THE EVOLUTION OF THE UROLOGICAL SPECIES
William A. See, MD, Professor of Urology, Chairman of Urology

... Urology newsletter highlights some of the minimally invasive strategies being utilized at our institution in an effort to improve treatment outcomes.

The pace and breadth of change the field of urology has undergone in the last several decades is truly amazing. When I began my residency in 1982, ureterolithotomy was an accepted approach for managing stone disease. Over the six years of my training, this cornerstone of calculous management was rendered obsolete by advances in endoscopic instrumentation and the development of extracorporeal shock wave lithotripsy. Much like the dinosaurs, an approach that dominated the landscape became extinct as a consequence of environmental factors. The fossils of that era, instruments such as the randall stone forceps, have been relegated to museums, private collections and forgotten storage closets. Similar examples of recent dramatic evolutionary change could be cited for other urological conditions including benign prostatic hyperplasia, erectile dysfunction, neurogenic bladder and incontinence.

Much as was the case for these diseases, other “foundation stones” of the specialty are currently being challenged. Chief among these today is the role of open surgical intervention. Minimally invasive approaches to diseases requiring reconstructive/extirpative management have rapidly morphed into related but distinct species. Hand assisted laparoscopy, robotic assisted laparoscopy, natural orifice transluminal endoscopic surgery, percutaneous cryosurgery, and high intensity focused ultrasound are recent derivations of conventional laparoscopy and ablative surgical techniques. All of these approaches offer the promise of decreased morbidity and equivalent efficacy. This inaugural issue of the Medical College of Wisconsin Department of Urology newsletter highlights some of the minimally invasive strategies being utilized at our institution in an effort to improve treatment outcomes.

While effective disease management in combination with improved patient care should be paramount, the Darwinian pressures culminating in the origin of these new surgical species are complex. It is important to recognize that a spectrum of additional environmental forces is playing a role in this evolutionary process. Direct to consumer marketing, industry growth strategies, legitimate scientific discovery, and personal/professional gain are contributing to the “selection” of the dominant approach. Whether or not we, as healthcare professionals, condone the role of these non-patient focused market forces, they none-the-less reflect the reality of our current healthcare environment.

While a powerful and omnipresent force, evolutionary pressure does not always culminate in durable change. The fossil record is replete
What’s New?

Kenneth Jacobsohn, MD, joined the Department of Urology on January 1, 2010 as an assistant professor and the department’s director of Minimally Invasive Urologic Surgery. Dr. Jacobsohn completed his residency at the University of Texas-Houston Health Science Center and a fellowship in minimally invasive urologic oncology at the City of Hope in Duarte, Calif.

On July 1, Amy Guise, MD, joined the department as an assistant professor. Dr. Guise is a 2010 graduate of the Department of Urology Residency Program. Her patient care focus is general urology and the management of stone disease.

Beginning in 2008, the department added an accredited two year pediatric urology fellowship, which is being led by world renowned pediatric urologist Michael Mitchell, MD. Travis Groth, MD, completed the fellowship in June of this year and joined the department’s pediatric section as an assistant professor on July 1.

The Department of Urology is in the first phase of a five year plan to increase its residency program from 10 to 15 residents. This increase was recently approved by the residency review committee due to significant growth in clinical volumes over the past five years.

Two years ago, Froedtert & The Medical College of Wisconsin opened a comprehensive cancer center which focuses on multidisciplinary treatment of a broad range of malignancies. We have a fully operational urologic oncology program within the Clinical Cancer Center.

The Department of Urology has expanded its community outreach program for adult urology and is providing office and surgical urologic services at Community Memorial Hospital in Menomonee Falls, as well as at St. Joseph’s Hospital in West Bend.

Applications of Laparoscopy and Minimally Invasive Techniques in Pediatric Urology

By Anthony Balcom, MD, Assistant Professor of Urology

Pediatric urologic laparoscopy began in the mid-1980s, when laparoscopic evaluation of the non-palpable testis began, which facilitated accurate diagnosis and treatment of intra-abdominal testes. Shortly thereafter, many other applications of laparoscopy and minimally invasive techniques in pediatric urology occurred, the first of which was accurate placement of peritoneal dialysis catheters using laparoscopic guidance. This allowed us to place the dialysis catheters away from the omentum which would tend to plug the catheter. Laparoscopy then advanced to the point where we could accomplish complete laparoscopic orchidopexy successfully.

The treatment of ureteropelvic junction obstruction followed shortly thereafter — especially in children approximately seven years of age and older. The laparoscopic approach allows very precise reconstruction of the ureteropelvic junction after the excision of the stenotic segment, with minimal skin scarring, and very comparable hospital stay post-operatively. In fact, most authorities would now agree that the laparoscopic approach to the ureteropelvic junction obstruction in the older child is the preferred method.

Other procedures, such as varicocele ligation, nephrectomy for non-functioning dysplastic kidneys, especially the multicystic dysplastic kidney, ureteroneocystostomy, and partial nephrectomy for benign disease have been undertaken with good success by the pediatric urologic laparoscopist. At Children’s Hospital of Wisconsin, however, we have not undertaken laparoscopic ureteroneocystostomy, because we think we have superior success rates with a very small open Pfannenstiel type of “bikini line” incision. In the mid-teen patient, a laparoscopic ureteroneocystostomy would potentially be applicable.

As pediatric urologists, we also deal with inguinal hernias and hydroceles, and laparoscopy through the hernia sac to assess the contra-lateral processes vaginalis has also enjoyed useful application. In 1993, we were among the first in the country to incorporate laparoscopy via the hernia sac into our assessment of the contra-lateral side. The laparoscopic approach minimizes development of contra-lateral symptomatic inguinal hernias and hydroceles and minimizes repeat anesthetics for the child. We then evolved to pure laparoscopic hernia repair in boys and girls.

Some of the rare applications of laparoscopy in pediatric urology continued on page 6
High Intensity Focused Ultrasound Clinical Trial

By Holly Kelly, RN, Clinical Research Manager; Principal Investigator, Robert F. Donnell, MD

The Department of Urology is participating in a high intensity focused ultrasound (HIFU) trial for the treatment of clinically localized prostate cancer. We are currently one of 12 locations in the United States and Canada and the only site in the Midwest participating in this study. Robert Donnell, MD, is the principal investigator for our site.

The device being utilized is the Ablatherm®, an integrated imaging system designed to target and deliver high intensity focused ultrasound energy to the prostate gland, resulting in thermal destruction of prostate tissue. The focused energy is delivered from an endorectal probe containing ultrasound treatment and imaging transducers. Treatment is expected to result in immediate thermal destruction of prostate tissue. This is performed under spinal or general anesthesia on an outpatient basis. Patients enrolled in the study have low risk prostate cancer. The study’s inclusion criteria included: clinical stage T1-T2a and prostate specific antigen (PSA) <10 ng/mL, Gleason score <6, AP diameter <25mm and prostate volume <40cc.

Although this is a pioneering study in the United States, approximately 5,000 patients, primarily in Europe, have thus far been treated with this device. In most cases, the HIFU procedure takes approximately one and one half to three hours. Published reports of patients treated with the Ablatherm HIFU device reveal encouraging treatment success rates based upon PSA follow up and histologic examination of post-treatment prostate biopsies. The desired endpoint of the current study we are participating in defines success as a PSA nadir <0.5ng/ml and stability of PSA though 24 months without a positive post-treatment biopsy. The most prevalent side effects noted in European literature have been ejaculatory problems, bladder outlet obstruction, impotence and dysuria.

References

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For most of the past decade, Medical College of Wisconsin physicians have performed a significant volume of hand assisted laparoscopic radical nephrectomies, as well as several different conventional laparoscopic procedures. In fact, some of Wisconsin’s first laparoscopic partial nephrectomies were performed at Froedtert & The Medical College of Wisconsin in 2006. Following recent faculty changes, we have significantly changed the breadth of robotic assisted laparoscopic procedures we routinely perform.

With the addition of Kenneth Jacobsohn, MD, assistant professor of Urology as our director of Minimally Invasive Urologic Surgery, we now offer a full complement of robotic upper and lower urinary tract surgery. Dr. Jacobsohn has performed more than 60 robotic partial nephrectomies since late 2008. His experience is the largest in Wisconsin and among the largest regionally.

Robotic renal surgery is the fastest growing urologic application of robotic surgery, and offers all the benefits of minimally invasive surgery — less pain, decreased blood loss and faster recovery — while maintaining oncologic principles and renal function. Changing from a predominantly open surgical approach to robotic partial nephrectomy for straightforward and complex renal masses has had a tremendously positive impact for our patients. This cutting-edge approach to renal surgery shortens hospital stays and recovery times.

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Dr. Jacobsohn has also brought with him expertise in robotic radical cystectomy and urinary diversion. We are thrilled to be able to offer this minimally invasive option to the often challenging bladder cancer population. Certainly, experience with this operation is vital to patient outcomes. Our urologists are among regional and national leaders in robotic cystectomy volume. We have found that our results mirror those in the published literature with faster recovery, less pain and fewer complications compared to open radical cystectomy. All types of urinary diversions are possible and performed with this approach. At Froedtert & The Medical College, robotic cystectomy is now the standard for appropriately selected bladder cancer patients.

In place since 2006, our robotic assisted laparoscopic radical prostatectomy (RALRP) experience continues to grow, and our team is among the busiest and most experienced in the state. Of course, our philosophy is to help our prostate cancer patients choose the right individualized treatment from the wide variety of options available, and RALRP is one of those choices. Similarly, our long-standing program of radical retropubic prostatectomies continues to thrive.

We are excited for the future of robotic and laparoscopic urology at Froedtert & The Medical College. In addition to the aforementioned operations, we also routinely perform robotic pyeloplasty, robotic radical nephrectomy, robotic nephroureterectomy and other robotic and laparoscopic reconstructive procedures. We are confident that changes in our treatment armamentarium will continue to mean quality outcomes for our patients.
Cryoablation for the Treatment of Small Renal Tumors: 
Froedtert & The Medical College of Wisconsin Experience

By Peter Langenstroer, MD, MS, Associate Professor of Urology

The management of small renal masses is a dynamic and evolving process. Twenty years ago, the mainstream management for small renal masses was radical nephrectomy. This resulted in overtreatment of many patients. It has become evident that radical nephrectomy is a significant risk factor for the development of chronic renal disease. More recently, chronic renal insufficiency has been associated with increased risk of cardiovascular events, hospitalizations and mortality. Patients undergoing renal preservation, e.g., nephron sparing surgery, have better overall quality of life than patients undergoing radical nephrectomy. Thus, nephron sparing surgery has become the contemporary standard of care for the management of small renal masses.

Cryoablation of renal tumors was introduced as an ablative modality to manage renal masses in the late 1990s. In February 2000, physicians at Froedtert & The Medical College of Wisconsin treated the first patients with laparoscopic renal cryoablation. Since then, we have performed more than 250 such ablations using laparoscopic or percutaneous methods. The advantage of this minimally invasive ablative technique is that it allows real time monitoring of the ablative process. The result is thermal destruction of the renal mass. Patients experience decreased hospitalization, decreased post-operative pain, less morbidity and early return to baseline functioning. The traditional open partial nephrectomy typically involves a four to five day hospitalization; in contrast, with laparoscopic cryoablation, hospitalization is typically one to two days.

To further minimize morbidity, we performed our first percutaneous cryoablation in January 2007. The percutaneous approach is an outpatient procedure that allows return to normal activities within one to two days. Follow up for cryoablative procedures requires imaging with computed tomography (CT) scans or magnetic resonance imaging (MRI) to monitor the effectiveness of the ablation. The initial scan is performed at three months and acts as a baseline for future scans. Parenchymal enhancement in the base of the ablative site is considered a recurrence. Outcomes for this procedure have been excellent. To date, the recurrence rate remains less than 5 percent. Loss of renal function is negligible and the radiographic treatment success rate is equivalent to that of contemporary partial nephrectomy series. Froedtert & The Medical College of Wisconsin have one of the largest cryoablation series in the country with some of the longest follow up. Based on our experience, we believe this technique has proven itself a viable option for the management of patients with small renal masses.

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Laparoscopy continued from page 6

at Children’s Hospital of Wisconsin have been 1) the assessment of children with intersex anomalies, 2) staging of intra-abdominal malignancies such as lymphoma, and 3) neo-vaginoplasty in young women with vaginal hypoplasia. Particularly in those who have failed perineal pressure neo-vaginal dilatation, laparoscopic construction of a neo-vagina using the Vechietti technique has been rewarding.

Perhaps the laparoscopic procedure that has been the most beneficial to the child and his or her family is a laparoscopic continent cecostomy. This involves constructing a continent, catheterizable channel, typically using the vermiform appendix, through which the patient administers an antegrade enema. This is particularly applicable to the child with neurogenic bowel dysfunction from spina bifida. The child and the family can then plan bowel movements for at home, rather than the child having accidents at school, and the bladder benefits in terms of better capacity, with less urinary tract infections.

... there are many applications of laparoscopy and minimally invasive surgical procedures in the field of pediatric urology.

In summary, there are many applications of laparoscopy and minimally invasive surgical procedures in the field of pediatric urology. The age range of the child in whom laparoscopy is applicable has increased greatly in the past 15 years, and now, even one year olds are of sufficient body size to be potential laparoscopic candidates, specifically nephrectomy for multi-cystic dysplastic kidney. Laparoscopic pyeloplasty for UPJ obstruction would typically be considered for children four years old and older. Children benefit from less invasive surgical intervention, shorter post-operative hospital stay, improved cosmetic outcome, and less post-operative pain.

Evolution continued from page 1

with examples of short lived events. As academicians, we must neither fear nor embrace the new surgical species spawned by evolutionary change. Rather, it is our responsibility to promote technological advancement coupled with scientific evaluation, followed by data driven change. This sequence, in some ways analogous to the scientific method, is an ongoing evolutionary paradigm that must be embraced by the academic urology community.

As we continue to push the envelope of discovery, a cognizance of the environmental forces at work, coupled with a continued emphasis on data driven change, will ensure the outcome of “natural selection” truly serves the needs of our patients. Today, the data supports a value of minimally invasive surgical approaches in selected patients. As such, at The Medical College of Wisconsin we remain committed to the continued refinement of these approaches and ultimately, to the definition of their ecological niche.
Medical College of Wisconsin

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Current Clinical Trials
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For more information on cancer clinical trials at Froedtert & The Medical College of Wisconsin, visit froedtert.com/clinicaltrials.

ALLERGAN BPH
A Multicenter, Double-Blind, Randomized, Placebo-Controlled, Parallel Group Study of the Efficacy and Safety of Intraprostatic Administration of BOTOX® 200 U (Botulinum Toxin Type A) Purified Neurotoxin Complex to Treat Lower Urinary Tract Symptoms Due to Benign Prostatic Hyperplasia

The study objectives of this phase II study are to assess the efficacy of intraprostatic administration of BOTOX 200 U as compared with placebo to treat lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH). Also, this study will further assess the safety of BOTOX intraprostatic injections. The Medical College of Wisconsin has already completed a National Institutes of Health trial for treatment of BPH with Botox utilizing Botox (300U or 100U) injection into the prostate with positive results and minimal adverse events.

AUXILUM PEYRONIE’S DISEASE
A Phase III, Double-Blind, Randomized, Placebo-Controlled Study of the Safety and Effectiveness of AA4500 Administered Two Times a Week for Up to Three Treatment Cycles (2 x 3) in Subjects With Peyronie’s Disease

The primary objective of this study is to assess the effectiveness of AA4500 (collagenase clostridium histolyticum) as determined by a responder analysis based on changes in the Peyronie’s disease (PD) symptom distress domain of the Peyronie’s disease questionnaire. Secondary objectives are to assess the effectiveness of AA4500 in improving penile curvature. Tertiary objectives are to assess the effectiveness of AA4500 in improving social stigmatization and sexual self image due to PD. This study will also determine the safety of AA4500 in men with PD.