour **[aim = 4-5 contractions / 10 mins)**	• MBS ≥ 7 • After ROM • Augment labour • PPH	• Intact membrane • Within 30 mins of dinoprostone • Foetal distress • previous LSCS (VBAC) or > 4 births • CVD

***IF IoL does not work ➔ (3) instrumental delivery OR (4) elective LCSC**

COMPLICATIONS of IOL

	Cause	RF	Rx
Failure to induce	Inability to progress to active phase (> 6 cm dilation) after syntocinon	unfavourable cervical cases	• Patient-decision to continue labour • Continue infusion • LCSC or delay for 2nd attempt
Uterine Hyperstimulation (main issue)	reduce foetal oxygenation by reducing placental blood flow (FHR <100) • Fetal distress (hypoxia, acidosis) • ED LSCS • Uterine rupture	• **Tachysystole** > 5 active contractions /10 mins (no FHR issues) • **Hypertonus** (contractions > 2mins or within 60s consec.)	• CTG monitor • **STOP** oxytocin or dinprostone → Left lateral position • **Tocolytics? (IV terbutaline, IV salbutamol) → MAY CAUSE foetal hypoxia → foetal distress →LCSC** • Prepare for instrument birth or CS
Uterine rupture	Life-threatening	scarred tissue	• ED LCSC, • hysterectomy, • uterus repair
Cord prolapse	Cord exposed out of cervix	ROM	Put cord back until LSCS
PPH	> 500mL within 24 hrs (primary) > 1000mL within 24 h (severe)	• Previous PPH • IV syntocinon → ++ risk of uterine atony	Prevent w. initial IM syntometrine (oxytocin + ergometrine)

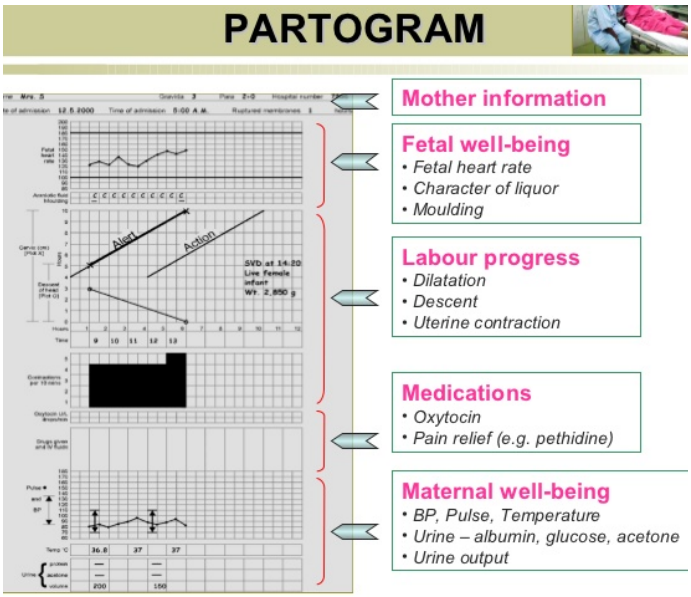
ANALGESIA

Maternal request *is* ***sufficient*** *medical indication*

* ***NON-pharmacological*** = water births, massages, acupuncture, meditation, controlled breathing

	Benefits	Risk	
Nitrous oxide (Entonox) 	• 50% nitrous oxide + 50% oxygen • **Mild short-term analgesia + sedation** → improves breathing • **Minimal toxicity + no effect on uterine contraction** • Fast acting + rapid elimination	• Does NOT reduce pain levels • **A/E = N/V + headaches + disorientated/claustrophobia** ○ **Malignant Hyperthermia** ➔Rx w/ dantrolene • **OD = resp. depression** (worse if opioid also used)	
Opioid (IM) • *Continuous* • *Programmed* • *PCA*	• Euphoria, analgesia, sedation • **Best for early active 1st labour stage** • Morphine > pethidine (shorter half life and less sedation effects)	***Maternal risks*** • Reduced GI motility & emptying • Urinary retention • N/V • Respiratory depression	***Fetus risk*** • Transient decrease in fetal HR • Resp. depression + hypothermia • Do NOT give 2 hrs before delivery!
Epidurals (b*upivacaine mixed w/ fentanyl*)	• LA – complete or partial sensation loss from waist down • **Best pain relief for 2nd stage of labour** (+++ relaxation for faster cervical dilatation) • Provide low dose → maintain muscle strength for urge to push	• Danger if inserted NOT below L3/4 → **possible paralysis or motor weakness (i.e. in SAS and not in epidural space)** • **Higher risk of instrumental delivery (FORCEPS)** - Reduced urge to push • **Post-dural puncture headache** ➔ **fluid, flat, caffiene** • Spinal epidural **haematoma** • CNS Infection • Urinary retention • Total spinal anaesthesia + cardiac arrest	

MONITORING THE PERI-NATAL PERIOD



What causes a slow, prolonged labour? – OBSTRUCTED LABOUR!

- **Power (Main)** = primary uterine inertia, opioids, epidural (bupivacaine)
- **Passenger** – **cephalopelvic mismatch** (e.g hydrocephalus, macrosomia), foetal malposition/presentation
- **Passage** – **CPD mismatch**, soft tissue (tumour, full bladder, vaginal septum)

What causes Reduced FM?

- Death of foetus
- AFI < 5
- Sleep
- Hungry/thirsty

What COMPLICATIONS OF Multipreg?

- *Hydramnios (poly)*
- *IUGR*
- *Pre-term*
- *APH*
- *Pre-eclampsia*
- *Abortion*

What causes meconium aspiration syndrome?

Dark green/black particulate/stained (feaces in meconium) = **FETAL DISTRESS**

- **Prolonged labour**
- **Post-term baby**
- **Maternal issues** (*GDM, pre-eclampsia, substance abuse, cord compression, hypertonic uterus*)
- **Foetal issues** (*SGA, LBW, IUGR*)

No MECONIUM = Obstruction/immobility = non-patent anus, Hirshsprung, meconium ileus, meconium plug syndrome, CF

When to call O+G Help?

Maternal

- Labour begins
- Confirmed or signs of infection
- Febrile anytime
- Tachycardia >100bpm

Foetal

- Foetal tachycardia >160bpm
- Reduced foetal movements

Elective vs Emergency C-Section

- ***Elective caesarean delivery*** = planned LSCS, recorded in the medical records, and performed **before** labour regardless of the indication.
- **Emergency caesarean's** = undertaken in response to pathology **during** labour or failure to initiate natural delivery

	Define	*Maternal*	*Foetal*
Cat 1 (within 30 mins)	LE	➢ Cord prolapse, placental/uterine rupture, ➢ APH, Maternal collapse	Sustained fetal bradycardia
Cat 2 (within 60 mins)	Urgent due to mother/baby compromise	➢ Failed instrumentation, IoL, ➢ failure to deliver at full dilatation	Scalp pH < 7.2, lactate > 4.8, abnormal CTG or doppler
Cat 2 (within 120 mins)		➢ Bleeding placenta praevia with stable maternal/foetal OBs ➢ Booked LSCS in established labour	Lack of progress with suspicious FHR pattern
Cat 3 (within 4 hours)	Delivery req. Both mother/ baby stable	Booked LSCS in early labour, severe preclampsia, previous LSCS	Breech presentation, CPD,
Cat 4 (add to routine list)	Elective LSCS	Elective LSCS, failed induction, malpresentation, multi-gestation	IUGR needing steroids

Layers of LSCS

1. ***Skin***
2. ***Subcutaneous tissue***
3. ***Fascia / rectus sheath*** (aponeurosis of TA, EO and IO)
4. ***Rectus abdominis muscles***
5. ***Peritoneum***
6. ***Vesicouterine peritoneum*** (and bladder) – the bladder is separated from the uterus with a bladder flap
7. ***Uterus*** (perimetrium, myometrium and endometrium)
8. ***Amniotic sac***

Intrapartum Issues = Operative/Assisted vaginal birth

	Caesarean section	Assisted births (instrumental delivery)	
		Forceps	**Ventouse (Vacuum)**
Procedure	1. **Pfannenstiel incision** (2 fingers above pubic symphysis) 2. **Classical vertical incision** (midline of abdomen) → very pre-term or anterior placenta praevia *Reduce risk of complications by* 1. ***PPI/H2 antag –*** *aspiration pneumonia (under GA)* 2. ***VTE prophylaxis*** *– LMWH, early mobilisation* 3. **Oxytocin** (reduce risk of PPH) 4. **Prophylactic ABx** (reduce infection risk)	Large metal tongs placed around baby's head to pull it out	Vacuum extractor (2.5% of vaginal birth) **Indications** ➢ **F**oetus alive ➢ **O**s open ➢ **R**upture membrane ➢ **C**ervix take up ➢ **E**ngaged head ➢ **P**resentation ok ➢ **S**agittal suture in AP diameter
Indication	**Maternal** • Obstructed labour (e.g. prolonged labour) • Multipregnancy • Uterine rupture • GBS/HSV +ve • HELLP syndrome • **Previous LSCS or uterine surgery** **Placenta** • Placental abruption • Placenta praevia • Cord prolapse **Foetal** • Malpresentation or breech • Fetal distress • Macrosomia • Hydrops fetailis • IUGR • Pre-term	• **Prolonged 2nd stage labour** [failure to progress] (after cervical dilatation) • **Fetal distress = Non-reassuring CTG** • **Cephalic presentation** • **Maternal exhaustion** (cannot push any more)	
CI	➢ Intrauterine foetal death ➢ **Extreme prematurity** ➢ **Gross congenital malformations** ➢ **Coag defect** = DIC (to minimise blood loss) ➢ Extensive scar or pyogenic infection in abdominal wall (BURNS?)	• Pre-term • Obstructed labour • Malpresentation • Bleeding/clotting disorder	
Benefits	• Reduced risk of incontinence and sexual dysfn after birth *Elective Caesarean section for no medical reason* ➢ convenient / personal choice ➢ No ante-natal issues	• Avoid surgery • For GA < 36 wks and wants NVD	• Avoid surgery + faster
Comp.	***Surgical*** ➢ *Bleeding* ➢ *Infection* ➢ *Pain* ➢ *VTE* ➢ ***Local structure*** *(ileus, adhesions, hernias, nerve damage, bowel, bladder, ureter dam)* ***Post-partum*** ➢ ***Wound** infection & dehiscence* ➢ ***PPH*** ➢ ***Endometritis** (2nd PPH)* ***Newborn*** ➢ ***+ TTN*** ➢ ***Lacerations (2%)*** ➢ ***cephalohaem*** ***Future preg risk*** ➢ *+ uterine rupture* ➢ *+ stillbirth* ➢ *+ placenta praevia* ➢ *+ repeat LSCS*	• PPH • Perineal / anal tears = retention and incontinence • **Femoral nerve injury** (weak knee Ext, loss of patella reflex) • **Obturator nerve** (weak hip adduction/rotation) • **Facial nerve palsy (unilateral)**	• PPH • Perineal / anal tears = retention and incontinence • **Caput succedaneum (skull bleed)** • Subgaleal haemorrhage (worst) • Neonatal jaundice (bruised scalp) • Vacuum marks on neonate scalp (chignon)
F/U	• ***No heavy lifting*** • ***No driving 4-6 weeks*** • ***OCP for at least** 1 year prior to next baby in 18/12 (allow scar heal)* • ***If macrosomia** → future preg USS at 36/40 to confirm size*	• Check blood/bruise heals • Oedema should subside after 2-3 days • Address parental concerns	

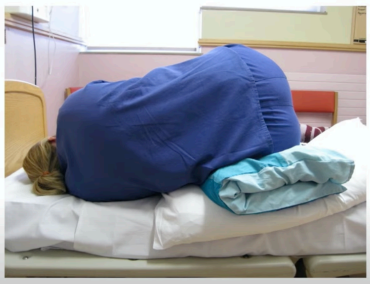
Intrapartum Issues = MAJOR THINGS THAT CAN GO WRONG!!

	Umbilical Cord Prolapse	Shoulder dystocia "HELPPER"
Define	Descent of umbilical cord through cervix in presence of ROM	Anterior Shoulder becomes stuck behind pubic symphysis after head has been delivered
RF	*Ante-partum* • **High presenting part** (breech, multiparity) • **Abnormal lie** (oblique, transverse) • Polyhydramnios • LBW (< 2500g) *Intrapartum* • ECV • 2nd twin coming through • Fetal scalp electrode applied • Balloon catheter	• **Macrosomic baby** (GDM) • Breech • Previous shoulder dystocia in previous pregnancy • Multi-pregnancy • Obese
Sx Ix	• Visible cord protruding from vagina • **Speculum Vag exam** = Palpate for umbilical cord • Non-reassuring CTG (e.g. Acute bradycardia) ○ Single prolonged decel. > 3mins	• Difficulty delivering face (obstruction of shoulders) • **"Turtle neck sign"** = head delivered but retracted back into vagina
Comp.	Cord compression & head entrapment **causing** ➢ **Birth asphyxia/hypoxia** ➢ HIE, cerebral palsy, neonatal death	• **Maternal** = PPH, Perineal tear • **Foetus** = hypoxia (CP), Clavicle #, brachial plexus or Erb's palsy, death
Mx	1. ***Call for help*** + **code blue** 2. ***Rapid T/f to consultant led unit and hospital labour ward*** (i.e. anaesthetist, theatre team, neonatologist) 3. ***Reduce pressure by drawing fetus away from pelvis and reduce compression on cord via***: • Maternal position (Exaggerated Sims – Left lateral position or knee chest – all 4's position) 4. ***IV access + bloods*** (FBC, X-match, Coag, ABO, Rh) 5. ***Tocolysis*** = *0.25mg terbutaline SC - ↓ contractions* 6. *Continue monitor FHR* *Post-birth* • ***Cord bloods*** → gases to aid neonate assessment • ***Clinical risk incident report*** • ***Debrief*** mother and family and MDT • ***Booklets to take home***	• ***Recognise + Hand off + HELP*** • **EVALUATE** for episiotomy = *to gain access of whole hand* • **LEGS** up _ lie flat = ***McRobert's manoevre (posterior pelvic tilt)*** • **SUPRPUBIC** pressure (in line with obstructed anterior shoulder **10 and 2 o'clock**) • **ENTER** ***Internal manoeuvres*** → fingers from down to up towards posterior aspect of anterior shoulder (other hand pushing anterior part of posterior shoulder) = like corkscrew (rotate to 10 or 2 o'clock) • **REMOVE** posterior arm • **ROLL on all 4's (enlarges pelvic diameter) and re-attempt internal manoeuvres** • Inform OBS/GYN and anaesthetist • **Zavenelli manoevre** (push head back into vagina) for ED LSCS • Document all actions on clinical incident report

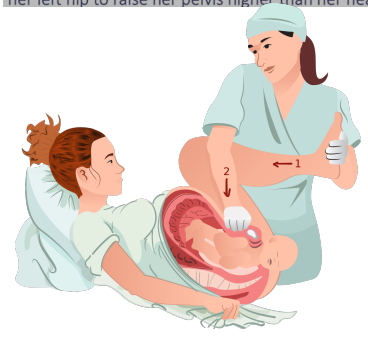
NERVE INJURIES BASED ON POSITION:

1) **Lateral cutaneous nerve of thigh under ligament** (prolonged hip flexion in lithotomy position)
2) **Lumbosacral plexus** (fetal head compressed during 2nd stage) = foot drop and numb anterolateral thigh
3) **Common peroneal nerve** = lithotomy position = foot drop and numb lateral lower leg

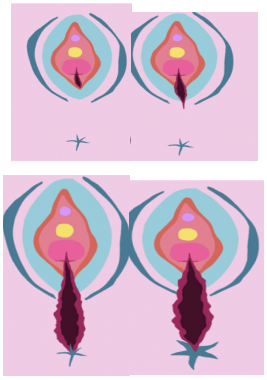
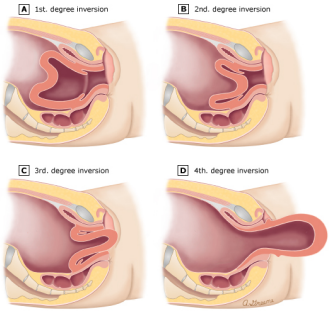
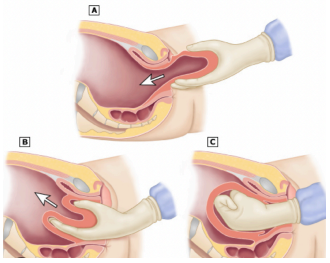
Exaggerated Sims position



Lie mother in left lateral with pillows placed under her left hip to raise her pelvis higher than her head



MATERNAL COMPLICATIONS

	MATERNAL SEPSIS/FEVER	PERINEAL TEARS	AMNIOTIC FLUID EMBOLISM	UTERINE INVERSION
Define	Chorioamnionitis (**most common**)– infection of chorioamnionitic membranes and amniotic fluid ➢ Gram +ve, gram -ve and anaeraobes ***Other causes*** ➢ UTI ➢ Covid-19 ➢ HELLP	Tear of perinium as baby's head passes (ranges from:) 1. 1st deg = frenulum of labia minora 2. 2nd deg = perineal muscles (**moreo common)** 3. 3rd deg = anal sphincter 4. 4th deg = rectal mucosa	Rare (2 in 100, 000 births) ➢ Where amniotic fluid (containing fetal tissue) enters maternal blood ➢ Immune reaction to fetal cells causes systemic illness ➢ Mimics anaphylaxis	Rare birth complication ➢ When fundus of uterus drop through uterine cavity and cervix turning uterus inside out ➢ ***Incomplete*** = descend does NOT pass introitus ➢ ***Complete*** = uterus passes vagina nd introitus
RF	• PPROM or Prolonged labour • Previous/current LVS GBS +ve or maternal infection/fever Pre-term delivery after SROM (<37wks)	• 1st birth (nulliparious) • LGA / Macrosomia (>4.5kg) • Shoulder dystocia • Asian ethnicity • Occipital-posterior position • Instrumentals	• Advanced maternal age • LSCS • Multi-pregnancy • Induction of labour • External Cephalic Version	• XS cord pulling during active 3rd stage
Sx	**Non-specific** • Maternal fever • ↑HR, RR (early sign) • ↓Sats, HTN, UO • warm peripheries, altered LOC • Tender uterus, smelly PV discharge **Specific Sx (Chorioamnionitis)** ➢ Abdo pain ➢ Vag discharge ➢ Uterine tenderness **Specific Sx (UTI)** ➢ Suprapubic pain +/- flank pain ➢ Dysuria ➢ Urinary frequency ➢ Vomiting (if pyelo)	• Pain • Bleeding • Infection 	Presents during labour or delivery ➢ SOB ➢ Coagulopathy ➢ Haemorrhage ➢ Seizures **Vitals** ➢ HypoTN ➢ Low Sats (hypoxia) ➢ ↑HR, RR ➢ LOC	Presents with ➢ Large PPH ➢ Maternal shock / collapse 
Ix	• FBC = ↑WCC, ↑CRP • EUC = AKI • LFT = ?cholecystitis • COAGs – check for DIC **Septic screen (sepsis 6)** • OF CAUL • Urine M/C/S • High vaginal swab • Throat swab M/C/S and PCR • Sputum M/C/S • Wound swab • LP (?meningitis) • CTG – non reassuring	Clinical dx	Clinical dx	Clinical Dx • ***Incomplete*** = felt via manual vaginal exam • ***Complete*** =can see uterus at vagina introitus 
Comp.	• DIC • Death (maternal and fetal)	• Sphincter dysfn – urinary and anal incontinence • Sexual dysfn – dyspareunia • +/- fistula	20% mortality rate ➢ Cardiac arrest	
Mx	**Call for help → O+G reg or consultant** • FiO2 (maintain > 94%) • IV **broad spectrum ABx** – tazocin +gentamicin • IVF resus • 3x sets blood culture (different sites and times) • ABG (lactate) • IDC (UO) • Cont. CTG monitoring • Prepare fo GA and OT ***If patient is GBS +ve and*** 1. **Active labour** = tocolysis 2. **No active labour** = IV benzyl (48 hr) + oral erythromycin (10 days) 3. **NO PROM** = IV benzyl (during labour) 4. **Chorioamnionitis = IV amp + gent + metro**	• 1st and 2nd deg = sutures on ward • 3rd and 4th deg = OT + sutures *Active care* ➢ **Mediolateral** Episiotomy to avoid anal sphincter ➢ **Perineal massage** - stretch and prepare tissues for delivery *Post-care* ➢ **Broad-spectrum ABx** ➢ **Laxatives** (↓constipation and wound dehiscence) ➢ **PT** (reduce risk/severity of incontinence) ➢ **LSCS in future pregnancies**	**Call for help → Code Blue (O+G, ICU, haematologist)** • A – secure airway (guedel) • B – FiO2 (for hypoxia) • C – IVF (hypoTN) or pRBC (if haemorrhage) • D – Rx seizures, • E – exposure (?other causes) • T/F to ICU • **ALS/CPR** and ED LSCS required if cardiac arrest occurs	**Call for help → Code Blue (O+G, ICU, haematologist)** ➢ **Johnson Manoeuvre** – manually push uterus back into abdomen into correct position (held for several mins) (oxytocin given to create uterine contraction) ➢ **Hydrostatic methods** - filling uterus with fluid to "re-inflate" it back into position ➢ **Corrective surgery** – Laparotomy