

# **SOP on Paracentesis (Abdominal Tap)**

**Department of Medicine  
Faculty of Medicine  
UWUSL**

# **Standard Operating Procedure on Paracentesis (Abdominal Tap)**

## **(1) Title**

Paracentesis (Abdominal Tap) for Diagnostic and Therapeutic Purposes

## **(2) Issued By**

Department of Medicine, Faculty of Medicine, Uva Wellassa University of Sri Lanka

## **(3) Purpose & Scope**

To ensure the safe, sterile, and standardised performance of diagnostic and therapeutic paracentesis (abdominal fluid aspiration) while maintaining strict biosafety, preventing needle-stick injuries, minimizing procedural risks, and maintaining quality assurance in clinical settings. This Standard Operating Procedure (SOP) applies to medical officers, registrar trainees, and medical students performing or assisting with the procedure under direct supervision.

## **(4) Principle**

Paracentesis involves the percutaneous insertion of a needle or specialized catheter into the peritoneal cavity to access and aspirate accumulated ascitic fluid.

**(4.1) Diagnostic Paracentesis:** A small volume (20–50 mL) of fluid is collected to determine the underlying aetiology of ascites via the Serum-Ascites Albumin Gradient (SAAG) and to rule out life-threatening infections such as Spontaneous Bacterial Peritonitis (SBP).

**(4.2) Therapeutic Paracentesis:** Large volumes of fluid (Large Volume Paracentesis or LVP) are systematically drained to relieve abdominal distension, alleviate respiratory compromise, and improve patient comfort in tense or refractory ascites.

## **(5) Responsibilities**

### **(5.1) Medical Officers**

(5.1.1) Confirm clinical indications, review coagulation profiles, and authorize the procedure.

(5.1.2) Supervise medical students and junior staff to ensure total adherence to sterile techniques and biosafety protocols.

(5.1.3) Manage acute post-procedural complications, interpret fluid analysis reports, and order plasma expanders (e.g., intravenous Albumin) when indicated.

### **(5.2) Medical Students**

(5.2.1) Perform or assist in the step-by-step setup and fluid collection strictly under the direct, bedside supervision of an accredited medical officer.

(5.2.2) Safely monitor and document vital parameters before, during, and after the fluid aspiration.

### **(5.3) Healthcare Staff / Nursing Staff**

(5.3.1) Prepare the sterile procedure trolley, position the patient, and process the collected diagnostic samples according to specific laboratory criteria.

## **(6) Indications**

### **(6.1) Indications for Diagnostic Paracentesis**

(6.1.1) New-onset ascites (Grade 2 or 3) to establish aetiology.

(6.1.2) Any patient admitted with known cirrhotic ascites to proactively screen for spontaneous bacterial peritonitis (SBP).

(6.1.3) Clinical suspicion of an infection in a patient with ascites presenting with fever, localized abdominal pain, altered mental state (hepatic encephalopathy), worsening renal function, or otherwise unexplained leucocytosis.

### **(6.2) Indications for Therapeutic Paracentesis**

(6.2.1) Large, tense ascites causing significant abdominal discomfort, painful distension, or respiratory compromise due to diaphragmatic splinting.

(6.2.2) Refractory ascites failing to respond to maximum dietary sodium restriction and medical diuretic regimens.

## **(7) Contraindications**

### **(7.1) Absolute Contraindications**

(7.1.1) Severe, uncorrectable coagulopathy (e.g., Disseminated intravascular coagulation [DIC]) or clinical fibrinolysis.

(7.1.2) Acute, visible skin infection, cellulitis, or extensive abdominal wall breakdown directly overlying the proposed needle insertion site.

(7.1.3) Intestinal obstruction with severe bowel distension (unless a safe fluid pocket is definitively visualized via immediate ultrasound guidance).

### **(7.2) Relative Contraindications**

(7.2.1) Severe thrombocytopenia (Platelets < 50,000/ $\mu$ L) or prolonged prothrombin time (INR > 2.0).

(7.2.2) Second or third-trimester pregnancy (requires mandatory ultrasound-guided site selection).

(7.2.3) Extensive prior abdominal surgeries or known intra-abdominal adhesions (increased risk of accidental bowel perforation).

(7.2.4) Significant organomegaly (hepatosplenomegaly) or a distended urinary bladder.

## **(8) Procedure**

### **(8.1) Assemble equipment**

(8.1.1) Ultrasound machine (highly recommended for identifying the ideal fluid pocket and avoiding loops of bowel).



(8.1.2) Dressing Trolley



### (8.1.3) Sterile dressing pack



### (8.1.4) Sterile gloves



(8.1.5) 2% Chlorhexidine swabs/Povidone-iodine solution



(8.1.6) 2% Lidocaine solution



(8.1.7) 25G needle, 22G(23G) needle and 18G(19G) needle



(8.1.8) 10mL syringe and 20mL syringe



(8.1.9) Cotton swabs



(8.1.10) Sterile gauze swabs





(8.1.11) 11-blade scalpel



(8.1.12) Adhesive plasters



(8.1.13) Vacuum bottles with connection tubing (for large volume therapeutic drainage)



(8.1.14) Sterile specimen cups



(8.1.15) Blood culture bottles



(8.1.16) Puncture-resistant sharps container & biohazard waste bags



## **(8.2) Pre-procedure steps**

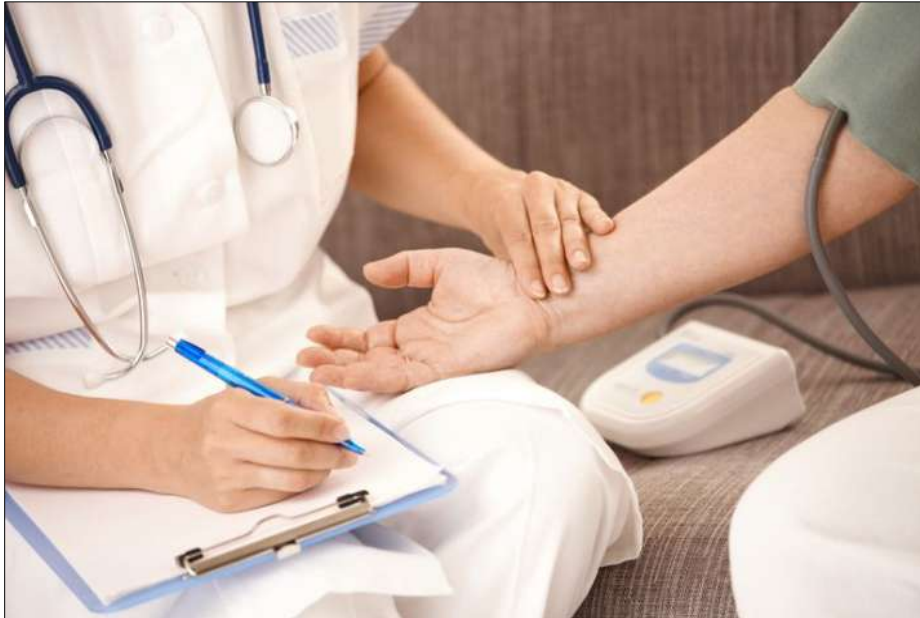
(8.2.1) Verify the patient's identity using standard institutional identifiers (full name and BHT number)



(8.2.2) Explain the steps, goals, and known risks of the procedure to the patient and request informed written consent from the patient.



(8.2.3) Instruct the patient to completely empty their bladder prior to starting, or verify patency of an indwelling urinary catheter, to minimize the risk of accidental bladder puncture and check the baseline vital signs (blood pressure, pulse rate, respiratory rate) and record them.



### **(8.3) Positioning and site selection**

(8.3.1) Position the patient supine in bed, with the head resting on a pillow.



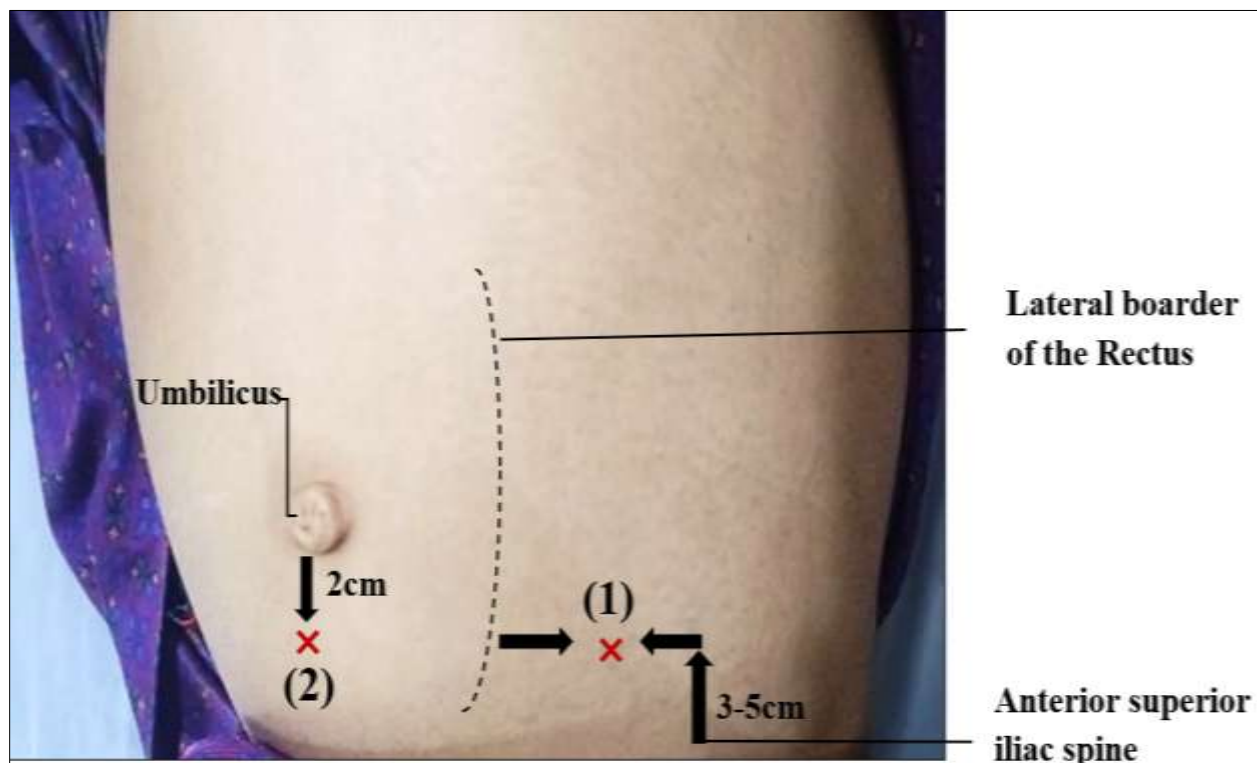
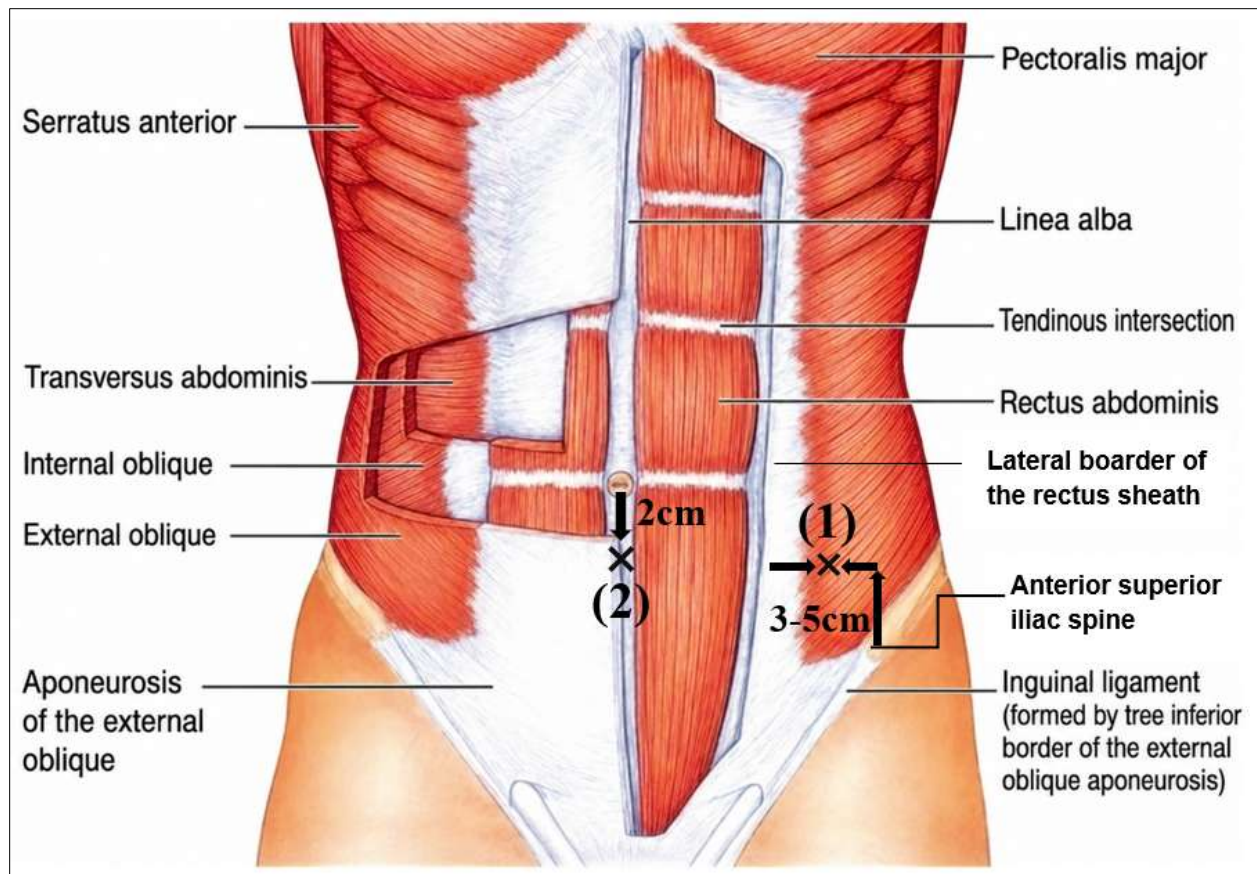
(8.3.2) Utilize ultrasound to map a deep, accessible fluid pocket and ensure it is entirely free of underlying, floating bowel loops or localized adhesions.



(8.3.3) Select and mark the entry landmark, ensuring it stays well clear of visible abdominal wall collateral veins, hernias, and prior surgical scars.

- (1) **Left or right lower quadrant approach (preferred):** 3 to 5 cm superior and medial to the anterior superior iliac spine (ASIS). Ensure it is lateral to the rectus sheath to avoid damaging the inferior epigastric artery.
- (2) **Midline approach:** 2 cm below the umbilicus, directly through the avascular linea alba.





#### **(8.4) Aseptic site preparation and local anaesthetic administration**

(8.4.1) Perform hand hygiene and don sterile gloves, gown, mask, and protective cap.



(8.4.2) Thoroughly clean the marked site and surrounding skin with 2% Chlorhexidine or povidone-iodine in an outward concentric pattern and let it dry completely.





(8.4.3) Apply the fenestrated sterile drape over the site.



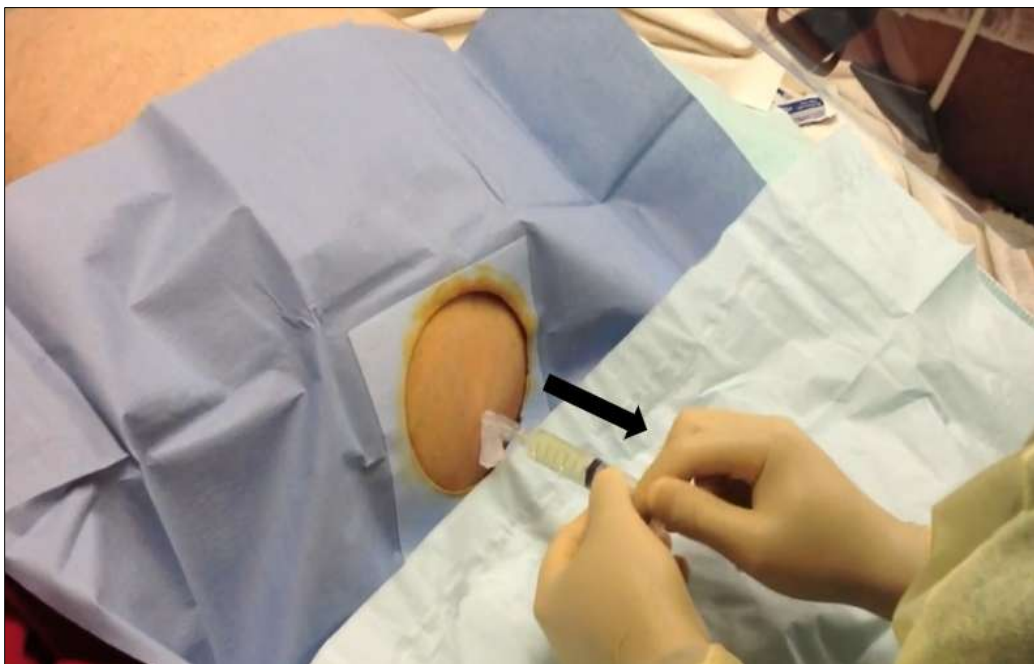
(8.4.4) Anaesthetise the skin with 2% lidocaine using a 25G needle.



(8.4.5) Advance a 22G/23G needle deeper through the subcutaneous tissue and muscle layers, progressively infiltrating the tract with anaesthetic.



(8.4.6) Advance the needle while continuously aspirating to avoid inadvertent vascular puncture. Continue until a sudden loss of resistance is felt and fluid is aspirated, indicating entry into the peritoneal cavity. Adequately infiltrate the parietal peritoneum with local anaesthetic, then withdraw the needle.



### **(8.5) Needle Insertion and Fluid Collection**

(8.5.1) Displace the skin laterally and insert the paracentesis needle along the anaesthetised tract using the Z-track method.

(The Z-track method involves displacing the skin and subcutaneous tissue laterally before needle insertion. After the needle is advanced into the target area and subsequently withdrawn, the displaced tissue is released. This creates a misaligned tract rather than a straight pathway, helping to minimize post-procedural fluid leakage)



(8.5.2) If using a catheter kit with a large-bore (15-gauge) introducer needle, make a small skin nick with an 11-blade scalpel to facilitate smooth catheter passage.



(8.5.3) During needle advancement, apply intermittent negative pressure with a syringe until a loss of resistance and free flow of ascitic fluid are obtained, confirming entry into the peritoneal cavity while minimising the risk of puncturing a vessel or viscus.



(8.5.4) Once ascitic fluid is aspirated, advance the catheter into the peritoneal cavity and then withdraw the needle, leaving the catheter in place for drainage.





(8.5.5) Attach a larger syringe to collect 20–50 mL of fluid for diagnostic purposes.



(8.5.6) For therapeutic evacuation, connect the catheter to the vacuum collection bottles using the sterile drainage tubing assembly. Monitor the colour and flow rate of the draining fluid continuously.





## **(8.6) Post-procedure steps and patient care**

(8.6.1) Once fluid evacuation is complete, carefully pull the plastic catheter straight out.





(8.6.2) Apply firm, direct digital pressure over the puncture wound using sterile gauze for 3–5 minutes (extend to 10 minutes if the patient has a high bleeding risk or portal hypertension).



(8.6.3) If a persistent ascitic fluid leak occurs, apply a sterile adhesive plaster over the puncture site to help seal the tract and prevent further fluid leakage.



(8.6.4) Return the patient to a comfortable resting position and re-measure their blood pressure and heart rate.



(8.6.5) **Volume expansion protocol:** For a large volume paracentesis exceeding 5 litres of drained fluid, administer intravenous albumin (25% concentration) at a dose of 8 grams per litre of total fluid removed to prevent post-paracentesis circulatory dysfunction, severe hypotension, and acute kidney injury.



(8.6.6) Dispose all contaminated needles and sharps immediately into the sharps container and discard used drapes, gowns, gauze, and other contaminated materials as clinical biohazard waste according to institutional waste management protocols.



(8.6.7) Perform strict hand hygiene, document the total volume and appearance of the fluid removed, and note any patient response in the BHT.



## **(9) Complications**

- (9.1) Persistent leakage of ascitic fluid at the needle insertion site. This issue can often be addressed with a single skin suture.
- (9.2) Abdominal wall hematoma or bleeding
- (9.3) Wound infection
- (9.4) Perforation of surrounding vessels or viscera
- (9.5) Hypotension after large volume fluid removal (more than 5-6 L) Albumin is often administered after removing more than 5 L of fluid to prevent this complication
- (9.6) Spontaneous hemoperitoneum
- (9.7) Catheter laceration and loss in the abdominal cavity
- (9.8) Hepatorenal syndrome- can be minimised with albumin administration in large volume paracentesis
- (9.9) Subcutaneous effusion due to ascitic fluid leakage

## **(10) Reference**

- (10.1) Sri Lanka College of Internal Medicine. *The Junior Hospitalist: Intern Survival Guide to Internal Medicine*. Volume 01.
- (10.2) *Paracentesis*. StatPearls Bookshelf. National Centre for Biotechnology Information (NCBI). <https://www.ncbi.nlm.nih.gov/books/NBK435998/>

## **(11) Prepared By**

Dr. Dilusha Lamabadusuriya  
Senior Lecturer in Medicine  
Department of Clinical Sciences  
General Sir John Kotelawala Defence University

Dr. Sudath Abeywickrama  
Head of the Department (Acting)  
Department of Medicine  
Faculty of Medicine  
Uva Wellassa University of Sri Lanka

Snr. Prof. Muditha Vidanapathirana  
Dean  
Faculty of Medicine  
Uva Wellassa University of Sri Lanka

Dr. Hashini Gunawardana  
Temporary Demonstrator  
Department of Medicine  
Faculty of Medicine  
Uva Wellassa University of Sri Lanka