

Robotic Training in Cardiothoracic Surgery

To the Editor:

In 1961, President Kennedy challenged the nation to undertake one of the most audacious goals in the history of humankind. Less than a decade later, a human stepped on the surface of the moon. Indeed, the series of methodical steps that resulted in "one giant leap for mankind" represents a blueprint for achieving the most audacious feats in science.

In many aspects, cardiac and thoracic surgeons that consider adopting surgical robotics into their practices face challenges that are analogous to those of President Kennedy. This task has been formidable. Of nearly 400 surgeons who have trained in robotics, fewer than 30 have developed sustainable programs. It is becoming increasingly clear that the high failure rate of robotics has been the result of suboptimal training. Clearly, cardiothoracic surgeons need to assume a position of leadership in determining the direction and methods for training.

In retrospect, it seems self-evident that the path of industry-sponsored training of surgeons in this highly complicated nascent field was not going to be successful. The training curriculum from industry emphasizes maneuvering the robot and port placement, leaving training for the actual surgical procedure to the discretion of the surgeon. Clearly this approach plays a key role in the slow pace of the adoption of robotic technology and the public's increasingly poor perception of this field.

As early adopters of this technology, we have performed more than 2,000 robotic procedures and have published compelling data regarding the potential advantages, the efficacy, and cost of robotics in this publication and other peer-reviewed journals. We believe that we are in a unique position to comment on the state of training in robotic surgery. At our institution, we have instituted a program of mentorship by senior experienced surgeons who teach specific procedures on human cadavers in a simulated operating room. This program consists of three specific programs for resident surgeons, young surgeons, and experienced surgeons. It begins with the teaching of procedures using the robot to the surgeon and their operating room team. After mastering the surgical procedure, the surgeons are instructed in port placement and other complex technological aspects of robotics. In addition, our training emphasizes the managerial responsibilities that accompany the sometimes dramatic effects that this type of program can have on an organization.

We believe that cardiothoracic surgeons should begin a dialogue within the structure of our organizations with the singular purpose of designing a curriculum for training surgeons at different stages in their careers. In partnership with industry, such a curriculum can be implemented in institutions across the United States. Undoubtedly, such leadership by cardiothoracic surgeons will enable a series of small steps that can culminate in the final goal of incorporating robotics in a safe and efficacious manner and be in keeping with the highest standards of our field.

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TachoSil to Prevent Postoperative Pericardial Adhesions

To the Editor:

We read with great interest the article by Cannata and colleagues [1]. As rightly outlined in this remarkable review of the literature, multiple approaches to prevent or to decrease postcardiotomy pericardial adhesions have been proposed, ranging from simple pericardial closure to the placement of bioresorbable membrane or nonresorbable barriers to more imaginative solutions such as vodka and pericardial instillation of melatonin. None of the proposed solutions gained widespread clinical acceptance; therefore, reduction in pericardial adhesion formation is still a greatly researched issue in cardiac surgery, and the investigation for the ideal solution continues.

Apart from its hemostatic and aerostatic properties of TachoSil, Kuschel and colleagues [2] have recently verified an additional benefit for using it in a human fibrinogen-thrombin patch in cardiac surgery. As assessed using a macroscopic grading scale, they demonstrated in a rabbit study comparing TachoSil with Gore-Tex that the fibrinogen-thrombin patch significantly reduced macroscopic pericardial adhesions after 6 months of implantation. Moreover, the limited retrosternal adhesions present in the TachoSil group were much less tenacious; to some extent this is due to the rapid mesothelial recovery induced by TachoSil. Another possible explanation is the reduction of intrapericardial blood loss because of its hemostatic properties. This bioabsorbable patch barrier has shown promising results when used in several regions of the human body [3]. Prevention of postoperative pleural adhesions was evaluated in another experimental animal model by Getman and colleagues [4]. After microscopical evaluation, they concluded that TachoSil completely prevented the development of pleural adhesions up to 6 weeks.

Based on the study by Kuschel and colleagues [2], TachoSil should be added to the list of resorbable pericardial substitutes used in the prevention of postoperative adhesions in order to make sternal reentry safer by significantly reducing the risk of injuring the heart, the grafts, or the great vessels. TachoSil was effective in the prevention of pericardial [2] and pleural adhesions [4] in small animal studies. Additional studies in humans are warranted to validate the efficacy of the TachoSil as an antiadhesion agent in the pericardial space.

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