NHS Highland

ABDOMINAL PARACENTESIS

EDUCATION PACK

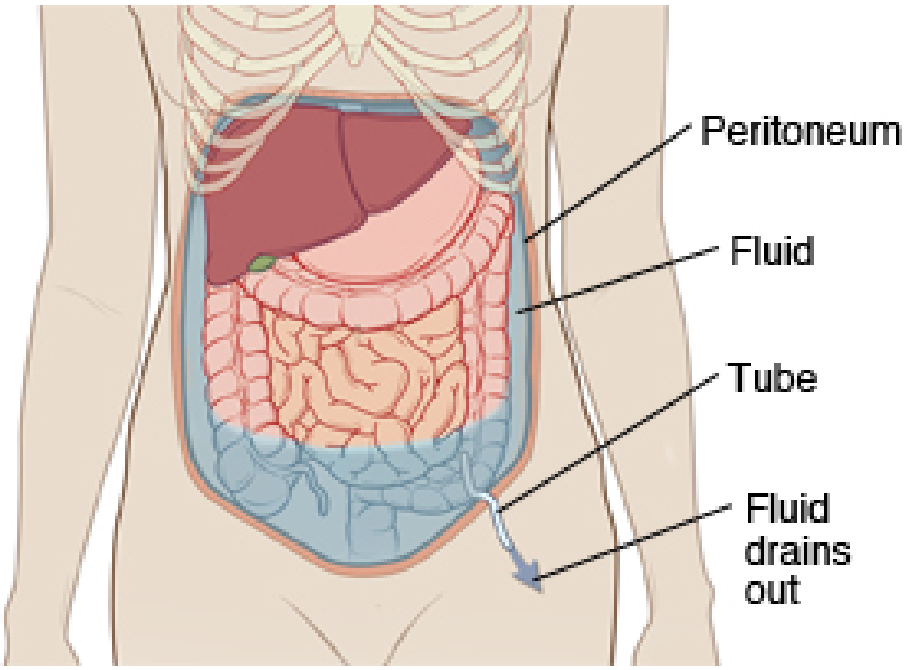
Reviewed by:	Colette Stewart/Andrea Broad	**Lead Reviewer:**	Andrea Broad
Date Reviewed:	January 2019	**Review Due:**	January 2021

CONTENTS

WHAT IS ASCITES?

Ascites is the name given to an accumulation of fluid within the abdominal cavity. It is caused by a combination of several factors, including the production of excess fluid in response to inflammation, and fluid not draining away as it would normally. Ascites is present in both malignant and non malignant disease. The most common cause is portal hypertension, most commonly cirrhosis (www.patient.co.uk)

Ascites may be present at diagnosis and also when disease recurs. Ascites causes unpleasant symptoms that significantly reduce the quality of life for patients. The accumulation and volume of fluid are difficult to predict, so often patients have to be admitted to hospital as an emergency with a variety of symptoms including distension of the abdomen, anorexia, discomfort, nausea, constipation and breathlessness.



INDICATIONS FOR DRAINAGE OF ASCITIC FLUID

There are several generally accepted indications for abdominal paracentesis:

1. Diagnostic (via either ascitic tap or paracentesis)

- Evaluation of new onset ascites
    - To determine aetiology
    - To differentiate serum-ascites albumin gradient (SAAG)
    - To detect cancerous cells
- Testing of ascitic fluid in a patient with pre-existing ascites who is admitted to the hospital, regardless of the reason for admission.
- Evaluation of a patient with ascites who has signs of clinical deterioration, such as fever, abdominal pain/tenderness, hepatic encephalopathy, peripheral leukocytosis, deterioration in renal function, or metabolic acidosis.

2. Therapeutic (usually via paracentesis)

- To relieve respiratory distress or abdominal pain resulting from ascites.

Performing a paracentesis at the time of admission to the hospital in patients with cirrhosis and ascites may decrease mortality rates (Oman *et al* 2014). Thus helping to clarify the cause of ascites and evaluating for infection, paracentesis can identify unusual and unexpected diagnoses, such as chylous, hemorrhagic, or eosinophilic ascites.

RELATIVE CONTRAINDICATIONS

Although it is rarely an emergency procedure and can usually be planned, paracentesis is a potentially life threatening procedure and therefore it should not be performed out of hours wherever possible. This is in contrast to a diagnostic tap, which should be performed within 24 hours of admission and can be performed out of hours.

The benefits of abdominal paracentesis in patients with appropriate indications almost always outweigh the risks. An analysis of the fluid helps determine the cause(s) of the ascites and the likelihood of bacterial infection, and it can identify antibiotic susceptibility of any organisms that are cultured.

However, there are some relative contraindications to paracentesis:

- **Disseminated intravascular coagulation (DIC)**- Patients with clinically apparent disseminated intravascular coagulation and oozing from needle sticks. Paracentesis can be performed once the bleeding risk is reduced by administering platelets and, in some cases, fresh frozen plasma.
- **Primary fibrinolysis** - Paracentesis can be performed once the bleeding risk is reduced with treatment.
- **Ileus and bowel dissention** - Paracentesis should not be performed in patients with a massive ileus with bowel distension unless the procedure is image-guided to ensure that the bowel is not entered.
- **Surgical scars**- The location of the paracentesis should be modified in patients with surgical scars so that the needle is inserted several centimetres away from the scar. Surgical scars are associated with tethering of the bowel to the abdominal wall, increasing the risk of bowel perforation
- **Abdominal wall malignancy**- these patients will also require image guided drain insertion
- **Uncooperative patient**
- **Skin infection at proposed puncture site**

INVESTIGATIONS AND PROCEDURES PRIOR TO DRAINAGE

- Completion of pre-procedure checklist
- Abdominal ultrasound must be performed by a competent practitioner prior to insertion of ascitic drain
- Weigh patient prior to insertion of drain as well as post drain removal
- FBC and clotting screen must be done 48 hours prior to procedure, unless if unstable when it should be done immediately before- if thrombocytopenia is present and severe (platelets <50), discuss with haematology. Fresh frozen plasma may be used if there is evidence of coagulopathy
- U&E, creatinine, and LFTs

EQUIPMENT REQUIRED FOR ABDOMINAL PARACENTESIS

- Signed Consent booklet or Adult with Incapacity form if relevant
- Completed pre-procedure checklist (filed in notes)
- Completed lab forms and patient labels
- White topped standard universal containers X 3
- Blood culture bottles (if sending for culture)
- Skin cleansing agent containing 2% chlorhexidine and 70% alcohol- Chloraprep 3ml applicator
- Sterile and non sterile gloves
- Steret alcohol wipes x 1
- Sterile ink pen
- Anaesthetic procedure pack
- Lidocaine 1% 5ml ampoule
- Green needle x 1 and orange needle x 1
- Syringes – 5ml & 10ml
- Paracentesis kit *(Rocket Safety Drain 8FG x 16cm paracentesis catheter with blunt obturator needle*)
- Hollister tube/drain attachment device
- 2 litre drainable drainage bag
- Sharps receptacle box and orange clinical waste bag
- Insertion bundle

Choice of paracentesis needle — the choice of the needle depends upon whether a diagnostic or therapeutic paracentesis is planned. As a general rule, the narrowest needle should be used to minimize complications in the event that a blood vessel or the bowel is entered by the needle. A diagnostic paracentesis can be performed in a lean patient with a 1 or 1.5 inch 22-gauge needle, while a 3.5 inch 22-gauge "spinal" needle can be used for diagnostic paracentesis in an obese patient. For a therapeutic paracentesis, a larger 15- or 16-gauge ascitic drain catheter is used to speed the removal of ascitic fluid.

TECHNIQUE

Preparation- Paracentesis is carried out to obtain ascitic fluid for analysis and to remove large amounts of fluid in patients with tense ascites. Proper technique is important to decrease the risk of sample contamination and complications.

Patient position — Paracentesis is usually performed with the patient supine. The bed is either flat, or the head is slightly elevated. Rarely, the patient can be positioned prone on "all fours". This position is used only when there is a small amount of fluid and making a diagnosis is crucial to the patient's management (e.g. tuberculosis, peritonitis).

Selecting the needle entry site — Paracentesis is typically performed through the abdominal wall in the left lower quadrant.

In the midline cephalad or caudad to the umbilicus, abdominal wall collateral vessels may be present, so those areas should be avoided. Surgical scars and visible veins should also be avoided. Surgical scars may be associated with bowel that is tethered to the abdominal wall by adhesions, thus putting the patient at risk for bowel injury if the paracentesis is performed near a scar.

A prospective study showed that the abdominal wall was thinner in the left lower quadrant than in the midline and that the pool of fluid was deeper in the left lower quadrant (Sakai *et al* 2005). This has led to the left lower quadrant being the preferred site of entry. By contrast, the right lower quadrant is less desirable since it may have an appendicectomy scar or a caecum filled with gas in patients taking lactulose. If the left lower quadrant is chosen, it is helpful to have the patient roll slightly to his or her left to permit pooling of fluid in that area. If available, previous abdominal imaging should be reviewed to ensure there is not a known underlying solid organ or mass under the chosen site.

The anterior superior iliac spine should be located and a site chosen that is two fingerbreadths (3 cm) medial and two fingerbreadths (3 cm) cephalad to this landmark (figure1). In the massively obese patient, it may be more difficult to find this landmark**. The inferior epigastric artery traces from a point just lateral to the pubic tubercle (which is 2 to 3 cm lateral to the symphysis pubis), cephalad within the rectus sheath (figure 2).** This artery can be 3 mm in diameter and can bleed massively if punctured with a large-calibre needle. Thus, this site should be specifically avoided.

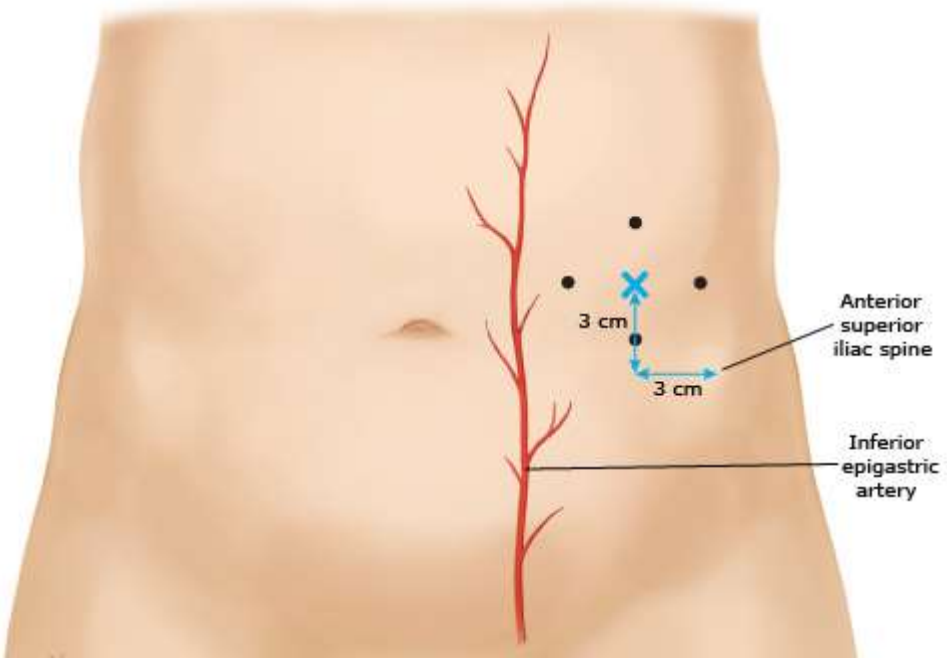


Figure 1

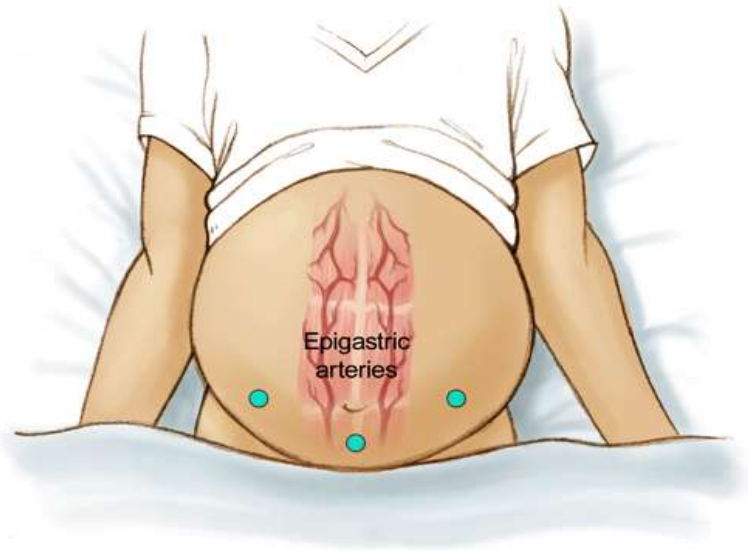


Figure 2

When choosing a site, confirm that there is dullness to percussion, that the spleen is not palpable, and that there are no surgical scars within several centimetres of the intended entry site. **Ultrasound must be performed prior to procedure to confirm the presence of fluid and the absence of bowel or the spleen within the range of the needle**.

Once you have chosen a site, place an "X" at the site using a sterile ink pen and then make marks at positions 12, 3, 6, and 9 o'clock, a few centimetres from the central "X". Sterilize the skin at and around the "X" with chlorhexidine, which removes the original "X". However, the original position of the "X" will be at the centre of the four marks. If a drape with a hole in it is used, the marks should be placed such that they are visible through the hole. The sterilization should not be so extensive that it erases all of the marks.

Skin sterilisation — clean the selected needle entry site with the Chloraprep applicator. Starting at the incision site, gently press the applicator against the skin until the solution soaks the sponge. Apply using repeated up and down, back and forth strokes for at least 15 seconds, before working outwards to the periphery. Leave the area to air dry completely before applying sterile drapes. Do not blot or wipe away. Sterility is optimised if the solution has dried by the time the skin is touched.

Anesthetising using a Z-track technique — Draw up a 1% lidocaine solution into a sterile 5ml syringe with the help of the assistant, who has wiped the lidocaine plastic/rubber bottle top with an alcohol (steret) wipe. Sterility of the bottle top cannot be assumed without wiping it.

The ideal needle for administering lidocaine to anaesthetize the skin is a 1.5 inch 25 gauge needle, since it is usually sufficiently long to deliver anaesthetic throughout the intended paracentesis track, except in the obese patient when you may have to use a 21 gauge needle.

The skin can then be anesthetised by approaching the chosen entry site tangentially with the needle and raising a wheal with a small amount of lidocaine. Once the wheal has been raised, the needle is withdrawn and placed at the entry site perpendicular to the curve of the abdominal wall. Using a Z-track technique, 3 to 5mL of lidocaine is used to anaesthetise the entire soft tissue tract. The Z-track creates a non-linear pathway between the skin and the ascitic fluid, thereby helping to minimize the chance of an ascitic fluid leak.

The Z-track should be created by pulling the skin downward with one hand, while inserting the needle with the other hand. It is helpful to use a gauze pad to pull on the skin, since it permits more traction on the abdominal wall, especially if the skin is wet from the cleansing solution. The operator must be able to manoeuvre the syringe with one (the dominant) hand, stabilizing the outer component with the thumb and a few fingers, while pulling on the plunger of the syringe with a few fingers of the same hand (figure 3).

Novice operators often find this technique difficult initially and regularly pull the non-dominant hand from the abdominal wall in order to use both hands to manoeuvre the syringe and plunger. This defeats the purpose of the Z-track. The hand on the abdominal wall should not be moved until the needle enters the fluid.

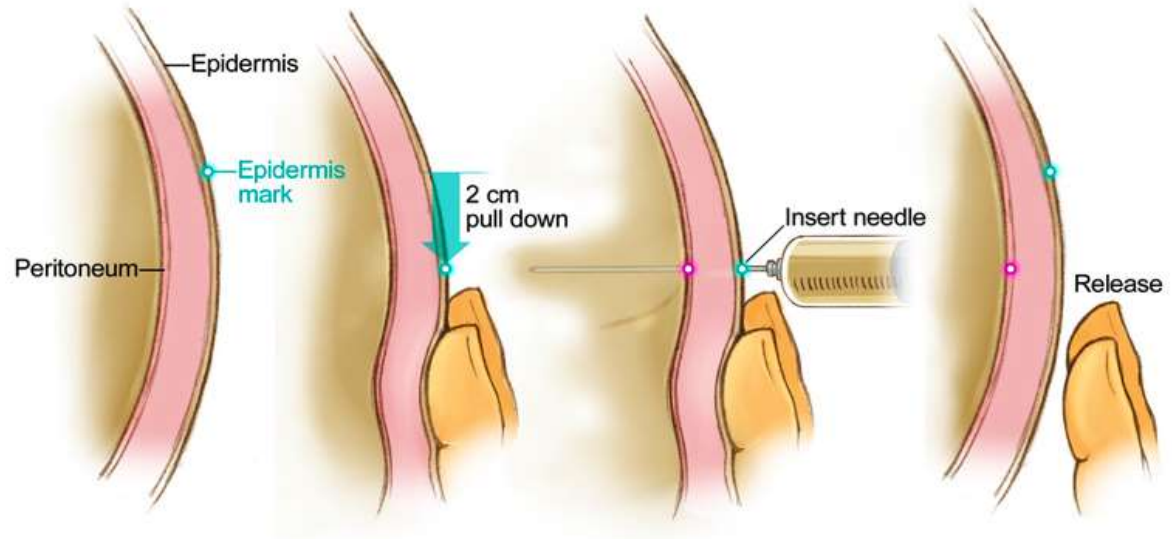


Figure 3

The needle and attached syringe are inserted in 5 mm increments. Then the plunger should be pulled back a few millimetres with each advancement to see if any blood is aspirated. If no blood is evident, a small amount of anaesthetic is injected, and the needle advanced another 5 mm. This process is continued until the needle enters the ascitic fluid. As the needle is advanced, aspiration should be intermittent, not continuous. Continuous aspiration may pull bowel or omentum onto the needle tip as soon as it enters the peritoneal cavity, occluding the tip. This may give the false impression that there is no fluid present since no fluid enters the needle and syringe. If bowel or omentum is pulled to the needle tip, releasing the suction on the syringe plunger may allow the bowel or omentum to float away and permit flow of fluid into the needle and syringe. The aspiration of yellow (or other coloured) fluid into the syringe tells the operator that the peritoneal cavity has been entered.

Ascitic fluid must be aspirated with the anaesthetic syringe and green needle to confirm the presence of fluid and the depth of penetration needed to reach the ascites. The local anaesthetic should be injected into the same route planned for passage of the paracentesis needle in order to minimize pain, especially if a larger-bore needle is used to obtain the fluid.

Paracentesis needle insertions- **do not attempt to insert paracentesis needle if no ascitic fluid aspirated with the syringe and needle.** The paracentesis needle should be inserted along the pathway that was anaesthetised. The paracentesis needle is also inserted using a Z-track technique. If a 15- or 16-gauge needle is being used for a therapeutic paracentesis, a #11 blade scalpel nick in the skin will be required to permit insertion of the needle. This tiny nick should be just long enough to permit the entry of the needle. The larger the nick, the higher the likelihood of a post-paracentesis leak.

Once the paracentesis needle has entered the peritoneal cavity and fluid is aspirated, the hand that is on the abdominal wall can be removed to assist with further manoeuvres. The depth of entry of the needle must be stabilized so that it does not pull out of the peritoneal cavity. If the skin has been properly held on the abdominal wall during needle insertion, fluid should drip from the hub of the needle once the syringe is removed. This proves that the needle is still in good position.

During laparoscopy, the peritoneum may "tent" over the needle as the needle is pushed into the abdomen. The parietal peritoneum is highly elastic and may tent a few centimetres before it is pierced. From the outside, the operator cannot see this tenting and may misinterpret the absence of fluid entering the syringe, despite a deep needle penetration, as a "dry tap". Rotating the needle 90 degrees or more may allow it to pierce the peritoneum, at which point fluid should flow into the syringe. When fluid is clearly present by examination and imaging, sampling the fluid should be possible, provided the needle is long enough to reach it, the needle entry site is well chosen, and the patient is positioned to allow the fluid to pool at the entry site.

Initiating the flow of fluid — frequently, when there is not much fluid present, it can be difficult to obtain a free flow of fluid. This is because the bowel or omentum may block the end of the needle. Multiple-hole needles (used almost exclusively for therapeutic paracentesis) help prevent this problem; when the end hole is blocked, fluid can still enter the needle through the side holes.

There is a common misconception that poor or sporadic flow of fluid means that the fluid is loculated. Loculated fluid is typically encountered in the setting of peritoneal carcinomatosis with accumulating malignant adhesions or bowel rupture with surgical peritonitis and adhesions.

Sometimes there is a flow of a few drops of fluid, and then the flow ceases. This may be due to a narrow plane of fluid, with bowel or omentum occluding of the needle tip. The patient can be slowly and gently repositioned to pool more fluid in the vicinity of the needle.

This will usually re-establish the flow of fluid. In some cases, the operator has inadvertently allowed the needle tip to pull out of the peritoneal cavity, back into the abdominal wall. If this occurs, the needle can be inserted further in an attempt to re-establish the flow of fluid. A stable angle and depth of penetration of the needle are crucial to a successful paracentesis. Nervous operators frequently bounce the needle in and out of the peritoneal cavity. Patience and persistence are the keys to successful paracentesis.

If stable, deeper needle insertion does not lead to a free flow of fluid, the needle depth and angle can be stabilized with one hand, while the other hand removes the syringe from the needle to see if fluid will drip from the needle hub, as is done during a lumbar puncture. Enough fluid can be obtained by this method to send for a cell count and differential at the minimum. While laboratories may request a minimum of 1ml for cell count and differential, it takes approximately 10 micro litres to fill a manual haemocytometer well and a few microlitres to be spread on a slide for the differential. If only a few drops of fluid are obtained, they should be placed into a purple top tube and sent for cell count and differential, informing the laboratory that there is some fluid in the tube, even though there is not enough to be easily visible. Fluid can be dripped into the purple top tube after the assistant has removed its top and holds it to catch the dripping fluid. More fluid can be obtained for other tests as needed if the operator is patient.

Obtaining fluid for testing- Once ascitic fluid is flowing the fluid can be collected for diagnostic testing. Usually approximately 25ml of fluid are needed for a cell count, differential, biochemical testing including protein and glucose, and bacterial cultures. Where the diagnosis is unclear cytology examination might be required also. It is easier to get a "feel" for the ease of fluid removal and to see the fluid enter the syringe using a smaller syringe rather than a larger syringe. The 5mL syringe is then removed from the needle carefully, to avoid pulling the needle tip out of the peritoneal cavity. That syringe is handed to the assistant, who is wearing non sterile gloves. 1 to 2mLs of fluid is then decanted into the tube containing the anticoagulant (red EDTA tube). If the fluid is allowed to clot prior to exposure to the anticoagulant, an accurate cell count cannot be performed. This is why anticoagulant tube is injected first. The remainder of the fluid in the 5mL syringe is decanted into the tube that contains no anticoagulant (usually a red-top tube) for chemical analyses.

INVESTIGATIONS - DIAGNOSTIC TAP

Microscopy: white cell count, red cell count, Gram stain

- Spontaneous bacterial peritonitis (SBP) can occur in patients with cirrhosis and ascites admitted to hospital. Neutrophil count of >250 cells/mm^3 are diagnostic of SBP. (EDTA tube to haematology, neutrophils >0.25, white cell count >0.5)
- The red blood cell count is usually <1,000 cells/mm^3 - higher levels raise the suspicion of an underlying malignancy - e.g. hepatocellular carcinoma.
- Samples should also be sent for culture and sensitivity. These should be inoculated into blood culture bottles as soon as the sample is taken.

Protein levels

Traditionally ascites was labelled as an exudate if the protein levels were >25 g/L, or a transudate if protein levels were <25 g/L. This has been superseded by the serum ascites-albumin gradient (SA-AG) which is a better measure.

SA-AG = serum albumin concentration - ascitic albumin concentration

- **SA-AG ≥11 g/L**: likely causes - cirrhosis, cardiac failure, nephrotic syndrome
- **SA-AG <11 g/L** : likely causes - malignancy, pancreatitis and tuberculosis

Amylase

This will be high in pancreatitis associated ascites. Don't request routinely unless pancreatitis is suspected

Cytology

The yield is greater with larger-volume samples (>100 ml), especially when concentration techniques are used. It is not so valuable for the diagnosis of primary hepato-cellular carcinoma.

Cultures

If cultures or other tests are desired, a 20mL syringe is connected to the needle that is in the abdominal wall, and the syringe is filled with ascitic fluid. This fluid is used to inoculate the blood culture bottles. The amount of fluid placed into the bottle is similar to the amount of blood that would be injected, usually 10mL per bottle. Multiple syringes of fluid or a 60mL syringe can be used instead of a single 20mL syringe if multiple miscellaneous tests are desired.

REMOVING LARGE VOLUMES OF FLUID (THERAPEUTIC PARACENTESIS)

A large-volume paracentesis has been defined as the removal of >5 litres of ascitic fluid. The diagnostic portion of the fluid can either be obtained with the smaller bore needle or the larger bore needle. The minimal amount of testing of the fluid removed for therapeutic purposes includes a cell count and differential; this test can lead to the detection of ascitic fluid infection at an early stage.

Patients with tense ascites should have enough fluid removed to relieve the intra-abdominal pressure in order to make the patient comfortable and to minimize the chance of a leak of ascitic fluid. If a patient is known to have refractory ascites, the removal of as much fluid as possible will extend the interval to the next paracentesis. If a patient's diuretic-responsiveness is not known, the removal of approximately 5 litres of fluid is enough to reduce the intra-abdominal pressure. A sodium-restricted diet and diuretics are used to further reduce the amount of fluid. Fluid is removed by free drainage in to a catheter bag.

With abdomens full enough to permit the removal of 8 to 10 litres of fluid, flow is usually brisk for several litres. As the fluid is depleted, the bowel and omentum are more likely to occlude the needle hole(s) and slow or stop the flow of fluid. If the flow slows, the patient can be slowly and gently repositioned to pool fluid at the needle site. In addition, either an assistant or the patient can press the abdomen to maximize the amount of fluid removed. Some patients who have had many taps spontaneously press on the contra-lateral side of the abdomen with one or both hands to push the fluid toward the needle to maximize fluid removal. The more fluid removed with each paracentesis, the longer the interval between procedures.

Needle/catheter removal — The needle should be removed in one rapid, smooth withdrawal motion. It is helpful to distract patients by asking them to cough as the needle is removed. The cough seems to prevent the patients from sensing pain during removal of the needle. The paracentesis catheter must not remain in for more than 24 hours.

POTENTIAL COMPLICATIONS OF ASCITIC DRAINAGE

Serious complications from abdominal paracentesis are uncommon, but a number have been described.

Ascitic fluid leak — the most common complication following paracentesis is an ascitic fluid leak, Leaks typically arise when a Z-track has not been performed properly, a large-bore needle has been used, and/or a large skin incision has been created.

When a leak occurs, placing an ostomy bag over the leak site allows quantification of the amount of fluid that is leaking. Placing gauze dressings over the site usually leads to rapid soaking of the dressings, rapid dressing changes, and maceration of the skin. Usually the amount of fluid decreases over a period of a few days if the patient is diuretic-sensitive. If the fluid is refractory to diuretic therapy, another therapeutic paracentesis may need to be performed (using proper technique) to stop the leak. Cellulitis may develop in the skin near the leak if it is prolonged. Retrograde infection of the ascitic fluid is exceedingly rare. If there is a large scalpel incision at the site, it can be sutured. However, the fluid may then dissect into the underlying soft tissue.

Bleeding — Bleeding from an artery or vein that is impaled by the needle can be severe and potentially fatal. An external figure-of-eight suture can be placed surrounding the needle entry site if the inferior epigastric artery is bleeding. Rarely, a laparotomy is required to control the haemorrhage. The risk of serious bleeding appears to be higher if renal failure is present. Patients with primary fibrinolysis may develop three-dimensional hematomas and require anti-fibrinolytic.

Bowel perforation and infection — Infection is rare unless the bowel is entered by the paracentesis needle. Bowel perforation by the paracentesis needle occurs in approximately 6/1000 taps. Fortunately, it usually does not lead to clinical peritonitis and is generally well tolerated. Treatment is not required unless patients develop signs of infection (e.g., fever, abdominal tenderness).

Hypotension – BP may drop after larger volumes of fluid have been drained. The need for colloid replacement after a therapeutic paracentesis remains controversial. Typically it is not required for paracentesis that remove 5 litres or less.

Mortality — Death due to paracentesis is very rare. For further information see links below.

POST PROCEDURE MANAGEMENT

Specimen containers should be labelled after they are filled- refer to lab policy.

The aim is to remove fluid in 1 to 4 hours if the patient tolerates this.

Record NEWS scores every hour or every 1 litre drained in the first hour.

Advise patient to move around if stable.

Albumin should be replaced for every 2.5 litres removed. This is started at 5 litres as you are unlikely to make the patient haemodynamically unstable when draining less than 5 litres. **This is for patients with portal hypertension as opposed to malignant ascites who do not need albumin replacement.**

At 5l drained administer 200ml of 20% Albumin

At 7.5l drained administer another 100ml 20% Albumin

At 10l drained administer another 100ml 20% Albumin

At 12.5l drained administer another 100ml 20% Albumin

MEDICAL REVIEW

If systolic BP drops >20 mmHg of their baseline or after 5 litres of fluid drained.

Any deterioration in NEWS score or if signs of dehydration or deterioration in condition.

All patients with liver problems and ascites must be discussed/referred to the GI team.

DRAIN REMOVAL

Remove the drain when drainage slows with patient moving around or a maximum of 24hours has passed since insertion. There should be a culture of removing the drain at the earliest opportunity.

Following removal of drain instruct, patient to lie on their opposite side for 2 hours to prevent leakage of fluid.

Watch for signs of hypotension, confusion, and sepsis post drainage.

REFRACTORY ASCITES

- Liver Cirrhosis which is diuretic resistant: this should be discussed with the consultant in charge as liver transplant and/ or Transjugular intrahepatic portosystemic shunt (TIPS) procedure should be considered
- Malignancy where chemotherapy is complete and life expectancy is at least a couple of months: Indwelling paracentesis catheter should be considered in discussion with oncology and interventional radiology

REFERENCES AND FURTHER INFORMATION:

http://www.uptodate.com/contents/diagnostic-and-therapeutic-abdominal-paracentesis?source=search_result&search=abdominal+paracentesis&selectedTitle=1%7E60#PATIENT_INFORMATION (accessed 18/07/2018)

http://www.patient.co.uk/doctor/ascites-tapping (accessed 17/08/2015)

http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD007794.pub2/full (accessed 17/08/2015)

Oman ES, Hayashi PH, Bataller R, Barnitt AS (2014). Paracentesis is associated with less mortality in patients hospitalised with cirrhosis and ascites. Clinical gastroenterology, hepatology 12 (3) P496

Sakai H, Sheer TA, Mendler MH, Runyon BA (2005) Choosing the location for non-image guided abdominal paracentesis. Liver international (2005) 25 (5) P984-986

http://onlinelibrary.wiley.com/doi/10.1111/j.1478-3231.2005.01149.x/abstract (accessed 17/08/2015)

PATIENT INFORMATION LEAFLET & CONSENT FORM

Available on the NHS Highland 'TAM (Treatment and Medications) App' and Hospital at Night intranet homepage.

ASSESSMENT OF COMPETENCE FOR ABDOMINAL PARACENTESIS

Who may perform abdominal paracentesis?

Advanced Nurse Practitioner (ANP) and Medical staff who have achieved competence in abdominal paracentesis as outlined below.

ANP or Medical staff in training, under direct supervision of a practitioner who is deemed competent in abdominal paracentesis as outlined below.

Formal training in abdominal paracentesis will be obtained by fulfilling both the theoretical and practical requirements below:

Theory:

- Completion of the abdominal paracentesis education pack
- Completed the following learn pro modules:
    - NES: Aseptic Technique
    - NES: Scottish IPC Educational Pathway – Foundation
        - Why Infection Prevention and Control Matters
        - Breaking the Chain of Infection
        - Hand Hygiene
        - Personal Protective Equipment (PPE)
        - Safe Disposal of Waste (including sharps)

Practice:

- Observation of procedure on at least one occasion
- Performance of procedure under direct supervision of a practitioner on at least five occasions

Supervision and practical support will be provided by a qualified doctor or advanced nurse practitioner who is deemed competent in this procedure.

Achieving Competence

Competency must be achieved before the ANP or Doctor will be permitted to perform the procedure independently. They must demonstrate the required level of competence on a minimum of five occasions. This will be evidenced by providing five Direct Observation of Practice Skill (DOPS) feedback forms demonstrating competence.

Updating & maintaining competency

Practitioners assessed as competent are expected to demonstrate evidence of updating their skills and knowledge, it is the responsibility of the practitioner to maintain and update their knowledge and skills and prevent skill fade.

ABDOMINAL PARACENTESIS COMPETENCY FRAMEWORK

Practitioners Name:	
Designation:	
Clinical Supervisor/mentor:	
THEORETICAL ASSESSMENT	**MENTORS Initials**
Have you read and completed of the abdominal paracentesis education pack?	
What are the indications for carrying out this procedure?	
What are the contra indications to carrying out this procedure?	
What are the potential complications and how would you manage them?	
Have you completed the required learn pro modules?	
PRACTICAL ASSESSMENT	
Complete abdominal paracentesis pre-procedure checklist and file in notes. Assess indications and contraindications for procedure	
Decontaminate hands as per policy	
Identify patient as per hospital policy, introduce self by name and title, and explain procedure. Give patient information leaflet and gain written consent.	
Ensure patient has cannula inserted and bloods have been checked prior to procedure and patient has been weighed	
Select equipment and check expiry dates	
Ensure albumen 20% is readily available prior to commencing procedure (if required)	
Place patient in supine position on the bed with head flat or only slightly raised.	
Identify the site of needle insertion in left lower quadrant of the abdomen, avoiding the midline cephalad or caudad to the umbilicus. Surgical scars and visible veins should also be avoided	
The anterior superior iliac spine should be located and a site chosen that is two fingerbreadths (3 cm) medial and two fingerbreadths (3 cm) cephalad to this landmark. Ultrasound scan used by competent person immediately prior to procedure that confirms ascites is accessible at the intended site of insertion?	
Mark the area for needle insertion appropriately	
Decontaminate hands as per policy and put on appropriate PPI	
The entry site should be cleaned using a Chloraprep 3ml applicator using repeated up and down, backward and forth strokes for at least 30 seconds, before working outwards to the periphery. Leave the area to dry completely before applying sterile drapes.	

Anaesthetise the skin around the intended site with Lidocaine 1% using a 25 gauge needle. Using the 'Z' track technique, advance the needle at 90 degrees through the skin, down into the peritoneum, aspirating as you advance until ascitic fluid is returned into the syringe.	
Again using the 'Z' track technique, insert the paracentesis needle along the pathway that was anaesthetised, and push through the abdominal wall until ascitic fluid obtained	
Advance catheter over needle until anchor flush with skin	
Remove needle and obtain specimens as required	
Secure anchor to skin with adhesive dressing	
Open clamp and drain ascitic fluid as directed	
Dispose of equipment safely as per policy	
Complete insertion bundle and file in notes, document any complications/deviations from standard practice	
Recognise own limitations and refer to more experienced person if appropriate	
Prescribe Albumin cover as appropriate	
SIGNATURE OF CLINICAL SUPERVISOR:	
DATE COMPLETED:	

PRACTITIONER'S STATEMENT

I have successfully undertaken a period of supervised practice and have achieved all of the competencies stipulated above. I understand that it is my professional responsibility to adhere to relevant policies and procedure guidelines when undertaking this skill in accordance with guidance from professional regulatory bodies and NHS Highland.

Signature: _____ Date achieved: _____

LINE MANAGERS/SUPERVISORS STATEMENT / FINAL SIGN OFF

I am satisfied that the individual named above has both the theoretical knowledge base and practical competency to perform the above procedure safely and independently without direct supervision
I confirm I have seen evidence of five DOPS demonstrating competence.

Signature: _____ Date achieved: _____

INSERTION BUNDLE

Abdominal Paracentesis Bundle			
DOCUMENT ANY COMPLICATIONS/DEVIATIONS FROM STANDARD IN PATIENTS NOTES		PATIENTS NAME ..... CHI.....	
Start date: June 2019 Review date: June 2021 Reviewer: C Stewart			
Date		Time	
Inserted By (name)		Inserted by (designation)	
Potential complications discussed	Infection requiring long term antibiotics □ Discomfort, bruising and fluid leak from site □ Damage to bowel, internal organ or blood vessel. □ (rare but serious)		
Procedure explained	Yes □ No □	Written Consent Obtained	Yes □ No □
Hand hygiene performed	Yes □ No □	Apron	Yes □ No □
Sterile gloves	Yes □ No □	Sterile drape	Yes □ No □
Skin prep- 70% Isopropyl alcohol with 2% Chlorhexidine	Yes □ No □	Sterile Field Maintained	Yes □ No □
		Hollister drain dressing	Yes □ No □
Insertion site	Left □ Right □	Site marked using USS	Yes □ No □
USS performed by	Radiology □ Other □ Name _____		Job title _____
Lignocaine	1% □ 2% □ Vol ____ mls	Drain type	Rocket safety □ Other _____
Fluid colour		Sample sent	Yes □ No □
Total drained	_____ mls	Albumin cover	Yes □ No □
Drain removed	**Date** _____ **Time** _____	**Removed by**	**Name** _____ **Title** _____

ABDOMINAL PARACENTESIS PRE-PROCEDURE CHECKLIST

NHS Highland

(File in case notes following completion)

PRE PROCEDURE CHECKLIST	Checked
Is paracentesis indicated at this time? (tense ascites)	**Yes** □ **No**□
Is this patient suitable for ward-based large volume paracentesis? (i.e. massive uncomplicated ascites with no contra indications to drainage) *Patients with a history of previous abdominal surgery, suspected malignancy involving the abdominal wall or peritoneal surface or who have previously required direct image-guidance for drain insertion* ***should be referred to Radiology for drain insertion under direct image guidance*** *(most commonly ultrasound)*	**Yes** □ **No**□
Has the Patient had an ultrasound scan that confirms ascites is accessible at the intended site of insertion?	**Yes** □ **No**□
Is the procedure being performed during daytime hours? *Avoid performing the procedure out of hours unless clinical urgency and in a level 2/3 care area (Document reason if variance)*	**Yes** □ **No**□
Has the person performing or supervising the procedure been trained and assessed as competent to do so? (must have completed local competency assessment/DOPs)	**Yes** □ **No**□
Ensure all necessary equipment available and the operator is familiar with its use *(If equipment is unavailable, discuss with nurse in charge of the clinical area)*	**Yes** □ **No**□
Ensure patient has been given written and verbal information regarding the procedure and written consent has been obtained	**Yes** □ **No**□
Ensure patient has IV access before commencing procedure and albumin readily available if required (albumen only for patients with cirrhosis).	**Yes** □ **No**□

IF NO to any of the above *discuss with senior member of clinical team responsible for the patient*

IF YES to all of the above- Proceed.

DURING THE PROCEDURE **STOP IF:**	
Unable to reconfirm ascites at insertion site , either clinically or under direct ultrasound guidance	
Unable to aspirate ascites with a green (18g) needle or smaller	
Aspiration of blood, blood stained fluid, faeces – **STOP AND SEEK SENIOR ADVICE IMMEDIATELY**	
Unable to advance the drain	
Patient withdraws consent	
FOLLOWING DRAIN INSERTION	**Checked**
Ensure ascitic fluid is draining freely	Yes □ No□
Albumen 20% prescribed if appropriate	Yes □ N/A □
Ensure ascitic drain insertion bundle is completed and filed in notes	Yes □ No□

Date checklist completed		**Time**	
Completed By (name)		**Completed by (designation)**	