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UROLOGICAL SURVEY

FRANCISCO J.B. SAMPAIO
Urogenital Research Unit
State University of Rio de Janeiro (UERJ), Brazil

EDITORIAL COMMITTEE

STONE DISEASE

Ex vivo ureteroscopic treatment of calculi in donor kidneys at renal transplantation

Rashid MG, Konnak JW, Wolf JS Jr, Punch JD, Magee JC, Arenas JD, Faerber GJ
Department of Urology, University of Michigan Medical Center, Ann Arbor, 48109, USA
J. Urol. 2004; 171: 58-60

Purpose: We evaluated the safety and efficacy of ex vivo ureteroscopy (ExURS) as a means of rendering the donated kidney stone-free at live donor renal transplantation.

Materials and Methods: A total of 10 suitable kidney donors with small, unilateral nonobstructive calculi underwent live donor nephrectomy (8 open flank, 2 hand assisted transperitoneal). Immediately after cold perfusion, ExURS was performed in an iced saline solution. Access to the collecting system was via the ureteral stump. Calculi were either removed with endoscopic baskets and/or completely fragmented with Holmium laser lithotripsy.

Results: Access to the renal collecting system was technically successful in all cases. A total of 10 stones, ranging in largest diameter from 1 to 8 mm (average 5.2) were visualized. Of the kidneys 6 had solitary stones, 2 had 2 stones and 1 had no stone. Of 10 stones 9 were successfully removed and/or fragmented with an average procedure time of 6.5 minutes (range 3 to 28). Indwelling ureteral stents were placed at transplantation in 5 of 10 kidneys. There were no intra-operative or postoperative ureteral complications. At 1 month after transplant serum creatinine ranged from 0.9 to 2.7 mg/dl (average 1.5). At a mean followup of 33.2 months new stones have not formed in any recipients and at mean 36.4-month followup no new calculi have formed in the remaining kidney of any donors.

Conclusions: ExURS is a technically feasible means of rendering a stone bearing kidney stone-free without compromising ureteral integrity or renal allograft function.

Editorial Comment

Because of the long list of patients awaiting renal transplantation, rules regarding the suitability of live kidney donors have been re-examined in recent years in hopes of expanding the donor pool. In this report, Rashid and colleagues harvested kidneys from donors with small, nonobstructing renal calculi in the donor kidney, then performed ex vivo ureteroscopy to remove the stones prior to transplantation. Although to date, no donor or recipient has had a stone recurrence, the practice of accepting kidney donors who have a systemic renal disease remains controversial.

With the widespread use of CT for renal imaging, the diagnosis of small, non-obstructing renal calculi has become more common, although the implication of this finding in otherwise asymptomatic patients without a history of stones is unknown. The authors of this paper noted that donors were evaluated metabolically to identify risk factors for stone formation, but they did not mention if donors were excluded based on metabolic abnormalities or if they were treated medically if donor nephrectomy was performed. Although the risk of renal loss associated with stone disease in a solitary kidney is decidedly low, the donor, now with a solitary kidney, requires careful radiographic surveillance, and every stone or symptomatic event requires intervention as for any patient with a solitary kidney. As such, follow-up and care of the donor becomes more involved. While this may constitute an acceptable risk for the donor, we as urologists with a primary concern for the donor must weigh the risk and benefits in our own mind before placing a healthy subject at risk for future renal compromise. As the authors suggest, the long term outcomes of these donors must be carefully followed so that future donors may be properly informed prior to donor nephrectomy.

Dr. Margaret S. Pearle
Associate Professor of Urology
University of Texas Southwestern Med Ctr
Dallas, Texas, USA

Nephrolithiasis associated with renal insufficiency: factors predicting outcome

Kukreja R, Desai M, Patel SH, Desai MR
Department of Urology, Muljibhai Patel Urological Hospital, Dr. V.V. Desai Road, Nadiad, Gujarat 387001, India

J. Endourol. 2003; 17: 875-9

Background and Purpose: Renal calculous disease may be associated with various degrees of renal insufficiency secondary to a combination of obstruction, urinary infection, frequent surgical intervention, and coexisting medical disease. Herein, we present our data on the progression of renal function in patients with stones associated with renal insufficiency and assess the significance of various factors that could predict postoperative renal function deterioration.

Patients and Methods: Data were obtained from 4400 patients undergoing treatment for calculous disease at our institute since 1991. Renal insufficiency, defined as a baseline serum creatinine > 1.5 mg/dL, was present in 84 (1.9%). Predictive factors evaluated for renal function deterioration were preoperative (age, duration of symptomatology and nephrolithiasis, urinary tract infection, coexistent medical diseases, baseline serum creatinine, and stone burden), intraoperative (number of percutaneous tracts), and postoperative (recurrent infection, proteinuria, cortical atrophy, residual fragments, and stone recurrence).

Results: Over a mean follow-up of 2.2 years (range 6 months-6 years), 33 patients (39.3%) showed improvement, 24 (28.6%) showed stabilization, and 27 (32.1%) showed deterioration in their renal function. Higher baseline serum creatinine, proteinuria > 300 mg/day, renal cortical atrophy, stone burden > 1500 mm(2), recurrent urinary infection, and age < 15 years were significant predictors of subsequent renal function deterioration.

Conclusions: Patients with nephrolithiasis and mild to moderate renal insufficiency warrant aggressive treatment aimed at complete stone clearance and prevention of recurrence of stones and urinary infection. A higher baseline preoperative serum creatinine, proteinuria > 300 mg/day on follow-up, renal cortical atrophy, stone burden > 1500 mm(2), recurrent urinary infection, and age < 15 years are associated with a significantly higher likelihood of renal function deterioration after treatment of the calculous disease.

Editorial Comment

Although the short-term goal in treating obstructing renal and ureteral calculi is relief of pain and obstruction, the long-term goal is preservation of renal function. However, in some cases damage to renal parenchyma is irreversible and renal function is not fully recovered. Kekreja and colleagues reviewed their series of 4400 patients undergoing surgical management for renal or ureteral stones and identified 84 patients with renal insufficiency despite stabilization with nephrostomy drainage. At a mean of 2.2 years of follow-up, 32% of patients had deterioration in their renal function, and 44% of those went on to end-stage renal failure and dialysis. Among a variety of factors assessed, age < 15 years, atrophic renal parenchyma, large stone burden, significant proteinuria and recurrent urinary tract infections were found to be significant predictors of post-operative renal deterioration. Moreover, for patients with a pre-operative serum creatinine = 3, deterioration of renal function occurred during follow-up in 54% of patients, with a direct correlation between preoperative serum creatinine and post-operative renal deterioration.

This study suggests that although most patients with stones and mild renal insufficiency can avert further renal functional loss with aggressive treatment to remove stones and prevent recurrent stones and infection, the outcome for patients who have already sustained significant renal damage is poor despite aggressive surgical management. Furthermore, for patients with any of the poor prognostic factors determined in this study, renal functional deterioration is more likely. Nevertheless, complete stone clearance and careful follow-up is

recommended for all patients with stones and renal insufficiency in hopes of maximally preserving renal function and delaying renal functional deterioration.

Dr. Margaret S. Pearle
Associate Professor of Urology
University of Texas Southwestern Med Ctr
Dallas, Texas, USA

ENDOUROLOGY & LAPAROSCOPY

Laparoscopic versus open donor nephrectomy: ureteral complications in recipients

Lind MY, Hazebroek EJ, Kirkels WJ, Hop WCJ, Weimar W, Ijzermans JNM
From the Departments of Surgery, Urology, Biostatistics and Nephrology, Erasmus Medical Center, Rotterdam, The Netherlands
Urology. 2004; 63: 36-9

Objectives: To describe our experience with laparoscopic donor nephrectomy (LDN) and open donor nephrectomy (ODN) regarding ureteral complications. LDN has proved to be safe and to offer significant benefits to the donor compared with ODN. Of major importance is the effect of the surgical technique on the graft. Studies have shown an increased incidence of ureteral complications in recipients of laparoscopically procured kidneys. Operative reconstruction results in additional morbidity for the recipient.

Methods: Living donors and their recipients, who underwent surgery from January 1994 to April 2002, were included in this retrospective study. A total of 122 LDN and 77 ODN recipients were included.

Results: Of the 122 LDN and 77 ODN recipients, 15 (12%) and 10 (13%), respectively, required percutaneous nephrostomy drainage. In total, 5 LDN (4.1%) and 5 ODN (6.5%) recipients required reconstruction of the ureter because of obstruction of the ureter or urine leakage (P value not statistically significant, excluding reconstruction required for technical errors). The operating time, warm ischemia time, and serum creatinine were comparable between recipients with or without ureter complications requiring reconstruction.

Conclusions: In our experience, LDN was not associated with an increased incidence of ureteral complications in the recipient compared with ODN.

Editorial Comment

Dr. Stephen Jacobs, one of the pioneers of laparoscopic donor nephrectomy, wrote an excellent commentary following this article that touched on all of the important points. He pointed out that, although the results of the study are reassuring with regards to no difference between the open surgical and laparoscopic kidneys in terms of recipient ureteral complications, the results must be interpreted cautiously because the groups were not synchronous and therefore significant bias could enter. Nonetheless, all recipients underwent ultrasonography and nuclear medicine scanning, and percutaneous nephrostomy tubes were used for initial management in all cases. In addition, in those patients who required operative repair the findings were similar. One criticism of the study that cannot be easily addressed is the low power for detecting a difference between groups, given the expected 3 – 5% frequency of transplant ureteral complications. That the incidence appears greater in this study (in both groups) is likely due at least in part to the routine assessment of all kidneys with ultrasonography and nuclear medicine scanning. What we can take home from this study is that any difference in ureteral complications between the 2 harvest methods is unlikely to be great. A small difference would have

been missed by this study. Certainly, however, the fears that laparoscopically harvested ureters might be stripped of their vascularity and cause a dramatic increase in the incidence of ureteral complications appears to be unfounded.

Dr. J. Stuart Wolf Jr.
Associate Professor of Urology
University of Michigan
Ann Arbor, Michigan, USA

Complications of abdominal urologic laparoscopy: longitudinal five-year analysis

Parsons JK, Varkarakis I, Rha KH, Jarrett TW, Pinto PA, Kavoussi LR
From the James Buchanan Brady Urological Institute, Johns Hopkins Medical Institutions, Baltimore, Maryland, USA

Urology. 2004; 63: 27-32

Objectives: To analyze complications of abdominal laparoscopic surgery of the urinary tract at a single institution during a 5-year period.

Methods: From 1996 to 2000, we identified 894 abdominal laparoscopic procedures performed at a single institution: 600 nephrectomies (live donor, simple, radical, nephroureterectomy, and partial), 112 pyeloplasties, 61 renal biopsies, 35 retroperitoneal lymph node dissections, 31 renal cyst ablations, 18 adrenalectomies, and 37 other abdominal procedures. The charts were retrospectively reviewed for complications, which were classified as operative, postoperative, or medical. Complications were correlated with patient age and American Society of Anesthesiologists score. Statistical analysis was performed with Fisher's exact test and chi-square tests.

Results: A total of 118 complications (13.2%) occurred. Two patients (0.2%) died. As a result of operative complications, the procedure of 13 patients (1.5%) was converted to an open one. As a result of postoperative complications, 13 (1.5%) underwent operative and 6 (0.7%) nonoperative intervention. The most common intraoperative complications were vascular (n = 23), adjacent organ (n = 10), and bowel (n = 9) injuries. The most common postoperative complications were neuromuscular pain (n = 12), hematoma (n = 11), urine leak (n = 7), and wound infection (n = 7). The differences in the annual complication rates for all procedures did not attain statistical significance (P = 0.5). Among all procedures, excluding live donor nephrectomy, complications of any kind correlated with a greater patient American Society of Anesthesiologists score (P = 0.01).

Conclusions: Rather than decreasing, the overall incidence of laparoscopic complications did not change significantly during a 5-year period at our institution. The factors contributing to this observation likely included the progression of inexperienced individual surgeons through the learning curve, the introduction of new, more sophisticated laparoscopic procedures, and stable rates of patient comorbidity. This experience may represent the average complication rate for urologic laparoscopy at a large-volume, academic training center.

Editorial Comment

For years I have been counseling patients pre-operatively that, overall, there is a about a 5% risk of major complication and about a 10% risk of a minor complication associated with laparoscopic nephrectomy. The data from this very large and long series supports those approximations. The context of these figures is important to consider. On one hand, a lower rate of complications might have been expected given the expertise of the senior surgeons at this institution. On the other hand, as pointed out in this article, the performance of many inexperienced trainees is included in this series. In addition, the typical referral patterns that lead the

sicker patients to the large medical centers also might tend to increase complication rates. Overall the rates have been stable over time, suggesting that this is about what anyone might expect given a certain level of experience and capability with laparoscopy.

Dr. J. Stuart Wolf Jr.
Associate Professor of Urology
University of Michigan
Ann Arbor, Michigan, USA

IMAGING

MRI for preoperative staging of renal cell carcinoma using the 1997 TNM classification: comparison with surgical and pathologic staging

Ergen FB, Hussain HK, Caoili EM, Korobkin M, Carlos RC, Weadock WJ, Johnson TD, Shah R, Hayasaka S, Francis IR
Department of Radiology/MRI UH-B2B311, University of Michigan Health System, Ann Arbor, MI, USA
AJR Am J Roentgenol. 2004; 182: 217-25

Objective: The purpose of our study was to determine the accuracy of MRI for preoperative staging of renal cell carcinoma using the 1997 TNM classification.

Materials and Methods: We conducted a retrospective review of MRI performed in 40 consecutive patients with 42 renal cell carcinomas before radical (n = 35) or partial (n = 4) nephrectomy or exploratory laparotomy (n = 3). The interval between imaging and surgery ranged from 1 to 59 days (mean, 17.9 days). Imaging was performed with T1- and T2-weighted, dynamic gadolinium-enhanced, and time-of-flight sequences. MRI and surgical-pathologic staging was performed using the 1997 TNM staging system. MRI staging was compared with surgical-pathologic staging as the gold standard. Agreement between the two staging methods was assessed using the kappa statistic.

Results: Agreement between MRI and surgical-pathologic staging was good for T staging (kappa = 0.72 and 0.78 for reviewers 1 and 2 respectively), poor for N staging (kappa = 0.13, both reviewers), good for M staging (kappa = 0.66, both reviewers), and excellent for the assessment of venous involvement (kappa = 0.93, both reviewers). MRI overestimated the T stage in five patients and the N stage in five and underestimated the T stage in three, the N stage in four, the M stage in one, and the extent of venous thrombosis in two patients.

Conclusion: MRI is a reliable method for preoperative staging of renal cell carcinoma using the 1997 TNM classification, in particular for assessing venous involvement.

Editorial Comment

The TNM staging system for renal cell carcinoma was revised by the American Joint Committee on Cancer (AJCC) and the International Union Against Cancer (UICC) in 1997. The 1997 TNM staging system for renal cell carcinoma reclassifies tumors using criteria for size and for extent of renal vein / vena cava involvement that are different from the criteria used in the 1987 staging system. With this new TNM staging classification the size limit for T1 tumor was changed from 2.5 to 7 cm.This paper adresses very clearly the problems of the imaging criteria for adequate preoperative evaluation of tumor size, presence of perirrenal extension and regional adenomegaly. It's well known that on the basis of imaging features distinction between stage T1/T2 and stage T3a tumor cannot be reliably made. This occurs because the assessment of invasion of the renal capsule and Gerota's fascia in tumor larger than 3 cm of diameter is based on the utilization of poor predictive radiological

findings (perinephric stranding, perinephric collateral vessels and presence of discrete soft-tissue masses larger than 1 cm). Large exophitic masses may be stage T1 or T2 and tumors with a small extrarenal component may be stage T3a. Although accurate characterization of tumor size(T) is more difficult when we are dealing with larger renal tumors, the authors had a highly accurate T staging even evaluating large tumors(mean size 14.2 cm). An important contribution of this restrospective study was the finding that tumor size was not a good predictor for the presence of perinephric fat invasion.The authors found a major overlap between the sizes of tumors without and with perinephric fat invasion: mean size of T1 tumors, 3.4 cm (range, 0.8–7 cm); of T2 tumors, 14.2 cm (range, 8–19.3 cm); and of T3a tumors, 9.2 cm (range, 7.9–12 cm). The tumors of all four patients in their study who underwent partial nephrectomy were correctly staged as T1 (size range, 0.8–3 cm).

One of the main limitations of this study, as the authors pointed out, is that most of their patients had advanced tumors. This is a relevant issue since nowadays as many as 30 - 40% of renal tumors are small, discovered incidentally and frequently appropriately treated with conservative surgery. In a recent study using multi-dectetor CT the authors were able to differentiate between stages T1/T2 and T3a (by diagnosing fat infiltration on 1-mm scans) with 96% sensitivity, 93% specificity, and 95% accuracy; the positive and negative predictive values were, respectively, 100% and 93%(1). Regarding the detection of lymph node metastase, the limitation of CT and MR imaging remains the same. This occurs because it is still based on lymph node size criteria only. With 10 mm as the limiting size for normal nodes, 4% of lymph nodes have a false-negative finding and the false-positive findings ranges from 3% to 43%. This is explained by the fact that nodal enlargement may be determined by reactive hyperplasia. In the group of patients with smaller lesions one might expect small number of patients with metastatic adenopathy. For the detection of stages T3 b and T3c, MR and MDCT imaging are excelent modalities. These methods are highy accurate in determining the presence and superior extent of thombus.

The major advantages of MRI, however, are the differentiation between tumor thrombus and blood thrombus since blood thrombus does not adhere to the wall of the vein and can be easily extracted.

Finally, it would be interesting to perform additional comparison of these results with the new and lower cutoff value of 4.5 cm proposed by some authors(2). It has been suggested that lowering the cutoff point resulted in better discriminatory power of the TNM classification (2).

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Dr. Adilson Prando
Department of Radiology
Vera Cruz Hospital
Campinas, São Paulo, Brazil

Precaval right renal arteries: prevalence and morphologic associations at spiral CT

Yeh BM, Coakley FV, Meng MV, Breiman RS, Stoller ML
Department of Radiology, University of California San Francisco, 505 Parnassus Ave, Box 0628, C-324C, San Francisco, CA, USA

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Purpose: To determine the prevalence and morphologic associations of precaval right renal arteries at spiral computed tomography (CT).

Materials and Methods: The authors retrospectively reviewed 186 arterial phase contrast material-enhanced spiral CT scans of the abdomen (5.0-mm section thickness in 97 scans, 2.5 mm in 89 scans) obtained during a 2-year period to identify patients with precaval right renal arteries. During routine interpretation of CT scans at daily readout, the authors prospectively identified 39 additional patients with precaval right renal arteries. All cases were evaluated for anatomic variants and associated clinical findings. Fisher exact analysis and chi2 analysis were performed to compare the frequency of anatomic variants between patients with and those without precaval renal arteries.

Results: Nine of 186 patients had precaval right renal arteries, for a prevalence of 5%. In the 48 patients with precaval renal arteries, 52 precaval arteries were found, of which 48 were accessory and four were dominant. Fourteen patients had right pelviectasis to the level of the precaval artery, and three of these had a clinical diagnosis of right ureteropelvic junction obstruction. Eighteen (35%) of the 52 precaval renal arteries arose from the anterior aspect of the aorta (within 30 degrees of the midline). The lower pole of the right kidney was rotated anteriorly in two (22%) of nine and 13 (33%) of 39 patients with precaval renal arteries in the retrospective and prospective groups, respectively, compared with four (2%) of 177 patients without precaval arteries ($P < 0.05$ and $P < 0.001$, respectively).

Conclusion: On the basis of these results, precaval right renal arteries appear to be more common than previously reported. Anterior rotation of the lower pole of the right kidney should prompt a search for precaval renal arteries.

Editorial Comment

Recently multidetector row CT(MDCT), using fast data acquisition and narrow collimation, has been shown a valuable method for angiographic applications. MDCT angiography provides additional anatomic data, notably regarding the angle of origin of the renal arteries, that is potentially useful for planning interventional procedures.This method is highly accurate an thus particularly useful for the detection of accessory renal arteries, early branching, and renal vein anomalies with an overall accuracy rate ranging from 89–100%. With the crescent use of the conservative and laparascopic renal surgery the importance of previous knowledgment of these anatomic variants and their associations is essential for the safety and success of these procedures.

In this manuscript the authors detected 9 of 186 patients with precaval right renal arteries, with a prevalence of 5%. These anomalous vessels were more frequently found in patients with an anteriorly rotated lower pole of the right kidney.For this reason they suggest that the finding of renal anomalies, especially an anteriorly rotated lower pole of the right kidney, should prompt a search for precaval renal arteries. We have seen sporadic cases of precaval right renal arteries only in patients with horseshoe kidneys.

In the 48 patients with precaval renal arteries, 52 precaval arteries were found, of which 48 were accessory and four were dominant. Fourteen patients had right pelviectasis to the level of the precaval artery, and three of these had a clinical diagnosis of right ureteropelvic junction obstruction. Since the anatomic position of the right renal artery is behind the inferior vena cava(IVC) and only the right gonadal vein is expected to pass anterior to IVC, an anomalous right renal artery passing anterior to the IVC can be injured inadvertently, especially during the retroperitoneal approach. Another important information is regarding the ventral origin of these precaval right renal arteries found in 37% of patients.This anterioir origin may result in misidentification at laparoscopy of such vessels as the inferior or superior mesenteric or hepatic arteries. Additional important feature is related to frequency of patients with precaval right renal arteries(up to 6%) which may develop symptomatic ureteropelvic junction obstruction. This information requires adequate

preoperative protocol for the MDCT examination in order to demonstrate this anatomic variation which will allow usefull information for conservative renal surgery and endopyelotomy.

Dr. Adilson Prando
Department of Radiology
Vera Cruz Hospital
Campinas, São Paulo, Brazil

UROGENITAL TRAUMA

Self-expanding metallic stent placement for renal artery dissection due to blunt trauma

Inoue S, Koizumi J, Iino M, Seki T, Inokuchi S
Department of Emergency Medicine, Tokai University School of Medicine, Isehara City, Kanagawa, Japan

J Urol. 2004; 171: 347-8

Case Report: No abstract available

Editorial Comment

Reports in the literature concerning the successful treatment of blunt renal artery injury with endovascular methods are rare (3 cases in the literature). Endovascular treatments are very tempting, because open repair can be both dangerous and futile, with a high rate of post-surgical thrombosis. Also, most patients with open arterial repairs would be treated with anticoagulants to decrease the potential for postoperative thrombosis, although this is often not possible in a trauma population. The authors of this case report discuss a patient with a traumatic intimal tear of the renal artery which caused both renal hypoperfusion and renovascular hypertension, who was treated with placement of a wallstent in the artery. Renal perfusion improved immediately and the hypertension subsided. The authors gave heparin 10,000 IU for 48 hours followed by aspirin and the phosphodiesterase III inhibitor (cilostazol) for 3 months. The patient suffered no bleeding, which was surprising as she had liver and bilateral lung contusions. Although these authors show that endovascular treatment of significant traumatic renal artery stenosis is possible I believe that (although tempting) it likely remains impractical for the majority of out trauma patients whom we are unwilling to fully anticoagulate after their injury. Interventional radiology physicians also remain wary of placing stents in injured vessels because of the concern of artery rupture or stent migration, causing catastrophic bleeding (although these authors advocate both endoluminal ultrasound and the use of a long stent to make sure the entire injured portion is stented properly). Perhaps the future will bring an endoluminal arterial stent technology that won't require systemic anticoagulation. Until then, this potentially risky treatment will remain experimental at best.

Dr. Richard A. Santucci
Assistant Professor of Urology
Wayne State University
Detroit, Michigan, USA

Management of trauma to the male external genitalia: the usefulness of American Association for the Surgery of Trauma organ injury scales

Mohr AM, Pham AM, Lavery RF, Sifri Z, Bargman V, Livingston DH
Department of Surgery, University of Medicine and Dentistry of New Jersey - New Jersey Medical School, Newark, 07103, USA

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Purpose: Injury to the male external genitalia is rare and, therefore, there are little data in the literature regarding the options for nonoperative management and outcome. To assist in defining the indications for nonoperative management the usefulness of the American Association for the Surgery of Trauma (AAST) organ injury scales for these injuries was examined.

Materials and Methods: We retrospectively reviewed the medical records of 116 male patients with trauma to the external genitalia in a 10-year period and classified injuries according to the organ injury severity scales (scrotum, testis, penis and urethra) of the AAST. Based on AAST grading management and outcome was reviewed.

Results: Mean patient age was 28 years and 79% of the injuries were due to gunshot wounds. A total of 87 patients (75%) underwent surgery, while 27 penile injuries and 8 scrotal/testicular injuries were managed nonoperatively. There were 54 scrotal explorations, 33 testicular injuries and 20 orchiectomies (bilateral in 1) for a testicular salvage rate of 39%. Documented followup by the trauma or genitourinary service was achieved in 47 of 110 survivors. No patient reported impotence or difficulty with fertility.

Conclusions: The AAST grading for male external genital trauma readily characterizes patients with high grade injuries that require operative management as well as select patients in whom injury can be safely managed nonoperatively.

Editorial Comment

The AAST organ injury severity scale has been previously validated for only 1 of the 9 genitourinary systems that are described (kidney). This report of 116 male patients with external genital injury (penile, testicular, urethral and scrotal) seems to indicate that this organ injury severity scale does generally correlate to the severity of injury and the need for surgery. Although larger, perhaps multicenter, trials will be required to provide the required statistical power to convincingly validate all 5 grades of the 4 scales examined (penis, testicle, scrotum, urethra), this study showed a trend towards nonoperative management of lower grade penile, scrotal and testicular injuries. Nonoperative management was possible in 100% Grade I, 75% Grade II, 29% Grade III, and 0% Grade IV penile injuries. Likewise, nonoperative treatment was possible in 66% Grade I, 83% Grade II, 0% Grade III and 0% Grade IV scrotal injuries. Finally, nonoperative treatment of 22% Grade I, 35% Grade II, 9% Grade III and 0% Grade IV testicular injuries was possible. Urethral injuries were uncommon, but generally required repair except in a few cases.

From this we can see that minor penile injuries are most amenable to conservative management, followed by scrotal injuries and then testicular injuries. The treatment of urethral injuries remains controversial in the literature, and a trend towards operative repair in this series mirrors modern thinking on this subject.

Although this series had a large volume of penetrating (and thus more “serious”) testicular injuries, their testicular salvage rate of 33% seems very low, and it is possible that more judicious tubule debridement and capsular closure even in those testicles with up to 60% destruction might have improved their outcome. This low rate of salvage also likely reflects the fact that many patients were simply not operated on, leaving only the worse cases for exploration.

The conclusion is that the AAST injury severity scale for male external genitourinary injuries now has some initial validation, but more work must be done. Also, the trend towards nonoperative management of injuries of all varieties may be finding some support among serious but selected external genital injuries.

Dr. Richard A. Santucci
Assistant Professor of Urology
Wayne State University
Detroit, Michigan, USA

PATHOLOGY

Benign urothelial papilloma of the bladder: a review of 34 de novo cases

Magi-Galluzzi C, Epstein JI
The Cleveland Clinic Foundation, Cleveland, OH, and The Johns Hopkins Hospital, Baltimore, MD, USA
Mod Pathol. 2004; 17 (suppl 1): 165A

Background: Urothelial papilloma of the bladder is an uncommon entity that represents less than 3% of papillary urothelial neoplasms, when using restrictive diagnostic criteria. The biologic potential of urothelial papilloma of the bladder is uncertain as there are only limited studies published on this issue.

Design: We retrospectively studied 34 patients who were diagnosed with urothelial papilloma of the bladder at one of our institutions between 1989 and 2002. Six cases were in-house and the remaining 28 were referred from other institutions as consults to one of the authors. In all cases, the diagnosis of papilloma was the first manifestation of urothelial neoplasia. All histologic slides were reviewed and met the diagnostic criteria of the 1998 WHO / ISUP classification system.

Results: The mean age of the patients at diagnosis was 57.8 (range, 23-87 years). The male-to-female ratio was 2.4:1 (24 males and 10 females). The tumor size ranged from one 2X to one 40X microscopic field. Some of the distinctive histological features seen were changes in the umbrella cells: vacuolization (4); prominence with cytological atypia (2); eosinophilic cuboidal morphology (1); hobnail morphology (1); and mucinous metaplasia (1). Also noted in 3 cases was prominent edema of the fibrovascular stalks mimicking polypoid cystitis. Follow-up was available in 26 cases with a mean follow-up for those without evidence of progression of 28.9 months (range, 3-127 months). Three patients (8.8%) developed recurrent papilloma 4, 15 and 18 months after the initial diagnosis of papilloma; one of these patients also showed progression to noninvasive low grade urothelial carcinoma at the time of recurrence (15 months). Three patients (8.8%) progressed to higher grade disease: 2 to noninvasive low grade urothelial carcinoma (11 and 15 months after the original diagnosis) and 1 to a papillary urothelial neoplasm of low malignant potential at 104 months and a noninvasive low grade urothelial carcinoma at 141 months from the initial diagnosis of papilloma. None of the patients demonstrated progression to either lamina propria (T1) or muscularis propria (T2) invasion. Two patients died for unrelated causes. None of the patients died of bladder cancer.

Conclusions: Patients with urothelial papillomas have a low incidence of recurrence and rarely progress to develop urothelial carcinoma. It seems reasonable to avoid labeling these patients as having cancer. It remains to be studied whether and when patients with papillomas who have no evidence of recurrence or progression no longer need to be followed.

Editorial Comment

In the World Health Organization / International Society of Urological Pathology (WHO / ISUP) consensus classification of urothelial (transitional cell) neoplasms of the urinary bladder (Am J Surg Pathol. 1998; 22:1435-48), papilloma is a distinct neoplasm from papillary neoplasm of low malignant potential. The former neoplasm is defined as discrete papillary growth with central fibrovascular core lined by urothelium of normal thickness and cytology, frequent vacuolization of umbrella cells and edema of the stroma. There is no need to count the number of cell layers. It is a rare benign condition comprising less than 3% of papillary urothelial neoplasms. Papillary urothelial neoplasm of low malignant potential is a papillary lesion with minimal architectural abnormalities and minimal nuclear atypia irrespective of cell thickness. In general, the major distinction from papilloma is that in papillary urothelial neoplasm of low malignant potential the urothelium is much thicker and/or nuclei are significantly enlarged. The urothelial papilloma, in contrast, has no architectural or cytological atypia.

Both papilloma and papillary urothelial neoplasm of low malignant potential may develop recurrent or new papillary lesions but only the latter may be associated with invasion or metastases in rare cases. The study by Magi-Galluzzi and Epstein disclosed the clinical behavior of 34 de novo papillomas. The follow-up showed that 6 patients had recurrent disease but none progression to either lamina propria (T1) or muscularis propria (T2) invasion. This paper confirms that papilloma and papillary neoplasm of low malignant potential should be considered separately. The urologist should follow-up patients with papilloma but because they have a low incidence of recurrence and rarely progress to develop noninvasive urothelial carcinoma, it seems reasonable to avoid labeling these patients as having cancer.

Dr. Athanase Billis
Full-Professor of Pathology
State University of Campinas, Unicamp
Campinas, São Paulo, Brazil

Predictive value of pathologic parameters of high-grade prostatic intraepithelial neoplasia (HGPIN) in the initial biopsy for the subsequent detection of prostatic carcinoma (PCa)

Mendrinos SE, Amin MB, Lim SD, Herrera CM, Srigley JR
Emory University, School of Medicine, Atlanta, GA, USA, and Credit Valley Hospital, Mississauga, ON, Canada

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Background: Recent experience suggests that PCa will be detected on rebiopsy in approximately 27% of patients with initial diagnosis of HGPIN. Knowledge of pathologic parameters of HGPIN that have a higher predictive power would help further stratify management of patients who are at a greater likelihood of having undetected carcinoma in the prostate gland.

Design: 153 initial biopsy cores from 80 patients with HGPIN (41 diagnosed subsequently with PCa and 39 without PCa on rebiopsy) with a minimum follow up of 2 years were evaluated. In each case the following parameters of HGPIN were assessed without knowledge of which cases had subsequently developed PCa : number of cores involved, number of glands with HGPIN per core, architectural pattern (micropapillary, tufted, flat, cribriform), cytoplasmic features, nuclear pleomorphism, presence of mitoses, nucleolar features [prominent nucleoli (<50% or =50% in PIN glands), ease of nucleolar recognition (at 10X, 20X or 40X objective), presence of multiple nucleoli], presence of necrosis, apoptosis, intraluminal crystalloids, blue mucin and presence

of associated features including atrophy, inflammation and stromal reaction. Pathologic parameters of HGPIN were correlated with detection of PCa in subsequent biopsy (ies).

Results: 66.7% of patients with two or more cores involved by HGPIN had PCa on subsequent biopsy. In contrast, 38.6% of patients with only one core with HGPIN were detected to have PCa (p=0.015, Fishers exact test). Tufted and flat were the most common architectural patterns. The presence of micropapillary HGPIN was associated with greater likelihood of subsequent PCa detection (p=0,041, Pearson x2 test). By multivariate analysis, pattern of HGPIN (micropapillary and cribriform) was the only independent predictor of cancer on rebiopsy (p=0.013, RR 4.586). Other pathologic variables failed to have predictive value for subsequent detection of PCa.

Conclusions: Patients with initial diagnosis of HGPIN, which demonstrates micropapillary or cribriform architecture or is present in multiple cores, should be candidates for more aggressive investigation to detect PCa, potentially by early rebiopsy and more aggressive sampling.

Editorial Comment

High-grade prostatic intraepithelial neoplasia (HGPIN) is considered a precursor lesion of invasive prostate carcinoma. This is evidenced by several findings: HGPIN is more frequent in patients with than without prostate carcinoma; in some rare cases, it is possible to document a transition between HGPIN and invasive carcinoma; the mean age of patients with HGPIN is lower than patients with invasive carcinoma; and, there are similarities between phenotypic and genotypic findings between these 2 conditions.

Many terms were used to refer to this condition. In 1989, during a consensus workshop held in Bethesda, MD, USA (Urology. 1989; 34: (suppl.) 2-3) it was suggested to use the term prostatic intraepithelial neoplasia (PIN). In this consensus meeting was also agreed to refer in the pathology report only high-grade PIN (grades 2 or 3) and not low-grade PIN (grade 1). Bostwick et al. (Hum Pathol. 1993; 24: 298-10) described 4 architectural patterns of HGPIN: micropapillary, tufted, flat, and cribriform. These are considered morphologic variants without any predictive value.

This paper showed that the architectural patterns of HGPIN might have importance to predict prostate cancer on subsequent biopsies. By multivariate analysis, the micropapillary and cribriform patterns of HGPIN were independent predictors of cancer on rebiopsy. Based on this paper, for the urologist is worth asking the pathologist to include in the pathology report the architectural pattern of HGPIN.

Dr. Athanase Billis
Full-Professor of Pathology
State University of Campinas, Unicamp
Campinas, São Paulo, Brazil

INVESTIGATIVE UROLOGY

Comprehensive evaluation of ureteral healing after electrosurgical endopyelotomy in a porcine model: original report and review of the literature

Andreoni CR, Lin HK, Olweny E, Landman J, Lee D, Bostwick D, Clayman RV
From the Division of Urology, Federal University (CRA), Sao Paulo, Brazil, Division of Urologic Surgery, Department of Surgery, Washington University School of Medicine (H-KL, EO, JL, DL), St. Louis, Missouri, Bostwick Laboratories (DB), Richmond, Virginia, and Department of Urology, University of California-Irvine (RVC), Irvine, California
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Purpose: Endopyelotomy (EP) has yet to equal the success achieved with open dismembered pyeloplasty. To understand better the ureteral response to EP we performed a timed histopathological evaluation of the porcine ureter after Acucise (Applied Medical, Rancho Santa Margarita, California) EP.

Materials and Methods: In 28 domestic pigs bilateral Acucise EPs were performed and bilateral 7Fr stents were placed. The kidneys, ureters and bladder were harvested after EP at 0, 1, 2, 3, 6, 12 and 18 hours, 1, 3 and 5 days, and 1, 2, 4 and 8 weeks. The stents were removed after 4 weeks. The healing area of the ureter was sectioned. Half was fixed in formalin 10%, stained and evaluated by light microscopy. The other half was frozen and reverse transcriptase-polymerase chain reaction was performed to measure steady state levels of epidermal growth factor, transforming growth factor (TGF)-alpha, TGF-beta 1, TGF-beta 2, TGF-beta 3, keratinocyte growth factor, vascular endothelial growth factor, insulin-like growth factor, platelet derived growth factor, collagen type 1, integrin and fibronectin transcript expression. Immunohistochemistry for actin, desmin and myosin expression was completed. The same studies were applied to the mid portion of the unoperated ureter.

Results: Initial sealing of the ureterotomy defect was by blood clot and periureteral fat. Complete healing of the mucosa was observed at 2 weeks in animals without an associated urinoma. However, in no case did the muscle layer bridge the whole circumference of the ureter despite followup out to 8 weeks. In the operated ureter elevated expression of keratinocyte growth factor, vascular endothelial growth factor, TGF-alpha, TGF-beta 1, TGF-beta 3 and integrin was detected 2 hours after the operation and sustained for 7 to 14 days after the procedure. Immunohistochemistry revealed that most presumed myocytes seen in the defect were actually myofibroblasts. Persistent urinoma formation beyond the first few days appeared to slow the healing process.

Conclusions: Urothelium regenerated rapidly over an iatrogenic ureteral defect despite the absence of a lamina propria. Muscle cell coverage failed to occur completely at 8 weeks. In the initial 8 weeks of the healing process myofibroblasts appear to be prevalent. A persistent urinoma negatively impacts the healing process.

Editorial Comment

This paper by Andreoni and colleagues is welcome, because it updates our knowledge on the natural response of the ureter to an endoureterotomy, since current understanding on this topic is based on papers from 1940's (1). Using current methods in histopathology (eg cell specific stains) and immunohistochemistry (eg growth factors) the authors evaluated the acute and chronic impact on the ureter and renal pelvis of an Acucise catheter incision in the pig.

The authors found that in the pig the urothelium rapidly regenerates and covers the incision site within a few weeks, and that an urinoma formation appears to slow the healing process.Functional smooth muscle cells or smooth muscles bundles failed to bridge the defect completely even 8 weeks after endopyelotomy. In addition, the authors suggest that growth factors, including TGF-â1, TGF-á and KGF, may have a role in promoting ureteral healing after endopyelotomy.

The most distinguished finding of the present study was that the nonepithelial cells found in the endopyelotomy defect appeared to be myofibroblasts and not smooth muscles cells, which was possible to be identified by immunohistochemical techniques. It is likely that the classic studies of intubated ureterotomy erroneously concluded that there was true regeneration of the ureter. The authors suggest that it might have been myofibroblasts and not smooth muscle cells responsible for apparent closure of the ureterotomy defect. Future investigations using electron microscopy or biochemical techniques would better clarify this issue.

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Dr. Francisco J.B. Sampaio
Full-Professor and Chair, Urogenital Research Unit
State University of Rio de Janeiro
Rio de Janeiro, Brazil

A porcine model of calcium oxalate kidney stone disease

Mandel NS, Henderson JD Jr, Hung LY, Wille DF, Wiessner JH
From the Departments of Medicine and Surgery, Medical College of Wisconsin and Department of Veterans Affairs, Zablocki Veterans Affairs Medical Center, Milwaukee, Wisconsin

J Urol. 2004; 171: 1301-3

Purpose: The pig has been extensively used in biomedical research because of the similarities in organ structure and function to humans. It is desirable to have an animal model of oxaluria and urolithiasis with physiological, anatomical and nutritional characteristics that more closely resemble those of man. In this study we determined if feeding pigs trans-4-hydroxy-l-proline (HP) increased urine oxalate levels and if it would serve as a model for human hyperoxaluria and stone disease.

Materials and Methods: Male Yorkshire-Durox cross-bred pigs were fed HP for up to 20 days. Urine was periodically collected and analyzed for oxalate levels and the presence of crystalluria. After 20 days of feeding the kidneys were removed and examined grossly and microscopically for indications of injury, crystal deposition and stone formation.

Results: Feeding pigs 10% HP (weight per weight HP/food) produced hyperoxaluria, which reached a maximum and leveled off by day 6. Urine oxalate remained near this level until the study ended at 20 days regardless of the further increase in HP to 20% of the weight of the food. When the kidneys were removed and grossly examined, calcium oxalate encrustations were observed on multiple papillary tips. Histopathological observation of the papillary tissue showed tissue injury and crystal deposition.

Conclusions: Pigs fed HP have hyperoxaluria and calcium oxalate crystalluria, and calcium oxalate papillary deposits form that may be precursors of kidney stones. The use of the pig as a model of human hyperoxaluria and stone formation should prove ideal for studies of these human diseases.

Editorial Comment

In addition to be an excellent animal model for surgical experimentation due to its extra and intra-renal anatomy similarities to humans (1,2) swine have also been shown to be a good model for clinical urological studies, including the formation and treatment of renal calculi.

In this research study, the authors tested if feeding pigs with trans-4-hydroxy-l-proline HP would increase their urine oxalate levels and produce a model of hyperoxaluria and calcium oxalate stone disease. The addition of HP to the pig diet resulted in an increase in urine oxalate excretion. Urine oxalate levels appeared to reach the maximum level at day 6 for all 3 HP fed pigs. Increasing the HP in the feed up to 20% by feed weight resulted in no further increase in urine oxalate levels.

The authors found no morphological changes in corticomedullary or papillary areas in control pigs, on the other hand, changes indicative of cellular injury were observed in HP fed pigs. These changes included

diffuse corticomedullary interstitial fibrosis with tubular dilatation, oxalate crystal deposition in tubules and focal collecting duct epithelial cell necrosis with aggregates of calcium oxalate crystals located at the papillary tip in all HP fed pigs. All these findings clearly demonstrated the feasibility of pig use as a model of human hyperoxaluria and stone formation.

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Dr. Francisco J.B. Sampaio
Full-Professor and Chair, Urogenital Research Unit
State University of Rio de Janeiro
Rio de Janeiro, Brazil

Intravesical nitric oxide production discriminates between classic and nonulcer interstitial cystitis

Logadottir Y, Ehren I, Fall M, Wiklund NP, Peeker R, Hanno PM
From the Department of Urology, Sahlgrenska University Hospital, Göteborg (YL, MF, RP), and Department of Urology, Karolinska University Hospital, Stockholm (IE, NPW), Sweden
J Urol. 2004; 171:1148-51

Purpose: Interstitial cystitis (IC) is one of the most bothersome conditions in urological practice. There are 2 subtypes, classic and nonulcer IC, with similar symptoms but different outcomes with respect to clinical course and response to treatment. Histologically there are fundamental differences between the 2 subtypes, classic IC presenting a severe abnormality of the urothelium and characteristic inflammatory cell infiltrates while inflammation is scant in nonulcer IC. Regulation of urinary nitric oxide synthase activity has been proposed to be of importance for immunological responses in IC. We present evidence of a profound difference between the 2 subtypes concerning nitric oxide production, mirroring the differences in inflammatory response in IC.

Materials and Methods: A total of 17 patients with both subtypes and active disease as well as patients with disease in remission were included in the study, all diagnosed according to National Institute for Diabetes and Digestive and Kidney Diseases criteria. Luminal nitric oxide was measured in the bladder of patients using a chemiluminescence nitric oxide analyzer.

Results: All patients with classic IC had high levels of NO. None of the other patients had any significant increase in NO levels in the bladder. The NO level in patients with classic IC was not related to symptoms but rather to the assignment to this specific subgroup of IC. The highest levels of NO were found in patients in the initial phase of classic IC.

Conclusions: The difference in NO evaporation between classic and nonulcer IC allows for subtyping of cases meeting National Institute for Diabetes and Digestive and Kidney Diseases criteria without performing cystoscopy. The findings in the present series together with previous findings clearly demonstrate that the 2 subtypes of IC represent separate entities. This separation further emphasizes the need to subtype all cases included in all scientific matters, ensuring that the 2 subtypes are evaluated separately in clinical studies.

Editorial Comment

Interstitial cystitis (IC) is often subdivided into 2 different subtypes: the classic "ulcerous" form of interstitial cystitis and the "early" or "nonulcer" form. The differences between the 2 subtypes are reflected in clinical manifestation and age distribution. It has also been demonstrated that the 2 subtypes respond differently to many treatment procedures (1). The main tool for differential diagnosis between the 2 forms of disease has been cystoscopy.

Classic IC presents at endoscopy with reddened mucosal areas. These are often associated with small vessels radiating towards a central scar that ruptures with increasing bladder distension. Histological specimens obtained from lesions demonstrate that classic IC is a destructive inflammation and some patients eventually develop a small capacity fibrotic bladder. Outflow obstruction of the upper urinary tract may also occur in the final stage of classic IC.

In nonulcer IC, the bladder mucosa is normal at initial cystoscopy. The development of glomerulations after hydrodistension is considered to be a positive diagnostic sign. Histologically, there are no or scant inflammatory signs in nonulcer disease (1).

In the present pioneer study, the authors demonstrated that all patients with classic IC showed high or very high levels of NO. None of the other patients had any significant increase in NO in the bladder. The NO level in patients with classic IC was not related to symptoms but rather to the assignment to this specific subgroup of IC. However, disease stage seemed to influence NO levels with the highest levels of NO found in patients in the initial phase of classic IC. The difference in NO levels between classic and nonulcer IC allows for subtyping of cases without performing cystoscopy.

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Dr. Francisco J.B. Sampaio
Full-Professor and Chair, Urogenital Research Unit
State University of Rio de Janeiro
Rio de Janeiro, Brazil

RECONSTRUCTIVE UROLOGY

Creation of luminal tissue covered with urothelium by implantation of cultured urothelial cells into the peritoneal cavity

Moriya K, Kakizaki H, Murakumo M, Watanabe S, Chen Q, Nonomura K, Koyanagi T
From the Departments of Urology (KM, HK, MM, QC, KN, TK) and Anatomy (SW), Hokkaido University Graduate School of Medicine, Sapporo, Japan
J Urol. 2003; 170: 2480-5

Purpose: We established the culture condition of seeding urothelial cells onto a scaffold for implantation into the peritoneal cavity and evaluated the histology of implanted urothelial cells.

Materials and Methods: In part 1 of the study cultured porcine bladder urothelial cells were seeded onto 3 types of collagen gel made on microporous membrane, including collagen gel with or without cultured porcine bladder fibroblasts, or a feeder layer. The macroscopic and microscopic appearance of the gel with urothelial cells were examined in vitro. As an in vivo study, cultured porcine bladder urothelial cells were

seeded onto a collagen gel/sponge matrix with or without cultured fibroblasts, or a feeder layer. Urothelial cell survival on each matrix was evaluated 28 days after implantation onto the omentum or mesentery of nude rats. In part two of the study, rat urothelial cells were cultured and seeded onto fibrin gel/atelocollagen sponge matrix as an autologous implantation model. After 7 days of cultivation the matrix was folded with urothelial cells inside, implanted onto the mesentery, and serially evaluated.

Results: Gel containing cultured fibroblasts was shrunken and basement membrane formation was observed on the gel with cultured fibroblasts or the feeder layer in vitro. Urothelial cells cultured with the feeder layer better survived on the collagen based matrix and formed a hollow-like lumen when implanted into the peritoneal cavity. The regenerated urothelium in an autologous implantation showed the same histological features as normal bladder urothelium.

Conclusions: Selection of less degradable matrix and formation of basement membrane are critical for survival of implanted urothelial cells. The regenerated urothelium in an autologous implantation model seems to have the similar properties to the normal urothelium.

Editorial Comment

This paper is a direct continuation of studies initiated by Oberpenning et al (reference 2 in the paper) which demonstrated that urothelial and smooth muscle cell expanded in-vitro and seeded onto an acellular matrix could be used for bladder augmentation in a canine model. The authors report about the outcome of inclusion of a feeder layer for epithelial culture on autologue urothelial cell implantation. Thus, when implanted into the peritoneal cavity cystic tissues with an endoluminal surface covered with regenerated autologous urothelium could be created. Apart from that it is remarkable to note that stromal cells were found expressing alpha-smooth muscle actin and desmin despite the absence of smooth muscle cells seeded to the implanted matrix. Whether this phenomenon is due to homing of bone marrow cells or an unproven differentiation of stromal cells is not known but is worth studying in future projects.

Despite good looking results with regards to tissue engineered segments of the lower urinary tract in animal models too many questions remain to be solved before we are ready to use tissue engineering in the lower urinary tract on a regular basis. One of the problems, i.e. possible malignancy has been discussed in the paper, because perturbation of the implanted transitional cells was noted which may have been the result of undesirable stromal-epithelial interaction.

Dr. Arnulf Stenzl
Professor and Chairman of Urology
Eberhard-Karls-University Tuebingen
Tuebingen, Germany

Surgical management of infiltrating bladder cancer in elderly patients

Peyromaure M, Guerin F, Debre B, Zerbib M
Department of Urology, Cochin Hospital, Paris, France
Eur Urol. 2004; 45: 147-54

Objectives: To review the surgical therapeutic options in elderly patients with infiltrating bladder cancer.

Methods: A review of the literature relevant to cystectomy and transurethral resection for infiltrating bladder cancer in elderly patients was conducted using Medline Services.

Results: Thanks to progress in anaesthesia, intensive care and surgery, cystectomy now forms part of the classical treatments for bladder cancer in elderly patients, with acceptable mortality and morbidity rates. The recent series of cystectomies performed in patients over 75 years old report a mortality rate associated with the procedure of less than 4.5%. The global mortality rate in the same population ranges from 10 to 50%. These rates are now similar to those reported in the general population. The mean survival after cystectomy in patients over 75 years old is more than 2 years. Global survival at 5 years is between 37 and 68%. It is acknowledged by most authors that resection alone is associated with higher relapse and progression rates than cystectomy.

Conclusions: Cystectomy appears to be reasonable in elderly people who have a life expectancy of more than 2 years, provided that a rigorous pre-operative assessment and anaesthetic management are performed. Transurethral resection alone should be proposed only to patients with poor health status and/or very advanced age.

Editorial Comment

The subject of this paper-whether radical cystectomy for muscle-invasive bladder cancer is justified in older patients-has been addressed by several authors in recent years. When dealing with this question, first of all the term “elderly” or “old” has to be defined. In this paper, elderly patients were those beyond 75 years, other authors included only patients older than 80 years. However, even if a clear definition is made we still have to question if every 75 or 80 year old can be compared based on his year of birth. In the clinical setting, the biological age is of much greater importance. Consciously or unconsciously, we tend to select patients who we assume are fit for such a procedure. If we make the wrong assumption and some surgeons are probably better than others, patients will have a larger chance of complications. This makes it difficult to compare different studies as long as we do not have better ways to define the biological age and not the actual age.

Another important aspect in this patient group is not only whether the patient survives the surgical procedure but also whether he lives long enough to benefit from an oncological aspect, that is to say “would he have lived long enough to die really from bladder cancer”. And how does an increase of live expectancy of a few years weigh against an incontinent urinary diversion. We should consider cystectomy for localized bladder cancer in patients of advanced age, but the oncological benefit and quality of life in these patients must be put into strong consideration.

Dr. Arnulf Stenzl
Professor and Chairman of Urology
Eberhard-Karls-University Tuebingen
Tuebingen, Germany

UROLOGICAL ONCOLOGY

Simultaneous transurethral resection of bladder tumor and benign prostatic hyperplasia: hazardous or a safe timesaver?

Tsivian A, Shtricker A, Sidi AA
Department of Urologic Surgery, Edith Wolfson Medical Center, Holon, Israel
J Urol. 2003;170: 2241-3

Purpose: We evaluated the effect of simultaneous transurethral resection of bladder tumor (TURBT) and benign prostatic hyperplasia (TURP) on recurrences at the bladder neck and prostatic urethra.

Materials and Methods: During the 10-year study period 51 patients fulfilled the entry criteria of past simultaneous TURBT and TURP, histologically confirmed transitional cell carcinoma of the bladder and benign prostatic hyperplasia, a preserved bladder and a minimal followup of 12 months. Their records were analyzed retrospectively. Patients were divided into 28 with single (group 1) and 23 with multiple (group 2) bladder tumors.

Results: During the 12 to 120 months of followup (mean 37.3) the average tumor recurrence rate was 68.6%, that is 53.6% in group 1 and 86.9% in group 2. Recurrences appeared within an average of 14.9 months, that is within 18 (range 4 to 36) in group 1 and 13.5 (range 3 to 36) in group 2. Tumor recurrence was at the bladder neck and/or prostatic urethra in 11 of the 51 cases (21.5%). Average time to recurrence at the prostatic fossa was 23.8 months, that is 27 (range 13 to 46) in group 1 and 21.6 (range 4 to 60) in group 2. Only 1 patient had a single recurrence in the prostatic fossa, while the others also had synchronous and metachronous recurrences at other bladder sites. Tumor progression to invasiveness was diagnosed in 3 of the 51 patients (5.9%).
Conclusions: Our data indicate that simultaneous TURBT and TURP do not negatively affect tumor recurrence at the bladder neck and prostatic urethra.

Editorial Comment

Implantation of bladder tumor cells is an interesting topic and base of renewed interest of the scientific community. Here, the authors tried to answer clinically if implantation occurs predominant at resection sites, such as the prostatic urethra after TUR of the prostate. Their data do not support the hypothesis of predominant implantation in the previously resected area. On the other hands, the biological facts of implantation are by far more complex than the clinical situation analyzed. Implantation occurs on areas coated e.g. with fibronectin, an intermediate matrix protein. Simplified, this protein is shed by bleeding and attaches on the bladder surface, not only on traumatized surfaces. Therefore, during and after resection of the prostate, large areas of the bladder are covered with this protein, representing an ideal surface for bladder tumor implantation. The recurrence rate in their analysis is very high. Given the fact that intermediate risk tumors are resected, the authors have an average recurrence rate of around 70% within a follow up of slightly more than 3 years, and even 87% in group 2. This recurrence rate seems very impressive and rather supports the notion that simultaneous transurethral resection of the prostate should not be performed because of the higher probability of an overall tumor cell implantation. This statement, however, needs to be scientifically proven.

Dr. Andreas Böhle
Professor of Urology
HELIOS Agnes Karll Hospital
Bad Schwartau, Germany

FEMALE UROLOGY

Stress incontinence surgery for patients presenting with mixed incontinence and a normal cystometrogram

Osman T
Urology Department, Ain Shams University, Cairo, Egypt
BJU Int. 2003; 92: 964-8

Objective: To evaluate the outcome of surgery for stress urinary incontinence (SUI) in patients presenting with a combination of stress and sensory urge UI.

Patients and Methods: The study comprised 75 women presenting with mixed incontinence; the most important inclusion criterion was a negative cystometrogram for detrusor overactivity. Based on random selection, a third of the patients received a 6-month course of anticholinergic treatment (group 1) and 50 (group 2) had surgery for SUI. The surgical procedure depended on the Valsalva leak point pressure (VLPP); those with a VLPP of = 90 cm H_2O underwent Burch retropubic bladder neck suspension (group 2a, 24 patients) while 26 (group 2b) with a VLPP of < 90 cm H_2O had pubovaginal sling (PVS) surgery. A further group of 20 patients with pure SUI (no urge UI) underwent surgery (PVS in 12 and Burch in eight) as a control group (group 3). After at least 6 months of follow-up (mean 9.3, SD 1.7), 68 patients were evaluable; they were assessed subjectively and objectively for dryness, and by a urodynamic evaluation and quantitative assessment using the SEAPI scoring system.

Results: In group 1 none of the patients became completely dry; there was persistent stress with and without urge UI in nine (43%) and 12 (57%) of the available 21 patients, respectively. Only three of those who had persistent SUI with no urge in the whole study group were satisfied and chose to continue anticholinergic therapy despite SUI. In this group the mean (SD) improvement in the subjective and objective SEAPI score was 3.4 (1.0) and 2.3 (3.8), respectively. In group 2a, 20 of the available 23 patients (87%) became completely dry (both stress and urge continent). The mean improvement in the SEAPI scores was 7.8 (0.9) and 7.8 (1.3), respectively. In group 2b, 20 of the 24 (83%) became completely dry, with mean improvements in SEAPI scores of 8.2 (0.4) and 7.9 (0.3), respectively. The improvement was statistically significant after surgery, vs. anticholinergic therapy, for all variables ($P < 0.05$). The incidence of persistence urge UI was highest in group 1 (43%), being 13% in group 2 (13% and 12% in 2a and b, respectively). In group 3 there was de novo urge UI in four of the 20 patients, and not significantly different from that in group 2.

Conclusion: Most patients with mixed stress and urge UI and a normal cystometrogram were cured of both symptoms by surgery. The incidence of residual urge in such patients was no higher than that of de novo urge after surgery in patients with genuine SUI.

Editorial Comment

This is a randomized study to evaluate the outcome of surgery for stress urinary incontinence (SUI) in a population of women who had a combination of SUI and symptoms of urinary urge incontinence combined with a preoperative cystometrogram that had no evidence of uninhibited detrusor contractions. The study involved 3 basic groups: the first group of 25 patients had their therapy limited to anticholinergic medication for over 6 months; the second was a surgical group of 50 patients which was divided into 3 subgroups of which one group had a Burch retropubic suspension on the basis of a urodynamically proven Valsalva leak point pressure of > 90 cm H_2O and a second subgroup of patients who underwent a pubovaginal sling with a criteria of a Valsalva leak point pressure of < 90 cm H_2O; lastly, the third group was a control group of patients who had stress urinary incontinence but no complaints of urinary urge incontinence who also underwent a pubovaginal sling or a Burch depending on their preoperative VLPP determination. After at least 6 months of follow-up, the patients were assessed subjectively and objectively on the basis of a SEAPI score. Conclusions of the authors based on their findings included the observation that anti-incontinence surgery has an excellent cure rate for both symptoms in those patients with both stress and symptoms of urinary urge incontinence and that clinical efficacy and patient satisfaction of medical therapy was sub-optimal. In addition, the authors noted that the rate of postoperative urinary urge incontinence was similar between the group of patients who had preoperative symptoms of urinary urge incontinence combined with their stress urinary incontinence and the control group who had only stress urinary incontinence and no complaints of urinary urge incontinence.

This is a valuable paper for the interested in female urology. It is notable that the incidence of post operative urinary urge incontinence was similar in both the surgical group of patients who had preoperative urinary urge incontinence and the control group who had no preoperative urinary urge incontinence. Also of specific interest is that though the patients who preoperatively complained of urinary urge incontinence had negative cystometrograms, 9 of 10 patients had cystometric evidence of detrusor overactivity when plagued with postoperative urinary urge incontinence. In addition, other noteworthy urodynamic changes noted in the study group was a diminution in the maximum flow rate in the patients who had persistent urinary urge incontinence. The authors through their documentation of these urodynamic parameters and their noted difference in the pre- and post-operative patients raised a valuable point: is the etiology of preoperative urinary urge incontinence different from the etiology of postoperative urinary urge incontinence? The authors lead us to believe that this is definitely possible with postoperative urinary urge incontinence potentially being related to an infravesical outlet obstruction as opposed to a preoperative idiopathic condition.

The discussion section by Dr. Osman is of great value and warrants careful reading both for the facts, which it presents as well as the questions that it raises with regard to the etiology of this most troublesome malady. It would be of genuine interest if the author could expand on the urodynamic differences pre and postoperatively between the group that underwent a Burch urothropexy vs. those who underwent a suburethral pubovaginal sling secondary to the historical claim of the potentially obstructive nature of a suburethral sling.

In conclusion, the paper's findings are along the same line as those voiced by Dr. McGuire in the past in that the finding of detrusor instability on a preoperative cystometrogram does not preclude a good result (1). Interested readers should consider other landmark papers of great value on this topic (1,2).

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Dr. Steven P. Petrou
Associate Professor of Urology
Mayo Medical School
Jacksonville, Florida, USA

PEDIATRIC UROLOGY

Vesicoureteral reflux in the Hispanic child with urinary tract infection

Pinto KJ
From the Pediatric Urology Department, Urology Associates of North Texas and Cook Children's Medical Center, Fort Worth, Texas, USA
J Urol. 2004;171: 1266-7

Purpose: Hispanic individuals have become the largest minority in the United States. Prior studies of minorities revealed real differences in vesicouretal reflux rates between white and black Americans. We studied the incidence of reflux in the Hispanic population to see if the reflux rate was different from that of the white population.

Materials and Methods: We reviewed the results of voiding cystourethrograms performed in Hispanic children as our normal screening for reflux and compared them to voiding cystourethrograms results in a group

of white children. The children were identified as Hispanic or white by their parents on an intake form.

Results: Of the Hispanic children 27% had vesicoureteral reflux on voiding cystogram, while 32% of the white children had vesicoureteral reflux.

Conclusions: Hispanic patients presenting with the first urinary tract infection seem to be afflicted with vesicoureteral reflux as often as their white contemporaries. Hispanic children should be screened as aggressively as white children when they present with urinary tract infections.

Editorial Comment

It has become clear that vesicoureteral reflux has some genetic determinants. Although the exact mechanisms are unclear, it is apparent that within families there is a 45% chance of sibling reflux and a 65% chance of reflux in offspring of patients with reflux. Furthermore, the rate of reflux in different races is quite different, with whites having a much higher rate than blacks.

In this context, this paper evaluates the rate of reflux in Hispanic children. The authors found that in the workup of a urinary tract infection, the chance of finding reflux was similar in Hispanic and white children. Although this suggests that there is no genetic difference, there are several caveats. Blacks not only have a lower rate of reflux but less urinary tract infections. Since this study only looks at Hispanics who had urinary infections, this study would not be able to evaluate the possibility that Hispanics might have a lower rate of infection also. Furthermore, blacks from different genetic groups appear to have different rates of reflux, so that the Hispanics in this study (primarily from Mexico) might not be representative of all Hispanics.

Dr. Barry A. Kogan
Chief and Professor of Urology and Pediatrics
Albany Medical College
Albany, New York, USA

Follow-up urine cultures and fever in children with urinary tract infection

Currie ML, Mitz L, Raasch CS, Greenbaum LA
Department of Pediatrics, Medical College of Wisconsin, Milwaukee, USA
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Background: The American Academy of Pediatrics practice parameter for urinary tract infection suggests a repeat urine culture if the expected clinical response is not achieved within the first 48 hours of therapy. The utility of repeat urine cultures and clinical significance of fever at 48 hours is unclear.

Objectives: To determine the frequency of positive repeat urine cultures in children admitted to the hospital with urinary tract infection, and to describe the fever curves of children admitted to the hospital with urinary tract infection.

Design and Methods: We reviewed all cases of urinary tract infection in children 18 years and younger who were admitted during a 5-year period to Children's Hospital of Wisconsin (Milwaukee). We recorded temperatures from hospital admission to discharge, age, sex, initial and follow-up culture results, antibiotics received, imaging performed, and medical history.

Results: Urinary tract infection was identified in 364 patients, and 291 (79.9%) had follow-up urine cultures. None were positive. Follow-up cultures produced 21,388.50 US dollars in patient charges. Fever lasted beyond 48 hours in 32% of patients. Older children were more likely to have fever beyond 48 hours.

Conclusions: Follow-up urine cultures were of no utility in children hospitalized for urinary tract infection, including those with fever lasting beyond 48 hours or those with an underlying urologic disease.

Fever beyond 48 hours is common and should not be used as a criterion for obtaining a repeat urine culture. These conclusions are valid for children with vesicoureteral reflux. Such an approach would result in significant cost savings.

Editorial Comment

The authors challenge yet another dogma of medical practice. Most all of us have been taught that, when treating pyelonephritis in children, it is important to obtain a follow-up urine culture in about 48 hours in order to be certain the therapy is working. This would seem empirically to be even more important in situations in which the child remains febrile. Yet, the authors found that of 291 follow-up cultures, not a single one was positive! This was true even if the child remained febrile and independent of whether the child had reflux. The estimated cost of these negative cultures was over $21,000! In an era of rising health-care costs, this is an important finding.

In a side observation, the authors found that 32% of children with febrile UTIs remained febrile for more than 48 hours and the rate was even higher in those over age 1. It would be interesting in a follow-up study to determine whether those who remained febrile longer had a higher rate of renal scarring, but that was not evaluated in this study.

Dr. Barry A. Kogan
Chief and Professor of Urology and Pediatrics
Albany Medical College
Albany, New York, USA