

A clearer path to success

Overcoming the obstructions that impact the performance of accepted wound drain designs

Dr. Raymond M. Dunn, Chief of Plastic and Reconstructive Surgery at UMass Memorial Medical Center in Worcester, MA shares his experience using Jackson-Pratt® Hemaduct® wound drains.

Leaving tradition behind

Wound drains are intended to facilitate healthy wound healing, help prevent infections and reduce pain. However, traditional drain and channel drain designs may fail to perform as intended if they become occluded by tissue ingrowth or clots.

The potential for drain occlusions is significant and occlusions may occur often. One study suggests that wound drains may become occluded as early as 1.52 days following surgery.¹ A second study discovered that 20 of the 21 explanted drains studied contained occlusions related to tissue ingrowth.²

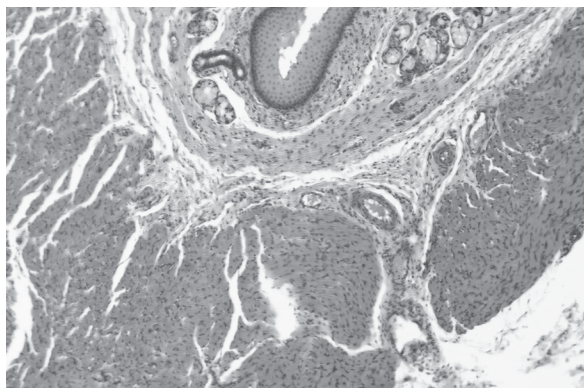


Image 1: Magnified soft-tissue. Drainage devices may occlude as early as 1.52 days following surgery.

Channel drains have become the wound drain of choice for many surgeons, because they are unaware that there is a better alternative. Within a channel drain, each channel spans the entire length of the drain segment. If an occlusion were to occur at any point along a channel, there is no way for both the fluid or negative pressure to circumvent it—potentially hindering the functionality of the channel. As a result, the drain may not remove sufficient fluid, which may increase the risk of post-operative infection and hospital readmission.

To help overcome this clinical challenge, Dr. Dunn converted to the Jackson-Pratt® Hemaduct® wound drain design, a patented “enhanced channel drain” that provides multiple fluid pathways via interconnected channels. The evolved wound drain design also includes closed channels to minimize the risk of tissue ingrowth altogether. He believes it is the only wound drain which allows fluid to cross into different channels, to be more effective in circumventing any potential obstructions such as soft tissue ingrowth.

What prompted Dr. Dunn to make the switch—and what have the results been to date?

Seeking a better way

As a plastic surgeon performing a variety of procedures, Dr. Dunn has used multiple wound drain designs on a regular basis for many years. So he is experienced with the shortcomings of traditional designs that were once the industry standard.

“Traditional perforated drains uniformly clog and are uncomfortable for the patient when removed,” Dr. Dunn said. Hemaduct® drains are uniquely constructed to overcome these obstacles.

“Wherever a blockage might exist, it may be bypassed by the novel design of the Hemaduct® wound drain system. It is a true advancement,” he said. And to Dr. Dunn, the impact is clear: “The difference of saving just one or two infections in your patient population is 100% important to those patients.”

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Clinically relevant trocar advantages

“There are several things about my experience with the Hemaduct product line that have been quite satisfactory. Let’s start with the tip of the drain and an aspect of the drain system that is often overlooked, namely the trocar,” Dr. Dunn said.

“Before I began to use Hemaduct® wound drains, the challenge was not always having a reliable device to place the drain. The trocar was either too dull or would sometimes disconnect from the end of the drain tube before insertion. I have never experienced that problem with the Hemaduct® system.”

Within the surgeon community, there is some debate about whether or not a trocar should be used. Historically, a surgeon may use an outside-in technique to position a drain. After making a small incision, a surgeon might insert a clamp through the skin to draw the drain out through the body cavity. According to Dr. Dunn, the use of a clamp is a less than ideal technique that creates a wider track where the drain exits the body and which may result in a greater potential for an ascending infection to the surgical site. Clinical studies have shown that this approach may result in a higher risk of drain site infections.

To address this issue, Hemaduct® wound drains are available with a trocar that is sterilized during the manufacturing process. The Hemaduct® wound drain trocar is a very sharp insertion device that enables a surgeon to safely and easily place the wound drain through the body cavity from the surgical site to the skin, using an inside-out drain placement technique that may help mitigate the risk of infection.

Hemaduct® trocars have other advantages as well. For example, they are contoured to exit the skin in a predictable way. They also create a tract for the drain path that is sufficiently long to help decrease the risk of ascending infection coming into the body cavity from where the drain is placed.

“The origin of many body cavity infections is the skin surrounding the incision. So the use of the Hemaduct® trocar has been a big advancement over time,” Dr. Dunn said. “As the literature suggests, I make my trocar stab wound two to three inches from the surgical site, to mitigate the risk of infection. I also apply a chlorhexidine gluconate gel pad at the area the drain tube exits the body. I have not had a single issue during the entire period that I’ve used this approach.”

Improving patient comfort and satisfaction

According to Dr. Dunn, another Hemaduct® system benefit is addressing issues with patient comfort and patient satisfaction when placing and removing wound drains.

Over time, many surgeons have adopted a traditional channel drain design that is hubless, meaning the drain remains the same diameter along its entire length. As a result, patients tend to experience less pain when it is removed—compared to traditional, perforated drains that feature hubs.

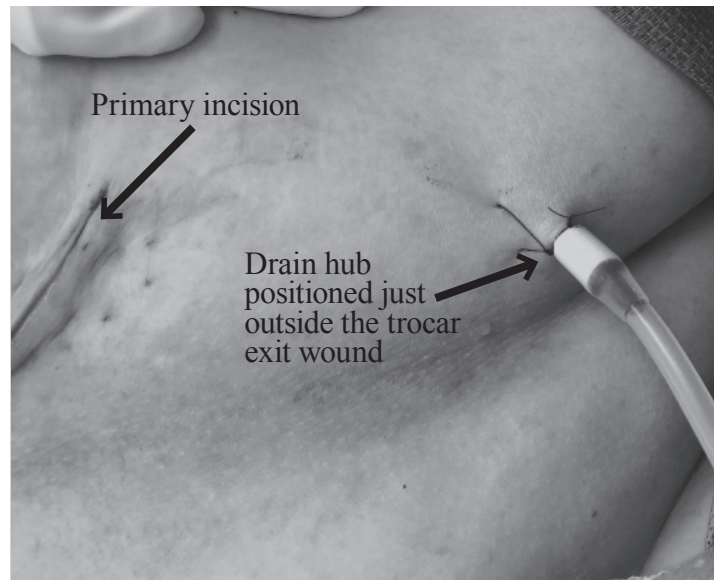


Image 2: The portion of the drain implanted is the same diameter along its entire length, making removal more comfortable for the patient.

In a traditional hubbed design, the drain segment is over-molded onto the drain tube, resulting in a larger diameter at the hub junction. When the drain and hub are pulled through the patient for removal, the soft tissue expands around the wider diameter hub, causing pain and discomfort for the patient.

To avoid this challenge, Dr. Dunn uses the 3/4 ducted round Hemaduct® drain, which includes a hub. But because he places the hub just outside the incision, the portion of the drain implanted is the same diameter along its entire length, making removal more comfortable for the patient (see Image 2). As a result, Dr. Dunn is able to achieve the reduced pain effect found with hubless designs.

“Patients can have high anxiety when it’s time to remove the drain. But Hemaduct® drains are very atraumatic; they are slippery and easy to remove,” Dr. Dunn said. “I’ve used Hemaduct® drains with thousands of patients and have never had an issue with discomfort.”

“In fact, Hemaduct® drains are so benign in terms of patient tolerance that I don’t hesitate to use multiple drains. For example, I may use two for breast reduction, one or two for body contouring, two for abdominoplasty and three to four for large abdominal wall reconstructive surgery.”

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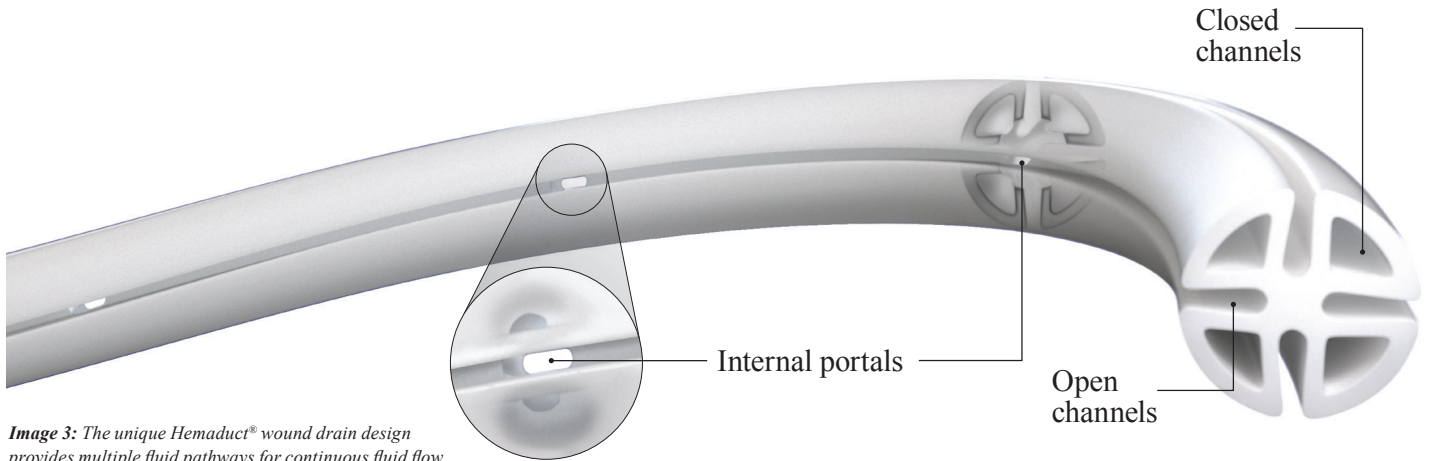


Image 3: The unique Hemaduct® wound drain design provides multiple fluid pathways for continuous fluid flow.

Making the case for conversion

In years past, surgeons could more readily request and receive preference items. But as provider organizations become more cost sensitive, the need is greater to present evidence to OR directors and hospital value committees that supports converting to a higher-priced alternative. “If the price is comparative to a traditional channel drain—as it is with the Hemaduct® system—it’s easier to make the case for change,” Dr. Dunn said.

Many surgeons are unaware that a more effective wound drain alternative is available. But once they discover the Hemaduct® system, surgeons quickly value its advantages. “Hemaduct® is an enhanced channel drain that is easy to use, more effective, extremely comfortable and competitive in cost,” Dr. Dunn said. “The combination makes for an easy conversion. There’s an extremely low barrier for me to use the Hemaduct® system.”

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About Raymond M. Dunn, MD

Dr. Dunn is Chief of Plastic and Reconstructive Surgery at UMass Memorial Medical Center, the academic medical center of the UMass Memorial Medical Health Care system in Worcester, Massachusetts. Consistently named to the list of Best Doctors® in the nation, Dr. Dunn is also one of America’s Top Plastic Surgeons and has appeared in Who’s Who Among America’s Teachers. A fellow of the American College of Surgeons, Dr. Dunn specializes in breast augmentation, body contouring, eyelid surgery and liposuction. His reconstructive surgical focus is on chronic wounds of the lower legs and traumatic injuries requiring microsurgical reconstruction.

Disclosures: Cardinal Health has compensated Dr. Dunn for his time to be interviewed. The views and opinions expressed by Dr. Dunn are based on his own clinical experiences and do not necessarily reflect those of Cardinal Health.

1 Karimov, Jamshid H. et al. Incidence of chest tube clogging after cardiac surgery: a single-centre prospective observational study. *European Journal of Cardio-Thoracic Surgery* Vol 44 (2013) p 1029-1036.

2 Zacharski et al Mechanism of Obstructions of Closed-wound Suction Tubing Arch Surgical – Vol 114 May 1979 p 614-615