Therapeutic Abdominal Paracentesis

Indications: large volume ascites causing respiratory compromise or abdominal pain/pressure
Relative contraindications: coagulopathy (INR >1.4, platelets <50, oral anticoagulant <24 hours, clopidogrel <7 days); pregnancy; distended bowel (obstruction/ileus); organomegaly; distended bladder

Introduction

- **Wash hands**, **Introduce self**, **Patients name & DOB & wrist band**, **Explain procedure and get written consent**
  - Risks: pain; bleeding; infection (peritonitis); damage to local structures (including bowel perforation); paracentesis leak
  - Ask patient to empty their bladder prior to procedure
- **Check patients clotting screen, platelet count and if they have been on an oral anticoagulant/clopidigrel**
- Ensure assistant is available
- Examine patient and tap out ascites
- Use ultrasound to confirm the presence/location of ascites, check the depth of the abdominal wall and mark the spot pre-procedure (although, if there is tense ascites with fluid thrill, it is usually safe to proceed without ultrasound)

Preparation part

- **Wash hands and apply surgical hat and mask**
- Clean a trolley
- Gather equipment onto bottom of trolley (think through what you need in order)
  - Sterile pack
  - Cleansing snap-sponge x2 (iodine or alcohol/chlorhexidine)
  - Sterile drape with hole in centre (or 2-3 drapes without holes in)
  - 10ml syringe and 3 needles (1 orange 25G, 2 green 21G) for local anaesthetic
  - IF NEED SAMPLES: 50ml syringe
  - Needle drain kit (can use suprapubic catheter set) – equipment included in kits varies
    - Scalpel
    - Catheter with needle
    - 20ml syringe
    - Catheter adaptor with 3-way tap/clamp
    - Drainage bag/bottles and tubing (can use catheter bag)
  - Cotton gauze swabs (used whenever needed throughout procedure to dry/clean sterile area)
  - Sterile dressing to secure catheter e.g. cannula dressing
  - Equipment to be kept outside of the sterile field
    - Chlorhexidine hand scrub solution
    - Sterile theatre gown
    - Sterile surgical gloves
    - 10ml 1% lidocaine (maximum 3mg/kg – note 1ml 1% lidocaine = 10mg)
- **Walk to patient**
- **Wash hands**
- Open sterile pack to form a sterile field on the top of the trolley
- Open packets (without touching the instruments themselves) and drop sterile instruments neatly into the sterile field
- Pick up waste bag from sterile pack without touching anything else and stick to side of trolley

Patient part

Positioning and exposure

- Position patient lying supine in bed with head of bed elevated (aids fluid accumulation in lower abdomen)
- Expose patient’s abdomen

*If the insertion point has not already been marked using ultrasound...*

- Locate insertion point:
  - Traditionally in the right iliac fossa (approximately 5cm above and up to 5cm medial to the right ASIS)
  - Tap out ascites and confirm flank dullness at intended insertion point
- Use different site if there is overlying infection
- Mark insertion point with a skin pen/indentation

Preparation

- Wash hands using Chlorhexidine solution, then apply sterile gown and gloves using the **surgical scrub technique**
- Sterilize area
Work from middle outwards in one spiral motion (using cleansing snap-sponge)
Repeat with second cleansing snap-sponge
Discard used snap-sponges as they are no longer sterile, but note all equipment used after this (including all needles) can be returned to the sterile field after use
Apply the sterile drape over the patient’s body so that the hole is in the correct place to allow access to the insertion site (or apply 2-3 drapes centred around exposed insertion site if no holes)

- Anaesthetise tract
  - Ask assistant to snap open lidocaine bottle and hold open upside-down
  - Draw up lidocaine using 1st green needle on 10 ml syringe and expel any air
  - Change to the orange needle and insert at an acute angle to form a single subcutaneous bleb around insertion site in order to anaesthetise the skin
  - Change to the 2nd green needle and insert perpendicular to the skin to anaesthetise the insertion tract
    - This is done by instilling lidocaine in small increments of increasing depth
    - Always aspirate when advancing the needle (so you know when you get to the peritoneal cavity) and aspirate before injecting lidocaine (to check you are not in a vessel)
    - When fluid is aspirated, remove needle and do not advance further

Now wait 1 minute for the anaesthetic to work, while you prepare the equipment and put in order:
1. Scalpel: remove cap
2. Needle: remove bung (if present) and attach 20ml syringe
3. Catheter: straighten curved tip of catheter using its sheath, insert needle into catheter and then remove catheter sheath
4. Catheter adaptor: clamp it or close 3-way tap

Paracentesis
- Make a 2mm scalpel incision through the anaesthetised skin
- Insert needle perpendicular to the skin into the same tract, aspirating during infiltration
- When fluid is aspirated, advance 5mm further to ensure the tip of the catheter enters the peritoneal cavity (not just the tip of the needle)
- Holding the needle still, advance the catheter off the end of the needle until the flange touches the skin
- Remove needle
- IF SAMPLES ARE REQUIRED: attach 50ml syringe to the catheter and aspirate 50ml for samples
- Attach catheter adaptor to end of catheter
- Attach drainage bag/bottle connection tubing to catheter adaptor and unclamp/open adaptor

Finally
- Dress catheter and secure tubing

To complete
- Confirm it works
- Thank patient and cover them
- Decant and send ascitic fluid samples if collected
- Bin waste and gloves, dispose of sharps safely, clean trolley and wash hands
- Fluid replacement: give 100ml 20% human albumin solution following every 2L ascites drained in cirrhotic patients; otherwise determine need for crystalloid fluids clinically
- Drainage rate: free drainage of up to 5L over first 4 hours, then up to 1L/h (if hypotensive – limit to 0.5L/h throughout)
- Fully document procedure in patients notes
- Other notes
  - Drain can be left in for up to 6 hours (risk of infection if left longer, especially for cirrhotic patients)
  - If ascitic fluid is still draining through tract after removal, attach stoma bag