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References

1. Navia D, Vrancic M, Piccinini F, Camporotondo M, Thierer J, Gil C, et al. Is the second internal thoracic artery better than the radial artery in total arterial off pump coronary artery bypass grafting? A propensity score-matched follow-up study. *J Thorac Cardiovasc Surg.* 2014;147:632-8.
2. Zacharias A, Habib RH, Schwann TA, Riordan CJ, Durham SJ, Shah A. Improved survival with radial artery versus vein conduits in coronary bypass surgery with left internal thoracic artery to left anterior descending artery grafting. *Circulation.* 2004;109:1489-96.
3. Schwann TA, Al-Shaar L, Engoren M, Habib RH. Late effects of radial artery versus saphenous vein grafting for multivessel coronary bypass surgery in diabetics: a propensity matched analysis. *Eur J Cardiothorac Surg.* 2013;44:701-10.
4. Engoren MC, Habib RH, Zacharias A, Schwann TA, Riordan CJ, Durham SJ. Effect of blood transfusion on long-term survival after cardiac operation. *Ann Thorac Surg.* 2002;74:1180-6.
5. LaPar DJ, Giovanni F, Crosby IK, Fonner E Jr, Speir AM, Kron IL, et al. The challenge of achieving 1% mortality for coronary artery bypass grafting: a multi-institution Society of Thoracic Surgeons database analysis. Presented at: 2014 AATS Annual Meeting; April 26-30, 2014; Toronto, Canada. Available at: <http://www.aats.org/annualmeeting/Program-Books/2013/F5.cgi/>.

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SHOULD SUTURELESS AORTIC VALVE REPLACEMENT BE PREFERRED ONLY FOR DECREASING AORTIC CROSSCLAMP TIME?

To the Editor:

We have read the article by Minh and colleagues¹ with great interest. We appreciate the authors' innovative approach applied to concomitant aortic and mitral valve diseases. The efforts for defining new treatment modalities have great importance and are indispensable for scientific development. However, the new approach should scientifically correct the shortcomings of the previously performed procedure. With this concern, we would like to discuss the procedure performed by the authors.

The only difference between sutureless aortic valve replacement (AVR) and surgical AVR is the decreased aortic crossclamping time. The potential advantages of the procedure are based on this fact. However, surgical steps, including sternotomy, cardiopulmonary bypass, aortic crossclamping, cardioplegic arrest of the heart, and aortotomy, are all the same when comparing both procedures. Therefore, the desired effect may not be demonstrated in the long-term results, and the superiority of sutureless AVR over conventional AVR in octogenarians may not be provided by only decreasing the aortic crossclamp time, because a large gap cannot be created between the 2 methods when considering aortic crossclamp time. In addition, cardiac damage is related to how the heart is protected rather than how long the clamp is in place.²

The prosthesis is specifically designed. Briefly, it consists of 2 cylindrical ring segments on the proximal ("outflow" ring) and distal ("inflow" ring) sides.³ Outflow and inflow rings have been seated above and below the aortic annulus, respectively. Although the sutureless anchoring system reduces crossclamping time, it produces an outward force affecting the aortic annulus during balloon dilatation of the prosthesis. The force used for dilatation was reported as 3 and 4 atm by Flameng and colleagues⁴ and Hoang Minh and colleagues,¹ respectively, that is, the pressures were equal to 2280 and 3040 mm Hg, respectively. The effects of the force on the annulus were not temporary by means of the acquired constant shape of the prosthesis. This may be the reason for permanent pacemaker implantation¹ and severe bleeding secondary to rupture of the aortic annulus.⁵ Except in the article by D'Onofrio and colleagues,⁵ the regions of life-threatening bleeding were not explained in the articles.^{1,3,4}

Determining whether the procedure is safe or not is important for the readers.

After a successful implantation, interaction between the outward

force of the prosthesis and the opposite resistance forces of the aortic annulus tissue provides tight stabilization. Loosening in the resistance forces of the aortic annulus tissue may cause paravalvular leak over time because the aortic annulus is not a stationary structure; it is always in motion. Although Hoang Minh and colleagues¹ did not observe paravalvular leak, Folliguet and colleagues³ reported 9 patients (4%) with paravalvular leak (7 patients in the early follow-up period and 2 patients in the late follow-up period).

Objective evaluation of the different aspects of the procedure may shed light on new methods to be applied in the future. This approach may be appreciated by the next generation.

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References

1. Minh TH, Mazine A, Bouhout I, El-Hamamsy I, Carrier M, Bouchard D, et al. Expanding the indication for sutureless aortic valve replacement to patients with mitral disease. *J Thorac Cardiovasc Surg.* In press.
2. Kaiser LR, Kron IL, Spray TL. Myocardial protection. In: Athanasuleas CL, Buckberg GD, eds. *Mastery of cardiothoracic surgery*. 2nd ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2007:318.
3. Folliguet TA, Laborde F, Zannis K, Ghorayeb G, Haverich A, Shrestha M. Sutureless pericardial aortic valve replacement: results of two European centers. *Ann Thorac Surg.* 2012;93:1483-8.
4. Flameng W, Herregods MC, Hermans H, Van der Mieren G, Vercauteren M, Poortmans G, et al. Effect of sutureless implantation of the Perceval S aortic valve bioprosthesis on intraoperative and

early postoperative outcomes. *J Thorac Cardiovasc Surg.* 2011;142:1453-7.

5. D'Onofrio A, Messina A, Lorusso R, Alfieri OR, Fusari M, Rubino P, et al. Sutureless aortic valve replacement as an alternative treatment for patients belonging to the "gray zone" between transcatheter aortic valve implantation and conventional surgery: a propensity-matched, multicenter analysis. *J Thorac Cardiovasc Surg.* 2012;144:1010-6.

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LEARNING CURVE FOR VIDEO-ASSISTED THORACOSCOPIC LOBECTOMY

To the Editor:

Since its introduction 2 decades ago, video-assisted thoracoscopic surgery (VATS) lobectomy for non-small cell lung cancer has evolved to become a safe and effective alternative to the conventional thoracotomy approach. Contrary to suggestions that VATS is associated with an increased risk of complications compared with open operations,¹ the current literature suggests VATS may offer superior perioperative outcomes compared with open thoracotomy in propensity-matched patients, with comparable long-term oncologic and survival outcomes.^{2,3} With increasing acceptance from the thoracic community, a vast number of surgeons are learning the VATS lobectomy technique internationally.

Li and colleagues¹ presented a timely and descriptive manuscript to examine the initial learning curve of 2 thoracic surgeons for VATS lobectomy. The authors eloquently distinguished the difference between a basic level of competence, including safety and efficacy, and a higher level of proficiency, which required an additional level of efficiency and consistency. Cumulative sum analysis was performed to assess efficiency, and the authors reported that this was achieved at different intervals for different end points, such as operating duration and blood loss. Overall, the authors concluded that 100 cases

were required to develop efficiency, whereas consistency was attained after 200 or more cases.

Such statistical analyses are of great interest, but broader interpretation is limited by the inclusion of only 2 surgeons. Previous studies on VATS lobectomy have suggested that 50 cases are required to overcome the initial learning curve.⁴ However, a number of factors may contribute to this process, including the attendance of mentoring workshops and fellowships, initial supervision by experienced VATS surgeons, training of supporting staff, and optimal instrumentation. None of these factors were discussed in detail, but the authors did acknowledge that the surgeons involved in this study had no VATS mentorship available as their level of expertise developed, and the presence of mentorship may have substantially shortened the time and case load required to achieve proficiency.¹

Pioneers of the VATS lobectomy procedure varied in their technical approach and were limited by a lack of specialized instrumentation and mentoring. However, with technologic advances and clinical experience, standardized techniques have been defined and workshop programs have been developed to enhance the safety of VATS lobectomy, particularly in the hands of inexperienced surgeons. A recent Consensus Statement by international VATS lobectomy experts recommended that 50 cases are required by a surgeon to achieve technical proficiency; 50 annual resident cases are required for an institution to be recognized as a VATS lobectomy training center, and 20 cases or more should be performed annually by a surgeon to maintain VATS lobectomy operative skills. Perhaps most significant, 100% of the 50 international VATS experts recommended that surgeons should be proctored during their initial learning experience.⁵ In view of these recommendations, we believe

that contemporary VATS surgeons should have an ethical and professional responsibility to undertake specialized training in recognized VATS lobectomy institutions and be proctored by experienced surgeons before initiating a VATS program. As the authors pointed out, this crucial period of overcoming the initial learning curve may have significant medical and legal ramifications.

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References

1. Li X, Wang J, Ferguson MK. Competence versus mastery: the time course for developing proficiency in video-assisted thoracoscopic lobectomy. *J Thorac Cardiovasc Surg.* 2014;147:1150-4.
2. Cao C, Zhu ZH, Yan TD, Wang Q, Jiang G, Liu L, et al. Video-assisted thoracic surgery versus open thoracotomy for non-small-cell lung cancer: a propensity score analysis based on a multi-institutional registry. *Eur J Cardiothoracic Surg.* 2013;44:849-54.
3. Cao C, Manganas C, Ang S, Yan TD. A meta-analysis of unmatched and matched patients comparing video-assisted thoracoscopic lobectomy and conventional open lobectomy. *Ann Cardiothorac Surg.* 2012;1:16-23.
4. Petersen RH, Hansen HJ. Learning curve associated with VATS lobectomy. *Ann Cardiothorac Surg.* 2012;1:47-50.
5. Yan TD, Cao C, D'Amico TA, Demmy TL, He J, Hansen H, et al. Video-assisted thoracoscopic surgery lobectomy at 20 years: a consensus statement. *Eur J Cardiothoracic Surg.* October 14, 2013 [Epub ahead of print].

<http://dx.doi.org/10.1016/j.jtcvs.2014.01.038>