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## UROLOGICAL SURVEY

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## STONE DISEASE

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### **Biochemical and physicochemical presentations of patients with brushite stones**

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*J Urol.* 2004; 171: 1046-9

**Purpose:** We determined whether the biochemical and physicochemical backgrounds of patients with brushite stones differ from those with hydroxyapatite and calcium oxalate stones.

**Materials and Methods:** From a computer data base of patients completing ambulatory evaluation 19 with brushite stones, 24 with hydroxyapatite stones and 762 with calcium oxalate stones were identified with the specified composition in greater than 70% of stones.

**Results:** Absorptive hypercalciuria type I was present in 63% of patients with brushite, 17% with hydroxyapatite and 30% with calcium oxalate stones. Distal renal tubular acidosis was noted in 32% of patients with brushite, 42% with hydroxyapatite and 3% with calcium oxalate stones. Mean urinary calcium in the brushite group was significantly higher than in the hydroxyapatite and calcium oxalate groups (265 +/- 125 vs 186 +/- 103 and 187 +/- 95 mg daily, respectively). Urinary pH in the brushite group was slightly but significantly higher than in the calcium oxalate group (6.15 +/- 0.30 vs 5.91 +/- 0.42). The brushite relative saturation ratio in the brushite group was marginally higher than in the hydroxyapatite group and significantly higher than in the calcium oxalate group (3.25 +/- 2.03 vs 2.34 +/- 1.51 and 1.83 +/- 1.66, respectively).

**Conclusion:** Patients with predominantly brushite stones could be distinguished from those with predominantly hydroxyapatite and calcium oxalate stones by higher urinary saturation with respect to brushite due mainly to hypercalciuria from absorptive hypercalciuria.

### **Editorial Comment**

Brushite stone formers constitute a particularly aggressive and difficult-to-treat subset of calcium stone formers. The low fragility of brushite stones observed in vitro is consistent with the clinical finding that they are relatively SWL-resistant; consequently, these stones typically require endoscopic treatment. Moreover, brushite stone formers tend to be highly metabolically active, with high recurrence rates even when patients have been rendered stone free after surgery (1). Therefore, insight into the physicochemical causes of brushite stone formation may facilitate management of these patients, who in my practice constitute a most challenging group of patients to manage medically.

Pak and colleagues searched their stone registry to identify 19 patients with predominantly brushite stones and 24 with predominantly hydroxyapatite stones, then compared them with a control group of 762 calcium oxalate stone formers to discern differences in urinary physicochemistry. Brushite stone formers were found to have urine that is significantly more supersaturated with respect to brushite than the other 2 groups, primarily as a result of higher urinary calcium. Indeed, absorptive hypercalciuria was overrepresented in the brushite group (63%) and underrepresented in the hydroxyapatite group (17%) compared with the calcium oxalate group (30%). Not surprisingly, urinary pH was also higher in the brushite and hydroxyapatite groups than the calcium oxalate group.

The authors raised the question as to why brushite, which represents a relatively unstable form of calcium phosphate that forms at lower urine pH than hydroxyapatite, fails to undergo conversion to hydroxyapatite during normal periods of urinary alkalization. They speculate that perhaps urinary inhibitors prevent the transformation. Equally important in my mind, is why these patients are so difficult to treat medically. Anecdotally, correction of their hypercalciuria often fails to result in a corresponding reduced rate of stone recurrence as is

typically seen with calcium oxalate stone formers. Whether pH manipulation (i.e., lowering of urine pH) can prevent brushite stone formation requires further clinical investigation, but it is likely to be a difficult and potentially dangerous (risk of bone loss) maneuver. For now, clinical studies such as these, may help shed some light on this difficult group of patients.

#### Reference

1. Klee LW, Brito CG, Lingeman JE: The clinical implications of brushite calculi. *J. Urol.* 1991, 145: 715-8.

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#### **Ureteral access sheath provides protection against elevated renal pressures during routine flexible ureteroscopic stone manipulation**

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*J Endourol.* 2004; 18: 33-6

**Background and Purpose:** New-generation flexible ureteroscopes allow the management of proximal ureteral and intrarenal pathology with high success rates, including complete removal of ureteral and renal calculi. One problem is that the irrigation pressures generated within the collecting system can be significantly elevated, as evidenced by pyelovenous and pyelolymphatic backflow seen during retrograde pyelography. We sought to determine if the ureteral access sheath (UAS) can offer protection from high intrarenal pressures attained during routine ureteroscopic stone surgery.

**Patients and Methods:** Five patients (average age 72.6 years) evaluated in the emergency department for obstructing calculi underwent percutaneous nephrostomy (PCN) tube placement to decompress their collecting systems. The indications for PCN tube placement were obstructive renal failure (N=1), urosepsis (N=2), and obstruction with uncontrolled pain and elevated white blood cell counts (N=2). Flexible ureteroscopy was subsequently performed with and without the aid of the UAS while pressures were measured via the nephrostomy tube connected to a pressure transducer. Pressures were recorded at baseline and in the distal, mid, and proximal ureter and renal pelvis, first without the UAS, and then with the UAS in place.

**Results:** The average baseline pressure within the collecting system was 13.6 mm Hg. The mean intrarenal pressure with the ureteroscope in the distal ureter without the UAS was 60 mm Hg and with the UAS was 15 mm Hg. With the ureteroscope in the midureter, the pressures were 65.6 and 17.5 mm Hg, respectively; with the ureteroscope in the proximal ureter 79.2 and 24 mm Hg, and with the ureteroscope in the renal pelvis 94.4 and 40.6 mm Hg, respectively. All differences at each location were statistically significant ( $P < 0.008$ ). Compared with baseline, all pressures measured without the UAS were significantly greater, but only pressures recorded in the proximal ureter and renal pelvis after UAS insertion were significantly higher ( $P < 0.03$ ).

**Conclusions:** The irrigation pressures transmitted to the renal pelvis and subsequently to the parenchyma are significantly greater during routine URS without the use of the UAS. The access sheath is potentially protective against pyelovenous and pyelolymphatic backflow, with clinical implications for the ureteroscopic management of upper-tract transitional cell carcinoma, struvite stones, or calculi associated with urinary tract infection.

### Editorial Comment

With dramatic improvements in endoscope design and instrumentation have come expanded indications for endoscopic stone management such that large and complex renal calculi are increasingly managed ureteroscopically. However, the treatment of larger stones is associated with longer operative times and a greater potential for fluid absorption and/or bacteremia. A recent cadaveric study assessed renal pelvic and ureteral flow characteristics during flexible ureteroscopy either with or without a ureteral access sheath and determined that use of a ureteral access sheath was associated with low intrarenal pelvic pressures regardless of irrigation pressure used, and significantly lower pressures with ureteroscopy at all locations in the ureter compared with ureteroscopy using a bare ureteroscope (1).

Auge and colleagues validated the findings of this cadaveric study in a clinical study of 5 patients with nephrostomy tubes who underwent flexible ureteroscopy for management of obstructing ureteral calculi. Measuring renal pelvic pressures via the nephrostomy tube during ureteroscopy either without or with a ureteral access sheath yielded differences of 45 mm Hg, 48.1 mm Hg, 55.2 mm Hg and 53.8 mm Hg with the ureteroscope in the distal ureter, middle ureter, proximal ureter and renal pelvis, respectively. As such, use of a ureteral access sheath is more than just a mere convenience, facilitating retrieval of stone fragments or passage of the ureteroscope. Instead it provides a safety mechanism, particularly during lengthy procedures or when the occurrence of pyelovenous or pyelolymphatic backflow poses the greatest risk, such as during the treatment of urothelial tumors or potentially infected stones.

### Reference

1. Rehman J, Monga M, Landman J, Lee DI, Felfela T, Conradie MC, Srinivas R, Sundaram CP, Clayman RV: Characterization of intrapelvic pressure during ureteropyeloscopy with ureteral access sheaths. *Urology*. 2003; 61: 713-8.

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## ENDOUROLOGY & LAPAROSCOPY

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### **Ureteropelvic junction obstruction: determining durability of endourological intervention**

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*J Urol.*; 171: 579-82

**Purpose:** We evaluated the durability of endourological intervention for ureteropelvic junction obstruction and established guidelines for postoperative surveillance.

**Materials and Methods:** Since 1989, 150 patients have undergone endourological intervention for ureteropelvic junction obstruction, of whom 127 (53 men and 74 women) 13 to 79 years old (mean age 40.4) underwent postoperative evaluation at our center. These 127 patients are the study group reported. Endourological management consisted of hot wire balloon endopyelotomy in 25 patients, percutaneous endopyelotomy in 67 and ureteroscopic laser endopyelotomy in 35. Success in this study was strictly defined as symptomatic relief plus radiographic resolution on excretory urogram and/or diuretic renogram. Statistical analysis was performed to assess mean time to failure and develop Kaplan-Meier re-stenosis-free survival estimates.

Results: Followup was 1 to 128 months (mean 22). Time to failure was 0.9 to 32.4 months (mean  $\pm$  SD  $10.3 \pm 9.4$ ). Kaplan-Meier estimates of time to re-stenosis (failure) were 6 months in 12% of patients, 12 in 22%, 18 in 24%, 24 in 27%, 30 in 32% and 36 in 37%. After 3 years no further failures were observed and Kaplan-Meier estimates remained unchanged.

Conclusions: The long-term probability of success, which is estimated to be 63.3% in this series, is somewhat lower than that reported in the literature. It likely is a result of longer followup and a more strict definition of success that includes functional and symptomatic relief. Our data suggest that while most failures become evident within the first 12 months, failure can develop as late as 3 years after intervention. As such, patients should be followed at least that long to ensure a durable result.

### Editorial Comment

Data such as this has been presented at meetings for a few years, and many in the academic community have started to lose favor for endopyelotomy and move towards laparoscopic pyeloplasty because of these findings. Although the mean time to failure was 10 months in this study, patients continued to fail up to 3 years post-operatively. A procedure with a 63% success rate long-term is just not a good choice for a young, active patient. On the basis of data such as this, I continue to offer endopyelotomy but encourage my patients towards pyeloplasty (if they are medically fit) because of my perception (although there are few data) that pyeloplasty will have better durability.

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### **A new technique for treating forgotten indwelling ureteral stents: silk loop assisted ureterorenoscopic lithotripsy**

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*J Urol. 2004; 171:719-21*

Purpose: Treating forgotten indwelling ureteral stents is difficult because forgotten stents become encrusted and fragmented. Therefore, we developed a silk loop with which to loop the lower end of a forgotten ureteral stent during ureterorenoscopy to supply a counterforce, which fixed the stent while separating encrusted stones from the forgotten stent. We evaluated the success of the silk loop method.

Materials and Methods: Nine patients were enrolled in this study from 1997 to 2003. Each patient had a forgotten ureteral stent with renal stones on the tip of the proximal end. All consented to the procedure of silk loop assisted ureterorenoscopic lithotripsy (URSL) with a Lithoclast (Microvasive, Natick, Massachusetts) lithotripter.

Results: We successfully removed the forgotten indwelling stent from all 9 patients with the silk loop assisted URSL method.

Conclusions: Silk loop assisted URSL makes the removal of forgotten stents easier. While percutaneous nephrostolithotomy and open surgery produce successful results, the silk loop method is less invasive and expensive, and it minimizes hospital recovery time.

### Editorial Comment

Encrusted retained ureteral stents are a frustrating and difficult surgical challenge. Shock wave lithotripsy of the stent to loosen fragments, combined percutaneous and cystoscopic lithotripsy of the renal and bladder ends of the stent (which are usually the most encrusted), and open surgery have all been reported. The authors of this article demonstrate nicely that small caliber ureteroscopes can be used with great effectiveness to provide a less morbid, outpatient solution. The silk-loop retraction of the bladder end of the stent appears to be a great trick, as friction of the ureteroscope on the stent can sometimes be problematic as the ureteroscope is advanced up the ureter, and allowed use of a semi-rigid instrument with a pneumatic lithotrite. The next time you are faced with an encrusted ureteral stent, consider the ureteroscopic approach.

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## IMAGING

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### **Changing role of imaging-guided percutaneous biopsy of adrenal masses: evaluation of 50 adrenal biopsies**

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*AJR Am J Roentgenol. 2004; 182: 1033-7*

**Objective:** Prior series of percutaneous imaging-guided biopsies of adrenal masses before the advent of dedicated CT and MRI of the adrenal glands have shown that 40-57% of adrenal masses biopsied were adenomas-benign lesions requiring no further evaluation or treatment. This study was performed to assess the effect of dedicated adrenal imaging with CT and MRI on the rate of percutaneous imaging-guided biopsies of adrenal masses.

**Materials and Methods:** We reviewed 50 consecutive adrenal mass biopsies performed during a 48-month period. The patient demographics, technique of biopsy, pathology results, and results of any prior dedicated adrenal imaging with MRI or CT protocols were noted.

**Results:** Only six (12%) of 50 biopsies were adenomas. Five of these six cases were preceded by dedicated adrenal CT or MRI. Thirty-five cases were metastatic disease, four were adrenal cortical carcinoma, three were pheochromocytoma, and two biopsies were nondiagnostic. Overall, 20 of 50 cases were preceded by a dedicated adrenal CT or MRI examination to exclude an adenoma; in 21 of the remaining 30 cases, the imaging characteristics before biopsy were inconsistent with the potential diagnosis of an adenoma and dedicated adrenal CT or MRI was not recommended.

**Conclusion:** The number of adrenal adenomas biopsied has declined markedly with the introduction of dedicated adrenal CT and MRI for adrenal adenomas. Percutaneous imaging-guided biopsy is useful in confirming the presence and nature of suspected metastatic deposits to the adrenal gland and in diagnosing or excluding adrenal adenomas in patients with equivocal imaging characteristics.

### Editorial Comment

Most incidentally found adrenal masses are adenomas even in patients with known primary tumors. For this reason a well established radiologic work-up is currently used in this clinical setting. By using a dedicated

adrenal radiologic evaluation(CT without contrast, washout-CT and chemical shift imaging by magnetic resonance), nearly all adrenal masses can be correctly categorized as adenomas or non-adenomas. Thus, percutaneous adrenal biopsy may be indicated for the small percentage of lesions that remain indeterminate in nature after CT and MRI. Such lesions include those with a percentage of wash-out near 60% threshold or lesions that have increased in size at follow-up imaging in spite of their benign appearance at prior CT study. As shown in this publication the number of adrenal masses biopsied has significantly reduced and consequently the number of adrenal adenomas. For the same reason the number of unnecessary resection of adrenal incidentalomas has also declined.

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**Voiding cystourethrography in boys. Does the presence of the catheter during voiding alter the evaluation of the urethra?**

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*J Urol.* 2004; 171: 1280-1

**Purpose:** We determined whether the presence of the catheter during the voiding phase of voiding cystourethrography alters the evaluation of the urethra concerning the normal structures as well as pathological findings, especially posterior urethral valves.

**Materials and Methods:** A total of 123 males 3 days to 16 years old (median age 2.6 months) underwent voiding cystourethrography. Urethral catheterization was performed in all cases. Four views were taken during the voiding phase with and without the catheter in place. Only 80 patients had available results. These examinations were studied with special attention to the normal structures and pathological findings.

**Results:** A total of 36 examinations (45%) were normal. Pathological findings were observed in 44 patients (55%), with abnormal vesical findings and/or vesicoureteral reflux in 33 (41.25%). In 11 patients (13.75%) 12 urethral abnormalities were found (posterior urethral valves 3, hypospadias 4, prostatic utricle 1, verumontanum polyp 1, prune belly syndrome with urethral dilatation 1, imperforate anus with urethral fistula 1 and urethral duplication 1). In all cases excluding those involving hypospadias there was no difference between the views with and without the catheter. However, concerning the normal structures, the verumontanum and fossa navicularis were better delineated without the catheter in 27% and 33% of cases, respectively.

**Conclusions:** Our study shows that a urethral catheter does not alter the diagnosis of abnormalities of the posterior urethra but may hamper the observation of normal structures or abnormalities of the anterior urethra.

**Editorial Comment**

Voiding cystourethrography is the most common radiologic procedure performed in children for the investigation of urinary tract infection. This article brings back an issue which has not been recently discussed (1). It is a well established concept among radiologists that leaving the catheter in place during voiding cystourethrography does not prevent the diagnosis of urethral disease. The argument that the diagnosis of posterior urethral valves may be missed, due to the effacement of the valve by the catheter is not valid. The catheter should be left in place because simplifies the process of controlling contrast infusion until voiding

occurs. If we remove the catheter and after that the child is not able to void, it will be necessary to do a recatheterization. Another benefit is related to technical aspects of this procedure. Voiding cystourethrography is a cyclic procedure. Reflex voiding at the beginning of vesical infusion is not uncommon. When this happens although the urethra will be promptly evaluated, the lack of adequate bladder distention may prevent the detection of vesico-ureteral reflux. By leaving the catheter in place we will be able to refill the bladder in order to perform an adequate search for reflux. After studying the posterior urethra and bladder we can always remove the catheter in order to evaluate the anterior urethra.

#### Reference

1. Ditchfield MR, Grattan-Smith JD, de Campo J, Hutson J: Voiding cystourethrography in boys: does the presence of the catheter obscure the diagnosis of posterior urethral valves? *AJR Am J Roentgenol.* 1995;164: 1233-5.

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## UROGENITAL TRAUMA

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### **Nonoperative management of blunt renal trauma: a prospective study**

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*Am Surg.* 2002; 68: 1097-103

Despite the abundance of literature on nonoperative management (NOM) of blunt trauma to the liver and spleen there is limited information on NOM of blunt renal injuries. In an effort to evaluate the role of NOM 37 consecutive unselected patients with renal injuries (grade 1, four; grade 2, 12; grade 3, 11; grade 4, six; and grade 5, four) were followed prospectively over 30 months (March 1999 to September 2001). Patients without peritonitis or hemodynamic instability were managed nonoperatively regardless of the appearance of the kidney on CT scan. Six (16%) patients were operated on immediately but only two (5.4%) for the kidney (grades 3 and 5 respectively). Of the remaining 31 patients 26 (84%) were managed successfully without an operation (grade 1 or 2, 12; grades 3-5, 14). Five patients were taken to the operating room after a period of observation (3, 3.5, 9, 36, and 44 hours respectively) but only three for the kidney (grades 4 and 5). The overall failure rate was 16 per cent (5 of 31); the rate of failure specifically related to the renal injury was 9.6 per cent (three of 31). Compared with the patients with successful NOM the five patients with failed NOM were more severely injured (Injury Severity Score  $\geq 15$  in 80% vs 27%,  $P = 0.04$ ), required in the first 6 hours more fluids (4.17  $\pm$  1.72 vs 1.87  $\pm$  1.4 liters,  $P = 0.003$ ) and blood transfusions (2.40  $\pm$  2 vs 0.42  $\pm$  1.17 units,  $P = 0.005$ ), and more frequently had a positive trauma ultrasound (80% vs 11.5%,  $P = 0.005$ ). We conclude that NOM is the prevailing method of treatment after blunt renal trauma. It is successful in the majority of patients without peritonitis or hemodynamic instability and should be considered regardless of the severity of renal injury. Predictors of failure may exist on the basis of injury severity, fluid and blood requirements, and abdominal ultrasonographic findings and need validation by a larger sample size.



### Editorial Comment

Prospective trials in genitourinary trauma are rare. This study attempts to show prospectively what at least a dozen studies over the years have shown retrospectively: that in the absence of clinically significant bleeding from the kidney, blunt renal trauma may be treated expectantly. Thirty-seven patients were seen. Only 2 (5%) underwent immediate renal exploration, and both of these patients had nephrectomy, one for a Grade V injury and one for a Grade III injury. Of note, it is my opinion that even this “conservative” center might have managed this patient without exploration of the Grade III injury and might have saved the patient the need for nephrectomy.

Three (8%) patients required delayed surgery after a failed period of observation. Two of these patients had a Grade IV injury, hypotension and abdominal compartment syndrome, and one had a Grade V injury and peritonitis: all were treated with nephrectomy. It is not absolutely clear to me from the text that both of these patient’s problems stemmed from their kidney, but nonetheless nephrectomy was elected.

As we would expect, patients managed without surgery did well. Even 5 (14%) patients with urinary extravasation did well, with spontaneous resolution of the urine leak. Five 5 (14%) of patients with devitalized renal segments also did well without complications.

Although the authors delineate which factors seem to predict failure of nonoperative management, unfortunately this analysis is not very helpful. For instance, the need for fluids and blood resuscitation in the first 6 hours was associated with the failure of nonoperative management: but the ongoing need for blood is likely the same criteria the surgeons used to bring the patient to operation! Not unexpectedly, higher injury severity scores (ISS) and the presence of intraperitoneal fluid on fast ultrasound examination were also associated with the need for operation. None of this analysis is helpful in assisting us in figuring out when our next patient may need surgery, however.

The message of the study is: continue to manage patients with isolated renal injury nonoperatively. Iatrogenic nephrectomy is avoided, complications are low, and the need for delayed surgery uncommon. Keep operating on those patient exsanguinating from the kidney, and those with ureteral or renal pelvis injury.

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### **Infection of non-operatively managed acetabular fracture via a suprapubic catheter**

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*Injury. 2003; 34: 550-1.*

### **Case Report - Abstract not available**

### Editorial Comment

It finally happened. A documented case of suprapubic catheter infecting a pelvic fracture. While orthopedic surgeons commonly warn of this potential complication, real evidence that it is a concern has never been found in the literature. This case is the first report I have seen documenting that an infected suprapubic tube tract infected a pelvic fracture: in this case a relatively distant acetabular fracture. Most orthopedists, it seems, are worried about the infection of pubic rami fractures.

Because I have not been convinced that suprapubic tubes cause a significant number of orthopedic infections, I do not hesitate to use them when necessary. Those times when I must place an open suprapubic tube (perhaps for posterior urethral distraction injury when I am unable to place a catheter endoscopically) I do modify the way I perform the operation, attempting to keep the catheter as far away from the broken pelvis as possible. I tunnel the catheter out the dome of the bladder, through the peritoneal space, and bring it out of the skin at the most superior location possible - sometimes even supraumbilically.

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## **PATHOLOGY**

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### **Vascular invasion is an independent prognostic factor in prostatic adenocarcinoma**

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*Mod Pathol. 2004; 17 (suppl.1): 144A*

**Background:** Prostate cancer is a significant cause of cancer morbidity and mortality in North American men. Tumor grade and stage are well-accepted prognostic factors. Histologic demonstration of tumor in vascular spaces has been associated with poor prognosis in many tumor types. Whether vascular invasion represents an independent prognostic factor for disease progression is uncertain in prostate cancer.

**Design:** 504 cases of prostatic adenocarcinoma from patients undergoing radical prostatectomy were reviewed for the presence of vascular invasion. Clinical followup data was available for 459 cases.

**Results:** Vascular invasion was identified in 106 (21%) of the cases. Univariate analysis showed a significant association between vascular invasion and PSA recurrence, tumor stage, Gleason grade, extraprostatic extension, seminal vesicle invasion, lymph node metastasis, surgical margins, perineural invasion, and preoperative serum PSA level (all  $p \leq 0.001$ ). No association was observed between vascular invasion and age at surgery, prostate weight, or the presence of high grade prostatic intraepithelial neoplasia. Vascular invasion is an independent predictor of PSA recurrence after controlling for tumor stage and Gleason grade in the multivariate analysis.

**Conclusions:** Vascular invasion can be seen in approximately 20% of prostate cancers. Vascular invasion is an independent risk factor for PSA recurrence.

### **Editorial Comment**

This paper emphasizes the importance of vascular invasion in radical prostatectomies. Most of the pathologists do not report this finding because it does not alter staging of the tumor. The same occurs in kidney and urinary bladder tumors except in testicular neoplasias. Since the 1997 edition of the TNM system for classification of malignant tumors, testicular neoplasms limited to the testis but with vascular invasion are classified as pT2 tumors.

The study from the Indiana University showed that vascular invasion seen in approximately 20% of prostate cancers is an independent predictor of PSA recurrence after controlling for tumor stage and Gleason

grade in the multivariate analysis. It was shown that vascular invasion is important and should be reported by pathologists. We hope that this finding is confirmed by other studies and considered in future staging systems.

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**The combined percentage of Gleason 4 and 5 is the best predictor of cancer progression after radical prostatectomy**

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*Mod Pathol. 2004; 17 (suppl.1): 145A*

**Background:** Clinical outcome is variable in prostate cancer patients treated by radical prostatectomy. The Gleason histologic grade of prostatic adenocarcinoma is one of the strongest predictors of biological aggressiveness of prostate cancer. We evaluate the significance of relative proportion of high grade cancer (Gleason pattern 4 and/or 5) in predicting cancer progression in prostate cancer patients treated by radical prostatectomy.

**Design:** Radical prostatectomy specimens from 364 consecutive prostate cancer patients were totally embedded and whole mounted. Various clinical and pathologic characteristics were analyzed. All the data were collected prospectively.

**Results:** The primary Gleason grade, secondary Gleason grade, Gleason score sum, the presence of Gleason grade 4, % of Gleason grade 4, the presence of Gleason grade 5, % of Gleason grade 5, and the combined % of Gleason grade 4 and 5 were all predictive of PSA recurrence (all P value <0.001). However, based on the Likelihood Ratio Test statistic the combined % of Gleason grade 4/5 is the best predictor of PSA recurrence. In a multivariate analysis that included the combined % of Gleason grade 4/5, Gleason score sum, tumor stage (T2 vs. T3), and surgical margins, only the combined % of Gleason grade 4/5 (P = 0.005) and surgical margins (P=0.01) were independent predictors of PSA recurrence.

**Conclusions:** The combined percentage of Gleason 4 and 5 is one of the most powerful predictors of patient outcome. We recommend that the combined percentage of Gleason 4 and 5 be evaluated in radical prostatectomy specimens.

**Editorial Comment**

As a measure of intrinsic biologic aggressiveness, Gleason grading may be enhanced by both structural (morphologic and morphometric) and functional means (by using gene expression profiling, for example). One proposed morphologic approach is quantitation of the amount of high-grade (percentage Gleason grade 4/5) carcinoma.

This paper clearly showed that the combined percentage of Gleason 4 and 5 is one of the most powerful predictors of patient outcome. We have recently evaluated in our Department 88 patients submitted to radical prostatectomy with a follow-up period of 12 to 63 (median = 26 months). Our data showed that comparing Gleason score (< 7 vs. = 7) and Gleason predominant grade (< 4 vs. 4/5) in the surgical specimen, only Gleason grade 4/5 was a statistically significant predictor of progression (recurrence and/or metastases) following radical prostatectomy.

Urologists should differentiate high-grade Gleason score  $4 + 3 = 7$  from  $3 + 4 = 7$ . They have different biological significance. Pathologists should always report grade 4/5 in radical prostatectomy specimens even if it corresponds to a tertiary grade.

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## INVESTIGATIVE UROLOGY

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### **The distribution of neuronal and inducible nitric oxide synthase in urethral stricture formation**

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*J Urol. 2004; 171: 1943-7*

**Purpose:** The distribution of neuronal (n) and inducible (i) nitric oxide synthase (NOS) may have a role in the maintenance of normal urethral spongiosum and during the development of spongiofibrosis in urethral stricture disease.

**Materials and Methods:** Eight normal and 33 strictured human bulbar urethras were studied by histological and immunohistochemical techniques for the neuronal markers S-100, nNOS and iNOS. The smooth muscle-to-collagen ratio was calculated by morphometric analysis of Masson's trichrome sections. Immunohistochemical staining patterns of the neuronal markers in normal urethral tissue was compared to that in urethral stricture tissue with spongiofibrosis.

**Results:** The smooth muscle-to-collagen ratio was significantly lower in the strictured urethra compared to that in the control group ( $p = 0.001$ ). In the strictured bulbar urethra nNOS immunoreactivity was decreased compared to that in normal urethral tissue. The severity of spongiofibrosis corresponded to the loss of nNOS immunoreactivity. iNOS immunoreactivity was found in strictured urethral epithelium and spongiosal tissue, whereas the control group was nonimmunoreactive to iNOS.

**Conclusions:** Urethral stricture formation is a fibrotic process associated with significant changes in NOS metabolism. Abnormal collagen synthesis following urethral trauma may be stimulated by inappropriate iNOS activity. A functional nerve supply to the urethral spongiosum seems to be crucial in the maintenance of the unique ultrastructure of the urethral spongiosum.

### **Editorial Comment**

It is well known that in the strictured urethra the main changes are found in the extracellular matrix. As well as in other tissues, the normal urethra and spongiosal tissue must have an adequate blood supply and nerve innervation to maintain its elastic and compliant characteristics. To our knowledge, this is the first study to analyze the quality of the nerve supply of the urethral spongiosum in the normal and strictured urethra. The authors investigated the changes of neuronal and inducible nitric oxide synthase (NOS) immunoreactivity in strictured bulbar urethras with different degrees of spongiofibrosis.

Structural differences in spongiosal tissue were described previously stating that biomechanical properties required for normal urethral function differ in the spongiosal tissue of glanular, penile and bulbar segments. For this study, the authors consistently used the bulbar urethra in the stricture and control groups.

The authors found a decrease in neuronal NOS activity associated with a slight increase in inducible NOS activity and postulated that it could result in a decrease in total NOS activity, leading to abnormal collagen synthesis. They concluded that urethral stricture formation is a fibrotic process associated with significant molecular changes in NOS metabolism. Also, they found that a functional nerve supply to the urethral spongiosum seems to be crucial in the maintenance of the urethral spongiosum structure.

**Dr. Francisco J.B. Sampaio**

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### **Urethral dysfunction in diabetic rats**

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*J Urol. 2004; 171: 1959-64*

**Purpose:** We investigated the effects of diabetes mellitus (DM) on urethral relaxation mechanisms during reflex bladder contractions in rats.

**Materials and Methods:** Five weeks after streptozotocin injection (65 mg/kg intraperitoneally) the effects of DM on urethral relaxation mechanisms were evaluated by simultaneous recordings of intravesical pressure under isovolumetric conditions and urethral perfusion pressure (UPP) using urethane anesthesia.

**Results:** In diabetic rats the UPP nadir during urethral relaxation and intravesical pressure thresholds for inducing urethral relaxation were significantly higher (199% and 92%, respectively) than in normal rats, while baseline UPPs were not significantly different. The mean rate and amplitude of high frequency oscillations of urethral striated muscle in diabetic rats were also significantly lower (17% and 64%, respectively) compared with normal rats. Following alpha-bungarotoxin treatment to eliminate striated muscle sphincter contractions intravenous administration of L-arginine (200 mg/kg intravesically), the substrate of nitric oxide (NO) synthase, decreased the UPP nadir (36% and 22%, in diabetic and normal rats) as well as intravesical pressure thresholds (49% and 22%, respectively). The effect was greater (61% to 126%) in diabetic rats than in normal rats. In each group of rats the effect of L-arginine was inhibited by Nomega-nitro-L-arginine (100 mg/kg intravesically), a NO synthase inhibitor.

**Conclusions:** During reflex bladder contractions streptozotocin induced diabetic rats exhibited smooth and striated muscle dysfunctions of the urethral outlet. L-arginine therapy, which could augment urethral smooth muscle relaxation by increasing NO production, may be useful for partially restoring the urethral relaxation mechanism in DM.

### **Editorial Comment**

Cystopathy characterized by high post-void residual urine volume, weaken bladder sensations and diminished bladder contractility affects around 80% of patients with noninsulin dependent diabetes mellitus. However, as yet, little is known on the effects of diabetes mellitus on urethral function.

Previous studies showed that nitric oxide is the most important transmitter that induces urethral relaxation during voiding. It has also been demonstrated that relaxation responses to nitric oxide in urethral muscle strips were decreased in diabetic rabbits. Thus, the authors investigated if urethral relaxation during the voiding reflex would be decreased in diabetes mellitus. In addition, the authors evaluated the effects on diabetes mellitus induced urethral dysfunction of L-arginine treatment, a drug that can increase endogenous nitric oxide production.

The authors found that relaxation mechanisms of urethral striated and smooth muscle during reflex bladder contractions are impaired in diabetes mellitus. They proposed that this defect coupled with bladder hypoactivity could result in inefficient voiding and bladder overdistention in diabetes mellitus. The authors also proposed that therapy with L-arginine might be useful for partially restoring the urethral relaxation mechanism in diabetes mellitus.

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## RECONSTRUCTIVE UROLOGY

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### **Sexual behavior and sexual function of adults after hypospadias surgery: a comparative study**

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*J Urol. 2004; 171: 1876-9*

**Purpose:** We assessed sexual behavior and sexual function in adults operated on for hypospadias.

**Materials and Methods:** Long-term psychosexual adjustment was assessed with a standardized questionnaire which was mailed to 57 patients with hypospadias older than 18 years and 60 age matched normal control subjects.

**Results:** A total of 37 patients with hypospadias and 39 controls participated. Self-reported strength of libido on a scale of 1 to 5 was shown to be similar in the 2 groups. Patients with hypospadias did not have problems in achieving erection and average self-rated quality of erection ranging from 1 to 5 was the same as that of controls (mean value 4.5). Patients with hypospadias noted curvature in a downward direction in a significantly higher proportion compared to controls (40% vs 18%, respectively). There were 13 patients with hypospadias who had ejaculation difficulties, of whom 6 had spraying and 7 had only dribbling of ejaculate. Patients with hypospadias masturbated significantly less often, were significantly less sexually active and had a smaller total number of sexual partners compared to control subjects. Control subjects were significantly more completely satisfied with their sexual life compared to patients with hypospadias (76.92% vs 51.35%, respectively).

**Conclusions:** Sexual function of patients who underwent surgery for hypospadias in general is not affected. However, there is clearly a difference in certain aspects of sexual behavior between patients with hypospadias and controls. Followup and adequate counselling of patients who underwent surgery for hypospadias in adult life is necessary.

### **Editorial Comment**

This is a nice paper dealing with late functional aspects after early hypospadias repair. Most of the previous papers are dealing with the results regarding general appearance and urethral function in the first few years after the reconstruction. Few authors, however, thought about consequences on sexual behaviour and sexual function in adulthood.

The authors studied 57 men between the age of 20 and 45 (mean age 27 yrs) who were treated surgically for hypospadias 2 to 15 yrs prior to the study. Several aspects of sexual behaviour and function were compared with an age matched control group of 39 men. There was no significant difference with regards to sexual function between the 2 groups. However, men with a previous surgery for hypospadias were less sexually active, with a smaller total number of sexual partners and a decreased overall satisfaction of their sexual life compared to control subjects. Whether this was related to a downward direction of the penis, ejaculation difficulties or a reduced penile size in a significantly higher proportion of the patients or whether some differences in hormonal values might have played a role could not be answered in this paper.

Despite some positive aspects in the outcome with regards to sexual function of patients with hypospadias repair we as reconstructive surgeons should be aware of possible improvements of surgical techniques such as penile length and diameter in order to avoid some of the problems in later sexual behaviour and cosmetics as here outlined.

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### **Incidence and location of prostate and urothelial carcinoma in prostates from cystoprostatectomies: implications for possible apical sparing surgery**

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*J Urol. 2004; 171: 646-51*

**Purpose:** Prostatic carcinoma (Pca) at cystoprostatectomy is usually an incidental finding with the majority thought to be clinically insignificant. Most studies have not specifically addressed the location of Pca or the incidence and location of in situ or invasive urothelial carcinoma (Uca) in prostates of cystoprostatectomy specimens. The frequency of involvement of the apex with these processes has clinical implications. Specifically urinary continence following orthotopic diversion may be enhanced by prostate apical sparing. In this study the pathological features of Pca and Uca, and the frequency of apical involvement were investigated in prostates from cystoprostatectomy specimens.

**Materials and Methods:** Whole mounted prostates from 121 consecutive cystoprostatectomy specimens were analyzed. Pca location, tumor volume, grade, stage, surgical margin and pelvic lymph node status of Pcas were assessed. Clinically insignificant Pcas had a volume of less than 0.5 cc without Gleason pattern 4, extracapsular extension, seminal vesicle invasion, lymph node involvement or positive surgical margins. Prostate involvement by Uca or urothelial carcinoma in situ (CIS)/severe dysplasia and its location were assessed.

**Results:** Of 121 prostates 50 (41%) had unsuspected Pca, of which 24 (48%) were clinically significant. Of Pcas 30 of 50 (60%) involved the apex, including 19 of 24 (79%) that were significant and 11 of 26 (42%) that were insignificant. Of 121 prostates 58 (48%) had Uca involving the prostatic stroma, noninvasive Uca or urothelial CIS/severe dysplasia in the prostatic urethra or periurethral ducts, of which 19 (33%) had apical involvement. Overall only 32 of 121 patients (26%) had no Pca or prostate Uca/CIS and only 45 (37%) had no clinically significant Pca or Uca/CIS in the prostate. However, 74 of the 121 patients (61%) had no prostatic apical involvement by Pca or Uca/CIS and 85 (70%) had no apical involvement by clinically significant Pca or Uca/CIS. Patients with prostatic apical involvement by invasive or in situ Uca uniformly had involvement of more proximal (toward the base) portions of the prostate.

**Conclusions:** The majority of prostates from cystoprostatectomies had no involvement of the prostatic apex by Uca or clinically significant Pca. Hence, most patients may be candidates for prostate apical sparing. However, involvement of the apex by Uca in any patient raises concern about procedures that leave portions of the prostate urethra after cystectomy in an effort to improve continence. In candidates for orthotopic neobladder reconstruction removing all of the prostatic urethra and sparing the remainder of the prostatic apex may allow improved preservation of urinary continence with an acceptable low risk of clinical Pca progression. Whether future strategies for preoperative exclusion of apical Pca and intraoperative assessment of more proximal prostate to help exclude apical urothelial disease may identify patients suitable for prostatic apical sparing remains to be determined. The impact on functional outcomes and cancer control also require additional study.

### **Editorial Comment**

In older textbooks the preservation of the prostatic apex during cystoprostatectomies for transitional cancer of the bladder was regarded a standard technique. In order to improve nerve preservation and subsequently potency and furthermore to enable postoperative of fertility preservation not only of the prostatic apex but of half of the prostate was suggested by some authors. It is of note that the areas which are than preserved are the ones where the majority of prostatic tumors arise.

In the current study 41% of 121 patients undergoing cystoprostatectomy for transitional cell cancer had unsuspected prostate cancer. Half of them were clinically significant. In 60% of the unsuspected prostate cancers and in 33% of the transitional cell cancer invading the prostate the prostatic apex was involved. Overall tumor was found unsuspectedly in the prostatic apex in 40% (39/121 patients).

This is actually a very high rate of unsuspected tumor in the prostate and a substantial number were significant tumors. With this number in mind it is therefore very difficult to argue for either an apex or even a fertility preserving cystoprostatectomy. Even if the transitional cell cancers invading the prostate are excluded because they might be seen with a better staging of patients there is still the problem of unsuspected prostate cancer which may not be found despite more efforts in preoperative staging. Neither PSA nor imaging will be able to detect them all. Therefore only partial remove of the prostate in patients with transitional cell cancer of the bladder has to be an absolute exception and patients and surgeons must be aware of the substantial risk of later problems with a secondary prostate cancer.

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## **UROLOGICAL ONCOLOGY**

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### **Is there a role for surgery in the management of metastatic urothelial cancer? The M. D. Anderson experience**

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*J Urol. 2004; 171: 145-8*

**Purpose:** Although rarely curative, chemotherapy remains the mainstay of treatment for metastatic urothelial cancer. The role of surgery for metastatic disease is not well established for urothelial cancer, but is sometimes undertaken in the face of persistent or recurrent disease that can be surgically resected.



**Materials and Methods:** We identified 31 patients with metastatic urothelial cancer undergoing metastasectomy with the intent of rendering them free of disease. All gross disease was completely resected in 30 patients (97%). The most frequently resected location was lung in 24 cases (77%), followed by distant lymph nodes in 4 (13%), brain in 2 (7%) and a subcutaneous metastasis in 1 (3%).

**Results:** Median survival from diagnosis of metastases and from time of metastasectomy was 31 and 23 months, respectively. The 5-year survival from metastasectomy was 33%. Median time to progression following metastasectomy was 7 months. Five patients were alive and free of disease for more than 3 years after metastasectomy.

**Conclusions:** The results in this highly selected cohort, with 33% alive at 5 years after metastasectomy, suggest that resection of metastatic disease is feasible and may contribute to long-term disease control especially when integrated with chemotherapy. Further prospective studies should be undertaken to better characterize the selection criteria and benefit from this intervention.

### Editorial Comment

These data look good on first sight, but it must be emphasized that patient selection is extraordinary and that only patients with an extremely good Karnowski Index can undergo excessive surgery for metastatic disease. After all, median time to progression following metastasectomy was only 7 months. Only 3 patients had no recurrence at last follow-up, of whom 2 have been disease-free for more than 5 years. If one looks closer into the data, these 2 disease-free patients might be those patients in whom necrotic tumor without viable cancer had been resected. Thus, the result might rather be contributed to chemotherapy.

In conclusion, surgery does not play a major role in the management of metastatic urothelial cancer and should be reserved for highly selected patients only.

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### Extended radical lymphadenectomy in patients with urothelial bladder cancer: results of a prospective multicenter study

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*J Urol.* 2004; 171: 139-44

**Purpose:** Previous studies demonstrate a positive correlation between postoperative survival and the extent of pelvic lymphadenectomies in patients with bladder cancer. However, the distribution of nodal metastases has not been examined in sufficient detail. Therefore, we conducted a comprehensive prospective analysis of lymph node metastases to obtain precise knowledge about the pattern of lymphatic tumor spread.

**Materials and Methods:** Between 1999 and 2002, we performed 290 radical cystectomies and extended lymphadenectomies. Cranial border of the lymphadenectomy was the level of the inferior mesenteric artery, lateral border was the genitofemoral nerve and caudal border was the pelvic floor. We made every effort to excise and examine microscopically all lymph nodes from 12 well-defined anatomical locations.

**Results:** Mean total number and standard deviation of lymph nodes removed was 43.1 +/- 16.1. Nodal metastases were present in 27.9% of patients. The percentage of metastases at different sites ranged from

14.1% (right obturator nodes) to 2.9% (right paracaval nodes above the aortic bifurcation). By studying cases of unilateral primary tumors or with only 1 metastasis we observed a preferred pattern of metastatic spread. However, there were many exceptions to the rule and we did not identify a well-defined sentinel lymph node.

Conclusions: We strongly recommend extended radical lymphadenectomy to all patients undergoing radical cystectomy for bladder cancer to remove all metastatic tumor deposits completely. The operation can be conducted in routine clinical practice and our data may serve as a guideline for future standardization and quality control of the procedure.

### Editorial Comment

These authors performed a meticulous lymphadenectomy together with cystectomy in patients with bladder cancer. In analogy to previous approaches in retroperitoneal lymphadenectomy for testis cancer, the lymph nodes were sampled and ordered according to their anatomic origin.

In general, these data provide interesting information on the rate and the extent of lymphonodular metastases in bladder cancer. Several issues however deserve comments. First, patients with pT1 category (n = 57) only had 1.8 % metastases, whereas pT2a patients had 10.7% and pT2b had 22.2% metastases. All other pT – categories had around 40 %, whereas pT4b had 80 % metastases. The percentage of lymph node metastases on all 290 patients was around 3 – 8 % over all anatomical sides, with the exception of the ipsilateral and contralateral paravesical area (14% and 11%). If patients had nodal metastases at level 1 (next to the bladder) 57% of patients of group were also positive at level 2 and 31 % at level 3. In conclusion nodal metastases next to the bladder indicate systemic disease. To my opinion, these data would rather provide the rationale for systemic chemotherapy in nodular positive patients.

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### **The incidence of prostate cancer in men with prostate specific antigen greater than 4.0 ng/ml: a randomized study of 6 versus 12 core transperineal prostate biopsy**

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*J Urol. 2004; 171: 197-9*

Purpose: The prostate cancer detection rate in patients with elevated prostate specific antigen (PSA) increases with extended needle biopsy protocols. Transperineal biopsy under transrectal ultrasound guidance is rarely reported, although notable cancer diagnoses are obtained with this technique. We describe the results of 6 and 12 core transperineal biopsy.

Materials and Methods: A total of 214 patients with PSA greater than 4.0 ng/ml were prospectively randomized to undergo 6 or 12 core transperineal biopsy. Each group of 107 patients was comparable in terms of clinical characteristics. The procedure was performed on an outpatient basis using local anesthesia. Specimens were obtained with a fan technique with 2 puncture sites slightly above the rectum (1 per lobe) under transrectal ultrasound guidance. Cores were taken from all peripheral areas, including the far lateral aspect of the prostate.

**Results:** The overall cancer detection rate was 38% and 51% for 6 and 12 core biopsy, respectively. In patients with PSA between 4.1 and 10 ng/ml the cancer detection rate was 30% and 49% for 6 and 12 core biopsy, respectively.

**Conclusions:** The 12 core transperineal prostate biopsy is superior to 6 core biopsy. The technique provides optimal prostate cancer diagnosis. About half of the patients with PSA greater than 4.0 ng/ml and a slightly lower percent with PSA between 4.1 and 10 ng/ml have prostate cancer.

### **Editorial Comment**

The rationale for performing 12 core biopsies in patients with prostate carcinoma is rarely given as clear as it is in the data presented with this paper.

Moreover, these data provide an impressive insight into true (?) the incidence of prostate carcinoma in a population with elevated PSA. Overall cancer detection rate was 38% and 51 % for 6 and 12 core biopsies, respectively. In patients with PSA between 4 and 10 ng/ml, the cancer detection rate was 30% and 49% for 6 and 12 core biopsies, respectively. The positive DRE rate in both groups was around 25 %. The authors conclusion is, 6 core prostate biopsy techniques should be considered outdated, and, about 50% of patients with increased PSA have prostate cancer. These two sentences deserve no further emphasis.

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## **FEMALE UROLOGY**

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### **The tensile properties of tension-free vaginal tape and cadaveric fascia lata in an in vivo rat model**

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*BJU Int. 2004;93: 171-3*

**Objective:** To examine the tensile properties (break load and maximum average load), after in vivo implantation in a rat animal model, of tension-free vaginal tape (TVT) and cadaveric fascia lata (CFL), as pubovaginal slings of these materials have become popular for treating stress urinary incontinence.

**Materials and Methods:** Twenty Sprague-Dawley rats (300-400 g) had 1 x 2 cm strips of commercially available TVT and CFL implanted on the right and left anterior abdominal wall, respectively. Half of the animals were then killed at 6 weeks and the remainder at 12 weeks, after which the strips of TVT and CFL were removed and their tensile properties measured using a tensiometer. The tensile strength of TVT and CFL strips maintained only in normal saline served as controls.

**Results:** The TVT strips had a mean break load of 0.740 kg in the control and only 0.390 kg for CFL ( $P < 0.05$ ). At 6 weeks the TVT material had a mean (sd) maximum average load of 0.634 (0.096) kg and a mean break load of 0.589 (0.249) kg, whereas the respective values for the CFL were 0.323 (0.198) and 0.167 (0.063) kg ( $P < 0.05$ ). Similarly at 12 weeks, TVT had a greater mean maximum average and break load than CFL, at 0.742 (0.052) and 0.274 (0.126), and 0.737 (0.056) and 0.185 (0.128) kg, respectively.

**Conclusion:** This is the first study to assess the tensile properties of the currently used sling materials, TVT and CFL, in an in vivo model. TVT has a greater break load and maximum average load than CFL; the tensile strength of these materials does not decrease with time.

### Editorial Comment

The authors measure and compare the tensile properties of commercially available synthetic polypropylene mesh and cadaveric fascia lata after 6-12 weeks of in vivo implantation. Their description and quantification of the temporally associated comparative changes of these materials help shed light on one of the potential causes of failures of suburethral slings using cadaveric fascia lata. The implantation site was abdominal which does raise the specter of a possible different induced tissue change or alteration had the materials been placed in the suburethral area (a site oft plagued with postoperative bleeding). This study does highlight the long-term durability of the polypropylene mesh without an associated potential genetic contamination. The interested urologist looks forward to the author's promised further long-term studies utilizing this clinical, experimental model.

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### **Cesarean section: does it really prevent the development of postpartum stress urinary incontinence? A prospective study of 363 women one year after their first delivery**

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*Neurourol Urodyn. 2004; 23: 2-6*

**Aims:** Stress urinary incontinence (SUI) in young women is usually the result of pelvic floor injury during vaginal delivery. Whether cesarean section delivery may prevent such injury is questionable. We undertook a prospective study to compare the prevalence of SUI among primiparae 1 year after spontaneous vaginal delivery versus elective cesarean section, or cesarean section performed for obstructed labor.

**Methods:** Three hundred and sixty-three consecutive primiparae were recruited immediately after delivery and were followed for 1 year. Women were asked upon recruitment whether they had ever experienced SUI before pregnancy. Those who had SUI before pregnancy were excluded. Thus, only cases of de novo childbirth-associated SUI were analyzed. Patients were divided into three subgroups according to the mode of delivery: spontaneous vaginal delivery (n = 145), elective cesarean section (n = 118), and cesarean section performed for obstructed labor (n = 100). Patients who underwent elective cesarean section were not given a trial of labor. Cesarean sections for obstructed labor were performed at a mean cervical dilatation of 8.7 +/- 1.6 cm and arrest of 184 +/- 24 min. Prevalence, frequency, and severity of postpartum SUI, as well as demographic and obstetric parameters, were analyzed in each subgroup.

**Results:** The three subgroups were comparable with respect to maternal age, weight, and height. Prevalence of postpartum SUI was similar after spontaneous vaginal delivery (10.3%) and cesarean section performed for obstructed labor (12%). However, SUI was significantly less common following elective cesarean section with no trial of labor (3.4%,  $P < 0.05$ ). Approximately half of the symptomatic patients in each subgroup reported either moderate or severe symptoms, however, only 15-18% expressed their desire for further evaluation.

**Conclusions:** Prevalence of postpartum SUI is similar following spontaneous vaginal delivery and cesarean section performed for obstructed labor. It is quite possible that pelvic floor injury in such cases is already too extensive to be prevented by surgical intervention. Conversely, elective cesarean section, with no

trial of labor, was found to be associated with a significantly lower prevalence of postpartum SUI. Whether the prevention of pelvic floor injury should be an indication for elective cesarean section is yet to be established.

### Editorial Comment

The authors attempt to illuminate the timing and role of cesarean section with regard to postpartum stress urinary incontinence by examining a study population divided into three subgroups. The first group being 145 primiparae women who underwent spontaneous vaginal delivery, the second group being 118 primiparae women who underwent selective cesarean section and a the third group of 100 primiparae women who underwent cesarean section for obstructed labor. The authors, in their paper, come to a clearly defined conclusion that childbirth induced stress urinary incontinence is best prevented through elective cesarean section prior to the onset of labor. In addition, it is noted in the report that cesarean section performed for obstructed labor was not associated with a diminished incidence of postoperative stress urinary incontinence. They also found that patients who have new onset stress urinary incontinence during pregnancy will have an increased risk of stress urinary incontinence at one year postpartum measurements.

The authors should be commended for this excellent paper for it is noteworthy in that it compares cesarean section performed before and after obstructed labor and contrasts the results of same. Urologists are often asked by female patients whether having a cesarean section may help them avoid incontinence later in life; this paper answers that question.

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## PEDIATRIC UROLOGY

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### **Long-term outcome of Fowler-Stephens orchiopexy in boys with prune-belly syndrome**

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*J Urol. 2004; 171: 1666-9*

**Purpose:** Intra-abdominal testes in boys with prune-belly syndrome have been conventionally managed by 1 or 2-stage orchiopexy with division of the gonadal vessels. We reviewed a series of adults with prune-belly syndrome to assess the morphological and functional outcome of orchiopexy in childhood with specific reference to the spontaneous onset of puberty, hormonal profiles and sexual function.

**Materials and Methods:** A total of 41 boys were divided into 3 groups depending on the type of orchiopexy performed, namely group 1 - 20 with bilateral 1-stage orchiopexy, group 2 - 10 with unilateral 1-stage and contralateral 2-stage orchiopexy, and group 3 - 11 with bilateral 2-stage orchiopexy.

**Results:** In group 1, 9 of 20 patients had good scrotal testes bilaterally, 6 had a good scrotal testis on 1 side and 3 had small testes on each side. Two boys required testosterone supplementation but 18 had normal hormonal and sexual function. In group 2 6 of 10 patients had good scrotal testes bilaterally and 4 had a good scrotal testis on 1 side. All patients underwent spontaneous puberty with good sexual function. In group 3, 7 of 11 boys had good scrotal testes bilaterally and 3 had 1 good testis with normal puberty and sexual function. These 10 patients underwent spontaneous puberty with good sexual function.

Conclusions: The majority of boys with prune-belly syndrome had a satisfactory outcome after orchiopexy with division of the gonadal vessels with testicular function sufficient to induce puberty and maintain satisfactory sexual function in adult life.

### Editorial Comment

In pediatric urology, many papers on long-term follow-up are based on observations made over several years. This paper is highly significant in that it assesses outcome on average 17 years after surgery. Early outcomes orchiopexy in the prune belly syndrome have been thought to be good, particularly when the operation has been done at an early age. However, this series provides another, more important view. Over time, particularly past the age of puberty, accurate assessment of testicular growth and function is more possible. In this series, of patients undergoing Fowler-Stephens orchiopexy in expert hands, only 22 of 41 patients had morphologically normal testes bilaterally. There was a slightly higher rate of success in those who underwent a bilateral two-stage Fowler-Stephens orchiopexy (7/11), but even this is not as positive as most surgeons would like. Fortunately, only 2 patients in the series require testosterone replacement and the rest underwent spontaneous puberty and reported good sexual function. The authors are to be congratulated on an important “long-term” follow-up.

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### **The urological care and outcome of pregnancy after urinary tract reconstruction**

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*BJU Int. 2004; 93: 588-590*

Objective: To assess the obstetric and urological outcomes during and after pregnancy following urinary tract reconstruction, as pregnancies after such surgery can have a significant effect on the function of the reconstructed urinary tract, and the reconstruction can significantly affect the delivery of the fetus.

Patients and Methods: We retrospectively reviewed the obstetric and urological history of 11 patients (12 pregnancies; 10 singletons and one twin) with previous urinary reconstruction, delivered between 1989 and 2003. Antepartum and postpartum urological function and obstetric outcomes were investigated.

Results: All the patients had some difficulty with clean intermittent catheterization (CIC) during pregnancy, and four needed continuous indwelling catheters. During pregnancy 10 women had several bladder infections and all received antibiotic suppression. There were eight Caesarean sections, two vaginal deliveries and one combined delivery. Six Caesareans were elective and three were emergent. The use of CIC returned to normal in all patients after delivery.

Conclusions: Women with a urinary reconstruction can have successful pregnancies. The complexity of the surgery and the concern for possible emergency Caesarean section resulted in most patients having an elective Caesarean delivery before term. Antibiotic prophylaxis is recommended and patients may require indwelling dwelling catheters while pregnant but normal CIC can be resumed after delivery.

**Editorial Comment**

Nearly all parents of girls with major urological anomalies are interested in the reproductive possibilities for their children and whether the reconstructive procedures used to correct them will interfere with sexual function, fertility and pregnancy. The authors report a fascinating series of patients who became pregnant after extensive urinary tract reconstruction, including continent urinary diversion in most and augmentation cystoplasty in others. Many had continent urinary stomas and all were on intermittent catheterization. Surprisingly, problems were encountered with intermittent catheterization in all patients during the pregnancy. In four cases this resulted in chronic indwelling catheter drainage during the pregnancy. Most all the patients had significant urinary tract infections during the pregnancy and most required a Caesarean section. Indeed, a number of the patients underwent an elective Caesarean section prior to term due to the complexity of the procedure in the face of the complex reconstruction with atypical blood supply to the urinary reservoir and stoma. All patients returned to baseline post-delivery including being able to resume normal intermittent catheterization. This report will be very useful in counseling parents and patients prior to major urological reconstructive surgery.

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