

Denver[®] ascites shunts

For patients with refractory ascites



For patients with refractory ascites, consider peritoneovenous shunting (PVS) with the Denver[®] shunt.

A specially designed silicone medical device consisting of a pump chamber with two catheters, the Denver shunt transfers fluid from the peritoneum to the central circulatory system. This allows the patient to maintain the critical protein and nutrients in the peritoneal fluid, while maintaining normal flow through vital organs.

Benefits of PVS:

- Retains nutrients
- Increases renal blood flow
- Improves mobility and respiration
- Relieves massive, refractory ascites
- Increases effective blood volume
- Increases diuresis

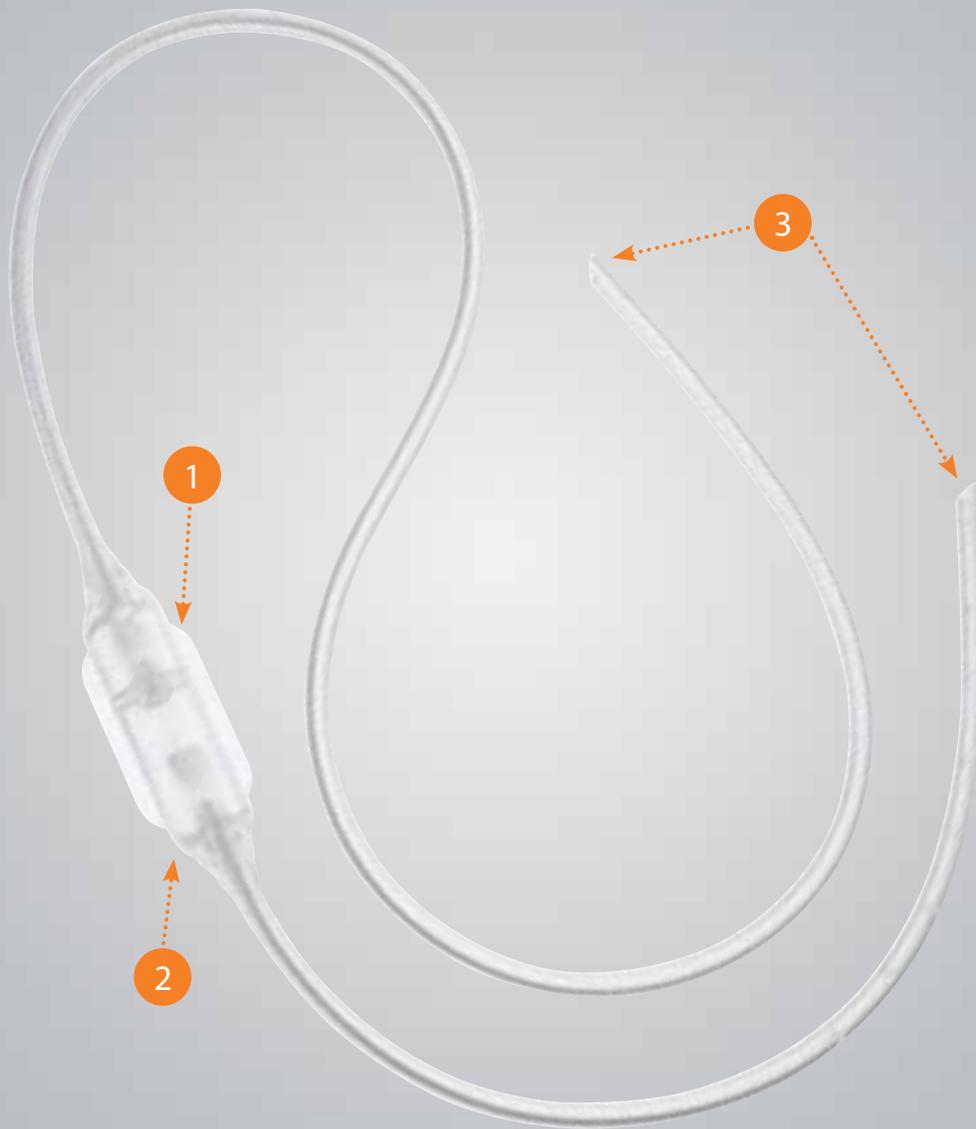
Silique™ surface treatment

Denver shunts now include the Silique surface treatment, which enhances the properties of our silicone shunts:

- Smoother, more uniform surface
- Less tacky
- Lower coefficient of friction

This is the same type of surface treatment used on devices such as infusion ports, central venous catheters, I.V. catheters and hemodialysis products.





Double-valved Denver ascites shunt (cat. no. 42-2000)

1 Compressible pump chamber

The soft pump chamber lies subcutaneously over the lower ribs, providing a convenient and comfortable location for manual pumping. While ascitic fluid flows spontaneously, manual pumping flushes fluid through the shunt, helping avoid the buildup of proteinaceous material.

- Helps avoid occlusion
- Provides a means to determine patency

2 Miter valves

Specially designed silicone miter valves, located in the pump chamber, control the flow of fluid.

- Permit flow in only one direction
- Enable spontaneous flow when the pressure in the peritoneal cavity is 3 cm H₂O or higher than the central venous pressure
- Designed so the inner surface of the valves slide against one another when manually pumped, helping reduce buildup on the valves

3 Radiopaque-striped catheters

The entire length of the venous catheter and the fenestrated peritoneal catheters are striped with barium sulfate, permitting visualization under fluoroscopy.

Product features:

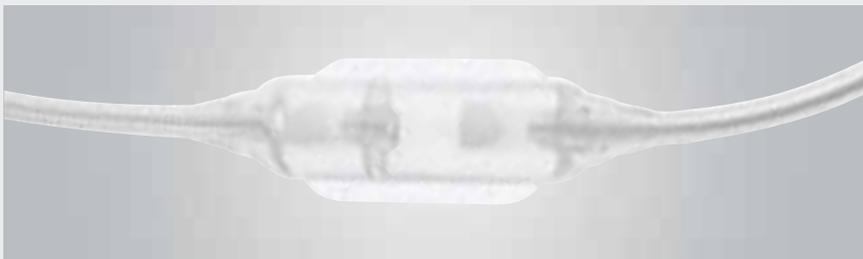
A variety of product features give you the flexibility to meet your patient's individual needs.

Valve options

Denver shunts give you the flexibility to determine the best means to control the flow of ascitic fluid by offering single- and double-valved pump chambers. Ascitic fluid viscosity and/or the amount of formed elements in the fluid should be of primary consideration when deciding if a single- or double-valved shunt is to be used.

Double-valved shunts

Double-valved shunts will meet the needs of the majority of your patients. They provide ample flow rates and have the added feature of a second valve. The second valve serves as a check valve that helps prevent reflux of blood into the venous catheter when the shunt is manually pumped.



Double-valved shunt

Single-valved shunts

Single-valved shunts offer less obstruction to flow, and therefore should be considered when the ascitic fluid is highly viscous. They also provide the highest flow rates.

In lieu of a check valve, the venous tubing just above the pump chamber should be compressed in an alternating fashion when pumping the pump chamber. See Directions for Use for detailed pumping instructions.



Single-valved shunt

Catheter options

While the peritoneal end of the catheter is always 15.5 Fr, you have two options for the venous catheter: 15.5 Fr (for internal jugular, subclavian or peritoneo-saphenous placement) or 11.5 Fr (designed for subclavian placement). Patient anatomy and procedural preference should determine which catheter size will be used.

Flow rate consideration

Spontaneous flow occurs when the pressure in the peritoneal cavity is approximately 3 cm H₂O higher than the central venous pressure. The range of flow for each shunt model is based upon a pressure head of 10 cm H₂O.

Venous catheter flow rate		
Catheter size	Double valve	Single valve
11.5 Fr.	20-30 mL/min	30-40 mL/min
15.5 Fr.	25-40 mL/min	40-55 mL/min

See page 7 for associated product codes.

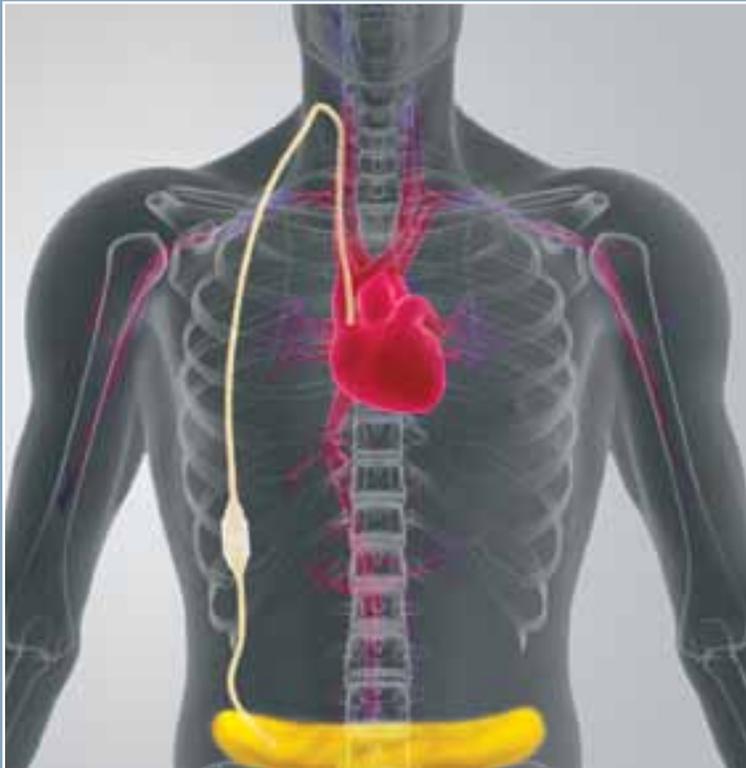
Procedural options:

The Denver shunt offers procedural options to meet varying physician preferences.

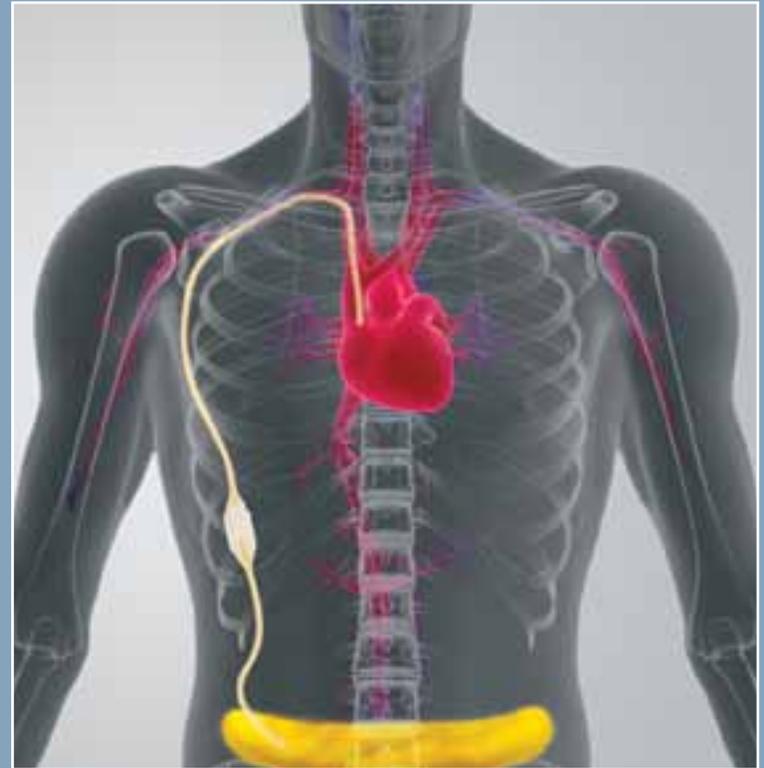
The Denver shunt may be placed via the internal jugular or subclavian route. It is also cleared for peritoneo-saphenous placement.

Historically, a surgical approach was used. However, over the past decade, percutaneous placement has become more common to minimize patient trauma and procedural risk. Denver shunt placement using the percutaneous technique is a minimally invasive procedure.

Internal jugular placement



Subclavian placement



If the Denver shunt is new to you, isn't it time you consider it for your patients with refractory ascites?

Successful physician and patient experience with the Denver shunt has continued to grow over the past decades, all over the world.

Peritoneovenous shunting may be the best option for your patient.

Consider PVS:

- For both malignant and non-malignant ascites
- As an alternative to conventional (repeated) paracentesis procedures
- For patients awaiting liver transplant
- As a potential alternative to transjugular intrahepatic portosystemic shunts (TIPS)

Here's what recent studies say about the success of PVS:

"Percutaneous placement of peritoneovenous shunt is a **safe, fast and inexpensive** procedure, extremely useful in resolution of refractory ascites, reducing symptoms and allowing effective palliation with a **great improvement in quality of life.**"¹

European Radiology, 2002

"Our results suggest that peritoneovenous shunting might be beneficial in patients with refractory ascites waiting for liver transplant and **could prevent postoperative acute renal failure.**"²

American Journal of Transplantation, 2005

"Peritoneovenous shunt placement provides an **effective treatment option** for patients with refractory malignant ascites in advanced cancer, and yields a higher likelihood of discharge compared with conventional paracentesis."³

Journal of Gastroenterology and Hepatology, 2007

If you've heard of the Denver shunt or tried it in the past, it's time to take another look.



Denver shunt ordering information

Denver ascites shunts	
Cat. no.	Description
42-2000	Denver ascites shunt: Double-valved, 15.5 Fr venous catheter
	Flow rate: 25 to 40 mL/min
42-2005	Denver ascites shunt: Single-valved, 15.5 Fr venous catheter
	Flow rate: 40 to 55 mL/min
Component	
42-3100	Tunneler, 18 Fr, 15" (for initial placement or revision)

Denver PAK (percutaneous access kits)	
Cat. no.	Description
42-2050	Denver PAK: Double-valved shunt, 11.5 Fr venous catheter
	Flow rate: 20 to 30 mL/min
42-2055	Denver PAK: Single-valved shunt, 11.5 Fr venous catheter
	Flow rate: 30 to 40 mL/min
<p>The following components are included in the PAK product codes:</p> <ul style="list-style-type: none"> • Ascites shunt with 11.5 Fr venous catheter and 15.5 Fr peritoneal catheter • 12 Fr peel-away introducer • 16 Fr peel-away introducer • J-tip guidewires (qty 2) • Syringe (12 mL) • 18G needles (qty 2) • 15 Fr, 13" tunneler 	

For Denver shunt revisions, the following components are available:

Replacement components	
Cat. no.	Description
42-2321	Venous catheter, 15.5 Fr, 60 cm
42-2322	Peritoneal catheter, 15.5 Fr, 27 cm
42-2521	Venous catheter, 11.5 Fr, 60 cm

Component	
Cat. no.	Description
42-3100	Tunneler, 18 Fr

Required component for all revisions	
Cat. no.	Description
42-3019	Nylon tubing connector

For more information or to place an order, contact your CareFusion Interventional Specialties Sales Representative or send an email to GMB-IS-Europe@carefusion.com

References:

- 1 Orsi, F., Grasso, R., Bonomo, G., Monti, C., et al. Percutaneous peritoneovenous shunt positioning: technique and preliminary results. *European Radiology*, 2002; 12:1188-1192.
- 2 Dumortier, J., Pianta, E., Le Derf, Y., Bernard, P., et al. Peritoneovenous Shunt as a Bridge to Liver Transplantation. *American Journal of Transplantation*, 2005; 5:1886-1892.
- 3 Seike, M., Maetani, I., Sakai, Y. Treatment of malignant ascites in patients with advanced cancer: Peritoneovenous shunt versus paracentesis. *Journal of Gastroenterology and Hepatology*, 2007; 22: 2161-2166.

For more information or to place an order contact your CareFusion Interventional Specialties Sales Representative send an E-Mail to

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