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Role of Peritoneal Ports for Treatment of Intractable Ascites

Haytham M Nasser, Maha M Abd El Raoof, Maha K Abd El Ghafar, Mohamed Y Mostafa, Mohamed Sobhi Hassan.

* Departments of Radiodiagnosis and** Oncology, Faculty of Medicine, Ain Shams University.

Abstract

Introduction: Ascites is a common complication of advanced malignancies and cirrhosis**.** Symptoms of marked abdominal distention, shortness of breath, diminished appetite, fatigue, and lower-extremity edema can significantly compromise a patient's everyday life**.** Treatment options for intractable ascites include serial paracentesis, peritoneovenous shunting, transjugular intrahepatic portosystemic shunt (TIPS) creation, and tunneled peritoneal catheters that may be external or, more recently, attached to subcutaneous ports. It is therefore appropriate to evaluate a port specifically designed for peritoneal access as a mean of controlling intractable ascites. We present a minimally invasive treatment for palliative drainage of symptomatic ascites in patients with advanced malignancy.

Aim of the work: The aim of this work is to evaluate the percutaneous implantable access system specifically designed for peritoneal access as a method to control intractable ascites as regards complications and patency.

Methods: This is a prospective intervention study will be conducted on 40 patients with intractable ascites referred from the oncology clinic to the diagnostic imaging department for percutaneous placement of peritoneal portcath as a palliative treatment for the patient.

Results: Good technical success rate (100%) in insertion was found with removal of ascites gradually. Immediate relief of symptoms (100%). There were no major complications. There was one minor complication(2.5%), a leakage at the port placement site in a patient with pancreatic carcinoma. The leakage stopped spontaneous with removal of ascites and the patient underwent conservative management.

Conclusion: peritoneal port systems for treatment intractable ascites is efficient way to avoid ascites related morbidity with increases patient compliance, satisfaction by decreased hospital visits as the drainage and patients monitor can be done in their homes. Port aspiration can be performed in some cases by patients or family members without nursing assistance. In comparison with tunneled peritoneal catheters with external components, the complication rate appears to be minimal.

Key words: Peritoneal Ports, Intractable Ascites.

INTRODUCTION

Ascites is a common complication of advanced malignancies and cirrhosis (1, 2&3). Symptoms of marked abdominal distention, shortness of breath, diminished appetite, fatigue, and lower-extremity edema can significantly compromise a patient's everyday function (2).

Available treatment options for intractable ascites include repeated paracentesis, transjugular intrahepatic portosystemic shunt (TIPS) creation, peritoneovenous shunting, liver transplantation and tunneled peritoneal catheters with external component yet recently peritoneal port represent minimally invasive effective option for treatment of intractable ascites..

Previously, permanent drainage catheters with external component was not considered viable treatment options for intractable ascites as a result of problems with infection, malposition, and occlusion (4,5).

However, tunneled peritoneal catheters have been used for many years for peritoneal dialysis with acceptable complication rates (6,7). In 1999, 27,000 people received peritoneal dialysis in the United States, constituting 9% of the dialysis population, where mortality rates was similar to or lower than those in hemodialysis patients (8). Tunneled catheters have generally been placed in operating rooms (6). Recently, 2-year catheter survival rates with percutaneous placement have been reported to be 49%–82% (8). Rosenblum et al (4) described the use of a subcutaneous venous access port to treat

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refractory ascites with promising results in nine patients.

THE AIM OF THE WORK

The aim of this work is to evaluate the percutaneous implantable access system specifically designed for peritoneal access as a method to control intractable ascites as regards complications and patency.

METHODS

This is a prospective intervention study will be conducted on 40 patients with intractable ascites at Ain Shams University Hospitals and some private clinics. Patients with intractable ascites are referred from the oncology clinic to the diagnostic imaging department for percutaneous placement of peritoneal portcath as a palliative treatment for the patient. Patients included in our study will be selected from them with the following criteria:

International normalizing ratio (INR) less than 1.5

Prothrombin time should be less than 15 sec

Partial thromboplastin time should be near normal.

Platelet count should be greater than 50,000 per mm3 to limit the risk of bleeding.

There should be no infection at the time of port placement.

At least a moderate amount of ascites should be present at the time of port placement to help insure placement of the catheter in an optimal location.

No age predilection.

And we will exclude those patients with infected ascites.

The standard procedure that the patients would have is as follows:

Patients will lie supine, after the surgical preparation, an 18-gauge needle is used to access the ascites under ultrasound guidance usually at the right iliac region. After spontaneous drainage of uncomplicated ascites is confirmed, a 0.035-inch-diameter guide wire is introduced through the needle into the ascites. A 16-F peel-away sheath is introduced over the guide wire into the peritoneal cavity. The dilator and wire are removed then the catheter is then advanced through the peel-away sheath into the ascites and the peel-away sheath is removed. The port pocket is usually created over the anterolateral lower ribs. A subcutaneous tunnel is created between the pocket and the ascites entrance site with use of a metal tunneler. The port is placed in the pocket and then the skin us sutured in two layers skin and subcutaneous. (1)

The port is accessed with a 19-gauge Huber needle and port aspiration is then performed to remove the remainder of the ascites. The port is then flushed with 20 mL of heparinized saline solution (100 IU/mL). A sterile dressing is applied.

The selected patients who had approved to participate in our study gave an informed consent (or their guardians approved) their images will be included.

RESULTS

Our study is performed with the participation of 40 patients between October 2010 and March 2013. 25 0f them are males and 15 female.

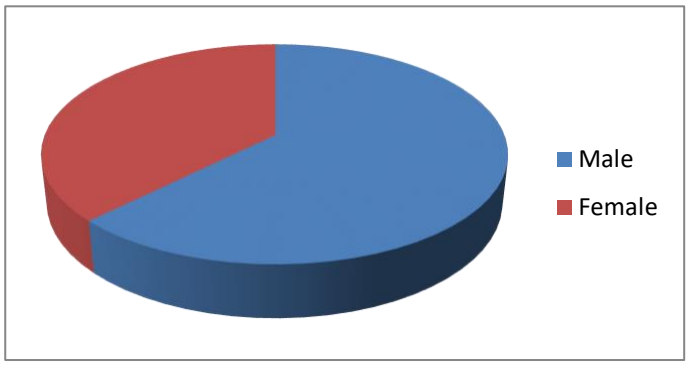

Figure (4.1) shows sex distribution among our patient sample

Male patients with mean age of 60.2 year; 5 patients cancer colon, 5 patients mesothelioma, 5 patients cancer head of pancreas, 4 patients bronchogenic carcinoma, 3 patients cancer sigmoid and 3 patients cancer stomach.

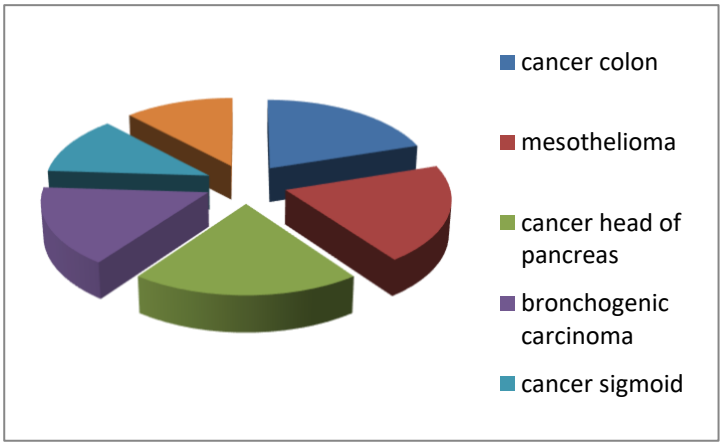

Figure (4.2) shows type of malignancy among our male patient sample

Female patients with mean age of 54.5, 3 patients cancer stomach, 3 patients cancer sigmoid, 3 patients cancer ovary, 1 patients liomyosarcoma, 1 patients mesothelioma, 1 patients adenosarcoma.

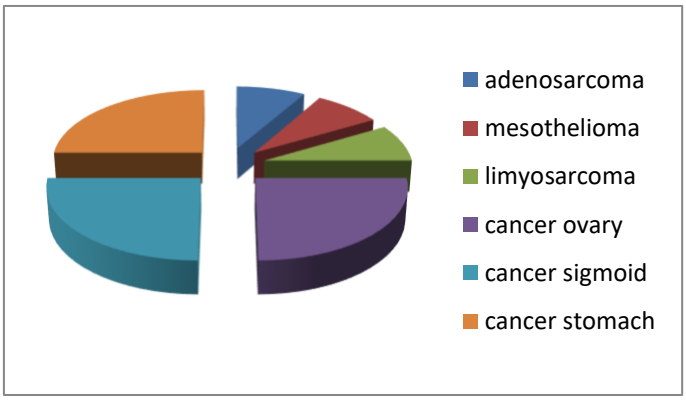

Figure (4.3) shows type of malignancy among our female patient sample

Data were collected and evaluated as regard the following points:-.

Procedural data included (immediate results): Technical success of port placement, Removal of ascites, Symptom relief, and immediate complications.
Long-term follow-up data included (long term results): Duration of symptom relief, Requirement for port removal, Duration of port patency, location where port aspiration was performed (hospital visits), and long term Complications

Immediate Results

Forty ports were placed in 40 patients all show technical success in insertion with removal of ascites gradually. Immediate relief of symptoms. There were no major complications. There was one minor complication, a leakage at the port placement site in a patient with pancreatic carcinoma. The leakage stopped spontaneous with removal of ascites and the patient underwent conservative management.

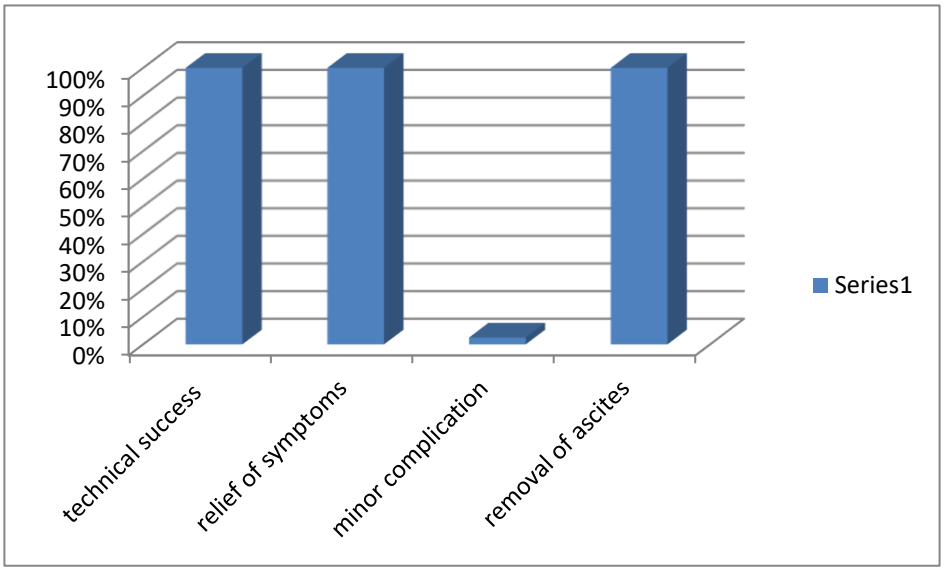

Figure (4.4) shows short term results

Long-term Results

Thirty nine patients (97.5%) showed complete relief of symptoms and good compliance until death (the ports were still in place and functioning at the time of death) or the end of this study.

Thirty nine patients (97.5%) were treated successfully without further catheter manipulation (catheter removal), antibiotic therapy.

One patient (2.5%) had a clinical failure. She had her port successfully inserted (technical success) followed by immediate relief of symptoms and decreased hospital visits yet three month later she developed infection at port site and Loculation of ascites. Ascites sampling, culture and sensitivity was done where E-coli single growth was discovered. Cather removal and aggressive antibiotic were prescribed afterward infection subsided with no reaccumulation of ascites till the end of this study.

The long-term patency rate of ports was 100% with mean patency duration 284.5 days. Forty patients are treated with peritoneal port without any occlusion that did not respond to a 20-mL saline solution flush even with kinking and migration of the catheter.

Twenty eight patients died during the course of the study, due to severity of their underlying disease. Among them, the patency rate was 100%, with complete relief of symptoms in all.

Twelve patients are still alive till the end of the study with patency rate 100%, and all had complete relief of symptoms caused by ascites.

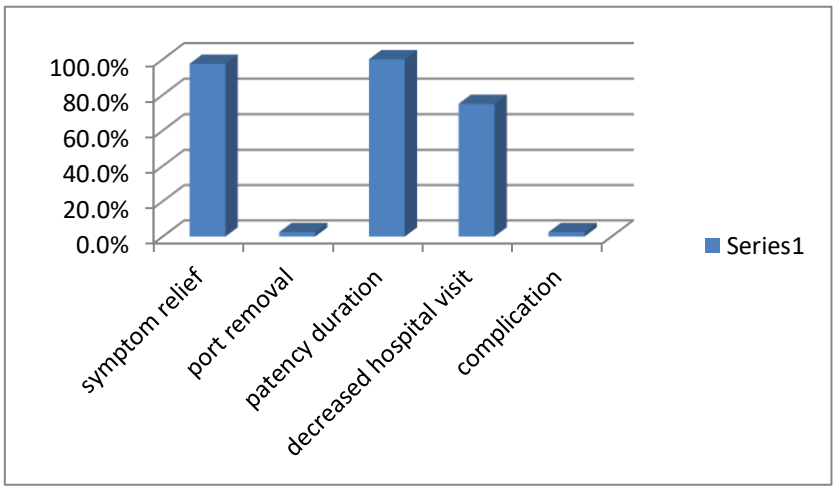

Figure (4.5) shows long term results.

Thirty patients (75%) were treated at home (with decreased hospital visits) and five (12.5%) were treated as outpatients in our clinic because they were not able to use the device. Five patients (12.5%) were admitted in the hospital because of other medical problems yet avoidance of repeated paracentesis was satisfactory to patient and clinician.

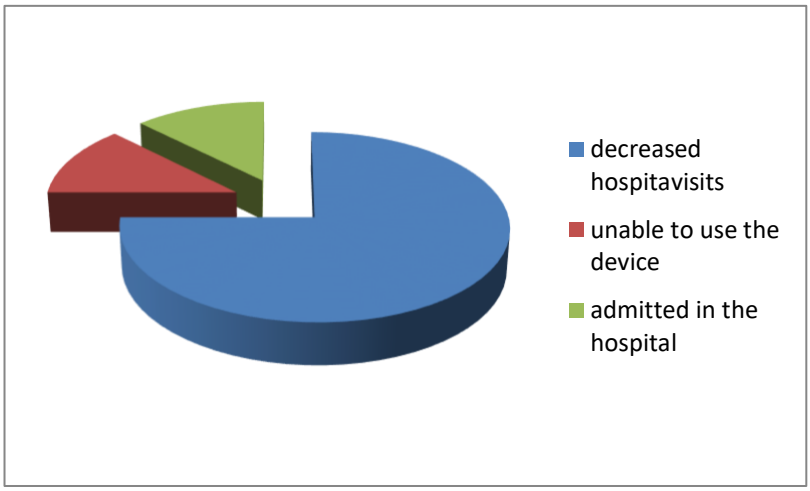

Figure (4.6) shows hospital visit distribution.

DISCUSSION

Intractable large-volume ascites is often disabling and decreases quality of life. Intractable ascites may be due to cirrhotic liver or malignant ascites. The malignant type can be secondary to peritoneal carcinomatosis, lymphangitic carcinomatosis, or massive hepatic metastases and frequently compromises the patients' quality of life. Control of intractable ascites and related symptoms remains a medical problem. (9)

Currently available treatments include repeted paracentesis, TIPS creation, and tunneled peritoneal catheters. Some of the previously listed techniques are invasive and require general anesthesia. Other raises the need of repeated hospital visits. So they were not satisfactory to patient population in which palliation is the primary concern. (3)

Tunneled percutaneously placed peritoneal ports series were first described by Rosenblum et al. (4).

In our study we used the retrograde technique as we assumed that it is much easier in placing the catheter in good pelvic position allowing better drainage. Yet previously reported studies used other techniques with no reported technique related complications, difficulties or failure.

The ports used by Rosenblum (4) were modified venous access ports which reports one case of catheter obstruction (10% of catheters). In the study performed by Ozkan (9) and in our study we used peritoneal port specifically designed to permit repeated access to the peritoneal cavity. Compared with the device used by Rosenblum et al, this catheter is larger in caliber and has multiple precut side holes. These properties may explain the 100% patency rate in both studies.

Rosenblum (4) in his study nine patients with cirrhotic refractory ascites were treated with 10 ports. There were three cases of bacterial peritonitis (33% of patients). Ozkan (9) in his study seven patients with malignant refractory ascites. There was no reported cases bacterial peritonitis. In our study we had low infection rate only one case representing 2.5 %. This case of infection occurred 3 month after port was successfully inserted and used for 3 month. Infection was attributed to in ability of the patient to use the port under aseptic condition. Possible explanation for the low infection rate in Ozkan study and in our study is that the patients had malignant ascites as cirrhotic patient were excluded due to the fact that the rate of spontaneous bacterial peritonitis in these patient is 33% rate in the report of Rosenblum et al (4).

Rosenblum et al (4) reported that two of three cases of peritonitis were associated with peritoneal fluid leakage at the port site. They suggested that these infections could have been prevented with improved suture technique with use of more closely spaced sutures and that late suture removal 10–14 days after port placement was beneficial for

further wound healing. In our study adequate care to these suture details may be another explanation of the lower infection rate (2.5 %) in this study.

Previously port pocket was created related to the anterior superior iliac spin (4). In Ozkan (9) study placement of the port over a bony surface (lower costal margin) yet reservoir reversed on the first day of the procedure due to the large pocket size and not suturing the port. In our study we also used the lower costal margin as port site with especial care to port size and suturing the port would explain absence of reservoir reversal as minor procedural complication.

The use of larger port size appears to provide an easier target for nurses to access the port and more easier for the patient to access port at home with decreased hospital visits and complication rate.

In this study, the technical success rate was 100%, and in the long term, the patency rate was 100%, success rate without complications was 97.5%, and complication rate was 2.5%.

Case (1)

This 65 years old female patient with metastatic cancer stomach. Clinical examination and radiological studies were done. US revealed clear tens ascites.

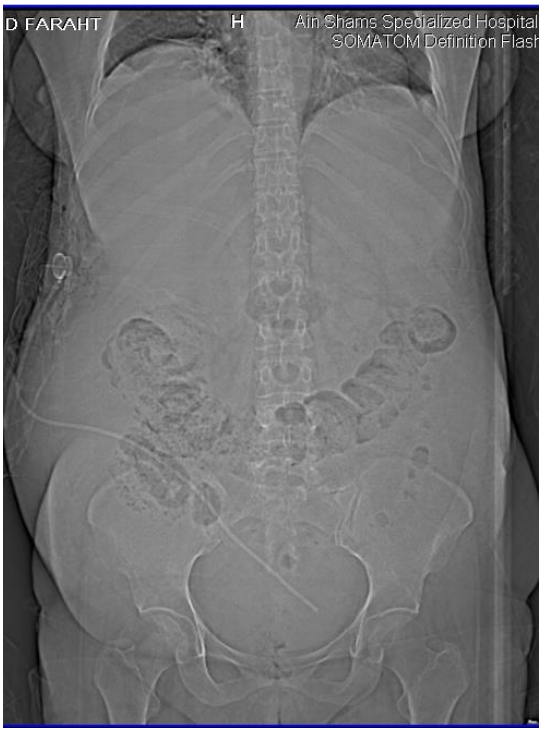

Figure (8): radiograph shows Port-catheter catheter in place.

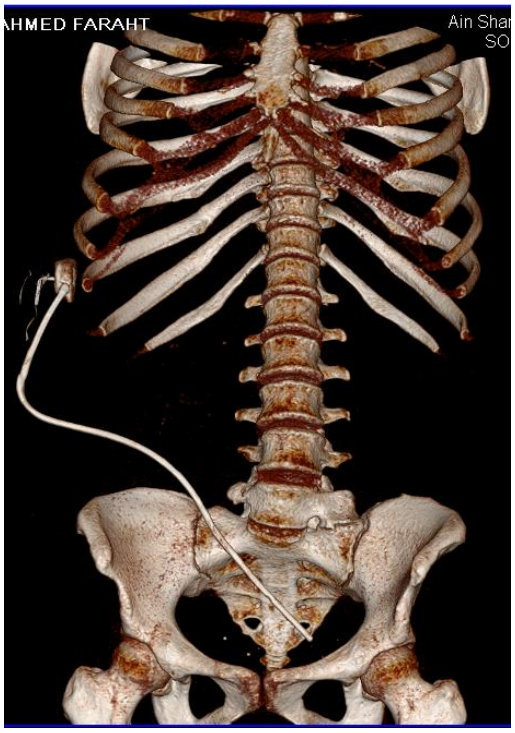

Figure (9): 3 D reconstructed CT shows port-catheter catheter in place.

Case (2):

This 62 years old male patient with cancer head of pancrease. Clinical examination and radiological studies were done. US revealed clear tens ascites.

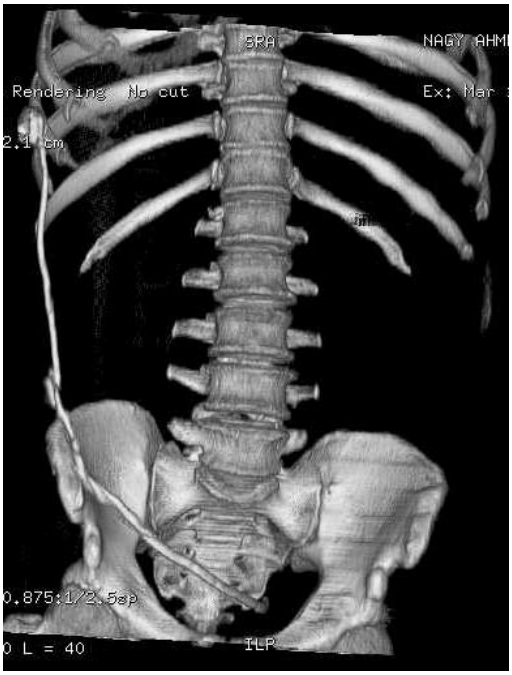

Figure (10): 3 D reconstructed CT
Shows port-catheter catheter in place.

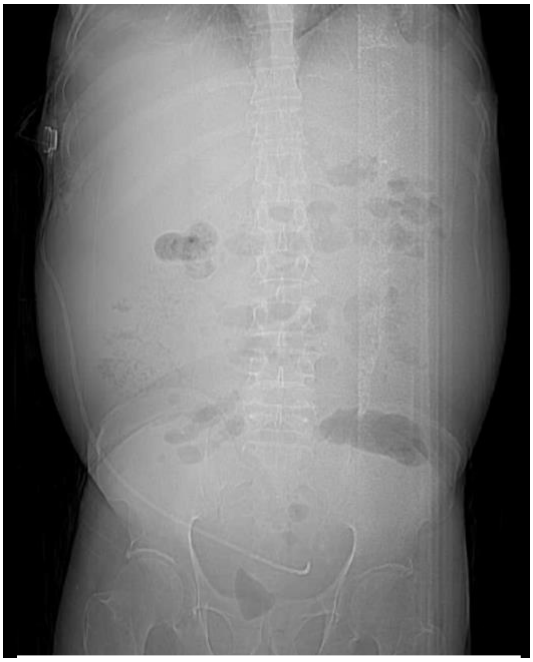

Figure (8): radiograph shows port-catheter catheter in place.

CONCLUSION

Peritoneal port systems for intractable ascites is efficient way to avoid morbidity and the patient's anxiety related to marked ascites and repeated puncture-aspiration. Compared to chronic indwelling catheters, subcutaneous location of port system provide a closed system between tapping sessions where it allows an entire integration with total liberty in daily life between two sessions of drainage. Drainage can be performed in an outpatient basis. This patient-friendly technique may be a treatment option with good success rate, patient compliance and clinician satisfaction.

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