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da Vinci Prostatectomy (Robotically Assisted Radical Prostatectomy)

Prostate Cancer Overview

Prostate cancer is a disease in which malignant (cancer) cells form in the tissues of the prostate. The prostate is a gland in the male reproductive system located just below the bladder and in front of the rectum. It is about the size of a walnut and surrounds the urethra (the tube that empties urine from the bladder). The prostate gland produces fluid that makes up part of the semen.

Approximately 16% of American men will be diagnosed with prostate cancer sometime in their life. Treatment options and prognosis depend on the stage of the cancer, the Gleason score, and the patient's age and general health.

The most common patient scenario is the man with clinically localized stage T1 to T2 disease with no regional lymph node or distant metastasis (T1 to T2N0-NxM0). According to the American Urological Association, of the 234,460 men in the United States diagnosed with prostate cancer annually, 91% have localized disease.¹

With greater public awareness, early detection is on the rise and mortality rates are declining. Additionally, new advances in medical technology are enabling cancer victims to go on to live active and productive lives after their treatment. Patients should always consult with their doctor for advice on the options that are available to treat their individual condition.

Treatment Options for Prostate Cancer

When prostate cancer is believed to be still localized within the prostate gland, there are essentially five treatment options available to a patient:

- 1) Observation (watchful waiting)
- 2) Hormonal therapy (non curative)
- 3) Remove the cancerous prostate (prostatectomy)

¹ AUA Guideline for the Management of Clinically Localized Prostate Cancer: 2007 Update

- 4) Radiate the cancerous prostate (either external radiation or radioactive seed implants)
- 5) Freeze the cancerous prostate (cryosurgery)

Patients should discuss the advantages and disadvantages of each treatment approach with their doctor. For localized prostate cancer, Radical prostatectomy, or surgical removal of the prostate and surrounding cancerous tissues, has historically been considered the “gold standard” or best way to eradicate prostate cancer. The da Vinci prostatectomy further revolutionizes this option.

Da Vinci Prostatectomy: Introduction

da Vinci[®] Prostatectomy is a minimally invasive approach to prostate removal.

This method incorporates the latest advancements in robotic-assisted technology and allows a surgeon greater visualization, enhanced dexterity, precision, control and superior ergonomics.

The da Vinci Surgical System is a sophisticated robotic platform designed to enable complex surgery using a minimally invasive approach. The da Vinci System consists of an ergonomic surgeon’s console, a patient-side cart with four interactive robotic arms, a high-performance three dimension high definition vision system and proprietary EndoWrist[®] instruments. Powered by state-of-the-art robotic technology, the da Vinci System is designed to scale, filter and seamlessly translate the surgeon's hand movements into more precise movements of the EndoWrist instruments. The net result is an intuitive interface with breakthrough surgical capabilities.



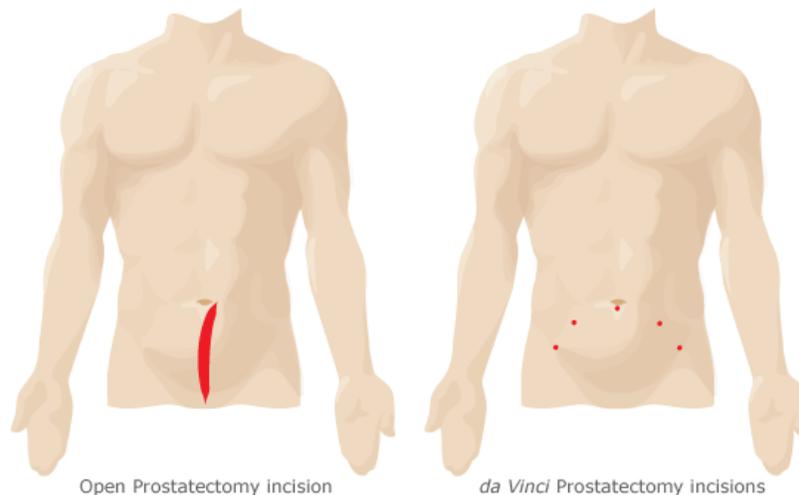
Small Endowrist instruments



Surgeon Console and daVinci Robot

For qualified candidates, the *da Vinci*[®] Prostatectomy offers numerous potential benefits over the traditional open prostatectomy, including:

- > Shorter hospital stay
- > Less pain
- > Less risk of infection
- > Less blood loss and transfusions
- > Less scarring
- > Faster recovery
- > Quicker return to normal activities



daVinci prostatectomy received FDA clearance for prostate cancer surgery in the US in May 2001. Since then, the preference of patients and surgeons for the da Vinci approach to radical prostatectomy has grown to over 100,000 procedures performed. The da Vinci prostatectomy is now the most selected approach to prostatectomy in the United States.

Candidates for daVinci

Patients with Gleason grade 6, 7 and 8+ may all be candidates for da Vinci prostatectomy. There is no specific age limit, though many surgeons favor prostatectomy for patients younger than 70.

da Vinci Prostatectomy: Procedure

Radical prostatectomy is a complex and delicate procedure due to many factors, including the location of the prostate gland deep inside the pelvis. In radical prostatectomy, the surgeon removes the entire prostate gland along with both seminal vesicles, both ampullae (the enlarged lower sections of the vas deferens), as well as additional surrounding tissues. The section of urethra that runs through the

prostate is cut away; with it may also come some of the sphincter muscle that controls the flow of urine.

Advantages of daVinci prostatectomy

In the United States today, surgeons use one of three approaches to radical prostatectomy: open surgery, laparoscopic surgery and robotic-assisted laparoscopic surgery, of which the latter two are minimally invasive. An open prostatectomy requires an 5-7 inch incision on the patient's abdomen for direct access to the operative site. Conventional laparoscopic and robotic-assisted laparoscopic approaches require several dime-sized incisions, or operating "ports," which are used to introduce narrow-shafted instruments. The surgeon and assistants maneuver the instruments from outside the body, under vision provided by a surgical camera. The potential advantages of laparoscopic and robotic-assisted laparoscopic prostatectomy over conventional open surgery include smaller incisions for less post-operative pain and improved cosmetics; reduced blood loss and less need for blood transfusions, as well as a faster return to normal activities. The two major drawbacks of conventional laparoscopy are that it relies on the use of rigid, hand-held instruments and visualization provided by a standard 2D video monitor. While these technologies enable smaller incisions, they can limit the surgeon's sense of depth of field, his/her dexterity and precision. Standing at the patient's side, the surgeon must operate in a counterintuitive fashion, moving the long-shafted instrument handle in precisely the opposite direction as he or she intends to move the instrument tip. The surgeon maneuvers the instruments while looking up at the 2D view of the operating field projected on a tableside video monitor and while instructing an assistant on how to position the surgical camera. In contrast, da Vinci Prostatectomy (dVP) incorporates state-of-the-art robotic technologies that provide natural depth of field and allow a surgeon's hand movements to be scaled, filtered and translated into precise micro-movements of tiny instruments at the operative site. The superior visualization, enhanced dexterity, precision and control enable the surgeon to perform complex procedures — like radical prostatectomy — through dime-sized operating "ports." For most patients, da Vinci Prostatectomy offers substantially less pain and a much shorter recovery than traditional prostate surgery. Other advantages may include reduced need for blood transfusions, less scarring and less risk of infection. In addition, recent studies suggest that dVP may offer improved cancer control and a lower incidence of impotence and urinary incontinence.

Studies show that the *da Vinci*[®] Surgical System allows surgeons to provide better clinical outcomes and redefine standards of care over other methods of surgery.

Benefits of the daVinci approach include improvements in patient experience of surgery to a minimally invasive, more precise surgery.

Comparison of Open Prostatectomy, Laparoscopic and *da Vinci* Prostatectomy

	Open	Laparoscopic	<i>dVP</i>
Patients	100	50	100
Operative Time (Min.)	164	248	140
Blood Loss (mL)	900	380	<100
Cancer Remaining	24%	24%	5%
Complications	15%	10%	5%
Catheter, Days	15	8	7
Hospitalization (Days)	3.5	1.3	1.2

Menon M. Robotic radical retropubic prostatectomy. BJU Int. 2003 Feb;91(3):175-180.

Additionally, *da Vinci* has allowed many surgeons to perform nerve-sparing techniques with radical prostatectomy to reduce the risk of impotence and urinary incontinence.

Disadvantages of *da Vinci* prostatectomy

While clinical studies support the use of the *da Vinci*® System as an effective tool for minimally invasive surgery, individual results may vary. A *da Vinci* Prostatectomy remains a surgical procedure, and there are inherent risks. Though data support high rates of cancer control, maintaining sexual function and return to urinary continence, there is no guarantee of these benefits to every patient. Results, as with the open operation, are surgeon dependent and improve significantly with surgeon experience with this surgical modality

Choosing *da Vinci* Prostatectomy at Peninsula Urology Center

Patients at Peninsula Urology Center will have their prostate cancer surgery performed by an experienced robotic surgeon, Dr. Dieter Bruno was the first urologist in the state of North Carolina to use the *da Vinci* robot and was the second to perform a *da Vinci* prostatectomy. He was director of the urologic robotic surgical program at East Carolina University School of Medicine and has over 5 years experience with the *da Vinci* robot. Dr. Bruno has performed many *da Vinci* prostatectomies, and currently uses the robot for other complicated surgeries such as kidney removal (nephrectomy), bladder cancer removal (cystectomy), pyeloplasties, and reconstructive work. His typical OR times for *da Vinci* prostatectomy are 1-2 hours with 50-75 cc of blood loss. He is a nationally certified (by Intuitive Surgical) proctor and frequently trains other surgeons on the *da Vinci* robotic platform.

Additional information available

<http://www.pucenter.com/>

<http://www.elcaminohospital.org>

www.daVinciprostatectomy.com