

Percutaneous EVAR:

Real Advance or Gimmick?

Examining the advantages of this procedure versus those of a traditional surgical cutdown approach.

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The idea to perform large-catheter (> 18 F) endovascular procedures using a totally percutaneous, nonsurgical approach seemed bold and probably dangerous when first introduced more than 10 years ago.¹ The recent availability of the then brand new Prostar XL closure device (Abbott Vascular, Santa Clara, CA) had made it technically possible. A decade and hundreds (if not thousands) of aortic endograft cases later, I would be quick to accept that percutaneous endovascular aneurysm repair (EVAR) has proven to be feasible and reasonably safe, and the technique appears to be gaining in favor and adoption across the various specialties involved in the “EVAR space,” surgeons included. However, it must also be acknowledged that surgeons (in general) continue to view the alleged wisdom of closing large femoral arterial holes percutaneously with lingering disbelief and suspicion. Such negative views may well evolve into growing acceptance as the percutaneous revolution continues its unstoppable march forward to take over the world.

This article discusses the pertinent issue of whether percutaneous EVAR offers any advantages over the more traditional surgical cutdown approach. A good start would be a review of the perceived disadvantages of the groin cutdown (see *Alleged Disadvantages of the Groin Cutdown Approach*). With the (important) exception of one team—likely the most experienced in the world—that found the percutaneous approach to be clearly superior,² several recent studies and publications attest to the fact that both techniques produce essentially equivalent clinical outcomes.^{3,4} It is also quite apparent that some of the problems with the surgical cutdown approach have been exaggerated or, at times, misrepresented altogether:

ALLEGED DISADVANTAGES OF THE GROIN CUTDOWN APPROACH

- General anesthesia required
- Increased blood loss
- Femoral nerve neuropathy
- Increased in-hospital length of stay
- Lengthening of recovery time
- Wound-healing complications

- A groin cutdown does not necessitate general anesthesia. In fact, the operation is often and easily performed under local anesthesia.

- Increased blood loss is not inherent to the surgical cutdown. Some of the same factors leading to excessive blood loss might occur with either procedure; in fact, it is not unusual for the percutaneous approach to result in a larger amount of blood loss in the hands of inexperienced operators.

- The alleged increase in length of hospital stay cannot be substantiated; the majority of patients can be discharged home on the first postoperative day, regardless of whether the approach is percutaneous or surgical.^{5,6}

- Femoral nerve neuropathy does occur, but its incidence is quite low and does not constitute a significant problem for the vast majority of patients.

- Wound-healing complications are a real issue but with a relatively low incidence. Nonetheless, percutaneous EVAR does seem to offer an advantage in this regard.⁷ Making a short oblique incision (as most EVAR surgeons do today) goes a long way to minimizing such complications when using a surgical cutdown.

The other side of this argument is something we do not often hear about: the obvious advantages of the surgical cutdown approach such as secure hemostasis and optimal arterial repair, as well as applicability to most if not all abdominal aortic aneurysm patients. By the same token, it is most appropriate to dwell for a moment on the inherent problems and limitations of the percutaneous technique resulting in contraindications to percutaneous EVAR (see *Contraindications to Percutaneous EVAR*). Obesity has emerged as an important issue: recent studies and observations confirm that percutaneous EVAR can be performed safely in the face of marked or morbid obesity, despite the difficulties of performing the arterial puncture in that setting. At the same time, obesity tends to increase the complexity and risks of the surgical approach. So, it seems that obesity should be viewed (increasingly) as a good indication for the percutaneous procedure and not the other way around.³

Is percutaneous EVAR a technique everyone should aim to learn and adopt? Probably not at this time and not until truly percutaneous endograft devices are developed and become commercially available. It is not so much an issue of whether EVAR can be done without a surgical incision; the real matter with percutaneous EVAR relates to the ability (and wisdom) of closing a very large arterial hole without direct visualization of the accessed vessel and not using a precise and secure surgical technique. With few exceptions, currently available EVAR devices continue to feature a large (> 18 F) delivery system. This whole argument may well fade and become a thing of the past when stent graft technologies evolve to become percutaneous devices. And most experts would agree the percutaneous label (in the EVAR landscape) could be affixed to a delivery system that is less than 16 F in outer diameter.

CONCLUSION

Percutaneous EVAR is definitely not a gimmick. Current techniques and developments should be viewed with interest and even enthusiasm, for they are likely to pave the way for the future of endovascular aortic repair. However, I do not believe the time is now for the percutaneous procedure to become the preferred technique in the hands of most operators. Not surprisingly, case selection and operator experience have been found to be of paramount importance to produce safety and optimal results with percutaneous EVAR. Contraindications must be carefully sorted out and respected. Both the Prostar XL and the Proglide (Abbott Vascular) closure devices^{8,9} have proved effective when used in a preclose manner. For surgeons who wish to

CONTRAINDICATIONS TO PERCUTANEOUS EVAR

- Calcification in the common femoral artery (circumferential, anterior wall)
- Anatomically high femoral bifurcation (at or above the inguinal ligament)
- Multiple dense groin scars
- Femoral arterial graft

become percutaneous EVAR operators, the fascial closure/mini-cutdown approach¹⁰ may well represent a worthy evolutionary step before going all percutaneous. I, for one, find this technique to be quite useful.

Lastly, I would incur a significant omission if I were to wrap up this article without mentioning what many *Endovascular Today* readers would immediately recognize as obvious and perhaps self-evident: percutaneous EVAR developments represent a significant opportunity for nonsurgical operators who aspire to become active in the EVAR space. Furthermore, I am sure an increasing number of such procedures will be performed without surgeons' input or participation. Whether good or bad, it is inevitable that a few patients will (sooner or later) require conversion of the access procedure to an open surgical operation. It is therefore paramount that such capabilities exist at the given institution at that point in time, without exception. ■

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