Implantable Peritoneal Ports in the Management of Malignant Ascites – Technical Innovation

Lourens Bester
Westmead Private Hospital & Westmead Public Hospital, Sydney
Email: lourensb@bigpond.net.au

Abstract
A minimally invasive method for palliative drainage of symptomatic malignant ascites by placing a peritoneal port in the Interventional Radiology Suite would allow patients to avoid repetitive trips to the Radiology Department for paracentesis and for paracentesis to be performed by the palliative care team at home. Since 2003 960 patients at Westmead Private Hospital have received either a chest or a brachial port in the Department of Radiology. The procedure was modified and used for the placement of tunnelled multiple side holes Peritoneal Ports using a modified Seldinger technique in the Interventional Radiology Suite. Patients with symptomatic ascites were able to be drained at home and all achieved significant improvement in those symptoms attributable to the ascites. It is postulated that the complication rate will be much lower than with tunnelled peritoneal catheters placed for palliative drainage of malignant ascites. Accordingly, percutaneous placement of Porten Ports in the Interventional Radiology Suite appears to be a viable and safe technique in patients who have symptomatic ascites that requires frequent therapeutic paracentesis for relief of their symptoms.

Ascites is a common complication of advanced malignancies with symptoms of marked abdominal distension, shortness of breath, diminished appetite and fatigue, which comprise cancer patients’ everyday functions. Treatment options for intractable ascites include serial paracentesis, peritoneovenous shunting, tunnelled peritoneal catheter hanging externally and more recently tunnelled peritoneal catheters attached to subcutaneous ports implanted under the skin.1

In the past permanent drainage catheters have not been considered a viable treatment option for malignant ascites due to infection, malposition or occlusion. Cuffed-tunnelled peritoneal catheters have been used for many years for peritoneal dialysis with an acceptable complication rate. A recent article published showed a two-year catheter survival rate of 49 to 82%.2,3,4

It was therefore appropriate to re-evaluate placement of peritoneal ports specifically designed for peritoneal access as a means of controlling malignant ascites and develop a technique for placement in the interventional radiology suite.5

Between January 2003 and August 2005 46 peritoneal ports were placed in patients with a short life expectancy and with symptomatic ascites. The ultimate goal was to repeatedly access the peritoneal port and to perform ascites drainage at home, thereby avoiding frequent trips to the radiology department for image-guided drainage.

Previously these ports were placed surgically, which necessitated hospital admission and hospital care before discharge.

Using ultrasound and performing the procedure in the angiography suite, a large collection of ascitic fluid is identified. The inferior epigastric artery and the venous perforators in the region where the port is going to be placed and also identified.

A Seldinger technique is used to create a tunnel through the subcutaneous tissues into the peritoneal cavity, after which the peritoneal port catheter is placed within the pelvis, followed by placement of the port in the subcutaneous tissues adjacent to the ilium on the left or right side.

The procedure is performed using buffered local anaesthesia only and under cover of one gram of Cephazolin and the wound closed with an absorbable suture. The port is heparin locked at the end of the procedure.

With the help of the palliative care unit at home nursing care protocol has been developed. The port is accessed at home on a weekly basis or more often if necessary using a Huber needle with dependent drainage. A maximum of three litres of ascites are drained at any given time to avoid volume depletion and the port heparin locked after the procedure.

Very few complications have been experienced as listed below:

(1) In one patient, there was accidental puncture of the inferior epigastric artery with contained haematoma formation in the anterior abdominal wall.
(2) One patient presented with wound infection and the port was removed.
(3) In one patient, there was accidental transection of the catheter by the Huber needle and the catheter and port was replaced.
(4) One patient developed bowel obstruction due to progressive disease.
(5) Several patients developed leakage around the insertion site, managed with decreasing intra-abdominal pressure by increasing frequent drainage with successful resolution.
(6) Several patients with exudative ascites developed port blockage, managed with saline irrigations and in one instance with port replacement.
(7) No patients presented with peritonitis or wound dehiscence.

Discussion
Intractable malignant ascites is often a disabling disease and decreases the quality of life in patients with a short life expectancy.

Serial paracentesis may be performed with or without ultrasound guidance and has the advantage of being relatively easy to perform with a 1% major complication rate. The disadvantage of serial paracentesis includes repeated trips to the hospital and the radiological department.6

Peritoneovenous shunting has an advantage as no hospital visits are required for drainage and there are no fluid or protein losses. A major disadvantage is the invasiveness of the procedure and poor long-term patency and excessive complications, which includes disseminated intravascular coagulation.7

Tunnelled peritoneal catheters with an external component for drainage are easy to place in the radiology department. They have a low complication rate and include the advantage of...
home drainage. The disadvantage relative to the peritoneal port includes a theoretically higher risk of infection and the risk of dislodgment.1,4

Rosenblum was first to describe the placement of cuffed-tunnelled venous access ports for the drainage of ascites. These ports were venous access ports that were modified with small six French catheters attached to the port.9

A technique was developed whereby a peritoneal port with a large bore catheter of 16 French was placed by an interventional radiologist in the radiology department using local anaesthesia, ultrasound and digital subtraction angiography. The peritoneal ports used were all previously placed surgically. The procedure were found to be a safe and effective treatment option for malignant ascites with a 100% success rate and 90% long-term patency rate with a low complication rate.5

Insertion in the outpatient setting is well tolerated and drainage at home improves patient quality of live and reduces frequent trips to the hospital. Liaison between community and hospital palliative teams is vital in providing optimal home based care.

References