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## UROLOGICAL SURVEY

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**STONE DISEASE****Effect of vitamin C supplements on urinary oxalate and pH in calcium stone-forming patients**

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**Background:** The contribution of ascorbate to urinary oxalate is controversial. The present study aimed to determine whether urinary oxalate and pH may be affected by vitamin C supplementation in calcium stone-forming patients.

**Methods:** Forty-seven adult calcium stone-forming patients received either 1 g (N=23) or 2 g (N=24) of vitamin C supplement for 3 days and 20 healthy subjects received 1 g. A 24-hour urine sample was obtained both before and after vitamin C for calcium, oxalate, magnesium, citrate, sodium, potassium, and creatinine determination. The Tiselius index was used as a calcium oxalate crystallization index. A spot fasting morning urine sample was also obtained to determine the urinary pH before and after vitamin C.

**Results:** Fasting urinary pH did not change after 1 g (5.8 +/- 0.6 vs. 5.8 +/- 0.7) or 2 g vitamin C (5.8 +/- 0.8 vs. 5.8 +/- 0.7). A significant increase in mean urinary oxalate was observed in calcium stone-forming patients receiving either 1 g (50 +/- 16 vs. 31 +/- 12 mg/24 hours) or 2 g (48 +/- 21 vs. 34 +/- 12 mg/24 hours) of vitamin C and in healthy subjects (25 +/- 12 vs. 39 +/- 13 mg/24 hours). A significant increase in mean Tiselius index was observed in calcium stone-forming patients after 1 g (1.43 +/- 0.70 vs. 0.92 +/- 0.65) or 2 g vitamin C (1.61 +/- 1.05 vs. 0.99 +/- 0.55) and in healthy subjects (1.50 +/- 0.69 vs. 0.91 +/- 0.46). Ancillary analyses of spot urine obtained after vitamin C were performed in 15 control subjects in vessels with or without ethylenediaminetetraacetic acid (EDTA) with no difference in urinary oxalate between them (28 +/- 23 vs. 26 +/- 21 mg/L), suggesting that the in vitro conversion of ascorbate to oxalate did not occur.

**Conclusion:** These data suggest that vitamin C supplementation may increase urinary oxalate excretion and the risk of calcium oxalate crystallization in calcium stone-forming patients.

**Editorial Comment**

Ascorbic acid has been implicated in calcium stone formation based on its conversion to oxalate and its potential urinary acidifying properties. Numerous studies have evaluated the effect of ascorbic acid consumption on urinary oxalate and pH in normal subjects and in stone-formers. However, results have been conflicting because of inaccuracies in measuring oxalate in the presence of ascorbate, which is readily oxidized to oxalate in vitro. Historical assays involving heating or alkaline conditions favored oxidation of unmetabolized ascorbate to oxalate thereby confounding results.

These authors evaluated the effect of vitamin C supplementation on urinary oxalate and pH in healthy subjects and stone formers given 1 g (healthy subjects and stone formers) or 2 g (stone formers) of ascorbic acid daily for 3 days. Urine collected over a 24-hour period was analyzed for stone risk factors before and after the administration of vitamin C, and urine samples were acidified before processing to prevent in vitro oxidation of ascorbate. Stone formers had higher levels of urinary oxalate than healthy subjects both at baseline and after vitamin C supplementation. However, both healthy subjects and stone formers demonstrated a significant rise in urinary oxalate after 1 g vitamin C consumption, by 56% (14 g) in healthy subjects and by 61% (19 g) in stone formers. Supplementation with 2 g daily of vitamin C in stone formers resulted in a 41% increase in urinary oxalate from baseline (from 34 mg/day to 48 mg/day). No change in urine pH was seen in either group after vitamin C supplementation.

In this study, urine was collected in acid to prevent in vitro oxidation of ascorbate to oxalate, and under these assay conditions both normal subjects and stone formers demonstrated a significant increase in urinary

oxalate levels with moderate vitamin C supplementation. Consequently, the large doses of vitamin C advocated for prevention of the common cold and to promote anti-aging effects could place both normal subjects and stone formers at additional risk for calcium oxalate stone formation. Although stone formers were observed in this study to have higher baseline levels of oxalate, an observation confirmed by some other investigators, diet was not carefully controlled in this study and subjects were only instructed to avoid oxalate- and vitamin C-rich foods. Since urinary oxalate depends on calcium and oxalate intake and the state of calcium absorption, the effect of vitamin C intake may be better studied under conditions of a controlled metabolic diet.

**Dr. Margaret S. Pearle**

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**Pediatric staghorn calculi: the role of extracorporeal shock wave lithotripsy monotherapy with special reference to ureteral stenting**

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*J Urol. 2003; 169: 629-33*

**Purpose:** Treatment for staghorn calculi in children represents a unique challenge. We assessed the efficacy of extracorporeal shock wave lithotripsy (ESWL) (Dornier Medical Systems, Inc., Marietta, Georgia) monotherapy for the management of staghorn calculi in children with special reference to ureteral stenting.

**Materials and Methods:** From June 1992 to January 2001 we treated 42 children 9 months to 12 years old with staghorn stones using the Piezolith 2501 (Richard Wolf GmbH, Knittlingen, Germany) lithotripter. The initial group of 19 patients underwent ESWL without prophylactic ureteral stenting, while in the latter group of 23 a Double-J (Medical Engineering Corp., New York, New York) ureteral stent was inserted immediately before the first ESWL session. Mean patient age, stone size, number of shock waves and ESWL sessions, hospital stay, stone-free rate and major complications were compared in the 2 groups.

**Results:** Overall 33 children (79%) were stone-free after 3 months. The 2 groups were comparable in regard to patient age, stone size, number of shock waves and ESWL sessions, and stone-free rates. Major complications developed in 21% of the unstented group, whereas none was observed in stented cases. This difference was statistically significant ( $p = 0.035$ ). Seven post-ESWL auxiliary procedures were required in the unstented group to manage complications. Hospital stay was significantly longer in the unstented compared with the stented group ( $p = 0.022$ ). At a follow-up of 9 to 102 months (mean 47) stones recurred in 2 children, who were treated with further ESWL.

**Conclusions:** ESWL monotherapy was an efficient and safe modality for the treatment of staghorn calculi in children. Stented patients had fewer major complications and a shorter hospital stay. Prophylactic ureteral stenting is advisable before ESWL for staghorn calculi in children.

**Editorial Comment**

The AUA Nephrolithiasis Clinical Guidelines Panel concluded that in adults, the optimal therapy for staghorn calculi is percutaneous nephrostolithotomy (PCNL) with or without adjuvant shock wave lithotripsy (SWL). Indeed, the need for additional SWL has decreased substantially as the use of flexible nephroscopy for

retrieval of residual calculi has increased. Outcomes for SWL monotherapy demonstrated low success rates with high retreatment and complication rates. However, SWL outcomes for treatment of renal calculi in children have been uniformly favorable and there is some suggestion that the ureters of children may accommodate passage of fragments better than adults.

Comprising the largest series of SWL monotherapy in children published to date, this study evaluated 42 children with partial (n = 33) or complete (n = 9) staghorn calculi treated with SWL monotherapy using a Piezolith 2501 lithotripter. The initial 19 children were treated without a ureteral stent in place while the latter 23 children underwent placement of a stent prior to treatment. Overall, a stone free rate of 79% was achieved, with 89% of children undergoing 1-3 SWL treatments. No difference in stone free rates was detected between the stented and unstented groups (78% versus 79%, respectively), although 21% of the unstented children developed obstruction requiring intervention, including 2 children with sepsis. Only 1 child in the stented group experienced a complication requiring intervention, an encrusted stent that was treated cystoscopically.

This study demonstrates that staghorn calculi can be treated effectively in children using a limited number of SWL treatments and that complications can be largely avoided with generous antibiotic usage and pre-placement of a ureteral stent. These results are all the more surprising given the use of a piezoelectric lithotripter, which has demonstrated inferior results compared with those of electrohydraulic and electromagnetic lithotripters in most series. These optimistic results underscore the difference between children and adults either in the character of the stone itself, the efficacy of SWL in fragmenting the stone or the efficiency with which the kidney discharges the fragments and the ureter accommodates them. Clearly, staghorn calculi represent a different entity in children and adults as these results are in stark contrast to adults in whom retreatment rates and complication rates are prohibitively high, without the benefit of achieving a stone free state in almost half the patients. It appears that SWL monotherapy may constitute reasonable first-line therapy in children.

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## **ENDUROLOGY & LAPAROSCOPY**

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### **Hand-assisted laparoscopy for large renal specimens: a multi-institutional study**

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*Urology 2003; 61:78-82*

**Objectives:** To present our experience with hand-assisted laparoscopy (HAL) for larger renal specimens. One of the theoretical benefits of HAL is the ability to manage large renal specimens, which we defined as tumors greater than 7 cm, and tumors in obese patients.

**Methods:** Between March 1998 and October 2000, 106 HAL radical nephrectomies were performed for enhancing renal masses, for which 95 patients had complete preoperative, intraoperative, and postoperative data. Of the 95 patients, 32 underwent HAL for large tumors (7 cm or greater) and 41 had a body mass index

of 31 or greater. The demographic and outcome data of these two groups were compared with 63 patients who underwent HAL for tumors less than 7 cm and 54 patients with a body mass index of less than 31.

Results: When comparing cohorts by tumor size, the only statistically significant differences were in convalescence and specimen weight. Patients with lesions 7 cm or greater required 21 days to recover compared with 18 days for patients with lesions less than 7 cm. Obese patients had statistically significantly higher American Society of Anesthesiologists classifications, longer operative times (214 versus 176 minutes), and longer convalescences (21 versus 17.5 days) compared with nonobese patients. The estimated blood loss and conversion rate was not different between the groups. Furthermore, no difference was noted between the groups in the incidence of positive margins, local recurrence, or metastatic recurrence at a mean follow-up of 12.2 months.

Conclusions: HAL provides a safe, reproducible, and minimally invasive technique to remove large renal tumors and renal tumors in the obese.

### **Editorial Comment**

It is widely recognized that radical nephrectomy, whether open surgical or laparoscopic, is more difficult in the obese patient or with a very large specimen. It is not the subcutaneous fat or the size of the tumor that matter in most cases, but rather the amount of perinephric fat that is the major determinant of specimen size and therefore operative difficulty. Obesity is considered a relative contra-indication for laparoscopic nephrectomy early in one's experience. The point of this report is that the hand-assisted approach to laparoscopic nephrectomy allows the surgeon to address very effectively even very large patients with large specimens. The operative times and recovery periods tended to be a bit longer in the larger patients, but I would argue that these differences would have been greater if one compared the operative time and convalescence following open surgical radical nephrectomy in obese and non-obese patients. Laparoscopic nephrectomy in general, and the hand-assistance approach in particular, probably offers more to the obese patient than to the non-obese patient in terms of the recovery advantage over open surgery.

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### **Prospective comparison of short-term convalescence: laparoscopic radical prostatectomy versus open radical retropubic prostatectomy**

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*Urology 2003; 61:612-6*

Objectives: To evaluate and compare prospectively the convalescence of patients after laparoscopic radical prostatectomy (LRP) and open radical retropubic prostatectomy (RRP) in a standardized clinical care pathway at a single institution by two surgeons of equal experience and training.

Methods: The study included all 60 patients undergoing LRP and RRP by two fellowship-trained surgeons in their first year of practice. The postoperative care of these patients was uniform and standardized. The medical records were reviewed and convalescence data obtained by an independent urologist and physician's assistant.

Results: Of the 60 patients, 24 underwent RRP and 36 underwent attempted LRP; 3 patients were converted from LRP to RRP. The differences in mean age, preoperative prostate-specific antigen level, Gleason score, in-hospital morphine equivalent requirement, time to oral intake, and hospital stay were not statistically significant between the LRP and RRP groups. The operating room time was significantly longer ( $5.8 \pm 1.2$  hours versus  $2.8 \pm 0.55$  hours,  $P < 0.0001$ ) and the estimated blood loss was significantly lower in the LRP group ( $533 \pm 212$  mL versus  $1473 \pm 768$  mL,  $P < 0.0001$ ) than in the RRP group. Pain medication use at home was significantly less in the LRP group ( $9 \pm 13$  versus  $17 \pm 15$  oxycodone tablets,  $P < 0.04$ ), as was the time to complete convalescence ( $30 \pm 18$  days versus  $47 \pm 21$  days,  $P < 0.002$ ).

Conclusions: Although LRP took almost twice as long to complete as RRP in our initial clinical experience, the patients had a similar hospital course. LRP patients required less pain medication after discharge and had a shorter time to complete recovery than did RRP patients. Additional studies are needed to address long-term cancer control, potency, and continence outcomes to determine the precise role of LRP in the treatment of men with clinically localized prostate cancer.

### Editorial Comment

Although laparoscopic radical prostatectomy has been routinely applied at several centers worldwide, the procedure is far from universally accepted. Surprisingly, this is the first paper to address critically one aspect of the laparoscopic prostatectomy that is purported to be one of its main advantages that being an improved post-operative convalescence compared to open surgical prostatectomy. There are a few problems with this study, primarily being that the method of obtaining the convalescence data was not clearly defined and certainly a validated questionnaire was not used, and that the operations were performed during the first year of practice of the 2 attending surgeons (although both had received fellowship training). With these caveats in mind, the data can still be informative. Laparoscopic radical prostatectomy took 3 hours longer in the operating room than did the open surgical procedure. That is consistent with the experience level of the surgeons, and the operative time for the laparoscopic procedure has been shown to decline (probably to the point of 30 to 90 minutes longer than for the open procedure) with continued experience. It is likely that the increased operative time in the laparoscopic group had some negative impact on the recovery of this group, but not so much as did the difference in operative approach. The laparoscopic group gained partial convalescence (what I would term “normal, non-strenuous activity”) in 12 days, compared to 21 days in the open surgical group (57% sooner) and full convalescence in 30 days compared to 47 days (36% faster). These improvements are about the same order of magnitude in a relative sense as that reported in studies of laparoscopic nephrectomy, although since the absolute recovery time is less following prostatectomy compared to nephrectomy, the difference in terms of absolute time (9 days for partial convalescence and 17 days for full convalescence) is a bit less than that seen in the nephrectomy population. We have unpublished data from our institution that suggests a recovery benefit of similar magnitude for laparoscopic prostatectomy. However, improved recovery following laparoscopic compared to open surgical prostatectomy has been assumed - the key comparisons to be made are for cancer control, potency, and continence. These issues are not addressed in this report and continue to be the subject of debate.

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**PATHOLOGY****Follow up of high grade prostatic intraepithelial neoplasia and atypical small acinar proliferation in a highly screened patient population**

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*Mod Pathol. 2003; 16: 169A*

**Background:** High grade prostatic intraepithelial neoplasia (HGPIN) is the only established precursor for prostate cancer (PCa), with high predictive value as a marker for PCa. About 2% of contemporary needle biopsies contain collections of small acini suspicious for PCa but which fall below the diagnostic threshold. These cases are reported as atypical small acinar proliferation suspicious for but not diagnostic of malignancy (ASAP). Identification of HGPIN, ASAP, or both, warrant repeat biopsy for concurrent or subsequent PCa. PCa has been reported occur in up to 36% of subsequent biopsies for HGPIN and up to 60% for ASAP. We report results of follow up biopsies in a patient population with long term close clinical follow up, a population in which earlier, less advanced lesions are detected.

**Design:** All patients were from community practices, and had serum prostatic specific antigen studies obtained annually or more frequently. 191 cases with an initial diagnosis of 1) HGPIN 2) ASAP or 3) both HGPIN and ASAP; and at least 1 set of subsequent biopsies were retrieved from the files of Bostwick Laboratories. Cases with concomitant PCa were excluded. Follow up biopsies for each entity were separated into 2 diagnostic categories 1) Ca or 2) Non-PCa.

**Results:** Repeat biopsies were obtained from 1 week to 14 months after the initial diagnosis. Results are as follows: HGPIN PCa, 23/103 (22%); HGPIN Non-PCa, 80/103 (78%); ASAP PCa, 18/49 (37%); ASAP Non-PCa, 31/49 (63%); HGPIN & ASAP PCa 11/39 (28%); and HGPIN & ASAP Non-PCa 28/39 (72%).

**Conclusions:** The predictive accuracy for PCa is lower for both HGPIN and for ASAP in a highly screened patient population compared with previously reported unscreened populations. It is still significant compared with historic controls with neither HGPIN nor ASAP. The combination diagnosis of HGPIN & ASAP is an intermediate predictor for PCa, weaker than for ASAP, but stronger than for HGPIN. Other factors that may account for the decline in the predictive accuracies of HGPIN and ASAP for PCa seen here include: 1) more extensive prostate sampling 2) a greater number of biopsies obtained 3) addition of more lateral biopsies.

**Editorial Comment**

High-grade prostatic intraepithelial neoplasia (HGPIN) and atypical small acinar proliferation suspicious for but not diagnostic of malignancy (ASAP) are timely topics on prostate pathology. Atypical lesions considered to be precursors of prostate cancer had many synonyms. Since 1989 during a consensus meeting in Bethesda sponsored by the American Cancer Society (Urology 1989; 34 (suppl): 2-3) a unified name was adopted for these lesions: prostatic intraepithelial neoplasia (PIN). At that meeting, it was also agreed that only high-grade lesions of PIN should be reported by pathologists (HGPIN). The frequency of prostatic carcinoma in a second biopsy of a patient with HGPIN varies from 23 to 79% (J Urol. 2001; 166: 402-10). It is very significant the trend for a lower frequency of this finding. In this commented paper, the authors found a frequency of 22%. They attribute this decline to: 1) more extensive prostate sampling; 2) a greater number of biopsies obtained; and, 3) addition of more lateral biopsies. This means that a higher number of prostate cancers is diagnosed at the time of the first biopsy. As to the term atypical small acinar proliferation suspicious for but not diagnostic of malignancy (ASAP) it is our opinion that the best term is simply "suspicious but not diagnostic of cancer".

ASAP may give to the urologist the meaning of a specific entity that this lesion definitely lacks. It happens when the pathologist is not sure of the diagnosis in cases of a tiny focus, absence of nuclear alterations or when the suspicious focus disappears in subsequent sections (Am J Surg Pathol. 1997; 21: 1489-95).

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### **pT1 Substaging in renal cell carcinoma: validation of the 2002 TNM staging modification of renal tumors**

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*Mod Pathol. 2003; 16: 168A*

**Background:** Tumor size has been used as a criterion to stratify renal cell carcinomas (RCC) into different pT categories. The recent 2002 UICC/TNM classification of malignant tumors is modified to substratify pT1 RCC into pT1a (< 4 cm) and pT1b (> 4 cm ≤ 7 cm). This study aimed to ascertain if this stage modification has prognostic relevance.

**Design:** 259 consecutive radical nephrectomy specimens from one institution for organ-confined RCC from 1970 to 1997 (156 conventional clear RCC (CRCC), 69 papillary RCC, 28 chromophobe RCC, 1 collecting duct carcinoma and 5 RCC, NOS) with follow-up (mean 7.17 years, median 6.45 yrs) were included in the study.

**Results:** There were 115 (44.4%) < 4 cm (pT1a), 95 (36.7%) > 4 cm ≤ 7 cm (pT1b) and 49 (18.9%) > 7 cm (pT2) tumors. Disease-related deaths (DD) and disease-related recurrences (DR) occurred in none (0%) and 2 cases (1.7%) of pT1a; 5 (5.3%) and 7 (7.3%) of pT1b, and 12 (24.5%) and 16 (32.6%) of pT2. All analyses were adjusted for age and sex. DR for all histologic subtypes was not statistically different between pT1a and pT1b with a risk ratio (RR) of 3.7 (p = 0.106). If only CRCCs were analyzed, DR in the pT1b group was statistically higher compared to pT1a with a RR of 8.54 (p = 0.047). The RR for pT2 was significantly higher than pT1a (20.30 for all histologic subtypes and 46.97 for CRCC) (p = 0.001). Using size as a continuous variable, the logarithmic change in tumor size was a significant predictor of DR with a risk ratio of 8.62 (p = 0.001). Since no deaths occurred in the pT1a category, the combined pT1a and pT1b and pT2 were compared to assess DD; DD in the pT2 group was significantly higher with an estimated RR of 2.2 (p = 0.002).

**Conclusions:** Substaging and staging of RCC into pT1 (pT1a and pT1b) and pT2 yields prognostically important information validating the 2002 TNM modifications for this tumor type. The substratification of pT1 is particularly useful in tumors with CRCC histology.

### **Editorial Comment**

The new proposal to stratify pT1 is also a timely topic on renal pathology. The recent 2002 UICC/TNM classification of malignant tumors was modified to substratify pT1 renal cell carcinoma into pT1a (< 4 cm) and pT1b (> 4 cm ≤ 7 cm). This is a large series based on 259 consecutive radical nephrectomy specimens from one institution for organ-confined renal cell carcinoma. The results of the study yielded prognostically important information validating the 2002 TNM modification for renal cell carcinoma. The authors conclude

that substratification of pT1 is particularly useful in tumors with conventional renal cell carcinoma histology. The conventional renal cell group includes clear and eosinophilic renal cell carcinomas. It is also worth mentioning that the 2002 UICC/TNM classification includes renal sinus (peripelvic) fat invasion as pT3a. In the 1997 edition, only perinephric adipose tissue was considered pT3a. Pathologists must be aware of this modification in order to properly examine the renal sinus.

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## IMAGING

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### **The urethra and its supporting structures in women with stress urinary incontinence: MR imaging using an endovaginal coil**

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*AJR Am J Roent. 2003; 180: 1037-44*

**Purpose:** The objective of this study was to evaluate the urethra and its supporting structures in patients with stress urinary incontinence using MR imaging with an endovaginal coil.

**Materials and Methods:** We reviewed MR images obtained using an endovaginal coil in 63 patients with stress urinary incontinence and in 16 continent women. We compared the two groups for the thickness of the striated muscle, smooth muscle, and mucosa–submucosa of the urethra; degree of asymmetry of the puborectalis muscle; frequency of distortion in the periurethral, paraurethral, and pubourethral ligaments; degree of the vesicourethral angle; and dimension of the retropubic space. Using the status of the urethra and its supporting structures as our basis, we scored the risk of stress urinary incontinence for each woman on a scale of 0–5.

**Results:** The striated muscle layer of the urethra was thinner in the group with stress urinary incontinence (mean  $\pm$  SD,  $1.9 \pm 0.5$  mm) than that in the continent group ( $2.6 \pm 0.4$  mm) ( $p < 0.001$ ). A high degree of asymmetry of puborectalis muscle ( $> 1.5$ ) was more frequent in the group with stress urinary incontinence (29%) than in the continent group (0%) ( $p = 0.015$ ). Supporting ligaments were more frequently distorted in the incontinent group than in the continent group. Distorted periurethral ligaments were found in 56% of the patients with stress urinary incontinence versus 13% of the women who were continent; distorted paraurethral ligaments were found in 83% of the patients with stress urinary incontinence versus 19% of the women who were continent; and distorted pubourethral ligaments were found in 54% of the patients with stress urinary incontinence versus 19% of the women who were continent ( $p < 0.05$ ). The group with stress urinary incontinence had a greater vesicourethral angle ( $148^\circ$  vs.  $125^\circ$ ) and larger retropubic space (7.5 vs. 5.1 mm) than did the women who were continent ( $p < 0.05$ ). The score for the risk of stress urinary incontinence was higher in the group with stress urinary incontinence ( $3.3 \pm 1.4$ ) than in the women who were continent ( $1.0 \pm 1.2$ ) ( $p < 0.001$ ).

**Conclusions:** MR imaging with an endovaginal coil revealed significant morphologic alterations of the urethra and supporting structures in patients with stress urinary incontinence.

**Editorial Comment**

Recently several studies using different approaches has been shown that magnetic resonance imaging (MRI) may be a useful tool for the diagnosis of the problems of the female pelvic floor. Today's use of MRI of the pelvic floor includes both anatomical/topographical images of high quality and functional imaging. Functional MRI when done preferentially in open MRI systems seems promising because allows a potential of simultaneously examining, micturition, bladder motion and pelvic floor muscles. The problem is that the quality of images obtained with open MRI equipments is not comparable with the high resolution images of the closed MRI systems with 1.5 Tesla. The main purpose of this excellent study is to demonstrate superb high resolution images of urethra and its supporting structures obtained with an endovaginal coil. These examinations were performed in normal women and in patients with stress urinary incontinence. It is clear that direct visualization of the morphology of these structures is important in deciding treatment options. Although a more detailed depiction of minute structures was obtained with this special endovaginal coil, In our opinion diagnostic, high resolution images obtained with the regular pelvic phased array coils are sufficient for the adequate evaluation of these abnormalities. As with others closed-magnet-systems the main limitation of this study very well pointed out by the authors are that these patients underwent pelvic floor examination only in supine position. Some dynamic changes of the urethra and vesicourethral angle as well some bladder descents can be missed unless the patients are examined in sitting position and during micturition and bladder motion.

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**Incidence of malignancy in complex cystic renal masses (Bosniak category III): should imaging-guided biopsy precede surgery?**

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*AJR Am J Roent. 2003; 180:755-8*

**Purpose:** Complex indeterminate renal cystic masses (Bosniak type III) can have benign and malignant causes and have been traditionally considered surgical lesions. We sought to determine the incidence of malignancy and to assess a possible role for imaging-guided biopsy for this category of renal masses.

**Materials and Methods:** Three hundred ninety-seven renal biopsies were performed at our institution between 1991 and 2000. Between January 1997 and August 2000, 28 Bosniak category III lesions, based on established CT imaging criteria on helical CT scans, were identified for analysis. The incidence of malignancy, based on surgical pathology or imaging follow-up and percentage of lesions proceeding to surgery, among these 28 lesions, was determined. The surgical results were correlated with the biopsy findings.

**Results:** Of the 28 biopsied category III lesions, 17 (60.7%) were malignant (16 renal cell carcinomas and one lymphoma), and 11 (39.3%) were benign (six hemorrhagic cysts, three inflammatory cysts, one metanephric adenoma, and one cystic oncocytoma). Seventeen of the 28 lesions (16 renal cell carcinomas and one inflammatory cyst) had surgical resection after the biopsy. All resected lesions had pathologic diagnoses

identical to the percutaneous imaging-guided biopsy results. The remaining 11 patients who had undergone nonsurgical biopsies had radiologic follow-up for a minimum of 1 year, with benign lesions showing no interval change.

Conclusions: Renal biopsy and radiologic follow-up were useful in identifying nonmalignant lesions in complex cystic renal masses and avoided unnecessary surgery in 39% of patients.

### Editorial Comment

Bosniak category III cystic masses are lesions which presents suggestive but not definitive signs of malignancy. For this reason they are designated as renal mass of indeterminate origin. The typical category III cystic mass shows thickened and irregular calcifications, uniform wall thickening, and thickened and irregular or multiple septa (>1 mm). It is well known that there is too much interobserver variability to distinguishing Bosniak II from Bosniak III cystic masses. Complementary evaluation with magnetic resonance imaging may be useful in some of these cases. Because there is 50-60% of chance of malignancy, the recommended treatment for Bosniak category III lesions is surgical resection (tumor enucleation, partial or total nephrectomy). Although imaging guided renal biopsy was performed for a different purpose (previous diagnosis for RF ablation), this study is useful to emphasize that if a percutaneous biopsy of a complex renal cyst should be done, it should be guided by CT and a 18 gauge needle should be used in order to obtain sufficient number of good quality cores. Fine-needle aspiration biopsy for cytology has too many false negative results. Some points are important when we are dealing with the management of a Bosniak category III renal cystic mass. First the patient's clinical factors such as age and the presence or not of intercurrent illness can interfere in the choice of the treatment modality. Second, if surgery should be done, whenever is possible a conservative procedure should be performed. Third, close follow-up or percutaneous CT-guided biopsy are both valid procedures and should be used accordingly.

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## INVESTIGATIVE UROLOGY

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### Effect of botulinum toxin A on the autonomic nervous system of the rat lower urinary tract

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*J Urol.* 2003; 169:1896-900

Purpose: The magnitude and duration of the effects of botulinum toxin A on acetylcholine (ACh) and norepinephrine release from the bladder and urethra of rats were measured using a radiochemical method.

Materials and Methods: Saline (sham treatment) or botulinum toxin A was injected into the bladder (50 µl.) or urethra (30 µl.) in separate groups of animals. The release of <sup>3</sup>H-norepinephrine or <sup>14</sup>C-choline was measured at 2 time points after injection (5 or 30 days).

Results: The fractional release of ACh in botulinum toxin A treated animals was significantly inhibited at higher frequencies of electrical field stimulation (20 Hz.) but not at lower frequencies (2 Hz.) 5 days after

injection. However, ACh release recovered to sham injected values 30 days after toxin injection. No significant differences in the fractional release of norepinephrine from sham injected or botulinum toxin A bladders were observed. In contrast, norepinephrine release from the urethra was inhibited by botulinum toxin A for at least 30 days after injection. Similar to its effect on transmitter release in the bladder, botulinum toxin A inhibited norepinephrine release in the urethra at high (20 Hz.) but not at low (4 Hz.) electrical stimulation frequencies.

Conclusions: These data indicate that the clinical effects of botulinum toxin A on the lower urinary tract may vary depending on the site of injection and level of nerve activity.

### Editorial Comment

Since its introduction into clinical use in the 1980's, botulinum toxin A (BTX-A) has been successfully used to treat various conditions including blepharospasm, strabismus, focal dystonias, muscle spasms and spasticity, axillary hyperhidrosis, and achalasia. Urological applications of BTX-A have been primarily associated with cases of detrusor external sphincter dyssynergia (DESD), as a viable option for patients that are not capable of performing clean intermittent catheterization (1).

In addition to classic neuropathic DESD, the urological indications for use of BTX-A have been expanded to include patients with a variety of bladder outlet obstructions. BTX-A was successfully used to treat voiding dysfunction in multiple sclerosis patients with DESD, patients with pelvic floor spasticity, and even in an acontractile multiple sclerosis patient who wished to void by Valsalva (2). Recently, it was reported a case of functional urethral obstruction and detrusor acontractility following pubovaginal sling surgery that was successfully treated by BTX-A urethral sphincter injection (3).

The authors are pioneers in the field, and the present work represents the expansion and in deep presentation of a previous abstract, on which the same group of researchers demonstrated that the clinical success of BTX-A is supported by laboratory research (4). The work demonstrated marked decreases in the release of labeled norepinephrine and acetylcholine in BoNT/A (laboratory grade botulinum toxin) injected rat urethral sphincters (4). While the therapeutic effect of inhibiting acetylcholine release is obvious, blockage of norepinephrine release may provide clinical benefit by inhibiting sympathetic transmission and smooth muscle dyssynergia (1).

In the present work, saline or BTX-A was injected into the bladder or urethra in separate groups of female Sprague-Dawley rats. The release of <sup>3</sup>H-norepinephrine or <sup>14</sup>C-choline was measured at 2 different times after injection (5 or 30 days). The results indicate that BTX-A injected into the bladder and urethra at different times before the experiment could depress the release of neurotransmitters in a frequency and time dependent manner. In the bladder ACh release was depressed 5 days after treatment but it recovered at 30 days. On the other hand, BTX-A depression of norepinephrine release in the urethra was delayed in onset but lasted at least 30 days, indicating that the mechanism of action or diffusion of BTX-A through the tissue is different in the bladder and urethra.

### References

1. Smith CP, Somogy GT, Chancellor MB: Botulinum toxin treatment of urethral and bladder dysfunction. *Int Braz J Urol.* 2002, 28: 545-52.
2. Phelan MW, Franks M, Somogyi GT, Yokoyama T, Fraser MO, Lavelle JP, Yoshimura N, Chancellor MB: Botulinum toxin urethral sphincter injection to restore bladder emptying in men and women with voiding dysfunction. *J Urol.* 2001, 165: 1107-10.
3. Smith CP, O'Leary M, Erickson J, Somogyi GT, Chancellor MB: Botulinum toxin urethral sphincter injection resolves urinary retention after pubovaginal sling operation. *Int Urogynecol J Pelvic Floor Dysfunct.* 2002, 13: 185-6.

4. McNeil BK, Smith CP, Franks ME, Ghosh R, de Groat WC, Chancellor MB, Somogyi GT: Effect of botulinum toxin A on urethral neurotransmitter release: Implications on somatic/autonomic nerve transmission. *J Urol.* 2001, 165: 277 (Abst).

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### **Nitric oxide synthase in the external urethral sphincter of the sheep: immunohistochemical and functional study**

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*J Urol.*; 169: 1901-6

**Purpose:** We studied the distribution of neuronal nitric oxide synthase (nNOS) and the effects of nitric oxide (NO) modulating drugs on contractile function of the external urethral sphincter of lambs. Gender differences were evaluated.

**Materials and Methods:** Longitudinal and transverse sections of the external urethral sphincter from 10 female and 10 male lambs were studied using reduced nicotinamide adenine dinucleotide phosphate-diaphorase histochemistry and nNOS immunocytochemistry. Isometric contractile responses to electrical field stimulation were recorded from external urethral sphincter preparations from 47 female and 45 male lambs and the effects of NO modulating drugs were evaluated.

**Results:** We detected nNOS in the sarcolemma of some but not all striated fibers, where nNOS seems to be concentrated at the neuromuscular junction. In addition, nNOS was present in nerve fibers and intramural ganglia. The density of innervation decreased toward the distal part of the external urethral sphincter and was higher in male preparations. No significant functional effects of the NOS inhibitor N<sup>G</sup>-nitro-L-arginine (10 mM.) or the NO donors diethylamine and spermine NONOate (Sigma Chemical Co., St. Louis, Missouri) (5 mM. each) on external urethral sphincter isometric contractility were found in either gender.

**Conclusions:** Despite the evidence for nNOS at the sarcolemma and nerve fibers of the external urethral sphincter the physiological relevance of these immunohistochemical findings remains to be determined.

#### **Editorial Comment**

The authors used sheep for studying because from an anatomical standpoint, these animals present a very clear distinction between the smooth and striated components of the external urethral sphincter. In this elegant study, histological and immunohistochemical techniques were combined with analysis on the effects of nitric oxide modulating drugs on external urethral sphincter contractile function in males and females.

Under light microscopy, it was identified the external urethral sphincter in the mid and caudal third of the urethra, both in males and females. No important morphological differences were identified between genders.

Staining for nNOS immunoreactivity demonstrated that the sheep external urethral sphincter is densely innervated by nNOS containing nerve fibers, which also occurred in the intramural ganglia, nerve trunks and

even in the sarcolemma of striated fibers. These observations provide the morphological basis for a functional role of endogenous production of NO in the external urethral sphincter, as a neurotransmitter or as a neuromodulator.

Nevertheless, even with these morphological evidences for the presence of nNOS in the external urethral sphincter, the authors did not observe any effect on in vitro contractility of the external urethral sphincter after NOS inhibition by N<sup>G</sup>-nitro-L-arginine. Therefore, the physiological relevance of these findings remains to be determined.

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## RECONSTRUCTIVE UROLOGY

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### **Free neurovascular transfer of latissimus dorsi muscle for the treatment of bladder acontractility: II. Clinical results**

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*J Urol.* 2003; 169:1379-83

**Purpose:** Until now patients with bladder acontractility were destined to lifelong clean intermittent catheterization with all of its inherent risks. Previous experimental studies demonstrated that voluntary voiding can be restored by microneurovascular free transfer of a carefully selected muscle flap. We present the selection criteria, modifications in technique, follow-up schedule and long-term results in 20 patients treated with transplantation of latissimus dorsi muscle to the bladder.

**Materials and Methods:** In 20 patients with bladder acontractility requiring intermittent catheterization for at least 2 years we performed latissimus dorsi detrusor myoplasty. Preoperative evaluation included urodynamic assessment, cystoscopy, upper tract imaging and electromyography of the rectus muscle. The procedure involves transfer of a free neurovascular latissimus dorsi muscle flap to the pelvis where it is anastomosed to the lowest motor branches of the intercostal nerve and deep inferior epigastric vessels. Patients were instructed to attempt voluntary voiding 3 months postoperatively. Follow-up included urodynamic evaluation, biannual Doppler ultrasonography and annual dynamic computerized tomography.

**Results:** Annual dynamic computerized tomography and/or biannual Doppler ultrasonography demonstrated vascularization and contractility of all transplanted muscle flaps. Mean follow-up is 44 months (range 18 to 74). Of the 20 patients, 14 were able to void spontaneously within 4 months postoperatively with post-void residual volumes of less than 100 cc, voluntary voiding was restored by bladder neck incision in 4, and 2 (10%) still require self-catheterization. Postoperative detrusor pressures ranged from 5 to 218 cm. H<sub>2</sub>O (mean 72, median 55). None of the patients had morphological and functional changes of the upper tract, or de novo incontinence postoperatively.

Conclusions: Functioning free muscle transplantation was able to restore voluntary voiding in patients who had previously been dependent on long-term catheterization. Voluntary voiding has been maintained several years postoperatively without deterioration of upper tract function.

### Editorial Comment

Previous work had shown that functional muscle transplantation may also be useful for the treatment of patients with bladder acontractility. This paper now shows for the first time a larger series of patients treated with free neurovascular transfer of latissimus dorsi muscle with a mean follow-up of 44 months, with a minimum follow-up of 18 months. This technique was successful in 90% of the patients who all were catheterizing themselves prior to surgery for at least 2 years. However, not all of them succeeded with the muscle transfer procedure alone. 20% of the patients needed a uni- or bilateral bladder neck incision to be able to void spontaneously with a residual volume of less than 100 cc. Is of note that none of the patients developed urinary incontinence.

The present study shows that restoration of intentionally voiding is possible in patients with bladder acontractility using careful selection criteria and with results which are persistent and do not lead to secondary complications in the long run.

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### Comparison of clinical and urodynamic outcome in orthotopic ileocaecal and ileal neobladder

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*J Urol. 2003; 169:1379-83*

Objective: Aim of this study was to evaluate the clinical and urodynamic results in patients who had undergone orthotopic bladder substitution with ileocaecal (Mainz pouch procedure) or ileal (Abol-Enein and Ghoneim procedure) segments and who had a minimum follow-up of 12 months.

Methods: Mainz pouch procedure (MP) was performed in 19 patients (mean age 62.4 years, median follow-up 36 months) and Abol-Enein and Ghoneim procedure (AG) in 36 patients (mean age 64.3 years, median follow-up 31 months). Complications and urodynamic findings were compared in both groups.

Results: Complications related to the pouch were (MP and AG groups, respectively) ureterointestinal anastomotic stenosis (10.5% versus 5.7%), pouch-urethral anastomosis stenosis (5.3% versus 5.5%), pouch-ureteral reflux (7.9% versus 4.2%), and pyelonephritis (15.8% versus 13.8%). At 12 months postoperatively, daytime incontinence rates were 5.3% versus 5.5% and nighttime incontinence (twice weekly or more) rates were 21% versus 8.4% in MP and AG groups. In urodynamic evaluation, which was performed in 39 patients at 12 months postoperatively, both groups showed adequate bladder capacity, the mean values of which were  $426 \pm 34$  ml in MP group and  $442 \pm 27$  ml in AG group ( $p > 0.05$ ). The mean value of maximal flow rate was  $19.6 \pm 3.7$  ml/s in MP group and  $16 \pm 6.1$  ml/s in AG group ( $p > 0.05$ ). The mean residual urinary volume was  $37 \pm 8.2$  ml in MP group and  $45 \pm 7.1$  ml in AG group ( $p > 0.05$ ).

Conclusion: The comparison between two types of bladder substitution, namely ileocaecourethrostomy (Mainz pouch procedure) and ileal reservoir (Abol-Enein and Ghoneim procedure) has demonstrated that urodynamic findings showed no significant difference between two groups.

### Editorial Comment

Several papers have tried to compare different gastrointestinal segments with regards to their use and possible complications in orthotopic neobladders. In this paper a group actually not so experienced with the technique of orthotopic neobladders as some centers of excellence have demonstrated that in their hands no real difference with regards to the outcome after a minimum follow up of 12 months could be detected. It is notable, however, that the incidence of ureterointestinal anastomotic stenoses was lower in patients with a subserosal technique. There was also a lower incidence of pouch-ureteral reflux with the ileal subserosal technique. The value of anti-refluxing techniques in orthotopic low pressure reservoirs is still under discussion. What we can learn from this paper is the fact that submucosal embedding of ureters is not only a more difficult way of inserting ureters but it is also probably more prone to complications. This may especially be true in those centers where the numbers of orthotopic neobladder procedures are not extremely high (1). Nevertheless, we must also consider other factors that are important to diminish a stenosis or stricture rate in ureterointestinal anastomosis such as the length of mobilized ureters, handling of the ureters during dissection, preservation of periureteral tissue and thus vascular anastomosis etc.

The last issue is also how we prepare ourselves for future instrumentation of the upper urinary tract in orthotopic neobladders. The location and angle at which ureters insert into the pouch may be factors for an easy or difficult access from below.

### Reference

1. Stenzl A, Hobisch A, Strasser H, Bartsch G: Ureteroileal anastomosis in orthotopic urinary diversion: how much or how little is necessary? *Tech Urol.* 2001; 7: 188-95.

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## UROLOGICAL ONCOLOGY

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### **The value of a second transurethral resection in evaluating patients with bladder tumours**

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*Eur Urol.* 2003, 43:241-5

Objectives: To evaluate the usefulness of a second transurethral resection for superficial and muscle-invasive bladder tumours.

Methods: A review of the literature relevant to repeat resection for bladder tumours was conducted using Medline Services.

Results: Transurethral resection of the bladder has two shortcomings: underestimating clinical stage, and overlooking other lesions. A second transurethral resection, when performed 2-6 weeks after the initial resection, corrects clinical staging errors in 9-49% of cases and detects residual tumor in 26-83% of cases. A second resection is particularly warranted for T1 tumours since 2-28% of them prove to be muscle-invasive, thus requiring a change in management. For muscle-invasive tumours, a second resection may be performed only if bladder sparing is being considered, as it helps to exclude the presence of tumor sites contra-indicating conservative treatment.

Conclusions: A second transurethral bladder resection may be warranted for T1 tumours, and for invasive tumours when a bladder preservation is planned.

### Editorial Comment

The authors performed Medline-based review of the literature and which all papers on value of a second transurethral resection in superficial bladder tumours were evaluated. This is a timely and important paper as it condenses the known facts on the value of a second transurethral resection into one well-founded argument: Do it! At second TUR residual tumours are detected between 4 and 78% and, especially in T1-tumours range from a minimum of 33% to maximum of 78%. The stage of tumours is underestimated in 9-49% of tumours at first resection. The interval recommended in this paper is between 2 and 6 weeks, with no benefit in waiting more than 2 weeks. From our personal experience the interval of 1 week is also possible without an increase in complications. Morbidity is not increased significantly with the second TUR. In conclusion, this paper further underlines the importance of a second transurethral resection, especially in T1-tumours.

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### **A study of the morbidity, mortality and long-term survival following radical cystectomy and radical radiotherapy in the treatment of invasive bladder cancer in Yorkshire**

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Objectives: To study the morbidity of radical cystectomy and radical radiotherapy in the treatment of patients with invasive carcinoma of the bladder and to report the long-term survival following these treatments.

Patient and Methods: 398 patients with invasive carcinoma of the bladder treated between 1993 and 1996 in the Yorkshire region were studied. Of 398 patients studied, 302 patients received radical radiotherapy and 96 underwent radical cystectomy. A retrospective review of patients' case notes was performed to construct a highly detailed database. Crude estimates of survival differences were derived using Kaplan-Meier methods. Log-rank tests (or, where appropriate, Wilcoxon tests) were used to test for the equality of these survivor functions. These functions were produced as all-cause survival. The proportional hazards regression modeling was used to assess the impact of definitive treatment on survival. A backwards-stepwise approach was used to

derive a final predictive model of survival, with likelihood ratio tests to assess the statistical significance of variables to be included in the model.

**Results:** The patients undergoing radiotherapy were significantly older (mean age: 71 years versus 66 years), but no difference was identified in the distribution of American Society of Anesthesiologists (ASA) grades in the two treatment groups. The stage distribution of cases in the treatment groups was not significantly different. Significant treatment delays were observed in both treatment groups. The median time from being seen in the clinic to transurethral resection of bladder tumor (TURBT) and subsequent radical treatment (cystectomy or radiotherapy) was 4.3 and 9 weeks, respectively. Age was the most significant independent factor accounting for treatment delays ( $p < 0.001$ ). The 30-day and 3-month treatment-associated mortality for radical cystectomy and radiotherapy was 3.1% and 8.3% and 0.3% and 1.65%. Of the patients who received radiotherapy, 57 (18.8%) were subsequently subjected to a salvage cystectomy. For these 57 patients, 30-day and 3-month mortality after the salvage cystectomy were 8.8% and 15.7%. Gastrointestinal complications were the major source of early morbidity after primary and salvage cystectomy. Bowel leakage occurred in 3% following radical and 8.7% after salvage cystectomy. Bowel complications (leakage and obstruction) were the major cause of death following salvage cystectomy. No specific cause was predominant in those undergoing radical cystectomy with intestinal anastomotic leakage and urinary leakage accounting for one death each. Exacerbation of co-morbid conditions accounted for the remaining causes of mortality. Urinary leakage occurred in 4% following both forms of cystectomy. Recurrent pyelonephritis and intestinal obstruction were responsible for the majority of complications in the follow-up period. Bladder and gastrointestinal complications accounted for the majority of complications following radical radiotherapy. Some degree of irritative bladder and rectal were noted commonly. Severe bladder problems, which rendered the bladder non-functional or required surgical correction, occurred in 6.3% of patients. 2.3% of patients underwent surgery for bowel obstruction related to radiotherapy induced bowel strictures. Following radiotherapy, 43.6% of patients had a recurrence in the bladder at varying intervals post-treatment. Of these, 40% had  $\geq T2$  disease. The 5-year survival following radiotherapy (with or without salvage cystectomy) was 37.4% while 36.5% of patients were alive 5 years after radical cystectomy. There was no statistically significant difference in the overall 5-year survival figures between the two primary treatments. Tumor stage, ASA grade and sex were the only independent predictors of 5-year survival on multivariate analysis.

**Conclusions:** This retrospective regional study shows that there is no significant difference in the 5-year survival of patients with invasive bladder cancer treated with either radical radiotherapy or radical cystectomy. All forms of radical forms of radical treatment for bladder cancer are associated with a significant treatment-associated morbidity and mortality. Gastrointestinal complications were responsible for the majority of complications. The treatment-associated mortality at 3 months was two- or three-fold higher than the 30-day mortality; emphasizing its importance as an indicator of the true risks of cystectomy. The clinical T stage, the sex and the ASA grade of the patient were the only independent predictors of survival. The data in this series suggests that radical radiotherapy and radical cystectomy should be both considered as valid primary treatment options for the management of invasive bladder cancer.

### **Editorial Comment**

This is a paper comparing the morbidity of radical cystectomy and radical radiotherapy from a local area in the United Kingdom. Although this is not randomized and scientifically of minor value than a prospective randomized study it still adds to the knowledge on the outcome of recent therapy of invasive bladder tumours. 398 patients with invasive bladder carcinoma were treated between 1993 and 1996 in the Yorkshire region. 302 patient received radical radiotherapy, 96 underwent radical cystectomy. Although there were differences in the two treatment-groups (radiotherapy patients were older than cystectomy patients, 71 years vs. 66 years), there was no major difference in the outcomes. Interestingly 18.8% of the patients who initially received

radiotherapy subsequently where subjected to salvage-cystectomy. The survival rate after 5 years was roughly 40%, the median survival rate was roughly 50% in both groups. In conclusion, this contribution is worth reading and shows the treatment results in a country where radiotherapy and not cystectomy is the primary choice of treatment in invasive bladder tumours. Certainly, from the continental point of view, radical cystectomy still can be considered the treatment of choice, but alternatives, such as radiotherapy, have to be kept in mind.

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## FEMALE UROLOGY

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### **The urologist's guide to genital piercing**

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*BJU Int. 2003, 91:245-51*

Over the past 10 years or so, there has been a clear increase in the number of people practicing body piercing, in particular, many young people appear keen to adopt an individuality with the 'body art', which they may regard as an expression of identity. It is perhaps ironic that this perceived individuality is in fact shared with thousands of others.

No part of the human anatomy is apparently immune from this fashion, but an examination into the history of body piercing reveals that such decorations are far from being an invention of the late 20th century. Indeed, as discussed in this review, piercing has occurred for thousands of years, in societies throughout the world, and has been adopted through the spectrum of social class.

Urologists should perhaps be particularly aware of the seemingly bizarre practice of genital piercing, as their specialist knowledge may sometimes be required to manage the inevitable complications.

### **Editorial Comment**

This guide covers both male and female piercing. The authors describe genital piercing with regards to: historical aspects; current laws; techniques of placement; and categorization of the types of genital piercings. In addition, there is an excellent section on potential urologic complications.

The urologist is expected to understand and treat maladies both spontaneous and self-inflicted from all walks of life. Besides tattooing, no other form of body adornment has separated the young from the old than body piercing and particularly genital piercing. Nevertheless, even if the mature urologist never grew up in a time where male and females pierced and tattooed various areas of their bodies with a remarkable frequency, he is expected to be able to look at a piercing, understand the potential urological complications and technique that it required. This paper helps the urologist with these specific tasks.

Interest in piercing of the genitals has risen to a point where some may consider it an art form as opposed to an attraction of a salacious or prurient nature. For those members of society who wish not to pierce their genitals or body there is deep lack of understanding of those who choose to pierce. Perhaps it is an attempt by those who subject themselves to piercing to obtain a more protean state than that which they acquired through the form of genetics sweepstakes from their parents and thus the incidence of piercing has raised to the point where it is now considered not outside of the standard state of propriety.

I recommend this article as part of one's reference library in the office. There are few places where one may obtain such a guide in a succinct and efficient manner with an amazing amount of clarity and marvelous pictures to which future reference may be obtained. Simply put: read the article if only for the pictures.

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### **Incontinent ileovesicostomy in the management of neurogenic bladder dysfunction**

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Neurourol Urodyn. 2003; 22:142-6

**Aims:** To report outcome and urodynamic follow-up of incontinent ileovesicostomy in quadriplegic patients with neurogenic bladder.

**Methods:** Seven patients (five male, two female, mean age 33.7 yr) with neurogenic bladder underwent ileovesicostomy for management of leakage or complications of chronic catheter drainage. Five had chronic indwelling catheters: three suprapubic and two urethral. Preoperatively, all had upper tract evaluation and videourodynamics. All seven patients had detrusor hyperreflexia. Preoperative detrusor leak point pressures averaged 42.7 cm H<sub>2</sub>O. Two females had intrinsic sphincteric deficiency from prolonged Foley catheter drainage. Ileovesicostomy involves isolation of a 15-20 cm segment of terminal ileum. The proximal 6-8 cm of this segment is opened on the antimesenteric border. The dome of the bladder is opened widely in a transverse manner and the proximal portion of the bowel is sutured onto the bladder. The distal portion of the ileum remains tabularized and becomes the stoma.

**Results:** There were no intraoperative complications. Operative time averaged 159 minutes. Associated procedures included removal of bladder calculus (n = 1), pubovaginal sling (n = 2), and Marshall Marchetti Krantz suspension (n = 1). Mean blood loss was < 200 cc in six patients. Mean hospital stay was 8 days. Complications in two patients included: fascial stenosis requiring stoma revision (n = 1), wound infection (n = 1), and postoperative ileus (n = 1). Mean follow-up was 37.4 months. Postoperatively, mean detrusor leak point pressures were 16.7 cm H<sub>2</sub>O (P = 0.0061). Patient satisfaction is high with only one complaint of occasional difficulty fitting the appliance.

**Conclusions:** Ileovesicostomy is an effective method of urinary drainage in quadriplegic patients. Detrusor leak point pressures were lowered, and upper tracts were preserved. No long-term complications encountered.

### **Editorial Comment**

The authors present their experience in patients with detrusor hyperreflexia refractory to medical therapy or unable to perform CIC who then underwent an incontinent ileovesicostomy. Preoperatively, urodynamics were completed on all patients with average detrusor leak point pressures being 42.7 cm H<sub>2</sub>O. Patients with areflexic/poorly contracting bladders were not offered the procedure. During the surgical case, a 15-20 cm section of terminal ileum was isolated with the proximal 6-9 cm of this segment being opened on the anti-mesenteric border and used as an augmentation to the bladder. Postoperatively, no bladder catheters were used and the ileostomy segment was stented with a red rubber catheter. Mean follow-up was 37.4 months. Complications occurred in 4 of 7 patients including fascial stenosis requiring stomal revision in one patient.

This is a very good and succinct paper that reminds one of the importance of this operation for all patients including female patients who have neurogenic vesical dysfunction and are unresponsive or unable to comply with the regimen of anticholinergic therapy and clean intermittent catheterization. As highlighted by the authors the main advantages of this procedure were preservation of the native ureterovesical junction and avoidance of a dysfunctionalized bladder. Though a passive drainage system similar to a cutaneous vesicostomy, previous authors have highlighted that vesicostomy in adults has only had mixed success (1). The attractiveness of this surgery includes that of removing the often used suprapubic tube and its secondary associated bladder irritation, and potential hematuria. This paper is very well written though it would have been of interest if the authors had expounded on the incidence of autonomic dysreflexia in their patients pre- and postoperatively. In addition, if the reader is interested, there are several other excellent papers on this operation and its treatment of this difficult clinical malady (1,2). These include reports from Dr. McGuire's group including one from 1994, which has good explanatory diagrams of the operation and the follow-up paper 5 years later, which provides excellent long term outcome results from this surgery (1,2). Of note is that in those authors' hands and in this paper's report, fascial and stomal stenosis mirrored that of the ileal conduit urinary diversion. Both female patients in this study group underwent pubovaginal slings. Previous authors have based their placement of slings on urodynamics with sling being offered for proximal urethral dysfunction and formal bladder outlet closure for a non-salvageable situation (2). Should consideration be given to a suburethral sling or urethropexy in all females undergoing the reconstruction regardless of their urethral support or intrinsic sphincter function? In addition, this paper, as have others (1,2), highlight the need for early postoperative urodynamics to establish operative success in the form of acceptable detrusor leak point pressures. The reader should remind himself of the difference between a Valsalva leak point pressure and a detrusor leak point pressure (3). The authors do elude peripherally in their discussion on the use of ileovesicostomy in patients with hypocontractile bladders. Future elucidation or quantification on the minimal detrusor strength required to be a candidate for this operation will be of great interest. In addition, I hope in the future we will be privileged to read the authors' reports on the use of incontinent ileovesicostomy in patients with hypocontractile bladders if the clinical series is developed.

#### References

1. Schwartz SL, Kennelly MJ, McGuire EJ, Faerber GJ: Incontinent ileovesicostomy urinary diversion in the treatment of lower urinary tract dysfunction. *J Urol.* 1994; 152:99-102.
2. Leng WW, Faerber G, Del Terzo M, McGuire EJ: Long-term outcome of incontinent ileovesicostomy management of severe lower urinary tract dysfunction. *J Urol.* 1999; 161:1803-6.
3. Wan J, McGuire EJ, Bloom DA, Ritchey ML: Stress leak point pressure: a diagnostic tool for incontinent children. *J Urol.* 1993; 150:700-2.

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#### PEDIATRIC UROLOGY

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**A preliminary investigation into quality of life, psychological distress and social competence in children with cloacal exstrophy**

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*J Urol.* 2003; 169: 1850-3

**Purpose:** Cloacal exstrophy is a complex multisystem anomaly. Due to ambiguous genitalia gender assignment or reassignment is common. The psychological, emotional and behavioral impact of this condition has rarely been investigated.

**Materials and Methods:** We recruited 8 children with cloacal exstrophy born with genital ambiguity and a control group of 12 with cloacal anomalies born without genital ambiguity were recruited via urology-endocrine clinics at Great Ormond Street Hospital for Children. Patient age was 5 to 18 years (average 11.3). The child behavior checklist, child health related quality of life and social cognition questionnaire were administered to assess perceived levels of social competence and adjustment, emotional and behavioral distress, and perceived quality of life.

**Results:** Social and behavioral competence as well as psychological problems were comparable with normative data for the 2 groups. There were no statistically significant differences in the 2 groups on any competence, problem or social adjustment scale. A quality of life measure again revealed no significant differences in the groups. The scores obtained were comparable with those reported for other chronic illnesses.

**Conclusions:** Results suggest that being born with cloacal exstrophy or anomaly and gender assignment or reassignment does not necessarily result in childhood psychological, emotional or behavioral distress and/or problems, lower levels of social competence or subjective reports of poor quality of life. It is suggested that longitudinal and larger studies are required to assess the long-term implications of this condition.

### **Editorial Comment**

This is an extremely important report of the psychological evaluation of children with cloacal exstrophy, with particular emphasis on 6 patients with 46 XY chromosomes who were raised as females. The researcher was blinded as to the chromosomal diagnosis in the cases and there was a control group of patients with cloacal anomalies, but not cloacal exstrophy or gender conversion. The authors found no statistical differences between the 2 groups, with scores comparable to those reported for other chronic illnesses.

The gender of rearing is highly controversial in patients with cloacal exstrophy and 46 XY chromosomes. Because the phallic structures are usually too small to be adequately reconstructed as a normal male phallus, most patients have, in the past, been raised as females. On the other hand, they have already had their central nervous system “imprinted” with androgens prenatally. Recently, fears of gender dysphoria and ultimately reassignment (no good published reports in peer-reviewed journals), have led many physicians to recommend raising these children as males, despite the fact that they will have an inadequate phallus. Hence the development of these patients as normal females is of major interest. On the other hand, this study has several cautions. First, follow-up is still too short with a mean age of 11.6 years. Second, 5 of the 16 patients eligible refused to be interviewed and 3 of the others were undergoing psychiatric treatment and were deemed ineligible. Data from these patients and follow-up through puberty could ultimately change the results. We anxiously await more information in this critical area.

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**Natural history of neonatal reflux associated with prenatal hydronephrosis: long-term results of a prospective study**

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**Purpose:** We have previously reported on patients with neonatal vesicoureteral reflux followed conservatively. The current study is a long-term follow-up of our prospective expectant management protocol for the overall cohort.

**Materials and Methods:** Between 1993 and 1998, 31 of 260 patients with prenatal hydronephrosis had vesicoureteral reflux and were followed prospectively. Outcome analysis was done on 25 patients, excluding 6 who underwent surgery, with the end point of complete resolution or improvement of reflux using our previously reported Kaplan-Meier survival curve, urinary tract infection, dysfunctional voiding, and changes in renal function or growth, somatic growth and hypertension.

**Results:** Of the 25 cases reflux was grades I to V in 7%, 20%, 34%, 16% and 23%, respectively. Reflux resolved in 13 patients (52%) and improved in 6 (24%). Grades I to V disease resolved in 100%, 77%, 53%, 28% and 40% of refluxing units, respectively. The improvement rate for grades III to V reflux was 13%, 14% and 30%, respectively. Breakthrough urinary tract infection occurred in 4 patients with grades IV and V reflux, and dysfunctional voiding developed in 5. Follow-up renal scans showed 19% and 17% decreased differential function in 2 units without new scars. There was no difference in renal length in patients with resolved versus persistent reflux or low versus high grade reflux. All patients had normal somatic growth at the 4-year follow-up and none had hypertension.

**Conclusions:** Expectant management was effective in the majority of cases and associated with a low urinary tract infection rate. Neonatal vesicoureteral reflux resolved or improved in 76% of our patients by age 4 years without somatic growth retardation or hypertension. High grade reflux resolved or improved in 59% of the units and showed normal renal growth with expectant management.

**Editorial Comment**

This is an interesting review of the mid-term follow-up (median of 44 months) of children diagnosed with vesicoureteral reflux as neonates. The reflux resolved spontaneously in 52%. Four patients had UTIs and dysfunctional voiding developed in 5. Two patients developed decreased renal function. The authors conclude that expectant management was effective in the majority of cases.

This paper is an interesting contribution, but the interpretation of the data seems skewed and the conclusions are arguable. In the first instance, 6 patients underwent surgery and are excluded. In general, studies are better reported in an "intent-to-treat" format. Excluding the 6 patients needing surgery changes the results. Furthermore, not all patients underwent follow-up DMSA scans, hence there may have been more than 2 cases of renal injury. Finally, despite 4 years of antimicrobial therapy, 48% of patients did not have resolution of their reflux. My personal opinion is that this study could also be used to argue more forcefully for more surgical therapy.

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