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UROLOGICAL SURVEY

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STONE DISEASE

Intraoperative Fragment Detection during Percutaneous Nephrolithotomy: Evaluation of High Magnification Rotational Fluoroscopy Combined With Aggressive Nephroscopy

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Purpose: Percutaneous nephrolithotomy effectively treats large volume renal calculi but relies on postoperative imaging to judge success. We evaluated the effectiveness of maximizing intraoperative imaging through combined high resolution fluoroscopy and flexible nephroscopy.
Materials and Methods: Percutaneous nephrolithotomy was performed cooperatively with a radiologist in an interventional radiology suite equipped with a ceiling mounted, high resolution C-arm. Aggressive rigid and flexible nephroscopy was performed. At the conclusion patients were prospectively classified as radiologically and/or endoscopically stone-free. Postoperative noncontrast CT allowed fragment classification as stone-free, 2 mm or less, 2 to 4 mm and greater than 4 mm.
Results: The average stone dimension +/- SEM was 579 +/- 77 mm(2) in 25 consecutive renal units. CT demonstrated that 15 renal units (60%) were stone-free after the primary procedure, while 2 (8%), 5 (20%) and 3 (12%) had fragments 2 or less, 2 to 4 and greater than 4 mm, respectively. Of 21 renal units considered endoscopically and fluoroscopically stone-free postoperative CT demonstrated that 6 had residual fragments, of which all were less than 4 mm. All 4 renal units not considered radiologically and endoscopically stone-free had fragments on CT. Intraoperative fluoroscopy after nephroscopy demonstrated fragments in 36% of renal units, of which after further nephroscopy 78% were stone-free on CT. The sensitivity of intraoperative imaging with reference to the gold standard of postoperative CT was 40%, 38% and 100% at thresholds of 0, 2 and 4 mm, respectively. Specificity was 100%, 94% and 95%, respectively.
Conclusions: Flexible nephroscopy combined with high magnification rotational fluoroscopy allows sensitive and specific intraoperative detection of residual fragments, enabling immediate removal or the planning of necessary second look nephroscopy.

Editorial Comment

The benefit of achieving a stone free state after surgical stone procedures has been amply demonstrated by Streem and others who showed that even small residual stones are associated with a high likelihood of stone growth, eventual development of symptoms or the need for surgical intervention (1). As such, the identification of residual fragments and aggressive removal is strongly encouraged. Unfortunately, accurate identification of residual fragments is typically performed postoperatively, necessitating a second procedure to remove remaining fragments. However, Portis and colleagues showed that the use of high magnification rotational fluoroscopy along with flexible nephroscopy could improve the detection and removal of residual fragments at the time of initial percutaneous nephroscopy and potentially reduce the need for a second operative intervention. With the use of this technique in 22 patients and 25 renal units, 7 of 9 renal units in which residual fragments were detected by high magnification fluoroscopy after endoscopic inspection were rendered stone free. Postoperative CT confirmed a stone free state in 15 of 21 renal units thought to be endoscopically and radiographically stone free, and demonstrated < 4 mm residual fragments in the remaining 6.

This technique results in a 3-4 fold higher stone free rate after initial PCNL for large stones than has been reported in series in which standard fluoroscopy and flexible nephroscopy were utilized in conjunction with rigid nephroscopic debulking at the time of initial PCNL. Pearle and colleagues achieved a 20% or 32% stone free rate depending on whether CT or flexible nephroscopy was used as the gold standard for residual

fragments (2). Consequently, the need for reoperation is substantially reduced by the use of this aggressive radiographic and endoscopic regimen.

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Appropriate Cutoff for Treatment of Distal Ureteral Stones by Single Session In Situ Extracorporeal Shock Wave Lithotripsy

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Objectives: To determine an appropriate cutoff for treatment by single session in situ extracorporeal shock wave lithotripsy for a prevesical stone by determining the differences in the efficiency quotient (EQ).
Methods: This was a review of a series of patients who underwent shock wave lithotripsy for a primary, single, prevesical stone from January 1995 to June 2003. All 153 patients were treated using a Dornier MPL 9000 lithotripter in the prone position under intravenous sedation. The stone size was measured in two dimensions (parallel and perpendicular to the long axis of the ureter). The EQ was calculated using a standard formula.
Results: Of the 153 patients, 141 (92.2%) were stone free within a mean period of 12.2 +/- 12.2 days (EQ 68.8). No significant complications occurred, and none of the patients required admission. The treatment failed in 10 patients (6.5%), who subsequently required an ancillary procedure (ureteroscopy). Statistically, we found 7 mm to be an appropriate cutoff for treatment using in situ shock wave lithotripsy. The EQ for stones greater than 7 mm and those 7 mm or smaller was 58 and 81, with a stone-free period of 13.6 +/- 12.9 and 10.9 +/- 11.6 days, respectively.
Conclusions: Ultrasound-guided shock wave lithotripsy is an efficient and safe modality for the treatment of prevesical stones 7 mm or less. Using an echo-guided lithotripter, the treatment was a radiation-free, day care procedure performed under intravenous sedation. Only 11% of our patients required repeat treatment.

Editorial Comment

The optimal treatment of distal ureteral stones remains one of the more controversial topics in endourology. Both procedures are associated with high success rates and low complication rates. In situ SWL with the Dornier HM3 has been shown in a number of series to be associated with remarkably high stone free rates and low retreatment rates, even for stones up to 15 mm in size (1,2). Although high stone free rates have also been achieved with third generation lithotripters, retreatment rates, particularly for larger stones, have been higher than in HM3 series. Akhtar & Ather compared stone free and retreatment rates for in situ SWL of distal ureteral stones ≤ 7 mm or > 7 mm in size in a retrospective analysis of 153 patients treated with a MPL9000 lithotripter.

Although stone free rates were quite high in both size categories (95% versus 89%, respectively), retreatment rates were significantly higher in the larger stone group (45% versus 11%, respectively), translating into an efficiency quotient of 81 for treatment of stones ≤ 7 mm and 58 for stones > 7mm. Although this size cutoff was chosen randomly, it provides a reasonable algorithm to guide treatment of distal ureteral calculi when considering treatment with a third generation lithotripter. For stones ≤ 7 mm in size, ureteroscopy or in situ SWL are certainly reasonable treatment options. However, for stones > 7 mm in size, the high success rate and low retreatment rate of ureteroscopy makes this treatment option more attractive then SWL if an HM3 is not available.

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ENDOUROLOGY & LAPAROSCOPY

Current Concepts in Achieving Renal Hypothermia during Laparoscopic Partial Nephrectomy

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BJU Int. 2006; 97: 342-4

Objectives: To review current methods of renal hypothermia during laparoscopic partial nephrectomy.
Methods: Review paper describing different methods of renal hypothermia during laparoscopic partial nephrectomy, including laparoscopic ice-slush, endoscopic retrograde cold saline infusion, transarterial renal hypothermia, laparoscopic cooling sheath and ancillary techniques for ischemic renoprotection.
Conclusion: Renal hypothermia is occasionally required during current laparoscopic renal procedures. Of the various techniques available to achieve laparoscopic renal hypothermia, the surface hypothermia achieved with ice-slush, although cumbersome, duplicates open surgical time-tested principles and is currently the preferred option. Better delivery systems for hypothermic solutions are needed for optimum uniform cooling of the kidney.

Editorial Comment

This paper reviews the different methods of renal hypothermia during laparoscopic partial nephrectomy and succinctly discusses the renal physiology of hypothermia and protective mechanisms from ischemia-reperfusion

injury. Not all methods have been established yet. Recent published large series of laparoscopic partial nephrectomy from different institutions have demonstrated that renal functions, as well as, oncological outcomes are comparable to open series without the need of renal hypothermia. Although ablative and reconstructive laparoscopic surgery have been growing and developing fast, fundamental questions remain unanswered; i.e. the optimal method to prevent renal ischemia-reperfusion injury when performing laparoscopic partial nephrectomy.

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Comparison of Laparoscopic Partial Nephrectomy and Laparoscopic Cryoablation for Renal Hilar Tumors

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Objectives: To compare laparoscopic partial nephrectomy (LPN) and laparoscopic cryoablation (LC) for the management of small renal tumors located near the renal hilum.
Methods: A retrospective chart review was performed on all patients who underwent LPN and LC. A total of 23 patients (12 LPN and 11 LC) had tumors located within 5 mm of the renal hilar vasculature. Patient data were retrospectively analyzed for specific parameters, including operative time, efficacy, morbidity, and postoperative course.
Results: All 23 cases were successfully completed laparoscopically. The mean operative time for LPN and LC was 2.8 hours and 2.3 hours, respectively ($P = 0.03$). The mean estimated blood loss was 197 mL for LPN and 70 mL for LC ($P < 0.01$). The analgesic requirement for those undergoing LPN and LC was 29 mg morphine equivalent and 23 mg morphine equivalent, respectively ($P = 0.41$). The hospital stay for patients in the LPN and LC groups was 3.9 days and 3.2 days respectively ($P = 0.55$). No intraoperative complications occurred in either group. Six patients experienced nine complications in the LPN group. The complications included hemorrhage in 1, fever in 1, ileus in 1, urinary tract infection in 1, urine leak in 4, and transient postoperative neuropathy in 1. The LC group had no postoperative complications. In the LC cohort, no disease recurrence developed during the 11.3 months of follow-up. No positive margins were found in the LPN cohort, and with a mean follow-up of 12 months, none have developed recurrence.
Conclusions: LPN for hilar tumors is a reasonable surgical option but carries an increased risk of urine leak. LC for hilar tumors has a shorter operative time and results in significantly fewer postoperative complications. Long-term follow-up data for both techniques remain unavailable.

Editorial Comment

Recent data has shown that cryoablation is an emergent effective treatment technology against renal cell cancer. The authors demonstrate the application of such technology in extremely difficult cases (hilar lesions, 5 mm from the renal vessels) without the need of complex reconstructive laparoscopic steps, as in laparoscopic partial

nephrectomy. They concluded that laparoscopic cryoablation is a safe procedure that can be applied towards hilar small renal tumors with less complications compared to laparoscopic partial nephrectomy.

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IMAGING

Prediction of Organ-Confined Prostate Cancer: Incremental Value of MR Imaging and MR Spectroscopic Imaging to Staging Nomograms

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Purpose: To assess retrospectively the incremental value of endorectal coil magnetic resonance (MR) imaging and combined endorectal MR imaging-MR spectroscopic imaging to the staging nomograms for predicting organ-confined prostate cancer (OCPC).
Materials and Methods: The institutional review board approved this HIPAA-compliant study and issued a waiver of informed consent for review of the MR reports and clinical data. Between November 1, 1999, and November 1, 2004, 229 patients underwent endorectal MR imaging and 383 underwent combined endorectal MR imaging-MR spectroscopic imaging before radical prostatectomy. Mean patient age was 58 years (range, 32-74 years). MR studies were interpreted prospectively by 12 radiologists who were informed of patients' clinical data. On the basis of the MR reports, the risks of extracapsular extension, seminal vesicle invasion, and lymph node metastasis were scored retrospectively from 1 to 5; the highest score was subtracted from 6 to determine a score (from 1 to 5) for the likelihood of OCPC on MR studies. The staging nomograms were used to calculate the likelihood of OCPC on the basis of serum prostate-specific antigen level, Gleason grade at biopsy, and clinical stage. Histopathologic findings constituted the reference standard. Logistic regression was used to estimate the multivariable relations between OCPC and MR findings. The area under the receiver operator characteristic curve was calculated for each model. The jackknife method was used for bias correction.
Results: MR findings contributed significant incremental value (P </= .02) to the nomograms in the overall study population. The contribution of MR findings was significant in all risk groups but was greatest in the intermediate- and high-risk groups (P < .01 for both). Accuracy in the prediction of OCPC with MR was higher when MR spectroscopic imaging was used, but the difference was not significant.
Conclusion: Endorectal MR imaging and combined endorectal MR imaging-MR spectroscopic imaging contribute significant incremental value to the staging nomograms in predicting OCPC.

Editorial Comment
Following strict criteria of macroscopic disease, endorectal MR imaging associated with superficial phased array coil, allows an overall accuracy of 83% and specificity of 98 % for detecting extraprostatic disease. In this

very well designed study 383 patients underwent endorectal MR imaging combined with MR spectroscopic imaging, and 229 underwent endorectal MR imaging alone. Mean patient age was 58 years (range, 32–74 years). None of the patients received neoadjuvant hormonal or radiation therapy prior to surgery. Pathological diagnosis of prostate cancer was made at biopsy in all patients. Clinical stage (determined by means of digital rectal examination), serum PSA level, and Gleason grade in the biopsy specimen, as well as MR data, were recorded retrospectively from the patients' medical records by two coauthors. Overall, in the prediction of OCPC, the area under the ROC curve for the staging nomograms was 0.80, while the area under the ROC curve for the staging nomograms plus MR findings was 0.88; the difference was significant ($P < .01$). The incremental value of MR findings to the staging nomograms was significant in all three risk groups, although it was greater in the intermediate- and high-risk groups ($P < .01$ for both) than in the low-risk group ($P = .02$). In the combined endorectal MR imaging–MR spectroscopic imaging group, the areas under the ROC curves were 0.81 for the staging nomograms and 0.90 for the staging nomograms plus MR findings; the difference was significant ($P < .01$). The authors nicely show that, the addition of MR findings to the " Partin Tables" (2001 version), significantly improved the prediction of OCPC for the overall patient population ($P < .01$).

Additional advantages of MR imaging combined with MR spectroscopy is the ability of these imaging methods to predict the risk of positive surgical margins, demonstrate the exact site of extraprostatic extension and to improve the surgeon's decision to preserve or to resect the neurovascular bundle during radical prostatectomy. Based on our limited experience, using routinely combined endorectal MR imaging with MR spectroscopy for staging prostatic cancer, in the last 16 months, we agree with the authors conclusion. Endorectal MR imaging should be included into future staging nomograms for the prediction of OCPC particularly in those patients with intermediate and high risk for presenting extraprostatic disease. Obviously further multicenter confirmatory studies are still mandatory.

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Retained Seminal Vesicles after Radical Prostatectomy: Frequency, MRI Characteristics, and Clinical Relevance

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Objective: Changes after radical prostatectomy (RP) may present potential pitfalls in the interpretation of pelvic MRI studies in post-RP patients. One such change is retained seminal vesicles (SVs). The purpose of this study was to characterize the MRI features and evaluate the frequency of retained SV remnants in patients after RP.
Conclusion: Retained SV remnants are a common finding after RP. Most are fibrotic distal tips. Recognition of SV remnants may prevent their misinterpretation as local recurrences.

Editorial Comment
During retropubic prostatectomy, among others surgical modifications, seminal vesicle sparing have been performed in order to prevent injury to vital vascular and neural structures and to obtain a better chance of

continence and potency, with minimal risk of residual tumor. Despite improvements in detection of early prostate cancer and in surgical procedures, approximately 25% of patients develop biochemical recurrence after radical prostatectomy (1). The clinicians usually use PSA kinetics in order to differentiate local recurrence from mestastatic disease. Since MR imaging, particularly with endorectal coil, may be used in the evaluation of the postprostatectomy bed, for the detection of recurrent disease, it is of crucial importance to adequately differentiate retained SV remnants from recurrent disease. In this interesting study, the authors' detected SV remnants in 52 (20%) of 263 of the patients examined, with an additional 99 patients (38%) having findings suggestive of retained fibrotic SV tips. In 22 (8%) of the patients examined, the seminal vesicles were retained at more than half their presurgical size. The appearance of SV remnants may persist for years after surgery. SV remnants showing low signal intensity on T2-weighted images ranged from intermediate to low signal intensity, compared with the signal intensity of water. The decreased signal intensity is assumed to be related to differing degrees of fibrosis. Fibrotic, SV remnants and retained fibrotic SV tips were found most commonly in the superolateral aspects of the prostatectomy fossa. The authors also pointed out that, although, retained SVs do not secrete PSA, they tend to pull down along the lateral aspects of the rectum and then may be palpated on digital rectal examination as small firm nodules and may be mistaken for a local recurrence. Another point to be considered is that local recurrence may occur within retained SVs.

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UROGENITAL TRAUMA

Reasons to Omit Digital Rectal Exam in Trauma Patients: No Fingers, No Rectum, No Useful Additional Information

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J Trauma. 2005; 59: 1314-9

Background: Performance of digital rectal examination (DRE) on all trauma patients during the secondary survey has been advocated by the Advanced Trauma Life Support course. However, there is no clear evidence of its efficacy as a diagnostic test for traumatic injury. The purpose of this study is to analyze the value of a policy mandating DRE on all trauma patients as part of the initial evaluation process and to discern whether it can routinely be omitted.

Methods: Prospective study of patients treated at a Level I trauma center. Clinical indicators other than DRE (OCI) denoting gastrointestinal bleeding (GIB), urethral disruption (UD), or spinal cord injury (SCI) were sought and correlated with DRE findings suggesting the same. Impression of the examining physician as to the need and value of DRE was also studied. Patients with a Glasgow Coma Scale Score (GCS) of 3 and pharmacologically paralyzed were excluded from the SCI analyses. UD analysis included only males.
Results: In all, 512 cases were studied (72% male, 28% female) ranging in age from 2 months to 102 years. Thirty index injuries were identified in 29 patients (6%), 17 SCI (3%), 11 GIB (2%), and 2 UD (0.4%). DRE findings agreed positively or negatively with one or more OCI of index injuries in 93% of all cases (92% seeking SCI, 90% seeking GIB, 96% seeking UD). Overall, negative predictive value of DRE was the same as that of OCI, 99% (SCI 98% versus 99%, GIB, 97% versus 99%, UD both 100%). Positive predictive value for DRE was 27% and for OCI 24% (SCI 47% versus 44%, GIB 15% versus 18%, UD 33% versus 6%). Efficiency of DRE was 94% and OCI was 93%. For confirmed index injuries, indicative DRE findings were associated with 41% and OCI 73% (SCI 36% versus 79%, GIB 36% versus 73%, UD 50% versus 100%). OCIs were present in 81% of index injury cases. In all index injury cases where OCIs were absent, positive DRE findings were also absent. DRE was felt to give additional information in 5% of all cases and change management in 4%. In cases where the clinician felt DRE was definitely indicated (29%) it reportedly gave no additional information in 85% and changed management in 11%.
Conclusion: DRE is equivalent to OCI for confirming or excluding the presence of index injuries. When index injuries are demonstrated, OCI is more likely to be associated with their presence. DRE rarely provides additional accurate or useful information that changes management. Omission of DRE in virtually all trauma patients appears permissible, safe, and advantageous. Elimination of routine DRE from the secondary survey will presumably conserve time and resources, minimize unpleasant encounters, and protect patients and staff from the potential for further harm without any significant negative impact on care and outcome.

Editorial Comment

The old teaching mantra in trauma management is that the only trauma patient who should not get a digital rectal exam (DRE) is either the patient who has no rectum or the doctor who has no fingers. This interesting paper by Esposito et al questions the overall value (yield) of the trauma DRE. Traditionally, the trauma DRE assesses for signs that suggest either rectal injury, urethral disruption injury or spinal cord injury. Rectal injury is suggested on DRE by occult blood (hemoccult test positive) in the rectal vault or loss of rectal wall integrity. Urethral disruption injury is suggested by a “high riding prostate”. Spinal cord injury is suggested by loss of or decreased rectal sphincter tone, and thus disruption of the S4-S5 spinal arc. The authors contend that related clinical findings and signs, such as blood at the urethral meatus, scrotal hematoma, perineal hematoma, and type of pelvic fracture are more reliable as positive predictors of injury then the DRE. In this study, DRE was found to add information in only 5% of cases and changed management in only 4%; and this was only significant for rectal tone (SCI) and rectal bleeding (rectal injury) and not for urethral injury. I have always felt that a labeled “high riding prostate” was a misnomer. Usually the trauma DRE is performed by the most inexperienced examiner and to them, all prostates feel high riding. The issue of poor inter-rater reliability to prostate DRE has been addressed by Smith & Catalona (1). With pelvic fracture and urethral disruption the pelvis fills with blood, the planes are obliterated and the prostate can be difficult to palpate. Thus a non-palpable prostate would seem to be more predictive of possible urethral injury (2). A well designed multi-institution study would put this issue at rest.

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Ultrasound Detection of Blunt Urological Trauma: A 6-Year Study

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The objective of this study was to assess the utility of emergency ultrasonography in the detection of blunt urological injury. A retrospective review was conducted of all consecutive emergency blunt trauma ultrasonograms (US) obtained at a level I trauma centre from January 1995 to January 2001. Among the 4320 emergency ultrasonograms performed, 596 patients (14%) had intraabdominal injury and, of these, 99 patients (17%) had urological injuries. The sensitivity of ultrasound for all urological injuries was 67%, and specificity was 99.8%. For isolated urological injuries, sensitivity and specificity were 55.6 and 99.8%, respectively. Ultrasound was most accurate in the detection of grade III renal injuries, identifying 14/15 (93%), and 13 underwent laparotomy. For isolated urological injuries, 15 of 25 (60%) patients with a true-positive US underwent laparotomy compared to 3 of 20 (15%) with a false-negative US. Isolated urological injury was significantly associated with an ultrasonographic pattern of free fluid in the left upper quadrant and the left pericolic gutter (odds ratio=55.1; $P < 0.001$), followed by isolated fluid in the left pericolic gutter (odds ratio=8.6; $P = 0.04$). Although emergency ultrasonography is useful in the triage of patients with blunt urological trauma, it may miss significant urological injury requiring further intervention. As most renal injuries may be managed non-operatively, further studies such as contrast-enhanced CT or angiography should be obtained in the stable patient with suspected blunt urological injury.

Editorial Comment

Computed tomography with intravenous contrast is the gold standard when imaging the injured kidney. In this day and age, most CT scanners are quick and helical, and thus without separate delayed images, injuries to the collecting system or ureteropelvic junction can be missed. Although CT has its clear advantages, most of the world does not have the luxury of a CT scan available and working 24 hours a day, in every trauma center. An accepted alternative to CT has been a complete intravenous urogram, followed by possible angiography. This interesting paper by McGahan et al explores the value of US as a screening tool for renal injuries. The manuscript, however, is muddied by its statistics, wordiness, and nonstandard renal trauma grading scale.

Arguably, ultrasound (US) is relatively cheap, safe, rapid, portable, and non-invasive method for imaging the abdomen. FAST (focused assessment with ultrasonography in trauma) has become an accepted method for evaluating the blunt trauma patient for possible intra-abdominal injuries. The value of US, however, is operator dependent. In properly trained hands, US have a sensitivity and specificity for detecting the presence of hemoperitoneum (suggesting intra-abdominal injury) as diagnostic peritoneal lavage (DPL). Ultrasound can be done at the bedside in the resuscitation area while simultaneously performing other diagnostic or therapeutic procedures. The indications for abdominal US are the same as for DPL.

The true value to FAST is in the evaluation for blood in the pericardial sac, hepatorenal fossa, splenorenal fossa, and the pelvis. A second or control scan is then performed 30 minutes later. The control scan is done to detect progressive hemoperitoneum in patients with a slow bleeding rate. As a retroperitoneal organ, renal trauma blood and urine (free-fluid) are confined to Gerota's fascia and the retroperitoneum. With kidney trauma associated free fluid is absent up to 1/2 the time. Free fluid noted with renal injuries is more likely to be free fluid from associated intra-abdominal injuries then from the kidney injury. This means that FAST must rely on parenchymal evaluation for grading of a renal injury. US imaging can be severely limited by obesity, subcutaneous air, and previous abdominal operations. Further limitations of US are its inability to distinguish between a urine leak and blood, and inability to reliably assess the vascularity of the kidney. Although not currently readily available, there is good promise that micro-bubble, contrast enhanced US may improve kidney parenchymal evaluation. Overall, FAST seems to be of value as a tool for triaging the unstable trauma patient, but when it comes to evaluating the stable kidney injured patient, US is not ready for prime time.

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PATHOLOGY

Risk of Prostate Cancer on First Re-Biopsy within 1 Year Following a Diagnosis of High Grade Prostatic Intraepithelial Neoplasia is Related to the Number of Cores Sampled

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Purpose: We determined the influence of the extent of needle biopsy sampling on the detection rate of cancer on first biopsy within 1 year following a diagnosis of HGPIN.
Materials and Methods: We identified 791 patients with HGPIN on the initial biopsy who had a followup biopsy within 1 year of their diagnosis. The mean interval from diagnosis of HGPIN to re-biopsy was 4.6 months. In the initial biopsy with HGPIN, 323 men had 8 or more cores (median 10, range 8 to 26) and 332 men had 6 core biopsies.
Results: In the 6 core initial sampling group, the risk of cancer on re-biopsy was 20.8% compared to only 13.3% following an initial 8 core or more sampling ($p = 0.011$). With 6 core biopsies for both the initial and re-biopsy the risk of cancer was 14.1% (group 1). With an initial 6 core biopsy and 8 core or more biopsy on followup, the risk of cancer was 31.9% (group 2). With 8 core or more biopsy sampling for both initial and repeat biopsies, the risk for cancer was 14.6% (group 3). The differences between groups 1 and 3 as compared to group 2 were statistically significant ($p = 0.001$ and $p < 0.0001$, respectively).
Conclusions: With relatively poor sampling (6 cores) on the initial biopsy, associated cancers are missed resulting in only HGPIN on the initial biopsy, and with relatively poor sampling on re-biopsy there is also a relatively low risk of finding cancer on re-biopsy (group 1). With poor sampling on the initial biopsy and better sampling on re-biopsy, some of these initially missed cancers are detected on re-biopsy yielding a higher detection of cancer (group 2). Sampling more extensively on the initial biopsy detects many associated cancers, such that when only HGPIN is found they often represent isolated HGPIN. Therefore, re-biopsy even with good sampling

does not detect many additional cancers (group 3). Our study demonstrates that the risk of cancer on biopsy within 1 year following a diagnosis of HGPIN (13.3%) is not that predictive of cancer on re-biopsy if good sampling (8 or more cores) is initially performed. For patients diagnosed with HGPIN on extended initial core sampling, a repeat biopsy within the first year is unnecessary in the absence of other clinical indicators of cancer.

Editorial Comment

In 2005 were published the recommendations on prognostic factors in prostate needle biopsies of an International Consultation Organized by the WHO Collaborating Center for Urologic Tumors (1). The recommendations included: 1) As the clinical significance or biologic relevance of low-grade prostatic intraepithelial neoplasia is not known and appears insignificant, this diagnosis should not be made in needle biopsies; 2) The diagnosis of high-grade prostatic intraepithelial neoplasia (HGPIN) is predictive of subsequent cancer detection in 27% to 31% (recent data) and 30% to 60% of patients, respectively; 3) Owing to the lower predictive value for cancer in recent years, attention has focused on HGPIN parameters in needle core biopsies that may be more useful in the subsequent detection of cancer. Whether the extent of involvement of HGPIN is a better predictor of subsequent prostate cancer is controversial as well as the pattern of HGPIN (micropapillary, cribriform, etc.).

In the study surveyed, the risk of cancer on biopsy within 1 year following a diagnosis of HGPIN was 13.3% in cases of an initial 8 core or more sampling. This percentage is lower than 27% to 31% of other recent studies. This study emphasizes the trend for a substantially decreasing in subsequent cancer detection if HGPIN is seen in extended biopsies. The authors conclude that for patients diagnosed with HGPIN on extended initial core sampling, a repeat biopsy within the first year is unnecessary in the absence of other clinical indicators of cancer.

Reference

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Relationship between Primary Gleason Pattern on Needle Biopsy and Clinicopathologic Outcomes among Men with Gleason Score 7 Adenocarcinoma of the Prostate

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Urology. 2006; 67: 115-9

Objectives: To examine the relationship among needle biopsy primary grade, prostatectomy grade, and postprostatectomy biochemical recurrence among men with Gleason score 7 disease.
Methods: We identified 320 men with Gleason score 7 tumors on prostate biopsy treated with radical prostatectomy between 1991 and 2001 by a single surgeon. None of these patients had received neoadjuvant or adjuvant hormonal therapy or radiotherapy. The chi-square test and Kaplan-Meier method were used to evaluate the correlation among biopsy Gleason score, prostatectomy Gleason score, and biochemical recurrence.

Results: A total of 252 (79%) and 68 (21%) men had primary Gleason pattern 3 and 4 identified on needle biopsy, respectively. Of the patients with Gleason pattern 3+4 tumors on biopsy, 24% were upgraded to primary pattern 4 or more on final pathologic analysis. Of the patients with Gleason pattern 4+3 tumors on biopsy, 47% were downgraded to primary pattern 3 or less on final pathologic analysis. The actuarial risk of biochemical prostate-specific antigen recurrence was significantly lower among patients with Gleason pattern 4+3 on biopsy, if the prostatectomy Gleason score was downgraded to 3+4 or less ($p = 0.03$).
Conclusions: Approximately 47% of men with a diagnosis of Gleason pattern 4+3 on needle biopsy are downgraded at radical prostatectomy and will have biochemical prostate-specific antigen recurrence-free outcomes similar to patients originally diagnosed with Gleason pattern 3+4 adenocarcinoma. This group of patients may benefit from definitive treatment such as radical prostatectomy for management of their disease.

Editorial Comment

Gleason score 7 may result from 3+4=7 or 4+3=7. Data regarding the importance of the percentage of Gleason 4 pattern in Gleason score 7 tumors are rapidly expanding but still controversial (1). In recently generated nomograms, patients with Gleason scores of 4+3 and 3+4 are stratified differently, underscoring the importance of the relative amount of pattern 4 (2). Whether or not the actual percentage of pattern 4 tumor should be included in the report is not clear based on the data published to date and, if this emerges as an important parameter, meaningful discriminatory cut-off points for the percentage of pattern 4 will need to be defined.

In the article surveyed, most frequently there is downgrading of patients originally graded as Gleason pattern 4+3=7. In 24% of the patients with Gleason pattern 3+4 tumors on biopsy were upgraded to primary pattern 4 or more on final pathologic analysis, and approximately 47% with a diagnosis of Gleason 4+3 on needle biopsy were downgraded at radical prostatectomy. The latter group had biochemical prostate-specific antigen recurrence-free outcomes similar to patients originally diagnosed with Gleason pattern 3+4 adenocarcinoma.

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INVESTIGATIVE UROLOGY

Urinary Hyaluronan as a Marker for the Presence of Residual Transitional Cell Carcinoma of the Urinary Bladder

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Eur Urol. 2006; 49: 71-5

Objective: The purpose of this report is to evaluate the value of urinary hyaluronan (HA) as a maker of residual transitional cell carcinoma (TCC).
Patients and Methods: Urine samples were collected from 83 patients hospitalized for transurethral resection (TUR). Patient ages ranged from 36 to 86 years. Samples were taken both before and after surgery. HA analysis was performed using an "ELISA-like" fluorometric assay.
Results: Patients were divided into two groups: a control group whose previous diagnosis was negative for tumors (n=22) and another with positive diagnosis for tumors (n=61) which was further sub-divided into with and without residual tumor. After the second procedure 47 individuals did not display residual tumor, whereas 14 (23%) did. The average HA in the control group was 8.3 microg/L pre- and 7.1 post-operatively, hence, no change occurred (p=0.471). In the group with TCC patients, the HA dropped from 885.5 microg/L to 215.3 microg/L with residual tumors and from 234.3 microg/L to 11.2 microg/L for those without residual tumor. Using a cut-off value of 20 microg/L, the sensitivity to detect residual tumor is 92.9% and specificity is 83%.
Conclusion: HA in addition to being one of the best markers for the initial evaluation of bladder carcinoma can be used to determine the presence of a residual tumor. This is associated with poor prognosis.

Editorial Comment

This is a welcome from lab to bedside article demonstrating that the glycosaminoglycan (GAG) hyaluronan is a good marker for detecting the presence of residual transitional cell carcinoma of the bladder. In addition to traditional methods such as cystoscopy and urine cytology, hyaluronan detection is promise. Although the technique for hyaluronan analysis is being more widely used, unfortunately, it is not available yet in the majority of hospitals.

In every study concerning GAG urinary analysis it is important to take into account some variations that we have detect in our own laboratory. When investigating whether the menstrual cycle affects urinary GAG excretion in normal young women, we found a significant increase in total urinary GAG excretion in the first half of the cycle, which paralleled the normal increase in serum estrogen levels that occurs at this phase (1). In general, estrogen inhibits the synthesis of extracellular matrix molecules by many mesenchymal cell types, such as vascular smooth muscle cells. Such inhibition would shift normal proteoglycan turnover toward degradation, which could explain the increase in GAG urinary excretion that was found in the first half of the cycle. It was not observed significant variation in the relative concentration of sulfated GAG during the different phases of the cycle. On the other hand, our results indicate that heparan sulfate was the prevailing urinary GAG during the whole cycle. Because heparan sulfate is the most abundant GAG in the glomerulus, the present findings support the hypothesis that renal structures are one of the main sources of urinary GAG.

Since these previous results (1) indicate that urinary GAG excretion during the normal menstrual cycle has a significant and consistent variation, studies evaluating GAG excretion in women could lead to misleading or erroneous results if comparisons were made among samples taken from different phases of the cycle. This may be indeed the reason underlying the inconsistent results in previously published reports concerning GAG urinary excretion in various diseases, such as interstitial cystitis, lithiasis, genitourinary tumors, etc.

The authors should be commended for that important investigative work with immediate clinical application, and for such more than welcome integration between basic science and clinical urology.

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Combination of Phosphodiesterase-5 Inhibitors and Alpha-Blockers in Patients with Benign Prostatic Hyperplasia: Treatments of Lower Urinary Tract Symptoms, Erectile Dysfunction, or Both?

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As the prevalence of both erectile dysfunction (ED) and lower urinary tract symptoms (LUTS) increases with age, physicians could be in the position to manage these two conditions simultaneously. Moreover, medical therapies for either one of these conditions can affect the other and this should be carefully considered when making treatment decisions. Pharmacotherapy for benign prostatic hyperplasia (BPH)/LUTS can cause side- effects affecting sexual function. Hence, 5alpha-reductase inhibitors such as finasteride and dutasteride are associated with a greater risk of ED, ejaculatory disorders (EjD) and decreased libido than is placebo. Among alpha (1)-adrenergic blockers, tamsulosin is associated with an increased risk of EjD. However, some alpha (1)-adrenergic blockers can also have a positive impact on erection. This is the case for alfuzosin, which has been shown to enhance erectile function in experimental models, probably by reducing the sympathetic tone and thus relaxing corpus cavernosum smooth muscle cells. Phosphodiesterase 5 (PDE-5) inhibitors are commonly used to treat ED. There is increasing evidence that they might also have a beneficial effect on LUTS, probably through the nitric-oxide pathway. Nitric oxide is an important mediator of the relaxation of isolated bladder and urethral smooth muscle, and could modulate prostatic smooth muscle tone. Alpha (1)-adrenergic blockers and PDE-5 inhibitors can therefore have a positive impact on both ED and LUTS. Although placebo-controlled studies are needed to confirm the impact of these drugs, alone or combined, on both ED and LUTS, this reinforces the need for a common approach to managing these two highly prevalent and bothersome conditions.

Editorial Comment

Lower urinary tract symptoms (LUTS) and erectile dysfunction (ED) association is a very much discussed theme in urology practice and many papers have been published during the last few years. Those involved with clinical practice have been learning from patients that when they take a phosphodiesterase-5 inhibitor they void better. Also, we learned from patients that when they are under treatment for LUTS with alpha-blockers, they void better and they improve their sexual function. Why this occur? Although it is hard to find placebo controlled studies in the literature on this topic, Doctor Carson provide us with a wonderful and thorough review on the current knowledge on combination of phosphodiesterase-5 inhibitors and alpha-blockers in patients with benign prostatic hyperplasia. Dr. Carson concluded that the concept of improving both lower urinary tract symptoms and erectile dysfunction with phosphodiesterase-5 inhibitors and alpha-blockers reinforces the need to have a common approach for managing this situation. I strongly recommend this paper for all urologists and other physicians dealing with LUTS and ED.

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RECONSTRUCTIVE UROLOGY

Growth of Bone Marrow Stromal Cells on Small Intestinal Submucosa: An Alternative Cell Source for Tissue Engineered Bladder

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Objective: To assess the potential use of bone marrow stromal cell (BMSC)-seeded biodegradable scaffold for bladder regeneration in a canine model, by characterizing BMSCs and comparing them to bladder smooth muscle cells (SMCs) by immunohistochemistry, growth capability, and contractility.
Materials and Methods: Bone marrow was taken by direct needle aspiration from the femurs of five beagle dogs for the in vitro study. Mononuclear cells were isolated by Ficoll-Paque density gradient centrifugation and cultivated in medium 199 with 10% fetal bovine serum. BMSCs were characterized by cell proliferation, in vitro contractility, immunohistochemical analysis, and the growth pattern on small intestinal submucosa (SIS) scaffolds compared to bladder SMC cultures from the same dogs. Another six dogs had a hemicystectomy and bladder augmentation with BMSC-seeded (two), bladder cells including urothelial cells plus SMC-seeded SIS (two) and unseeded SIS scaffolds (two). The six dogs were followed for 10 weeks after augmentation.
Results: In vitro BMSCs had a significant contractile response to calcium-ionophore, with a mean (sem) 36 (2) %, relative contraction ($P < 0.01$), which was similar to bladder SMCs but markedly different from fibroblasts. BMSCs also expressed alpha-smooth muscle actin by immunohistochemical staining and Western blotting, but did not express desmin or myosin. In vivo, both BMSC-seeded and bladder cell-seeded SIS grafts had solid smooth-muscle bundle formation throughout the graft.
Conclusions: BMSCs had a similar cell proliferation, histological appearance and contractile phenotype as primary cultured bladder SMCs. SIS supported three-dimensional growth of BMSCs in vitro, and BMSC-seeded SIS scaffold promoted bladder regeneration in a canine model. BMSCs may serve as an alternative cell source in urological tissue engineering.

Editorial Comment

During recent years, biodegradable scaffolds demonstrated a good source for bladder wall regeneration. Some performed better than others, such as polyglycolic acid and other produced scaffolds, in comparison to small intestine submucosa (SIS) or organ specific acellular matrix (bladder acellular matrix graft (BAMG)) which demonstrated the potential to support tissue regeneration. All have in common that the cells migrate from the host to the center of the scaffold. This might be too slow in that fibrotic changes can happen in the center of the implant before the migration line reaches the center. The result is a scar without function or even worse, shrinking tissue dependent.

To avoid this effect, cell seeding prior to the implantation gives faster recovery, function and reduction of possible scaring. Zhang et al. differentiated bone marrow stromal cells (BMSC's) into smooth muscle cells. For comparison, they cultured bladder smooth muscle cells (SMC's) of the same animal. In addition to an almost equal histological outcome, the intensity for α-smooth muscle actin was brighter in the differentiated BMSC's with a better contractility in Ca^{2+}-ionophore conditions. Both types of cells grew on and into the SIS scaffold in several layers. Finally augmented to the bladder, cell-matrix implants demonstrated bladder wall regeneration, which was better for BMSC differentiated cells throughout the complete SIS.

The comparison between BMSC and bladder SMC nicely demonstrates the advantage of bone marrow-derived stromal cells, which do have the potency to differentiate myogenically. The seeded scaffold regenerates faster in comparison to the unseeded, but the results are preliminary because each in-vivo group consists of just two animals. The disadvantage is the requirement of 10% fetal bovine serum, which is not in accordance with the principles of Good Medical Practices (GMP) and currently makes impossible to introduce this technique into the clinic.

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Cyanoacrylic Glue: A Minimally Invasive Nonsurgical First Line Approach for the Treatment of Some Urinary Fistulas

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Purpose: We evaluated the adaptability and the efficacy of cyanoacrylic glue for the conservative treatment of urinary fistulas of different etiologies using an endoscopic, percutaneous or endovaginal approach.
Materials and Methods: From May 1998 to July 2004, 13 patients with long lasting iatrogenic and/or inflammatory urinary fistulas were treated conservatively with endoscopic, percutaneous or endovaginal application of 1 to 3 cc of cyanoacrylic glue.
Results: The complication rate in this cohort of 13 patients was low. Occlusion therapy failed in 2 genitourinary fistulas, which were wider (diameter greater than 1 cm) and short. In the remaining 11 cases, urinary fistulas were successfully sealed and at a median followup of 35 months, no relapses were observed.
Conclusions: Cyanoacrylic glue is suitable for endoscopic, percutaneous and endovaginal use. This occlusion therapy represents a safe and minimally invasive approach that might be offered as a first line option for the treatment of urinary fistulas, especially narrow and long tract fistulas.

Editorial Comment

After failed conservative therapy (at least by two months catheterization), Muto et al. treated iatrogenic and/or inflammatory urinary fistulas with the use of cyanoacrylic glue. The established therapeutic approach in all reported cases (anastomotic neovesicoilial-, neovesicourethral-, anastomotic neovesivocutaneuos-, prostatoperineal-, vesicosigmoid and vesicovaginal-fistula) is open surgery. In times where economic aspects play an increasing role in medicine, new minimal invasive approaches with decreased hospitalization and surgical time needs to be evaluated. In recent times, new sealants became available and modified endoscopic techniques promised a satisfying result in fistula repair. Independent of fistula location and diameters (from 0.5 – 2.0 cm), 13 patients were treated with the use of cyanoacrylic glue. After a median follow-up of 35 months, 11

patients (85%) had successful outcomes. Treatment failed in 2 patients with short fistulas larger than 1.5 and 2.0 cm in diameter. Occlusion therapy represents a safe and minimally invasive approach that may be offered as a first option for fistulas of the urinary tract with a diameter less than 1.5 cm.

Those iatrogenic fistulas might be prevented by the use of Gelatine Matrix Haemostatic Sealant (GMHS). GMHS with thrombin is used in surgical procedures to adjunct haemostasis when control of bleeding by conventional procedures is ineffective or impractical. In addition, the stable matrix expands up to 20% in volume when in contact with blood, resulting in a closure of the access tract and compressing the surrounding tissue. Recently, we used this sealant very successful close to the vesicourethral anastomosis (radical prostatectomy) or the neovesicourethral anastomosis (cystoprostatectomy) as an additional sealant after PCNL (1) and mini-PCNL (2). This modified technique might help to prevent iatrogenic induced epithelialized urinary fistula. Muto et al. report offers a new choice to treat occurred ones less invasive.

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UROLOGICAL ONCOLOGY

Predicting Recurrence and Progression in Individual Patients with Stage Ta T1 Bladder Cancer Using EORTC Risk Tables: A Combined Analysis of 2596 Patients from Seven EORTC Trials

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Eur Urol. 2006; 49: 466-77

Objectives: To provide tables that allow urologists to easily calculate a superficial bladder cancer patient's short- and long-term risks of recurrence and progression after transurethral resection.
Methods: A combined analysis was carried out of individual patient data from 2596 superficial bladder cancer patients included in seven European Organization for Research and Treatment of Cancer trials.
Results: A simple scoring system was derived based on six clinical and pathological factors: number of tumors, tumor size, prior recurrence rate, T category, carcinoma in situ, and grade. The probabilities of recurrence and progression at one year ranged from 15% to 61% and from less than 1% to 17%, respectively. At five years, the probabilities of recurrence and progression ranged from 31% to 78% and from less than 1% to 45%.
Conclusions: With these probabilities, the urologist can discuss the different options with the patient to determine the most appropriate treatment and frequency of follow-up.

Editorial Comment

The risk of superficial bladder cancer to recur or to progress is relatively well known. But how high is this risk exactly? Which factors contribute to recurrence, and, more importantly, to progression? How can the risks for an individual patient be calculated according to his or her individual risk factors?

Clearly, the urologist would like to have nomograms at hand to help with these tasks – similar to the well-known Partin tables for prostate cancer.

This hope became reality with the important work from Sylvester and coworkers. From the large database of the EORTC study group they calculated risk factors for superficial bladder cancer and created a model where the risk factors were evaluated in uni- and multivariate statistics. A scoring system helps to assess the probability of an individual patient for recurrence and progression. Interestingly, with regard to progression the recurrence status at the first follow-up cystoscopy is (next to CIS status) of prognostic importance. Only 8.7% of patients without a 3 month's recurrence progressed, whereas 25.6% with a recurrence at 3 months suffered later progression.

This paper is highly recommended reading for every urologist dealing with urothelial cancer.

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Prevention of Bladder Cancer: A Review

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Eur Urol. 2006; 49: 226-34

Introduction: Bladder cancer represents an ideal tumor model to test and apply cancer prevention strategies. In addition to reviewing the epidemiology of transitional cell carcinoma (TCC), we review the current status and the future directions of bladder cancer prevention.
Materials and Methods: A literature review of peer-reviewed articles which address bladder cancer prevention was performed.
Results: Pre-clinical and limited clinical data suggest that bladder cancer is responsive to efforts to delay or prevent its development in at-risk patients, and in reducing the risk of recurrence in patients with established disease. Many epidemiologic studies, however, investigating natural products, such as vitamins and herbal compounds, lack conclusive evidence of their chemopreventive effects.
Conclusions: While many agents hold promise in the prevention of bladder cancer, none currently can be recommended as proven chemoprevention strategies. Improving the accuracy of patient risk assessment and identification of surrogate endpoint biomarkers are crucial to the testing of these strategies. Efficient study design will ensure rapid and substantial advances in the chemoprevention of bladder cancer.

Editorial Comment

Doctor, what can I do to prevent my risk of bladder cancer?

These or similar questions might not be so easily answered given the amount of conflicting data on this topic. Reading the review of Leppert and coworkers might give some help. The well-known data e.g. on smoking

and occupational exposure are summarized and commented, and many new information on dietary changes (fat, soy bean, vitamins, selenium) and nonsteroidal anti-inflammatories are given. With this paper at hand, a well-founded answer to the above question is possible.

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FEMALE UROLOGY

A Magnetic Resonance Imaging-Based Study of Retropubic Haematoma after Sling Procedures: Preliminary Findings

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BJU Int. 2005; 96: 1067-71

Objective: To determine, using magnetic resonance imaging (MRI), the incidence of retropubic haematoma and any associated clinically significant effects after a xenograft (porcine dermis) sling (XS) or the tension-free vaginal tape (TVT) procedure.
Patients and Methods: Between October 2003 and March 2004, 24 consecutive patients presenting with stress urinary incontinence (SUI) were enrolled in this prospective study; 12 each underwent an XS or TVT procedure. A vaginal balloon pack was used for only 3 h after XS and not after TVT. All patients had pelvic MRI 6-8 h after surgery. The primary outcome measure was the incidence and distribution of retropubic haematoma after each sling technique. Secondary outcome measures included the interval to the first three spontaneous voids, the bladder emptying efficiency of the first three voids, a visual analogue scale pain score at 24 h after surgery, and the short-term (6-month) cure rate for SUI.
Results: Overall, six (25%) patients (four XS and two TVT) developed a retropubic haematoma. Most commonly, they spread along the right paravesico-urethral space between the right half of the levator ani and the bladder neck. Patients with large haematomas took significantly longer to void (median 14.5 vs 6.0 h, P = 0.048). There was no difference in pain score in patients with or with no haematoma. None of the patients had clinically detectable haematomas in the suprapubic wound. All six patients with haematomas were cured or improved at the 6-month follow-up.
Conclusions: MRI is a useful noninvasive method for detecting retropubic haematomas soon after surgery. There was a surprisingly high incidence of retropubic haematomas, especially after the XS procedure. Retropubic haematomas may influence postoperative voiding efficiency.

Editorial Comment
The authors review 24 patients who underwent a suburethral sling using either xenograft or tension free vaginal tape. All patients had a pelvic MRI approximately 6-8 hours after surgery. The MRI was utilized to evaluate for

the development of a retropubic hematoma. The radiographic findings were then correlated to the presence of voiding or voiding dysfunction and pain postoperatively. The authors found that 25% of the patients developed a retropubic hematoma with a degree of lateralization to the right. There was no difference in the pain perceived by patients with or without hematoma and those with large hematomas took a greater time to normal voiding. All patients with hematomas were either cured or improved at their last follow-up.

This is an interesting report and raises many clinical questions. That only 25% of patients had a hematoma detected at 4-6 hours postoperatively may strike many patients as surprising. In addition, that there was some lateralization to the patient's right does indicate that there may be the potentiality that hematomas are somewhat technically based more on the surgeon's dominant hand than on the patient's anatomy. Many surgeons historically have found that hematoma formation may not be such a bad thing with regards to operative success. Classically, the success of an MMK was based on the formation of a retropubic scarification fixing the bladder neck and proximal urethra in a retropubic procedure. In fact, Lee et al in a publication in 1979, upon performing a secondary repair found that those patients that were redo's had inadequate scarification and the authors subsequently coined the "alleged MMK" (1). Of note is that both techniques had hematomas though the xenograft had four hematomas while the TVT had two. Thus indicating a potential technique related incidence of hematoma generation as opposed to patient's anatomy. The patient's had a vaginal pack for just 3 hours after surgery and none of the patients had a clinically detectable hematoma in the suprapubic wound. It will be of great interest to see in the future if the authors would consider repeating this study but having one group being operated upon by a right surgeon while the other having a left handed dominant surgeon perform the surgery to see if there is a lateralization of hematoma formation. In addition, repeating the study while having the vaginal pack placed overnight would also be of great interest. The continence rates at 2-3 years postoperatively may shed further light on earlier surgeon's notations on the need for retropubic fibrosis for long-term success; will those patients with a large hematoma and potentially greater scarification retropubically be drier than those which did not.

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High Incidence of Vaginal Mesh Extrusion Using the Intravaginal Slingplasty Sling

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J Urol. 2005; 174: 1308-11

Purpose: The intravaginal slingplasty (IVS) is a tension-free vaginal tape variant that uses a multi-filament polypropylene tape to support the mid urethra for the treatment of female stress urinary incontinence. Numerous cases of defective vaginal wound healing have been described in the international urogynecological literature. We describe our experience of vaginal mesh extrusion using the IVS sling.
Materials and Methods: A total of 35 patients underwent suburethral sling procedures for anatomical stress urinary incontinence using the IVS system from November 2002 to September 2003. A retrospective chart

review was performed to retrieve data on safety and efficacy, complications and outcomes using this product. Results: Six patients (17%) to date have presented with defective vaginal healing manifested by extrusion of the sling material. Mean time to presenting symptoms was 9 months (range 2 to 15). All patients required surgical removal of the sling material. No urethral erosions were noted.
Conclusions: Our experience suggests that the IVS sling system, which uses a multi-filament polypropylene suburethral mesh, incurs an unacceptably high rate of defective vaginal wound healing and mesh extrusion.

Editorial Comment
The authors reviewed a total of 35 patients who underwent a suburethral sling procedure using the intravaginal slingplasty (IVS) tension free vaginal tape. This is a multifilament polypropylene tape used for a mid-urethral sling technique. The authors noted a 17% sling extrusion rate with the mean time to presentation being approximately 9 months. All the patients required surgical removal of the sling material.

The causes of mesh erosion may be potentially multi-factorial: tension of sling, tissue vascularity, material composition and weave. Symptom presentation is variable and includes vaginal bleeding or discharge, pelvic pain as well as dysparunia and malodor. Though some have discussed minimally invasive techniques of managing vaginal erosion (1) most authors advocate partial or complete excision of the surgical material. As the trend toward suburethral slings continues towards increasing degree of minimal invasiveness, surgeons must always remember that minimal invasiveness does not always mean minimal complications. Scientific research to help analyze the causes of erosion to help minimize this complication should continue as changing demographics combined with patient demand will lead to increased performance of minimally invasive anti-incontinence procedures using artificial material.

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PEDIATRIC UROLOGY

Phimosis: Stretching Methods With or Without Application of Topical Steroids?

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Phimosis has been defined as unretractable foreskin without adherences or a circular band of tight prepuce preventing full retraction. We suggested a new treatment protocol combining betamethasone with stretching exercises to reduce the number of patients requiring surgery for phimosis. Between January 2003 and September

2004, 247 boys aged 4 to 14 years (mean 7.6) were included in this consecutive, prospective, open study. Patients were treated with 0.05% betamethasone cream applied to the distal aspect of the prepuce twice daily for the first 15 days, then once daily for 15 more days. Preputial gymnastics started 1 week after topical application of betamethasone. Ninety-six percent of patients receiving 1 or more cycles of betamethasone showed complete resolution of phimosis. There was a significant difference ($P < .001$) in response rate between the study and control groups. Only 10 boys in the study group had no response to steroid and stretching. Treatment with topical steroids, combined with stretching exercises, is a suitable alternative to surgical correction (preputial plasty/circumcision).

Editorial Comment

The authors studied the effect of betamethasone and stretching on a population of children referred for circumcision. They found that the treatment (up to 3 monthly cycles) worked in the great majority of patients. Indeed, only 10 of 247 patients ultimately underwent a surgical procedure for the phimosis. Success rate for the first month of treatment was 77% and for the 2nd and 3rd it was 57% and 60% respectively.

These results are impressive and remind us that for families that chose not to have their son's circumcised as newborns, there is an effective non-surgical treatment available. On the other hand, the authors leave several questions unanswered. There was a control group that just did stretching and did not apply the betamethasone. Unfortunately, the authors give very little data on this group. However, 76% of these got better! Would the addition of any type of cream augment that success rate?

Most important, the authors provide no data on whether these patients required any treatment whatsoever. Most everyone recognizes that resolution of phimosis occurs spontaneously in most cases. Only in situations of balanitis or posthitis is treatment really necessary. Hence, without that information, it is hard for the reader to know the value of the therapy. Indeed, it is the patients with inflammation/scarring or a history of pain and infection that might make the stretching difficult. It would be important to know the success rate of treatment in this group in particular. One might guess it would be lower. Nonetheless, the authors do present enough compelling data that a trial of non-operative treatment seems worthwhile in most cases.

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Intermittent Hydronephrosis Secondary to Ureteropelvic Junction Obstruction: Clinical and Imaging Features

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Objective: We sought to assess the clinical and imaging findings in intermittent hydronephrosis secondary to ureteropelvic junction obstruction, with particular emphasis on the characteristic ultrasonographic findings.
Methods: This prospective, longitudinal, observational study included all children who had intermittent ureteropelvic junction obstruction and presented with abdominal pain over 6 years. Renal ultrasound was used as an initial screening tool to detect intermittent hydronephrosis. Renal ultrasonography was repeated every 1

to 2 days to record serial changes from the symptomatic to the asymptomatic stage. Their clinical manifestations and imaging findings were studied.
Results: Eighteen patients (14 boys, 4 girls) were studied. Most had sharp pain that began acutely and typically lasted for < 2 days. Most of the children (16 of 18) had nausea and vomiting that accompanied the pain. The acute episode generally resolved spontaneously and was followed by a pain-free interval that ranged from days to months. Factors that predisposed to an attack included increased water intake, vigorous exercise, or bladder distention. All patients had clearly demonstrable obstruction of the renal pelvis during an acute attack, a finding that diminished or resolved during the symptom-free intervals. During convalescence, all patients had renal pelvic wall thickening on ultrasonography. This finding appeared on the second or third day after a painful episode subsided, persisted for 6 to 9 days, and then disappeared in the symptom-free stage. Pyeloplasty was performed in 17 patients, none of whom had recurrent pain on follow-up. Extrinsic obstructions were found in 9 patients.
Conclusions: The keys to diagnosis are awareness of the syndrome, a detailed history, and immediate and serial imaging studies during painful crises. A thickened renal pelvic wall during convalescence is an important ultrasonic sign of intermittent hydronephrosis.

Editorial Comment

The authors review their experience with intermittent hydronephrosis. This problem typically presents with severe acute, but episodic, flank pain, often associated with nausea/vomiting. The condition is rare (18 patients over 6 years), but making the diagnosis is very rewarding to the patients and their families. Surgery was needed in all cases, but none of the patients had episodic pain after repair.

The authors point out the difficult with diagnosis and suggest frequent renal sonography, with the emphasis being on emergency ultrasound during an episode of pain, that is then compared to an ultrasound done when the patient is asymptomatic. This has been the most diagnostic test in our hands also. Diuretic renography and other provocative tests have been unreliable, whereas an ultrasound during an acute episode has been uniformly revealing.

The authors also propose a new test; measurement of the thickness of the renal pelvic wall during the convalescence after an acute episode. The finding of increased renal pelvic wall thickness was seen in all the author's patients between 2 and 9 days after the acute episode and then disappeared. This new finding is most helpful, as in many instances, an ultrasound of the kidney during the acute crisis may not be feasible. Further substantiation of this finding is needed, but it should be looked for in all patients with symptoms compatible with an intermittent hydronephrosis.

The authors note that it is expected that an extrinsic lesion would be the cause of an intermittent hydronephrosis. Indeed, in their series they found this in 53% of cases. Two cases of ureteral polyps were also noted, but in the others, the actual explanation for the intermittent hydronephrosis seems to be an intrinsic abnormality at the UPJ. The pathophysiology in these cases is unclear, but the clinical scenario was convincing.

Overall, the authors bring to light an important clinical syndrome. In addition to the usual criteria, the study proposes a novel new finding that is very exciting.

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