
UROLOGICAL SURVEY

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STONE DISEASE

Third prize: contemporary percutaneous nephrolithotripsy: 1585 procedures in 1338 consecutive patients

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Background and Purpose: The approach to urinary-stone disease has changed dramatically over the last three decades with a transition from open surgery to minimally invasive procedures. Percutaneous nephrolithotripsy (PCNL) is a cornerstone of the treatment of kidney and selected upper-ureteral stones and continues to evolve with advances in techniques and instrumentation. The purpose of this study was to assess outcomes and trends prospectively in a large contemporary group of patients undergoing PCNL.

Patients and Methods: Between July 1990 and December 2005, all 1338 patients at a single center scheduled for PCNL (N = 1585 procedures) were enrolled. Their mean age was 53 years (range 4-89 years). Data including comorbidities, stone burden, stone location, surgical time, hospital length of stay, rate of secondary procedures, and adverse events were collected prospectively. The primary outcome measures were stone-free rate and complications.

Results: There was a substantial incidence of comorbid medical conditions (48.8%) and anatomic renal abnormalities (25.3%), demonstrating the diverse and challenging patient population in this contemporary series. The overall stone-free rate at 3 to 6 months of follow-up was 94.8%.

Conclusions: Percutaneous nephrolithotripsy is a highly effective procedure and may be performed in a diverse group of patients with comorbid conditions and renal abnormalities. Improved intracorporeal lithotripters, balloon dilation of the tract, use of flexible instruments, and liberal use of secondary nephroscopy result in excellent stone-free rates with low morbidity.

Editorial Comment

This large contemporary series provides important information that is helpful with regards to counseling patients on the risk:benefit ratio of percutaneous nephrolithotomy (PCNL). It is important to emphasize that these results are from a very experienced tertiary center with a large volume of procedures (over 100 PCNL's per year), and one might expect that success rates may be somewhat lower and complication rates somewhat higher at sites with lower surgical volumes.

The broad applicability of the PCNL is supported by the wide age range treated (4-89), the substantial comorbidity (in 49% of patients) and the significant proportion of patients with renal abnormalities (25%). In spite of this challenging patient population, the success rate of 90% at time of discharge is commendable. We should note that no computerized tomography was utilized for postoperative follow-up – recent studies would suggest that more sensitive CT scans would detect residual stones in approximately 20% of those deemed stone-free by traditional imaging.

Importantly, the high success rate in this series was obtained without the need for routine upper pole access as has been recommended by other investigators. It may have been useful to stratify efficacy and safety based on the presence of renal anomalies and patient comorbidities or based on the need for multiple or supracostal access.

The authors report that they converted from a serial Amplatz dilator system to a balloon dilation system in 1995, following reports by other investigators of decrease in bleeding with this approach. It would have been interesting to know if their 7% bleeding complication rate (minor and major) decreased after the switch to

balloon dilation. The low rates of pulmonary complications and major bleeding set new standards for preoperative counseling of patients.

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Determination of ideal stent length for endourologic surgery

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Purpose: To assess whether direct measurement of ureteral length correlates with patient height or the ureteral length measured on intravenous urography in order to determine the appropriate ureteral stent length to be used for ureteroscopic surgery.

Patients and Methods: Sixty-five patients (70 ureters) who underwent ureteroscopic procedures were evaluated. The ureteral length between the ureteropelvic and ureterovesical junctions was determined either by preoperative intravenous urography (straight ureteral length; SUL) or intraoperatively with the aid of a guidewire (practical ureteral length; PUL). We regarded the PUL as a clinically useful measurement. The height, SUL, and PUL for each patient was determined. For a postoperative comparison of proper stent position, we selected another 36 patients in whom the length of the stent was based on patient height.

Results: The SUL values correlated significantly with the PUL ($R^2 = 0.482$ on the right v 0.564 on the left side) and might be used as a predictor of stent length. However, patient height did not correlate with the PUL. Postoperative stent position tended to be better in the patients who had direct ureteral measurements than in those with stents chosen on the basis of patient height.

Conclusion: Determination of stent length according to patient height does not correlate well with the length needed for endoscopic procedures. Direct measurement of the ureteral length is easy and minimizes stent-associated complications and stent migration.

Editorial Comment

The routine use of noncontrast cross-sectional imaging for the diagnosis and preoperative planning for urolithiasis makes the determination of ureteral length on IVP to a certain degree obsolete. As such, alternative methods to determine ureteral length at the time of surgery are attractive. The concept of direct ureteral length measuring at the end of the procedure is attractive. This can be accomplished as described in this study, by passing a guidewire. Alternatively, one can measure the distance on the ureteroscope as it is withdrawn from the UPJ to the UVJ. Lastly, one could use an open-ended ureteral catheter with inked-measurements. The authors note that ureteral dilation at the end of a ureteroscopic stone extraction could lead to overestimation by the PUL method.

The stent sizes utilized based on patient height were longer than we would traditionally utilize. For example, we commonly utilize 22 cm stents for patients shorter than 5'4", and though the shortest patient in this study was 4'8", the shortest ureteral stent placed was 24 cm.

The authors' hypothesis that a poorly placed stent that crosses the midline is somewhat speculative without the evaluation of urinary symptoms and flank pain in this study. One could make a counter-argument that

a coil sitting flush on the sensitive trigone could cause more discomfort than one that has extra length in the bladder. As such, the impact of stent positioning on patient outcomes remains an area ripe for investigation.

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ENDOUROLOGY & LAPAROSCOPY

Open versus laparoscopic live donor nephrectomy: a focus on the safety of donors and the need for a donor registry

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Purpose: A review of the existing literature showed that the subject of live donor nephrectomy is a seat of underreporting and underestimation of complications. We provide a systematic comparison between laparoscopic and open live donor nephrectomy with special emphasis on the safety of donors and grafts.

Materials and Methods: The PubMed(R) literature database was searched from inception to October 2006. A comparison was made between laparoscopic and open live donor nephrectomy regarding donor safety and graft efficacy.

Results: The review included 69 studies. There were 7 randomized controlled trials, 5 prospective nonrandomized studies, 22 retrospective controlled studies, 26 large (greater than 100 donors), retrospective, noncontrolled studies, 8 case reports and 1 experimental study. Most investigators concluded that, compared to open live donor nephrectomy, laparoscopic live donor nephrectomy provides equal graft function, an equal rejection rate, equal urological complications, and equal patient and graft survival. Analgesic requirements, pain data, hospital stay and time to return to work are significantly in favor of the laparoscopic procedure. On the other hand, laparoscopic live donor nephrectomy has the disadvantages of increased operative time, increased warm ischemia time and increased major complications requiring reoperation. In terms of donor safety at least 8 perioperative deaths were recorded after laparoscopic live donor nephrectomy. These perioperative deaths were not documented in recent review articles. Ten perioperative deaths were reported with open live donor nephrectomy by 1991. No perioperative mortalities have been recorded following open live donor nephrectomy since 1991. Regarding graft safety, at least 15 graft losses directly related to the surgical technique of laparoscopic live donor nephrectomy were found but none was emphasized in recent review articles. The incidence of graft loss due to technical reasons in the early reports of open live donor nephrectomy was not properly documented in the literature.

Conclusions: We are in need of a live organ donor registry to determine the combined experience of complications and long-term outcomes, rather than short-term reports from single institutions. Like all other new techniques, laparoscopic live donor nephrectomy should be developed and improved at a few centers of excellence to avoid the loss of a donor or a graft.

Editorial Comment

The author performed a very comprehensive review of the literature (live donor laparoscopic nephrectomy) revealing only 7 randomized trials that concluded that when compared to open live donor nephrectomy, laparoscopic

live donor nephrectomy provides equal graft function at 1 year, an equal rejection rate, equal urological complications, and equal patient and graft survival. Analgesic requirements, pain data, hospital stay and time to return to work are significantly in favor of the laparoscopic procedure.

On the other hand, laparoscopic live donor nephrectomy has the disadvantages of increased operative time, increased warm ischemia time and increased major complications requiring reoperation. These complications may decrease with more operative experience. The learning curve for laparoscopic procedures has been extensively discussed in the literature. It is pivotal that better simulation, education models can be created to decrease the challenging issues of learning this new operative technique.

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Prospective radiographic followup after en bloc ligation of the renal hilum

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Purpose: We determined the risk of arteriovenous fistula after en bloc ligation of the renal hilum.

Materials and Methods: A prospective evaluation of all patients who underwent en bloc ligation of the renal hilum during nephrectomy for malignant disease was performed. Pertinent operative data were recorded and patients were followed for clinical evidence of arteriovenous fistula formation, including hypertension, abdominal bruit and new onset congestive heart failure. Patients with at least 12 months of followup underwent computerized tomographic arteriography to assess arteriovenous fistula formation.

Results: A total of 94 patients underwent en bloc renal hilar ligation during open (43) and laparoscopic (51) nephrectomy using a 45 mm titanium endovascular stapler. Of this cohort 11 patients were lost to followup and 3 died of disease. The remaining 80 patients were followed an average of 35.2 months with no clinical evidence of arteriovenous fistula formation. Specifically there was no statistically significant difference in preoperative and postoperative blood pressure ($p = 0.18$ and 0.62 , respectively), no evidence of abdominal bruit on examination and no new onset congestive heart failure. A total of 32 had increased serum creatinine and, therefore, they were excluded from followup computerized tomographic arteriography. Eight patients had a followup of less than 1 year and they were not yet eligible for evaluation. In the 40 patients who underwent computerized tomographic arteriography no fistulas were noted.

Conclusions: Based on clinical followup and prospective radiographic evaluation there appears to be a low risk of arteriovenous fistula formation after en bloc ligation of the renal hilum using a titanium endovascular stapler.

Editorial Comment

The authors should be congratulated to perform this prospective study. The first case of fistula formation after en bloc ligation of the renal pedicle was reported by Hollingsworth (1934) in a patient with tuberculosis renal disease. Few other cases of fistula formation after en bloc ligation of the renal pedicle were reported. Approximately 60 case reports of fistula formation after mass ligation of the renal pedicle were published of which most developed in the setting of infection or inflammation.

The authors performed the "en bloc" endovascular renal hilar ligation using endovascular staplers during open and hand assisted laparoscopic nephrectomies. One should be careful and aware of possible misfiring and

different types of laparoscopic endovascular staplers so possible complications can be minimized or completely avoided.

In summary, “en bloc” renal hilar ligation using endovascular staplers could be considered in cases of renal cell carcinoma when the absence of infection and/or severe inflammation may contribute for possible arterio-venous fistula formation.

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IMAGING

Combined T2-weighted and diffusion-weighted MRI for localization of prostate cancer

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AJR Am J Roentgenol. 2007; 189: 323-8

Objective: The objective of our study was to compare T2-weighted MRI alone and T2 combined with diffusion-weighted imaging (DWI) for the localization of prostate cancer.

Subjects and Methods: T2-weighted imaging and DWI (b value = 600 s/mm²) were performed in 49 patients before radical prostatectomy using an endorectal coil at 1.5 T in this prospective trial. The peripheral zone of the prostate was divided into sextants and the transition zone into left and right halves. T2 images alone and then T2 images combined with apparent diffusion coefficient (ADC) maps (T2 + DWI) were scored for the likelihood of tumor and were compared with whole-mount histology results. Fixed window and level settings were used to display the ADC maps. Only tumors with an area of more than 0.13 cm² (> 4 mm diameter) and a Gleason score of > or = 6 were considered significant. The area under the receiver operating characteristic curve (A(z)) was used to assess accuracy.

Results: In the peripheral zone, the A(z) value was significantly higher (p = 0.004) for T2 plus DWI (A(z) = 0.89) than for T2 imaging alone (A(z) = 0.81). Performance was poorer in the transition zone for both T2 plus DWI (A(z) = 0.78) and T2 (A(z) = 0.79). For the whole prostate, sensitivity was significantly higher (p < 0.001) with T2 plus DWI (81% [120/149]) than with T2 imaging alone (54% [81/149]), with T2 plus DWI showing only a slight loss in specificity compared with T2 imaging alone (84% [204/243] vs 91% [222/243], respectively).

Conclusion: Combined T2 and DWI MRI is better than T2 imaging alone in the detection of significant cancer (Gleason score > or = 6 and diameter > 4 mm) within the peripheral zone of the prostate.

Editorial Comment

Localization of prostate cancer is important for adequate tumor staging, adequate targeting for transrectal ultrasound biopsy and for adequate conservative therapies such as intensity-modulated radiation therapy, interstitial brachytherapy and cryosurgery. Endorectal magnetic resonance techniques that can be used for identification of prostate cancer are conventional T2-weighted image, 3D-spectroscopy, diffusion-weighted image (DWI) and dynamic contrast enhanced technique (DCE). Since the appearance of cancer on T2-weighted image is not specific, several studies have demonstrated that the combination of endorectal MR imaging and

magnetic resonance spectroscopic imaging, can lead to high sensitivity and specificity for peripheral zone tumor localization. DWI is a technique of imaging prostate cancer based on the fact that cancer tissue presents with restriction of the movements of the molecules of water compared with the movement of the molecules of water within normal prostatic tissue. In other words, cancer appears with low apparent diffusion-coefficient values (ADC). Though the authors state that sensitivity of combined T2 and DWI MRI is significantly higher than with T2 imaging alone, we should be alert because both techniques can present false positive (due to prostatitis, focal prostatic atrophy, etc) or false negative results. In our institution, we have been using routinely, in the last 3 years, the combination of these four different techniques: T2-weighted image, 3D-spectroscopic imaging, DWI and dynamic contrast enhanced imaging. Preliminary analysis of our materials has been shown that combining these four techniques provides better sensitivity and specificity for cancer detection and localization.

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Split-bolus MDCT urography with synchronous nephrographic and excretory phase enhancement.

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Objective: Our purpose was to evaluate the utility of CT urography performed using a split contrast bolus that yields synchronous nephrographic and excretory phase enhancement.

Materials and Methods: Five hundred consecutive patients referred for evaluation of possible urinary tract abnormalities (327 for painless hematuria) underwent CT urography with unenhanced scanning of the abdomen and pelvis and scanning during concurrent nephrographic and excretory phase enhancement produced by administration of a split contrast bolus. The enhanced abdomen scan was obtained with abdominal compression; the enhanced pelvis scan was obtained after release of compression. Findings from axial sections and coronal maximum intensity projections were correlated with clinical follow-up and, as available, with laboratory and other imaging studies including cystoscopy, ureteroscopy, urine cytology, surgery, and pathology. Follow-up management for each patient was determined by the clinical judgment of the referring physician.

Results: CT urography identified 100% of pathologically confirmed renal cell carcinomas (n = 10) and uroepithelial malignancies involving the renal collecting system or ureter (n = 8). An additional nine renal masses were identified for which no pathologic proof has yet been obtained, including eight subcentimeter solid renal masses and one multiloculated lesion. Fourteen of 19 confirmed cases of uroepithelial neoplasm involving the bladder were identified. CT urography yielded one false-positive for bladder tumor, two false-positives for ureteral tumor, and one patient with a bladder mass who refused further evaluation. CT urography yielded sensitivity and specificity of 100% and 99% and 74% and 99% and positive predictive value and negative predictive value of 80% and 100% and 93% and 99% for the renal collecting system and ureter and bladder, respectively. CT urography was ineffective in identifying 11 cases of noninfectious cystitis. CT urography also depicted numerous other congenital and acquired abnormalities of the urinary tract.

Conclusion: Split-bolus MDCT urography detected all proven cases of tumors of the upper urinary tract, yielding high sensitivity and specificity. The split-bolus technique has the potential to reduce both radiation dose and the number of images generated by MDCT urography.

Editorial Comment

Multidetector CT-urography (MDCT-urography) has been shown to be an effective single comprehensive examination in the evaluation of patients with hematuria or with risk for the development of urothelial malignancies. Since protocols for MDCT urography varies from each institution, most MDCT urography images are obtained in the unenhanced phase (detection of calculi), nephrographic-phase (detection of renal masses) and excretory-phase (detection of urothelial lesions). The authors present their results with a new protocol called split-bolus MDCT urography where the unenhanced phase is followed only by a combined nephrographic and excretory phase. During split-bolus, CT-urography the intravenous injection of contrast material is performed in two steps. First, 40 ml is injected at 2 ml/s and after 120 second from the beginning of the first injection, the remaining 80 ml is injected. This technique showed high sensitivity and specificity, for the detection of all proven cases of tumors of the upper urinary tract. The main objective with MDCT-urography is to detect all possible causes of hematuria while using the lowest possible radiation dose to the patient. As shown by the authors the split-bolus technique has the potential to reduce both radiation dose and the number of images generated by MDCT urography. In our opinion this protocol is ideal for patients submitted to previous cystoscopy since we might miss some small tumors within a fully distended and opacified bladder. As we have discussed previously in this journal (volume 33, number 3, pages 435-436), we consider “the bladder-wall phase” (scans at 60 or 70 seconds after intravenous injection of the total amount of contrast), essential for the detection of small bladder tumors. However, this “bladder phase wall” has the drawback of significant increase in the effective radiation dose to the patient (18 to 25 mGy).

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UROGENITAL TRAUMA

Selective nonoperative management of penetrating abdominal solid organ injuries

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Ann Surg. 2006; 244: 620-8

Objective: To assess the feasibility and safety of selective nonoperative management in penetrating abdominal solid organ injuries.

Background: Nonoperative management of blunt abdominal solid organ injuries has become the standard of care. However, routine surgical exploration remains the standard practice for all penetrating solid organ injuries. The present study examines the role of nonoperative management in selected patients with penetrating injuries to abdominal solid organs.

Patients and Methods: Prospective, protocol-driven study, which included all penetrating abdominal solid organ (liver, spleen, kidney) injuries admitted to a level I trauma center, over a 20-month period. Patients with hemodynamic instability, peritonitis, or an unevaluable abdomen underwent an immediate laparotomy. Patients

who were hemodynamically stable and had no signs of peritonitis were selected for further CT scan evaluation. In the absence of CT scan findings suggestive of hollow viscus injury, the patients were observed with serial clinical examinations, hemoglobin levels, and white cell counts. Patients with left thoracoabdominal injuries underwent elective laparoscopy to rule out diaphragmatic injury. Outcome parameters included survival, complications, need for delayed laparotomy in observed patients, and length of hospital stay.

Results: During the study period, there were 152 patients with 185 penetrating solid organ injuries. Gunshot wounds accounted for 70.4% and stab wounds for 29.6% of injuries. Ninety-one patients (59.9%) met the criteria for immediate operation. The remaining 61 (40.1%) patients were selected for CT scan evaluation. Forty-three patients (28.3% of all patients) with 47 solid organ injuries who had no CT scan findings suspicious of hollow viscus injury were selected for clinical observation and additional laparoscopy in 2. Four patients with a “blush” on CT scan underwent angiographic embolization of the liver. Overall, 41 patients (27.0%), including 18 cases with grade III to V injuries, were successfully managed without a laparotomy and without any abdominal complication. Overall, 28.4% of all liver, 14.9% of kidney, and 3.5% of splenic injuries were successfully managed nonoperatively. Patients with isolated solid organ injuries treated nonoperatively had a significantly shorter hospital stay than patients treated operatively, even though the former group had more severe injuries. In 3 patients with failed nonoperative management and delayed laparotomy, there were no complications.

Conclusions: In the appropriate environment, selective nonoperative management of penetrating abdominal solid organ injuries has a high success rate and a low complication rate.

Editorial Comment

Most blunt solid organ injuries can successfully be managed nonoperatively. Stab wounds, in general can be managed nonoperatively about 50% of the time for anterior abdominal entrance wounds and 85% for retroperitoneal entrance. While traditionally teaching dictates that gunshot wounds of the abdomen were absolute indications for exploration, such concepts have been brought into question with multiple publications in the last few years, mostly championed by the trauma group from LA County Medical Center. In general the treatment algorithm for penetrating abdominal trauma is as follows: signs or symptoms of peritonitis, hemodynamic instability or an abdomen difficult to evaluate due to mental status change or body habitus, underwent intra-abdominal exploration. All other patients were imaged by CT with intravenous contrast. If the CT suggested a hollow organ viscus injury or a contrast “blush” with instability, the patient was explored. Contrast “bush” and stable patients underwent angiography. If there was no bowel injury and the penetrating wound was on the left and thoracoabdominal, a delayed diagnostic laparoscopy is performed to evaluate for a diaphragmatic injury. Any injury was repaired laparoscopically. The patient is then examined serially for the next 24 to 48 hours. Persistently asymptomatic patients were fed and discharged after 48 hours. 60% of penetrating injuries were explored immediately, 30% (27) of whom had with kidney injuries. Of the injured kidneys, 12 underwent renorrhaphy and 9 or (33%) nephrectomy. Of those kidney injuries managed conservatively, none of the Grade 1 and 2 injuries were explored while 1 of 3 of the Grade 3-5 injuries were explored. In conclusion, in the very select patient gunshot wound to the kidney patient, nonoperative management can be successful.

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Proposed mechanisms of lower urinary tract injury in fractures of the pelvic ring

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Objective: To investigate whether the observation of particular pelvic fracture patterns enables the clinician to predict the presence and type of injuries to the lower urinary tract, as the mechanisms of injury to the lower urinary tract in association with fractures of the pelvic ring are unclear.

Patients and Methods: The case-notes and radiographs of 168 patients with either pelvic ring or acetabular fractures were reviewed; 108 pelvic ring fractures (81 men, 27 women) and 60 acetabular fractures (46 men, 14 women). The pelvic fractures were classified according to the system described by Tile and were correlated with the incidence and type of lower urinary tract injury (LUTI).

Results: Overall, of the 108 men and women with pelvic ring fractures, 27 (25%) had a LUTI documented either radiologically or as an intraoperative finding. Of the 81 men with pelvic ring fractures, 24 (30%) had a LUTI, of whom six (7%) had an isolated bladder laceration, 14 (17%) a partial urethral injury (PUI) and four (5%) a complete urethral disruption (CUD). Five of the 18 men with urethral injuries also had bladder injuries and in three of these, the bladder neck was also injured. Three of 27 women (11%) had a LUTI, all of whom had isolated bladder lacerations. Of the 46 men with an acetabular fracture, one (2%) had a CUD, and three (7%) had a PUI. One of 14 of women with an acetabular fracture sustained a bladder laceration. None of the three men with a Tile Type-A pelvic ring fracture sustained a LUTI. Of the 28 men with 'open-book' (Tile Type-B1) fractures, 21 (75%) had no associated LUTI and seven (25%) had a LUTI (five partial urethral injuries and two bladder lacerations). Of the 10 men with 'lateral compression' (Tile Type-B2) fractures, six had no LUTI and four had a LUTI (two partial urethral injuries and two bladder lacerations). Of the 40 men with 'vertical shear' (Tile Type-C) fractures, 27 (68%) had no LUTI and 13 (32%) a LUTI (four complete urethral disruptions, seven partial urethral injuries, and two bladder lacerations) including all of the combined bladder and urethral injuries and all of the bladder neck injuries.

Conclusion: The pelvic fracture pattern alone does not predict the presence of a LUTI. When it occurs, the type of LUTI appears to be related to the fracture mechanism. The pattern of injury to the soft tissue envelope and specifically to the ligaments supporting the lower urinary tract offers the best correlation with the observed LUTI. We propose a mechanism for this.

Editorial Comment

The above article by Mundy clearly deserves a closer look, particularly at the illustrative images and figures. Pelvic fractures are typically classified by fracture pattern and mechanism of injury. The two most commonly used schemas are the Young-Burgess and the Tile classifications. They divide the fracture patterns more by mechanism into Type A, anterior compression (AP) injury, Type B, lateral compression (LC) and Type C vertical shear and conformationally unstable. Bladder injuries in the male with pelvic fractures are primarily due to shearing forces and not to bladder penetration from a bony spicule. This is illustrated by publications from the SF General Group where half of bladder injuries occurred on the opposite side of the bony fracture. Intuitively, a pelvic fracture that results in the most shearing forces, then should also give the highest likelihood for bladder injury. Urethral injuries have been classically described by Turner Warwick as prostatico-membranous disruption injuries. It is my observation, and that of others, most injuries to the urethra from pelvic fracture are at the bulbomembranous junction and not at the level of the prostate. Again, in the male, it appears that shearing forces are the cause of urethral injury and not direct

compression or penetration. In other words, the injury that causes the most shearing forces to the urethra should cause an injury.

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PATHOLOGY

The role of P501S and PSA in the diagnosis of metastatic adenocarcinoma of the prostate

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Background: Adenocarcinoma of the prostate can present as metastatic carcinoma with no known primary. Prostatic origin can be confirmed in most of these cases by immunohistochemistry for prostate-specific antigen (PSA) and prostate-specific acid phosphatase. In a small subset of high-grade prostate carcinomas, both markers are negative and therefore are not helpful for confirming prostatic origin. Recently, novel marker proteins that are preferentially expressed in prostate tissue were identified. One such marker is P501S or prostein, a 553-amino acid protein that is localized to the Golgi complex. It is expressed in both benign and neoplastic prostate tissues, but not in any other normal or malignant tissue examined to date. Owing to its apparent specificity, prostein may be a good marker to demonstrate prostatic origin in metastatic prostate cancer.

Design: Five-micron sections of a tissue microarray were subjected to immunohistochemistry with a monoclonal mouse anti-P501S (clone 10E3, Dako, Carpinteria, CA) antibody and a monoclonal mouse anti-PSA (clone ER-PR8, Dako, Carpinteria, CA) antibody. The tissue microarray contains 78 cases of metastatic prostatic adenocarcinoma, 20 cases of primary prostatic adenocarcinoma, and 20 cases of benign prostate tissue from the peripheral zone as well as samples of benign brain, pancreas, kidney, thyroid, testis, skeletal muscle, and fibroconnective tissue.

Results: Similar staining (intensity and extent) was identified for both markers in the majority of metastatic tumors (11 distant sites, 42 pelvic lymph nodes), in all 20 primary tumors and in all benign prostate and nonprostate tissues. The P501S stain had perinuclear cytoplasmic (Golgi) distribution even in poorly differentiated tumors and metastases. Two distant metastases were negative for PSA but retained focal weak positivity for P501S. Two other distant metastases were weakly PSA positive, but strongly P501S positive. Metastases in the pelvic lymph nodes were positive for both markers in 53 cases and 1 lymph node metastasis was strongly PSA positive but P501S negative. In summary, 67 of the 69 cases (97%) of metastatic prostate carcinomas were PSA positive, whereas 68 of the 69 cases showed at least focal weak reactivity for P501S (99%). None of the tumors were negative for both markers.

Conclusions: Immunohistochemistry for P501S is a sensitive and highly specific marker for identifying prostate tissue. The large majority of metastatic prostatic adenocarcinomas are P501S positive (99%). A small subset of metastatic prostatic adenocarcinoma shows significant differences in staining intensity and extent for PSA and P501S and, therefore, combined use of these markers may result in increased sensitivity for detecting prostatic origin.

Editorial Comment

In 2001 (1), Xu et al. identified P501S or prostein, a novel prostate-specific protein expressed in normal and malignant prostate tissues. Characterization of the prostein gene showed that prostein cDNA encodes a 553-amino acid protein. The protein is predicted to be a type IIIa plasma membrane protein with a cleavable signal peptide and 11 transmembrane-spanning regions. Prostein gene is located on chromosome 1 at the WI-9641 locus between q32 and q42. Prostein mRNA is shown to be uniquely expressed in normal and cancerous prostate tissues using Northern blot, cDNA microarray, and real-time PCR analysis. Furthermore, prostein mRNA expression does not appear to be prostate tumor grade related and is restricted exclusively to prostate cell lines. Immunohistochemical staining using a mouse monoclonal antibody generated against prostein demonstrates that this protein is specifically detected in prostate tissues both at the plasma membrane and in the cytoplasm.

P501S or prostein should not be confounded with P504S (alpha-methylacyl coenzyme A racemase or AMACR). In 2000, Xu et al. (2) using cDNA library subtraction in conjunction with high throughput microarray screening, identified 3 genes: P503S, P504S and P510S that showed differential expression in malignant and benign prostate glands. It was demonstrated AMACR (P504S) immunoreactivity in prostatic adenocarcinoma but not in benign prostatic glands, while P503S immunoreactivity was present in both malignant and benign glands. Furthermore, it was found AMACR overexpression in colorectal, ovarian, breast, bladder, lung, and renal cell carcinomas, as well as lymphomas and melanomas (3). This findings makes AMACR unsuitable for the diagnosis of metastatic adenocarcinoma of the prostate.

In the study surveyed, P501S or prostein showed that is a good marker in metastatic adenocarcinoma of the prostate. The authors found that 67 of the 69 cases (97%) of metastatic prostate carcinomas were PSA positive, whereas 68 of the 69 cases showed at least focal weak reactivity for P501S (99%). None of the tumors were negative for both markers. They conclude that Immunohistochemistry for P501S or prostein is a sensitive and highly specific marker for identifying prostate tissue. The large majority of metastatic prostatic adenocarcinomas are P501S positive (99%).

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Renal medullary carcinoma: report of seven cases from Brazil

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Mod Pathol. 2007; 20: 914-20

We report seven cases of renal medullary carcinoma collected from several institutions in Brazil. In spite of a relatively high incidence of sickle cell trait in Brazil, this is a rare tumor. All patients were males between the ages of 8 and 69 years (mean 22 years). From the collected information, the most frequent presenting symptoms were gross hematuria and flank or abdominal pain. The duration of symptoms ranged from 1 week to 5 months. Most of the tumors were poorly circumscribed arising centrally in the renal medulla. Size ranged from 4 to 12 cm (mean 7 cm) and hemorrhage and necrosis were common findings. All seven cases described showed sickled red blood cells in the tissue and six patients were confirmed to have sickle cell trait. All cases disclosed the characteristic reticular pattern consisting of tumor cell aggregates forming spaces of varied size, reminiscent of yolk sac testicular tumors of reticular type. Other findings included microcystic, tubular, trabecular, solid and adenoid-cystic patterns, rhabdoid-like cells and stromal desmoplasia. A peculiar feature was suppurative necrosis typically resembling microabscesses within epithelial aggregates. The medullary carcinoma of the 69-year-old patient was associated with a conventional clear cell carcinoma. To our knowledge, this association has not been previously reported and the patient is the oldest in the literature. The survival after diagnosis or admission ranged from 4 days to 9 months. The 8-year-old African-Brazilian patient with a circumscribed mass is alive and free of recurrence 8 years after diagnosis. This case raises the question whether a periodic search for renal medullary carcinoma in young patients who have known abnormalities of the hemoglobin gene and hematuria could result in an early diagnosis and a better survival.

Editorial Comment

Renal medullary carcinoma is a rare, rapidly growing tumor that affects young individuals with sickle cell trait. This tumor was described in 1995 by Davis et al. (1), which considered it the seventh sickle cell nephropathy. The six sickle cell nephropathies previously described by Berman (2), in 1974, are gross hematuria, papillary necrosis, nephrotic syndrome, renal infarction, inability to concentrate the urine and pyelonephritis. All of them are to a certain extent related to the obstruction of blood vessels and tissue hypoxia resulting from red blood cell sickling. The renal medulla is particularly susceptible to damage in sickle cell disease due to its unique environment characterized by anoxia, hyperosmolarity and low pH that tend to promote hemoglobin S polymerization and red blood cell sickling. Over a period of 22 years, the Armed Forces Institute of Pathology had collected only 34 cases (1) and over the next 5 years, only 15 more had been described (3).

The incidence of sickle cell trait in Brazil is 6.7% in African-Brazilians, 5.4% in Mulattos (persons with mixed White and African-Brazilian ancestry) and 0.21% in Whites (4). Considering the large population at risk, the tumor is, in fact, very rare suggesting that additional factors are likely necessary. This is the first report from Brazil as a result of the collaboration of several pathologists that searched for cases of renal medullary carcinoma in their institution's files.

Renal medullary carcinoma is typically seen in young patients with the sickle cell trait and exceptionally with sickle cell disease. All seven cases described in the study showed sickled red blood cells in the tissue and six patients were confirmed to have sickle cell trait. Renal medullary carcinoma shows a male predominance (2:1) and the mean age at presentation is approximately 22 years, with ages ranging from 5 to 40 years.

The most frequent presenting symptoms are gross hematuria and flank or abdominal pain. A palpable abdominal mass is often observed. Some patients may present with symptoms of metastatic disease. Spontaneous gross hematuria, the first sickle cell nephropathy, is usually unilateral and occurs at the same age range that renal medullary carcinoma. It is worth noting, however, that most of these spontaneous benign bleedings occur from the left kidney and most of the renal medullary carcinomas arise on the right kidney. The origin and pathogenesis of renal medullary carcinoma are not completely understood.

The prognosis of renal medullary carcinoma is very poor due to the highly aggressive behavior of this neoplasm and to its resistance to conventional chemotherapy. Metastases are both lymphatic and hematogenous with liver and lungs most often involved. The mean duration of life after surgery is about 15 weeks (5) and the

longest documented survival for renal medullary carcinoma was 15 months (6). Exceptionally, the 8-year-old African-Brazilian patient with a circumscribed mass described in the study is alive and free of recurrence 8 years after diagnosis. Chemotherapy has been known to prolong survival by few months but generally, neither chemotherapy nor radiotherapy has altered the course of the disease (7).

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INVESTIGATIVE UROLOGY

Structural organization of fibrous connective tissue in the periacinar region of the transitional zone from normal human prostates as revealed by scanning electron microscopy

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BJU Int. 2007; 100: 940-4

Objective: To analyse, using scanning electron microscopy (SEM), the organization of stromal fibrous components in the transitional zone (TZ) from normal human prostates; because of its association with disease, greater emphasis was placed upon the periacinar region of the stroma.

Materials and Methods: TZ specimens were obtained from normal prostates during autopsy of six men, aged 18-30 years, who had died from accidents. Tissue was fixed for SEM in a modified Karnovsky solution for 48 h at 4 degrees C, and to visualize the three-dimensional organization of the stroma, samples were treated to remove cells.

Results: In acellular preparations, narrow fibrous septa formed a dense and supportive scaffold for ducts and acini, and a smooth and homogeneous fibrous sheet, herein identified as pars fibroreticularis, lined the acinar

lumen. More internally, fibrous septa had a spongy organization with dense lamellae. Higher magnification showed that the smooth luminal sheet is made of 115-154-nm thick fibrils in a tight parallel arrangement. Just under this layer there was a meshwork of fibrils 77-115 nm thick that were orientated in less defined directions. Conclusion: In the TZ of the human prostate, dense stromal fibrous components around acini act as a barrier that might enhance local cellular responses and events that occur in disorders such as benign prostatic hyperplasia. The periacinar pars fibroreticularis supports the notion of high structural variability in this region of basement membranes.

Editorial Comment

The transitional zone (TZ) is particularly relevant for prostate pathology as it is thought to be the main region of the gland that enlarges in BPH.

The present findings show that in the TZ of the human non hyperplastic prostate, dense stromal fibrous components around acini may act as a diffusion barrier that might enhance local cellular responses and events that are known to occur in disorders such as BPH. The periacinar stroma also includes a distinct pars fibroreticularis, and this supports the notion of high structural variability in this region of basement membranes.

The normative findings on prostate TZ presented here will also serve as comparison for future findings of this region in patients with BPH.

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Relationship between adult dark spermatogonia and secretory capacity of Leydig cells in cryptorchidism

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BJU Int. 2007; 100: 1147-9

Objective: To examine whether hormonal therapy before orchidopexy affects the histology of the testis and to assess the responsiveness of the Leydig cells, as it has been shown that although basal plasma testosterone levels are within the 'normal' range in cryptorchid boys there is an insufficient increase of testosterone after a human chorionic gonadotrophin (hCG) stimulation in approximately 30% of cryptorchid boys.

Patients and Methods: In all, 55 boys (aged 1-7 years) with a unilateral undescended testis were included in the study and divided into two groups. Group I (32 boys) received hormonal therapy before orchidopexy; 17 boys received a long-acting LHRH analogue (buserelin) administered as a nasal spray in doses of 20 microg/day for 28 days, followed by 1500 IU hCG intramuscularly (i.m.) once a week for 3 weeks, and the remaining 15 received 1500 IU hCG i.m. once a week for 3 weeks. Group II (33 boys) had orchidopexy alone. During orchidopexy biopsies were taken from the undescended and contralateral descended testes of the boys in both groups for histological analyses. Variations in the number of adult dark (Ad) spermatogonia per tubule (Ad/T) were assessed and testosterone levels were measured during the course of the hormonal therapy (before treatment, 14 days after initiation of buserelin administration, 24 h after each hCG injection, and 3 months after cessation of therapy).

Results: In group I, 17 boys (53%) had a 'normal' Ad/T after hormonal treatment vs only six (18%) in group II after orchidopexy alone (P = 0.019). In the hormonally treated boys (group I) we compared the testosterone

values 24 h after the second injection of hCG (when the response was most pronounced). Those with a normal Ad/T had a mean (sd) testosterone level of 199.5 (97.6) ng/dL vs 99.6 (85) ng/dL in those with an inadequate Ad/T response to hormonal therapy ($P < 0.003$).

Conclusion: We have confirmed that there are two subgroups of cryptorchid boys. Patients with a sufficient Leydig cell secretory capacity will have normal testicular histology and Ad spermatogonia count after hormonal treatment. While those with a suboptimal Leydig cell capacity will have a low Ad spermatogonia count and consequently poor prognosis for future fertility, despite successful surgery. As to whether different types and durations of the hormonal therapy in patients with impaired Leydig cell response could lead to improved testicular histology and consequently improved prognosis for future fertility, remains to be answered.

Editorial Comment

This paper presents new important insights on the understanding of cryptorchidism and its treatment and I will highlight some important points.

The authors demonstrated for the first time, that the transformation of gonocytes into Ad spermatogonia is a testosterone-dependent process. If an adequate increase in plasma testosterone follows hormonal stimulation, normal germ-cell maturation occurs. Patients that have an insufficient Leydig cell response to hormonal stimulation, resulting in an inadequate testosterone increase, will have poor testicular histology and a low Ad spermatogonia count.

Interesting, the authors concluded that appears to be two subgroups of cryptorchid boys; those with a sufficient Leydig cell secretory capacity and those with a suboptimal Leydig cell secretory capacity.

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RECONSTRUCTIVE UROLOGY

Resurfacing and reconstruction of the glans penis

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Eur Urol. 2007; 52: 893-8

Objectives: To describe the techniques and results of surgical reconstruction of glans penis lesions.

Methods: Seventeen patients (mean age: 53.2 yr) were treated by resurfacing or reconstruction of the glans penis for benign, premalignant and malignant penile lesions. The aetiology of the lesions was one Zoon's balanitis, four lichen sclerosus, one carcinoma in situ, five squamous cell carcinomas, and six squamous cell carcinomas associated with lichen sclerosus. Five cases were treated by glans skinning and resurfacing; five cases by glans amputation and reconstruction of the neoglans, and seven cases by partial penile amputation and reconstruction of the neoglans. Glans resurfacing and reconstruction were performed with the use of a skin graft harvested from the thigh.

Results: The mean follow-up was 32 mo. All patients were free of local premalignant/malignant recurrence. Patients who underwent glans resurfacing reported glandular sensory restoration and complete sexual ability. Patients who underwent glansectomy or partial penectomy with neoglans reconstruction maintained sexual function and activity, although sensitivity was reduced as a consequence of glans/penile amputation.

Conclusions: In selected cases of benign, premalignant or malignant penile lesions, glans resurfacing or reconstruction can ensure a normal appearing and functional penis, without jeopardizing cancer control.

Distal urethral reconstruction of the glans for penile carcinoma: results of a novel technique at 1-year of followup

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J Urol. 2007; 178: 941-4

Purpose: No satisfactory techniques are available to replace the anatomy and function of the penile glans after radical surgery for penile carcinoma. We report a new technique of glans reconstruction using distal urethra. We evaluated anatomical, physiological and esthetic features as well as short-term and long-term clinical outcomes. **Materials and Methods:** A total of 14 patients with a mean age of 54 who had squamous penile carcinoma underwent glans reconstruction after simple glansectomy in 8 and after amputation of the distal third of the shaft in 6. Glans sensibility, erectile function, ejaculation, orgasm, penile length, local recurrence, patient and partner satisfaction, and quality of life were evaluated before and after the operation. Mean followup was 13 months. **Results:** All patients noticed subjective and objective thermal and tactile epicritic sensibility in the area of the neoglans. Ten of 14 patients (71%) noticed spontaneous and/or induced rigid erections. Interestingly International Index of Erectile Function scores in the ejaculation and orgasm domains did not significantly change in the period before and after surgery. No local disease recurrence or penile retraction were reported at long-term followup.

Conclusions: Reconstructive glanuloplasty with distal urethra in penile tumor surgery is an innovative, easy and rapid surgical technique with appreciable functional and esthetic results.

Editorial Comment

Reasons for penile reconstruction may not only be neoplasia, but also trauma, inflammatory disease and congenital malformation. In many cases, careless even unnecessary amputations eliminate the possibility for a satisfactory glans reconstruction. Because penile anatomic reconstruction is often possible, the EAU has established treatment guidelines on penile cancer (1) which favor the use of conservative penile sparing techniques for the tumor entities of Ta-T1, G1-3 and select cases of T2 tumors.

Palminteri et al. and Gulino et al. published their techniques, which appear to help in the reconstruction of the penile glans with a good cosmetic outcome (2,3). Palminteri et al. used a free split-thickness skin graft of the thigh. Gulino et al. investigated their functional outcome even further after using the distal urethra in the reconstructive approach. With a physical examination, the IIEF (erection, ejaculation, orgasm and libido domain score) and the Bigelow & Young scores, they evaluated an overall satisfying outcome with a minor additional surgical effort (mean 35 min). The advantage of using the distal urethra is the untroubled blood supply (including certain rigidity under erection) and the sensibility.

Both techniques can be performed for a distal penile reconstruction involving amputation up to one third of the penile length. In case of penile cancer, both oncological radicality and satisfactory body image can be achieved. It complies with compliance of EAU penile cancer guidelines and maximizes patients' quality of life without compromising tumor survival.

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Nerve-sparing radical cystectomy and orthotopic bladder replacement in female patients

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Eur Urol. 2007; 52: 1006-14

Objectives: Orthotopic diversion, initially performed solely in men, has now become a viable option in women. Approximately 15 yr ago, at several centres, urethra-sparing cystectomy and orthotopic diversion were initiated in women with bladder cancer. Several studies have since addressed both the oncologic and functional outcomes of this procedure.

Methods: We describe our surgical technique of cystectomy and orthotopic urinary diversion in female patients, with an emphasis on how we preserve the neurovascular bundle.

Results and Conclusions: An improved understanding of the anatomic neurovascular and fascial planes related to the rhabdosphincter has facilitated identification of elements needed for orthotopic diversion in female patients. The technique of en bloc anterior exenteration includes the anterior portion of the vagina; however, preservation of the rhabdosphincter and its autonomic nerve supply necessitates specific modifications of the standard operation. The video provides a detailed description of our surgical technique with attention to anatomic details necessary to avoid damage to the proximal urethra and to preserve the autonomic innervation of the rhabdosphincter.

Autonomic nerve preservation reconfirmed

Editorial Comment

This is another detailed description and rationale for an orthotopic bladder substitution in female patients undergoing radical cystectomy. There is a plethora of literature now about the use of urinary continence diversion to the urethra in female patients. Whereas almost all contributions agree that such a diversion can and should be authored to female patients there is still no agreement whether better functional results can be achieved with a preservation of autonomic nerves running to the remnant isolated urethra. This contribution by well-known experts clearly favor preservation of autonomic nerves for two reasons: sexual activity, especially in younger women has been more or less neglected for many years but seems to be important (reference 16 and 17 in the manuscript), this group has formerly demonstrated that preservation of autonomic nerves also contributes to continence. It is therefore not only important to preserve autonomic nerves in the younger patients, although sexually active, but to preserve autonomic nerve in elderly patients as well, those patients that are in danger of having a borderline continence postoperatively. A better sensitivity of the remnant urethra will be better for the “first drop incontinence” due to better reaction of urine entering the urethra and resulting in reflex contraction in the pelvic floor but also will help in achieving better results with postoperative physical therapy for urinary incontinence (1).

Not everything concerning the function of autonomic nerves with regards to clitoral and vaginal function, secretion of pelvic glands, function and long-term fate of urethral smooth musculature, and interaction with rhabdosphincter and pelvic floor musculature is known to date. However, with increasing knowledge we know that it is important to preserve at least part of the ganglions and nerve fibers of pelvic autonomic nerves to increase the quality of life for these patients in the long-term. In addition, it is the long-term quality of life where functional outcome is important contrary to oncological outcome, which in the first few years seems to be dominant as quality of life studies have shown.

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UROLOGICAL ONCOLOGY

Preoperative serum testosterone level as an independent predictor of treatment failure following radical prostatectomy

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Objectives: Preoperative low serum testosterone (TS) level has been reported to be associated with adverse pathologic results in patients with clinically localized prostate cancer (pCA) treated with radical prostatectomy (RP). However, prior studies failed to show prognostic impact of preoperative low TS in these patients. The aim of this study was to investigate the relationship between preoperative TS and prostate-specific antigen (PSA) failure in these patients.

Methods: Of 304 patients diagnosed with clinically localized pCA who had been treated with RP alone, 272 patients whose preoperative TS level had been measured were eligible for this analysis. Postoperative TS levels were also available in 222 of the 272 patients. Cox proportional hazard model was used to elucidate factors predictive for PSA failure.

Results: Of the 272 patients 49 had low (< 300 ng/dl) and 223 had normal preoperative TS level. In a stepwise multivariate analysis, preoperative TS ($p = 0.021$) was an independent and significant predictor of PSA failure along with RP Gleason score ($p = 0.006$), surgical margin status ($p = 0.0001$), and PSA ($p = 0.0001$). Five-year PSA failure-free survival rate of the patients with preoperative low TS (67.8%) was significantly worse than that with normal TS (84.9%) ($p = 0.035$). Serum TS levels increased significantly after RP ($p < 0.0001$). The increment of TS level in preoperative low TS group was significantly greater than that in preoperative normal TS group ($p = 0.0003$).

Conclusions: The current results demonstrated that preoperative TS level is an independent and significant predictor of PSA failure after RP in patients with clinically localized pCA. *European Association of Urology*.

Editorial Comment

Testosterone levels and prostate cancer are a topic that attracts much attention and stirs controversy. This contribution from Tokyo, Japan adds to the multifaceted database. With a cut-off at 300 ng/dL total testosterone the authors found an inverse correlation of testosterone level and prostate cancer aggressivity as measured by Gleason score, positive surgical margins, PSA, and 5-year postoperative PSA failure status.

Most interestingly, testosterone levels increased after radical prostatectomy. The postoperative increment of testosterone levels was significantly higher in the group with preoperative low testosterone. Clearly, these data deserve confirmation from other groups and elucidation of the mechanisms involved in testosterone level variation after radical prostatectomy.

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Concomitant carcinoma in situ is a feature of aggressive disease in patients with organ-confined TCC at radical cystectomy.

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Eur Urol. 2007; 51: 152-60

Objectives: Carcinoma in situ (CIS) is a nonpapillary, high-grade, potentially aggressive, and unpredictable manifestation of transitional cell carcinoma (TCC) of the bladder. The aim of this study was to assess whether presence of concomitant CIS has a detrimental effect on cancer control after radical cystectomy.

Methods: The records of 812 consecutive patients who underwent radical cystectomy and pelvic lymphadenectomy for bladder TCC at three US academic centres were reviewed. Ninety-nine of 812 (12%) patients had CIS only at radical cystectomy and were excluded from the analyses.

Results: Three hundred thirty of the 713 (46.3%) patients had concomitant CIS at radical cystectomy. Patients with TCC involvement of the urethra were more likely to have concomitant CIS than not (61% vs. 40%, $p=0.018$). Concomitant CIS was significantly more common in patients with lower cystectomy stages and higher tumour grades. In univariate, but not multivariate, analysis, patients with concomitant CIS versus those without were at increased risk of disease recurrence ($p=0.0371$). In patients with organ-confined disease, concomitant CIS was an independent predictor of disease recurrence ($p=0.048$ and $p=0.012$, respectively) but not bladder cancer-specific mortality ($p=0.160$ and $p=0.408$, respectively) after adjusting for the effects of standard postoperative features.

Conclusions: Concomitant CIS in the cystectomy specimen is common, and patients with concomitant CIS are at increased risk of urethral TCC involvement. The presence of concomitant CIS appears to confer a worse prognosis in patients with non-muscle-invasive TCC treated with radical cystectomy.

Editorial Comment

The outcome of patients with bladder cancer of any stage and concomitant CIS was analyzed in this retrospective study on 713 patients undergoing radical cystectomy. Several issues deserve comments: The percentage of

CIS present increased over the years from 33% in the eighties to 52% in period from 2001 to 2003. The majority of patients had grade 3 tumors (82.5%) and/or pT2 and pT3 disease (60.8%). Roughly, half of the patients had lymphovascular invasion, one-fourth (24.9%) had lymph node metastases. Accordingly, after 5 years, half of the patients with concomitant CIS had recurrences and half of the patients with concomitant CIS had died from bladder cancer. Patients without concomitant CIS fared better than those with concomitant CIS (7-year recurrence-free survival 58.1% and 41.5%, respectively). Interestingly, the incidence of concomitant CIS was highest in patients with organ-confined disease (pTa excluded) and higher in lower-stage and higher grade disease. Involvement of the urethra was more common in CIS patients.

The authors state correctly, that presence of concomitant CIS worsens the outcome significantly. In practical terms, early radical treatment should be considered if CIS is present.

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NEUROUROLOGY & FEMALE UROLOGY

Urodynamic studies in women with stress urinary incontinence: Significant bacteriuria and risk factors

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Neurourol Urodyn. 2007; 26: 847-51

Aim: A prospective study was performed to determine the incidence of significant bacteriuria and to identify the risk factors for bacteriuria after urodynamic studies (UDSs) in women with urodynamic stress urinary incontinence (SUI).

Methods: A total of 225 women with urodynamic SUI were evaluated. All women were negative on double-screened urine cultures, in clean-catch midstream urine (MSU) specimens, before UDS. Another urine specimen was obtained for urinalysis and culture at 3-7 days after UDS. Urinary culture with 10(5) CFU/ml or more was regarded as significant bacteriuria. To identify the risk factors for significant bacteriuria, the clinical characteristics of all patients including age, BMI, parity, medical and operation history, degree of pelvic organ prolapse, results of urinalysis, and UDS were evaluated.

Results: The prevalence of significant bacteriuria was 6.2%. The most common identified microorganism was *Escherichia coli* (57.1%). Univariate analysis demonstrated that a history of recurrent urinary tract infection (UTI; $P = 0.002$) and urological surgery or procedure ($P = 0.02$) were significant predictors of significant bacteriuria. On multiple logistic regression analysis the past history of recurrent UTI was the only significant independent risk factor (OR = 28.5, 95% CI = 4.309-188.488, $P = 0.009$).

Conclusions: This study suggests that for most women with SUI it may be unnecessary to use preventive prophylactic antibiotics in UDS. However, our results suggest that in patients with a previous history of recurrent UTI or urologic surgery the risk for significant bacteriuria is increased and use of prophylactic antibiotics should be considered. *Neurourol. Urodynam. 26:847-851, 2007. (c) 2007 Wiley-Liss, Inc.*

Editorial Comment

Investigators performed a prospective study examining the prevalence of significant bacteriuria after urodynamic studies and to identify risk factors for same. It was noted that recurrent cystitis and previous urologic instrumentation or procedures were significant risk factors of bacteriuria. The authors obtained urine approximately one week before the urodynamics, at the time of the urodynamic studies, as well as 3-7 days after urodynamic studies were done. These investigators concluded that because the cultures were sterile for the procedure that all acquired infections within the week after the urodynamic studies were most likely due to the urodynamic studies. Of note is that the bacteriuria after the urodynamic studies was most likely non-nosocomial. It would have been of great interest if the authors had been able to query the patients on the frequency and intensity of coitus for the period immediately after the urodynamic studies to the time that the post-procedure urine studies were obtained. The existence of "honeymoon cystitis" is well known even in the mature or infirmed population.

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Outcomes following repeat mid urethral synthetic sling after failure of the initial sling procedure: rediscovery of the tension-free vaginal tape procedure

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J Urol. 2007; 178: 1370-4; discussion 1374

Purpose: We evaluated outcomes of the repeat mid urethral sling to treat recurrent or persistent stress urinary incontinence after failure of an initial mid urethral sling.

Materials and Methods: We retrospectively analyzed data on patients who underwent the repeat mid urethral sling procedure due to persistent or recurrent stress urinary incontinence. Repeat slings were placed without removal of the previous sling. All patients were followed at least 1 year after the second mid urethral sling.

Results: Of the 31 female patients with a repeat mid urethral sling 29 were followed, including 13 with a retropubic and 16 with a transobturator sling. For the first mid urethral sling 17 patients received a retropubic sling (tension-free vaginal tape) and 12 received a transobturator sling (6 inside out and 6 outside in procedures). Cure and improvement rates irrespective of the approach were 75.9% (22 of 29 patients) and 6.9% (2 of 29), respectively. Cure rates for the retropubic and transobturator slings were 92.3% (12 of 13 patients) and 62.5% (10 of 16), respectively, a difference that did not quite attain statistical significance ($p = 0.089$).

Conclusions: The repeat mid urethral sling for persistent or recurrent stress urinary incontinence has a lower cure rate than the initial sling. However, the retropubic approach tends to have a higher cure rate than the transobturator approach in repeat sling cases.

Editorial Comment

The authors review their very large experience with suburethral slings and report on patients who underwent a repeat suburethral sling. The study group included retropubic suburethral slings as well as the

transobturator approaches. The surgeons noted that their repeat suburethral sling procedure that was a re-do operation had a lower success rate than the initial operation success rate. This has been noted as well for patients undergoing re-do pubovaginal slings using autologous fascia for operative failures (1). The trend towards a lesser cure rate with a repeat transobturator procedure versus a retropubic approach could potentially be explained by both the urethral angle theory as discussed by the authors as well as the level of suburethral support that can be provided by the different techniques. The diminished efficacy of transobturator slings in patients with lower Valsalva leak point pressures is currently being explored in the literature (2).

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PEDIATRIC UROLOGY

Efficacy of combined anticholinergic treatment and behavioral modification as a first line treatment for nonneurogenic and nonanatomical voiding dysfunction in children: a randomized controlled trial

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Purpose: This randomized blinded clinical study was designed to compare the efficacy of tolterodine treatment combined with behavioral modification, behavioral modification alone and behavioral modification plus placebo in children with nonneurogenic, nonanatomical voiding dysfunction.

Materials and Methods: A total of 72 children meeting inclusion criteria were randomly allocated to 1 of 3 groups. One group received tolterodine (1 mg twice daily) along with behavioral modification, 1 received behavioral modification only and 1 received placebo with behavioral modification. A dysfunctional voiding scoring system questionnaire was completed for all patients at the beginning of the study, and at 1 and 3 months of treatment.

Results: A total of 71 patients were evaluated. The groups did not differ with respect to age, gender and symptom score before study enrollment ($p > 0.05$). Repeated calculations of symptom scores at 1 month of the treatment revealed a significant decrease in symptoms in all 3 groups, with a significant decrease in patients receiving tolterodine. In addition, at month 3 the symptom score of the tolterodine group was significantly lower compared to month 1, while scores remained steady in the behavioral modification and behavioral modification plus placebo groups.

Conclusions: Tolterodine combined with behavioral modification for voiding dysfunction in children without neurological or anatomical abnormality can be recommended as a first line treatment before invasive evaluation.

Editorial Comment

This is an interesting prospective randomized controlled trial, which relied primarily on a dysfunctional voiding scoring system from Toronto Children's to evaluate the outcome of the treatment. 72 children were selected with equal number of boys and girls, allocated into one of three groups. Voiding dysfunction that qualified them for the study was incontinence, frequency, urgency or obstructive symptoms with or without recurrent non-febrile urinary tract infections in the absence of obvious anatomical or neurogenic disease. Patients were between 4 and 12 years-of-age. Anatomic disease was evaluated by ultrasound and not VCUG, and the patients were not selected by any urodynamics or uroflow criteria. All patients were trained in behavior modification, including timed voiding, double-voiding and relaxation of the pelvic floor during voiding.

Group 1 patients were started on tolterodine 1 mg twice daily and were maintained for three months. Group 2 had no medications and received only behavior modification training. Group 3 were patients who had a placebo administered along with behavior modification training. Dysfunctional bowel was noted and treated in 30 of the 72 patients. The dysfunctional voiding questionnaire was given at the beginning of the study, at end of one month and again at the end of three months.

The results showed that initial dysfunctional voiding symptom scores were not significantly different. All three groups showed significant decrease after one month of treatment with a greater statistical significance in the Tolterodine group. Interestingly, the behavior modification group that did not receive placebo had lower symptom scores at one month and three months. Gender adjustment did not affect statistical results of the groups. 41 patients had a history of afebrile UTI's and 15 patients had afebrile urinary tract infections at enrollment during the study. Urine cultures were monitored monthly with new UTI's in 18 patients relatively equally spread over the three groups.

This is an interesting study because of its prospective randomized nature. Tolterodine was tolerated in all the patients except one, with statistically beneficial effects combined with behavior modification. The patients chosen were patients similar to an office practice and were not particularly well screened with urodynamics or uroflow studies, so that this represents an "all-comers" group with very good outcomes. It will be interesting to see if other studies use the dysfunctional voiding scoring system and if it stands up under the test of other investigators scrutiny.

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Quality assessment of hypospadias repair with emphasis on techniques used and experience of pediatric urologic surgeons

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Objectives: To assess outcomes in hypospadias repair at our institution, as compared with the literature, with repair technique and surgeon considered as risk factors.

Methods: The results of 299 primary hypospadias corrections were analyzed. All procedures were performed by three experienced pediatric urologists. Mean patient age at operation was 16.3 months. Follow-up was between 6 months and 5.5 years. Distal hypospadias repair was carried out in 242 patients, with tubularized incised plate reconstruction in 100 patients, advancement in 128, and the Mathieu technique in 14.

Results: During follow-up, complications occurred overall in 93 patients (31%). For distal hypospadias complications occurred in 59 patients (24%). The most common findings for distal hypospadias were urethral fistulas (14.4%). The complication rate depended on the severity of the anomaly (0 glanular, 28% pericoronal, and 63% proximal) and the chosen technique (16% advancement technique versus 60% tubular techniques). We found statistically significant differences in complication rates between operating surgeons.

Conclusions: Complications after hypospadias surgery are frequent. They are multifactorial and depend mainly on the type of the anomaly, the chosen technique, and the experience of the surgeon. More studies are needed to obtain an internationally accepted quality indicator for the outcome of hypospadias repair.

Editorial Comment

These authors reviewed 299 primary hypospadias repairs over a five year period with a special emphasis on the technique used and the experience of the pediatric urologic surgeon, with a mean follow up of 29 months and with a very critical eye for complications. The mean age of surgery was 16.3 months.

Tubularized incised plate technique was used in 133 patients and advancement techniques not requiring sutures in the urethra were used in 128 patients with 38 patients having miscellaneous techniques. Prophylactic antibiotics were given. Stenting was left to the choice of the individual surgeons. All procedures were performed with loupe magnification.

The groups were analyzed according to technique used and with respect to the three operating pediatric urologic surgeons. All glanular hypospadias patients did uniformly well. 93 patients, or 31% of the patients had a complication after surgery. 7% have recurrent problems that required more than one surgical intervention. 18% were fistulas, partial dehiscence of the wound or glans resulting in meatal retraction was 7.4% and urethral stenosis was 2%. Complication rates were higher the further away from the tip of the penis that the hypospadias meatus was, which is not surprising. Advancement techniques had a complication rate of 16%, while tubular reconstructions had a complication rate of 56%. Tubularized incised plate urethroplasties had a complication rate of 27%. When tubularized incised plate was used for hypospadias on the shaft of the penis, the complication rate was 66% and when it was used for distal hypospadias, it was 35%.

The pediatric urologist who had the most experience had a statistically significant better success rate for hypospadias repairs than the pediatric urologist with the least experience. 24% complication rate was noted in the hands of the most experienced surgeon and 40% complication rate in the least experienced surgeon.

At first glance this manuscript seems to have a high complication rate, however all patients that had a single-staged hypospadias reconstruction were included and complication rates are higher in the studies that include all patients rather than those that deal with a single technique. The authors should be congratulated on their attention to the detail of the complications and their honest reporting.

Of note for students of hypospadias, when the tubularized incised plate urethroplasty was used for mild hypospadias, it was very successful, however when it was extended to more severe hypospadias patients it was not.

It has always been my belief that hypospadias complications are directly proportional to the length of the repair and this study seems to validate that relationship also. There is some speculation in the study about the learning curve, since the newest member of the faculty member had a higher complication rate than those who had been there for 5 and 14 years. In some respects, it is encouraging to note that within 5 years the experience seems adequate to have very good results.

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