Mitral valve repair: Is the cheese factory moving?

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When I delivered the American Association for Thoracic Surgery Presidential Address in 2005, I mentioned that changes in surgery are inevitable, and we either adopt them and carry on or resist them and perish like the mouse and the little people in the fable *Who Moved My Cheese* by Dr Spencer Johnson. Surgery through small incisions and ports using long shaft instruments or robotic-assisted instrumentation is here to stay, and its role is expanding. Actually, cardiac surgery is way behind other surgical specialties when it comes to minimally invasive procedures. One of the reasons is that open-heart operations require cardiopulmonary bypass and an empty and still heart to repair congenital and acquired defects. In addition, we often work inside a complex organ instead of on its surface. For these reasons, the infrastructure required for thoracoscopic and in particular robotic-assisted heart surgery is complex and unique. This issue of the *Journal* contains an important document on a pathway to establish a successful robotic-assisted cardiac surgery, authored by a group of experts¹ who candidly describe the complexities of developing such program. As with any new initiative in cardiac units, a surgeon leader is indispensable, but the difference is that a larger number of fully dedicated personnel is required, including hospital administration for financial support (acquisition and maintenance of robotic equipment and increased operating times), anesthesiologists with extensive experience in cardiac anesthesia (echocardiography, single-lung ventilation, percutaneous cannulation of the superior vena cava and coronary sinus), perfusionists, dedicated surgical assistant, dedicated operating room nurses, and robot technical personnel.¹ The surgeon must be trained in manipulating the robotic arms, and apparently this can be done in an experimental laboratory.² The most common application of robotic-assisted cardiac surgery has been with mitral valve repair, and the surgeon must be experienced in repairing mitral and tricuspid valves.^{2,3} This is an important requirement, and because most surgeons in the United States perform less than 10 mitral valve operations per year,^{4,5} it is unrealistic to expect that we all can be experts in mitral valve repair and even less in

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Central Message

Patients with degenerative mitral disease should be referred to centers of excellence where the best approach to repair the mitral should be determined by randomized clinical trials.

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robotic mitral valve repair. Suri and colleagues³ indicate that robotic mitral valve repair is feasible in all types of degenerative mitral valve disease, including patients with advanced myxomatous degeneration of the mitral valve with prolapse of multiple segments. They also suggest that robotic mitral valve repair is associated with fewer peri-operative complications, more rapid patient recovery, quicker return to normal activity, and excellent durability when compared with conventional mitral valve repair.³ As I read their editorial, I felt guilty that I have not embraced this technology and that I may not be giving my patients the best possible care.

In a recent editorial in the *Journal of the American College of Cardiology*, Bonow and Adams⁶ suggest that the “time has come to define centers of excellence in mitral valve repair” to increase the repair rate in patients with degenerative disorders of the mitral valve and to improve the outcomes of this operation, particularly its durability. Centralization of specialized health care services is difficult even in countries with socialized medicine, such as England and Canada, because all surgeons believe they are qualified to manage patients with mitral regurgitation.^{4,6,7} I believe that mitral valve repair is not an operation for all cardiac surgeons because a large number of cases per year are needed to acquire and maintain the skills necessary to

consistently provide good results.⁷ I also believe that surgeons such as Suri and colleagues³ and others who claim that mitral valve repair is better with robotic technology than under direct vision through the sternum should initiate a multicenter prospective randomized clinical trial comparing these 2 approaches. Unless experts like them can prove to us that what they are doing is better than what most of us do, the cheese is not going to move.

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