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UROLOGICAL SURVEY

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EDITORIAL COMMITTEE

STONE DISEASE

Effect of dietary calcium on stone forming propensity

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Purpose: Epidemiological studies have reported that high calcium diet protects against kidney stone formation in normal subjects. This metabolic study was designed to elucidate the physiological and physicochemical effects conferring this apparent protection.

Materials and Methods: A total of 21 normal volunteers underwent 2 phases of study in a crossover, randomized design, wherein they consumed constant metabolic diets that matched the estimated highest and lowest quintiles of calcium intake from published epidemiological studies.

Results: Urinary calcium was significantly greater on the high calcium diet (148 +/- 55 versus 118 +/- 43 mg. daily, $p < 0.01$, $p < 0.01$) but urinary oxalate did not differ between diets. There was no difference in relative saturation ratio of calcium oxalate between the 2 diets. The high calcium diet significantly increased saturation of brushite and decreased that of uric acid. Due to the other differences between the diets (more fluid, potassium, magnesium and phosphate in the high calcium diet), the high calcium diet also increased 24-hour urinary volume, potassium, phosphorus, pH and citrate. After adjustment of these confounding variables, the high calcium diet significantly increased relative saturation ratio of calcium oxalate by 24%.

Conclusions: High calcium diet from published epidemiological studies does not alter the propensity for calcium oxalate crystallization in normal subjects despite increased urinary calcium and unaltered urinary oxalate because of the greater amounts of ingested fluid, potassium and phosphate. However, high calcium intake alone, without concomitant changes in the diet, poses a modest risk for calcium stone formation.

Editorial Comment

The role of dietary calcium in stone formation is controversial. Although high urinary calcium has been implicated in calcium stone disease, no prospective randomized trial has definitively established a link between urinary calcium and stone disease. Indeed, a recent long-term prospective, randomized trial demonstrated a higher incidence of stone formation in a group of hypercalciuric stone formers maintained on a low calcium diet compared with a similar group taking a normal calcium, low protein, low sodium diet. Likewise, 2 large populational studies showed a higher rate of incident stone formation in subjects in the highest quintile of calcium intake compared with the lowest. In both cases, the protective effect of a high calcium diet was attributed to reduced urinary oxalate as a result of intestinal binding of oxalate by calcium, which reduces intestinal oxalate absorption and decreases urinary oxalate excretion.

Heller and colleagues attempted to reproduce the high and low calcium diets from the observational studies by Curhan and colleagues in order to assess the physiological and physicochemical responses to changes in dietary calcium. In this 2-phase, randomized crossover study, 21 normal subjects were maintained on a constant metabolic diet matched to the dietary compositions of the highest and lowest quintiles of calcium intake in the epidemiological studies. Not surprisingly, urinary calcium was higher on the high calcium diet; however urinary oxalate and the relative saturation ratio for calcium oxalate were not significantly different between groups as a result of other stone-protective factors in the high calcium diet such as higher fluid, potassium and magnesium, which resulted in increased urinary volume, citrate and pH. Controlling for these confounding factors, the high calcium diet in fact increased the relative saturation ratio of calcium oxalate.

Based on this study, the “protective effect” of a high calcium diet may well not reside not in lowering of urinary oxalate but rather in the other favorable factors associated with a high calcium diet such as high fluid intake and an alkali load. Indeed urinary calcium increases significantly with a high calcium diet. As oxalate intake was fairly limited in this study, no increase in urinary oxalate was seen with the low calcium diet as had been speculated in the previous studies. However, with a more liberal oxalate intake, urinary oxalate could potentially increase in response to a low calcium diet. Nonetheless, indiscriminate recommendations to increase calcium intake in stone formers based on the findings of these recent studies may in fact pose additional risk of stone formation if concomitant measures, such as increased fluid and alkali intake are not taken.

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Durability of the medical management of cystinuria

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Purpose: Cystinuria is an autosomal recessive disorder of dibasic amino acid transport in the kidney that leads to an abundance of cystine in the urine. This molecule is poorly soluble in urine and it is prone to crystallization and stone formation at concentrations above 300 mg./l. Medical treatment in these patients has incorporated increasing urine volumes, alkalinization and thiol medications that decrease the availability of free cystine in urine. Despite a reasonable prognosis for reduced stone formation we and others have noted difficulties in patients complying with medical management recommendations. Therefore, we evaluated the durability of treatment success in our patients with cystinuria.

Materials and Methods: A retrospective chart review was performed in all patients with cystinuria referred to the comprehensive kidney stone center at our institution for an 8-year period. Medical therapy, stone recurrence rates, compliance with medications and scheduled followup, and the results of metabolic evaluations via 24-hour urine collections were reviewed. The average concentrations of urinary cystine in initial and followup 24-hour samples were compared in patients compliant and noncompliant with medical treatment. In addition, each patient was mailed a 1-page questionnaire to assess the self-perception of medical compliance.

Results: We identified 26 patients with a mean age of 32 years at referral (range 13 to 67) who were followed an average of 38.2 months (range 6 to 83). Females represented 58% of those with cystinuria. Overall compliance with medical recommendations was poor with a short duration of success. Of the 26 patients followed at our stone center only 4 (15%) achieved and maintained therapeutic success, as defined by urine cystine less than 300 mg./l. An additional 11 patients (42%) achieved therapeutic success but subsequently had failure at an average of 16 months (range 6 to 27). Of these patients 7 (64%) regained therapeutic success at an average of 9.4 months (range 4 to 20). Five patients (19%) never achieved therapeutic success, while an additional 6 (23%) failed to present to followup appointments or provide subsequent 24-hour urine studies despite referral to a tertiary care center. Patient self-assessment of medical compliance was uniformly high regardless of physician perceptions or treatment results.

Conclusions: The durability of medically treating patients with cystinuria is limited with only a small percent able to achieve and maintain the goal of decreasing cystine below the saturation concentration. Greater

physician vigilance in these complicated stone formers is required to achieve successful prophylactic management. Furthermore, these patients require better insight into the own disease to improve compliance.

Editorial Comment

Despite the relative simplicity of the pathophysiology of cystinuria compared with calcium oxalate nephrolithiasis, stone prevention in cystinurics remains a frustratingly difficult problem. Once hydration and alkalinization fail to prevent stone recurrence in cystinuria, the addition of chelating agents becomes necessary. Unfortunately, the choice of available agents is strikingly few, the medication is expensive and the side effects are often prohibitive. Consequently compliance with medication regimens is uniformly poor.

This sobering article by Pietrow and colleagues reviews the outcomes and perceptions of 26 cystinuric patients at a tertiary stone center. Although just over half the patients initially achieved therapeutic success as determined by urinary cystine levels, only 15% of patients maintained levels below cystine solubility. Moreover, nearly one quarter of patients was lost to follow-up. Interestingly, patients achieving and not achieving therapeutic success had similar perceptions of their compliance with medication and dietary regimens.

This article underscores the importance of close monitoring of cystinuric patients to maximize compliance and ultimately therapeutic success. Furthermore, it emphasizes the need for pharmaceutical companies to simplify drug regimens through higher dose pills to reduce the unwieldy number of pills required daily (12 on average in this series) and to make an effort to develop new medications with fewer side effects and lower cost. Unfortunately, the relatively low incidence of this disorder has discouraged pharmaceutical companies from pursuing active research and development in this area. For now, close patient follow-up is the best way to monitor and encourage these patients to follow a prescribed medical regimen that has proven efficacy in reducing stone recurrence.

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ENDOUROLOGY & LAPAROSCOPY

Conservative elective treatment of upper urinary tract tumors: A multivariate analysis of prognostic factors for recurrence and progression

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J Urol. 2003; 169:82-5

Purpose: We evaluate the safety and efficacy of conservative elective treatment of upper urinary tract tumors, and determine predictive factors for recurrence and progression to optimize indications of this type of treatment.

Materials and Methods: Since 1984 we have performed a prospective study of conservative treatment of single, low grade and stage, less than 3 cm upper tract tumors. The study includes 54 patients with a normal

contralateral kidney who had been followed for more than 36 months. Open conservative surgery was performed in 31 cases and endourological surgery in 23. Minimum followup was 36 months, maximum 210 and mean 84.8. Univariate and multivariate analyses of recurrence and progression were performed in relation to age, sex, association with a bladder tumor, bladder tumor stage and grade, sequence of bladder tumor in relation to upper urinary tract tumor, number of previous bladder tumor recurrences, association with bladder carcinoma in situ, upper urinary tract tumor grade, stage, location, size and therapy, and upper urinary tract cytology.

Results: Of the 54 patients 19 (35%) had recurrence, which was bilateral recurrence in 4, and progression occurred in 9 (16%). At the end of analysis 44 (62.9%) patients were disease-free and alive at a mean time of 92.88 months, 13 (24%) died disease-free at a mean of 72.7 months and 7 (12.9%) died of disease at a mean of 97.85 months. Cause specific mortality occurred in 7 (12.9% cases). Among the 54 initially conservatively treated units 42 (77.7%) kidneys were ultimately preserved. On univariate and multivariate analysis tumor location in the renal pelvis and association with a previous multi-recurrent bladder tumor were variables significantly related to recurrence and progression, as well as bilateral recurrence.

Conclusions: Conservative treatment is an optional approach for select upper urinary tract tumors. The strongest risk factors for recurrence and progression were association with a previous multi-recurrent bladder tumor and tumor location in the renal pelvis but these conditions were also the strongest risk factors for bilateral recurrence. Conservative treatment can also be recommended in these cases but only with compliant patients and close followup.

Editorial Comment

This study is important because it gives us an excellent glimpse into the natural history of conservatively managed upper tract urothelial neoplasms. The authors used a mix of ureteroscopy and open surgery (as an alternative to percutaneous resection) to locally resect the lesions, but otherwise the operative and follow-up regimens are the current endourological state-of-the-art for conservative management of upper tract urothelial neoplasms. Importantly, only solitary lesions of low grade and stage were included. These are the optimal candidates for elective nephron-sparing surgery (the authors did not include in this report the results in patients with a solitary kidney). This is the group of patients in whom we are most tempted to offer conservative treatment, sparing the kidney. How might we expect to do in the long run? With a minimum follow-up of 3 years, and a mean follow-up of 7 years, the authors can give us an excellent answer. We can expect that 1 of 3 will have a recurrence, 1 of 4 will lose their kidney, and that 1 of 8 will die of progression of disease. In univariate analysis, the authors found that a positive upper tract cytology and a history of multiple recurrent bladder tumors were associated with a worse prognosis. This makes sense, as both are markers for more biologically aggressive disease. They also noted that tumors in the renal pelvis carried a worse prognosis than those in the ureter, but this finding is skewed by the patients managed with open surgical distal ureterectomy – which will always be more effective than conservative therapy performed to more proximal lesions because all of the “downstream” upper tract urothelium is removed. The long term follow-up provided in this paper is supportive of the concept of conservative management for solitary upper tract tumors of low grade and stage, and provides good figures that we can use to counsel patients.

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Incomplete renal tumor destruction using radio frequency interstitial ablation

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J Urol. 2002; 168:2406-10

Purpose: We evaluate the efficacy of temperature based radio frequency ablation as a potential treatment modality for small (less than 3.5 cm) renal tumors.

Materials and Methods: We treated 15 patients with a total of 20 tumors with radio frequency ablation through an open surgical approach immediately before partial nephrectomy. All tumors were biopsied before radio frequency ablation treatment. Tumors were heated to 90 to 110C for 6 to 16 minutes (mean 9.1). Tumor ablation was monitored by direct vision and ultrasound. Partial nephrectomy was performed in standard fashion. All specimens were stained with hematoxylin and eosin, and 5 specimens were stained for nicotinamide adenine dinucleotide (NADH) diaphorase activity.

Results: Tumors ranged from 1.5 to 3.5 cm. (mean 2.4) in greatest dimension. All 20 specimens had evidence of morphologically unchanged tumor and normal renal parenchyma on standard hematoxylin and eosin staining. Of the 5 specimens 4 stained positively for NADH in areas confirmed to be tumor in hematoxylin and eosin stained neighboring sections. There was 1 intraoperative renal pelvic thermal injury requiring pyeloplasty and 2 postoperative caliceal leaks requiring stent placement.

Conclusions: In our series radio frequency therapy did not result in total tumor destruction when specimens were examined with hematoxylin and eosin or NADH staining. We believe that radio frequency interstitial tumor ablation of renal cell carcinoma without subsequent tissue resection should continue to be an investigational treatment modality for those who would otherwise undergo partial or radical nephrectomy.

Editorial Comment

In many ways, the kidney would seem to be a wonderful organ to which to apply “needle-invasive” or extracorporeal therapy for malignancies. It is fairly consistently oriented, it can be accessed through a pathway (the retroperitoneum) that avoids any vital organs, and it is easily imaged. Moreover, malignancies in the kidney are more often being detected when they are small, and therefore more amenable to these minimally invasive techniques. Finally, urologists have long had a close working relationship with radiologists, who are the ones in many institutions who control the mechanisms used in the application of these techniques. It is not surprising, then, that there has been such great interest in “needle-invasive” or extracorporeal treatments for renal masses suspicious for malignancy. This article throws a bit of caution back to the enthusiasts of one of the emerging techniques, radio frequency ablation. In their series of 15 patients with 20 tumors, treated with an open surgical application of radio frequency ablation immediately prior to partial nephrectomy, there was incomplete tumor destruction as assessed by HE staining in all 20 tumors. As this stain may overestimate the viability of cells immediately after thermal coagulation, the authors assessed the histology with NADH stain in the last 5 tumors. NADH stain evaluates for enzymatic activity that may more accurately determine viability of the cells. With this stain, however, 4 of 5 specimens still appeared to have incomplete tumor destruction. Looking at the varied results of radio frequency ablation for renal tumors that have been reported in the literature, one obvious conclusion is that the technical aspects of the procedure are critical and not yet completely defined. Results from reputable institutions have varied from excellent to, as in this article, poor. It might be that these investigators’ open surgical application was based more on misleading visual needle localization than radiographic localization. Some might argue that the parameters of the treatment were not optimal. Alternatively, it may be that these authors’ assessment methods were in fact more accurate than those of others were, and that is the reason for their poor (more accurate) results. Whatever the reasons for the extreme variations, it is certain that

the answer is not going to be easily attained. With this degree of variation and uncertainty, I agree with the authors that radio frequency ablation of renal masses suspicious for malignancy should still be considered investigational at this time.

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PATHOLOGY

Should the diagnosis of benign prostatic hyperplasia be made on prostate needle biopsy?

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Hum Pathol. 2002; 33:796-800

Purpose: Pathologists frequently sign out benign prostate needle biopsies as "benign prostatic hyperplasia" (BPH). There are no data indicating that a diagnosis of BPH on biopsy correlates with either gland weight or with the International Prostate Symptom Score (IPSS) used to measure urinary obstructive symptoms.

Material and Methods: The authors examined biopsies for average percentage of glands and average percentage of glands with papillary infolding per case, maximum percentage of glands and maximum percentage of glands with papillary infolding per core per case, and presence of any stromal nodules per case. BPH was measured in 2 ways: (1) IPSS grouped into 3 categories (mild, moderate, severe) and (2) prostate weight at radical prostatectomy in men with limited cancer. IPSS was classified as follows: mild (n = 12), moderate (n = 13), and severe (n = 10).

Results: There was no correlation with IPSS and any of the histologic features measured. For the 41 radical prostatectomy specimens, the average weight was 65.3 g (median, 56.0 g, range, 22 to 117 g). There was no correlation between gland weight and the average or maximum percentage of glands, or average or maximum percentage of glands with papillary infolding. Stromal nodules on biopsy correlated with gland weight. In the 30 cases without stromal nodules on biopsy, the mean gland weight was 51.4 g. In the 11 cases with stromal nodules on biopsy, the mean gland weight was 77.4 g (P = 0.0125). However, stromal nodules were not specific for a large prostate (i.e., a 15 g prostate had stromal nodules on biopsy).

Conclusions: With the exception of stromal nodules found on biopsy, histologic findings on biopsy are not specific for either clinical or pathologic BPH. Thus benign prostate biopsies should be signed out merely as "benign prostate tissue".

Editorial Comment

The diagnosis of "benign prostatic hyperplasia" (BPH) is not uncommon on pathology reports. Most of the times, however, there is no correlation with prostatism. Why does it happen? There are 2 main reasons. The first is related to erroneous diagnosis of benign prostatic hyperplasia. Purely stromal nodules are easily diagnosed by pathologists. Mixed (glandular and stromal) nodules are difficult to diagnose on needle biopsies. Papillary infolding is not a criterion for the diagnosis. The criterion is subtle and depends on the microscopy of the stroma intervening the glands. Most of the times mixed nodules are erroneously diagnosed. The second reason

relates to the prostate zone biopsied. Unless specified, the needle biopsy is from the peripheral zone of the prostate, which rarely shows BPH. In 378 radical prostatectomies, Kerley et al. (J Urol Pathol. 1997; 6:87-94) found 57 prostates (15.1%) with nodules in the peripheral zone. Another point to consider is the fact that these nodules in the peripheral zone represent a microscopic finding and are not related to prostatism. In conclusion, pathologists should not have aversion to report "benign prostate tissue".

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Substratification of stage T1C prostate cancer based on the probability of biochemical recurrence

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Objectives: To evaluate the influence of preoperative prostate-specific antigen (PSA), biopsy Gleason sum, and prostate biopsy quantitative histologic findings on the probability of biochemical failure in an attempt to identify criteria to substratify Stage T1c prostate cancer more accurately.

Methods: We reviewed the records of 1149 patients who underwent prostatectomy for T1c disease between 1988 and 2000. Biochemical recurrence (PSA 0.2 ng/mL or greater) defined the endpoint in this study. Recursive partitioning analysis was used to establish cutpoints for preoperative PSA level, biopsy Gleason sum, number of positive biopsy cores, and maximal percentage of any single biopsy core involved with cancer. These cutoff values were then evaluated using Kaplan-Meier estimations to determine the probability of remaining biochemically recurrence free.

Results: Using a PSA cutpoint of 10 ng/mL or a biopsy Gleason sum of 7, two groups of patients were identified (T1cI and T1cII). The rate of freedom from PSA recurrence at 3, 5, and 10 years after surgery for T1cI was 98%, 96%, and 96%, respectively, and for T1cII was 86%, 83%, and 73%, respectively ($P < 0.001$). For T1cII patients, the greatest percentage of cancer in a single biopsy core was found to be a predictor of biochemical failure on multivariate analysis and, using a cutoff value of 50%, further stratified the PSA recurrence-free rates for the men in group T1cII (90% and 85% versus 75% and 56% at 5 and 10 years after surgery, respectively, $P = 0.03$).

Conclusions: The results of this study demonstrate that within Stage T1c there are two populations of patients with significantly different recurrence probabilities: T1cI (Gleason sum less than 7 and PSA 10 ng/mL or less) and T1cII (Gleason sum 7 or greater or PSA greater than 10 ng/mL). Furthermore, using a cutpoint of 50% of cancer in a single core of biopsy tissue, additional risk stratification is afforded to men with higher risk "T1cII" cancer.

Editorial Comment

Clinical stage T1c is one of the most important issues regarding prostate cancer. Of 557 consecutive men who underwent radical prostatectomy between October 1998 and January 2000 at the Johns Hopkins Medical Institutions, 386 (69%) presented with clinical stage T1c (J Urol. 2002; 168:100-104). In our Institution (Unicamp), 52% of the patients who underwent radical prostatectomy in 2002 presented in this stage. The effort to stratify this clinical stage is worthy. Epstein JI et al. (J Urol. 1998; 160:2407-11) and Noguchi M et al.

(J Urol. 2001; 166:104-9) consider T1c cancer as “significant” or “insignificant”, according to pathologic findings on needle biopsy. This stratification relates to cancer volume found in the specimen of the radical prostatectomy. Gretzer MB et al., propose a stratification based on biochemical recurrence (PSA 0.2 ng/mL or greater). According to their results, using a PSA cutpoint of 10 ng/ML or a biopsy Gleason sum of 7, two groups of patients were identified (T1cI and T1cII). This study adds to the “significant” or “insignificant” parameters probabilities of PSA recurrence. It will help the urologist to discuss with his patient this unique condition in oncology (stage T1c prostate cancer).

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IMAGING

Prospective comparison of computerized tomography and excretory urography in the initial evaluation of asymptomatic microhematuria

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J Urol. 2002; 168:2457-60

Purpose: The ideal imaging study for evaluation of the upper urinary tract in patients with macrohematuria has been debated. We retrospectively compared the diagnostic yield of computerized tomography (CT) to excretory urography (IVP) in the initial evaluation of asymptomatic microhematuria.

Material and Methods: Between December 1998 and June 2001, 115 patients presenting with asymptomatic microhematuria underwent CT and IVP before cystoscopy. Helical CT images with 5 mm. adrenal and kidneys slices with and without contrast material were followed by delayed 5 mm. ureteral contrast images through the bladder base. Each CT and IVP was examined by a radiologist who was blinded to the result of the other imaging study. Diagnostic yields of the imaging techniques were compared using the test of 2 proportions and chi-square analysis.

Results: Radiographic abnormalities were noted on CT or IVP in 38 patients. Sensitivity was 100% for CT and 60.5 for IVP, and specificity 97.4% for CT and 90.9% for IVP. CT accuracy was 98.3% compared to IVP accuracy which was 80.9% ($p<0.001$). A total of 40 nonurological diagnoses were made by CT, including 3 abdominal aortic aneurysms and 1 iliac artery aneurysm. No additional diagnoses were made by IVP. Fewer additional radiographic studies were recommended after CT than after IVP.

Conclusions: The use of CT in the initial evaluation of asymptomatic microhematuria results in better diagnostic yield. In addition, more nonurological diagnoses can be made and less additional radiography is needed to confirm a diagnosis.

Editorial Comment

Radiological imaging plays an important role in the initial evaluation of patients with painless micro- or macrohematuria. Helical CT is the method of choice for evaluation of the kidneys and urinary collecting system, including renal masses, infection, trauma, and urinary calculi. This method, however, has limitations

for demonstrating the urothelium, and thus IVP still remains the initial imaging procedure for evaluating hematuria in many centers. Recently, a new technique called CT-urography has been developed, and successfully used for evaluating the urothelium. CT-urography can be performed with a single detector CT, or preferably with a multi-detector row CT (multi-slice CT). With multi-slice CT, multiple channels of data are acquired simultaneously, allowing thinly collimated images to be obtained through the entire urinary tract in a single breath hold. For better demonstration of the entire ureters, usually a supplemental infusion of normal saline can be used in order to obtain maximum distension, and consequently optimal visualization of the normal anatomy of the renal pelviocalyceal system, ureters, and entire bladder .This technique also provides high resolution multiplanar and 3D image reconstructions, which are similar to the conventional IVP films. This article is significant because it shows that an excellent degree of accuracy (98.3%) compared to IVP (80.9%), can be obtained with single slice helical CT. Obviously the single detector CT-urography must be used under strict diagnostic criteria. Obviously multi-detector row CT offers better image resolution than single slice helical CT. In our opinion , there is no doubt that in the near future CT-urography will completely replace the IVP for the evaluation of patient with hematuria. Besides urological abnormalities, CT-urography can detect several causes of non-urological diseases causing hematuria. IVP is an insufficient imaging method for a complete evaluation of a patient with hematuria, and isolated — or even associated —complementary radiographic studies are usually recommended.

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Prostate biopsy: indications and technique

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J Urol. 2003:169:12-19

Purpose: The last decade has seen numerous modifications in the way prostate cancer is diagnosed. We review the current indications for and methods of prostate biopsy.

Materials and Methods: The English language literature was reviewed regarding major indications for and methods of prostate biopsy. Pertinent peer reviewed articles were collated and analyzed.

Results: The most widely accepted indication for prostate biopsy is a prostate specific antigen (PSA) value of greater than 4.0 ng./ml. However, some investigators advocate prostate biopsy for men with a PSA value in the 2.5 to 4.0 ng./ml. range, believing that use of this parameter results in detection of a greater number of cases of curable disease. Age specific PSA range, percent free PSA and presence of prostatic intraepithelial neoplasia or atypia are all considered to be relative indications for prostate biopsy. The current literature describes a trend toward increasing the number of cores obtained and the sites biopsied beyond those of the standard sextant technique. The additional cores in many series are obtained from more lateral regions of the gland.

Conclusions: Although several criteria are used as indications for initial prostate biopsy, all are based on PSA level and/or abnormal digital rectal examination. Future improvements in currently used prostate cancer markers may result in better selection of cases to biopsy. There is no universally accepted technique of prostate gland biopsy. The current literature supports use of more extensive biopsy techniques to increase the likelihood of prostate cancer detection.

Editorial Comment

In the recent years, much has been written about how to optimize the indications and the techniques of transrectal ultrasound-guided biopsy for the detection of prostate cancer. This important compilatory study, nicely answered the most common questions about prostate biopsy, such as the following questions listed below: 1)- Decrease or not the PSA cutoffs to enhance prostate detection? To biopsy a patient with PSA of 2.5 to 4.0 ng/mL, would be advisable only in patients with family history, increased age-adjusted PSA, or abnormal digital rectal examination. 2)- Is intrarectal lidocaine jelly a good choice for local anesthesia? No, local anesthesia (periprostatic nerve block with 1% lidocaine) is far superior than that achieved with intrarectal lidocaine jelly. 3)- How many cores do we have to take during the biopsy? Although there is no consensus about the name of the approach of taking a larger number of cores from the far lateral portions of peripheral zone, it is clear that at least 12-13 cores are necessary. Interesting enough is that this number of cores has the same accuracy as the recent and invasive method called "saturation technique". This saturation technique has the drawback of requiring a general anesthesia. 4)- Can we use endorectal magnetic resonance (MR) to improve the prostate biopsy accuracy? Yes, The overall accuracy of endorectal MR imaging to improve prostate cancer detection rate was 70%. So the finding of an abnormal area of hypo-intensity in T2-weighted images for a patient with previous negative biopsy is very suspicious and should be biopsied accordingly. 5)- Do we need to biopsy the transition zones routinely? No, there is not enough data to support this approach. The transition zones should be biopsied only in patients with previous negative biopsy, and in those with negative DRE and elevated PSA levels (>15 ng/mL).

Unfortunately the authors did not mention the utility of color-Doppler ultrasound, particularly "power Doppler with echo-contrast", which has been shown to be a useful method detecting 8-16 % of isoechoic neoplasms (1,2). This is particularly useful in patients with large prostates. The use of the 5 regions technique (13 cores) in patients with different gland sizes showed that the cancer detection rate was 43%, 27%, and 24% of men with prostate volumes <30 cc, 30 to 50 cc and >50 cc, respectively (3).Color Doppler ultrasound would certainly increase the cancer detection rate in this group of patients.

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INVESTIGATIVE UROLOGY

Expansion and fixation properties of a new braided biodegradable urethral stent: An experimental study in the rabbit

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J Urol. 2003; 169:1171-4

Purpose: Biodegradable spiral urethral stents have been used with favorable results combined with thermal treatments of the prostate and for recurrent urethral strictures but the configuration of the helical spiral is not ideal. We developed a new tubular mesh configuration for the biodegradable urethral stent and evaluated its expansion and locking properties in the rabbit urethra.

Materials and Methods: The stents were made of self-reinforced polylactic acid polymer (Bionx Implants, Ltd., Tampere, Finland) blended with $BaSO_4$ (Alfa Chem, New York, New York) to achieve radiopacity. Two braiding patterns, that is 1 over 1 and 2 over 2 + 1, were used to produce a tubular mesh structure. Stainless steel stents (pattern 1 over 1) served as controls. The stents were inserted into the posterior urethra of 27 male rabbits. The animals were sacrified after 1 week, 1 and 6 months, respectively. X-rays were done immediately after stent insertion and at sacrifice. Longitudinal movement and expansion were assessed on the x-rays.

Results: All stents maintained position in the urethra without fixation. Macroscopic disorientation of the structure of the 2 over 2 + 1 braided self-reinforced polylactic acid polymer stents began before 1 month, while 1 over 1 braided stents retained their construction. At 6 months 3 of 6 biodegradable stents were degraded. Average longitudinal movement was 2 mm. (range 1 to 3) in the 1 over 1 self-reinforced polylactic acid polymer group, 2 mm. (range 0 to 7) in the 2 over 2 + 1 polylactic acid group and 3 mm. (range 3 to 3) in controls at 1 month.

Conclusions: Biodegradable polymers are suitable materials for braided urethral stents. The expansion properties of the 2 braiding models tested in this study sufficed to fix the stents in situ in the prostatic urethra. However, the 1 over 1 braiding pattern was superior to the 2 over 2 + 1 pattern, in that it retained its macroscopic construction until the degradation of single self-reinforced polylactic acid polymer fibers.

Editorial Comment

The development and use of biodegradable devices for urological application has increased in the last 10 years. This is an elegant study performed by the group that developed some years ago the first biodegradable spiral stents for urology (1,2). In the present work, the authors produced from biodegradable polymers, a self-expanding, self-reinforced braided biodegradable stent for urological use. The stents were tested after insertion into the prostatic urethra of 27 male rabbits. After stent release into the urethra the device expanded to its original shape due to the viscoelastic memory of biodegradable polymers. The authors found that its expansion property was good and fixed the stent in situ as firmly as metallic devices. Although there are some differences between the 1 over 1 pattern and the 2 over 2 + 1 pattern, in thesis, the developed stents are promising and may be suitable for clinical use in the near future. Nevertheless, clinical trials will be necessary to demonstrate the usefulness and the cost-effectiveness of biodegradable stents in urological practice.

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Penile weight and cell subtype specific changes in a post-radical prostatectomy model of erectile dysfunction

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J Urol. 2003; 169:1175-9

Purpose: We evaluated neurogenic erectile dysfunction, focusing on the post-radical prostatectomy model. We investigated changes in DNA, protein and apoptotic cells of the rat penis after denervation. Gross morphometry was measured to elucidate the impact of chemical changes.

Materials and Methods: Postpubertal male Sprague-Dawley rats were randomized to bilateral or unilateral cavernous nerve transection, or sham operation. Wet weight, DNA content and protein content were measured. Tissue sections were stained for apoptosis by terminal deoxynucleotidyl transferase-mediated deoxyuridine triphosphate nick end labeling and the apoptotic index was calculated. Dual staining was performed for endothelial and smooth muscle cells to identify apoptotic cells.

Results: Penile wet weight was significantly decreased at all time points after bilateral neurotomy ($p<0.0005$). Unilateral neurotomy allowed much greater preservation of penile weight. DNA content was significantly decreased in bilaterally denervated penes and unchanged in unilaterally operated penes. Protein content was not significantly altered in the bilateral or unilateral cohorts. Bilateral neurotomy induced significant apoptosis, while unilateral surgery caused significantly less apoptosis. Each population had apoptotic clustering just beneath the tunica albuginea, which was mostly smooth muscle cells.

Conclusions: These data suggest the importance of neural integrity to maintain penile homeostasis. The loss in penile weight was consistent with the anecdotal experience of many clinicians. Decreased DNA content may have been due to significant levels of apoptosis in smooth muscle cells. Preserved protein content may suggest an increase in extracellular protein, as postulated in corporeal fibrosis. The subtunical population of apoptotic smooth muscle cells revealed a mechanism for veno-occlusive dysfunction observed after radical prostatectomy. These effects were significantly moderated in the unilateral model, reinforcing the critical nature of neural integrity.

Editorial Comment

This is a sophisticated study of the detrimental effects of dennervation on penile function and structure, with clinical applications for further understanding the erectile dysfunction following radical prostatectomy. This is the first study which clearly demonstrated that lesion to the cavernous nerves will result in immediate beginning of apoptosis, primarily in smooth muscle cells. Also, the reductions in smooth muscle cells, mainly in the subtunical position, would explain the significant occurrence of veno-occlusive dysfunction in post-

radical prostatectomy erectile dysfunction. Also, the present study demonstrated a dramatically reduction in the penile weight when bilateral cavernous nerve injury was created. On the other hand, these changes were significantly reduced with preservation of one neurovascular bundles. The authors found that the DNA content remained intact in the unilateral neural lesion, while it altered dramatically in the bilateral model of lesion. These findings reinforced the idea for the clinician, to make all efforts for preserving the neurovascular bundles, at least in one side, during radical prostatectomy.

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RECONSTRUCTIVE UROLOGY

Reconstructive urethroplasty using porcine acellular matrix: preliminary results

[Article in Italian]

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Arch Ital Urol Androl. 2002;74:127-8

Objective: The use of "porcine acellular matrix", obtained from small intestine submucosa, could simplify the repair of long urethral strictures, whereas single stage techniques can be carried out only by means of grafts, as buccal mucosa; or flaps, as prepucial skin. To our knowledge we report the first use of porcine intestine submucosa in urethroplastic surgery.

Materials and Methods: From May 2001 to December 2001, five urethral reconstructions were completed using "porcine acellular matrix". Four male patients had urethral strictures longer than 10 cm. After circumcision and penile degloving, we extended the surgical approach to the perineum-scrotal region by a midline longitudinal incision. The urethra was exposed, dissected from corpora cavernosa, then rotated of 180 degrees and on this side longitudinally incised throughout all the stenotic length. Urethroplasty was accomplished with matrix tissue modelled according to the length of the stenosis and grafted by a 5-0 polyglycolic acid running suture. The enlarged urethra was then derotated, laying the graft dorsally, closed to corpora cavernosa, to prevent pouching. A further graft was accomplished in a female patient with a 3 cm long urethral stricture. All urethroplasties were stented for 14 days. No complication developed.

Results: After 1 month urethral patency was satisfactory compared with preoperatory images and the urinary flow was normal. After 2 months the urethra was endoscopically verified: it was easy to appreciate the homogeneous transformation of the graft into the native tissue. At 6-month follow-up radiological and urodynamic outcome is still satisfactory in all patients.

Conclusions: According to our preliminary experience "porcine acellular matrix" is a promising approach for the repair of long urethral strictures. Its safety and effectiveness encourage us to treat more cases in male and female patients.

Editorial Comment

The authors are probably the first to report on porcine acellular matrix for male patients with long urethral strictures.

There are several critical points, which should be mentioned. One of them is why alternative methods such as penile skin or buccal mucosa had not been used in these patients. This brings up another question regarding ethical committee approval: How do you obtain informed consent in these patients where alternatives exist?

Nevertheless this paper has been published and provides now for the first time a clinical experience with acellular matrix as a substitute for the male urethra. We have to await now how this porcine material will react in the human host in the long term. Will it be replaced by human collagenous tissue? We still don‘t know if this replaced tissue has some elasticity or whether the material will be encapsulated by fibrous tissue. This may then possibly lead to late reactions, both locally and systemically at a much later date. Furthermore porcine acellular matrix still contains DNA and viral transmissions are a possibility. Altogether further long term observations are mandatory before any larger series with this material should be initiated.

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Urethral stricture repair with an off-the-shelf collagen matrix

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J Urol. 2003; 169:170-3

Purpose: In select patients with urethral strictures in whom genital skin is insufficient alternative tissues are needed for urethral reconstruction. We explored the feasibility of using a bladder submucosa collagen based inert matrix as a free graft substitute for urethral stricture repair.

Materials and Methods: A total of 28 patients 22 to 61 years old with a diagnosis of urethral stricture underwent reconstructive surgery using a collagen based inert matrix for urethral repair. The inert collagen matrix was trimmed to size as needed for each patient and the neourethra was created by anastomosing the matrix in an onlay fashion to the urethral plate with continuous 6-zero absorbable sutures. The size of the created neourethra ranged from 1.5 to 16 cm. A voiding history, physical examination, retrograde urethrography, uroflowmetry and cystoscopic examinations were performed preoperatively and postoperatively. Random urethral biopsies were also performed.

Results: After a 36 to 48-month followup (mean 37) 24 of the 28 patients had a successful outcome. The remaining 4 patients had a slight caliber decrease at the anastomotic sites on urethrography. A subcoronal fistula developed in 1 patient which closed spontaneously 1 year after repair. Mean maximum urine flow rate increased from the preoperative value of 9 +/- 1.29 to 19.7 +/- 3.07 ml. per second postoperatively. Cystoscopic studies revealed adequate caliber conduits and normal appearing urethral tissues. Histological examination of the biopsy specimens showed the typical urethral stratified epithelium.

Conclusions: Use of an off-the-shelf collagen inert matrix appears to be beneficial for patients with urethral strictures and obviates the need for obtaining an autologous graft, thus eliminating donor site morbidity.

Editorial Comment

The authors are known for applying biomaterials for reconstructive purposes of the lower urinary tract. This paper deals with their first experience of acellular collagen matrix obtained from cadaveric human bladder

tissue for the surgical treatment of urethral stricture disease. Half of the patients had some form of penile urethral strictures, which are usually the more difficult ones to treat. Still, a successful surgical outcome was claimed in 24 of 28 patients after a follow-up ranging from 36 to 48 months. It is remarkable that in 4 patients endoscopic biopsies revealed normal urethral tissue.

Acellular cadaveric tissue can nowadays be produced in larger quantities and would thus be storable for regular use in urethral reconstructive surgery. It has the advantage of unlimited availability avoiding secondary harvesting at the time of urethral reconstruction.

The potential and the advantages are obvious but one should still be cautious about immediate use of acellular collagen matrix. Possible remnant DNA, the issue of prions, and the still unproven fate of the cadaveric tissue must be explored in larger series of patients and under a long-term follow up. It will be especially interesting to see whether there are systemic immunologic changes or adaptations in these patients.

Despite these cautious marks the future of reconstructive surgery of the lower urinary tract seems to be promising for absorbable biomaterials derived from human or animal sources.

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UROLOGICAL ONCOLOGY

Orthotopic urinary diversion after cystectomy for bladder cancer: implications for cancer control and patterns of disease recurrence

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Purpose: The impact of orthotopic urinary diversion on the quality of cystectomy and ensuing cancer control has not been adequately studied. We analyzed our experience with this clinical problem.

Materials and Methods: The records of 214 patients who underwent cystectomy and orthotopic diversion for bladder cancer were retrospectively evaluated and compared with those of 269 treated with an ileal conduit. Analyzed end points included overall and cancer specific survival. We specifically assessed the patterns of relapse and their association with pathological findings at cystectomy in the neobladder group.

Results: No cancer specific survival difference was identified in the neobladder and ileal conduit cohorts when adjusting for pathological stage. Patterns of relapse in 62 of the 214 patients with a neobladder (29%) included local recurrence in 23 (11%), distant recurrence in 19 (9%), and combined local and distant recurrence in 18 (8%). Urethral recurrence was rare (2%). Of 10 patients (4.6%) diagnosed with upper tract recurrence 6 and 4 initially had relapse in the ureteroenteric anastomosis and renal pelvis, respectively. Five of the 6 patients with anastomotic relapse had evidence of disease in the intramural or juxtavesical ureter that was removed en bloc with the cystectomy specimen. Only 1 patient required neobladder takedown after such anastomotic recurrence.

Conclusions: These results indicate that neobladders do not compromise the quality of preceding cystectomy or interfere with management in the presence of local or distant disease relapse. Our data suggest that involvement of the intramural or juxtavesical ureteral segment at cystectomy irrespective of surgical margin

status may identify patients at higher risk for anastomotic recurrence, which is associated with an ominous prognosis.

Editorial Comment

The authors compare the clinical causes of patients with bladder cancer after cystectomy and orthotopic neobladder vs. ileal conduit. However, this comparison is not really fair as the majority of patients with ileal conduit underwent cystectomy after systemic (neoadjuvant) chemotherapy.

Rather than finding really new data from this comparison, the paper is important as it reflects the treatment standards of a very large and well-known referral center. Obviously, all patients in whom primary cystectomy is indicated will undergo a neobladder urinary diversion. If neoadjuvant chemotherapy is indicated, these patients usually receive an ileal conduit. From my point of view, this reflects a thorough and rational approach, which will suit the majority of patients very well.

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An interval longer than 12 weeks between the diagnosis of muscle invasion and cystectomy is associated with worse outcome in bladder carcinoma

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J Urol. 2003; 169:110-5

Purpose: The standard of care for muscle invasive transitional cell carcinoma of the bladder is radical cystectomy. Definitive therapy may often be delayed for various reasons. We assessed whether pathological stage and survival correlated with the length of time between diagnosis of muscle invasion and cystectomy.

Materials and Methods: The records of 290 consecutive patients who underwent radical cystectomy between February 1987 and July 2000 were reviewed. Of 265 (91.4%) cystectomies performed for transitional cell carcinoma data were available for 247 (85.2%) and 189 (65.2%) patients were identified who underwent surgery for muscle invasive disease (T2 or greater). The interval between diagnosis of muscle invasion and cystectomy was calculated for each patient. Patients were divided into groups based on time to surgery as group 1 - less than 4 weeks, 2 - 4 to 6 weeks, 3 - 7 to 9 weeks, 4 - 10 to 12 weeks, 5 - 13 to 16 weeks, and 6 - greater than 16 weeks. Exploratory univariate and multivariate analyses were performed to test the association of time lag with clinical features and postoperative survival.

Results: Mean patient age was 66 years (range 37 to 84) and overall 3-year Kaplan-Meier estimated survival was 59.1% +/- 4% (median follow-up 36 months). For all patients mean interval from diagnosis to cystectomy was 7.9 weeks (range 1 to 40). Extravesical disease (P3a or greater) or positive nodes were identified in 84% (16 of 19) of patients when the delay was longer than 12 weeks, compared with 48.2% (82 of 170) in those with a time lag of 12 weeks or less ($p < 0.01$). Similarly 3-year estimated survival was lower (34.9% +/- 13.5%) for patients with a surgery delay longer than 12 weeks compared to those with a shorter interval 62.1% +/- 4.5% (hazards ratio 2.51, 95% CI 1.30-4.83, $p = 0.006$). When adjusted for nodal status, and clinical and pathological stages the interval was still statistically significant (adjusted hazards ratio 1.93, 95% CI 0.99-3.76, $p = 0.05$).

Conclusions: In patients, undergoing radical cystectomy a delay in surgery of greater than 12 weeks was associated with advanced pathological stage and decreased survival. Although this relationship persisted after adjusting for nodal status, and clinical and pathological stages, the presence of lymph node metastasis remained the strongest predictor of patient outcome.

Editorial Comment

The authors analyze their cystectomy cases in terms of the interval between diagnosis of muscle invasion for bladder cancer and cystectomy. A total of 189 patients were identified to fulfilled the criterion. The mean interval from diagnosis to cystectomy was 7.9 weeks. The overall 3-years estimated survival was 59.1%. However, extravesical disease was identified in 84% when the delay was longer than 12 weeks, in contrast to 48,2% in those with a time lag of 12 weeks or less ($p < 0,01$). Consequently, Kaplan-Meier survival curves show clearly distinct differences between these 2 groups, reflecting the biology of extravesical disease.

This data supports the notion that too long a delay between diagnosis and therapy of invasive bladder cancer will result in impaired outcome for the patient. However, the 12 weeks limit is artificial, and does not reflect clinical reality. It remains to state that patients should be advocated not to wait too long to seek definitive curative treatment.

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FEMALE UROLOGY

Suprapubic sling adjustment: minimally invasive method of curing recurrent stress incontinence after sling surgery

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J Urol. 2002; 168:2059-62

Purpose: Recurrent stress urinary incontinence after sling surgery is a complex problem. A minimally invasive method of correcting recurrent stress urinary incontinence after pubovaginal sling surgery is described.

Materials and Method: We performed suprapubic sling adjustment in 10 women with recurrent stress urinary incontinence after sling surgery. Of these 10 women, 4 had received an antibacterial polytetrafluoroethylene patch sling, 3 an autologous dermis patch sling and 3 an autologous rectus fascia patch sling but stress incontinence recurred. To correct recurrent incontinence, a pubovaginal sling was revised by adjusting the sling tension suprapubically with the aid of a cotton swab test and bladder leak test.

Results: Mean followup was 13 months (range 8 to 28). Of the 10 women, 9 became completely dry and 1 was greatly improved. One patient who had persistent stress incontinence generated an abdominal leak point pressure of 189 cm H_2O compared to a preoperative pressure was 120 cm H_2O. The incidence of de novo urge incontinence was 2% (2 of 10 cases). Mean resting cotton swab angle was (+) 20 and (+) 5 degrees, and mean Valsalva cotton swab angle was (+) 40 and (+) 5 preoperatively and postoperatively. Mean pad use

decreased from 3 pads to less than 1 pad a day. Mean self-reported satisfaction score was 9 (range 8 to 10) on a visual analog scale.

Conclusions: Pubovaginal slings may be revised safely with excellent results. Adjusting the sling tension suprapubically is a minimally invasive technique. Suprapubic sling adjustment may be performed as an intermediary step before resorting to a complete sling takedown/revision.

Editorial Comment

The author, Dr. Jong M. Choe, describes his technique of suprapubic sling adjustment after failed suburethral sling. The initial slings performed were strut slings with the endopelvic fascia not being perforated, but instead the sutures of the supporting sling passing through the endopelvic fascia traversing the retropubic space and then being anchored above the anterior rectus fascia. The technique involved the dissection and identification of the sling non-absorbable suspension sutures. The sutures were then retied in a tighter fashion with the utilization of a cotton swab test and supine bladder leak test. Dr. Choe's technique of correction as reported was very efficient with the mean operating time of 45 minutes, and mean estimated blood loss of 9 cc. The salvage success rate was equally impressive, with 9 of 10 patients being completely dry, and 1 patient greatly improved. Despite the reported objective cure rate of 90% (9 of 10 cases), and subjective cure rate of 100% (10 of 10 cases), the author also reports that 2 of 10 patients (20%) had de novo urge incontinence, and 1 of 4 patients presenting preoperative urge incontinence had persistence of same.

Dr. Choe should be complimented for reporting on a minimally invasive method of addressing a very difficult subpopulation of patients in our practice: the woman who has failed a previous suburethral sling. This paper is distinctly different than a prior paper on repeat pubovaginal sling procedures for recurrent stress incontinence after pubovaginal sling (1). Though the author does compare the 2 studies, the studies differ in that the series reported by Dr. Frank and me dealt with patients who had previous classic pubovaginal slings with endopelvic fascia perforation, with a variable degree of inactive retropubic fibrosis encasing the urethra. Dr. Choe's original slings were strut slings with a stated no perforation of the endopelvic fascia in addition to the sutures traversing this retropubic space. One of the interesting side points Dr. Choe raises, is that if does one really need to perforate the endopelvic fasica to a great degree in order to obtain a satisfactory and long term management of female urinary incontinence. Anecdotal experience states that when a sling fails, it usually fails right away, and when it does not fail, it lasts a long time. This is somewhat different than the time frame reported by Dr. Choe, in view that his mean time to recurrent stress incontinence was approximately 4 months (range 3-9 months). It would have been an interesting addition to this paper to explore Dr. Choe's thoughts on why his initial slings failed. Rovner et al. has cited reasons for early failures, such as suture breakage, incorrect sling placement, and tying the sling too loosely (2). Most of these early failures though are manifested immediately, as opposed to having a period of good results that gradually degrade into operative failure. I compliment Dr. Choe on the use of the Blaivas-Groutz anti-incontinence surgery response score (3). I find this incontinence score to be an excellent, simplified way of evaluating patient outcomes (see Appendix). Of note is that the mean reported Blaivas-Groutz anti-incontinence surgery score was 1, with a range of 0-2, but Dr. Choe does not make any mention of the 24-hour pad test, which is an integral part of the anti-incontinence surgery response score. In addition, I would have found of great value to find out which patient failed among the various pubovaginal sling types, and which patients were plagued with de novo or persistent urge incontinence. This would have potentially helped our understanding of female outlet obstruction and secondary voiding dysfunction.

This is a very valuable paper to review, especially when discussing potential options for a patient plagued with recurrent stress urinary incontinence after a pubovaginal sling. It will be of great interest to find if the reported technique has the same degree of efficacy in patients who have had a classic pubovaginal sling with perforation of the endopelvic fascia and retropubic fibrosis. I wager not.

Appendix - Anti-incontinence surgery response score

Postoperative 24-hour voiding diary
0 Nor urge or stress urinary incontinence episodes
1 1 to 2 Incontinence episodes
2 3 or more incontinence episodes

Postoperative 24-hour pad test
0 Total pad weight gain 8 g or less
1 Total pad weight gain 9 to 20 g
2 Total pad weight gain greater than 20 g

Patient questionnaire
0 The patient considers herself cured
1 The patient considers herself improved
2 The patient considers the operation to have failed

Total outcome score
0 Cure
1 to 2 Good response
3 to 4 Fair response
5 Poor response
6 Failure

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Tension-free vaginal tape for stress urinary incontinence: Is there a learning curve?

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Neurourol Urodynam. 2002; 21:470-2

Aim: To assess the learning curve characteristics of the first 30 tension-free vaginal tape (TVT) procedures carried out in our medical center and to evaluate its safety and short-term effectiveness.

Methods: A total of 30 incontinent women with urodynamically proven SUI were enrolled. None had undergone any previous anti-incontinence procedure. All were operated on by one surgeon, in accordance with the technique describe by Ulmsten et al. in 1996. Mean follow-up was 11.4 ± 3.6 months (range, 5-17 months).

Results: Five (17%) bladder perforations occurred at the beginning of the study, due to inadvertent insertion of the applicator. All perforations were identified by intraoperative cystoscopy. Five other patients (17%) had increased intraoperative bleeding (> 200 mL) necessitating vaginal tamponade. Blood transfusions were not required. Eight (27%) patients had immediate postoperative voiding difficulties, necessitating catheterization for 2-10 days, but none needed long-term catheterization. There was no local infection or rejection of the Prolene tape was found. All patients were subjectively cured of their stress incontinence; however, urodynamic evaluation revealed "asymptomatic genuine stress incontinence" in one patient. Sixteen of 21 patients (80%) with preoperative urge syndrome had persistent postoperative symptoms. No patient developed de novo urge incontinence.

Conclusion: The TVT operation is a new, minimally invasive surgical procedure with excellent short- and medium-term cure rates. However, there is a definite learning, curve, and we believe that the operation should only be performed by experienced surgeons.

Editorial Comment

The authors present their experience regarding the initiation of tension-free vaginal tape (TVT) placement at their hospital for the treatment of stress urinary incontinence. They examined 30 incontinent women who had never had previous anti-incontinence surgery. The TVT placement was performed by one surgeon. Thirty patients were recruited in this study and analyzed in 3 groups of 10. The parameters examined included operative time, bladder injury, bleeding, hospitalization, and need for catheterization in each of the 3 groups. These parameters were then examined for statistical significance. In addition, the groups were stratified for age, parity, and the presence of preoperative urgency.

This paper is important in view of the popularity of the TVT since its introduction by Ulmsten et al. in 1996 (1). As the popularity for this operation has increased, there has been an increase in pressure and desire on urologists and gynecologists to perform this at their respective hospitals to provide a full service for their patients. The question which each surgeon asks of himself prior to performance of a surgery, is how easy will this be to do, and how rapidly may I learn it so I may offer it in a successful and safe fashion to my patients. The 3 main complications examined in this paper were bladder injury, bleeding, and the need for catheterization postoperatively. Of note, was that the instance of bladder injury did diminish rapidly with increase in surgical experience. Bleeding did not alter between the 3 groups. The need for perioperative catheterization also did not change significantly with increase in surgical experience. In the patients who had urgency, it was noteworthy that 80% had persistent postoperative symptoms. This is in marked contrast to the classic thought of the resolution of urgency after an anti-incontinence operation, with two-thirds having the urgency resolve, one-third having the urgency continue, and less than 5% having de novo urinary urge incontinence (2).

Several points of critique in this paper were that the paper did look at the learning curve of a single surgeon, but it was stated in the article that the urogynecological surgeon had been trained by Ulmsten to perform all of the operations. It was unclear to me whether the surgeon spent one day with Dr. Ulmsten, one month, or a residency. In addition, it would be more illuminating if the exact training could be delineated with regard to the number of cases, hands on training or solely observation. Also, there were 30 TVT procedures carried out, one of the procedures was aborted and converted to a Burch-retropubic suspension secondary to distorted anatomy attributed to previous pelvic surgeries. I was unsure whether this patient was included in the 30 patients. Another point of review is that 11 (37%) of the patients underwent concomitant surgical procedures. These ranged from laparoscopic procedures to pelvic relaxation repairs. The authors try to accommodate this and still use the TVT procedures in their series by commenting on the mean operating time for the TVT procedure outside of the concomitant surgical procedures. Unfortunately, the concomitant surgical procedures may have had a downstream effect on the overall incidence of bleeding, hospitalization, and post-operative catheterizations. I would have found the paper much more educational if the TVT procedures analyzed would have been without concomitant operations.

Literature is now replete with commentary and descriptions of the tension-free transvaginal tape procedures. Any of the papers in the literature report fairly small series with a large number of multi-site authors with good results, thus indicating that perhaps the learning curve is rather rapid with the TVT procedure (3). Though the paper by Groutz et al. used patients who had never had anti-incontinence operations before, other papers have commented on the success of the TVT procedure for patients who have previously failed stress incontinence surgery (4).

This paper is valuable for it helps guide the reader in the onset of the use of the TVT procedure, if that operation has not yet been added to his surgical armamentarium. It also guides the reader to counsel his patients that there may not be a significant diminution in urge incontinence after the anti-incontinence operation. Based on this paper, the surgeon can count on the incidence of bladder perforation diminishing with increased surgical experience but the challenge of perioperative hemorrhage remaining. In addition, emphasis is made that this operation should not be completed without intraoperative cystoscopy.

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PEDIATRIC UROLOGY

Tubularized incised plate repair: functional outcome after intermediate followup

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Purpose: We describe the functional outcome following tubularized incised plate repair of hypospadias in toilet trained children after an intermediate followup.

Materials and Methods: Children were included in this study only if they were toilet trained and had flow rate data not less than 6 months after primary tubularized incised plate hypospadias repair or 2 months after any secondary procedure to correct complications. Uroflow data (peak flow, voided volume and post-void residuals) were analyzed and plotted on previously determined age-volume dependent nomograms.

Results: Of the 48 boys, 39 required no secondary procedures, while 9 secondary fistula closures were performed in 2, meatotomy in 2 and dilation in 5. After either primary (n = 26) or secondary (n = 7) procedures 33 of the 48 patients (68.7%) had normal peak flow rate and 15 (31.3%) had low peak flow rate. Of the 48 patients 46 had post-void residual urine less than 10% of voided volume.

Conclusions: Most children will void efficiently with no straining and no post-void residual (1/2) to 4 years after tubularized incised plate hypospadias repair. Of our patients 68.7% have normal peak flow rate. Intermediate followup of larger series and followup at puberty are recommended to resolve the debate concerning the long-term functional outcome of tubularized incised plate hypospadias repair.

Editorial Comment

This paper attempts to evaluate the functional outcome of the incised plate hypospadias repair. In my mind, the data are incomplete; however, the authors do find that the majority of patients had flow rates below the mean. Although these data would not yet convince me to give up this excellent repair, it does give pause and make us ever more aware that 6 month to 4 year followup is very insufficient for pediatric urological conditions.

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Imaging studies after a first febrile urinary tract infection in young children

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Background: Guidelines from the American Academy of Pediatrics recommend obtaining a voiding cystourethrogram and a renal ultrasonogram for young children after a first urinary tract infection; renal scanning with technetium-99m-labeled dimercaptosuccinic acid has also been endorsed by other authorities. We investigated whether imaging studies altered management or improved outcomes in young children with a first febrile urinary tract infection.

Methods: In a prospective trial involving 309 children (1 to 24 months old), an ultrasonogram and an initial renal scan were obtained within 72 hours after diagnosis, contrast voiding cystourethrography was performed one month later, and renal scanning was repeated six months later.

Results: The ultrasonographic results were normal in 88 percent of the children (272 of 309); the identified abnormalities did not modify management. Acute pyelonephritis was diagnosed in 61 percent of the children (190 of 309). Thirty-nine percent of the children who underwent cystourethrography (117 of 302) had vesicoureteral reflux; 96 percent of these children (112 of 117) had grade I, II, or III vesicoureteral reflux. Repeated scans were obtained for 89 percent of the children (275 of 309); renal scarring was noted in 9.5 percent of these children (26 of 275).

Conclusions: An ultrasonogram performed at the time of acute illness is of limited value. A voiding cystourethrogram for the identification of reflux is useful only if antimicrobial prophylaxis is effective in reducing reinfections and renal scarring. Renal scans obtained at presentation identify children with acute pyelonephritis, and scans obtained six months later identify those with renal scarring. The routine performance of urinalysis, urine culture, or both during subsequent febrile illnesses in all children with a previous febrile urinary tract infection will probably obviate the need to obtain either early or late scans.

Editorial Comment

This is a fascinating study that tests our acceptance of routine radiographic testing in children with febrile urinary tract infections. By performing a renal ultrasound, VCUG and DMSA scan in all febrile infants with a UTI and then looking back at the results, the authors concluded that the ultrasound played no role in management. Furthermore, the DMSA scan did not alter management either. Although the authors still accept a role for the VCUG, they challenge the reader to prove the assumption that prophylactic antibiotics will reduce the incidence of reinfection and renal scarring. Although further studies of this population group are needed, this study is important in that it is the first to provide evidence evaluating the effect of currently routine interventions in this population.

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