History of the Labouring Obstetrical Patient

- GTPAL
- Gestational age
- Degree of prenatal care (e.g., IPS, MSSS, ultrasounds, last medical appointment)
- Infection status (e.g., GBS, HIV)
- Medical conditions associated with pregnancy (e.g., gestational diabetes, pre-eclampsia)
- Fetal well-being (e.g., fetal movement)
- Current vaginal bleeding or leaking fluid from vagina
- Onset and frequency of contractions (if present)
- Past medical history
- Current medications
- Allergies
- Distance from home to hospital

Physical Exam of the Labouring Obstetrical Patient

- Vitals
- Speculum exam for presence of fluid
- Cervical assessment:
  - Dilation
  - Effacement
  - Fetal station
  - Consistency
  - Position
- Assessment of fetal well-being
  - Fetal tracing

Definition of Labour

Labour is defined as uterine contractions producing cervical changes and is divided into four stages:

- First stage
  - Onset of true labour to complete dilation of the cervix
  - Includes latent and active phase
    - Latent: early cervical effacement and dilation (usually considered up to 3-4 cm)
    - Active: more rapid cervical dilation (~1cm/hour)
- Second stage
  - Full dilation (10 cm) to delivery of the fetus
- Third stage
  - Delivery of fetus to delivery of the placenta
  - Generally occurs 2-10 minutes after the birth of the baby
- Fourth stage
  - Variability in the definition (6 hours to 6 week postpartum)
Management of Labour

- First stage
  - Maternal ambulation or if lying, lateral recumbent position
  - CBC, Hgb, blood group, Rh type, HBV status, urinalysis
  - Maternal vitals q1-2 hours
  - Assess need for analgesia
  - Fetal monitoring (active phase) q30 minutes (uncomplicated pregnancy) or q15 minutes (obstetric risk factors)
  - Monitor uterine contraction q30 minutes (uncomplicated) or continuously (complicated)
  - Vaginal exams q2 hours (active phase)

- Second stage
  - Avoidance of supine position
  - Encourage mother to bear down with each contraction
  - Fetal monitoring q15 minutes (uncomplicated pregnancy) or continuously or q5 minutes (obstetrical risk factors)
  - Vaginal exam q30 minutes to monitor fetal descent
  - Put on gloves and set up tray
  - Modified Ritgen’s maneuver or manual perineal support
  - After delivery of the head, clear airway and check for nuchal cord
  - Delivery of anterior shoulder (administer oxytocin)
  - Delivery of posterior shoulder
  - Place baby on to mum’s belly (and then into infant warmer)
  - Clamp and cut cord and take cord samples

- Third stage
  - Placental separation occurs within 5-30 minutes
  - Avoid fundal massage
  - Inspect for signs of placental separation (fresh blood from vagina, umbilical cord lengthening, fundal rising, uterus feels firm) before applying traction on cord
  - Deliver placenta and inspect for abnormalities/ensure completeness
  - Examine mum for lacerations (and repair if necessary)

- Fourth stage
  - Monitoring for BP, HR, and blood loss

Management of Shoulder Dystocia*

- McRobert’s maneuver (may be done in conjunction with suprapubic pressure)
  - Flexion of maternal legs against abdomen

- Suprapubic pressure

- Wood’s/corkscrew maneuver
  - Apply pressure to scapula of posterior shoulder to try to rotate it into the anterior position

- Insert hand into vagina, grasp posterior arm and move it across the chest (results in delivery of posterior shoulder and displacement of anterior shoulder from behind pubic symphysis)
  - May result in fractured humerus

- Fracture of one or both clavicles

- Zavanelli maneuver
  - Push fetal head back into vagina and prepare for c/s (may require uterine relaxant)

*Note these are listed in the order that they should be attempted

Indications for Operative Vaginal Delivery and Caesarean Section
History, Physical Exam, and Laboratory Findings of Pre-Eclampsia

Diagnostic criteria for preeclampsia are:
1. Development of hypertension (systolic BP >140 mmHg or diastolic BP >90 mmHg) in a woman whose BP was previously normal, after the 20th week of pregnancy AND
2. Development of new-onset proteinuria (≥0.3 g protein in a 24 urine collection) after the 20th week of pregnancy

History

- Headache
- Visual disturbances (e.g., scotoma)
- Epigastric/RUQ pain
- Swelling (especially in face/hands; ask about abnormal weight gain)
- Family history of pre-eclampsia
- Oliguria

Physical Exam

- Hypertension
- Hyperreflexia
- Swelling (especially in face/hands)

Laboratory

- Proteinuria
- Low platelets
- Elevated transaminases
- Increased hematocrit (hemoconcentration due to relative hypovolemia)
- Increased serum uric acid concentration
- Decreased creatinine clearance
- Elevated bilirubin (hemolysis)

Labor Analgesia

Non-Pharmacologic Options

- Those requiring minimal training or equipment
  - Continuous support
  - Touch/massage
  - Therapeutic heat/cold
  - Hydrotherapy
  - Vertical position
- Those requiring specialized training
  - Biofeedback
  - Intradermal water injection
  - Transcutaneous electrical nerve stimulation (TENS)
  - Acupuncture
  - Hypnosis
### Pharmacologic Options

<table>
<thead>
<tr>
<th>Method</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Systemic analgesia</strong></td>
<td></td>
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<tr>
<td>Parenteral agents</td>
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<tr>
<td>Patient controlled opioid</td>
<td>Less variable plasma concentration, superior pain relief with ↓dose, ↓maternal respiratory depression, ↓placental transfer of drug, higher patient satisfaction</td>
<td>Specialized equipment, opioid side effects, small doses are not always effective, risks to fetus/neonate are unclear</td>
</tr>
<tr>
<td>Opioid adjuncts (e.g., barbiturates, BZDs)</td>
<td>Rarely used due to availability of safer alternatives</td>
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<tr>
<td>Intermittent bolus parenteral opioid (e.g., meperidine, morphine, tramadol, fentanyl)</td>
<td>Simple, quick onset, no specialized equipment or personnel</td>
<td>Maternal side effects (e.g., nausea, dysphoria, respiratory depression), fetal side effects (e.g., decreased FHR variability, respiratory depression)</td>
</tr>
<tr>
<td><strong>Inhalational agents</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrous oxide</td>
<td>Negligible neonatal effect, no effect on uterine activity</td>
<td>Requires maternal cooperation</td>
</tr>
<tr>
<td>Volatile anesthetic agents</td>
<td></td>
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<tr>
<td>(e.g., isoflurane, sevoflurane)</td>
<td>Not used clinically at present</td>
<td></td>
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<tr>
<td><strong>Regional analgesics</strong></td>
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<tr>
<td>Epidural analgesia</td>
<td>Most effective analgesia, higher patient satisfaction, allows conversion to c/s if necessary</td>
<td>Contraindicated if: increased ICP, active neurological disorder, infection at site of injection/systemic infection, frank coagulopathy</td>
</tr>
<tr>
<td>Spinal analgesia</td>
<td>Rapid onset with good sacral analgesia</td>
<td>Delayed verification of functioning epidural catheter, higher incidence of pruritus, possible higher risk of fetal bradycardia, risk of PDPH, limited analgesia duration (single-shot spinal)</td>
</tr>
<tr>
<td>Combined spinal-epidural analgesia</td>
<td></td>
<td></td>
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<tr>
<td>Paracervical block</td>
<td></td>
<td>Rarely used due to risk of ↓uteroplacental perfusion</td>
</tr>
<tr>
<td>Lumbar sympathetic block</td>
<td></td>
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<tr>
<td>Pudendal nerve block (S2-S4)</td>
<td></td>
<td>Frequent failure with risk of direct fetal trauma</td>
</tr>
<tr>
<td>Perineal infiltration</td>
<td>Rapid onset</td>
<td>Incomplete epidural analgesia</td>
</tr>
</tbody>
</table>

### Fetal Surveillance

#### Baseline Assessment

- **Rate**
  - Normal (120-160 bpm)
- **Variability**
  - Short-term (beat-to-beat) is normally 5-25 bpm
  - Long-term variability is 3-10 cycles/minute
### Fetal Heart Rate Patterns

<table>
<thead>
<tr>
<th>Description</th>
<th>Fetal distress?</th>
<th>Potential Explanation</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accelerations</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>↑FHR in response to contraction</td>
<td>No</td>
<td>Physiologic response</td>
<td>None needed</td>
</tr>
<tr>
<td><strong>Early deceleration</strong></td>
<td></td>
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</tr>
<tr>
<td>↓FHR with lowest point at peak of the contraction</td>
<td>No</td>
<td>Seen when fetal head engaged (head compression)</td>
<td>None needed</td>
</tr>
<tr>
<td><strong>Late deceleration</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>↓FHR with lowest point after peak of contraction</td>
<td>Yes</td>
<td>Uteroplacental insufficiency</td>
<td>Change maternal position (supine → lateral)</td>
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<tr>
<td></td>
<td></td>
<td>Fetal hypoxia</td>
<td>Maternal oxygen</td>
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<tr>
<td></td>
<td></td>
<td>Fetal metabolic acidosis</td>
<td>Discontinue oxytocin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low arterial pH</td>
<td>IV tocolytic c/s</td>
</tr>
<tr>
<td><strong>Variable deceleration</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>↓FHR with variable onset</td>
<td>Yes</td>
<td>Umbilical cord compression</td>
<td>Change maternal position 100% oxygen to mother</td>
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<td></td>
<td></td>
<td></td>
<td>Trendelenberg position</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Discontinue oxytocin</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>IV tocolytics</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Amnio-infusion with normal saline</td>
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<tr>
<td></td>
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<td></td>
<td>Assisted vaginal delivery or c/s</td>
</tr>
<tr>
<td><strong>Decreased beat-to-beat variability</strong></td>
<td>Possibly</td>
<td>Fetal acidosis, Quiet sleep state, Maternal sedation (drugs)</td>
<td>Acoustic stimulation to differentiate between sleep state and something more concerning</td>
</tr>
</tbody>
</table>

### Augmentation of Labour

- Artificial stimulation of labour
- Artificial rupture of membranes (ARM), which may be done in conjunction with IV oxytocin infusion
- Complications of oxytocin augmentation include:
  - Hyperstimulation causing fetal distress as a result of ischemia
    - May lead to uterine rupture
  - Antidiuretic effect of oxytocin may lead to severe water intoxication
  - Uterine muscle fatigue and post-delivery uterine atony (more commonly seen with prolonged oxytocin use)

### References

