POLICY AND PROCEDURE FOR PARACENTESIS

POLICY

Paracentesis is the procedure of removing ascitic fluid from the abdominal cavity. It can be performed using a needle or cannula, or more usually by the insertion of a bonnano catheter.

Ascites is associated with cancers, particularly ovarian and upper gastrointestinal; and those with liver metastases. It can also be seen in congestive cardiac failure, liver failure and protein depletion.

Benefits:

Paracentesis aims to improve the symptoms of ascites such as abdominal distension and discomfort, altered bowel habit, breathlessness, nausea and early satiety/anorexia. It can improve symptoms in up to 90% of cases, with some benefit seen after just two hours of drainage. It is less likely to improve the associated symptoms of oedema, fatigue, poor mobility and malaise.

Risks:

The removal of large volumes, particularly in patients with renal or hepatic impairment, can cause a fluid shift with hypotension leading to symptoms of dizziness, fatigue and malaise (affects up to 3%).

There is a risk of perforation of an abdominal viscus, haemorrhage (1-2%, a particular risk if the INR is raised or the platelets are low), infection and pulmonary embolus from a dislodged thrombus.

It should be remembered that with the exception of chemotherapy-sensitive carcinoma of the ovary, the prognosis in patients with ascites is usually poor (2-3 months) and that any procedure may contribute to a deterioration. In those very near the end of life, there may be safer ways to control symptoms.

Type of ascites:

Ascites is usually either a transudate (protein level less than 30 in ascitic fluid) or an exudate (protein level greater than 30). Transudates are usually seen in those with liver failure, from cirrhosis or metastases. A trial of diuretics may be appropriate if the renal function permits. Exudates are seen usually with intra-abdominal malignancy, and diuretics are unlikely to be helpful.

If there is uncertainty regarding the type of ascites and whether diuretics may help, a serum ascites albumin gradient (SAAG) can be taken. This is performed by sending a specimen of ascitic fluid to the biochemistry laboratory for measurement of protein and albumin levels. This albumin level is subtracted from the serum level and if the value is greater than 11, a trial of diuretics may be helpful. See appendix 1.

PROCEDURE

Action	***Rationale***
Before the procedure: Assess to confirm the presence of ascites	Exclude other conditions such as bowel obstruction and distension due to tumour
Blood tests	Ensure a safe procedure. See appendix 2
Stop anticoagulation (3 days for warfarin, 1 day for subcutaneous heparin)	Minimise the risk of haemorrhage

Consider ultrasound	If previous drainages have been difficult or there is doubt over the presence of fluid
Action	***Rationale***
Procedure: Obtain valid witnessed informed consent	 This should be clearly documented in the notes
Take the patient's pulse and blood pressure	To inform speed of drainage. See appendix 3
Prepare a trolley of equipment	See appendix 4
Ask the patient to empty their bladder	To minimise the risk of perforation
Ask the patient to lie supine in a comfortable position with the backrest slightly raised	To allow gravity to assist in the drainage
Confirm once again the presence of ascites. The usual site for paracentesis is the left side of the abdomen at least 10cm from midline	To minimise risk of complications such as perforation and haemorrhage
Clean the area with sterile solution eg chlorhexidine 0.05%	To minimise the risk of infection
Use aseptic technique throughout	To minimise the risk of infection
Infiltrate up to 10ml of 2% lidocaine for injection into the area to be cannulated. Start subcutaneously and gradually infiltrate deeper until fluid is aspirated from the peritoneal cavity. Wait 3 minutes or until the patient reports numbness on testing with a needle prick.	For patient comfort and to aid cooperation with the procedure
Insert large bore needle, cannula or *Bonanno* catheter into the peritoneal cavity. A scalpel is rarely required	At this point a sample can be taken for protein and albumin levels if required
Apply a drainable catheter bag	To collect and measure the ascitic fluid
Apply an adhesive dressing to the catheter if it is to remain in situ	To prevent it from becoming dislodged. Sutures are rarely required
Document the procedure, plan for drainage and required frequency of observation in the notes	
Take and record regular blood pressure and pulse measurements, and note the volumes drained.	This is normally required hourly, but may be more frequent in a high-risk patient. This allows monitoring of the fluid shift and guides decisions on the need for IV fluids. See appendix 2
If the patient becomes unwell, clamp the tube, take pulse, blood pressure and temperature and seek medical advice.	There is a risk of perforation, infection and hypovolaemia with this procedure
Post-procedure: Remove the catheter once the specified volume has been drained, or the drainage has slowed to a minimum. Aim to remove the drain by 24 hours (max 72 hours) The patient should be asked to lie on the opposite side to the drainage site for removal	Uncontrolled drainage may lead to hypovolaemia. To minimise the risk of infection Lying on the opposite side minimises the risk of leakage from the site
Apply a sterile gauze and adhesive dressing to the area. If leakage is heavy, a stoma bag may be required. Sutures are rarely required.	To maintain asepsis and protect the wound

Appendix 1 – Diuretics

Diuretics can be considered in those with a prognosis of several months as it takes 4 weeks to eliminate the excess fluid.
Consider them where the serum ascites albumin gradient (SAAG) is >11g/L. In these cases, the success rate of spironolactone is 60% at 300mg)

- Measure baseline urea and electrolytes and weight
- Start with spironolactone (aldosterone block) 100-200mg mane
- Increase dose by 100mg every 5-7 days to achieve a weight loss of 0.5-1kg/24hours
- The typical maintenance dose is 300mg mane (max 400- 600mg)
- Consider adding furosemide 40mg mane if the desired weight loss not achieved after 2 weeks (max 160mg) – stop when this is achieved
- Monitor for electrolyte disturbance and hypotension
- Stop diuretics if do not achieve satisfactory reduction in ascites, cause renal impairment or not tolerated

Appendix 2 – blood results

In order to proceed with a safe paracentesis, the following should be considered as a guide. In some cases if likely benefits outweigh the risks, paracentesis can be performed despite poor blood results. In these cases, the patient should be made aware of the increased risk as part of obtaining informed consent.

Caution should be exercised in those with:	**Rationale**
INR greater than 1.5	Risk of haemorrhage. Consider the use of vitamin K to normalise the INR before proceeding
Platelets below 50	Risk of haemorrhage
Significant anaemia	May be worsened by haemorrhage, lower reserves for coping with procedure May make correct attribution of symptoms more difficult.
Low white cell count/neutropenia	Risk of infection
Low sodium (less than 126)	Poor prognostic indicator. Paracentesis can cause further electrolyte disturbance
Abnormal potassium	Paracentesis can cause further electrolyte disturbance
Poor renal function	Lower reserves for dealing with fluid shift
Hepatic impairment	Lower reserves for dealing with fluid shift, may be associated with raised INR
Low protein and albumin (less than 20)	Likely to re-accumulate more quickly due to low oncotic pressure (production rate exceeds drainage rate), leading to significant intravascular depletion

Appendix 3– observations, rate of drainage and IV fluids

Total amount drained will depend on the individual patient, their blood results, previous experiences with paracentesis and the apparent volume on clinical assessement.

Observations	Rate	Fluids
Systolic Blood Pressure greater than 100 prior to and throughout procedure Check BP and pulse hourly for the first four hours, then as required	Free drainage of up to 5L over the first 4 hours, then clamp and drain 1L per hour until drainage slows to a minimum or the required amount is drained	Not usually required
Systolic blood pressure less than 100 prior to or during procedure Check BP and pulse hourly	Drain 1/2L per hour and limit total amount drained. Stop if BP falls significantly or symptoms of hypovolaemia develop	Consider fluid replacement with IV saline
Renal failure or dehydration		Consider fluid replacement with IV saline
Liver cirrhosis		Consider 20% albumin, 100ml for every 2L drained

Appendix 4 – equipment required for paracentesis

- Bonanno catheter pack
- Sterile dressing pack
- Sterile cleaning solution eg chlorhexidine 0.05% aqueous solution (Unisept)
- Local anaesthetic (10ml of 2% lidocaine)
- Needles (one blue and two green or white)
- Syringes (two 10ml)
- Sterile gloves
- Gauze
- Adhesive dressing eg mepore, hypafix
- Large sterile drainable catheter bag with stand or hooks
- Inco pad
- Plastic apron
- Scalpel

References:

- Guidelines for the Management of Malignant Ascites, St Peters Hospice, Bristol 2008 (palliativedrugs.com)
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- A clinical decision guide to symptom control in palliative care, Regnard and Hockley, 2003
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- Symptom control in Advanced Cancer, 3rd edt. (2001) Twycross, Wilcock
- Ascites careplan and policy, The Rowans Hospice.