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| **Practical Procedures: Central Line Insertion - Internal Jugular approach** |
| **­­**  Central line insertion should be real-time ultrasound guided  Internal jugular is preferred to subclavian where possible as it is less likely to lead to pneumothorax  **Indications for central line Insertion:**   * Administration of medications that require central access e.g. amiodarone, inotropes, high concentration electrolytes * Fluid balance monitoring with CVP * Intravenous access (long term or difficult peripherally)   **Complications associated with insertion:**   * Haemothorax * Pneumothorax * Haematoma * Inadvertant arterial puncture |
| **Equipment required:**   * Ultrasound and sterile ultrasound sheath * Sterile trolley * Sterile field, gloves, gown and mask * Seldinger central line kit * Saline flush * Chlorhexidine * Lignocaine * Suture * Scalpel * Sterile dressing * Pressure bag to attach to monitoring |
| **Contraindications to procedure:**   * Coagulopathy * Local infection * Avoid in raised intracranial pressure- aim for a femoral approach if required * Patient non compliance |
| **Pre Procedure:**   * Consent patient if conscious otherwise document why the procedure is in the patients best interests * Consent should include:   + Infection, bleeding (arterial puncture, haematoma, haemothorax), pain, failure, damage to surrounding structres (including pneumothorax), thrombosis. * Set up sterile trolley * Position patient with head down if they can tolerate it, with head facing away from side of insertion   + This ensures maximum venous filling * Ultrasound area to define anatomy * Having a nurse or assistant is helpful |
| **The Procedure:**   * Wash hands and don sterile gown and gloves * Clean the area and apply sterile field * Apply sterile sheath to the ultrasound probe * Confirm anatomy * Under ultrasound guidance insert lignocaine cutaneously, subcutaneously and around internal jugular. * Whilst lignocaine has time to work flush all lumens of the line and then clamp all lumens except the Seldinger port * Ensure caps are available for the lumens * Under ultrasound guidance take Seldinger needle attached to syringe and insert into the internal jugular vein. * When blood is freely aspirated remove syringe and inset Seldinger wire. This should pass easily. * Use scalpel to make an incision in the skin * Pass the dilator over the wire and gently but firmly dilate a tract through to the internal jugular. * Remove the dilator and pass the central line over the Seldinger wire, do not advance the line until you have hold of the end of the wire. * Remove the wire * Aspirate and flush all lumens and re clamp and apply lumen caps * Suture the line to allow 4 points of fixation * Dress with a clear dressing so the insertion point can be clearly seen |
| **Post Procedure:**   * Attach central line to pressure bag to allow CVP monitoring   + Nursing staff can show you how to do this or will do it for you * Run a blood gas to ensure a venous sample * Chest x-ray to confirm placement and to check for pneumothorax * Clear documentation of date of insertion and monitor for infection |
| **In the event of failure:**   * Stop procedure * Seek senior help |
| **Top Tips for central line insertion:**   * Central lines can have multiple lumens. Most commonly 3,4 and 5 lumen lines are inserted. Confirm what the line will be used for and how many infusions a patient has to aid your selection of the line with the correct amount of lumens * Always ensure you are happy with your anatomy before commencing the procedure * Ensure your sterile trolley is well set up with the kit lined up in the order you will use things and a clear area for sharps. This will make your life easier. * NEVER LET GO OF THE SELDINGER WIRE! |

N.B. The Seldinger central line kit should contain the line, Seldinger wire, dilator, Seldinger needle and syringe, scalpel and suture point fixation.