

PARACENTESIS

BEFORE YOU BEGIN

Indications:

- Diagnostic: to determine the etiology of ascites. (new onset ascites, clinical deterioration of patient with ascites), assess for SBP
- Therapeutic: to relieve symptoms of ascites (>5L removal consider large volume tap)

Contraindications: none are absolute

- Coagulopathy: no absolute cut off of INR or platelets but have type and screen ready if platelet<50K, INR>5

Gather Supplies:

- Preprint labels for studies (see below)
- Patient Consent
- Lavender top tube, Gold top tube, sterile tubes for cytology, one pair of blood culture bottles (one aerobic, one anaerobic)
- Paracentesis kit (for diagnostic tap you can simply gather a 10ml syringe, 18 gauge needle, and 1% lido and save the cost of the kit)
- Vacutainer bottle(s) (skip for diagnostic tap)
- Chucks/underpad to maintain cleanliness of bed
- If anticipate difficult closure (degree of coagulopathy or volume of ascites) surgical glue (Dermabond)
- Have wastebasket and sharp receptable box close by
- *sterile drape, sterile gown and non-sterile cap are optional. Not shown to lead to contaminated cultures or procedure related infections.

Technique Step by Step:

1. No need to be NPO
2. Obtain informed consent
3. Have the patient urinate or use a foley to empty the bladder prior to procedure.
4. Place the patient in the semi-recumbant position and rolled slightly to one side with the aim of performing at procedure on the more inferior (closer to the bed) side.
5. At Stanford ultrasound guidance is required for paracentesis and should augment the physical exam. If ultrasound marking performed in radiology department always go to ultrasound yourself to witness the marking and positioning of the patient.
6. Insertion site can be LLQ/RLQ.
7. LLQ/RLQ: Site has thinner abdominal wall and has a greater ability to remove more fluid. . Insertion is a few finger breaths above the inguinal ligament. Make sure the patient turns slightly to the ipsilateral side of needle insertion.

8. Using sterile technique, prep and drape the site of insertion. Anesthetize locally all the way to the peritoneum. If you obtain peritoneal fluid, note the needle depth.
9. Use the Z- technique/Z-track (retracting skin with non-dominant hand while inserting needle) which is a needle insertion technique that can theoretically minimized risk of ascetic fluid leakage but no RCTs have been done. For diagnostic paracentesis use a 20-22 gauge needle attached to a 20-30cc syringe to aspirate peritoneal fluid. Remember to apply minimal continuous negative pressure (too much pressure has been shown to draw bowel or omentum to the needle) or use intermittent but frequent pressure to ensure you do not withdraw blood and obtain peritoneal fluid.
10. Once fluid is aspirated, remove the needle from the metal/plastic catheter and attach pressurized, non-collapsible tubing. The tubing will have a needle attached to it and this is inserted into a vacutainer bottle. Once this is done the three- way stopcock is adjusted to allow fluid to flow into the vacutainer.

AFTER THE PROCEDURE

Colloid replacement: If <5L removed no need to give albumin, if >5L give 8gm per liter of ascites removed which should be 50-75gm.

After the procedure, ask the patient to lie in his bed for at least 1 hours and the nurse to check vital signs q1hr for 4hrs to avoid hypotension.

Write a procedure note which documents the following:

- Patient consent
- Indications for the procedure
- Relevant labs, e.g INR/PTT, platelet count
- Procedure technique, sterile prep, anesthetic, amount of fluid obtained, character of fluid, estimated blood loss
- Any complications
- Tests ordered

Complications:

- Peritoneal fluid leak, infection (peritonitis), perforated viscous, hemorrhage, renal failure, and hypotension

Diagnostic studies:

- Document color and turbidity of fluid
- Send fluid for cell count, differential (lavender top); albumin, total protein (tiger or gold top); gram stain (black top test tube); culture (culture bottles) [10cc of ascetic fluid is needed per culture bottle]
- A needle that has passed through the skin should not be used to inoculate the blood culture bottles.
- Other studies (amylase, cytology, AFB stains etc) only if clinically indicated
- Ensure you have a recent serum albumin to calculate SAAG

References:

1. UCSF Hospitalist Handbook third edition 2009: paracentesis
2. Up-to-Date 2012: Diagnostic and therapeutic abdominal paracentesis
3. NEJM video
4. Grabau CM, Crago SF, Hoff LK, et al. Performance standards for therapeutic abdominal paracentesis. *Hepatology* 2004; 40:484