Conflict of Interest Statement

Authors have nothing to disclose with regard to commercial support.

References

- Chitwood WR Jr. Clarence Crafoord and the first successful resection of a cardiac myxoma. *Ann Thorac Surg.* 1992;54:997-8.
- Murphy DA, Miller JS, Langford DA. Robot-assisted endoscopic excision of left atrial myxomas. *J Thorac Cardiovasc Surg.* 2005;130:596-7.
- Gao C, Yang M, Wang G, Wang J, Xiao C, Wu Y, et al. Excision of atrial myxoma using robotic technology. *J Thorac Cardiovasc Surg.* 2010;139:1282-5.
- Schilling J, Engel AM, Hassan M, Smith JM. Robotic excision of atrial myxoma. *J Card Surg.* 2012;27:423-6.
- Morgan JA, Peacock JC, Kohmoto T. Robotic techniques improve quality of life in patients undergoing atrial septal defect repair. *Ann Thorac Surg.* 2004;77:1328-33.
- Guirado VM, Taricco MA, Nobre MR, Couto EB Jr, Ribas ES, Meluzzi A, et al. Quality of life in adult intradural primary spinal tumors: 36-Item Short Form Health Survey correlation with McCormick and Aminoff-Logue scales. *J Neurosurg Spine.* 2013;19:721-35.
- Gao C, Yang M, Wang G, Wang J. Totally robotic resection of myxoma and atrial septal defect repair. *Interact Cardiovasc Thorac Surg.* 2008;7:947-50.
- Raju V, Burkhart HM, Cetta F Jr, Suri RM. Successful robot-assisted repair of congenital mitral valve regurgitation. *Ann Thorac Surg.* 2014;98:1085-7.
- Halkos ME, Liberman HA, Devireddy C, Walker P, Finn AV, Jaber W, et al. Early clinical and angiographic outcomes after robotic-assisted coronary artery bypass surgery. *J Thorac Cardiovasc Surg.* 2014;147:179-85.
- Xiao C, Gao C, Yang M. Totally robotic atrial septal defect closure: 7-year single-institution experience and follow-up. *Interact Cardiovasc Thorac Surg.* 2014;19:933-7.
- Bonatti J, Vetrovec G, Riga C, Wazni O, Stadler P. Robotic technology in cardiovascular medicine. *Nat Rev Cardiol.* 2014;11:266-75.
- Chitwood WR. Current status of endoscopic and robotic mitral valve surgery. *Ann Thorac Surg.* 2005;79:s2248-53.
- Modi P, Hassan A, Chitwood WR. Minimally invasive mitral valve surgery: a systematic review and meta-analysis. *Eur J Cardiothorac Surg.* 2008;34:943-52.
- Gao C, Yang M, Wu Y, Wang G, Xiao C, Zhao Y, et al. Early and midterm results of totally endoscopic coronary artery bypass grafting on the beating heart. *J Thorac Cardiovasc Surg.* 2011;142:843-9.
- Pineda AM, Santana O, Zamora C, Benjo AM, Lamas GA, Lamelas J. Outcomes of a minimally invasive approach compared with median sternotomy for the excision of benign cardiac masses. *Ann Thorac Surg.* 2011;91:1440-4.
- Bonaros N, Schachner T, Wiedemann D. Quality of life improvement after robotically assisted coronary artery bypass grafting. *Cardiology.* 2009;114:59-66.
- Gjeilo KH, Wahba A, Klepstad P, Lydersen S, Stenseth R. Survival and quality of life in an elderly cardiac surgery population: 5-year follow-up. *Eur J Cardiothorac Surg.* 2013;44:e182-8.
- Ma ZS, Yin QY, Dong MF, Feng ZY, Wang LX. Quality of life in patients undergoing totally thoracoscopic closure for atrial septal defect. *Ann Thorac Surg.* 2011;92:2230-4.
- Suri RM, Antiel RM, Burkhart HM. Quality of life after early mitral valve repair using conventional and robotic approaches. *Ann Thorac Surg.* 2012;93:761-9.

Key Words: robotic surgery, minimally invasive cardiac surgery, myxoma, quality of life

EDITORIAL COMMENTARY

The life in your years

Richard Lee, MD, MBA

See related article on pages 152-7.

The important thing to you is not the years in your life, but how much life in your years!

—Edward J. Stieglitz, MD, 1947

In this issue of the *Journal*, Yang and colleagues¹ explore differences in “life in years” in “Comparison of

Postoperative Quality of Life Between Patients With Robotic and Conventional Atrial Myxoma Excision.” At a single center, they compared 44 patients undergoing conventional sternotomy for atrial myxoma excision with 49 patients in whom the myxoma was removed robotically. The SF-36 and several supplementary questions, including pain and mean return to work, were analyzed.

At 30 days, nearly every metric in the SF-36 was better in the robotic group. Although the gap narrowed in the course of 6 months, there were still several areas that trended toward improved outcomes in the robotic group. The robotic group had less pain, less adverse effect, and a much quicker return to work.

The good news for a surgeon who only uses a conventional approach is that it is safe and that, at 6 months at least, there is not much advantage to a less invasive approach. The

From the Center for Comprehensive Cardiovascular Care, St Louis University, St Louis, Mo.

Disclosures: Author has nothing to disclose with regard to commercial support.

Received for publication Feb 6, 2015; accepted for publication Feb 7, 2015; available ahead of print March 17, 2015.

Address for reprints: Richard Lee, MD, MBA, Center for Comprehensive Cardiovascular Care, Saint Louis University, 3635 Vista Ave, Desloge Towers 13th Floor, St Louis, MO 63110 (E-mail: rlee@slu.edu).

J Thorac Cardiovasc Surg 2015;150:157-8

0022-5223/\$36.00

Copyright © 2015 by The American Association for Thoracic Surgery

<http://dx.doi.org/10.1016/j.jtcvs.2015.02.021>

bad news is that several meaningful recovery parameters, such as return to work, substantially favor the robotic approach, similar to a previous study with mitral repair.²

I am reminded of a debate at a national meeting several years ago. The patient had a short-segment proximal left anterior descending coronary artery stenosis, and the question was whether bypass or a stent should be used. All the surgeons clearly voted that the surgical approach was the “winner.” Next, the moderator asked “How many of you would still get a stent if it were you?” Again, the majority of surgeons raised their hands. Similarly, patients often decide with their heart rather than their mind, and they then vote with their feet. Even if there is a slight long-term survival benefit, the investment of time and inherent morbidity associated with surgery are perceived as important. If many thoracic surgeons are willing to take an inferior long-term outcome to avoid taking time out of their practice, it should not be surprising that our patients feel the same. It is our challenge to improve cardiac surgery so that they can enjoy an equivalent long-term return with an ever smaller short-term investment on their part. In the case of atrial myxoma, it appears that a robotic approach may meet that challenge.

Overall, this article is well written and provides a good early step in a field that remains in its infancy. There are a few areas for improvement that need to be recognized for future studies. Most importantly, baseline data were not obtained. Without it, these data will remain inconclusive and subject to selection bias. In addition, it will be important to note the slope of improvement. In an article by Grady and associates,³ it was noted that in most cases quality of life improved early relative to baseline for most isolated procedures, except for the mitral valve procedures. At 3 months, the patients who underwent mitral procedures felt worse than baseline! This did improve with time, however, to above baseline. This was likely due to a large number of patients with few or no symptoms, much like the myxoma population. Moreover, for those patients undergoing isolated surgery for atrial fibrillation, there was a dramatic improvement. This is pertinent to this study, because there was a large difference in postoperative atrial fibrillation between the groups (4% robotic vs 18% conventional). It is plausible that the atrial fibrillation may have adversely influenced the quality of life in the sternotomy group.

For those former economics students, there is always a trade-off, like the guns/butter curve. In medicine, we worry about learning curves and patient safety when introducing new techniques. In the series of Yang and colleagues,¹ cardiopulmonary bypass time was about 15% longer in the robotic group, but the crossclamp times were similar. The robotic group still had shorter intensive care unit and hospital stays, so the additional cardiopulmonary bypass time did not appear to add any additional “cost,” although this could not be definitively stated without some neurocognitive testing. Although it was not stated, the surgeon was already

likely an experienced robotic surgeon. With the introduction of each new technology or operation, it is the patient who “pays the costs” of learning. As we develop newer and “better” technologies, the safe introduction of these techniques should be optimized to “flatten” the learning curve, and the tracking of outcomes must begin with patient 1 rather than patient 100. It is imperative that all surgeons remember that each point on our learning curve represents a human life.

Although less important than patient safety, financial costs must also be tracked and assessed in future studies so that we can be fiscally responsible. With health care expenditures at 18% of the Gross Domestic Product, the United States cannot afford investments into health care that don’t offer significant benefit. For the young person who will return to work, this investment may make sense. If it is broadly applied to the entire population, the advantage is less obvious if the outcomes are the same at 6 months. Eventually, a small thoracotomy may provide an optimal balance.

As surgeons, we have done an excellent job in reducing mortality, largely by creating the Society of Thoracic Surgeons database and using it for both feedback and the optimization of surgical practice. The 2014 Society of Thoracic Surgeons data demonstrate mortality for first-time coronary artery bypass to be down to approximately 2%. Morbidity is north of 12%, however, and readmission approximates 10%. Figures for valve surgery are even less encouraging; patients undergoing mitral valve replacement with coronary artery bypass grafting patients continue to have a 10% mortality, and one-third of patients undergoing aortic valve replacement with coronary artery bypass grafting are not discharged to home but to some other institution. Indeed, there is work to be done.

It is our duty as doctors to provide safe treatments to our patients. “Do no harm” will always remain one of our core tenets. As we continue to lower mortality, we need to include morbidity as an integral part of the equation. As a community, we should actively partner to develop new technology and critically evaluate both the benefits and the harm. The new paradigm for health care is one of value, a parameter that includes not just mortality, but morbidity and cost. Surgeons are truly the people best able to define this for our patients. We must start by including assessments of “life in years” to work toward developing optimal value propositions for patients. If we don’t do it, someone less qualified will.

References

1. Yang M, Yao M, Wang G, Xiao C, Wu Y, Zhang H, et al. Comparison of postoperative quality of life between patients with robotic and conventional atrial myxoma excision. *J Thorac Cardiovasc Surg.* 2015;150:152-7.
2. Suri RM, Antiel RM, Burkhart HM, Huebner M, Li Z, Eton DT, et al. Quality of life after early mitral valve repair using conventional and robotic approaches. *Ann Thorac Surg.* 2012;93:761-9.
3. Grady KL, Lee R, Subačius H, Malaisrie SC, McGee EC Jr, Kruse J, et al. Improvements in health-related quality of life before and after isolated cardiac operations. *Ann Thorac Surg.* 2011;91:777-83.