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◆ ABOUT YOUR NEWSLETTER ◆

The WRAMC Us TOO Newsletter begins its fourteenth year with this issue. It started as an eight-page publication intended for the military prostate cancer community in the Greater Washington, DC, metropolitan area. Initially printed in 200 copies for local distribution, it is now a twenty-page newsletter printed in 2,150 copies with distribution far beyond the “Beltway.”

The newsletter is produced and distributed without charge to the expanded readership. Corporate grants and individual donations from the readership provide the wherewithal to sustain the publication. There are no paid employees. Instead, the newsletter relies on volunteer effort from within the WRAMC Us TOO board of directors for its operation. We also receive considerable support and encouragement from the respective staffs of the WRAMC Urology Service and the Department of Defense Center for Prostate Disease Research (CPDR). **(Continued on page 18)**

THOMAS N. KIRK NOW PRESIDENT AND CEO AT Us TOO

Thomas N. Kirk has assumed his duties as president and CEO of Us TOO International Prostate Cancer Education and Support Network. With over 30 years of experience as a family service leader, he brings a breadth of experience and understanding of the challenges faced by patient-related organizations such as Us TOO. Tom spent more than thirteen years in increasingly responsible leadership positions within the National Alzheimer’s Association, including chapter network development and education and training. He also has extensive experience in the family issues, men’s issues, and outreach to minority and underserved populations.

◆ INSIDE THIS ISSUE ◆

About Your Newsletter **Page 1**
New Us TOO President/CEO **Page 1**
Prostate-Specific Issues **Page 3**

“The Doctor Is In” **Page 8**
daVinci Robotic System **Page 10**
Counselors Listing **Page 19**

◆ FROM THE EDITOR'S DESK ◆

Don't Miss Our Guest Speaker on February 2, 2005!

No doubt you have been reading about the extraordinary medical feats in the treatment of soldiers wounded in Operation Iraqi Freedom. Dedicated and highly skilled military medical personnel, combined with state-of-the-art medical technology, are working wonders in treating the wounded. As a change of pace in our regular guest speaker program for February 2, 2005, we are fortunate to be able to present a first-hand account of medical service in Iraq. Look below for details.

Our speaker for the November meeting was Dr. Jason D. Engel, Center for Robotic Surgery, George Washington University Hospital. His topic was "New Techniques: The da Vinci Robotic Surgical System." It provided us with insights into the remarkable new technology now available for performing the radical prostatectomy. A summary of Dr. Engel's informative remarks is presented beginning on page 10.

◆ PROGRAM FOR WEDNESDAY, FEBRUARY 2, 2005 ◆

Dr. James R. Jezior, Assistant Chief of Urology, WRAMC, recently returned from a year tour as Chief, General Surgery Service, and then Deputy Commander for Clinical Services at the 28th Combat Support Hospital, Baghdad, Iraq. A 1985 graduate of the United States Military Academy, he received his medical degree from the Uniformed Services University of the Health Sciences in 1989. Dr. Jezior will provide us with insights into the much-admired provision of combat-related medical treatment to our soldiers in Iraq. **His topic is "Serving the Soldier - Military Medicine in Iraq."** Join us at 7 PM on Wednesday, February 2, 2005, in Joel Auditorium at WRAMC. **You don't want to miss this one!** Plan now to attend and bring your spouse or a friend. They are always welcome.

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PROSTATE - SPECIFIC ISSUES

◆ **OK! Forget the Chardonnay, Bring on the Burgundy! And Make It a Double!** Stanford, et al., at the Hutchinson Cancer Research Center found that moderate consumption of red wine may lower the risk of prostate cancer. The study showed that four 4-ounce glasses per week of red wine lowers the risk by 50%. White wine showed a much weaker association with decreased prostate cancer risk. This is the first study to evaluate prostate cancer risk in relation to red versus white wine. Overall alcohol consumption showed no clear relationship with prostate cancer risk. In fact, beer and liquor consumption appeared to increase the relative risk. The researchers say that men who consume little or no alcohol should not rush out to begin drinking red wine based on this one study. On the other hand, men who already consume alcohol may wish to consider including a modest amount of red wine. (Source: Reuters Health Information, October 8, 2004)

◆ **Brachytherapy Seed Migration.** Chen, et al., at the Cleveland Clinic Foundation, recently reported on the subject of seed migration (radioactive 125 iodine) after brachytherapy. They evaluated 246 patients involving 23,184 seeds. Of these seeds, 75 were lost through the urethra and 25 migrated to the thorax. In the case of one patient, the researchers detected radioactivity, but no seed migration, in his chest-neck area, suggesting thyroid uptake from a leak in a seed implanted in the prostate. The researchers noted that this one case of thyroid uptake was not clinically significant; however, given the increasing use of brachytherapy, more cases of thyroid uptake are likely to be seen. The re-

port is seen as being beneficial to the study of thyroid cancers related to ionizing radiation. (Source: *Journal of Urology* 2004; 172:1827-1829 via Reuters Health Information, November 26, 2004)

◆ **Promising Research Regarding Prognostic Indicators for Prostate Cancer.** Even when primary therapy appears to be successful for localized prostate cancer, the cancer often recurs. Current methods to predict prostate cancer progression are not reliable. Vinata B. Lokeshwar, Ph.D., University of Miami School of Medicine, had developed a test for bladder cancer based on concentrations of hyaluronic acid (HA) and the enzyme hyaluronidase (HAase). The research was extended to see if HA/HAase had application to prostate cancer progression. Compared with other biochemical and structural markers such as PSA and Gleason score, the predictive value of HA/HAase was 85% accurate in predicting prostate cancer recurrence. This was superior to any other marker. The indicator shows great promise for improving doctors' ability to identify localized prostate cancers that are likely to progress so that these patients can receive more aggressive treatment. The research was funded by the Department of Defense Prostate Cancer Research Program. (Source: News Release, Congressionally Directed Medical Research Programs, December 3, 2004)

◆ **The Robotic-Assisted Prostatectomy.** A study of 300 men who had a minimally invasive prostatectomy using a robotic device showed that most had reduced blood loss, faster recovery. Dr. Vipul Patel used the da Vinci robotic system for 300 con-

secutive patients. The operation took between 1.5 and 2 hours. He cited the 10-times magnification and the cutting instruments for allowing greater precision. Patients had much less blood loss, spent only one day in the hospital, and returned to regular daily activities in an average of 8.7 days. Dr. Patel noted that widespread use of the da Vinci system is not likely any time soon. The system is expensive—about \$1.3 million—but insurance companies do cover the procedure. He expects that it will take ten years to learn whether cancer outcomes are better with the da Vinci system compared to the other therapies. He also expects demand for the procedure to increase as more patients learn about the faster recovery. (Source: *Journal of American College of Surgery* 2004;199:S100, October 11, 2004)

◆ **Sexual and Urinary Function after Prostatectomy.** Researchers at the Keck School of Medicine, University of Southern California, reported on the Prostate Cancer Outcomes Study sponsored by the National Cancer Institute. This large quality-of-life study involved almost 3,500 prostate cancer patients. One segment of the study asked non-Latino white, African-American, and Latino patients about changes in their urinary, bowel, and sexual function and how such changes affected their quality-of-life. Given that African-Americans tend to have worse outcomes after therapy, the researchers were surprised to find that 44% of African-Americans reported erections firm enough for intercourse compared to 22% of non-Latino white men and 28% for Latinos. The researchers also noted that among African-Americans, more patients tended to elect radiation therapy over surgery. This may be due to a perception that radiotherapy will have less effect on sexual

function. Men from the different ethnic/racial groups who were treated with radiation therapy had no significant differences in their recovery of sexual, urinary, and bowel functions after treatment. This may be attributable to the smaller sample size for those selecting radiotherapy. (Source: *Men's Health News*, Wednesday, October 13, 2004)

◆ **Is Aspirin an Answer?** In a study involving 1,200 men undergoing radiation therapy, Nguyen, et al., Fox Chase Cancer Center, identified 232 as taking nonsteroidal anti-inflammatory drugs (NSAIDs), and 974 were not so identified. The men were followed for four-and-one-half years with these results: (a) on average, men taking NSAIDs went 100 months before cancer spread, compared to 37 months for those not taking NSAIDs; (b) 3% of those on NSAIDs developed a new cancer compared to 5% for those not on NSAIDs; (c) 91% of those on NSAIDs were alive after 10 years, compared to 68% of those not on NSAIDs. Aspirin was not the only NSAID that seems to provide benefits. Other anti-inflammatory drugs such as ibuprofen and naproxen acted similarly. Observers explain that prostate cancer may develop in areas with chronic inflammation, and that NSAIDs may be able to modify this process, thereby affecting the cancer. The researchers note it is too early to say that aspirin and other NSAIDs are lifesavers; more confirmatory studies are needed. (Source: *Web MD Medical News*, October 4, 2004)

◆ **Delay in Radiotherapy After Diagnosis.** Men newly diagnosed with prostate cancer need time to explore primary treatment options and get second opinions in order to make a well-informed treatment

decision. Based on a recent study, men who eventually choose radiotherapy need not be overly concerned about any delay between diagnosis and therapy. Andrews, et al., at the Fox Chase Cancer Center, Philadelphia, found that men who delay the initiation of external beam radiation (EBRT) for up to three months after diagnosis had similar clinical and biochemical outcomes as patients who started treatment immediately upon diagnosis. The study involved 1,498 men over a twenty year period. The study analyzed patients in low-, medium-, and high-risk categories, using such factors as overall survival, metastasis, recurrence, radiation dosage, patient age, and adjuvant androgen deprivation. The researchers concluded that, while newly diagnosed men should be treated as soon as possible, the study should alleviate concerns about spending time to obtain the information necessary to make a treatment decision. (Source: ASTRO 46th Annual Meeting, Abstract 2176, October 5, 2004)

◆ **PSA Velocity May Predict Prostate Cancer Outcomes.** Researchers are seeking better ways to determine which PSA-detected prostate cancers are most likely to progress. Such knowledge would help address the problem not only about how to treat newly diagnosed men, but perhaps more importantly, to determine which men should be treated at all. PSA velocity, the rate at which PSA levels rise over time prior to diagnosis, is attracting more attention as a prognostic marker. A recent study involved 1,095 men with localized prostate cancer who underwent radical prostatectomy without adjuvant hormonal therapy. All the men had undergone more than one PSA test prior to diagnosis. Biopsies were done when PSA levels exceeded 2.5 ng/ml. Most tumors were detected by PSA screening only. An annual

PSA velocity of more than 2.0 ng/ml was associated significantly with disease recurrence, death from prostate cancer, and death from any cause, compared with lower PSA velocity. For example, 24 of 262 men with an annual PSA velocity of more than 2.0 ng/ml died from prostate cancer, but only 3 of 833 men with lower PSA velocity died from the disease. PSA velocity, PSA at diagnosis, Gleason score after biopsy, and tumor stage at diagnosis all were significant predictors of death from prostate cancer. PSA velocity before diagnosis discriminated impressively between fatal and non-fatal prostate cancers. Randomized clinical trials are still required to determine whether this information can be used to inform treatment decisions. (Source: *Journal Watch*, MA Medical Society, July 13, 2004)

◆ **More on Predicting Outcomes After RP.** Rogers, et al., at Johns Hopkins Hospital, assessed the clinical outcomes of 160 men who had persistently detectable PSA levels (greater or equal to 0.1 ng/ml) after radical prostatectomy for localized prostate cancer. Seventy-five men (47%) developed distant metastases after surgery; the median time from surgery to metastases was 5 years. The probability of survival free of distant metastases at 3, 5, and 10 years was 68%, 49%, and 22%, respectively. The researchers found that post-prostatectomy PSA slope and the prostatectomy Gleason score are useful in identifying patients at greater risk for developing distant metastasis. A rising PSA slope greater than or equal to 0.5 ng/ml per month for the period of 3 to 12 months after surgery was especially effective in identifying high-risk patients. Furthermore, men with prostatectomy Gleason scores less than 8 had a 62% chance of remaining free of metastasis for five years

after surgery compared with a 30% probability in men with Gleason scores between 8 and 10. The value of the study is that the early identification of men at higher risk for metastasis should help physicians determine the need, timing, and extent of adjuvant treatments. (Source: *Cancer* 2004; 101:2549-2556 via Reuters Health Information, December 27, 2004)

◆ **Osteoporosis Neglected in Men Being Treated by ADT.** Androgen deprivation therapy (ADT) is associated with accelerated rates of osteoporosis and fracture. Dr. Tawee Tanvetyanon, Loyola University Chicago Medical Center, reviewed the records of 184 patients who had received ADT with goserelin injections for a year or more. Theoretically, these patients have higher risk of osteoporotic fracture and should be deemed a priority for osteoporotic therapy. Yet, Dr. Tanvetyanon found that relatively few of them were having this risk addressed. Surprisingly, primary care physicians provided the greatest number of osteoporotic interventions while cancer-related specialists provided the fewest. He says that guidelines for bone mineral density measurement and treatment interventions are necessary for prostate cancer patients undergoing ADT. (Source: *Cancer* 2005; 103 via Reuters Health Information, December 14, 2004)

◆ **Salvage Radical Prostatectomy as an Option.** Salvage radical prostatectomy after failed radiotherapy has been a dubious option for dealing with cancer recurrence. Recent research suggests that the salvage radical prostatectomy may offer a better opportunity for long-term cancer control than heretofore. Eastham, et al., Memorial Sloan-Kettering Cancer Center, studied data from 100 patients who underwent salvage radical prostatectomy following failed external beam radiotherapy and

brachytherapy. They concluded that the technically demanding procedure has an acceptable morbidity profile when performed by an experienced surgeon. Rates of urinary incontinence and erectile dysfunction are high compared to the standard radical prostatectomy, but these outcomes continue to improve. Complication rates dropped significantly from 33% to 13% over a ten year period. The rectal injury rate fell from 15% to 2%. The researchers concluded that the improvement in the morbidity profile should encourage more physicians to consider the salvage radical prostatectomy as a potentially curative procedure. (Source: *J Urol* 2004; 172:2239-2243 via Reuters Health Information, December 15, 2004)

◆ **Watchful Waiting May Be OK for Selected Men.** If you are newly diagnosed with prostate cancer and your PSA remains stable or declines over time, you may be among a carefully chosen population that is suitable for watchful waiting. De Vries, et al., Erasmus Medical Center, Rotterdam, The Netherlands, followed 191 men with prostate cancer detected by screening at an average age of 69 years. The men chose watchful waiting based on medical advice or personal preference. About 84% of the men had “favorable” tumor characteristics defined as PSA less than 10 ng/ml, clinical stage T2A, and a Gleason score of 3+3 or lower. The average PSA for the group was 3.9 ng/ml. After 40 months, 35 men had a declining PSA slope, while 85 men had an increasing PSA slope. During the follow-up period, 30 men eventually underwent treatment by surgery or radiation. Six men died, but none from prostate cancer. The researchers say their limited study showed that carefully selected men could safely defer curative treatment, or even refrain

from treatment. Tumor parameters, PSA doubling time, and PSA slope could be used to monitor tumor activity and possibly help determine the timing of deferred treatment. The authors recognize the need to validate their results by further study. (Source: *J Urol* 2004; 172:2193-2196)

◆ **Quality of Life Issues Assume Greater Importance.** For men with early prostate cancer, the primary therapies are

frank discussion with their doctors before selecting a primary therapy. For example, if a surgeon has not raised the subject of nerve sparing prior to surgery, the patient can rightly assume that the technique is not a major concern of the surgeon and that needs to be addressed. Newly diagnosed men should do the homework necessary for them to understand the incidence of such potential side effects as incontinence, erectile dysfunction, urinary retention, rectal burning, urethral burning, and hemorrhagic cystitis (inflammation of the bladder with bleeding) to the extent they are associated with the several therapies. (Source: *Men's Health Advisor*, The Cleveland Clinic, Vol. 6: No. 10; pp 4-5, October 2004)

radical prostatectomy, external beam radiation, or brachytherapy. For many men with very early tumors, the 10-year data show no difference in survival among the three options, according to Craig Zippe, MD, at Glickman Urologic Institute, The Cleveland Clinic. That is why it is so important that men have a full and

The WRAMC Us TOO newsletter, including back issues, is available online at the website of the Center for Prostate Disease Research (CPDR) at www.cpdr.org. The website also offers other useful prostate cancer-related information. Be sure to visit it regularly.

“THE DOCTOR IS IN”

Paul Y. Song, MD

**Department of Radiation Oncology and the Center for Prostate Disease Research,
WRAMC**

(Editor's Note: Readers should not act on the responses without prior consultation with their own physicians.)

QUESTION: I read very little about proton beam radiation as a primary therapy for prostate cancer. How does it compare with Intensity Modulated Radiation Therapy (IMRT) in terms of potential recurrence and side effects?

ANSWER: Protons are heavy particle beams that have interesting and potentially beneficial dose distribution characteristics. Radiobiologically, their properties are not significantly different from x-rays. But protons produce a dose distribution phenomenon called a Bragg Peak which allows for the concentration of dose inside and immediately adjacent to a tumor volume while minimizing the dose to surrounding tissues with very minimal scattering. The technology is very expensive and currently only available at a few sites, such as Loma Linda and Massachusetts General. The technology has been evaluated most extensively in the management of choroidal melanoma, base of skull tumors, soft-tissue sarcomas, and most recently prostate cancer. Current results for the treatment of prostate cancer are very comparable to those reported with intensity modulated radiation therapy (IMRT).

Now let me add to this discussion a brief mention of photons. Almost all tumors treated with radiation are treated with either photons or electrons. X-rays are bundles of energy called photons. Photons are delivered using linear accelerators which use high frequency electromagnetic waves to accelerate electrons to a high energy through a microwave accelerator structure. The high energy electron beam can be used by itself to treat superficial tumors or it can be made to strike a target to produce an x-

ray beam (photon) for treating deep seated tumors. It is these photons that are used in the treatment of prostate cancer. Whether one is talking about three-dimensional treatment or intensity modulated treatment, both refer to treatment with photons. Three-dimensional treatment emphasizes an image-based, virtual simulation approach of defining the tumor and critical structure volumes for the individual patient. Radiation beams are customized to the desired target volume and to reduce the unnecessary treatment of healthy structures. IMRT is a form of three-dimensional treatment in which a computer-aided optimization process is used to determine customized non-uniform radiation dose distributions.

IMRT provides the ability to optimally manipulate intensities of individual photon rays within each treatment field and permits greater custom design and optimization of dose distributions. IMRT can produce far superior and conformal dose distributions than 3D treatment. This allows for higher doses to the desired targets and a significantly reduced volume of normal tissue exposed to toxic doses, reducing overall complication rates and achieving better local tumor control. Walter Reed Army Medical Center offers IMRT for the treatment of prostate cancer.

QUESTION: What has been the general experience regarding the migration of radioactive seeds after brachytherapy?

ANSWER: Seed migration after prostate seed brachytherapy has been reported to occur in up to 30% of all patients. Most of the seed migration remains within the pelvis, but 1-2% have been found to travel to the lung. Given the relative short half-life

of the isotopes used (17 days for Pd-103 and 60 days for I-131), the clinical significance appears to be insignificant as there are no reported toxicity or late term effects noted.

WRAMC Us TOO MEETING SCHEDULE

Our regular quarterly meetings feature a medical professional presenting a topic of interest to the prostate cancer community. They are scheduled for the first Wednesday in the months of February, May, August, and November from 7-8:30 PM in Joel Auditorium, Walter Reed Army Medical Center (WRAMC). The newsletter announces the speaker and the topic. The speaker's remarks are recorded, summarized and presented as the major item in the next quarterly issue of the newsletter.

We also have two monthly sessions. These informal, friendly meetings allow the exchange of views and experiences among the attendees. They offer camaraderie, frank discussion, information, and support. They are especially useful for the newly diagnosed man. The monthly sessions have a daytime and an evening schedule. The daytime session meets on the second Wednesday of every month from 1:30-3:00 PM. The evening session meets on the second Thursday of every month from 6:30-8:00 PM. Both monthly sessions convene in the conference room, Center for Prostate Disease Research (Ward 56), WRAMC.

Remember, you need not have been treated at WRAMC nor have any military-related affiliation in order to attend our meetings. Everyone is welcome.

New Techniques: The da Vinci Robotic Surgical System

Jason D. Engel, MD

Center for Robotic Surgery

George Washington University Hospital

(A summary of a presentation to the WRAMC US TOO on November 3, 2004)

INTRODUCTION

I'm here tonight to describe the way that I remove a prostate using the da Vinci Robotic Surgical System. By no means am I here to say that this is the only way to do it. It's the way I do it; I think it's the wave of the future. Its use is not widespread at present, but it is important that interested persons like yourselves hear about it now because you are going to hear about it more in the future. Tonight I'm going to take you through the steps of a radical prostatectomy using the da Vinci system so you can understand the procedure and where we are right now.

LAPAROSCOPY IN GENERAL

Let's start with the basics. No doubt everyone here is familiar with the open radical prostatectomy. But you are likely not equally familiar with the notion of laparoscopic prostatectomy. What is laparoscopy? In effect, laparoscopy is a way to do surgery through small incisions that you poke instruments through and then observe the process on a TV monitor. Basically your hands are outside the patient's body. The surgeon is doing the same operation that he otherwise would do "hands on" through a major incision. Laparoscopy gets the job done with the advantage of improved recovery time. In general, that's why laparoscopy is done. Laparoscopy is very common for several surgeries such as gall bladder removal, appendectomies, and hernias. More and more procedures are being done this way. Again, in general, the goal there is to perform the surgery effectively while improving on patient recovery time.

Instead of making a major incision to gain access, surgeons using laparoscopic techniques make several small incisions called "ports." Port placement is a very

important aspect of laparoscopic surgery because there is a strategy in selecting port location. Colleagues frequently inquire—"What was your port placement?" Laparoscopy begins with the insertion of a needle into the patient's abdomen to induce air. This creates a space so the surgeon can see inside the abdomen. Then he places small instruments through the ports. The number and size of the ports depend on the nature of the operation. That is basic laparoscopy. It doesn't matter what operation we're talking about.

The difference between laparoscopy and open surgery is basically viewing things on a TV screen compared to hands-on, direct visualization inside the patient. Note this slide; this is the classic set up in an operation called "pyeloplasty." Notice that my hands are outside the patient. I'm standing over the patient, but I am not looking at her. Instead my attention is focused on the TV screen to see what I am doing. This illustrates the basic difference between laparoscopy and open surgery. This person has had a kidney operation. I'm not going to do this operation any better than I would do in the open case. I do the same operation that I would otherwise do if I'd made a big incision. The difference is she went home the next day with full recovery in a week or two, whereas otherwise you would think in terms of a month or more. So, again, laparoscopy improves recovery time in general.

Take a look at this close-up of my hands. The instruments I am holding resemble chopsticks. My hands are able to move them around, but they are effectively limited to only one motion, that is, being able to open and close. Since I can only open and close, I am not able to perform more complex movements that would be

possible if I had instruments that moved just like my hands. Many operations can be done with the “open-close” motion, but it is somewhat of a limitation that we will talk about later. In general, laparoscopy has the advantages of inducing less pain, getting the patient out of the hospital faster, and quicker patient recovery. The disadvantage of laparoscopy is that the instruments are less mobile than the surgeon would prefer—it is not even close to using his own hands. The other significant disadvantage is that the image seen on the TV screen is two-dimensional. Yes, you get a beautiful picture, but judging depth perception is difficult. It makes things like suturing—where the needle is, the direction it is pointing—very difficult. Although most laparoscopic procedures have become commonplace, those procedures requiring extremely precise reconstruction remain a challenge this way.

Over the last ten to fifteen years, it's safe to say that laparoscopy has become more and more popular. You can see reports in the literature saying in effect, "Look what I've been able to do laparoscopically!" Many of those applications never made a lot of sense. Laparoscopic prostatectomy was one example. Reports boasted of being able to do a prostatectomy laparoscopically. (**Note:** I am not yet talking about the da Vinci robot here; I'm talking in general about laparoscopy for the prostatectomy.) The situation is this—the technique for the open radical prostatectomy has improved over time so that patients now recover very quickly. Without a significant difference in recovery time, why resort to the difficult laparoscopic procedure? Furthermore, the surgeon needs to do fifty to a hundred of them to gain proficiency. Even then, it can take much longer than does the open procedure. Yes, in kidney surgery and

certainly in gall bladder surgery, you can really make a huge difference in recovery time. But there are several reasons for laparoscopic prostatectomy not to be widely employed. This procedure is not necessarily better than the open procedure and may not even be as good. For example, there were valid concerns about using cautery next to the nerves. Although there are practitioners who have done hundreds of procedures and are very skilled, I doubt that laparoscopy will become the dominant technique for prostatectomy. Ultimately, I don't think very many more surgeons will be trained to do it that way. I did about five of them, and I thought it was ridiculous to try to adopt this technique. It's hard to look a patient in the eye and tell him it's the better operation and it's worth extending the time of the operation time to six to eight hours when you can do a great job using the open technique.

THE DA VINCI ROBOTIC SYSTEM

Then along came the da Vinci robot. Originally it was developed for a military and NASA application called “telesurgery,” providing the ability to perform surgery where the surgeon wouldn't have to be present in the room. That would have great applicability for the military and space missions, as well as for remote areas in a civilian setting. The design engineers likely looked at the limitations of laparoscopy—the limited ability to have the instruments be as good as hands, as well as the lack of visual depth perception. These limitations had to be overcome. The da Vinci Robotic Surgical System does just that. The instruments are completely different; they move just like hands. It is no longer just an open and closing motion; it is a function of

six pulleys to accomplish what your hands can do. It also uses two cameras to convert the TV image into 3-D, solving the depth perception problem. Now the TV image is as if the surgeon is actually inside the patient—it's absolutely perfect 3-D! Just as there are many laparoscopic instruments, there are many da Vinci instruments, but the da Vinci instruments are much smaller at the tip and much finer.

Some persons may have the distorted impression that the robot performs autonomously—that it walks up to the patient and operates on computer program as if it were spot-welding on an automobile assembly line! It's not like that at all. Take a look at this slide. It shows the two cameras and what the robot looks like. The machine actually is an interface between the surgeon's hands and the ends of the instruments. There has to be some way for me to control the end of the instrument, and it's too complex to do it with my own hands. Ultimately the robot arms attach to the laparoscopic instruments that work within those ports that I showed you earlier.

Here is another illustration. I am sitting at a console where I perform the da Vinci operation. I am looking at a 3-D TV screen. My hands are velcro-hinged to the robotic arms. I am moving my hands just as though I were operating directly, manipulating the instruments inside the patient. Now you can appreciate the potential of the military concept of telesurgery. The patient could be remote from the surgeon who would be performing the operation via the module. This telesurgery concept is not yet technically feasible, but it is not far-fetched to expect that it will eventually become a reality.

Remember what I said earlier about the claims when laparoscopy became more popular, "Look what I can do! See what I pulled off!" Well, the same situation has developed with the da Vinci robotic system. This list shows what procedures now are being done with the da Vinci. I can tell you that there is no reason for over half of them. I have already noted that it didn't make a lot of sense to do a laparoscopic prostatectomy, even by a proficient surgeon. But it does make sense to do a da Vinci laparoscopic radical prostatectomy because there is a much faster learning curve. In doing a laparoscopic procedure, the surgeon lacks depth perception, so he has to assume the needle is going to be facing a certain way. Much of the technique depends on rote memorization. In contrast, the da Vinci technique provides the freedom similar to the open surgery technique.

SIDE EFFECTS

No doubt many of you are interested in the potential side effects associated with the da Vinci technique. Let me hasten to note that the data is skimpy because the da Vinci radical prostatectomy is a new procedure. Relying on anecdotal evidence and my personal experience, I believe the da Vinci prostatectomy is more effective than an open prostatectomy in nerve sparing to preserve potency. Whether that translates into a better post-operative erection rate will be very hard to demonstrate conclusively. But that is definitely my perception from my own experience. I see more patients regain potency quicker than when I was doing the open prostatectomy. Regarding continence, the anastomosis (reconnecting the plumbing, so to speak) is much more exact for me using the da Vinci. Patients are completely watertight

every time by definition, and I can test for it at the end of the procedure by irrigating the catheter. This also allows me to keep the catheter in place for a much shorter time. In general, the catheter need remain in place for about five to seven days compared to about ten to fourteen days for the open procedure.

THE BOTTOM LINE

The bottom line is this—the da Vinci has not yet gained full acceptance, but in my practice, I am convinced it is the better operation. I perform the radical prostatectomy much better when I use this tool. It is important to remember that the da Vinci's advantage is not simply improved recovery time, although it does that. Improved recovery time is important, but that is not enough reason, in and of itself, to opt for the procedure. No, it must first and foremost be superior in the efficacious removal of the diseased prostate while minimizing potential side effects. And that has been my experience with the da Vinci system.

VIEWING THE PROCEDURE

(Editor's note: Dr. Engel now showed a series of slides and film clips that graphically depicted the employment of the da Vinci robotic system. They cannot be included here, but his accompanying narrative is useful.)

Now let's take a look at some slides and film clips showing port placement and the da Vinci procedure. After detaching the prostate from the bladder, the goal is to reconnect the bladder and the urethra in such a way as to avoid damage to the sphincter. In the open prostatectomy, the

surgeon cannot always visualize exactly what he is doing, so it is not easy to do a very good anastomosis (connection). With the da Vinci, I'm not relying on the patient's postoperative healing process. I am able to place thirteen or fourteen sutures in the patient compared to four or five in the open prostatectomy. My camera is going to be right here; so my eyes are provided with ten-times magnification enabling every stitch to be exactly where I want it. A side benefit is that the catheter must stay in place a much shorter time.

This is a cadaver. Now you will be able to see how the da Vinci operation is performed. Here is the rectum; this is the prostate; this is the bladder. Notice the structure right here—that is one of the neurovascular bundles which controls erections. When I'm doing an open prostatectomy through an incision, I am standing way up there with my head looking down. I'm going to cut some tissue here and push all this down and hope I don't damage the bundle. And many times I am successful. But when I'm doing a da Vinci procedure, I'm actually coming from a more favorable angle. When it's time for me to deal with this nerve bundle, I come at it from this angle with the camera right here, and I'm able to snip, snip, snip and the bundle comes right off. It's very obvious that the neurovascular bundle is being spared.

Now for more film clips. I'm not trying to teach you how to do the operation! I'm just trying to show you what happens during the da Vinci procedure. If I were giving this talk to urologists who do laparoscopy, their first question would be, "What was your port placement?" If you're able to study someone else's port placement, you can learn from it. Note that the patient is

positioned in a very odd way. His legs are in the stirrups, but then he is tilted head down as you can see. I'm inside the patient's abdomen now. Anatomically, the prostate is not in the abdominal compartment; it's in the pelvic compartment. There is a wall between the two compartments. The surgeon must create a "door" to go to the other side. The door in this case is the bladder. Here it is. Now I'm going to cut a big triangle from here to here, pull it down, and get to where I need to be. Notice how smooth the movement is. That is so because the instrument won't allow me to make a sudden jerky movement. So that's why it's so good. You can set a ratio between your hand movement and the tool movement to ensure a very slow, steady movement that facilitates sewing and other manipulation. Now here's where the prostate is. Sewing would be extremely difficult without the robot. I can put my camera all the way down where that needle point is to see exactly where it should go. The next step is to tie a knot which is quite easy with the robot. Watch how I'm using my hands. I'm having no problem whatever with depth perception. Here I am taking the bladder off the prostate. See the urine coming out of the bladder? The bladder wall should be a circle when I'm done. Here's the top half of the circle. See that? The bottom half is still attached here, so I'll have to detach it now; then I'll have a circle. At the end I'm going to connect that circle to the urethra. See the circle? This is the inside of the bladder. What I'm going to do is to finish detaching it. This is the prostate, and this is the catheter I'm using to hold it up. Inside here in the next step, I'll see those seminal vesicles that we talked about before. I'll ultimately be able to use them to hold up the prostate. These are the special instruments and clips that I use in a laparoscopy.

See this extra arm? My machine has an extra arm which allows me not to forego an additional assistant. There also is one extra port; so I have five ports. I'm going to use this arm to hold up the seminal vesicles in a sort of step-by-step-by-step process. One of the arms is moving my camera. I am controlling the camera with my feet by pressing on different pedals. My assistant is using the extra port mostly to suck the smoke that you saw at the outset. He can remove that device in order to hand me a stitch, a clip, or other items as I may need them. The assistant is

extremely important. We must work as a team in anticipating each other's movements. It's the difference between night and day when you don't have an experienced assistant.

The next step is to tease down the rectum and get at the prostate. That leaves you with the prostate held up with a tube that is called the pedicle. Look here—that is the prostate as it is held up. Here's the pedicle. I've clipped it and I'm going to cut it. I'm not going to use any cautery, which is one of the big detractors in conventional laparoscopic prostatectomy. Remember that neurovascular bundle we saw earlier? You don't want to do a cautery here because you only have one chance. If you burn the nerve here, it's finished. So from this step on I use only scissors and not any cautery. We're going to cut this blood vessel, a part of the prostate artery.

Now I have cut through and entered that plane, I'm going to be able to peel that nerve bundle right down and see it the whole way. Here's the bundle. Do you see all those nerves? Here's the bottom of the prostate. So I'm going to be able to peel this off—all these nerves—and when I'm done, I'll see this nerve bundle perfectly preserved all the way up. When you do it this way, you just see these two beautiful bundles going along the rectum just as we saw on the cadaver. It is rare to see them that well preserved in an open prostatectomy.

Once you've done that, the prostate is completely freed except for the urethra. The only thing holding this prostate is the urethra. Note how long the stump of the urethra is. Remember how difficult I said it was to see in this area. Now I'm able to dissect the urethra completely away and you can see this man's sphincter. It is obvious that I'm not going to hurt it. You

can see the length of the stump to which I'm going to connect. There will be no problem here because I can easily see what I'm doing the whole time. At this point, the prostate is practically free. All that's left to do is to make one cut. People ask, "What do you do to get the excised prostate out of the patient?" It is placed in a bag and rolled up in the patient's abdomen with a very long string for later removal. Taking out the specimen is the last step of the procedure.

Now we proceed to reconstruct the patient. Here's the bladder. I'm holding it up. Here's the hole in the bladder where the prostate was. I'm pulling on the back wall and sewing this up in a running fashion. The da Vinci robot allows me to see well all the way around, making it so much easier to connect the bladder to the urethra. Here I am sewing the urethra. My assistant is showing it to me. There is perfect depth perception and this makes for much more exact sewing. In the open operation the surgeon's visibility is very limited, so he is hoping that the urethra is attached to the bladder with a good bite. With the da Vinci, I know that every bite is perfect. If it's not perfect, I just take it out and do it over. At this point I'm just about done. I've put a catheter in the patient. Here I'm tying the knot. This is the bladder, and the urethra is here. At the end, I'll fill the patient's bladder to make sure he urinates well and to observe for leaks. By definition, it never does leak because of the number and accurate placement of the sutures. Also, that is what permits the removal of the drain the next morning because I know it won't be sucking out urine. With the open operation, you expect a little urine leakage until the body seals it up.

Now back to the excised prostate in the bag! It is removed via the belly button

port. The belly button incision is slightly larger than the others to accommodate removal of the bag. The prostate gets squishy once you've cut those pedicles. The good thing about the bag is that it allows you to deliver the prostate a lot like a baby. You pull it, then sort of rock back and forth until it suddenly comes out. So the incision ends up being much smaller than the specimen, as is generally the case with all laparoscopies.

This concludes my presentation. I hope that you can appreciate the advantages of the da Vinci Robotic System. Are there any questions?

Q: Have studies been done comparing incontinence rates among the various therapies?

A: It is reasonably established in the literature that the continence results are better with the da Vinci system. On the other hand, the rate of incontinence from the open prostatectomy has dropped dramatically over time due to improvements in technology and technique. The other point is how much faster the patient becomes completely dry after the laparoscopic prostatectomy using the da Vinci system.

Q: What is the length of the operation?

A: That depends on the skill and proficiency of the surgeon. These cases took me ten hours at first. Now it takes me an hour and a half. For me, personally, it is much faster to do it this way than to do the open procedure. Of course, there is much more pre-operative set-up time. Putting in the ports takes a little longer

than actually making an incision. However, when you get proficient with the procedure it starts making sense.

Q: How long did you have to train on the da Vinci before you could actually use it?

A: It took about thirty to forty cases to get very good at it.

Q: What about insurance coverage for the prostatectomy using the da Vinci system?

A: Insurance companies pay hospitals what amounts to a set fee. So the companies don't have a lot of incentive to promote the da Vinci system, even though patients go home sooner. When a patient asks me, "Is my insurance likely to cover it?" my answer to him is, "Yes, open prostatectomy and laparoscopic prostatectomy are always covered."

Q: Are there any prostate cancer patients who are less likely for robotic surgery?

A: Practically everyone who is a candidate for surgery is a candidate for this. If there is one category of patient for whom the da Vinci system is less likely that would be obese men. In the past there have been suggestions that men who had prior abdominal surgery or the TURP should not be candidates for robotic surgery, but they are not deal breakers. Of course, each patient has to be carefully evaluated no matter what therapy they select.

Q: Does the da Vinci system offer any advantage as a form of salvage prostatectomy?

A: The salvage prostatectomy after failed radiation therapy is so fraught with complications that it is seldom considered as an option. Other procedures have been

developed that make a lot more sense. The chance of me making a hole in the rectum might be 10 to 20 percent and very bad complications could occur. Instead, a possible option in this case would be cryotherapy. I don't use it at all as a primary modality, but in my opinion it would be one way to avoid the complications associated with salvage prostatectomy.

Q: What factors do you consider in deciding whether to do a lymph node dissection?

A: I base the lymph node dissection decision on these factors: (1) an examination of the Kattan Nomograms or the Partin Tables to get an indication of the risk of extracapsular spread; high risk generally is associated with a Gleason score of 10, but I tend to look for a Gleason score of 7 or higher; (2) another reason for a lymph node dissection is for the patient's peace of mind. The patient often says, "I don't care what the literature shows. I want the procedure done." I'm willing to do it for his peace of mind, but I don't routinely offer it.

Q: Is there a downside to having a lymph node dissection?

A: The downside when done through an incision is that lymph nodes are basically

filters for lymph, so if you obstruct the lymph system, the lymph has nowhere to go at first, and then it finds a way out through other channels. The lymph can collect as a lymphocele, and cause complications. A lymphocele can set you up for a blood clot in your leg because the vein gets stressed. Anytime you propose any procedure, you must be able to look the patient in the face and tell him there is a good reason to do it because there are always risks. Using the da Vinci system, the chance of a lymphocele developing is far less because I've made a connection between that area of the body and the peritoneal cavity; the lymph simply leaks into the abdomen and is absorbed by the body. So in this case the lymphocele is not as much of an issue.

Q: Can the da Vinci system be used to repair a hernia?

A: You wouldn't want to break out a tool like this for hernia repair. Of course, the repair can be done laparoscopically. That is how it's done now in many patients. I would not use the da Vinci; instead, I would use the basic laparoscopic procedure. Remember I said at the outset that the da Vinci could be used for a long list of procedures, but it would be ridiculous to use it for many of them. So for hernia repair, opt for the laparoscopy, but not the da Vinci.

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(About Your Newsletter - Continued from page 1)

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We are especially grateful to our volunteer counselors who are shown on page 19 of every edition. They make themselves available by telephone to any person who wishes to discuss in confidence any issue related to prostate cancer within their personal experience with the disease.

Finally, we see this as your newsletter. We want to be responsive to your needs for “news you can use” about prostate cancer. We welcome your suggestions and comments, and we are always interested in receiving stories of your own experience with prostate cancer that we can share with the readership.

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