# The EVAR Toolbox

A wide range of accessories is essential for the best technical results.

**BY THOMAS LARZON, MD**

Endovascular repair of the aorta has become a widely accepted treatment modality since its introduction in the early 1990s. As endovascular indications and treatment options have expanded, it is clear that having a wide range of available accessories is essential for achieving optimal results.

## CATHETERS

Not only are catheters used as guiding accessories and as a component in the Seldinger technique, but they can also be of high value as indicators for branch vessels. In the treatment of thoracoabdominal aortic aneurysms, when four vessels are normally planned to be branched with stent grafts, it is especially important that all efforts are made to reduce the amount of contrast administered. A simple method we use is to hook a catheter (eg, a universal flush catheter) at the origin of the branch vessel. Another method is to place a 4-F catheter into the target vessel. This will facilitate placement of the aortic component and make it easier to obtain access to the target vessel whether the fenestrated or branched technique is used.

## BALLOONS

The GORE® Tri-Lobe Balloon (Gore & Associates, Flagstaff, AZ) is especially valuable in the thoracic arch.

**Figure 1. The GORE® Tri-Lobe Balloon consists of three separate balloons and comes in two different sizes, both in 18-F introducer systems.**

**Figure 2. Minimal leaking of blood through the GORE® DrySeal Sheath (Gore & Associates) after routine endovascular aneurysm repair.**

For example, we have used the GORE® Tri-Lobe Balloon to mimic a stent in assessing endoleaks. The normal use of elastic aortic balloons is for expanding implanted stent grafts to achieve better alignment against the arterial wall. In the thoracic portion of the aorta, the use of aortic balloons requires more restrictions because there is a risk of balloon and endoprosthesis migration. Also, to decrease the cardiac load, induced hypotension or super pacing might be necessary. The GORE® Tri-Lobe Balloon Catheter is an exception, with its ability to maintain up to 80% of blood flow through the system while it is inflated. The system consists of three different balloons. When the system is inflated through its single port, three separate balloons expand rapidly, uniformly, and simultaneously, and in between the balloons, a significant amount of blood can pass through (Figure 1). The GORE® Tri-Lobe Balloon is very versatile, does not need an introducer to prevent it from distal migration, and can be used in various situations.

If a type I endoleak is revealed on completion angiography, the balloon can be inflated inside the device. If the endoleak then disappears, this will indicate that a bare stent for alignment purposes would be of benefit. On the other hand, if the endoleak still exists, this is an indication that proximal extension with fabrics could be of value.

**Figure 3. The GORE® DrySeal Sheath can accommodate more than one catheter without leaking a significant amount of blood.**

## INTRODUCERS

Percutaneous access for endovascular aneurysm repair has continued to gain popularity. It is faster and possibly less traumatic than open access and has the potential to significantly decrease procedural blood loss. Yet, a limiting factor associated with introducers has been the occurrence of blood leaking through the valve. However, the new GORE® DrySeal Sheath has the ability to provide true hemostasis (Figure 2). The sheath is pressurized with a 2.5-mL valve-inflation syringe to create a seal, and no further manipulation is required to maintain hemostasis. The sheath is helpful in any type of aortic intervention, with the ability to accommodate many catheters and guidewires (Figure 3), making it especially valuable in challenging endovascular aneurysm repair and thoracic endovascular aneurysm repair cases or in thoracoabdominal aneurysms in which access for multiple wires and catheter access is essential. As a result, we can frequently avoid multiple accesses in the same groin in these complicated cases and avoid repeated catheterization, as well as a less-traumatic approach to the iliac artery.

## CONCLUSION

Standard accessories, such as catheters, balloons, and introducers, can be used in many different situations. In fact, they represent an important part of the toolbox needed to assist with endovascular repairs that are beyond the more standardized procedures, as they can be used to facilitate the orientation of stent grafts to achieve access to target vessels, to determine a strategy of endoleak treatment, and to minimize blood loss in a percutaneous case. ■

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