Re: JSLS. 2008;12(1):9-12 A da Vinci Robot System Can Make Sense for a Mature Laparoscopic Prostatectomy Program

To the Editor:

The economics of robotic prostatectomy are very important, considering the fact that prostate cancer is the most common cancer in men and radical prostatectomy is one of the main treatments for localized disease. The rapid adoption of robotic prostatectomy has resulted in the widespread availability of robotic systems and significant utilization by surgeons with little prior laparoscopic experience.1 The study by Steinberg et al2 evaluates the potential cost-benefit of adopting the robotic approach to an established laparoscopic program. This study found that it is possible that an increase in surgical volume will result in sufficient profits to offset the added cost of the robot (purchase cost of $1.5 million plus maintenance cost) and equipment. A major requirement is that robotic prostatectomy will be profitable for a hospital and that a sufficient rise in surgical volume is achievable. The authors conclude that a high-volume laparoscopic radical prostatectomy (LRP) program can convert to robot-assisted prostatectomy (RAP) and maintain profitability but may not reach the level of LRP.

I think that the issue of achieving profitability is very important for hospitals that take on the entire burden of purchasing and maintaining the robot. If hospitals lose money on their robotics program, then this may sway further hospitals in competitive markets from purchasing a robot. One of the key assumptions in this article is that the cost of disposables for the robot is only $200/case. This seems to be unreasonable as each robotic case requires a minimum of 4 instruments (scissors, grasper, and 2 needle drivers), and robots with 4 arms will use 5 or 6 instruments. Since each instrument costs over $2000 and has a limit of 10 uses, there is a minimum added cost of over $1000 per case over the cost of an LRP. Furthermore, the authors assume a profit of $5,409 per case. This profit may be achievable with certain insurance companies, but Medicare reimburses around $7,000 per case such that a high profit margin is not achievable for many patients who are over 65. Based on the above consideration, it is unlikely that the predictions regarding the profitability of RAP will be achievable under current market conditions. A decrease in the cost of the robot and/or equipment will be required to improve the cost-effectiveness of RAP.

Finally, as more hospitals obtain a robot, the added draw of having a robot diminishes such that acquiring a robot may not significantly increase the patient volume for the fourth or fifth hospital in a region compared with the first or second robot in the region.

Yair Lotan, MD
Associate Professor of Urology
The University of Texas Southwestern Medical Center
Department of Urology, J8.112
5323 Harry Hines Blvd.
Dallas, TX 75390
Phone: (214)-648–0389
Fax: (214)-648–8786
E-mail: yair.lotan@utsouthwestern.edu

References:
1. Ahlering TE, Skarecky D, Lee D, Clayman RV. Successful transfer of open surgical skills to a laparoscopic environment using a robotic interface: initial experience with laparoscopic radical prostatectomy. J Urol. 170(5):1738–41, 2003 Nov.
2. Steinberg PL, Merguerian PA, Bihrlle W 3rd, Heaney JA, Seigne JD. A da Vinci robot system can make sense for a mature laparoscopic prostatectomy program. JSLS 2008;12:9–12.

Authors’ Response

Dear Editor:

Dr. Lotan’s comments regarding our cost analysis of implementing a robotic prostatectomy program are well taken. With regard to the added costs of instruments, the figure of $200 per case was $200 above the cost per case of laparoscopy instruments at our center. The absolute cost of the instruments per case is, as Dr. Lotan sites, roughly $1000. Our figure underestimates the difference in cost between the laparoscopic and robotic approaches, as it was derived from institution-specific data and is subject to local variation; however, the $400,000+ annual cost of the robot and service contract remain the bulk of additional cost at all but the highest volume centers.

Secondly, with regards to Medicare reimbursement for this procedure, the average age in the Henry Ford Hospital experience is 60.2 years for patients undergoing robotic-assisted radical prostatectomy.1 Certainly, a center operating on a large number of Medicare beneficiaries stands to decrease its income relative to a center with fewer beneficiaries, but in this large series the average age is below the minimum for Medicare.
The clear relationship between volume and income with this procedure is a critical factor for any hospital seeking the development of a robotics program and the purchase of a robot. In our estimation, the caseload a center can expect is the critical factor in the decision to purchase a surgical robot, as it only pays for itself if it is utilized, in the same manner as an airplane. Other factors, such as attracting other patients to a center, recruitment of physicians and merely “keeping up,” are important, but these effects are less easily discerned than the relationship between a large surgical caseload offsetting the expense of the robot.

Our paper was meant to temper the enthusiasm for this technology at low-volume centers, where the addition of robotics to the array of services of such centers may lead to financial harm, and prevent healthcare dollars from being more appropriately allocated.

References:
1. Badani KK, Kaul S, Menon M. Evolution of robotic radical prostatectomy: assessment after 2766 procedures. *Badani Cancer*. 2007;110(9):1951–1958.