American Journal of
Biomedical Science & Research

www.biomedgrid.com
ISSN: 2642-1747

Case Report

Management of Refractory Chylous Ascites with a Peritoneovenous (Denver) Shunt: A Case Report

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To Cite This article: *Atta Nawabi MD, MBA, MPH, FACS, FICS*, Hunter Tessman MS, Steven Lemons MD, Brandon Custer MD, Zachary Collins MD, Perwaiz Nawabi DO, MS, MBA, Management of Refractory Chylous Ascites with a Peritoneovenous (Denver) Shunt: A Case Report. Am J Biomed Sci & Res. 2026 29(5) AJBSR.MS.ID.003834,* **DOI:** 10.34297/AJBSR.2026.29.003834

Received: December 24, 2025; **Published:** January 06, 2026

Abstract

Background: Chylous ascites is an uncommon but clinically significant complication after abdominal surgery, including pancreatic resection. Persistent chyle loss can lead to malnutrition, immune dysfunction, and recurrent symptomatic fluid accumulation requiring repeated drainage.

Intervention: Given refractory, recurrent chylous ascites despite aggressive conservative management, a multidisciplinary decision was made to place a peritoneovenous shunt (Denver shunt) via interventional radiology.

Outcome: Following shunt placement, reduction in ascites burden/paracentesis frequency, nutritional improvement, length of hospital stays, and cost.

Conclusion: In selected patients with refractory chylous ascites who fail conservative and lymphatic interventions, peritoneovenous (Denver) shunting may provide durable symptomatic relief and reduce the need for repetitive paracentesis.

Keywords: Chylous ascites (CA), Chyle leak, Peritoneovenous shunt, Denver shunt (DS) Pancreatic surgery, Interventional radiology (IR), Cystgastrostomy (CG)

Introduction

Chylous ascites is defined by the accumulation of triglyceride-rich fluid in the peritoneum [1]. Chylous ascites has many etiologies and can include congenital lymphatic abnormalities, inflammatory conditions, liver cirrhosis, malignancies, trauma, and iatrogenic injury during surgery [1]. The most common causes are patients that undergone lymphatic intervention such as lymph node dissection for malignancies of the gastrointestinal tract and pancreatic resection [2]. Chylous ascites can present with painless abdominal distention, weight loss and less common acute abdomen [3]. Complications of chylous ascites can include malnutrition, immunodeficiency, and increased infection risk [4].

The initial treatment of the Chylous ascites is diet modification with a high-protein low-fat diet with medium chain fatty acids. If necessary, complete fasting with total parenteral nutrition and intravenous administration of octreotide can be used. Minimally invasive options for diagnosis and treatment for CA are lymphangiography and lymphoscintigraphy follow by the embolization. For the refractory chylous ascites, surgery such as lymphatic duct ligation or peritoneovenous shunting (Denver shunt) is indicated [1].

In this case report, we utilized Denver shunt after failed prolong conservative management for refractory chylous ascites.

Case Presentation

A 39-year-old man with a history of a motor vehicle collision underwent distal pancreatectomy and splenectomy 06/2023. He subsequently developed a pancreatic duct leak treated with ERCP and pancreatic duct stent placement (Figure 1). His clinical course was complicated by ERCP-associated necrotizing pancreatitis, managed endoscopically with cyst gastrostomy for necrosectomy and placement of an AXIOS stent (Figure 2).

Figure 1 and 2

During the prolonged course, the patient developed symptomatic high-volume chylous ascites requiring paracentesis approximately three times weekly, totaling roughly 10 litters per week. He also developed superior mesenteric vein (SMV) thrombosis requiring SMV stenting (Figure 3). Lymphangiography and lymphoscintigraphy did not demonstrate a discrete site of lymphatic leakage (Figure 4,5).

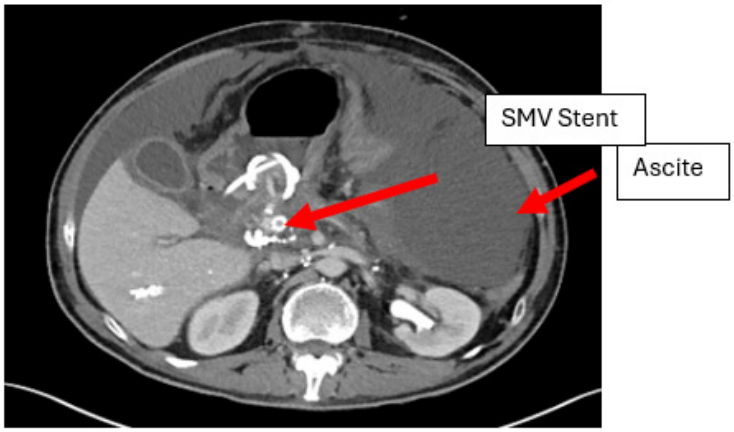


Figure 3

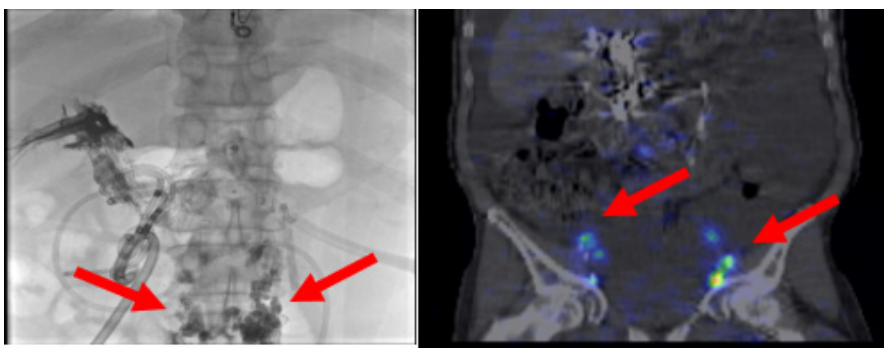
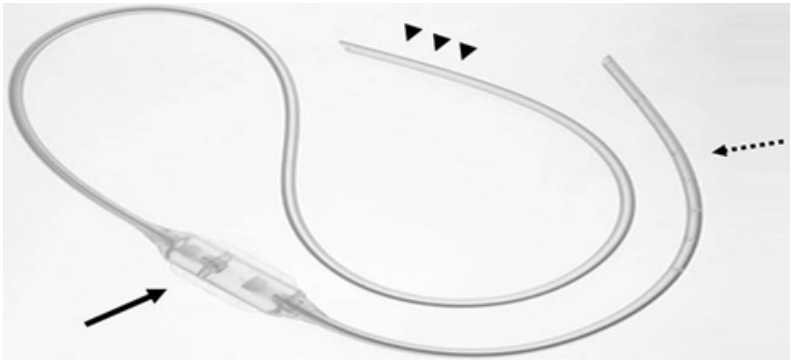


Figure 4, 5: Lymphangiogram and Lymphoscintigraphy.

Despite aggressive and prolonged conservative management, including dietary modification with chyle diet, octreotide use, prolong TPN. The patient continued to require near–every-other-day paracentesis for symptom control. Hepatobiliary surgery was consulted. After multidisciplinary discussion with interventional radiology, the decision was made to proceed with peritoneovenous Denver shunt placement (Figure 6).



Note*: Creator: Yarmohammadi, Hooman/Radiology

Figure 6

Procedure: Peritoneovenous (Denver) Shunt Placement

The procedure was performed by interventional radiology under moderate sedation with local anaesthetic. With the patient supine, the abdomen, anterior chest, and neck were prepped and draped in sterile fashion.

Ultrasound was used to identify a suitable pocket of free intraperitoneal fluid. Peritoneal access was obtained using an 18-gauge Seldinger needle or 5-Fr Yueh catheter under ultrasound guidance. A guidewire was advanced, and position confirmed. The tract was serially dilated and a 16-Fr peel-away sheath placed into the peritoneal cavity.

Ultrasound guidance was then used to access a patent internal jugular vein. A guidewire was advanced into the superior vena cava under fluoroscopic guidance and the tract dilated. A subcutaneous pocket for the pump chamber was created along the anterior chest wall. Using a tunneling tool, the peritoneal and venous catheters were passed subcutaneously to the pump chamber. The peritoneal catheter was positioned intraperitoneally, and the venous catheter advanced via the internal jugular vein into the superior vena cava under fluoroscopy (Figure 7).

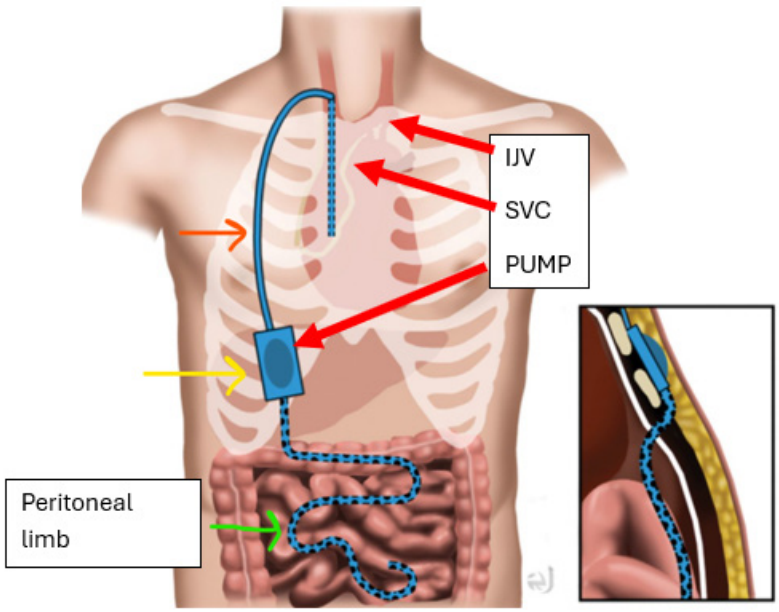


Figure 7: Denver Shunt implantation.

https://doi.org/10.2214/AJR.12.9203

Discussion

Refractory chylous ascites can impose substantial morbidity through persistent abdominal symptoms, repeated invasive procedures, prolonged hospitalization, malnutrition, and immunologic compromise. In this case, the patient experienced high-volume recurrent chylous ascites requiring frequent large-volume paracenteses and prolonged nutritional support. Diagnostic lymphatic studies did not localize a leak amenable to embolization, and conservative therapy was insufficient to control symptoms.

Peritoneovenous shunting can provide an alternative pathway for ascitic fluid return to the systemic circulation, potentially reducing the frequency of paracentesis and supporting nutritional recovery when ongoing lymphatic losses are otherwise difficult to control. This case also highlights the importance of multidisciplinary management—particularly coordination between hepatopancreatobiliary surgery and interventional radiology—in selecting and implementing advanced therapies for complex postoperative complications.

Conclusion

In selected patients with persistent, high-output chylous ascites that fails conservative therapy and lacks a target for lymphatic embolization, peritoneovenous (Denver) shunting may be an effective salvage strategy to reduce symptomatic ascites and dependence on repeated paracentesis.

Our case exemplified that the Denver shunt is an efficacious method for the treatment of refractory chylous ascites that failed with conservative management. This shows the importance of multidisciplinary care in the coordination between the surgical team and interventional radiology in the care of these patient population.

Acknowledgement

None.

Conflict of Interest

None.

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