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Transcarotid: A sign from above?

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Key Points

- Transcarotid (TC) access is primarily being performed in high risk patients and early mortalities are likely due to comorbidities.
- Otherwise, transcarotid access has low rates of vascular complications and perioperative strokes.
- The length of stay and rates of major bleeding should be targeted as areas for improvement.

Sharma et al.'s meta-analysis is timely as the medical community is at a crossroads. With the expansion of transcatheter aortic valve replacement (TAVR), implanting centers with variable experience and skill level will need to make some choices. Currently, only 4.7% cases utilize nontransfemoral access and the median number of nontransfemoral procedures is four cases.^{1,2} As last measure, 662 TC TAVR were performed in the United States amongst 72,991 TAVR procedures, making TC access a niche procedure. Given that procedural volume is directly proportional to outcomes, alternative access should be concentrated at tertiary centers of excellence and operators will need to decide which alternative access will be the primary choice.²

Patients analyzed in this study were largely high risk and this may explain the relatively high 30-day mortality rate. Currently, the Transcatheter Valve Therapeutics (TVT) national registry reports a 2.26% 30-day mortality rate in contrast to the 6.7% reported by Sharma et al.'s analysis.¹ It should be noted that the TC patients studied had a

mean Society of Thoracic Surgery 30-day mortality risk of $7.9 \pm 3.3\%$, reflecting a high-risk cohort. These outcomes resemble 2013 30-day mortality rates (6.59%), data from an era of only high to prohibitive risk TAVR patients, corroborating that comorbidities likely determined mortality rather than TAVR access.

Controversies in using carotid access include screening for cerebral vascular disease and Circle of Willis patency. Initial transcarotid access utilized antegrade shunting to maintain cerebral perfusion, but shunting has largely been abandoned in TC TAVR.³ Some sites routinely use computed tomography (CT), magnetic resonance angiography (MRA), or only carotid Doppler to determine contralateral artery and cerebral vascular patency, but the practice has yet to be standardized. Other adjuncts for assessing neurological reserve such as oximetry or electroencephalographic monitor are also not uniformly utilized and their merits are unclear as they did not impact outcomes.⁴ While carotid access via surgical cutdown and subsequent repair appears to be standard, screening and managing cerebrovascular disease is unclear. Despite the heterogeneity in strategies, the rate of stroke was consistent, ranging from 3.1 to 4.8% and still lower than the rate of stroke found in the TVT registry for transaxillary access of 6.3%, suggesting that Circle of Willis screening and cerebral oxygenation management make little difference in performing TC TAVR.⁵

The superficial location and surgical exposure lends to a low rate of vascular complications. At 2.5%, TC TAVR vascular complication rate rivals that of axillary/subclavian (2.5%) and is approaching transfemoral access (1.26%).^{1,5} Surprisingly, the low vascular complication rate was accompanied by a relatively high rate of major bleeding (7%) and long length of stay of 7.7 days (LOS). It is unclear if the bleeding was from the surgical access or a secondary vascular access. In patients with high burdens of vascular disease, even small bore femoral access can be associated with significant complications such as major bleeding and operators should strongly consider utilization of the radial approach. As for the LOS, analyzed studies may reflect the early experience of heart teams in caring for patients with surgical, alternative access. Nevertheless, carotid repair should not inhibit ambulation and it is likely that significant strides have been made in postoperative management and mobilization.

All in all, TC is growing as an alternative to femoral access. Superficial location, familiarity and new data showing acceptable strokes rates make it an increasingly popular choice amongst surgical colleagues. Ultimately, the best access for each patient should be chosen based on anatomy and local expertise.

CONFLICTS OF INTEREST

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