All roads lead to Rome -- Direct cervical carotid artery access in carotid artery intervention

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Carotid artery stenting (CAS) is an alternative treatment for patients with severe carotid artery stenosis, especially those with prohibitively high surgical risks. The routine vascular access for CAS is the femoral route. Although the technical success rate reported in a large series have been relatively high, difficulty in accessing the supra-aortic vessels from the femoral approach still accounts for procedural failure in 2% to 7% of cases. The reasons for this failure may be tortuosity and redundancy of the aortic arch, congenital anomalous or aberrant cephalad trunk configuration, or stenosis or occlusion in the abdominal aorta.

To overcome these clinical and anatomical problems, brachial or axillary arterial accesses for CAS have been reported in the literature. With further improvements on device profile and deliverability, the radial artery approach has also been recently advocated. Not only will these approaches possibly mitigate the technical difficulty of the femoral approach when dealing with diseased aorta patients, they may also reduce the time for bed rest and hospitalization after intervention. However, none of these “alternative” measures have proven to reduce procedural complication when compared to the femoral approach. In addition, like the femoral approach, none of these “arm” techniques can be safely applied to every patient with ipsilateral, proximal or ostial common carotid artery lesions.

The direct cervical approach, in contrast, ameliorates all the issues associated with the femoral as well as the “arm” approaches and has been reported in the literature. Under this direct approach, there is no limitation or pathology through the arch configuration, and common carotid artery lesions are no longer in the way. However, as surgical cutdown and suture of the arteriotomy is required, the direct approach carries the same surgical risks of an open endarterectomy. Direct percutaneous arterial puncture and sheath placement will only be possible with the use of a vascular closure device at the completion of the procedure to achieve hemostasis, as nicely demonstrated by O’Steen M et al in this June issue of the Journal of Geriatric Cardiology. An attempt to cannulate the left common carotid artery with a 6F Shuttle sheath via the femoral approach was not successful in a 98 year-old man with prohibitive surgical risks. The symptomatic left internal carotid artery stenosis was finally treated via direct percutaneous cervical puncture, with the application of a Boomerang hemostasis wire (CARDIVA Medical, Inc, Mountain View, CA).

There are several issues that need to be discussed. A patient with an occluded contralateral carotid artery will not tolerate any ipsilateral flow interruption, so the use of any form of local compression for hemostasis of the carotid puncture is to be avoided. The selection of a Boomerang wire in this patient is therefore brilliant, but we have to emphasize the bare fact that the long-term experience with this device is not clear. Risk and benefit should always be balanced before any treatment is to be applied, especially in a 98 year-old patient with symptomatic carotid stenosis. This judgment can only be made after thorough evaluation of the clinical situation and assessment of every alternative approach. After all, we have to remember that the purpose of CAS is to prevent any new ischemic stroke.

Like the old saying “All roads lead to Rome,” interventional cardiologists should be familiar with various accesses to the carotid arteries, including the direct puncture in order to select a best approach for an ultimate procedural and clinical success.

References


