

Recent Findings in Prostate Cancer



AWARDS & HONORS FOR THE UC IRVINE CANCER DIVISION

UCI and Dr Ahlering have annually hosted special symposiums for the American Urological Association on Advanced Robotic Techniques featuring local and national leaders.

Dr. Ahlering's honors include *American's Best Doctors Designation* (since 1994), *Who's Who (Lifetime)*, *Physician of Excellence*, *Orange Coast Magazine*, Prize Posters at Urological Meetings and *Intuitive Surgical's Pioneer of da Vinci Urology Surgery*.

THE CUTTING EDGE -1

Nine ADVANCES IN SURGICAL TECHNIQUES

NEW ROBOTIC TECHNIQUES FOR CANCER CONTROL

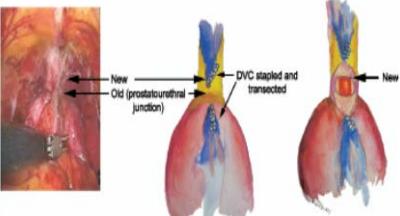


Technique 1. The Single Knot Anastomosis Dr Roland van Velthoven utilized a **single 'running' stitch to reattach the urethra to the bladder, greatly simplifying a taxing laparoscopic technique.** Dr. Ahlering proved this clever idea for robotic prostatectomy, and the two published their results jointly. This method is now the standard method in robotic and laparoscopic prostatectomy. [*Laparoscopic Running Urethrovesical Anastomosis: 'The Single Knot Technique'* Urology 61(4):699-702, 2003.]

Technique 2. Reducing Positive Margins I Utilizing the **high magnification (10-12X)** and **3-D color visibility** of the da Vinci robotic, Dr. Ahlering refined the robotic technique for surgeons to prevent inadvertent nicking of the prostate and exposing the cancer, 'positive margins' producing **one of the lowest occurrence rates reported in the literature.** [*Robotic Radical Prostatectomy: A Technique to reduce pT2 Margins.* (+on-line video) Urology 64(6):1224-28, 2004.]

Technique 3 Positive Margins II: The New Standard. This newly published method significantly **cut in ½ the overall margin rate** of Method I (above) from 17.6% to 7.5%; one of the lowest ever reported. The rate of high-risk pT3 margins were reduced **4-fold** from 50% to 13%. This paper showed these great **improvements could be made**

without impairment to the patient's continence. [*The impact of Urethral Stump Length and Continence on Positive Surgical Margins in Robot-assisted Laparoscopic Prostatectomy.* (+on-line video) Urology 70(1):173-177, 2007.]



Technique 4 'Preserving the Potency Nerves without Cautery-The Athermal Technique'

Dr. Ahlering presented a **new technique preserving sexual function** for robotic prostatectomy by eliminating the use of electrocautery when sparing the potency nerves of the neurovascular bundle. This technique carefully controls bleeding from the blood vessels which are intertwined with the potency nerves without the use of damaging electrocautery by a surgery safe clamp (see image). Without this control, the bleeding obscures the potency nerves, and makes saving these nerves more difficult. This athermal potency technique has been subsequently adapted as the worldwide robotic surgical standard. [Feasibility Study for Laparoscopic Radical Prostatectomy Cautery Free Neurovascular Bundle Preservation. (+ on-line video) Urology 65(5):994-997, 2005.]



Technique 6. 'Finding and Eliminating Hidden Cancer' A comprehensive dissection of the residing fat on and near the prostate **eliminates previously undetected cancer positive lymph nodes.** [*Anterior Prostatic Fat: Anatomic & Pathological basis for complete dissection at the time of radical prostatectomy*) Urology 70(5):1000-1003, 2008 + video]

ADDITIONAL PAPERS IDENTIFYING MECHANISMS WHICH INHIBIT THE RETURN OF SEXUAL FUNCTION

Dr Ahlering and his team are aggressively working to understand which factors delay return of sexual potency after surgery. In 10+ papers, we have verified the wisdom of the innovative method for preserving sexual function after surgery without electrocautery resulting in a 4 fold increase in the rate for **return of potency at 3 months at ~40%** for men ≤ 65 years old with unilateral or bilateral nerve preservation. (1) J. Endourology 19(6):715-8, 2005. 2. J. Endourology 20(8): 586-9, 2006.) Heat from the electrocautery can damage potency nerves, arguing clearly for the avoidance of such cautery near the fragile potency nerves. (3) J Endourology 21(10):1195-8, 2007) For men who had cautery 63% were potent at 2 years (4 Urology 72(6) 1371-4, 2008), and ~90% potent in cautery-free men (5 J. Urology 181(1) 259-63, 2009). We demonstrated that men with larger size prostates (>45 grams) will have a delay in early return to potency, probably due to traction injury of pulling on a larger prostate (6 Urology 72(6) 1263-8, 2008). Our results also support a crossover mechanism for the potency nerves as men with only one bundle preserved regain sexual function almost as well as those with b Days ve bundles preserved (7 Br J. Urol, 2009).

Additionally, we have shown that sacrificing the accessory pudental artery does not have an impact on return of potency after robotic prostatectomy (8 J Sex Med. 2010 Jan;7(1 Pt 1):298-303. Epub 2009).

Technique 7. Proper Robotic Port Placement. We identified the pubis as the landmark site, to correctly place surgical ports (openings). [*Anatomic Port Placement for the Robotic Prostatectomy.* J EndoUrology 18(6):572-575, 2004.]

Technique 8. Feasibility of Hernia Repair during Robotic Prostatectomy. Our group was the first to report that simultaneous herniorrhaphy and robotic prostatectomy is technically feasible and effective without increased complications or morbidity. [*Combined inguinal hernia repair with prosthetic mesh during transperitoneal robotassisted laparoscopic radical prostatectomy: a 4-year experience.* J Urol.178(4):1296-9, 2007.]

Technique 9. Optimal Camera Port Placement. Our data support a transverse camera port incision to greatly reduce the incidence of incisional hernias. [*Transverse Versus Vertical Camera Port Incision in Robotic Radical Prostatectomy: Effect on Incisional Hernias and Cosmesis.* [Urology.586-90,2011.]

Prevention of prostate cancer

NOW IN THE 12TH YEAR OF ROBOTIC EXPERIENCE AND INNOVATION FOR BETTER OUTCOMES AND QUALITY OF LIFE FOR THE PATIENT

VERY LOW COMPLICATION RATE

In a review of safety of >1300 robotic surgeries, the **major complication rate has dropped** from 17% in the first 100 surgeries to 4.6% in the last ~400 cases, which is significantly below the open surgery rate of ~10%.

CANCER CONTROL

Reducing the rate of positive surgical margins (cancer not removed) can significantly improve long term survival of radical prostatectomy patients. Creating innovative surgical techniques (see Inside Techniques #1-3), Dr. Ahlering **has reduced the overall rate of positive margins** (cancer found at the edges of the prostate) to ~8.5%, far below the 10-35% rate of the published literature and in organ confined prostate cancer a rate of only 4.6%.

RETURN OF POTENCY- THE 'ATHERMAL' TECHNIQUE

A novel technique invented by Dr. Ahlering eliminated the use of damaging electrocautery during preservation of the delicate potency nerves. He has published 10+ papers revealing new aspects of return to potency (see inside flyer for the technique # 4). Currently we find ~35% of pre-potent men <66 yrs with unilateral or bilateral nerve preservation return to satisfied functional potency within 3 months and ~90% within 2 years. Perseverance of the surgeon to improve technical methods, excellent surgical team, and validated methods of measuring patient follow-up in the assessment are important standards that UC, Irvine employs to measure the true progress of robotic technology.

WORLDWIDE TEACHING

Dr. Ahlering lectures extensively across the world, presenting the UCI experience with robotic prostatectomy. From down under in Melbourne and Sidney Australia, to Sweden, Russia, France, Belgium, Rome, Japan, South America and of course in the United States. Physicians worldwide travel to UCI to learn from the Robotic Fellowship program, and multi-day training session on robotic surgery.

THE CUTTING EDGE -2 LABORATORY INVESTIGATION: PROSTATE CANCER PREDICTION

Based on earlier work in the dynamics of PSA return, UCI has NCI funding to work on a much larger scale to investigate thousands of possible enzymatic proteins to see if they are turned 'on' or 'off', or merely innocent bystanders in the growth of prostate cancer. We are using highly advanced 'tissue micro arrays' and computer analysis to identify the strategic villains of prostate cancer, for use in a simple laboratory test, to identify the early events in cancer malignant transformation. We hope to delineate the biologic factors that appear to be significantly associated with *high-risk* of disease progression as well as men with a *low-risk* prostate cancer recurrence.

The National Cancer Institute selected only six institutions to commence this five year 'cutting edge' large scale intensive research into six different deadly cancers. UC, Irvine is the only site chosen to discover the hidden cellular protein 'signatures' (SPECS) in prostate cancer, and we are working hard to identify the key protein players in the progression of the disease and testing new biological markers of aggressive prostate cancer.

We greatly appreciate your support in our comprehensive prostate cancer research in these important topics:

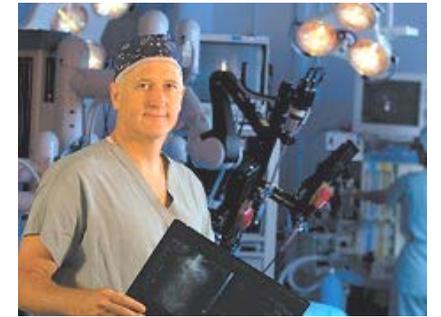
- *Identifying and refining surgical techniques to eliminate prostate cancer*
- *Understand the risk factors in long-term cancer survival*
- *Use new imaging to identify the cancer*
- *Provide insight into the mechanisms which damage or delay return of potency and create newer safer surgical techniques*
- *Understand the mechanisms of return of urinary continence*
- *Understand the role nutrition plays in prostate cancer.*

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PROSTATE CANCER INSIGHTS

*'Leading
The Cutting
Edge'*



The research interests of the University of California, Irvine urological surgeons are aggressive efforts into new innovations in surgical techniques, cancer prevention, identification of cancer severity and cancer prediction diagnostics for survival for prostate cancer.

Prostate Cancer

Internationally respected surgeon, Dr. Thomas Ahlering has helped pioneer the use of the Da Vinci Robot for the prostate cancer surgery. Now entering **12 years** of robot-assisted surgery, the University of California, Irvine robotic-assisted laparoscopic prostatectomy experience is one of the oldest programs in the world, has published one of the largest series on robotic prostatectomy in the literature, and has performed **1,400 robotic prostatectomies**. Since the robotic program inception in 2002, Dr. Ahlering has written over **70 scientific publications** and book chapters specifically on this new laparoscopic method, of which **9 papers** bring forth **new advancements in techniques** and are described in this brochure. These advances demonstrates that robotic prostatectomy produces superior outcomes for the patient in reduced blood loss, near zero blood transfusion, low complication rates, earlier return to work, and now excellent oncological outcomes with very low positive margin rates. These findings fully validate the wisdom of the transition from open surgery to the robotic laparoscopic technique.