No Cost or Safety Advantage to Robot-Assisted Radical Prostatectomy Compared With Open-Procedure Surgery for Patients With Prostate Cancer

A recent study has demonstrated that robot-assisted radical prostatectomy (RARP) is not safer than open radical prostatectomy (ORP), and results in higher charges compared with ORP (J Clin Oncol. 2014;32:1419-1426).

Prior large observational studies have also not shown any differences in postoperative complications or long-term outcomes between RARP and ORP. However, these studies were performed when physicians were less experienced with the robotic procedure.

In the current study, the authors set out to reexamine the outcomes of surgeries and determine whether a benefit to RARP would emerge in the postdissemination era when there was more experience.

“Our data suggest that in the postdissemination era (ie, contemporary patients), patients over age 65 undergoing robot-assisted radical prostatectomy have the same risk of complications, readmissions, and additional cancer therapies as those who get open surgery,” says corresponding author Quoc-Dien Trinh, MD, instructor in the division of urologic surgery at Harvard Medical School in Boston, Massachusetts.

No Overall Safety Differences

Researchers identified the records of 6310 patients aged 65 years or older in the linked Surveillance, Epidemiology, and End Results (SEER)-Medicare database who were diagnosed with prostate cancer between October 2008 and December 2009 and who were treated with a radical prostatectomy. After excluding patients with metastatic disease, those aged older than 80 years, and those with unknown tumor grade or stage or unknown pelvic lymph node dissection status, they were left with 5915 patients in their analysis. Age at diagnosis, year of diagnosis, marital status, race, area population density, area education level, area median income level, region of residence, Gleason score, preoperative prostate-specific antigen score, pelvic lymph node dissection status, and disease stage were collected for each patient.

Of the entire cohort, 2439 patients (41%) received ORP, and 3476 patients (59%) underwent RARP. The percentage of patients undergoing RARP increased from 48% in October 2008 to 60% during December 2009.

On bivariate analysis, no significant differences were noted with regard to overall complications in 30-day outcomes. However, the patients undergoing RARP were found to have significantly higher rates of genitourinary complications and lower rates of miscellaneous surgical complications in 30-day outcomes.

When examining 90-day outcomes, patients treated with RARP were found to have a lower rate of overall complications, as well as lower rates of respiratory, wound, and miscellaneous medical and surgical complications compared with those undergoing ORP, the authors reported. However, RARP was found to be associated with more genitourinary complications at 90 days.

RARP was associated with significantly fewer transfusions and shorter hospital stays. No differences in readmission rates were observed. The median first-year charges were more than $1400 greater for RARP compared with ORP, and undergoing RARP was associated with significantly higher charges within one year from surgery.

In addition, multivariate logistic regression analysis revealed no significant overall differences in 30-day and 90-day complications between the 2 procedures. More specifically, patients treated with RARP had significantly higher odds of developing genitourinary and miscellaneous medical complications, but were significantly less likely to have a red blood cell transfusion or prolonged length of stay. There were no differences in the use of adjuvant therapy noted between the 2 cohorts.
“This study is in line with prior published data,” says Peter Scardino, MD, chairman of the department of surgery at Memorial Sloan-Kettering in New York City. “All the best published data show there are tremendous variations among surgeons. The surgical experience and technique matter, but there’s no essential differences between technologies, open versus robotic.”

The study authors note that even though there are limited comparative effectiveness evaluations of RARP and ORP, and no randomized comparative data, robot-assisted surgery has been adopted quickly and is performed more frequently than open surgery for prostate cancer.

The authors note that it is widely believed that the rapid dissemination of RARP is market-driven and not evidence-driven. From 2004 to 2010, the use of RARP increased from 8% of prostatectomies to 67%, according to a study by Lowrance et al (J Urol. 2012;187:2087-2092).

Although the results of the current study demonstrate that, overall, the robotic approach was not a safer procedure in the Medicare population studied, some of its advantages are evident: a 4-fold lower odds of requiring a blood transfusion and a 3-fold lower odds of having a prolonged hospital stay were noted in the study. Furthermore, the findings indicate that RARP is safe in terms of cancer control, because no increased risk of receiving additional cancer therapy after surgery compared with ORP was noted.

With regard to costs, the current study demonstrated that RARP remains more expensive, and the higher hospital costs are not offset by advantages in perioperative outcomes or fewer additional treatments, the authors write.

**Study Limitations and Clinical Implications**

Trinh et al described their study as a robust analysis of comparative effectiveness, although they admit to some weaknesses within it. First, Dr. Trinh emphasized that the study applies to Medicare patients aged older than 65 years. However, these men do not constitute the majority of patients who undergo surgery for prostate cancer, who are mostly aged younger than 65 years and carry private insurance, thereby potentially limiting the generalizability of the data. In addition, it is not a prospective randomized study, but rather an observational analysis of comparative effectiveness. Also, even though RARP had become more common than ORP in the era studied, surgeon experience still played a large role in the outcomes, the authors acknowledge. This was accounted for as best as was possible by using a variable based on the number of robotic procedures performed within a geographic region, but individual experience could not be assessed and is very important in terms of surgical outcomes.

Furthermore, additional anticancer treatments after surgery can be considered to be a proxy for cancer control because there is no long-term follow-up with which to truly compare cancer control outcomes. Short-term follow-up also prevented the examination of any differences in long-term rates of urinary incontinence or erectile dysfunction, which are important endpoints as well. The study authors note that a previous analysis by Barry et al did not demonstrate any differences (J Clin Oncol. 2012;30:513-518).

Dr. Scardino says he does not know of any randomized trials performed to date that provide long-term data regarding cancer control or genitourinary symptoms. “We will likely get the best data from long-term comparative effectiveness studies, such as this current study,” he says. “We have looked at this in our own institution retrospectively and found no differences in outcomes between the 2 procedures with experienced surgeons as well,” he says, referring to a recent study by Silberstein et al for which Dr. Scardino served as a coauthor (BJU Int. 2013;111:206-212).

“The right thing to tell the patients is that it’s more important that the surgeon does the correct operation for your cancer,” adds Dr. Scardino. “Most importantly, you should avoid surgeons who rush you into an operation for a low-risk prostate cancer that can be better managed with active surveillance.”

“Bottom line, I think we cannot stress enough how important it is to choose the surgeon, not the technique,” says Dr. Trinh. “It is important not to assume that RARP is better than ORP; an inexperienced surgeon performing a robot-assisted procedure would be expected to achieve poorer results than an experienced surgeon performing an open procedure.”

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