
UROLOGICAL SURVEY

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STONE DISEASE

Frequency of Ureteroscope Damage Seen at a Tertiary Care Center

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Purpose: There is controversy regarding ureteroscope durability. Little is known regarding the subsequent durability of a flexible ureteroscope after major damage has been incurred and the ureteroscope has been repaired. Maintenance and repair are associated with significant cost. We reviewed and assessed the frequency and cause of ureteroscope damage at our medical center.

Materials and Methods: From December 2001 we prospectively recorded the specific use of all ureteroscopes and any resultant damage at a single tertiary care institution. We then reviewed a total of 601 ureteroscopic cases involving 654 semirigid and flexible ureteroscope uses from December 2001 to November 2004. Cases were performed by multiple residents and fellows under the supervision of 3 attending urologists (CML, RJL and VGB). Retrograde and antegrade cases involving stones, urothelial carcinoma, strictures and diagnostic evaluations were included. Repairs for the respective ureteroscopes were performed by the original manufacturer.

Results: A total of 53 reports of damage (8.1% of total uses) were recorded. Major damage when the scope was deemed unusable and required repair was seen in 39 cases (6.0%). Four newly purchased flexible ureteroscopes were entered into the study and they provided 40 to 48 uses before the initial repair was needed. After these new ureteroscopes underwent comprehensive repair for major damage they averaged only 11.1 uses (median 8) before needing repair again. Older model ureteroscopes that underwent repair before being entered into our study averaged between 4.75 and 7.7 uses before being sent for subsequent repair. Of the total of 39 breakages 39 for which ureteroscopes were sent for repair 14 (35.9%) were the result of errant laser firing, 11 (28.2%) were the result of excessive torque, 8 (20.5%) were the result of decreased flexion in the distal tip or another loss of function without obvious iatrogenic cause, 3 (7.7%) were the result of multifocal catastrophic damage involving laser firing and excessive torque, and 3 (7.7%) were the result of cleaning and processing outside of the ureteroscopy suite.

Conclusions: The most important risk factors for predicting the number of uses expected from a ureteroscope at our institution is ureteroscope age and whether the ureteroscope has undergone comprehensive repair as the result of prior damage. Our analysis suggests that after damage occurs to a ureteroscope more damage occurs with greater frequency. The cost of maintaining previously used ureteroscopes should be carefully considered in comparison to the cost of purchasing a new ureteroscope.

Editorial Comment

This study supports the fragility of flexible ureteroscopes, though it suggests that newer generation endoscopes may be utilized for up to 48 procedures before requiring a major repair. The complexity of the case, need for treatment of the lower pole, use of holmium laser lithotripsy and patient anatomy are all important variables that determine the amount of stress placed on the ureteroscope during a procedure, therefore it is difficult to say whether 50 cases should be expected with a new ureteroscope. However, the most important observation from this study is that once a ureteroscope returns from a major repair, this refurbished endoscope is prone to breakage a second time, at a much more rapid rate – such that less than 10 cases can be expected. Evaluating the cost of

repair vs. purchase of a new scope it appears that the cost per case (US\$300 for a new scope, US\$536 for a refurbished scope) favors discarding the broken scope and starting afresh.

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Endoscopically Guided Percutaneous Renal Access: “Seeing is Believing”

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Image-guided percutaneous nephrostomy tube placement can be a challenging procedure, particularly in a nondilated system or in the morbidly obese patient. Herein, we report the routine use of ureteroscopy-guided percutaneous renal access. With this method, rapid, accurate creation and dilation of the nephrostomy tract is assured in all patients regardless of body habitus or stone burden.

Editorial Comment

Access is everything when it comes to percutaneous nephrolithotomy. Selecting the appropriate calyx, entering on the papillae, avoiding the infundibulum, gaining guidewire access down to the bladder, or better yet through-and-through from flank to urethral meatus are key steps that make or break the procedure. Traditionally we have relied on ultrasound or biplanar fluoroscopy to help guide renal access, and then experience, manipulation, torque catheters and a pinch of luck to get the guidewire down to the bladder.

The technique described in this study emphasizes the endoscopic skills inherent to urologists rather than the imaging skills more commonly found with radiologists. By observing the angle of entry of the access needle and advancement of the guidewire into the collecting system one can limit the opportunity for inaccurate or unsuccessful renal access. When we have utilized this technique, we grasp the guidewire with a 3-prong Triceps grasper (Boston Scientific) and pull it through the ureteral access sheath to gain through-and-through access.

When weighing the advantage of this technique against the added cost of flexible ureteroscopy with a ureteral access sheath, it is clear that this may not be needed for all cases; rather it may play a more important role in complex cases where ureteroscopic management or displacement of some of the stones may be needed. It may also be of particular important for a novice on the learning curve of gaining renal access. Also important to note is that it requires two experienced endoscopists – one at each end of the patient, therefore it may be a technique more suited for teaching environments.

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ENDOUROLOGY & LAPAROSCOPY

Laparoscopy for Renal Cell Carcinoma: Diffusion Versus Regionalization?

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Purpose: Recognizing the emergence of laparoscopy as a standard of care for surgical treatment in many patients with organ confined renal cell carcinoma, we explored the diffusion of this technology by examining temporal trends in the nationwide use of laparoscopic total and partial nephrectomy in patients with renal cell carcinoma.

Materials and Methods: Data from the Healthcare Cost and Utilization Project Nationwide Inpatient Sample were abstracted for 1991 through 2003. International Classification of Diseases-Ninth Revision, Clinical Modification 9 codes were used to identify patients undergoing open and laparoscopic total and partial nephrectomy for renal cell carcinoma. Using hospital sampling weights we calculated annual incidence rates for open and laparoscopic nephrectomy, thereby estimating the diffusion of laparoscopy. Bivariate and multivariate analyses were used to identify patient and hospital characteristics associated with the more frequent use of laparoscopic techniques.

Results: Data on 63,812 patients were abstracted from the Nationwide Inpatient Sample, yielding a weighted national estimate of 323,979 who underwent laparoscopic (4.9%) or open (95.1%) nephrectomy (total or partial) for renal cell carcinoma between 1991 and 2003. Although it is still infrequent, the use of laparoscopy has increased steadily since 1998 with a utilization peak in 2003 of 1.7 laparoscopic nephrectomies per 100,000 American population, representing 16% of all total and partial nephrectomies for renal cell carcinoma in 2003. Treatment year, overall hospital nephrectomy volume and teaching hospital status were the most robust determinants of increased laparoscopic use (each $p < 0.001$).

Conclusions: Although its use has increased progressively in the last decade, the dissemination of laparoscopy for renal cell carcinoma has been generally slow and limited in scope. The next step in this body of work is to identify specific technical, educational and policy interventions that will influence the diffusion of this alternative standard of care.

Editorial Comment

The surgical approach for the treatment of renal cell carcinoma has evolved since Clayman and colleagues performed the first Laparoscopic Radical Nephrectomy in 1990. Moreover, the innovative and scientific nephron-sparing concept pioneered and popularized by Novick culminated with the development of the minimally invasive laparoscopic partial nephrectomy first performed by Winfield et al. This manuscript reveals a surprising reality of our practice trends in the USA, when surgical management is the option. Although the laparoscopic approach maybe considered the gold standard for the surgical treatment of Renal cell carcinoma, majority of cases are performed using the open technique. Finally, the authors concluded that the current trend is a progressive increase in the dissemination of the laparoscopic technique but it has been slow and limited in scope and studies are necessary to optimally identify the limiting factors and better propagate this surgical technique.

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Long-term Durability of Laparoscopic Decortication of Symptomatic Renal Cysts

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Objectives: To assess the long-term results of patient symptoms and radiologic outcomes of laparoscopic renal cyst decortication in the treatment of symptomatic simple renal cysts. Renal cysts are common in the adult population. Symptomatic renal cysts have traditionally been treated by percutaneous aspiration with or without injection of sclerosant agents; however, this has a high rate of recurrence.

Methods: From April 1994 through July 2005, 45 patients underwent laparoscopic decortication of symptomatic simple renal cysts with renal cyst wall excision and fulguration of the epithelial lining. Complex renal cysts were excluded. Of the 45 patients, 24 (53.3%) had undergone previous cyst aspiration with injection of sclerosant material for intended ablation. The Wong-Baker pain scale was used to assess the preoperative and postoperative pain scores. Radiologic success was indicated as no recurrence on the most recent computed tomography scan.

Results: Of the 45 procedures, 44 were completed laparoscopically. One patient (1.8%) underwent open conversion because of excessive bleeding. The mean operative time was 89 minutes (range 48 to 170). Symptomatic success was achieved in 91.1% of patients, with a median follow-up of 52 months (range 3 to 132), and radiographic success was achieved in 95.5% of patients, with a median follow-up of 39 months (range 3 to 96).

Conclusions: Long-term follow-up has confirmed that laparoscopic cyst decortication is an effective and durable treatment option for symptomatic simple renal cysts during long-term follow-up. The greater and durable success rates of this minimally invasive technique may favor this treatment option over other treatment modalities.

Editorial Comment

The treatment of symptomatic renal cysts has evolved with the advent of laparoscopic surgery. The authors demonstrated that the minimally invasive surgical technique may offer a durable success rates with minimal morbidity. Although the Percutaneous approach of cyst aspiration may offer a different less invasive alternative, it is well known that the recurrence rates are higher, independent of the use of sclerosing agents or not. The Laparoscopic surgery combines the advantages of a minimally invasive procedure with the effectiveness of cyst marsupialization achieved by open surgery, as well as, the capability of ablating the epithelial surface of the cyst with argon beam coagulators or even with monopolar cautery due to the better visualization secondary to the magnification achieved by the laparoscope.

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IMAGING

Evaluation of Living Renal Donors: Accuracy of Three-dimensional 16-section CT

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Radiology 2006; 240: 136-44

Purpose: To retrospectively assess the sensitivity and specificity of three-dimensional (3D) 16-section computed tomography (CT) in the evaluation of vessels, pelvicalyceal system, and ureters in living renal donors, with surgical findings as the reference standard.

Materials and methods: This was a HIPAA-compliant study. Institutional review board approval was obtained for the review of subjects' medical records and data analysis, with waiver of informed consent. Forty-six renal donors (18 men, 28 women; mean age, 42 years) were examined with 16-section CT. Two blinded reviewers independently studied renal vascular and urographic anatomy of each donor CT scans by first using 3D images alone, then transverse images alone, and finally transverse and 3D data set. Image quality, degree of diagnostic confidence, and time used for review were recorded. Sensitivity and specificity were calculated.

Results: For 3D images, transverse images, and transverse in conjunction with 3D data sets, the respective sensitivity and specificity of CT in evaluation of accessory arteries by reviewer 1 were 100% and 100%, 89% and 100%, and 100% and 100%, and those by reviewer 2 were 89% and 97%, 89% and 100%, and 89% and 100%; the respective sensitivity and specificity in evaluation of venous anomalies by reviewer 1 were 100% and 98%, 100% and 98%, and 100% and 98%, and those by reviewer 2 were 100% and 98%, 100% and 95%, and 100% and 98%. For focused comprehensive assessment of renal donors with 3D scans alone, a reviewer on average (average of reviewers 1 and 2) used 2.4 minutes per scan, demonstrated full confidence in 93%, and rated the quality as excellent in 76%.

Conclusion: For focused assessment of renal vascular and urographic anatomy, review of 3D data set alone provides high sensitivity and specificity with regard to findings seen at surgery.

Editorial Comment

Recently, several studies have been shown that CT angiography (CTA) with multi-detector row technology (16-channel) has superior accuracy than conventional angiography and non-selective digital subtraction angiography for the evaluation of living renal donors. To obtain such high accuracy, the images must be obtained with 1 mm slice thickness reconstruction interval during arterial and venous phases. Using this protocol CTA will demonstrate with clarity almost all supernumerary renal arteries and veins, early branching of vessels and abnormalities of pelvicalyceal system and ureter. Thus, the overall accuracy of 16-channel- CTA for detection and classification of surgically relevant arterial and venous variants may reach 100%. However this protocol of investigation has important drawback since offers a huge number of axial images making their interpretation by the radiologist, a meticulous and time consuming process. The authors shows that in a series of 46 consecutive renal donors, who had surgical findings for comparison, review of 3D images alone obtained with 16-section CT was faster and adequate. The respective mean accuracy for evaluation of renal arterial, venous and urogram findings was 98%, 98% and 100% for 3D images alone. Three-dimensional images may also help the surgeons by offering them fewer and relevant images of donor anatomy, which can be displayed in the operating room during surgical procedure. As pointed out by the authors more studies will need to be performed to validate these results.

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Transition Zone Prostate Cancers: Features, Detection, Localization, and Staging at Endorectal MR Imaging

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Purpose: To retrospectively evaluate the accuracy of endorectal magnetic resonance (MR) imaging in the detection and local staging of transition zone prostate cancers, with pathologic analysis serving as the reference standard, and to assess MR imaging features of these cancers.

Materials and Methods: The institutional review board approved this HIPAA-compliant retrospective study and waived the informed consent requirement. An institutional database of 986 patients who underwent MR imaging before radical prostatectomy yielded 148 consecutive patients with at least one transition zone cancer at step-section pathologic analysis. An additional 46 patients without transition zone cancer were randomly selected as a control group. Two readers independently reviewed MR studies to identify patients with transition zone cancers and determine the location and local extent of these cancers. Imaging features that helped in the identification of transition zone cancers were recorded. Descriptive and kappa statistics, as well as receiver operating characteristic and multivariate logistic regression analyses, were used.

Results: For identification of patients with transition zone cancers, sensitivity and specificity were 75% and 87%, respectively, for reader 1 and 80% and 78%, respectively, for reader 2. Interreader agreement was fair. For detection of the location of transition zone cancer, the area under the receiver operating characteristic curve was 0.75 for reader 1 and 0.73 for reader 2. Interreader agreement was fair. The readers' accuracy in detecting transition zone cancer foci increased significantly ($P=.001$) as tumor volume increased. In the detection of extraprostatic extension of transition zone cancers, sensitivity and specificity were 56% and 94%, respectively, for reader 1 and 28% and 93%, respectively, for reader 2. Homogeneous low T2 signal intensity ($P=.001$ for reader 1, $P<.001$ for reader 2) and lenticular shape ($P=.017$ for reader 1) were significantly associated with the presence of transition zone cancer.

Conclusion: MR imaging can be used to detect, localize, and stage transition zone prostate cancers.

Editorial Comment

Recently some reports have been shown the role of MR imaging in the assessment of transition zone (TZ) cancers. MR features observed in transition zone cancer are presence of nodule with ill-defined margins (lack of capsule) showing homogeneous hypo intensity on T2 weighted images. In this retrospective study, the authors added two other important features that helped in the identification of TZ cancers: lenticular shape of the lesion and invasion of the anterior fibromuscular stroma. Although none of these findings is pathognomonic for transition zone cancer the authors found that the combination of these features allows the identification of these cancers with specificity ranging from 78 to 87%. The authors observed that, tumor volume was an important factor in the detection of TZ cancers. The accuracy of TZ cancer detection at MR imaging was related to the transition zone cancer volume, with higher accuracy for cancers with larger volumes. The accuracy was significantly higher for tumor volume greater than or equal 0.77 mL. This may not be relevant if we consider that patients with TZ cancers have higher tumor volumes than patients with peripheral zone cancers. Although based on small series, another important and original observation of the current study is that local staging of transition zone cancers is possible with MR imaging and that extraprostatic extension occurs at a larger mean tumor volume in TZ cancers than in peripheral zone cancers. As we have mentioned in the March – April 2006 issue of this journal, other MR imaging techniques such as diffusion-weighted images, contrast material-enhanced MR imaging and MR spectroscopic imaging can also be used

for evaluation of TZ cancers. In our experience, the findings on conventional MR imaging should be associated with these other imaging techniques.

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UROGENITAL TRAUMA

American Association for the Surgery of Trauma Organ Injury Scale for kidney Injuries Predicts Nephrectomy, Dialysis, and Death in Patients with Blunt Injury and Nephrectomy for Penetrating Injuries

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Background: Despite broad clinical use of the American Association of the Surgery of Trauma (AAST) injury scale for kidney, it has only been found to predict the need for renal surgery in single institution series. We sought to validate this scheme for morbidity and mortality in a national cohort of patients with renal injury.

Methods: A retrospective cohort design was used to determine the association between increasing AAST scores and nephrectomy, dialysis, and mortality. The cohort included all patients with a renal injury in the National Trauma Data Bank (NTDB) from 1994 and 2003. Univariate and multivariate prediction models were used for analysis of data.

Results: At the time of review, a total of 742,774 patient records were registered in the NTDB. Renal injury occurred in 8465 patients (1.2%). Increasing injury grade was associated with a greater nephrectomy (RR 12-127), dialysis (RR 1.3-4.7), and mortality (RR 1.3-1.9) rate for blunt kidney injury. For penetrating injury, nephrectomy was the only outcome that was associated with higher grades of renal injury with a RR of 7.7 to 31 for grades III to V injuries.

Conclusion: The AAST injury scale for kidney predicts for morbidity in blunt and penetrating renal injury and for mortality in blunt injury. Thus, we continue to support its use as a clinical and research tool.

Editorial Comment

Thee injury scales developed for kidney trauma were primarily based on the consensus of experts in urologic trauma, and not by evidence based medicine. First reported back in 1989, the AAST injury scales provide a valuable tool to classify injuries, in order to perform clinical research, and to decide on management. (1) The above retrospective review is another in a long line of papers seeking to validate that the AAST scale of degree of kidney injury is an accurate predictor of morbidity and mortality from blunt renal trauma. Since the more severe the mechanism of injury, the higher the likelihood for increased AAST renal injury grade, it is intuitive that the kidney and associated injuries result in higher rates of nephrectomy and mortality.

The National Trauma Data Bank - NTDB - www.facs.org/trauma/ntdb.html - the largest aggregation of trauma registry data ever assembled., managed by the American College of Surgeons, is a national data base of

trauma patients admitted to the hospital from over 405 trauma centers, and contains over 1.5 million records from trauma centers in the U.S. and Puerto Rico. The goal of the NTDB is to inform the medical community, the public, and decision makers about a wide variety of issues that characterize the current state of care for injured persons. The NTDB also proves a unique and powerful tool to study national trauma trends as to urologic and general trauma.

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Organ Injury Scaling: Spleen, Liver, and Kidney

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The Organ Injury Scaling (O.I.S.) Committee of the American Association for the Surgery of Trauma (A.A.S.T.) was appointed by President Trunkey at the 1987 Annual Meeting. The principal charge was to devise injury severity scores for individual organs to facilitate clinical research. The resultant classification scheme is fundamentally an anatomic description, scaled from 1 to 5, representing the least to the most severe injury. A number of similar scales have been developed in the past, but none has been uniformly adopted. In fact, this concept was introduced at the A.A.S.T. in 1979 as the Abdominal Trauma Index (A.T.I.) and has proved useful in several areas of clinical research. The enclosed O.I.S.'s for spleen, liver, and kidney represent an amalgamation of previous scales applied for these organs, and a consensus of the O.I.S. Committee as well as the A.A.S.T. Board of Managers. The O.I.S. differs from the Abbreviated Injury Score (A.I.S.), which is also based on an anatomic scale but designed to reflect the impact of a specific organ injury on ultimate patient outcome. The individual A.I.S.'s are, of course, the basic elements used to calculate the Injury Severity Score (I.S.S.) as well as T.R.I.S.S. methodology. To ensure that the O.I.S. interdiffuses with the A.I.S. and I.C.D.-9 codes, these are listed alongside the respective O.I.S. Both the currently used A.I.S. 85 and proposed A.I.S. 90 are provided because of the obligatory transition period. Indeed, A.I.S. 90 contains the identical descriptive text as the current O.I.S.'s. The Abdominal Trauma Index and other similar indices using organ injury scoring can be easily modified by replacing older scores with the O.I.S.'s.

Urgent Superselective Segmental Renal Artery Embolization in the Treatment of Life-threatening Renal Hemorrhage

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Urol Int. 2006; 77: 34-41

Introduction: Renal hemorrhage is a major life-threatening condition that can be caused by trauma, operation, biopsy, as well as sudden spontaneous rupture of renal tumors or aneurysms. We report our experience with

superselective segmental renal artery catheterization and embolization as therapeutic options for such cases. **Patients and Methods:** Over the last 8 years, 28 patients with severe renal hemorrhage were admitted for evaluation and possible further treatment. Twenty of them had a history of previous biopsy (6 of them one of a transplanted kidney), 1 patient had a recent percutaneous nephrostomy, 4 patients presented with renal mass ruptures (2 patients renal cell carcinoma, 1 patient angiomyolipoma, 1 patient hemorrhagic cysts), 1 patient had rupture of a renal aneurysm during delivery, 1 patient suffered bleeding after partial nephrectomy, and 1 patient was hospitalized after a car accident. They all presented with clinical signs of hemodynamic instability. Angiographic investigation of the kidneys preceded further intervention in all cases. 26 out of the 28 patients underwent superselective embolization of the specific bleeding vessel with the use of microcoils and/or Gelfoam particles. **Results:** All patients treated by superselective segmental renal artery embolization had a successful outcome, including a steady renal function and a stable clinical course. No complications occurred. **Conclusion:** Superselective segmental renal artery catheterization and embolization is a safe and efficient method for the treatment of patients with severe renal hemorrhage, preserving healthy renal parenchyma and renal function.

Editorial Comment

Increasingly, there is wide acceptance and support in the literature for the nonoperative management of nearly all blunt renal trauma, except for the potentially life-threatening injuries that are AAST Grade V. An aggressive approach at nonoperative management, inherently accepts an increased complication rate of delayed bleed or urinary leak. However, such complications can be effectively managed endoscopically or endo-vascularly. Delayed renal bleeding can occur up to several weeks after initial injury, although the period of greatest risk is within the first two to three weeks after injury. Clot lysis and hematoma liquefaction begins around day 5 to 7 and continues for another 2 weeks or so. It is during this time that renal bleeding is most likely. The kidney can bleed either into the collecting system, into the perirenal space, or as an arteriovenous fistula. Overall, delayed bleeding after trauma is rare, effecting less than one percent of all renal injuries. Penetrating injuries managed conservatively, in particular stab wounds, are especially prone to delayed bleeding, occurring in up to 18% of cases. Conservatively managed large devascularized renal segments with an associated bowel injury are also prone to delayed hemorrhage.

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PATHOLOGY

What's New in Prostate Cancer Disease Assessment in 2006?

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Curr Opin Urol. 2006; 16: 146-51

Purpose of Review: Issues relating to the disease are critical in the diagnosis, management, and prognostication of prostate cancer.

Recent Findings: New data have emerged regarding the disease of prostate cancer and its precursors. The diagnosis of prostate cancer on needle biopsy has been refined because of the recent discovery of alpha-methylacyl-CoA racemase, which preferentially labels adenocarcinoma of the prostate. Modifications and additions to the Gleason grading system were published based on a consensus conference of urological pathologists. Various models have been proposed using Gleason score, clinical findings, as well as measurements of tumor volume on needle biopsy to enhance the prediction in men undergoing radical prostatectomy and to predict “insignificance”. Several studies have confirmed that certain findings in radical prostatectomy are adverse, yet conflicting studies were published as to the independent prognosis of tumor volume. The risk of cancer following a diagnosis of high-grade prostatic intraepithelial neoplasia on needle biopsy has decreased to the point at which this author does not recommend a routine repeat needle biopsy within the first year following the diagnosis of high-grade prostatic intraepithelial neoplasia.

Summary: This review summarizes developments over the last year in the disease of prostate cancer and its precursors.

Editorial Comment

Alpha-methylacyl coenzyme A racemase (AMACR) is an enzyme first purified and characterized by investigators studying lipid metabolism. Although the role of this enzyme is still unknown, the application of AMACR immunohistochemistry in prostate pathology has been increased sharply in the last few years. AMACR preferentially labels adenocarcinoma of the prostate. In cases that the basal cells are patchy or discontinuous this labeling may be very useful for the differential diagnosis. Unfortunately, AMACR does not stain exclusively neoplastic acini. Benign acini may also show positivity, therefore, this stain should be used with caution (1).

Due to the widespread use of extended needle prostatic biopsies, Epstein does not recommend a routine repeat needle biopsy within the first year following the diagnosis of high-grade prostatic intraepithelial neoplasia. This recommendation is based on studies showing a substantially decreasing in subsequent cancer detection if high-grade prostatic intraepithelial neoplasia is seen in extended biopsies (2).

An important contribution for the improvement of the Gleason grading system was given by a Consensus Conference sponsored by the International Society of Urological Pathology (ISUP) during the USCAP (United States and Canadian Academy of Pathology) meeting in San Antonio, Texas, in 2005 (3).

There are several arguments favoring a need for a consensus on Gleason grading: 1)- In the 1960s, there was no screening for prostate cancer other than by digital rectal examination, 2)- The use of 18-gauge thin biopsy needles and the concept of sextant needle biopsies to more extensively sample the prostate were not developed until the 1980s, 3)- Tertiary patterns were not addressed within the original Gleason system, 4)- The Gleason system predated the use of immunohistochemistry (it is likely that many of Gleason’s original 1 + 1 = 2 adenocarcinomas would today be regarded as adenosis, 5)- The original Gleason grading system was not applied to newly described variants of adenocarcinoma of the prostate; and, 6)- The Gleason system varies considerably in contemporary surgical pathology practice and has led to several recent attempts to achieve consensus on Gleason grading.

A recent study in our Institution (4) showed that the highest impact of the consensus recommendations on a series of cases graded according to the standard Gleason system was seen on the secondary pattern, which had the lowest percentage of concordance. It reflected in a change toward a higher Gleason grading group in 46/172 (26.74%) of the cases. A further study showed that these 46 patients had significantly a higher preoperative PSA, had more extensive tumors in the surgical specimen, had higher frequency of positive surgical margins and pathologic stage, and a strong tendency for shorter time to biochemical (PSA) progression-free survival following radical prostatectomy. The recommendations of the ISUP are a valuable refinement for the standard Gleason grading system and should be used by pathologists in their routine practice.

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Prostate Basal Cell Lesions Can Be Negative for Basal Cell Keratins: A Diagnostic Pitfall

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Background: Prostate basal cell lesions can have architectural and cytologic atypia that mimic prostate adenocarcinoma. Immunohistochemical stains for basal cell markers are most helpful in the differential diagnosis. All of the published studies show basal cell lesions are positive for basal cell keratins, whereas adenocarcinoma is negative for both. We reported two cases of prostate basal cell lesions with negative basal cell keratin expression by immunohistochemistry.

Study Design: We reported the histologic and immunohistochemical profiles of two cases of basal cell lesions of the prostate.

Results: Histologically, both cases were highly suspicious for prostate adenocarcinoma with infiltrative growth pattern and significant nuclear atypia. The atypical glands in both cases were negative for basal cell keratins. However, both lesions were positive for another basal cell marker, p63, confirming that they were basal cells in origin, rather than prostate adenocarcinoma.

Conclusion: Prostate basal cell lesions can occasionally be negative for basal cell keratins by immunohistochemistry and therefore may be misdiagnosed as prostate adenocarcinoma. We recommend using both p63 and basal cell keratins simultaneously in the workup of atypical prostate lesions to avoid such a misdiagnosis.

Editorial Comment

Absence of basal cells is a hallmark for the diagnosis of prostatic adenocarcinoma. Basal cells in the prostate do not have phenotype of myoepithelial cells and this is opposite to what happens in the mammary gland. In the latter, the myoepithelial cells have function of contraction that does not happen in the prostate. The basal cells in the prostatic gland can be recognized on hematoxylin and eosin stain. They are located next to the basement

membrane, the nuclei may be round, oval or pyramidal, darker than the apical cells and sometimes show a clear halo. They stain in immunohistochemistry by high-weight cytokeratins (34 β E12) and p63. The first stains the cytoplasm and the latter the nuclei.

Presence of basal cells in prostatic acini excludes adenocarcinoma but not their absence. Why does it happen? One of the reasons is disclosed by the paper of this survey. Very rarely basal cells may not stain by immunohistochemistry. Most frequently, absence of basal cells is due to the anatomical distribution in the acini. Basal cells may be continuously distributed along the acini or may be patchy or discontinuously distributed. The latter distribution frequently happens in smaller branches of the acini, which may also not show basal cells at all.

This peculiar distribution of basal cells is of utmost importance for the proper interpretation of small foci “suspicious but not diagnostic for adenocarcinoma” (improperly called ASAP). In such small foci, basal cells may be absent due to anatomical spacing and not due to absence of true neoplastic acini.

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INVESTIGATIVE UROLOGY

Expression of cAMP and cGMP-Phosphodiesterase Isoenzymes 3, 4, and 5 in the Human Clitoris: Immunohistochemical and Molecular Biology Study

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Urology. 2006; 67: 1111-6

Objectives: Only a little research has focused on the evaluation of female sexual function. With sexual stimulation, the clitoris becomes engorged with blood and tumescent. Nevertheless, only little is known about the significance of the cyclic nucleotide-mediated signal transduction in the control of this process. We sought to elucidate the presence of the phosphodiesterase (PDE) isoenzymes 3, 4, and 5 in the human clitoris using immunohistochemical and molecular biology methods.

Methods: Thin sections of clitoral specimens were incubated with primary antibodies directed against PDE isoenzymes 3, 4, and 5. Next, the sections were incubated with either Texas red or fluorescein isothiocyanate-labeled secondary antibodies, and visualization was done using laser microscopy. The expression of mRNA encoding for various PDE isoenzymes was evaluated using reverse transcriptase polymerase chain reaction.

Results: Immunofluorescence indicating the presence of PDE4 (cyclic adenosine monophosphate-PDE) was observed in the nonvascular smooth musculature of the corpus cavernosum clitoris, sinusoidal endothelial and subendothelial layers, and nerve fibers innervating the tissue. Immunoreactivity specific for PDE5 (cyclic guanosine monophosphate-PDE) was limited to the smooth muscle of the clitoral erectile tissue. The fluorescein isothiocyanate reaction indicating the expression of PDE3 (cyclic adenosine monophosphate-PDE) was registered to a certain degree only in the clitoral epidermis. In the reverse transcriptase polymerase chain reaction studies, a predominant expression of mRNA encoding for PDE1A was registered, but only small amounts of mRNA encoding for PDE4 and PDE5 were detected.

Conclusions: Our results have demonstrated the presence of cyclic adenosine monophosphate-PDE and cyclic guanosine monophosphate-PDE in the human clitoris and may indicate a regulatory function of these enzymes in the cyclic nucleotide-mediated control of smooth muscle tone.

Editorial Comment

Sexual dysfunction in women remains a significant problem that may affect up to 43% of women in the United States of America (1). Despite this, in contrast to the extensive knowledge on male sexual function and dysfunction during the last years, studies on physiology of female sexuality have been received minimal attention. Therefore, the present study is very much welcome, because objectively demonstrated the localization of mRNA transcripts and immunoactivity related to PDE isoenzymes 4 and 5 in the human clitoris.

Because of their central role in smooth muscle tone regulation, PDEs remain an attractive target for drug development in urology and other specialties, such as gynecology (2). Also, PDE inhibitors are under investigation with potential uses in urinary stone disease, overactive bladder (2) and lower urinary tract symptoms (3).

The extensive clinical data on the use of the orally active PDE5 inhibitors in the treatment of male erectile dysfunction claimed PDE characterization in female genital tissues with the aid of immunohistochemistry and molecular biology (2,4). The findings of the present study are in support that PDE isoenzymes are involved in clitoral function during sexual stimulation and are giving additional rationale for the use of PDE inhibitors in the pharmacotherapy of female sexual dysfunction and arousal disorders.

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Laparoscopic Partial Nephrectomy for Renal Masses: Effect of Tumor Location

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Urology. 2006; 67: 1169-74

Objectives: To report our single institutional experience of laparoscopic partial nephrectomy (LPN) for enhancing renal masses and evaluate outcomes and histopathologic findings with respect to the location of the renal mass.

Methods: A retrospective review of LPN for 123 renal masses completed by 7 urologists was performed. Of these lesions, 49 (40%) were exophytic, 19 (15.5%) endophytic, 47 (38%) mesophytic, and 8 (6.5%) were hilar. We defined exophytic as more than 60%, mesophytic as 40% to 60%, and endophytic as less than 40% of the renal mass protruding off the surface of the kidney on radiologic imaging studies. Hilar lesions were those located within 5 mm of the renal hilar structures, regardless of the surface characteristics.

Results: The mean tumor size was 2.6 cm (range 1 to 9). Hilar vessel clamping was performed during 55 procedures (44.7%); the mean warm ischemia time was 27 minutes (range 12 to 52). On final histopathologic examination, 3 patients (2.5%) had positive tumor resection margins. Overall, 26 (20.6%) complications occurred. The complication rate was significantly less for patients who underwent LPN for an exophytic (10%) or a mesophytic (12.8%) mass than for those with an endophytic (47%) or a hilar (50%) mass. Histopathologic examination of the renal masses revealed malignant pathologic features in 86 (69%) and benign findings in 37 (31%). In our series, only 55% of exophytic tumors were malignant and, if malignant, were invariably low grade (96%).

Conclusions: The complications of LPN and the malignancy rate of the renal lesions were related to the tumor location within the kidney.

Editorial Comment

The authors nicely demonstrate that the intrarenal tumor location has a significant impact on the complication rate during laparoscopic partial nephrectomy. The authors reminded us that the lesions close to the hilum are the most prone to surgical complications (50%). Also, it was reported that the upper pole tumors resulted in the greatest average blood loss and complication rate (25.8%).

I would like to take the opportunity to remember those involved in upper pole resection that the vascular anatomy in this region, as related to the kidney collecting system, is the most complex (1). Of utmost importance is the fact that the posterior segmental artery itself was in close relationship to the upper infundibulum or to the junction of the pelvis with the upper calyx in 57.3% of the cases (1,2). Therefore, this artery is at great risk during incisions close to the hilum (less than 1 cm). Injury to the posterior segmental artery (retropelvic artery) will result in significant hemorrhage and may be associated with destruction of a large area of the remaining renal parenchyma. In some cases, the area supplied by the posterior segmental artery corresponds to approximately 50% of the functioning renal tissue in normal kidneys (3).

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RECONSTRUCTIVE UROLOGY

Complex Posterior Urethral Disruptions: Management by Combined Abdominal Transpubic Perineal Urethroplasty

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J Urol. 2006; 175: 1751-4

Purpose: We present our short-term results of abdominal transpubic perineal urethroplasty for complex posterior urethral disruption.

Materials and Methods: From January 2000 to March 2005, 21 patients with complex posterior urethral disruption underwent abdominal transpubic perineal urethroplasty. Complex disruption was defined as stricture gap exceeding 3 cm or associated perineal fistulas, rectourethral fistulas, periurethral cavities, false passages, an open bladder neck or previous failed repair. Preoperative voiding cystourethrogram with retrograde urethrogram and cystourethroscopy were done to evaluate the stricture and bladder neck. Followup consisted of symptomatic assessment and voiding cystourethrogram.

Results: There were 11 adults and 10 prepubescent boys with an average age of 26 years (range 6 to 62). Mean followup +/- SD was 28 months (range 9 to 40). Mean stricture length was 5.2 +/- 1.4 cm. Of the 21 patients 12 had previously undergone failed urethroplasty. The mean period between original trauma/failed repair and definitive repair was 10.2 +/- 4.3 months. Urethroplasty was achieved through the subpubic route in 16 patients, while 5 required supracrural rerouting. In 20 of 21 patients (95%) postoperative cystourethrography showed a wide, patent anastomosis. Postoperative incontinence developed in 2 of 21 patients (9.5%). Seven of the 21 patients (33%) were impotent after the primary injury, while 3 of 14 (21.4%) had impotence postoperatively. There were no complications related to pubic resection, bowel herniation or periurethral cavity recurrence.

Conclusions: Combined abdominal transpubic perineal urethroplasty is a safe procedure in children and adults. It allows wide exposure to create a tension-free urethral anastomosis without significantly affecting continence or potency. Complications of pubic resection are now rarely seen.

A Comparison of One-Stage Procedures for Post-Traumatic Urethral Stricture Repair

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BJU Int. 2005; 95: 1299-302

Objective: To compare the results and complication rates of various one-stage treatments for repairing a post-traumatic urethral stricture.

Patients and Methods: The medical records of 153 patients who had a post-traumatic urethral stricture repaired between 1977 and 2003 were evaluated retrospectively, and analysed for the different types of urethral reconstruction.

Results: The procedures included direct end-to-end anastomosis in 86 (56%) patients, free dorsal onlay graft urethroplasty using preputial or inguinal skin in 40 (26%), ventral onlay urethroplasty using buccal mucosa in seven (5%) and ventral fasciocutaneous flaps on a vascular pedicle in 20 (13%). At a mean (median, range) follow-up of 75.2 (38, 12-322) months, 121 (79%) patients had no evidence of recurrent stricture, while in 32

men (21%) they were detected at a mean follow-up of 30.47 (1-96) months. Patients having a dorsal onlay urethroplasty had the longest strictures. The re-stricture rate was lowest after a dorsal onlay urethroplasty (5% vs 27% when treated with end-to-end anastomosis, 15% after fasciocutaneous flaps and 57% after a ventral buccal mucosal graft). The surgical technique used had no effect on postoperative incontinence or erectile dysfunction rates.

Conclusion: In patients with strictures which are too long to be excised and re-anastomosed, tension-free dorsal onlay urethroplasty is better than ventral graft or flap techniques. In patients with short urethral strictures direct end-to-end anastomosis remains an option for the one-stage repair of urethral stricture.

Editorial Comment

Certain cases of urethral disruption early surgical the re-alignment is immediately indicated (e.g. involvement of the rectum, wide separation of bladder and urethra, bladder or bladder neck injury). All other cases late intervention can be performed after immediate supply with a suprapubic catheterization after 3 – 6 months allowing the resorption of the retropubic hematoma, if no surgeon with extensive experience of the various techniques of primary open realignment is available. As an attractive option the early endoscopic realignment might be the best solution, using suprapubic and transurethral approach, on the one hand resulting in prevent the dislocation of the urethral stumps and the rapid transurethral drainage, on the other hand avoiding common complications of an early open approach (e.g. bleeding, higher stricture and impotence rate). The very disadvantage of this endoscopic technique is its dependence on especially skilled surgeons and their equipment. A prospective study would help to facilitate the final decision-making between early open, endoscopic and late reconstruction in the future, but barely possible because if the small incidents, until then the classification of the posterior urethral injuries might help (1,2).

Opposite to the presented data, probably most of the pelvic floor urethral distraction defects can be managed by a one-stage perineal anastomotic urethroplasty in the exaggerated or high lithotomy position. Webster suggested certain maneuvers to achieve to shorten the distance of the defect: a) further circumferential mobilization of the distal urethra (2-3 cm), b) separation of the corporal bodies (1-2 cm), c) inferior pubectomy (1-2 cm), d) supra-crural re-routing after creating a tunnel in the bone beneath the corporal bone with a pubectomy (1-2 cm). Those maneuvers might help to manage defects up to 9 cm (3).

The abdominal-perineal approach as used by the authors should be performed to improve the visualization and to remove fistula tracts, periurethral epithelialized cavities, to excise scar tissue at the prostate and to perform a tension-free-anastomosis (4, 5). To have such a high success rate as reported by the authors an experts hand is required, particularly given the fact that approximately half were prepubescent, which is even better than the present literature (4-7). Beside the suggested use of a cremaster flap, which is an elegant approach, the gracilis muscle interposition can be suggested to manage perineal fistulas, recto-urethral fistulas or even to protect the anastomosis the support might be better and the possibility to use it to reconstruct the continence mechanism (8). The blood loss seems to be small in regard to the invasiveness of the surgical approach. Overall, the authors can be congratulated to the result of their surgical approach.

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Female Urethral Strictures: Successful Management with Long-term Clean Intermittent Catheterization after Urethral Dilatation

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BJU Int. 2006; 98: 96-9

Objective: To report our experience in the diagnosis and treatment of urethral stricture in women.

Patients and Methods: A retrospective review of records and video-urodynamics identified women treated for urethral stricture between 1999 and 2004 at one institution by one surgeon. Urethral stricture was defined as a fixed anatomical narrowing between the bladder neck and distal urethra of <14 F preventing catheterization, and the diagnosis was confirmed by cysto-urethroscopy, and/or video-urodynamics. Women with a history of external beam radiotherapy to the pelvis, or of gynaecological, urethral or bladder malignancy, were excluded, and the women had a urethral biopsy to exclude a malignant cause of the stricture. Initial treatment consisted of urethral dilatation to > or = 30 F. After a period of indwelling catheterization, the women were placed on clean intermittent self-catheterization (CISC) at least once daily, and monitored every 3-6 months. At each follow-up, the urethra was catheterized to exclude recurrence. American Urological Association (AUA) symptom scores were obtained at presentation and at the initial 3 month follow-up.

Results: Seven women met the criteria for urethral stricture, and were followed for a mean (range) of 21 (6-34) months. All were initially maintained on daily CISC, and some were gradually reduced to weekly CISC for the duration of follow-up. No patient had a recurrent stricture while on CISC, and none has had a urethral reconstruction to manage their condition. AUA symptom scores improved in all of the women by a mean of 10.7 points. No complications related to catheterization were noted.

Conclusion: Urethral stricture is rare in women. Long-term CISC in these women is safe and effective, and can avoid the need for major reconstructive surgery.

Technique and Results of Urethroplasty for Female Stricture Disease

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J Urol. 2006; 175: 976-80

Purpose: Urethral stricture disease in females is uncommon and is often treated with repeat dilation or internal urethrotomies. Various surgical techniques to repair strictures have been described with successful results. However, these techniques are cumbersome to use. The vaginal inlay flap is simple and easy to learn. To our knowledge this is the first report of its use and clinical results in a series of patients from 2 institutions. **Materials and Methods:** Eight symptomatic women with a history of traumatic or difficult catheterization, a history of at least 1 urethral dilation or urethrotomy and difficult or a failed attempt at catheter placement underwent urethroplasty. The technique consisted of incising the posterior aspect of the stricture and advancing a vaginal inlay flap. A retrospective chart review was performed.

Results: Followup was 1 to 9 years. All patients had subjective relief of symptoms and could easily catheterize with a 14Fr catheter. Average caliber of the urethra increased from 9.25Fr to 16.5Fr and post-void residual urine decreased from 130 to 15 cc. One patient with a hypotonic bladder was in retention, which resolved during 3 months. One patient underwent repeat dilation once 3 weeks after the primary procedure with no recurrence. No patient had stress urinary incontinence. There were no immediate or delayed serious complications.

Conclusions: Urethral stricture disease in females is an uncommon entity that can cause voiding symptoms, recurrent infections, retention and renal impairment. This method of surgical repair offers a durable result and has a low incidence of complications.

Editorial Comment

Although the urethral stricture in female is uncommon recently two papers with a different therapeutic approach were published. In the first study progressively the stricture was dilated with up to a 30F sound. In the follow-up of up to 39 months the patients performed clean intermittent self-catheterization. Three of them (38%) needed additional re-dilatation (Smith et al.). Probably the dilatation up to 30F causes a rupture of the stricture and it needs to be asked if this cause new fibroses in even the former normal urethra. The re-stricture might be avoided by the regular dilatation by the clean intermittent self-catheterization.

The surgical urethroplasty performed by Swender et al. with an intraoperative urethral diameter of 22F, remains in a urethral diameter in mean 16.5F after a follow-up of up to 9 years similar to the published data of Montorsi et al. of 17 women with a follow-up of 12 months (1). Except one patient none of the women needed a further treatment. All were able to perform clean intermittent self-catheterization. On the other hand the dilatation did not cause in any of the cases urinary stress incontinence whereas after the urethroplasty two patients had had stress incontinence (see Swinder et al., Table 2).

Parameters are probably needed to decide who is suitable for dilatation and who for the urethroplasty to improve the outcome further. Perhaps, we are too conservative when contemplating surgical correction for female urethral stricture. On the other hand, although simple techniques are at hand, skilled surgical expertise is requested to protect the sphincteric mechanism (2). The videourodynamics and intraurethral ultrasound might become diagnostic tools in order to choose the best approach, but successful application of surgery calls for adequate clinical experience (3).

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UROLOGICAL ONCOLOGY

Delay of Radical Prostatectomy and Risk of Biochemical Progression in Men with Low Risk Prostate Cancer

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J Urol. 2006;175: 1298-302

Purpose: Men newly diagnosed with prostate cancer are faced with multiple treatment options. Understanding these options and their associated side effects, and making a decision often requires time, resulting in a delay before receiving treatment. This is particularly pertinent in men with low risk disease who may be considered candidates for watchful waiting and, thus, may not experience strong pressure to undergo treatment promptly. Whether delays and especially prolonged delays, eg greater than 180 days, before RP negatively impact the disease outcome is unclear.

Materials and Methods: We examined the association between time from diagnosis to surgery, and pathological features of the RP specimen and risk of biochemical progression in 895 men with low risk prostate cancer (prostate specific antigen less than 10 ng/ml and biopsy Gleason sum 6 or less) treated with RP between 1988 and 2004 in the Shared-Equal Access Regional Cancer Hospital Database using logistic regression and Cox proportional hazards, respectively.

Results: Time from biopsy to surgery was not significantly related to high grade disease in the RP specimen, positive surgical margins or extraprostatic extension (all p-trend >0.05). After adjustment for multiple clinical covariates a longer time from biopsy to surgery was significantly associated with an increased risk of biochemical progression (p-trend = 0.002). However, this increased risk of progression was only apparent in men with delays greater than 180 days (median 263, vs 90 or fewer days RR 2.73, 95% CI 1.51 to 4.94).

Conclusions: Our data suggest that patients with low risk prostate cancer can be reassured that immediate treatment is not necessary. Whether long delays (greater than 180 days) decrease the likelihood of curability in some patients requires further study.

Editorial Comment

In contrast to the recent papers on surgery delay in bladder cancer a delay in radical prostatectomy for prostate cancer does not seem to be of equal consequences.

In accordance with the slower proliferation time in (most, but not all!) prostate cancers a negative impact of delay was seen in patients with more than 180 days in time to surgery.

Interestingly, in a subgroup analysis of 27 men there was no significant association between pre-prostatectomy PSA velocity and the risk of progression.

It is worthwhile to read the 2 editorial comments to this study, which give some comments on the impact these data may have on “wait-and-see” strategies.

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Cystectomy Delay More Than 3 Months from Initial Bladder Cancer Diagnosis Results in Decreased Disease Specific and Overall Survival

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J Urol. 2006; 175: 1262-7

Purpose: Some groups hypothesize that a delay in cystectomy may result in higher pathological stage and possibly alter survival in patients with bladder cancer. The timing of this delay has been somewhat arbitrary. We evaluated the timing from T2 bladder cancer diagnosis to cystectomy, its impact on survival and potential causes of delay.

Materials and Methods: A contemporary cohort of 214 consecutive patients presented with clinical T2 bladder cancer and underwent radical cystectomy as primary therapy. Clinicopathological parameters were maintained in an institutional database. A review of time to cystectomy, pathological stage, disease specific survival and OS was performed. Variables were tested in univariate and multivariate analyses. The log rank test was used for exploratory analyses to determine meaningful delay cutoff points.

Results: Mean followup and time to cystectomy in the entire cohort was 40 months and 60 days, respectively. A significant disease specific survival and OS advantage was observed in patients undergoing cystectomy by 93 days or less (3.1 months) compared to greater than 93 days ($p = 0.05$ and 0.02 , respectively). Pathological staging was similar between the groups ($p = 0.15$). A multivariate benefit in OS was observed in patients treated with timely cystectomy. The most common factor contributing to cystectomy delay was scheduling delay, as seen in 46% of cases.

Conclusions: A cystectomy delay of 3.1 months undermines patient survival, likely through the development of micrometastases, since local stage progression is not apparent at this point. Most delays are avoidable and should be minimized. Despite the need for second opinions and the impact of busy surgical schedules clinicians must strive to schedule patients efficiently and complete surgical treatment within this time frame.

Editorial Comment

A recent editorial comment in this journal on the effects of delay in radical bladder cancer surgery is supported by this brand new paper from Ann Arbor, Michigan.

The authors analyze their data on 214 consecutive pathological stage T2 cystectomies and performed uni- and multivariate analyses. The mean time to cystectomy was 53 days in the cohort with no delay (that is, 93 days or less), and 124 days in the cohort with delay (that is greater than 93 days delay).

Both, disease-specific and overall survival was impaired in the delay group.

Interestingly, scheduling delay was the reason most often indicated.

In conclusion, a delay of more than three months may be dangerous for the patients and cystectomy should be performed as soon as possible – a scheduling delay of more than 3 months should not be tolerable.

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NEUROUROLOGY & FEMALE UROLOGY

Long-term Results of Robotic Assisted Laparoscopic Sacrocolpopexy for the Treatment of High Grade Vaginal Vault Prolapse

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J Urol. 2006; 176: 655-9

Purpose: Transabdominal sacrocolpopexy is a definitive treatment option for vaginal vault prolapse with durable success rates. However, it is associated with increased morbidity compared with vaginal repairs. We describe a minimally invasive technique of vaginal vault prolapse repair and present our experience with a minimum of 1 year followup.

Materials and Methods: The surgical technique involves 5 laparoscopic ports: 3 for the da Vinci robot and 2 for the assistant. A polypropylene mesh is attached to the sacral promontory and vaginal apex using polytetrafluoroethylene sutures. The mesh material is then covered by peritoneum. Patient analysis focused on complications, urinary continence, patient satisfaction and morbidity with a minimum of 12 months followup.

Results: A total of 30 patients with post-hysterectomy vaginal vault prolapse underwent robotic assisted laparoscopic sacrocolpopexy at our institution and 21 have a minimum of 12 months followup. Mean followup was 24 months (range 12 to 36) and mean age was 67 years (range 47 to 83). Mean operative time was 3.1 hours (range 2.15 to 4.75). All but 1 patient were discharged home on postoperative day 1 and the 1 patient left on postoperative day 2. Recurrent grade 3 rectocele developed in 1 patient, 1 had recurrent vault prolapse and 2 had vaginal extrusion of mesh. All patients were satisfied with outcome.

Conclusions: The robotic assisted laparoscopic sacrocolpopexy is a minimally invasive technique for vaginal vault prolapse repair, combining the advantages of open sacrocolpopexy with the decreased morbidity of laparoscopy. We found a decreased hospital stay, low complication rates and high patient satisfaction with a minimum of 1 year followup.

Editorial Comment

This article discusses the use of robotic assisted laparoscopic sacrocolpopexy for female vaginal vault prolapse. The authors review their findings in thirty patients treated with this technique with a minimum of 12 month follow-up and found excellent results at the end of the study period.

These surgeons should be congratulated for this and their previous report on the use of robotic technology in urologic and pelvic floor reconstruction (1). Currently, the vast majority of discussion of the use of the robot

has been with prostatic surgery when it appears, as presently reported, that it has great potential applicability to pelvic floor reconstruction. Praise should be extended for the author's frank discussion of their management of short and long term complications and in describing the evolution of their surgical technique to address and minimize same. Their dedication to the principles and tenets of pelvic floor reconstruction should be noted. I hope that in the future, the readership of this journal will have the opportunity to review the 3 and 5 year durability rates of this studied patient population.

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Dorsal Graft Urethroplasty for Female Urethral Stricture

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J Urol. 2006; 176: 611-3

Purpose: Urethral strictures in females are uncommon, and treatment options and outcome are not well-defined with scanty reports. We describe a new method of urethroplasty for the repair of female urethral stricture.

Materials and Methods: Three 60-year-old females, each with a history of recurrent urinary tract infections and obstructive voiding symptoms due to urethral stricture, underwent urethroplasty with a dorsal vaginal or buccal mucosal graft. The dorsal aspect of the distal urethra was dissected from the surrounding tissue through a suprimeatal incision and the urethral wall was incised through the stricture at the 12 o'clock position. A 1.5 cm wide free graft was harvested from the vaginal wall or buccal mucosa in 1 case, and the mucosal surface was placed upon the urethral lumen and sutured with a running 5-zero polyglactin suture to the open urethra. Indwelling 18Fr urethral and 16Fr suprapubic catheters were left in place for 2 and 3 weeks, respectively.

Results: No additional treatment was required during the 1, 8 and 27 months of followup. All patients had normal micturition following catheter removal.

Conclusions: Dorsal graft urethroplasty is feasible and effective for the correction of persistent female urethral stricture.

Editorial Comment

The authors describe a method of addressing female urethral stricture through a suprimeatal approach. The technique utilized both vaginal wall graft as well buccal mucosa with excellent results.

These surgeons used the same incision as that used for the suprimeatal transvaginal urethrolisis (1). Of note is though significant strictures were addressed, there was no incidence of stress urinary incontinence postoperatively. As discussed with the use of the suprimeatal transvaginal urethrolisis, patients should be warned of potential sexual dysfunction utilizing this approach secondary to its proximity to the clitoris¹. Though the authors suffered no stress urinary incontinence in their patient population, they do make the excellent point

that the area of potential addressment with a suburethral sling is not surgically altered through their urethroplasty approach.

Reference

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PEDIATRIC UROLOGY

Bladder Reservoir Function in Children with Monosymptomatic Nocturnal Enuresis and Healthy Controls

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Purpose: We investigated bladder reservoir function in children with monosymptomatic nocturnal enuresis and in healthy controls.

Materials and Methods: A total of 18 children with monosymptomatic nocturnal enuresis and 119 controls who were 7 to 13 years old were recruited. Children completed frequency volume charts and measurements of nocturnal urine production. Mean diuresis in the period preceding each voiding was calculated. Those with enuresis were grouped according to bladder capacity and hospitalized for 4 nights, including a baseline night and 3 with an oral water load. Enuresis volumes and post-void residual volume were estimated, allowing the calculation of bladder volume at the time of enuresis.

Results: Nine children with monosymptomatic nocturnal enuresis were characterized as having normal bladder capacity and 9 had decreased bladder capacity. We found large intra-individual variability in daytime voided volume in all 3 groups of participants. Children with enuresis and small bladder capacity generally voided with volumes close to maximal voided volume. A total of 93 enuresis episodes were recorded. Large intra-individual variability was seen in bladder volume at enuresis and it was lower than maximal voided volume in more than 50% of episodes. Variability in bladder volume at enuresis was greatest in the patient group with decreased bladder capacity. We found a significant correlation between diuresis and bladder capacity in all groups during the day and night.

Conclusions: There is a great intra-individual diurnal variability in voided volume in children with enuresis and in healthy children. Enuresis seems to occur at bladder volumes that are smaller and larger than the maximal voided volume obtained from voiding charts.

Editorial Comment

The authors attempted to measure bladder size in children using voiding diaries and, in enuretic children, observed voiding overnight in hospital, including after water loading. They found that about half of children

with enuresis had smaller than expected functional bladder capacity. However, there was a large intra-individual variability, both in normal controls and children with enuresis. Similarly, looking at nocturnal enuretic episodes in particular, there was wide variation and at least 50% of episodes occurred at volumes less than the maximal voided volume during the day. Finally, water loading appeared to increase functional bladder size.

These findings are of considerable interest. First, the finding of smaller than expected bladder capacity suggests that some of the children may well benefit from anticholinergic therapy. Of course, this has been recognized in the past and the children who do respond are limited. What is interesting, yet disconcerting is the wide variation. Though not particularly surprising, as many social and behavioral factors can influence voiding function, this calls into question the usefulness of short-term voiding diaries. These diaries are the initial non-invasive assessment in most children with voiding problems, yet are clearly highly flawed as a tool to estimate bladder capacity. Also concerning is the finding that for control children the largest voided volume was usually the first void in the AM. In children with nocturnal enuresis, in whom the diary would be most useful, this measurement will clearly not be comparable (as the child will have voided during the night). This again limits the usefulness of the voiding diary. An interesting finding that might have therapeutic benefit is the determination that water loading could, over a few days, lead to larger voided volumes. If so, could morning water loading be of benefit to nocturnal enuresis? Further studies are needed.

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The Impact of Attention Deficit Hyperactivity Disorders on Brainstem Dysfunction in Nocturnal Enuresis

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Purpose: In a specialized university setting the prevalence of attention deficit hyperactivity disorder in general and particularly the inattentive subtype attention deficit hyperactivity disorder of the predominantly inattentive subtype is highly increased. We replicated previous research findings that enuresis is associated with a brainstem deficit and investigated the impact of attention deficit hyperactivity disorder on this brainstem deficit in enuresis.

Materials and Methods: Electromyography recorded startle eye blink modification with and without attentional modulation was used to measure brainstem functioning in 158 children between 6 and 12 years old. Performance in 3 enuresis groups, including children with enuresis, enuresis plus attention deficit hyperactivity disorder of the predominantly inattentive subtype and enuresis plus attention deficit hyperactivity disorder combined, respectively, was compared with that in normally developing controls and in children with attention deficit hyperactivity disorder subtypes without enuresis.

Results: In an automatic attentional task the enuresis groups showed decreased brainstem inhibition compared to that in the control and attention deficit hyperactivity disorder groups ($p < 0.006$). In a controlled attentional task children with and without enuresis who had attention deficit hyperactivity disorder of the predominantly inattentive subtype were unable to show attentional modulation in all age groups ($p < 0.02$).

Conclusions: Startle eye blink modification research reveals a brainstem inhibition deficit in children with enuresis, which could explain why they are unable to remain dry at night. When additional attention is allocated to specific trials in the task, children with attention deficit hyperactivity disorder of the predominantly inatten-

tive subtype fail to optimize sensory gating. With respect to enuresis, this could result in an identification problem of bladder signals, leading to an inadequate or absent arousal effect in attention deficit hyperactivity disorder of the predominantly inattentive subtype.

Editorial Comment

The authors use Startle Eye Blink studies to compare children with enuresis to controls and to compare those with attention deficit disorders to normals. They demonstrated clear differences, with enuretic children (even those with ADHD) having much lower percentage pre-impulse inhibition of startle. In some ways but not all, the response was similar to that seen in patients with ADHD-inattentive subtype who did not have enuresis. Because Startle Eye Blink studies are a measure of brain-stem function, the results indicate that children with enuresis have a clearly documented brain stem dysfunction. In general, this dysfunction over-rides the effects of ADHD as an association with enuresis.

Nocturnal enuresis is caused by a combination of a large nocturnal urine output, small nocturnal bladder capacity and a failure of arousal. These factors all can be related to central nervous system dysfunction. Hence, it is not surprising that enuretic children might have brainstem dysfunction. This particular study is confounded a bit in that almost 30% of the enuretic group had daytime symptoms also. Since it is generally thought that diurnal enuresis has a different etiology than mono-symptomatic nocturnal enuresis, it would have been nice to have the different groups separated out. Also, the percentage pre-impulse inhibition of startle can be increased by medications, in particular methylphenidate. It would have been fascinating to test the results of methylphenidate treatment in these groups, even though it has not been shown to improve enuresis. Any divergence of effect would be helpful in understanding the pathophysiology of nocturnal enuresis better.

Studies of this type should be encouraged. The relationship between brain function and voiding function is intuitively clear, but obviously quite complex. Nonetheless, further application of modern neuroscience tools to patients with voiding function should be encouraged as these investigations will be helpful in understanding the conditions and in developing new therapeutic interventions.

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