Transaxillary valve surgery in Dresden: a 99% concept

Ali Taghizadeh-Waghefi, Sebastian Arzt, Konstantin Alexiou, Klaus Matschke, Manuel Wilbring, Utz Kappert

Department of Cardiac Surgery, University Heart Center Dresden, Dresden, Germany

Correspondence to: Ali Taghizadeh-Waghefi, MD. Department of Cardiac Surgery, University Heart Center Dresden, Fetscherstrasse 76, 01307 Dresden, Germany. Email: ali.waghefi@gmail.com.

Keywords: Minimally invasive cardiac surgery (MICS); transaxillary access; sternum-preserving

Submitted Aug 06, 2026. Accepted for publication Sep 09, 2026. Published online Sep 24, 2026.
doi: 10.21037/acs-2026-0280-tdv
View this article at: https://dx.doi.org/10.21037/acs-2026-0280-tdv

For more than half a century, the median sternotomy defined cardiac surgery; in our practice, it is no longer the default but a bail-out access, reserved for the uncommon situations in which a sternum-preserving approach is not feasible. For most of the field, full sternotomy has remained the default for valve surgery precisely because it is universal and forgiving; making a sternum-preserving route the rule, rather than an option offered to a favorable few, demands a fundamentally different way of organizing a cardiac surgery program. It marks the transition from selective innovation to routine practice. The challenge is therefore no longer technical feasibility, but institutional implementation. Among consecutive patients undergoing isolated surgical aortic valve replacement, the share approached through a right-lateral transaxillary access rose from 18.7% to 97.8% over 4 years (1). We have come to describe this as a 99% concept —not a boutique technique reserved for the slim, the young, or the photogenic, but the default route for very nearly everyone who comes to surgery. Across the first 1,000 consecutive transaxillary aortic valve replacements, 30-day mortality was 0.9%, with cross-clamp times competitive with conventional access (1). That depth has a counterpart in breadth. Across 2,486 consecutive transaxillary procedures, a single right-lateral incision has served the full structural-heart spectrum—isolated and combined aortic, mitral, and tricuspid surgery, myxoma resection, septal-defect closure, and ascending aortic replacement—with conversion to sternotomy in under 2% and no intraoperative mortality (2).

Thus, a near-total sternum-preserving practice is an institutional achievement before it is a technical one. Reaching it meant extending the access to precisely the patients usually invoked to justify staying with the sternotomy: the elderly, the obese, the anatomically awkward. In high-risk groups such as patients with obesity, the transaxillary route was not merely feasible but associated with a survival advantage over sternotomy (3). None of this followed from a single pair of gifted hands. It followed from reorganizing anesthesia, perfusion, nursing, and intensive care around one reproducible pathway, so that the access stopped being an event and became routine. That is the difference between a virtuoso series and a 99% concept.

© AME Publishing Company.

What proved harder than performing the operation was describing it. Once a sternum-preserving route becomes a department's default, every attempt to audit it, compare it, or teach it runs into the same obstacle: the available vocabulary cannot quite say what we are doing. "Minimally invasive cardiac surgery" is not a technique but an umbrella, and the labels beneath it—MICS, robot-assisted and video-assisted surgery, the totally endoscopic approach, direct-vision microthoracotomy—mostly name the way the operative field is visualized rather than the way the chest is entered. No agreed definition disciplines this list: 'minimally invasive' is asked to cover everything from a divided sternum to an intact one, and the same operation is renamed from one center to the next (4). As the nomenclature multiplies around the camera, the robot, and the endoscope, it obscures the one variable that actually determines how invasive an operation is to the chest wall—whether the thoracic skeleton is divided.

It helps to separate two dimensions that are routinely conflated: the extent of skeletal disruption and the degree of technical support. They are orthogonal. A robotic procedure and our direct-vision transaxillary procedure may be neighbors on the skeletal dimension—both leave the sternum and ribs intact—while sitting at opposite extremes of technical support. A partial sternotomy, conversely, reduces the incision but still divides bone. This is why two operations that feel worlds apart in the operating room—a robotic case and a transaxillary one under direct vision—belong together, while two routinely spoken of in the same breath—a partial and a full sternotomy—do not. Of the two, the skeletal dimension is the clinically decisive one: the categorical break in cardiac access is not between direct vision and robotics, but between an operation that divides the thoracic skeleton and one that does not. What matters, in other words, is sternum-preserving intercostal access—reaching the heart through a native intercostal space, without dividing the sternum, rib, or costal cartilage, whatever the visualization. Our transaxillary approach is simply one way of achieving it—the one that suited our team.

Seen this way, such an operation is not an exotic departure but conventional cardiac surgery delivered through an intercostal portal. Peripheral cannulation and a confined intercostal corridor aside, the intracardiac operation is unchanged: annular sutures, prosthesis sizing and orientation, and preservation of the subvalvular apparatus, performed to standards unchanged for half a century (5). That is also why the approach proved teachable rather than idiosyncratic—a curriculum more than a mystique—and why it could be handed to trainees instead of remaining the signature of one surgeon. The instrument used to see into the chest mattered far less than whether the chest had to be broken open to begin with. Framed as access rather than technology, the route resolves into a sequence of teachable steps rather than a barrier of personal reputation —which is what allowed a department, rather than an individual, to own it.

If a single center can make the intact skeleton the default for nearly all comers, the lesson is larger than any one access. It is that the meaningful category is the genus, not the instrument: whether the chest is entered without dividing the skeleton, not which device is used to see inside it. Our transaxillary 99% concept is one instance; video-assisted, totally endoscopic, and robotic approaches are others, separated from ours by technical support but not by access. Classifying by access rather than by the gadget would let the field align its nomenclature, simplify its training, and compare its outcomes honestly. Transcatheter therapy remains a separate interventional discipline; this is an argument about surgical access. The instruments will keep changing. The

© AME Publishing Company.

access—sternum preserved, ribs intact, the heart reached between them—is the concept worth keeping.

Acknowledgments

None.

Footnote

Funding: None.

Conflicts of Interest: The authors are cardiac surgeons at the University Heart Center Dresden who developed and routinely perform the transaxillary approach discussed in this editorial; several of the cited studies originate from their own institution. The authors have no other conflicts of interest to declare.

Open Access Statement: This is an Open Access article distributed in accordance with the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: https://creativecommons.org/licenses/by-nc-nd/4.0/.

References

1. Wilbring M, Arzt S, Taghizadeh-Waghefi A, et al. The transaxillary concept for minimally invasive isolated aortic valve replacement: results of 1000 consecutive patients. Eur J Cardiothorac Surg 2024;66:ezae427.
2. Taghizadeh-Waghefi A, Arzt S, De Angelis V, et al. The Transaxillary Access in a One-Access Concept for Treatment of Isolated or Combined Structural Heart Disease: Access-Related Outcomes. Thorac Cardiovasc Surg 2026;74:DGTHG-V79.
3. Taghizadeh-Waghefi A, Petrov A, Arzt S, et al. Minimally Invasive Aortic Valve Replacement for High-Risk Populations: Transaxillary Access Enhances Survival in Patients with Obesity. J Clin Med 2024;13:6529.
4. Doenst T, Diab M, Sponholz C, et al. The Opportunities and Limitations of Minimally Invasive Cardiac Surgery. Dtsch Arztebl Int 2017;114:777-84.
5. Wilbring M, Alexiou K, Schmidt T, et al. Safety and Efficacy of the Transaxillary Access for Minimally Invasive Aortic Valve Surgery. Medicina (Kaunas) 2023;59:160.

Cite this article as: Taghizadeh-Waghefi A, Arzt S, Alexiou K, Matschke K, Wilbring M, Kappert U. Transaxillary valve surgery in Dresden: a 99% concept. Ann Cardiothorac Surg 2026;15(5):67. doi: 10.21037/acs-2026-0280-tdv