
TEAM

ANESTHESIA



435

OSCE

5 stations - 2 rest

(5 minutes each)

1. Preoperative assessment
2. Airway management (LMA, ETT)
3. Peripheral line access.
4. Central line access.
5. Spinal anesthesia.

★ Please don't forget to check the notes at the end!

Good Luck!

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Reference: Logbook + 433 team + lectures

Preoperative Assessment

First: introduce yourself and ask for permission.

Second: take history

Personal	Past surgical/ anesthetic	Past medical
- Age? - Diagnosis? - Procedure?	- Previous surgeries? (airway/neck/other) - Previous anesthesia?(general/regional) - Previous difficult intubation? ★ - Complications: Malignant hyperthermia, Prolonged apnea, Awareness during anesthesia, post-dural puncture headache, Postoperative nausea and vomiting, Jaundice	- Neurology (headache, high ICP, epilepsy, other) - Cardio (HTN, CHF, VHD, HLD, CVA, other) - Respiratory (asthma, recent URTI, OSA, other) - Endocrine (DM, thyroid, obesity, other) - Renal (failure, dialysis, other) - MSK (rheumatoid arthritis, NMJ disorders) - Hematology (SCD, anemia, other?) - Porphyria / pseudocholinesterase deficiency? - History of cervical trauma/ burns?
Social	Medications & allergies	Review of the systems
Smoking? Alcohol? Substance abuse? tattoos?	- Medications? (ex. Corticosteroids, Antihypertensives) - Allergies to medications? Adhesive?	(Just mention it)
Family history	Malignant hyperthermia / porphyria / pseudocholinesterase deficiency / sickle cell disease	

Third: perform physical examination

Vital signs / Anthropometrics	Systems	Airway
- Anthropometrics: Height, weight, BMI - Vital signs: Pulse rate, Respiratory rate, BP, Temp., SpO2	Cardiovascular + Respiratory, Abdomen, Neurological (just mention it)	LEMON (see next page)

Fourth: order investigations

CBC	Coag. profile	Glucose	Urea & electrolytes	Others
- Hemoglobin - WBCs - Platelets	- PT, PTT - INR (if needed)	+ Hg1Ac if diabetic	- Na / K - Ur / Cr	- ECG - Chest x-ray Or others as needed

Fifth: ASA Classification (see appendix)

ASA I	ASA II	ASA III	ASA IV	ASA V	ASA VI

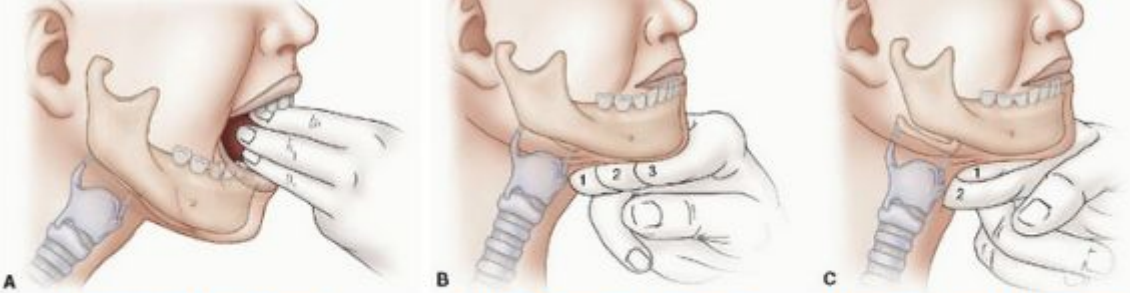
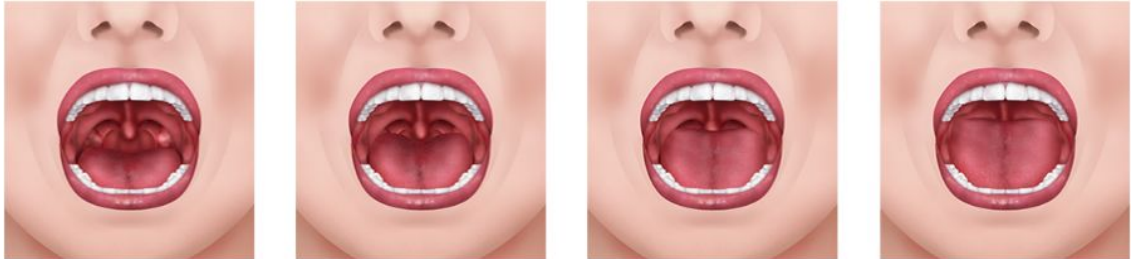
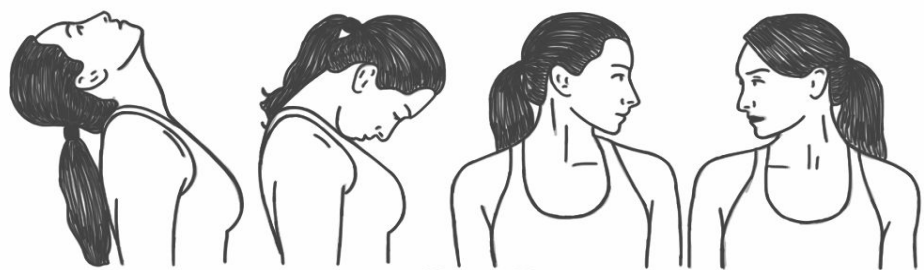
Sixth: anesthesia plan

NPO	Premedications	Anesthesia	Invasive lines	Post- op management	consent
Solids: 6-8 hrs Fluids: 4 hrs Clear fluids: 2 hrs Breast Milk: 4 hrs Formula milk: 6 hrs	6 As Anxiolysis, Amnesia, Antiemetic, Antacid, Anti-Autonomic, Analgesic	- General - Regional - Other	(If needed)	- PACU, PICU, HDU, SICU - Analgesia	- Written - Explain options ★

Seventh/ last: thank the patient and ask if they have any questions.

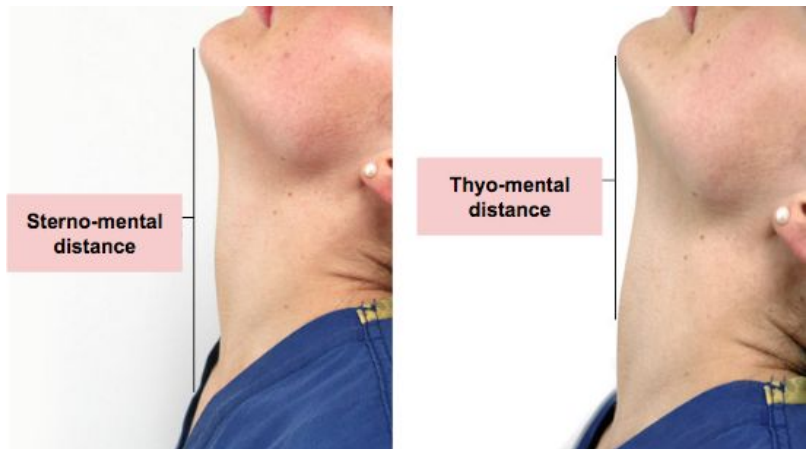
Preoperative Assessment (AIRWAY)

LEMON

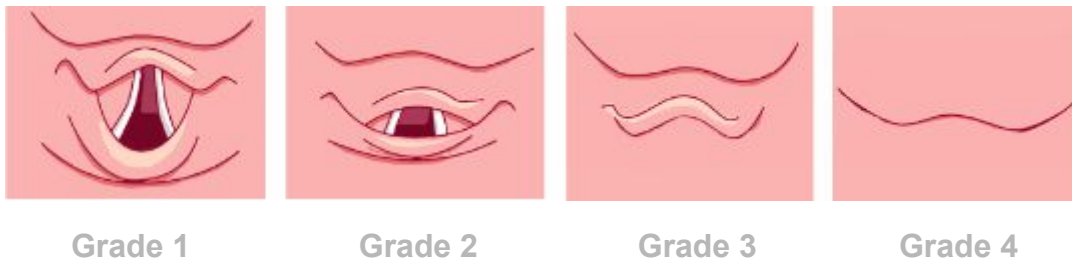
<p>L LOOK</p>	<p>Body: obese? If female: large pendulous breast? Neck anatomy: short? thick? webbed? Mouth: limitations (opening)? Teeth? (number & health) Enlarged tongue? (hypothyroidism, acromegaly & obesity) Mandible (+TMJ): micrognathia, receding mandible (ask patient to sublux their lower incisor beyond upper incisor) Maxilla: protruding? (buck teeth) Face: beard? Facial trauma? Nose: nasal passage patency Head size: <u>Children</u> (ex. hydrocephalus or rickets) <u>Adults</u> (ex. acromegaly)</p>
<p>E EVALUATE (3 - 3 - 2) Rule</p>	 <p>Interincisor distance ≥ 3 fingers (> 6 cm) (A) With patients fingers</p> <p>Hyoid-mental distance ≥ 3 fingers (> 6 cm) (B) with your fingers</p> <p>Thyroid-hyoid distance ≥ 2 fingers (> 4 cm) (C) with your fingers</p>
<p>M MALLAMPATI (modified) *they may ask about the mallampati score (what you see in each grade)*</p>	<p>Sit in front of the patient at the same level → ask to open their mouth as much as they can → ask to protrude their tongue withOUT saying "aah"</p>  <p>Class 1 Soft and hard palate Uvula Fauces Pillars</p> <p>Class 2 Soft and hard palate Major parts of Uvula Fauces</p> <p>Class 3 Soft and hard palate Base of Uvula</p> <p>Class 4 Hard palate</p>
<p>O OBSTRUCTION</p>	<p>Look for: Excessive secretions, stridor, muffled voice, congenital defects or masses like a goitre/tumors.</p>
<p>N NECK</p>	<p>Neck immobility: cervical spine injury / arthritis / severe kyphosis Tell the patient to look up & down - right & left [Atlanto-occipital joint (AOJ) + C-spine]</p> 

Other predictors:

- **Thyromental distance (TMD)**
Distance from the thyroid cartilage to the mental prominence when the neck is extended fully.
Should be ≥ 7 cm
- **Sternomental distance (SMD)**
Distance from the upper border of the manubrium sterni to the tip of the chin, with the mouth closed and the head fully extended.
Should be ≥ 12.5 cm



- **Laryngoscopy: Cormack and Lehane system** just mention it



Discussion questions:

1) Difficult & Easy intubation.

Difficult intubation	Easy intubation 2) mention all the parameters for easy airway
<ul style="list-style-type: none"> - History of previous difficult intubation. - Obesity. - Mallampati of III or IV. - Interincisor gap of < 3 fingers. - Thyromental distance of \leq 6 cm. - Sternomental distance < 12.5 cm - Cormack Lehane of III or IV. - Abnormalities: 1 or more of (TMJ, AOJ, C-Spine) joints. 	<ul style="list-style-type: none"> - Mallampati of I or II - Interincisor gap, hyoid-mental \geq 3 fingers - Thyroid-hyoid distance \geq 2 fingers - Thyromental distance of > 6 cm - Sternomental distance \geq 12.5 cm - Cormack Lehane of I or II. - Neck mobility. (> 90 degree)

2) If you have Mallampati IV what would you do?

Local anesthesia to recurrent laryngeal nerve (to prevent laryngeal spasm) + sedate the patient + go for fiber optic intubation.

3) Management of difficult intubation?

MOST IMPORTANT: CALL FOR HELP

[For a better picture](#)

Plan A: intubate (3 maximum)

If it fails → call for help and

Plan B: LMA + oxygenation + ventilation (max twice)

If LMA fails → wake patient

If oxygenation & ventilation fail

Plan C: face mask ventilation and wake patient

If it fails

Plan D: can't intubate can't ventilate → surgical intubation

4) Definition of preoperative period:

It is the time from the decision to have surgery until admission to the operation room.

5) Indications of preoperative evaluation:

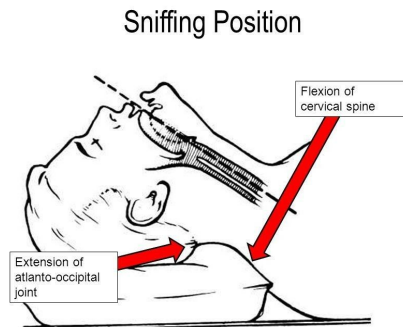
- Assess the anesthetic risks in relation to the proposed surgery.
- To decide the anesthetic technique (general, regional, or combination.)
- To plan the postoperative care including any analgesic regimens.

Notes (from Q-bank):

- Preoperative airway assessment is done through: **Hx > bedside examination > imaging (e.g. x.ray)**
- Marfan syndrome (high arched palate + mitral regurgitation & they typically have flexible joints and scoliosis)

Endotracheal Tube Intubation (ETT):

1. Assume ventilation is in progress.
2. **Always take a consent even if the patient is not awake**
3. Attach the patients to the monitors (ECG monitor, BP monitor, pulse oximeter)
4. Assemble and checks all necessary equipment (check them below)
5. Choose appropriate size ET tube (check them in the discussion part)
6. Choose appropriate type (straight or curved) and size laryngoscope blade
7. Check light , **Tests ET tube cuff integrity**
8. Insert the stylet and lubricates the ET tube
9. Place head in neutral or **sniffing position** (golden position)
10. Clear airway if needed (suction) **[ALWAYS MENTION SUCTION IT'S INCLUDED IN THE CHECKLIST]**
11. Insert laryngoscope blade (they asked 432 to remove the blade and reconnect it)
12. Hold laryngoscope in left hand.
13. Insert laryngoscope in right side of mouth, moving tongue to the left.
14. Visualize epiglottis, then vocal cords.
15. Insert ET tube to proper length for gender (check them in the discussion part)
16. Inflate ET tube cuff to achieve proper seal; remove syringe
17. Insert bite block
18. Produce noticeable chest rise; auscultates breath sounds
19. Confirm correct positioning of ET tube by colorimetric ETCO2 " Capnography"
20. Secure ET tube in place (commercial device or tape)
21. Perform correct ventilation rate for respiratory arrest (1 breath every 5 to 6 seconds)
22. Deliver each ventilation over 1 second
23. Demonstrate complete release of bag between ventilations



Equipments required for intubation:

Laryngoscope		Endotracheal tube(ETT)	Stylet (help to insert the ETT)	
<p>Curved blade (Macintosh) Handle</p> <p>Mac 3, Mac 4 (curved blades)</p>	<p>Straight blade (Miller)</p> <p>Miller 4 (straight)</p>			
Suction catheter	Suction yaunker	Bag valve mask	Colorimetric ETCO2 detector	
lidocaine spray	Magill forceps(optional)	ETT holder or u can just use tape	10 cc syringe	Lubricant (water soluble)

Discussion questions:

1) How to confirm that the endotracheal tube is in the right place?

★ Most reliable	Additional
<ul style="list-style-type: none"> ● Visualizing the tube through vocal cords. ● Capnography tracing (ETCO₂) ● Esophageal detector device. ● Chest x-ray. 	<ul style="list-style-type: none"> ● Chest movements after connecting the tube to the circuit. ● <u>5 point auscultation</u>: by auscultating the <u>apices</u>, <u>bases</u> of the lungs and the <u>epigastric</u> area (first to auscultate) ● H₂O vapor

2) What are the ETT Sizes:

Male: 8.0-9.0 mm | **Female:** 7.0-8.0 mm | **Pediatric:** uncuffed: (age/4)+4 mm, cuffed: (age/4)+3.5

3) What length of the ETT insertion you should stop?

Typically 23 cm for men, 21 cm for women.

4) Which type of laryngoscope you use for pediatric? Straight type (Miller)

5) What will happen if you introduce the tube far into one of the main bronchi? Desaturation

6) Indications:

- To ensure airway patency in an unconscious patient.
- To protect the lungs from the aspiration of gastric contents.
- To provide positive-pressure ventilation, in the setting of respiratory failure or general anesthesia.

7) Contraindications:

- Pharyngeal obstruction: (foreign body, massive swelling of the pharynx)
- Serious maxillofacial trauma.

8) Complications:

At the time of intubating:

- Failed intubation
- Trauma to the face
- Laryngospasm
- Hypertension
- Tachycardia, bradycardia, arrhythmia

While the ETT is in place:

- Tension pneumothorax
- Pulmonary aspiration
- Airway obstruction

After intonation:

- Sore throat
- Laryngeal edema
- Hoarseness

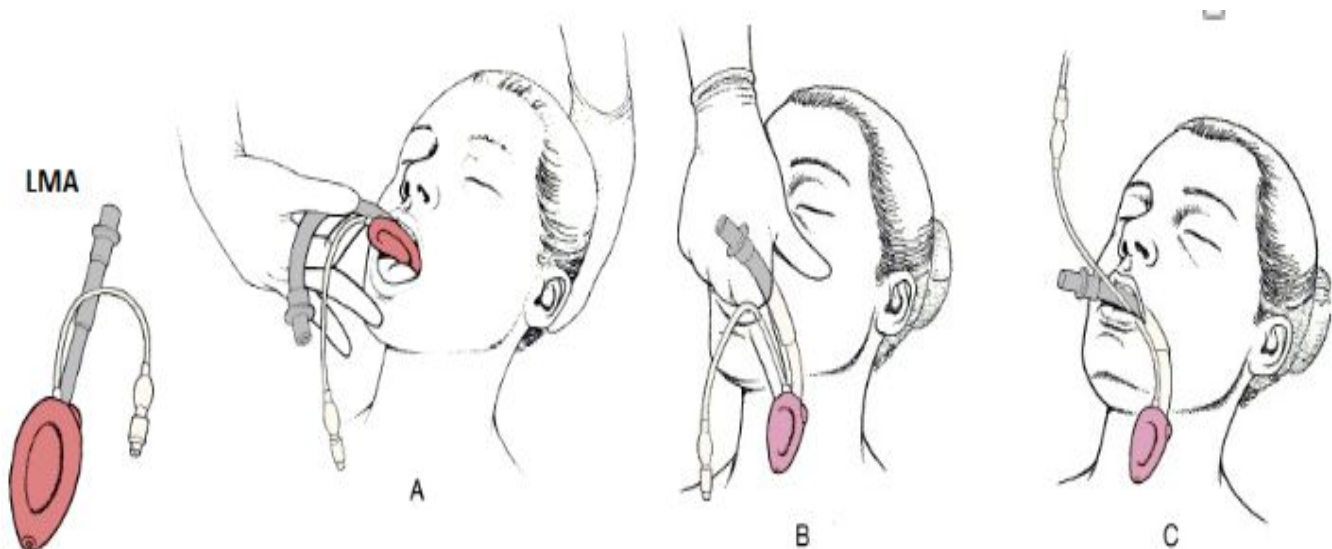
9) Rapid sequence induction:

- When the patient has "full stomach", i.e. predisposed to regurgitation/aspiration.
- Decrease level of consciousness (LOC).
- Meal within 6 hours.
- Sphincter incompetence suspected (GERD, hiatus hernia, nasogastric tube).
- Increased abdominal pressure (pregnancy, obesity, bowel obstruction, acute abdomen).
- Remember Selicks maneuver (Cricoid pressure) and administer Suxamethonium

10) The purpose of using stylet? help to insert the tube easily

Laryngeal Mask Airway (LMA):

1. Prepare and assemble all necessary equipment
2. Choose appropriate size LMA
3. Test integrity of cuff by inflating it
4. Deflate cuff on a flat surface and lubricate LMA on posterior surface only for use
5. Do NOT forget to say (Assume the patient is ventilated, then you'll ventilate him through LMA)
6. **Pt in Sniffing position**, open the mouth using the "crossed fingers" technique or by performing a [tongue- Jaw lift](#); do not hyperextend neck.
7. Clear the airway if needed
8. Insert tube into mouth and place it so that the curvature is the same as that of the Pharynx, directing it posteriorly until resistance is felt.
9. Inflate the cuff with the appropriate amount of air corresponding to the size of the tube , remove syringe
10. Insert bite block
11. Produce noticeable chest rise; **auscultate breath sounds**
12. Confirm correct positioning of LMA by **colorimetric ETCO² capnograph**
13. Secure LMA in place
14. Perform correct ventilation rate for respiratory arrest (1 breath every 5 to 6 seconds)
15. Perform correct ventilation rate for cardiac arrest (1 breath every 6 to 8 seconds)
16. Deliver each ventilation over 1 second
17. Demonstrate complete release of bag between ventilations



Discussion questions:

1. What size of LMA should you choose?

- **Male: 4**

- **Female: 3**

- **Neonate: 1**

2. If you have a difficult intubation?

ASK FOR HELP.

3. Indications:

As an alternative to both mask ventilation and endotracheal intubation in appropriate patients.

- Difficult airway: After failed intubation “in cases where ETT is **not** indicated”,
- Resuscitation of an unconscious patient.
- In the case of surgeries done on the face (e.g. eye surgery)

4. Contraindications:

- **Absolute contraindications:** (in all settings, including emergent) are as follows:
 - 1- Cannot open mouth
 - 2- Complete upper airway obstruction.
- **Relative contraindications:** (in the elective setting) are as follows:
 - 1- Increased risk of aspiration: Prolonged bag-valve-mask ventilation, morbid obesity, second or third trimester pregnancy, patients who have not fasted before ventilation, upper gastrointestinal bleed
 - 2- Suspected or known abnormalities in supraglottic anatomy
 - 3- Need for high airway pressures (In all but the LMA ProSeal, pressure cannot exceed 20 mm water for effective ventilation.)

5. Complications:

- Aspiration of gastric contents
- Local irritation
- Upper airway trauma: Pressure-induced lesions, nerve palsies
- Mild sympathetic response
- Complications associated with improper placement: Obstruction, laryngospasm
- Complications associated with positive-pressure ventilation: Pulmonary edema, bronchoconstriction

Central Venous line

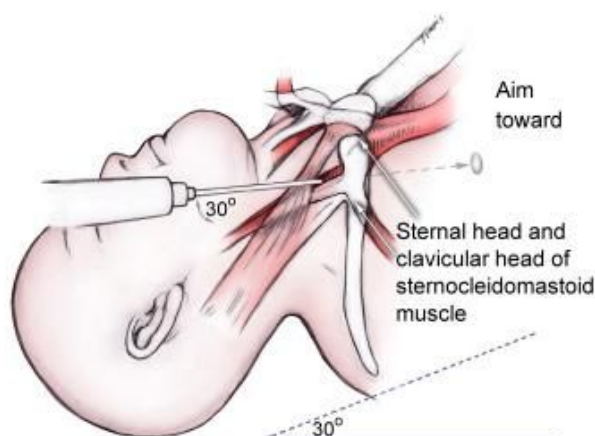
Common Sites include: **Femoral vein** (to access IVC), **Internal jugular vein** (to access SVC) & **Subclavian vein**

Internal Jugular Vein catheterization

highly recommended: [video](#)

Steps:

1. Explain to the patient what you are going to do and take the **consent**
2. **Monitor** (BP, ECG, Pulse Oximeter) *Someone should be with you to watch the monitors and tell you if there's any arrhythmia*
3. Prepare the equipments needed and flush the catheter ports. Wears cap, mask, gown and gloves (**Sterile procedure**)
4. Clean the skin, and drape the site. *(with povidone iodine or chlorhexidine) > allow to dry*
5. Supine position, Tilt the head end of the bed down at least 15° and turn the head away. (**Trendelenburg position**) *(to distend the jugular vein and prevent air embolism)*
6. Locate **anatomical landmark**: the triangle formed by the sternal and clavicular heads of the sternocleidomastoid muscle superiorly and the clavicle inferiorly. *Stand behind the patient's head (NOT right)*
7. **Infiltrate local anesthetic lidocaine around the site if patient awake.**
8. Palpate the carotid artery with your left hand, covering the artery with your fingers.
9. **Insert the needle** attached to syringe at a 45-degree angle to the skin 0.5-1 cm laterally to the artery, the point of insertion is at the apex of this triangle.
10. Direct needle caudally, in male towards the right nipple and in female towards the right iliac crest, Advance needle while withdrawing plunger of syringe.
11. When blood appears, remove syringe, **insert Guidewire** with ECG monitor *(in case arrhythmia ¹take out 1 or 2 cm.)* then **remove the needle** and keep the wire in place by holding it all the time
12. Insert the dilator over the Guidewire *(3 times up and down)*, **dilate the skin**, remove the dilator, Insert the central line catheter over the wire *(depth: 15cm)*. (**Seldinger technique**)
13. When the guide wire appeared from the distal part of the catheter hold it and advance the catheter over the guidewire into the vein then remove the guide wire
14. Re-flush all the catheter ports and Connect to tube
15. Fix catheter in place by loose stitch *(not a tape)* and cover it and identify the catheter level
16. Clean the site and apply sterile dressing



¹ if persists give IV lidocaine

1-Syringe. 2-Dilator. 3-Needle. 4-Quidwire.

5-Catheter. 7-11 blade scalpel.

Discussion questions:

1) What do we call Catheter over wire? Seldinger technique.

2) What is the location of Internal Jugular Vein?

Between the two heads of sternocleidomastoid muscle, lateral to internal carotid artery.

3) What are the Indications of central line?

- Poor peripheral venous access. ex. burns
- Monitoring central venous pressure (CVP)
- Insertion of transvenous pacing.
- Hemodialysis.
- Total parenteral nutrition (TPN)
- Long standing chemotherapy.
- Infusion of irritant drugs. ex. bicarbonate, potassium and vasopressors.

4) What are the Complications of central line?

- Pneumothorax
- Chylothorax (left IJV)
- Hemothorax
- Contamination and infection
- Hypersensitivity reactions
- Sepsis, Speed shock
- Air embolism
- Thrombus embolism
- Dysrhythmia
- Hematoma
- Cardiac tamponade
- Trauma to nearby tissue

5) What are Signs and symptoms of Air Embolism?

Hypotension, Cyanosis, Weak and rapid pulse, Loss of consciousness.

(Sudden arrhythmias, Sudden drop in saturation, Sudden drop in etCO₂)

6) What is the management of Air Embolism?

1. Close the tubing
2. Turn patient on left side with head down i.e. Trendelenburg/left lateral decubitus.
3. Consider Check tubing for leaks.
4. Administer 100% Oxygen
5. ASK for HELP

7) What monitor you would use? ECG to check for Arrhythmia, pulse oximetry, BP

8) If you can't go to the jugular vein what vein you would use?

Femoral vein (dirtier area → ↑risk of infection).

9) What are the Contraindications of central line?

- Obstructed vein (eg. clot)
- Severe coagulopathy
- Contaminated site
- Burned site
- Stenosis of the vein
- Raised ICP (IJ line)
- Uncooperative awake patient
- Traumatized site (eg. clavicle fracture and subclavian line)

10) What is the most common complication of left jugular vein line?

Chylothorax: injury of the thoracic duct (which present only on the left side of the body).

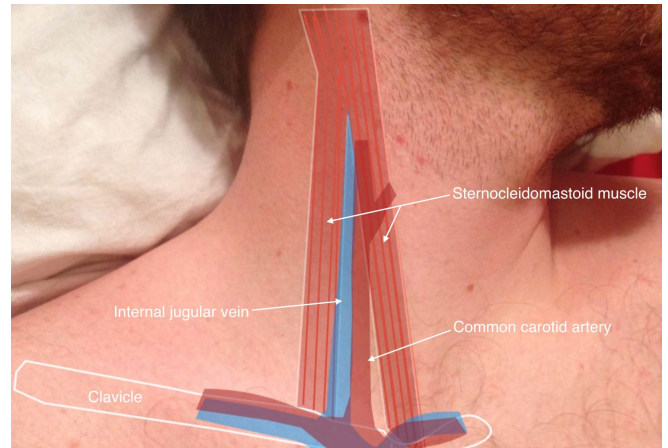
11) How to rule out the catheter not in artery?

- By ABG
- X-ray: tip of the catheter should be in the lower margin of the 2nd rib to the upper margin of the 3rd rib (level of the carina) we also do X-ray to rule out pneumothorax
- Aspirate and look for:
 - Venous blood: Dark, slow, no pulse.
 - Arterial blood: lighter, faster, with pulse.

12) How to know you are in? by aspirating and visualizing blood.

13) How to know you are in atrium? Arrhythmia (if it happened we take it out 1-2 cm and if persisted give IV lidocaine)

14) What is the most common complication of subclavian use? Pneumothorax.



Peripheral IV Insertion

[Video](#)

In case a large cannula 18 to 20 gauge (larger the gauge = smaller the needle), you need to anesthetize the patient

*Explain the steps while you're working.

1. Explain to the patient what you are going to do and take the **consent**.
2. Prepare all the equipment
3. Wash hand and Put on **gloves**, **Maintain aseptic technique**
4. **Apply Tourniquet** proximally.
5. Locate vein (by **palpation**) and **cleanse** the overlying skin with alcohol or povidone iodine.
6. **Anesthetize** the skin if a large bore cannula is to be inserted in an awake patient.
7. Hold vein in place by applying pressure on vein distal to the point of entry.
8. Puncture the skin (in **15-30°**) with bevel of needle upward about ½ to 1 centimeter from the vein and enter the vein either from the side or from above.
9. Note blood return and advance the catheter either over or through the needle, depending on which type of catheter needle device is employed.
10. Remove the Tourniquet. **Don't forget!**
11. Withdraw and remove the needle and attach the intravenous tubing.
12. Cover the puncture site with povidone-iodine ointment and a sterile dressing and tape in place, excluding the point of connection of the intravenous tubing
13. wash hands, thank the patient, cover the patient, ask if the patient have any concerns or questions, document procedure.
14. Dispose needles, syringes and other sharp objects into the yellow sharp container.



Discussion questions:

1) What are the Common sites?

Hands ²and arms, Antecubital fossa (AC space),

*cephalic or antecubital vein have a fixed anatomy (in difficult situation or obese pt)

2) What are the Alternate sites?

- Long saphenous veins
- External jugular veins

*we don't prefer to use the Alternate sites because Embolism and infection rates higher

3) What are the indications of Peripheral IV line Insertion?

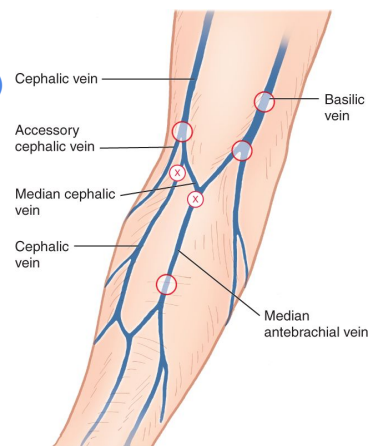
- Fluid maintenance and dehydration.
- Nutritional supplementation.
- Administration of medication.
- Blood transfusions.

4) What are the Complications of Peripheral IV line Insertion?

- Pain and irritation
- Infiltration and extravasation
- Phlebitis
- Thrombosis and thrombophlebitis
- Hematoma formation
- Venous spasm
- Vessel collapse
- Cellulitis
- Nerve, tendon, ligament, and limb damage

5) **Avoid sites that have injury or disease:** Trauma – Dialysis fistula – History of mastectomy

6) **How to differentiate between hematoma and extravasation and infiltration, and the management for each one?**



Hematoma	<p>When there is leakage of blood from the vessel into the surrounding soft tissue. A localized mass of blood outside of the vessel, usually creating a hard, painful lump.</p> <p>Management: A hematoma can be controlled With apply direct pressure and elevate extremity until bleeding stops.</p>
Infiltration	<p>The inadvertent administration of a <u>non vesicant fluid</u> or medication from its intended vascular pathway (vein) into the surroundings ing tissue</p> <p>Signs and symptoms: Swelling, discomfort, burning, and/or tightness, Cool skin and blanching around IV site, Decreased or stopped flow rate, no backflow of blood into IV.</p> <p>Management:</p> <ol style="list-style-type: none"> 1. Discontinue IV infusion and remove needle or catheter. 2. Apply a pressure dressing to the site. 3. Choose new site. 4. Initiate IV therapy with new equipment . 5. Document.
Extravasation	<p>The inadvertent administration of a <u>vesicant fluid</u> or solution from its intended vascular pathway (vein) into the surrounding tissue</p> <p>Signs and symptoms: Swelling, discomfort, burning, Cool skin, Blistering and/or skin sloughing.</p> <p>Management:</p> <ol style="list-style-type: none"> 1. Discontinue IV infusion. 2. Remove needle or catheter. 3. Administer the appropriate antidote according to your facility's protocol. Elevate the extremity. 4. Follow the manufacturer's recommendations to apply either cold or warm compresses to the affected area. 5. Document.

² accessory cephalic and dorsal venous arch of the hand

Spinal Anaesthesia

[video](#)

1. **Pink** (draw lidocaine).
2. **Orange** (cutaneous analgesia).
3. **Black** (subcutaneous analgesia).
4. **Violate with a red cover** (for drawing bupivacaine)
5. **Quincke needle** with its stylt

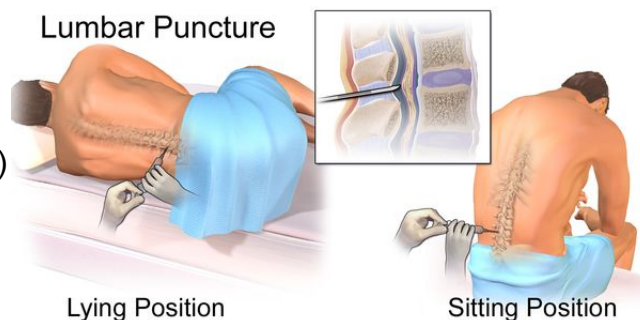


Position:

- Lateral decubitus
- Sitting (**c-shaped position**: raising his legs and flexing his back to increase the interlaminar space)

Steps:

1. Introduce yourself and explain the procedure.
2. Taking **Consent** from the patient
3. Assessment (indication and contraindications)
4. Make sure that the **monitors** are on (ECG, Oximetry and blood pressure cuff) and insert IV fluids **1 liter of crystalloid preloading (Normal saline)**.
5. **Sterilization (gloves, cap, mask, drape)**
6. Prepare the back with antiseptic **using the (blue) sponge. In and out or circular motion.**
7. Place a sterile Drape Over The Area (**you'll have to locate the intervertebral space twice, first to know where to place the drape (white sterilized plastic) then to know where to inject**
8. Identify the anatomical landmarks (**Identify the top of the iliac crest. Tuffier's line generally corresponds with the 4th lumbar vertebrae, so the injection will be above or below 'we go below'**), **don't remove your L hand from the place you identify and go for step 9 with R hand**
9. Inject local anaesthetic into the skin and deeper tissue. **tell the patient you are now going to insert the local anesthetic needle, (small needle for skin (orange), large for the deeper tissues-subcutaneously (black))**
10. Insert the large introducer needle into the selected spinal interspace. **Before inserting the needle make sure you prepared the bupivacaine**
11. Direct the spinal needle through the introducer and into the subarachnoid space. **until you hear and feel the pop which indicates penetrance of ligamentum flavum.**
12. Take out the inner part of the needle and Free flow of **CSF confirms proper placement**
13. Aspirate for CSF if clear inject the proper anaesthetic (**2-3 ml of the hyperbaric bupivacaine 0.5%**)
14. Remove the needle, introducer, syringe and drape sheet (**bcz if you take the syringe alone the CSF and the drug will leak**)
15. Thank the pt, have him lie down and keep motoring his BP.



Discussion questions:

1) What is “Tuffier’s” line (intercrestal line) ? a line drawn across highest point of both iliac crest intersecting L4 spinous process.

2) why we ask patient to raising his legs and flexing his back in sitting position? to increase the inter-laminal space

3) What is the complications of Spinal Anaesthesia?

- Hypotension (most common).
- Back pain
- Spinal headache.
- Bradycardia.
- Epidural hematoma & infection.
- Meningitis (unsterile technique or immunocompromised pt)
- Cauda equina injected into the nerve itself.
- Neurological deficit.
- TNS transient neurologic symptoms.
- Local anesthetic systemic toxicity (LAST)

4) How do you treat hypotension?

- **Primary Treatment:** Increase the cardiac preload Large IV fluid bolus within 30 minutes prior to spinal placement, minimum 1 liter of crystalloids
- **Secondary Treatment** (when the primary failed): Pharmacologic vasopressor:
 - Ephedrine³ have alpha + beta effects used in bradycardia pt.
 - Phenylephrine have only alpha effects used in tachycardia pt.

5) What is post dural puncture headache (PDPH)?

A headache that develop **12-48 hours after** spinal anesthesia (Not immediately) due to CSF leak⁴. But remember not every post surgical headache is a PDPH.

6) How do you treat PDPH?

Conservative: Bed rest, Fluids, Caffeine to cause vasoconstriction of brain vessels.

Epidural blood patch⁵: if headache didn't respond to conservative treatment (after 24 h).

7) What is the monitor you would use?

Blood pressure to rule out the hypotension, ECG, Pulse oximetry and temperature monitoring.

8) What is the complications of Spinal Anaesthesia if it was intravascular?

Local Anesthetic Systemic Toxicity (LAST)

9) How can you manage LAST?

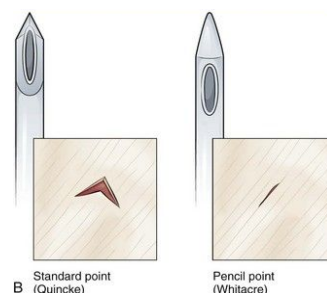
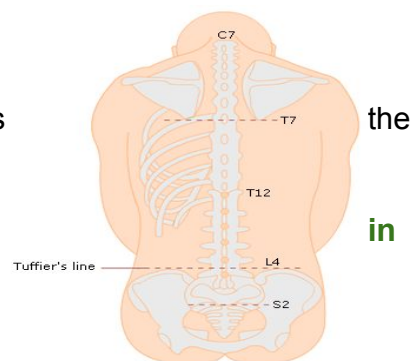
Call for help - Stop LA - ABCs resuscitation - Intralipid emulsion CPR + ACLS (if cardiac arrest occurs)

10) How we confirmatory for Spinal Anaesthesia and epidural Anaesthesia?

- Spinal Anaesthesia: CSF flow
- Epidural Anaesthesia: Loss of resistance

11) What are the types of needles?

- **Spinal needle:** Pencil point needle (27G) and Quincke needle
- **Epidural needle:** Tuohy needle (size = 16 or 18)



³ what is the dose of ephedrine? 25 - 50 mg IM or 5 - 25 IV

⁴ Decrease CSF → compensated by increased blood flow → dilated blood vessels → headache.

⁵ The definitive treatment

12) When will you stop advancing your needle - what do you do before?

Sudden drop in the blood pressure, administer IV fluid (preload the pt) and prepare ephedrine

15) What is the Indications for Spinal Anaesthesia ?

Any operations below the umbilicus and surgery duration 2-3 hrs:

C/S (most commonly because it is fast and heavier).

Hernia repairs ,gynaecological, urological operation, orthopedics.

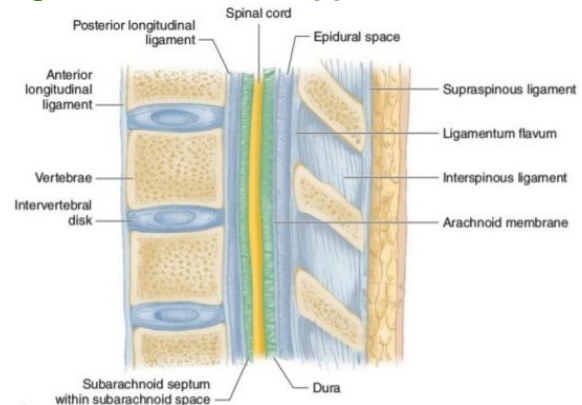
Any operation on the perineum or genitalia

16) what is the Contraindications for Spinal Anaesthesia ?

- Absolute:
 - **Refusal**
 - Infection at site of injection ex: bed sores
 - **Coagulopathy & anticoagulated**⁶
 - Severe hypovolemia. Cuz the drug cause hypotension and that will worsen the situation.
 - Increased intracranial pressure. Will cause brain herniation.
 - Severe aortic or mitral stenosis.
 - Not hemodynamically stable.
- Relative: Use your best judgment

17) what are the tissue that the needle passes through in the Midline Approach:

1. Skin
2. Subcutaneous tissue
3. Supraspinous ligament
4. Interspinous ligament
5. Ligamentum flavum
6. Epidural space
7. Dura mater
8. Intrathecal space (subarachnoid space)



18) How to prevent hypotension following regional anesthesia?

Preload the pt. If pregnant tilt the bed.

19) Pregnant and received spinal anesthesia and found to have hypotension?

Change position, fluid, vasopressor.

20) expected events if Level blocked:

T10 = hypotension

T1 = bradycardia





21) what do we mean by hyperbaric and how to obtain it ?

- Hyperbaric means that the solution is heavier than CSF.
- We obtain it by adding Dextrose to the solution to make it hyperbaric. Hypobaric means that the solution is lighter than CSF.

* زي المويه والزيت, المويه تعتبر هايبربارك بالنسبه للزيت = أثقل من الزيت وتجلس تحت والزيت فوق. لهذا نستعمل الهايبربارك عشان يبقى المخدر تحت وما يطلع فوق ويسوي لنا مشاكل بالتنفس والخ

⁶ aspirin use is not a contraindication for spinal anesthesia according to guidelines

Oropharyngeal airway:

<p>Step 1 Select The Proper Size</p>	 <p>- Measure the NPA from the victim's earlobe to the corner of the mouth.</p>
<p>Step 2 OPEN THE VICTIM'S MOUTH</p>	 <p>- Use the cross-finger technique to open the victim's mouth.</p>
<p>Step 3 Insert The OPA</p>	 <p>For an adult:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Grasp the victim's lower jaw and tongue and lift upward. <input type="checkbox"/> Insert the OPA with the curved end along the roof of the mouth. <input type="checkbox"/> As the tip approaches the back of the mouth, rotate it one-half turn (180 degrees). <input type="checkbox"/> Slide the OPA into the back of the throat. <p>For a child or an infant:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Use a tongue blade or a tongue depressor and insert with the tip of the device pointing toward the back of the tongue and throat in the position it will rest in after insertion. OR Insert the OPA sideways and then rotate it 90 degrees.
<p>Step 4 Ensure Correct Placement</p>	 <p>The flange should rest on the victim's lips.</p>

Discussion questions:

1) Indications: Unresponsive patient who with NO gag reflex.

- It will prevent obstruction of airway by tongue

2) Contraindications: Responsive patient - Patient with gag reflex

3) Complications: Patient with gag reflex will vomit. - Airway obstruction (if the tongue is pushed against the posterior pharyngeal wall during insertion)

Nasopharyngeal airway:

Step 1

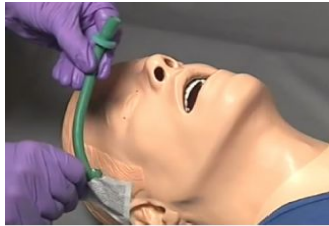
Select The Proper Size



Measure the NPA from the victim's earlobe to the tip of the nostril.
Ensure that the diameter of the NPA is not larger than the nostril.

Step 2

Lubricate The NPA



Use a water-soluble lubricant prior to insertion. With the bevel toward the septum, advance the NPA gently

Step 3

Insert The NPA



If resistance is felt, do not force.
If you are experiencing problems, try the other nostril

Step 4

Ensure Correct Placement



The Angel Should Rest The Victim's Nostril.

Discussion:

1) Indications:

- Oral, Faciomaxillary surgery.
- patients who are semiconscious (with intact cough and gag reflexes).
- prolonged seizure activity
- need for frequent nasotracheal suctioning
- airway obstructed by the tongue.

2) Contraindications:

- Basal skull fracture, Significant facial fracture.
- Deformity of the nose or nasal pathology.
- Bleeding disorders.
- Hx of epistaxis that requires medical treatment

3) Complications:

- Epistaxis
- Airway obstruction (if the tongue is pushed against the posterior pharyngeal wall during insertion)

REMEMBER:

- Don't forget **WIPE** (Wash hands, Introduce self (full name, grade) Patient's name & DOB & what they like to be called Explain why you are there)
- **Explain** the steps while you're working.
- Always gain consent before starting (explain procedure, indication contraindications and complications)
- Always make sure to put the patient on standard monitors (ECG,Pulse oximeter, BP monitor)
- **Station (preoperative assessment):** you can skip the first half by saying (after taking detailed history i will assess the airway. If the examiner asks you to elaborate, then you can say everything that is mentioned.
- Don't forget to **thank** the patient!
- Be quick and precise, you might lose a mark if you keep messing up!
- You have to say every step that is mentioned in the logbook. You'd think something isn't important but it is in the checklist!
- **DISPOSAL + clean after yourself!!!**