Study: Minimally Invasive Prostate Surgery Safer than Open Surgery

Globe Newswire

Robotic-Assisted Surgery Significantly Reduces Complications Compared to Open Surgery

An independent study published online in the journal Urology found that minimally invasive surgery for prostate cancer significantly reduces complications when compared to open surgery. The study found that minimally invasive surgery for prostate cancer, including laparoscopic and robotic-assisted surgery, was associated with lower transfusion rates, shorter length of hospital stay, and lower serious postoperative complication and mortality rates compared to open prostatectomy.

In the study, the authors (Liu JJ, Maxwell BG, Panousis P, Chung BI) evaluated the National Surgical Quality Improvement Program (NSQIP) database, a national, prospective perioperative database reflecting diverse practice settings, from 2005 to 2010, for laparoscopic or robotic-assisted prostatectomy and open retropubic prostatectomy.

Compared with other administrative databases that capture only inpatient events, the NSQIP database identifies complications up to 30 days postoperatively, providing more detailed characterization of complications after prostatectomy. The perioperative outcomes that were examined included surgical and total operation duration, transfusion rates, length of stay, major morbidity (cardiovascular, pulmonary, renal and infectious) and mortality.

"When evaluating minimally invasive surgery techniques, particularly robotic-assisted surgery, which is now the standard of care in the United States for prostatectomies, it is important to use the surgery it is replacing as a comparator," said Myriam Curet, MD, Chief Medical Advisor, Intuitive Surgical. "The introduction of laparoscopic urologic surgery and subsequent development of robotic techniques have dramatically increased the use of minimally invasive radical prostate surgery. This examination of the most robust, independent surgical database clearly demonstrates that a minimally invasive radical prostatectomy can be safely performed with low complication rates, particularly when compared to alternative procedures."

The study identified 5319 radical prostatectomies: 4036 minimally invasive radical prostatectomy (laparoscopic and robotic-assisted) and 1283 open. Although operating time was longer in the minimally invasive robotic-assisted prostatectomy group (270 minutes vs. 252 minutes, p-value = <.0001), there were significantly fewer perioperative blood transfusions (21% vs. 1.3%, p-value = <.0001) and shorter mean length of stay (1.8 vs. 3.2 days).

The overall complication rate after minimally invasive radical prostatectomy was 5% compared with 9% in open prostatectomy (P <.0001). Mortality was low in both groups, although it was significantly lower in the minimally invasive radical prostate surgery group (0.05%) compared with the open prostatectomy group (0.4%, p-value =.01).

Prior to the introduction to robotic-assisted surgery, 95% of prostate surgeries were performed open through a midline incision. Today, more than 85% of the prostate surgeries performed in the United States are done robotically through small incisions.[1]

In late 2011 and 2012, several large-scale clinical studies on da Vinci Surgery were published and demonstrated the benefits of da Vinci Surgery. Since da Vinci Surgery for prostatectomy is the most mature procedure, many of these large studies used population databases to assess the clinical impact of da Vinci Surgery for prostate surgery when compared to the prior standard, open surgery. As other clinical areas of da Vinci Surgery mature, clinical evidence continues to trend toward lower complication rates compared to open surgery.[2-7] While many studies' findings favor da Vinci Surgery, some do not.[8-10] Medical research requires careful analysis of patient populations, appropriate statistical technique and robust data collection. In these analyses, it's also important to note that robotic-assisted surgery may provide a minimally invasive option for more complex cases. We encourage those interested in clinical evidence on the use of da Vinci Surgical Systems to explore relevant literature critically. For examples of such studies, please visit: http://intuitivesurgical.com/company/clinical-evidence [1].

[1] MIP percentage prior to introduction of robotic prostatectomy: Premiere Prospective Database 2004-2010 as cited by Davis et. al. BJUI 2013 (accepted for publication).
[2] Boggess, J. F., et al. (2008). "A comparative study of 3 surgical methods for hysterectomy with staging for endometrial cancer: robotic assistance, laparoscopy, laparotomy." American Journal of Obstetrics and Gynecology 199(4): 360.e1-9.
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[5] Kang, J., et al. (2012). "The impact of robotic surgery for mid and low rectal cancer: A case-matched analysis of 3-arm comparison--open, laparoscopic, and robotic surgery." Annals of Surgery.
[6] Trinh QD, et al. "Perioperative outcomes of robot-assisted radical prostatectomy compared with open radical prostatectomy: results from the nationwide inpatient sample." Eur Urol. 2012 Apr; 61(4):679-85.
[7] Tewari A, et al. "Positive Surgical Margin and Perioperative Complication Rates of Primary Surgical Treatments for Prostate Cancer: A Systematic Review and Meta-Analysis Comparing Retropubic, Laparoscopic, and Robotic Prostatectomy." Eur Urol. 2012 Feb 24.
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hysterectomy among women with benign gynecologic disease." JAMA 2013;309:689-98.
[9] Barbash GI, Glied SA. "New technology and healthcare costs: the case of robot-assisted surgery." N Engl J Med. 2010;363(8):701-704.
[10] Schroeck FR., Krupski TL. Sun L., et al. "Satisfaction and Regret after Open Retropubic or Robot-Assisted Laparoscopic Radical Prostatectomy." Eur Urol 2008 Oct; 54(4):785-93.

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[1] http://intuitivesurgical.com/company/clinical-evidence