
UROLOGICAL SURVEY

Francisco J.B. Sampaio
Urogenital Research Unit
State University of Rio de Janeiro

Athanase Billis
State University of Campinas
Campinas, SP, Brazil

Andreas Böhle
Helios Agnes Karll Hospital
Bad Schwartau, Germany

Steven B. Brandes
Washington University in St. Louis
St. Louis, Missouri, USA

Sean P. Elliott
University of Minnesota
Minneapolis, MN, USA

Fernando J. Kim
Univ Colorado Health Sci Ctr
Denver, Colorado, USA

Manoj Monga
University of Minnesota
Edina, MN, USA

Steven P. Petrou
Mayo Medical School
Jacksonville, Florida, USA

Adilson Prando
Vera Cruz Hospital
Campinas, SP, Brazil

Brent W. Snow
University of Utah
Salt Lake City, Utah, USA

STONE DISEASE

Computed tomography-determined stone-free rates for ureteroscopy of upper-tract stones

Macejko A, Okotie OT, Zhao LC, Liu J, Perry K, Nadler RB

Department of Urology, Northwestern University Feinberg School of Medicine, Chicago, Illinois, USA

J Endourol. 2009; 23: 379-82

Background and Purpose: Most series on ureteroscopy for urolithiasis use postoperative plain radiography of the kidneys, ureters, and bladder (KUB) or intravenous urography (IVU) to determine outcomes. These imaging modalities, however, are not very sensitive and may overestimate stone-free rates (SFRs). The aim of our study was to assess SFRs after ureteroscopy for urolithiasis using CT follow-up.

Patients and Methods: A total of 92 patients underwent 113 ureteroscopic procedures for either renal or ureteral stones. Success of ureteroscopy was then determined by the absence of any stone fragments (stone-free). Stone-clearance rates (SCRs) were also calculated for ≤ 2 mm and ≤ 4 mm residual stone fragments.

Results: Each renal unit contained a mean of 1.87 stones with a mean stone diameter of 8 ± 6 mm. The overall SFR was 50.4%. SFRs were significantly higher for ureteral stones (80%) than renal stones (34.8%) ($P = 0.0001$). Renal units with multiple stones were less likely to be stone free than those with single stones ($P = 0.011$). No difference in SFRs was found between lower pole and non-lower-pole stones.

Conclusions: Overall SFRs by CT were lower than SFRs reported by radiography of the KUB or IVU criteria. Further studies to identify the clinical significance and natural history of residual stone fragments on CT scan after ureteroscopy are needed.

Editorial Comment

The study spanned a seven-year period - such that the average number of patients treated was 1 per month. It is feasible that a center with a higher volume of ureteroscopic procedures might have different stone-free results. Indeed, though the authors attribute the lower stone-free rate to the sensitivity of CT scan detecting "tiny" stones, 16% of patients in this study had residual stones > 4 mm in size. In addition, technology has evolved and improved over the study period - indeed the ureteroscopes utilized in this study lacked exaggerated active deflection and are no longer available on the market. This characteristic of the scopes might have affected stone free rates. The authors state that larger fragments were basket extracted while stones < 2 mm in size were left to pass. The authors do not describe what visual cues they utilized to determine stone size - for example were all fragments larger than the safety wire diameter basket extracted?

The authors did not standardize the time of post-operative imaging. Indeed some patients were imaged on day 1 (too early for clinical relevance) and some were imaged after 16 months (residual or recurrence of stones)? CT scan imaging at a predetermined time point (ex. 1 month) would have added clarity to the findings.

Twenty-six percent of patients were pre-stented. While this may facilitate ureteroscopy by ureteral dilation, it may also lead to edema, clot and/or debris that prevent an adequate visualization of the entire collecting system.

Dr. Manoj Monga

Professor, Department of Urology

University of Minnesota

Edina, Minnesota, USA

E-mail: endourol@yahoo.com

Evaluation and management of post-shock wave lithotripsy pain with third-generation lithotriptors using rofecoxib

Greene TD, Joseph JV, Erturk E

Department of Urology and Kidney Stone Treatment Center, University of Rochester School of Medicine, Rochester, New York, USA

J Endourol. 2009; 23: 395-8

Introduction: Newer generation lithotriptors have been modified to induce less pain. We evaluated factors contributing to post-shock wave lithotripsy (SWL) pain and assessed potential benefits of preemptive analgesia using Rofecoxib, a COX-II inhibitor, and potential effects on stone passage rates.

Materials and Methods: Sixty-nine patients were evaluated. Thirty-eight percent were women and 62% men, with a mean age of 53. Seventy-four patients treated using Dornier lithotripter-50 were enrolled in a prospective, double-blind, randomized study. The study group received 50 mg of rofecoxib 1 hour before extracorporeal shockwave lithotripsy (ESWL) and 24 hours later. The control group received no pretreatment medications. All patients were discharged with narcotic medications and contacted on postoperative days (POD) 1, 3, and 7. Questionnaires were administered to assess pain control using a numeric pain scale.

Results: Seventy-two percent had renal stones, and 28% ureteral, with a mean size of 10 mm. The mean pain score was 4.2 immediately after SWL, 3.4 on POD 1, 1.9 on POD 3, and 0.6 on POD 7. Multivariate analysis revealed a significant decrease in pain with time ($p < 0.0001$). Patients with severe pain before SWL had more pain after treatment ($p = 0.003$). Older patients had less pain post-SWL ($p = 0.045$). Pretreatment with Rofecoxib significantly reduced post-SWL pain from 5.04 to 4.03 ($p < 0.0001$). Other variables had no effect on posttreatment pain.

Conclusions: Pain after SWL is moderate to severe using third-generation lithotriptors and is significantly reduced by POD 3. Younger patients and those with significant pretreatment pain had more pain after treatment. Preemptive Rofecoxib reduced post-SWL pain, but had no impact on stone passage.

Editorial Comment

Rofecoxib was administered for only 24 hours. There may have been some utility in extending its' use for one week after SWL, both for pain relief and to promote stone passage. The authors note that the study was terminated early with the removal of Rofecoxib from the market for cardiac concerns, yet they do not report their sample size calculations, or what percentage of target accrual they reached. As such, it is difficult to determine the probability of a type 2 error due to underpowering of the study.

Over 30% of patients in the study underwent ureteral stenting - it would be interesting to evaluate the utility of Rofecoxib in this subset of patients - does it alleviate stent discomfort?

This article contributes greatly to our understanding of pain with SWL. First, it quantifies the natural progression of pain after SWL - moderate-severe (5 or 10) for the first 2 days, subsiding almost completely by Day 7. Secondly, it identifies patients with a higher risk of significant pain post-operative - younger patients, and those with pre-SWL pain. These subsets would warrant further investigation in the future to identify effective adjuvant analgesic approaches.

Dr. Manoj Monga

Professor, Department of Urology

University of Minnesota

Edina, Minnesota, USA

E-mail: endourol@yahoo.com

ENDOUROLOGY & LAPAROSCOPY

Laparoscopic management of intraperitoneal bladder rupture secondary to blunt abdominal trauma using intracorporeal single layer suturing technique

Kim FJ, Chammas MF Jr, Gewehr EV, Campagna A, Moore EE

Division of Urology, Department of Surgery, Denver Health Medical Center and University of Colorado Health Sciences Center, Denver, Colorado, USA

J Trauma. 2008; 65: 234-6

Background: Since Parra reported the first case of laparoscopic repair of bladder rupture caused by nonlaparoscopic injury to the bladder in 1994, several case reports have demonstrated the feasibility of this reconstructive surgical technique. We report the series of six patients that underwent laparoscopic repair of intraperitoneal bladder rupture (LRIB) because of blunt trauma using a single layer suturing technique. To our knowledge, this is the first series of LRIB reported secondary to blunt abdominal trauma.

Methods: From January of 2002 through June of 2006, a total of 139 patients were identified in our trauma registry with bladder ruptures secondary to abdominal blunt trauma. Among them 111 (79.8%) patients had associated pelvic injury. Seventy-one patients underwent surgical exploration and open bladder repair. Six cases were managed with laparoscopic technique. Patients were positioned in supine position and a three port-technique (5 mm, 10 mm, and 12 mm) was performed using the intracorporeal single layer suturing with a 3.0 Vycril (UR-6 needle). A close system Jackson-Pratt drain was placed in the retropubic space to monitor possible urine extravasation.

Results: The mean age of the patients was 47.3 years old (18-74 years). There were three female and three male patients. The average operation time was 43 minutes (31-75 minutes), mean length of bladder tear was 6.37 cm (5.3-7.7 cm), mean estimated blood loss was 16.6 cc (10-35 cc) and mean follow-up was 25.5 months (20-28 months). Two patients underwent combined orthopedic procedures. Computerized Tomography (CT) cystogram was performed between 5 days and 7 days after surgery with no signs of leakage in all patients.

Conclusion: LRIB perforation because of blunt abdominal trauma using single layer intracorporeal suturing technique is a minimally invasive alternative to open surgery in well selected patients with no other intrabdominal injuries or intracranial pressure issues, offering faster recovery and better cosmetic results.

Editorial Comment

The authors reported the largest case of laparoscopic repair of intraperitoneal bladder rupture (LRIB) because of blunt trauma using a single layer suturing technique. There are basically 2 pivotal points that should be mentioned. First, the indication of specific patients with isolated intraperitoneal bladder rupture with no concomitant increased in intra-cranial pressure. Secondly, the use of single absorbable suture to close the bladder defect with debridement of not viable tissue and no additional supra-pubic catheter.

Dr. Fernando J. Kim

*Chief of Urology, Denver Health Med. Ctr.
Associate Professor, Univ. Colorado Health Sci. Ctr.*

Denver, Colorado, USA

E-mail: fernando.kim@uchsc.edu

Temperature safety profile of laparoscopic devices: Harmonic ACE (ACE), Ligasure V (LV), and plasma trisector (PT)

Kim FJ, Chammas MF Jr, Gewehr E, Morihisa M, Caldas F, Hayacibara E, Baptistussi M, Meyer F, Martins AC

Department of Surgery, Division of Urology, University of Colorado Health Sciences Center, Denver, Colorado, USA

Surg Endosc. 2008; 22: 1464-9

Background: Reports of iatrogenic thermal injuries during laparoscopic surgery using new generation vessel-sealing devices, as well as anecdotal reports of hand burn injuries during hand-assisted surgeries, have evoked questions about the temperature safety profile and the cooling properties of these instruments.

Methods: This study involved video recording of temperatures generated by different instruments (Harmonic ACE [ACE], Ligasure V [LV], and plasma trisector [PT]) applied according the manufacturers' pre-set settings (ACE setting 3; LV 3 bars, and the PT TR2 50W). The video camera used was the infrared Flex Cam Pro directed to three different types of swine tissue: (1) peritoneum (P), (2) mesenteric vessels (MV), and (3) liver (L). Activation and cooling temperature and time were measured for each instrument.

Results: The ACE device produced the highest temperatures (195.9 degrees +/- 14.5 degrees C) when applied against the peritoneum, and they were significantly higher than the other instruments (LV = 96.4 degrees +/- 4.1 degrees C, and PT = 87 degrees +/- 2.2 degrees C). The LV and PT consistently yielded temperatures that were < 100 degrees C independent of type of tissue or "on"/"off" mode. Conversely, the ACE reached temperatures higher than 200 degrees C, with a surprising surge after the instrument was deactivated. Moreover, temperatures were lower when the ACE was applied against thicker tissue (liver). The LV and PT cooling times were virtually equivalent, but the ACE required almost twice as long to cool.

Conclusions: The ACE increased the peak temperature after deactivation when applied against thick tissue (liver), and the other instruments inconsistently increased peak temperatures after they were turned off, requiring few seconds to cool down. Moreover, the ACE generated very high temperatures (234.5 degrees C) that could harm adjacent tissue or the surgeon's hand on contact immediately after deactivation. With judicious use, burn injury from these instruments can be prevented during laparoscopic procedures. Because of the high temperatures generated by the ACE device, particular care should be taken when it is used during laparoscopy.

Editorial Comment

The authors report the awareness of laparoscopic devices that although it may assist the surgeons the surgeon should be cognoscenti of the instruments that are in use during the surgery. The importance is to be familiar with the potential hazards and limitations that each laparoscopic instrument may cause during each surgical case.

Dr. Fernando J. Kim

Chief of Urology, Denver Health Med. Ctr.

Associate Professor, Univ. Colorado Health Sci. Ctr.

Denver, Colorado, USA

E-mail: fernando.kim@uchsc.edu

IMAGING

Prostate cancer: sextant localization at MR imaging and MR spectroscopic imaging before prostatectomy--results of ACRIN prospective multi-institutional clinicopathologic study

Weinreb JC, Blume JD, Coakley FV, Wheeler TM, Cormack JB, Sotito CK, Cho H, Kawashima A, Tempany-Afdhal CM, Macura KJ, Rosen M, Gerst SR, Kurhanewicz J

Department of Radiology, Yale University School of Medicine, New Haven, CT, USA

Radiology. 2009; 251: 122-33

Purpose: To determine the incremental benefit of combined endorectal magnetic resonance (MR) imaging and MR spectroscopic imaging, as compared with endorectal MR imaging alone, for sextant localization of peripheral zone (PZ) prostate cancer.

Materials and Methods: This prospective multicenter study, conducted by the American College of Radiology Imaging Network (ACRIN) from February 2004 to June 2005, was institutional review board approved and HIPAA compliant. Research associates were required to follow consent guidelines approved by the Office for Human Research Protection and established by the institutional review boards. One hundred thirty-four patients with biopsy-proved prostate adenocarcinoma and scheduled to undergo radical prostatectomy were recruited at seven institutions. T1-weighted, T2-weighted, and spectroscopic MR sequences were performed at 1.5 T by using a pelvic phased-array coil in combination with an endorectal coil. Eight readers independently rated the likelihood of the presence of PZ cancer in each sextant by using a five-point scale--first on MR images alone and later on combined MR-MR spectroscopic images. Areas under the receiver operating characteristic curve (AUCs) were calculated with sextant as the unit of analysis. The presence or absence of cancer at centralized histopathologic evaluation of prostate specimens was the reference standard. Reader-specific receiver operating characteristic curves for values obtained with MR imaging alone and with combined MR imaging-MR spectroscopic imaging were developed. The AUCs were estimated by using Mann-Whitney statistics and appropriate 95% confidence intervals.

Results: Complete data were available for 110 patients (mean age, 58 years; range, 45-72 years). MR imaging alone and combined MR imaging-MR spectroscopic imaging had similar accuracy in PZ cancer localization (AUC, 0.60 vs. 0.58, respectively; $P > .05$). AUCs for individual readers were 0.57-0.63 for MR imaging alone and 0.54-0.61 for combined MR imaging-MR spectroscopic imaging.

Conclusion: In patients who undergo radical prostatectomy, the accuracy of combined 1.5-T endorectal MR imaging-MR spectroscopic imaging for sextant localization of PZ prostate cancer is equal to that of MR imaging alone.

Editorial Comment

Endorectal prostate cancer imaging protocols remain subject of much debate, and undergo continuous evaluation and review. The results of this multi-institutional trial showed that magnetic resonance spectroscopic imaging (MRSI) shows no advantages over conventional magnetic resonance imaging (MRI) alone, for localization of peripheral zone prostate cancer. Similarly to other radiologic centers, since 2005, combined conventional endorectal MRI + MRSI has become routinely practice in our institution, in two main clinical situations. First, in the preoperative staging work-up for patients with moderate or high risk of extraprostatic extension and second in patients with negative biopsies and elevated or rising PSA.

Patients without signs of extraprostatic extension on conventional endorectal MRI, are usually further evaluated with spectroscopy since the number of voxels per section, highly suspicious for cancer on the basis of an elevated ratio choline + creatine / citrate is useful to predict extra-prostatic extension (1). Presence of more than four, contiguous highly suspicious voxels located adjacent to the capsule in an otherwise confined tumor on T2-weighted image, may be associated with extra-prostatic extension on microscopic analysis.

Similarly since 2005, we have been using the multiparametric evaluation for the detection of prostate cancer in patients with elevated PSA and negative prostate biopsies. Multiparametric evaluation is a combination of conventional endorectal T2-weighted image, spectroscopy, diffusion-weighted image and perfusion study (dynamic contrast-enhanced MRI). Using only MRI and MRSI results to target an endorectal sonographically guided biopsy in men with highly suspicious spectral trace for prostate cancer the sensitivity, specificity, positive and negative predictive values, and accuracy were 71%, 84%, 75%, 81%, and 79%, respectively (2). In this group of patients with at least two negative biopsies the finding of more than one focal area with low-signal intensity on T2-weighted image, suspicious for cancer, is not infrequent. These focal areas with reduced T2 signal intensity in peripheral zone are probably related to post-biopsies scarring. In our experience these abnormalities may be disregarded as a suspicious lesions based on spectroscopic imaging alone or combined with diffusion-weighted image and perfusion study. Based on this complete MRI work-up an similarly to cancer of transition zone (3), we feel that the best results for the detection of cancer of the peripheral zone in patients with negative biopsies, will be accomplished by the combination of the results of these 4 techniques (a retrospective analysis of this materials and methods has already been initiated). It is interesting to emphasize that these techniques are complimentary since they are based in different biologic principles. In view of the results of this well designed multicenter trial, perhaps in the near future, it will be interesting to confirm if multiparametric MRI evaluation is of incremental value for the detection of prostate cancer in the larger group of patients without previous biopsy.

References

1. Yu KK, Scheidler J, Hricak H, Vigneron DB, Zaloudek CJ, Males RG, et al.: Prostate cancer: prediction of extracapsular extension with endorectal MR imaging and three-dimensional proton MR spectroscopic imaging. *Radiology*. 1999; 213: 481-8.
2. Prando A, Kurhanewicz J, Borges AP, Oliveira EM Jr, Figueiredo E: Prostatic biopsy directed with endorectal MR spectroscopic imaging findings in patients with elevated prostate specific antigen levels and prior negative biopsy findings: early experience. *Radiology*. 2005; 236: 903-10.
3. Prando A, Borges AP, Oliveira EM: Detection of Transition Zone Prostate Cancer: The Role of Color Doppler Transrectal Ultrasound and MR Imaging with Conventional and Functional Studies. Educational Exhibit, RSNA 2007. LL-UR2682. Available at: http://rsna2007.rsna.org/V2007/documents/content_brochures/SSC_Ultrasound.pdf

Dr. Adilson Prando

*Chief, Department of Radiology and
Diagnostic Imaging, Vera Cruz Hospital
Campinas, São Paulo, Brazil
E-mail: adilson.prando@gmail.com*

Urinary bladder cancer: diffusion-weighted MR imaging--accuracy for diagnosing T stage and estimating histologic grade

Takeuchi M, Sasaki S, Ito M, Okada S, Takahashi S, Kawai T, Suzuki K, Oshima H, Hara M, Shibamoto Y
Department of Radiology, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan
Radiology. 2009; 251: 112-21

Purpose: To prospectively evaluate the ability of diffusion-weighted (DW) magnetic resonance (MR) imaging to be used to determine the T stage of bladder cancer and to measure the correlation between the apparent diffusion coefficient (ADC) and histologic grade.

Materials and Methods: This study was approved by the local institutional review board. All patients gave written informed consent. Forty patients with a total of 52 bladder tumors underwent MR imaging that included

DW imaging. Histologic grade was determined for all tumors. Two radiologists interpreted four image sets (ie, T2-weighted images alone, T2-weighted plus DW images, T2-weighted plus dynamic contrast agent-enhanced images, all three image types together). Conventional criteria were used for interpreting T2-weighted and contrast-enhanced images. For DW images, new staging criterion developed on the basis of the hypothesis that tumors, submucosal tissue, and muscles show high, low, and intermediate signal intensity, respectively, was used. The McNemar test was used to examine differences in accuracy, sensitivity, and specificity. Differences in the performance were analyzed by comparing the areas under the receiver operating characteristic curves (A(z) values). To compare ADCs between three histologic grades, analysis of variance was used.

Results: The overall accuracy of T stage diagnosis was 67% for T2-weighted images alone, 88% for T2-weighted plus DW images, 79% for T2-weighted plus contrast-enhanced images, and 92% for all three image types together. The overall accuracy, specificity, and A(z) for diagnosing T2 or higher stages were significantly improved by adding DW images ($P < .01$). The mean ADC of G3 tumors was significantly lower than that of G1 and G2 tumors ($P < .01$).

Conclusion: DW images provided useful information for evaluating the T stage of bladder cancer, particularly in differentiating T1 or lower tumors from T2 or higher tumors. The ADC may in part predict the histologic grade of bladder cancer.

Editorial Comment

Local staging of bladder cancer can be performed either by CT or by MRI. Sensitivity and specificity for detecting perivesical invasion with multidetector CT are 92% and 98% respectively, with an accuracy of 96%. These results are obtained, if MDCT is performed more than 7 days after biopsy (1).

The high intrinsic contrast of MR imaging permits distinction of bladder wall layers (2). With fast dynamic contrast-enhanced imaging, bladder cancer enhances more intense and earlier than normal bladder wall and post biopsy changes. This characteristic enhancement may allow differentiation of tumor from fibrosis or edema, although this is still difficult soon after transurethral resection. MR imaging has a reported staging accuracy of 72%-96% and is superior to CT for differentiation of superficial versus deep muscle invasion, unfortunately, overstaging occurs in about 20% patients.

Although based on relative small series, the authors present interesting results showing that diffusion-weighted imaging (DWI) may significantly reduce overstaging of bladder cancer observed with conventional MRI techniques. This sequence is relatively fast and easy to accomplish and can be performed routinely. Radiologists should include DWI in the protocol of MRI staging of bladder cancer. Further studies are warranted to confirm that this sequence has higher accuracy than conventional sequences (T2-weighted images + fast dynamic contrast enhanced), for the demonstration of invasion of perivesical tissues. Another potential utility of this sequence would be its ability to differentiate scars and reactive tissue after biopsy from tumor tissue.

References

1. Kim JK, Park SY, Ahn HJ, Kim CS, Cho KS: Bladder cancer: analysis of multi-detector row helical CT enhancement pattern and accuracy in tumor detection and perivesical staging. *Radiology*. 2004; 231: 725-31.
2. Barentsz JO, Witjes JA, Ruijs JH: What is new in bladder cancer imaging. *Urol Clin North Am*. 1997; 24: 583-602.
3. Watanabe H, Kanematsu M, Kondo H, Goshima S, Tsuge Y, Onozuka M, et al.: Preoperative T staging of urinary bladder cancer: does diffusion-weighted MRI have supplementary value? *AJR Am J Roentgenol*. 2009; 192: 1361-6.

Dr. Adilson Prando

*Chief, Department of Radiology and
Diagnostic Imaging, Vera Cruz Hospital
Campinas, São Paulo, Brazil
E-mail: adilson.prando@gmail.com*

PATHOLOGY

Noninvasive urothelial carcinoma of the bladder with glandular differentiation: report of 24 cases

Miller JS, Epstein JI

Departments of Pathology, Urology and Oncology, The Johns Hopkins Hospital, Baltimore, MD, USA

Am J Surg Pathol. 2009; 13 [Epub ahead of print]

Noninvasive urothelial carcinoma (UC) with glandular differentiation in the absence of infiltrating carcinoma is a rare entity that has not been well characterized. We retrieved 24 cases of noninvasive UC of the bladder with glandular differentiation on biopsy (n = 20) or transurethral resection (n = 4) without an associated invasive component. The cases were identified from the consult files of one of the authors between 1992 and 2008. Mean patient age at diagnosis was 70 years (range: 48 to 87 y) and 75% were male. Half of the cases were pure noninvasive UC with glandular differentiation; half were associated with either carcinoma in situ or high-grade noninvasive papillary carcinoma. The glandular component consisted of 1 or more patterns: papillary (46% of cases), glandular (42%), cribriform (33%), and flat (25%). Mitoses, apoptosis, and necrosis were identified in 83%, 67%, and 17% of the biopsies, respectively. One case was a recent diagnosis, and 5 patients either refused treatment or were lost to follow-up. Of the 18 patients with available follow-up information, 9 (50%) did not develop invasive carcinoma; the remaining 9 (50%) eventually developed an invasive bladder tumor. Of these, 2 were small cell carcinoma, 3 were poorly-differentiated UC (2 of these developed widespread metastases), and 4 were UC, not otherwise specified. In both instances of eventual small cell carcinoma, and in 2 of the 3 cases of poorly-differentiated UC, the initial biopsy consisted of pure noninvasive UC with glandular differentiation without carcinoma in situ or noninvasive papillary carcinoma. Of note, none of the patients in the study developed invasive adenocarcinoma.

Editorial Comment

Divergent differentiation is a very peculiar capacity of urothelial tumors (1). Squamous differentiation, defined by the presence of intercellular bridges or keratinization, occurs in up to 20% of urothelial carcinomas (2,3). Glandular differentiation is less common than squamous differentiation (4,5). The findings of squamous and/or glandular phenotype in urothelial carcinoma of the bladder is a marker of invasiveness and consequently of a more aggressive behavior. In a study in our institution squamous and/or glandular differentiation was seen in 12/165 (7.27%) transurethral resections of the bladder. All 12 cases were infiltrative (pT1 or pT2 stage) at clinical presentation (6). In the study by Miller and Epstein of noninvasive urothelial carcinoma with glandular differentiation on clinical presentation, of the 18 patients with available follow-up information, 9(50%) developed an invasive bladder tumor.

References

1. Grignon DJ: Neoplasms of the urinary bladder. In: Bostwick DG, Eble JN, (ed.), *Urologic Surgical Pathology*. St.Louis, Mosby, 1997: pp. 214-305.
2. Sakamoto N, Tsuneyoshi M, Enjoji M: Urinary bladder carcinoma with a neoplastic squamous component: a mapping study of 31 cases. *Histopathology*. 1992; 21: 135-41.
3. Martin JE, Jenkins BJ, Zuk RJ, Blandy JP, Baithun SI: Clinical importance of squamous metaplasia in invasive transitional cell carcinoma of the bladder. *J Clin Pathol*. 1989; 42: 250-3.
4. Grace DA, Winter CC: Mixed differentiation of primary carcinoma of the urinary bladder. *Cancer*. 1968; 21: 1239-43.
5. Fegen JP, Albert DJ, Persky L: Adenocarcinoma and transitional cell carcinoma occurring simultaneously in the urinary bladder (mixed tumor). *J Surg Oncol*. 1971; 3: 387-92.

6. Billis A, Schenka AA, Ramos CC, Carneiro LT, Araujo V: Squamous and/or glandular differentiation in urothelial carcinoma: prevalence and significance in transurethral resections of the bladder. *Int Urol Nephrol*. 2001; 33: 631-3.

Dr. Athanase Billis

*Full-Professor of Pathology
State University of Campinas, Unicamp
Campinas, São Paulo, Brazil
E-mail: athanase@fcm.unicamp.br*

Recommendations for the reporting of surgically resected specimens of renal cell carcinoma: the Association of Directors of Anatomic and Surgical Pathology

Higgins JP, McKenney JK, Brooks JD, Argani P, Epstein JI; Association of Directors of Anatomic and Surgical Pathology

Department of Pathology, Stanford University, Stanford, CA, USA

Hum Pathol. 2009; 40: 456-63

A checklist based approach to reporting the relevant pathologic details of renal cell carcinoma resection specimens improves the completeness of the report. Karyotypic evaluation of renal neoplasms has refined but also complicated their classification. The number of diagnostic possibilities has increased and the importance of distinguishing different tumor types has been underscored by dramatic variation in prognosis and the development of targeted therapies for specific subtypes. The increasing number of recognized renal neoplasms has implications for handling renal resection specimens. Furthermore, the prognostic significance of other features of renal neoplasms related to grade and stage has been demonstrated. This guideline for the handling of renal resection specimens will focus on problem areas in the evolving practice of diagnosis, grading, and staging of renal neoplasms. The accompanying checklist will serve to ensure that all necessary details of the renal resection specimen are included in the surgical pathology report.

Editorial Comment

The reporting of renal cell carcinoma is facilitated by the provision of a checklist to insure that pathologists provide all of the essential information to enable clinicians to optimize patient care.

The checklist includes the gross description and the diagnostic information:

1. Gross description. Includes how the specimen is received, how the specimen is identified, the type of nephrectomy (total or partial), the length of ureters and the description of other structures. The tumor description includes the site within the kidney, the size in 3 dimensions, the gross characteristics (color, consistency and degree of heterogeneity, the relationship to the perinephric soft tissue with emphasis to the renal sinus fat, renal vein invasion, adrenal invasion, lymph nodes, and other findings (hydronephrosis, pyelonephritis, etc.)

2. Diagnostic information. Includes the histologic type according to the World Health Organization 2004 classification (1): clear cell carcinoma, multilocular cystic carcinoma, papillary carcinoma, mucinous tubular and spindle carcinoma, collecting duct carcinoma, medullary carcinoma, translocation carcinomas (includes Xp11 and 6:11), tubulocystic carcinoma, acquired cystic disease-associated carcinoma, and renal cell carcinoma, unclassified. For the histological grade may be used the Fuhrman scheme (2). Sarcomatoid dedifferentiation is a growth pattern that may occur in any of the major types of renal cell carcinoma. Presence of necrosis has been found to be of prognostic significance (3). The number of nodes sampled and the number positive should be reported. The prognosis appears to be significantly adversely affected by

extranodal extension of the metastatic focus, and therefore, it is recommended that this be assessed and reported as well (4).

References

1. Hamilton SR, Aaltonen LA. World Health Organization classification of tumours. pathology and genetics. IARC Press, Lyon. 2000.
2. Fuhrman SA, Lasky LC, Limas C: Prognostic significance of morphologic parameters in renal cell carcinoma. Am J Surg Pathol. 1982; 6: 655-63.
3. Amin MB, Amin MB, Tamboli P, Javidan J, Stricker H, de-Peralta Venturina M, et al.: Prognostic impact of histologic subtyping of adult renal epithelial neoplasms: an experience of 405 cases. Am J Surg Pathol. 2002; 26: 281-91.
4. Dimashkieh HH, Lohse CM, Blute ML, Kwon ED, Leibovich BC, Cheville JC: Extranodal extension in regional lymph nodes is associated with outcome in patients with renal cell carcinoma. J Urol. 2006; 176: 1978-82; discussion 1982-3.

Dr. Athanase Billis

Full-Professor of Pathology

State University of Campinas, Unicamp

Campinas, São Paulo, Brazil

E-mail: athanase@fcm.unicamp.br

UROGENITAL TRAUMA

Renal gunshot wounds: clinical management and outcome

Voelzke BB, McAninch JW

Department of Urology, University of California San Francisco at San Francisco General Hospital, San Francisco, California 94114, USA

J Trauma. 2009; 66: 593-600; discussion 600-1

Background: To analyze our experience with renal gunshot wounds (GSW).

Methods: We analyzed our prospective trauma database for patients with renal GSW.

Results: Two hundred one patients (206 renal units) with renal GSW were collected from our database. Preoperative imaging (1-shot intravenous pyelogram, dedicated intravenous pyelogram, or computed tomography) was performed in 68.7% (n = 140). Gross or microscopic (>5 red blood cell/high power field) hematuria was present in 88.7%. Injury to other organs was present in 96.5% (194 of 201), with >1 organ involved in 74.6% (other than kidney). The liver was the most commonly injured organ. Using the American Association for the Surgery of Trauma grading system, there were 46 grade 1 (G1), 21 G2, 62 G3, 51 G4, and 26 G5 injuries. The trend to observe without renal exploration has not changed significantly during the past three decades (1978-1989 = 32.8%, 1990-1999 = 39%, 2000-2007 = 30.4%). Ninety-five renal units (excluding nephrectomy) underwent repair with associated small or large bowel injuries without any known complications, including 14 patients with mesh used during renal repair. The renal salvage rate was 85.4% (n = 176 of 206) with two delayed nephrectomy procedures for persistent bleeding after initial repair. The total number of nephrectomy procedures was 30 of 206 renal units. Postoperative imaging was obtained in 32.8% (55 of 201) patients, and there were no known cases of postinjury hypertension. Overall survival was 90.6% (182 of 201), with 2 intraoperative and 17 postoperative deaths. There were no postoperative infections related to renal reconstruction. Isolation of renal vessels was obtained in all patients before opening Gerota's fascia with no deaths secondary to urologic intervention.

Conclusion: Selective observation and various operative techniques can yield high renal salvage rates approximating 85% after GSW.

Topical haemostatics in renal trauma--an evaluation of four different substances in an experimental setting

Björser K, Holst J

Vascular Center, Malmö University Hospital, Lund University, Sweden

J Trauma. 2009; 66: 602-11

Background: Damage control is valuable in hemodynamically unstable trauma patients. To improve the hemostasis of packing, topical hemostatic agents have been suggested. The effects of such agents are unclear in trauma situations. The purpose of this study was to investigate the hemostatic capacity, and the stability of the hemostatic clot, of four substances with different mode of action in an experimental traumatic bleeding model.

Methods: A standardized heminefrectomy was performed in 180 heparinized and normotensive Sprague-Dawley rats. Four different substances were studied (separately and in combinations) in a randomized fashion: gelatin (sponge and matrix), bovine thrombin, freeze-dried recombinant factor VIIa (rFVIIa), and microporous polysaccharide hemospheres. Eight treatment groups (15 animals/group) were considered, primary endpoint was hemostasis within 20 minutes of observation. The effective treatment groups were evaluated in a second set in the same experimental model, but with a prolonged observation time after hemostasis (60 minutes) to control the stability of the clot.

Results: Those animals treated with gelatin in the comparative study, with and without thrombin or rFVIIa, obtained hemostasis. Thrombin and rFVIIa alone did not have any hemostatic capacity. Only 20% to 25% of the animals obtained hemostasis with microporous polysaccharide hemospheres alone or in combination with rFVIIa. In the prolonged observation study, gelatin alone and in combination with thrombin or rFVIIa was studied. On average, 34% (20%-54%) of the animals rebled with no significant difference between the treatment groups.

Conclusions: Gelatin-containing products provided a fast hemostasis in this experimental model. One third of the animals rebled, regardless of whether thrombin or rFVIIa was added. Further studies are demanded to confirm these results clinically

Editorial Comment

The above two articles on gunshot wounds to the kidney and the other on haemostatic agents are both very timely and raise many controversies and unanswered questions. Although the authors hold on to the dogma of a one-shot IVP before any renal exploration, I have generally found little utility in its use. In our hands, the IVP is usually a “fuzzy-gram” and adds little to the decision making. While Morey et al published some value in the IVP in helping to grade the renal injury, as to high or low grade, we have not had such luck. In our trauma center, if the patient is stable enough to undergo imaging, we take the patient to the CT scanner and get an accurate read as to the grade of renal and associated injuries. If the patient is so unstable that no imaging can be done and needs to be rushed to the OR, this patient is typically a “damage control” patient where fancy and time consuming renal reconstructions are a disservice to the patient. It is our feeling that a damage control patient with a kidney injury needs to be observed, temporized by packing or the like, or undergo a quick nephrectomy. In such an unstable patient, a one-shot IVP will not help you or allow you to change your intra-operative decision making. Furthermore, an easy way to assess contralateral kidney function is to place a vessel loop to occlude the ipsilateral injured kidney ureter, give indigo, and look for blue in the Foley. Blue indicates at least a partially functional contralateral kidney. The notion that we should do a one-shot IVP on all patients to prevent taking out a solitary kidney that has a 0.1% incidence makes no sense to me. While we

are in the tissue preservation business, and would like to preserve every kidney, kidney repair should not be at the expense of compromising patient recovery and survival from the associated injuries. While the urology community has been slow to accept the above statements, there is mounting evidence from the general surgical and trauma literature that one shot IVPs and getting primary vascular control are dogma, and have little value in the contemporary setting.

I also have problems with the dogma of primary, proximal vascular control of the renal hilum before opening Gerota's fascia. By definition a GSW to the kidney has penetrated Gerota's so it is an uncontained hematoma and Gerota's is open already. In general, if the kidney injury is significant, Grade 3-5, the hematoma has already done the kidney mobilization and dissection – so getting the kidney to the midline to place a vascular clamp on the hilum typically can be done very quickly and easily. Primary, proximal control has value for a zone 1 hematoma where there is a potential injury to the great vessels. Here getting proximal and distal control has great value to prevent exsanguination. However, if the injury is just to the renal parenchyma, I really don't understand the need for proximal control - especially in every patient. Furthermore, while the SF General group reports that it takes only 10 minutes to get proximal control, in my own experience it typically takes more like 20 plus minutes, especially on the right. So, in the unstable and potential damage control patient I feel we do the patient a disservice is delaying kidney repair for 20 or more minutes. They also report that they only clamp the renal artery 12% of the time – that suggests to me that they are over grading the renal injuries. In our experience, true grade 4 and 5 renal injuries are usually aggressively bleeding from the kidney, and clamping the hilum expedites and facilitates renal repair. As long as the warm ischemia time is < 30 minutes, I see no reason not to clamp the artery. Furthermore, the use of adjunctive hemostatic agents, such as Floseal and the use of Nu-knit make sense to me and can expedite vascular control. Such agents should not substitute for renal parenchymal suturing, but be an adjunct, expect perhaps in the very unstable damage control patient where packing the kidney and applying agents can preclude the need for a damage control nephrectomy.

The last comment I have is why we should treat low grade GSW to the kidney any differently then a blunt renal injury, if the kidney grade for grade injury is the same. Clearly high grade GSW have a high degree of blast injury and delayed necrosis and need to be more aggressively explored and repaired. However, for low velocity GSW and no clear intra-abdominal injury, I feel in this day and age of excellent interventional radiology imaging and the readily available use of selective angio-embolization in most trauma centers, that conservative management of isolated penetrating injuries, even grade 3 and 4 are very under utilized. Arguably, the rate of pseudoaneurysms and AV fistulas can approach 25% in conservatively managed high grade penetrating injuries – but an unnecessary abdominal exploration can be avoided – in so doing expediting morbidity and recovery time.

Dr. Steven B. Brandes

Associate Professor, Division of Urologic Surgery

Washington University in St. Louis

St. Louis, Missouri, USA

E-mail: brandess@wudosis.wustl.edu

Male sexual dysfunction after pelvic fracture

Metze M, Tiemann AH, Josten C

Universitätsklinikum Leipzig, Zentrum für Chirurgie, Klinik für Unfall- und Wiederherstellungs- und plastische Chirurgie, Leipzig, Germany

J Trauma. 2007; 63: 394-401

Background: The assessment of multiple aspects of male sexual function after pelvic fracture.

Methods: A cross-sectional retrospective study of male sexual function was conducted. Patients admitted with traumatic pelvic fracture between January 1995 and June 2001 were included. One hundred and two patients were invited by mail. After performing a standardized clinical examination including an interview, the patients were asked to answer a questionnaire at home. Sexual dysfunction was classified as erectile dysfunction (ED), ejaculatory dysfunction, sensory loss in genital region, and pain during sexual activity. ED was assessed by the International Index of Erectile Function (IIEF). The pelvic injury was classified using Tile's classification.

Results: Complete data of 77 men were available (age 35 +/- 13). A total of 47 patients (61%) reported limitations in sexual function. Persistent ED was found in 15 patients (19%). The patient's report of ED could be verified by a low IIEF score in 14 cases. Injury patterns, which may increase the incidence of sexual dysfunction, could be identified. A ruptured symphysis appeared to bear a risk of temporary ED. Comparing compression and distraction in type B injuries, patients with distraction injury showed more severe sexual function. Posterior ring disruptions seemed to increase the risk of persistent problems, possibly caused by nerve damage.

Conclusions: This study emphasizes that major pelvic trauma may impair sexual function in men. The results demonstrate an objective measurement of ED by the IIEF as well as an extended spectrum of complaints. The IIEF questionnaire might be considered to identify patients that need further medical evaluation.

Editorial Comment

Often times, years after the orthopedic complications of pelvic fracture have long healed the urologic complications of urethral stricture and erectile dysfunction continue to plague the patient. Impotence after pelvic fracture appears to be primarily vascular from either a pure arteriogenic or combined arteriovenogenic cause. By the use of MRI and Doppler studies, Armenakas et al. has shown that the corporeal veno-occlusive dysfunction and cavernous arterial insufficiency after pelvic fracture are due to direct corporal cavernosal fracture or avulsion, subsequent fibrosis which alters the elasticity of the tunica albuginea and corporeal compliance, or to internal pudendal artery injury. Only secondarily is impotence primarily neurogenic. Neurogenic impotence is the result of prostatic plexus and/or neurovascular bundles nerve injury, and from nervi erigentes (S2-S4) injury due to shearing forces of the pelvic fracture that result in nerve stretching and tearing. Predictive signs of potential erectile dysfunction as noted by MRI are avulsion of the corpus cavernosum from the ischium, separation of the corporeal bodies, fracture of the corporeal body, and superior or lateral displacement of the prostate apex. Surgical correction for impotence (prosthetics, arterial reconstruction and venous occlusion), however, should be deferred for at least 12 to 18 months from initial injury, because delayed return of erectile function can occur spontaneously.

Dr. Steven B. Brandes

Associate Professor, Division of Urologic Surgery

Washington University in St. Louis

St. Louis, Missouri, USA

E-mail: brandess@wudosis.wustl.edu

Renal gunshot wounds: clinical management and outcome

Voelzke BB, McAninch JW

Department of Urology, University of California San Francisco at San Francisco General Hospital, San Francisco, California, USA

J Trauma. 2009 Mar;66(3):593-600; discussion 600-1

Background: To analyze our experience with renal gunshot wounds (GSW).

Methods: We analyzed our prospective trauma database for patients with renal GSW.

Results: Two hundred one patients (206 renal units) with renal GSW were collected from our database. Preoperative imaging (1-shot intravenous pyelogram, dedicated intravenous pyelogram, or computed tomography) was performed in 68.7% (n = 140). Gross or microscopic (>5 red blood cell/high power field) hematuria was present in 88.7%. Injury to other organs was present in 96.5% (194 of 201), with >1 organ involved in 74.6% (other than kidney). The liver was the most commonly injured organ. Using the American Association for the Surgery of Trauma grading system, there were 46 grade 1 (G1), 21 G2, 62 G3, 51 G4, and 26 G5 injuries. The trend to observe without renal exploration has not changed significantly during the past three decades (1978-1989 = 32.8%, 1990-1999 = 39%, 2000-2007 = 30.4%). Ninety-five renal units (excluding nephrectomy) underwent repair with associated small or large bowel injuries without any known complications, including 14 patients with mesh used during renal repair. The renal salvage rate was 85.4% (n = 176 of 206) with two delayed nephrectomy procedures for persistent bleeding after initial repair. The total number of nephrectomy procedures was 30 of 206 renal units. Postoperative imaging was obtained in 32.8% (55 of 201) patients, and there were no known cases of postinjury hypertension. Overall survival was 90.6% (182 of 201), with 2 intraoperative and 17 postoperative deaths. There were no postoperative infections related to renal reconstruction. Isolation of renal vessels was obtained in all patients before opening Gerota's fascia with no deaths secondary to urologic intervention.

Conclusion: Selective observation and various operative techniques can yield high renal salvage rates approximating 85% after GSW.

Editorial Comment

Grade for grade, it never made much sense to me to treat isolated low velocity gunshot wounds (GSWs) much differently from blunt renal injuries. This article by Voelzke from San Francisco General confirms by own clinical experience. In other words, that most isolated Grade 3 and 4 renal injuries, whether from gunshot or blunt mechanisms, can be expectantly and successfully managed. While with penetrating high grade injuries the risk for a delayed pseudo-aneurysm and re bleed can be higher, up to one fourth of cases – such events can be managed successfully by selective embolization by the interventional radiologist. I feel that we explore too many isolated renal injuries in general and we need to do more expectant management.

Dr. Steven B. Brandes

Associate Professor, Division of Urologic Surgery

Washington University in St. Louis

St. Louis, Missouri, USA

E-mail: brandess@wudosis.wustl.edu

BASIC AND TRANSLATIONAL UROLOGY

Erectile dysfunction might be associated with chronic periodontal disease: two ends of the cardiovascular spectrum

Zadik Y, Bechor R, Galor S, Justo D, Heruti RJ

Center for Health Promotion and Preventive Medicine, Medical Corps, Israel Defense Forces, Zrifin, Israel
J Sex Med. 2009; 6: 1111-6

Introduction: Both chronic periodontal disease (CPD) and erectile dysfunction (ED) are associated with cardiovascular disease and its risk factors, including smoking and diabetes mellitus. However, the association between ED and CPD has never been studied.

Aim: To study the association between ED and CPD.

Main Outcome Measures: Prevalence of ED, prevalence of CPD, ED severity.

Methods: The study population consisted of 305 men who filled the Sexual Health Inventory for Men (SHIM) questionnaire in order to detect ED and assess its severity, and underwent a pair of standardized posterior dental bitewing radiographs in order to detect CPD. SHIM questionnaire scores 21 or less represented ED. Alveolar bone loss of ≥ 6 mm represented CPD.

Results: The mean age of included men was 39.5 \pm 6.7 years. Overall, 70 (22.9%) men had ED and 13 (4.3%) had CPD. CPD was significantly more prevalent among men with mild ED ($P = 0.004$) and moderate to severe ED ($P = 0.007$) in comparison to men without ED.

Conclusions: ED might be associated with CPD. These preliminary findings are consistent with theories that associate these conditions with systemic inflammation, endothelial dysfunction, and atherosclerosis.

Editorial Comment

This is a very interesting study associating erectile dysfunction with systemic inflammation disease.

The authors found that 15.8% of men with moderate and severe erectile dysfunction (ED) presented advanced periodontal disease, while 9.8% with mild and only 2.1% without ED presented periodontal disease. This association might be explained on findings of DNA of periodontal pathogenic bacteria in atheromatous plaques and the epidemiological association between periodontal disease and coronary heart morbidity.

The authors proposed that since ED was proven to be an early sign of coronary heart disease, it is reasonable to believe that extra-oral inflammation induced by periodontal bacteria might be associated with atherosclerosis and dysfunction of vessels, first in the small vessels, such as the penile vasculature.

Dr. Francisco J. B. Sampaio

Full-Professor and Chair, Urogenital Research Unit

State University of Rio de Janeiro

Rio de Janeiro, RJ, Brazil

E-mail: sampaio@urogenitalresearch.org

Combination of alfuzosin and tadalafil exerts an additive relaxant effect on human detrusor and prostatic tissues in vitro

Oger S, Behr-Roussel D, Gorny D, Lebret T, Denoux Y, Alexandre L, Giuliano F

Pelvipharm, Orsay Parc, Orsay, France

Eur Urol. 2009 May 3. [Epub ahead of print]

Background: Lower urinary tract symptoms (LUTS) suggestive of benign prostatic hyperplasia (BPH) and erectile dysfunction (ED) are highly prevalent in aging men and are strongly linked. Alpha(1)-blockers such as alfuzosin are effective monotherapies for LUTS. Phosphodiesterase type 5 (PDE5) inhibitors such as tadalafil are the first-line treatment for ED. Both drugs act by two different mechanisms of action on common urogenital target organs and, thus, may have additive effects.

Objectives: We evaluated in vitro the effects of alfuzosin, tadalafil, and the combination of both on human detrusor and prostatic smooth muscle.

Design, Setting, and Participants: Prostatic and bladder tissue were obtained from patients (n=20 and n=17, respectively) undergoing cystoprostatectomy for bladder cancer.

Measurements: In organ baths, isolated prostatic strips and isolated bladder strips were incubated with vehicle, tadalafil (10(-6) M and 10(-5) M), alfuzosin (3x10(-8) M or 10(-6) M and 10(-5) M) or a combination. Concentration-response curves (CRCs) to norepinephrine were generated on prostatic strips and detrusor strips precontracted with carbachol. Strips were also submitted to electrical field stimulation (EFS).

Results and Limitations: When alfuzosin and tadalafil were combined, the maximal relaxation to norepinephrine on carbachol-precontracted detrusor strips was significantly increased compared with tadalafil alone, and EFS-induced detrusor contractions were better inhibited compared with each compound alone. Tadalafil significantly inhibited norepinephrine-induced prostatic strip contractions by reducing the maximal effect, whereas alfuzosin shifted the CRC of norepinephrine to the right. Combining both tadalafil and alfuzosin resulted in a greater relaxant effect. Likewise, the combination was more effective at reducing EFS-induced contractions compared with each compound alone.

Conclusions: The combination of alfuzosin and tadalafil exerts an additive effect of inhibiting adrenergic smooth muscle tone of prostatic tissue and EFS-induced detrusor contractions and conversely, of enhancing adrenergic relaxation of detrusor precontracted with carbachol. These experiments provide experimental support for the clinical investigation of the combination of alpha1-blockers and PDE5 inhibitors in the treatment of LUTS.

Editorial Comment

Prescription of an association of alpha-blockers and PDE-5 inhibitors has been increasingly in clinical practice, since lower urinary tract symptoms (LUTS) and erectile dysfunction (ED) are commonly associated. Also, it has been demonstrated a positive effect of PDE-5 in LUTS. On the other hand, it has been demonstrated that LUTS would predispose to sexual dysfunction. Therefore, an emerging concept is that the combination of an alpha-blocker and a PDE-5 inhibitor is the most effective therapy to treat LUTS secondary to BPH. The present study demonstrated in vitro that the combination of alfuzosin and tadalafil shows an additive relaxant effect on human prostate and detrusor tissue, and therefore, the association could be more effective than monotherapy in relieving LUTS associated with BPH.

Dr. Francisco J. B. Sampaio

Full-Professor and Chair, Urogenital Research Unit

State University of Rio de Janeiro

Rio de Janeiro, RJ, Brazil

E-mail: sampaio@urogenitalresearch.org

RECONSTRUCTIVE UROLOGY

Muscle- and nerve-sparing bulbar urethroplasty: a new technique

Barbagli G, De Stefani S, Annino F, De Carne C, Bianchi G

Center for Reconstructive Urethral Surgery, Arezzo, Italy

Eur Urol. 2008; 54: 335-43

Background: To describe a new surgical technique for the repair of bulbar urethral strictures to preserve the bulbospongiosum muscle and its perineal innervation. **Objective:** Surgical steps of muscle- and nerve-sparing bulbar urethroplasty are described. The outcome is provided regarding semen sequestration and postvoiding dribbling.

Design, Setting, and Participants: We performed the procedure in 12 patients (average age: 43.58 yr) with bulbar urethral strictures (average stricture length: 4.47 cm). **Surgical Procedure:** Six patients underwent urethroplasty using a ventral oral mucosal onlay graft, and six patients underwent urethroplasty using a dorsal oral mucosal onlay graft. In all patients, the surgical approach to the bulbar urethra was made avoiding dissection of the bulbospongiosum muscle from the corpus spongiosum and leaving the central tendon of the perineum intact.

Measurements: Clinical outcome was considered a failure when any postoperative instrumentation was needed. The primary outcome examined the technical feasibility of the muscle- and nerve-sparing bulbar urethroplasty. The secondary outcome examined the presence or absence of postoperative postvoid dribbling and semen sequestration using a nonvalidated questionnaire (Appendix).

Results and Limitations: In all patients, postoperative voiding cystourethrography was performed 3 wk after surgery and no urethral sacculation was evident. Urethrography were repeated after 6 mo and 12 mo. No postvoid dribbling or semen sequestration was demonstrated in all patients at 6 mo and 12 mo after surgery. No patient showed stricture recurrence. The average follow-up was 15.25 mo (range 12 mo to 26 mo, median 13.5 mo).

Conclusions: Bulbar urethroplasty preserving the bulbospongiosum muscle, the central tendon of the perineum, and the perineal nerves is a safe, feasible, minimally invasive alternative to traditional bulbar urethroplasty.

One-sided anterior urethroplasty: a new dorsal onlay graft technique

Kulkarni S, Barbagli G, Sansalone S, Lazzeri M

Centre for Reconstructive Urethral Surgery, Pune, India

BJU Int. 2009; 17 [Epub ahead of print]

Objective: To investigate the feasibility, tolerability, safety and efficacy of using a new surgical technique for the repair of anterior urethral strictures to preserve vascular supply to the urethra and its entire muscular and neurogenic support.

Patients and Methods: In all, 24 patients (mean age 46 years) underwent a new one-sided anterior dorsal oral mucosal graft urethroplasty while preserving the lateral vascular supply to the urethra, the central tendon of the perineum, the bulbospongiosum muscle and its perineal innervation. The cause of stricture was instrumentation in three cases (12%), unknown in five (21%), infection in four (17%), and lichen sclerosus in 12 (50%). The stricture site was bulbar in 12 cases (50%) and panurethral in 12 (50%). The mean stricture length was 4.2 cm in patients with bulbar strictures and 10 cm in patients with panurethral strictures. Of 24 patients, 20 patients (83%) had received previous treatments. Clinical outcome was considered a failure when any postoperative instrumentation was needed, including dilatation.

Results: The overall mean (range) follow-up was 22 (12-55) months. Of the 24 patients, 22 (92%) had a successful outcome and two (8%) were failures. One failure was treated using definitive perineal urethrostomy and another failure underwent successful internal urethrotomy.

Conclusions: The preservation of the one-sided vascular supply to the urethra and its entire muscular and neurogenic support should represent a slight but significant step toward perfecting the surgical technique of urethral reconstruction using a minimally invasive approach.

Editorial Comment

The authors describe modifications to the standard substitution anterior urethroplasty that help preserve the bulbospongiosum muscle and perineal nerve fibers. Previously, Yucel and Baskin showed that perineal nerves innervate the bulbospongiosus muscle and send fine branches that penetrate the corpus spongiosum, mainly in the bulbar area. Moreover, these authors demonstrated that branches of the dorsal nerve of the penis at the junction of the corpus cavernosum and corpus spongiosum assemble into a network with the perineal nerves (1). Contraction of the bulbospongiosum and ischiocavernosus muscles help propel the ejaculate out of the urethra. The contraction of those is thought to help prevent urine pooling at the end of voiding. The perineal nerve endings provide sensation to the scrotum, perineum and ventral penis and frenulum. Given that the risk of weakness of ejaculation is reported to be up to 39% after substitution urethroplasty, and post void dribbling in up to 50%, the role of muscle preservation during urethroplasty has been the subject of a lot of interest.

Both series report success rates that are comparable to the published rates of about 90%. No post void dribbling or semen sequestrations were reported in up to 12 months of follow up in the first study, while the second study lacks data on erectile or ejaculatory dysfunction.

There are inherent limitations to both studies especially in the fact that they lack a control group comparison, and randomization was not performed. It would be of interest to evaluate whether the preservation of the one-sided vascular supply to the urethra and its entire muscular and nerve support or limiting the dissection to the midline would decrease morbidity from ejaculatory and erectile dysfunction in a setting of a randomized controlled trial. Still, both studies are major steps in the refinement of the technique of minimally invasive urethroplasty. It remains to be seen whether this anatomical preservation of the neurovascular supply and muscular support is going to translate into decreased morbidity.

Reference

1. Yucel S, Baskin LS: Neuroanatomy of the male urethra and perineum. *BJU Int.* 2003; 92: 624-30.

Dr. Sean P. Elliott

Department of Urology Surgery

University of Minnesota

Minneapolis, Minnesota, USA

E-mail: selliot@umn.edu

UROLOGICAL ONCOLOGY

European consensus conference on diagnosis and treatment of germ cell cancer: a report of the second meeting of the European Germ Cell Cancer Consensus group (EGCCCG): part I

Krege S, Beyer J, Souchon R, Albers P, Albrecht W, Algaba F, et al.

Department of Urology, Krankenhaus Maria-Hilf, Krefeld, Germany

Eur Urol. 2008; 53: 478-96

Objectives: The first consensus report presented by the European Germ Cell Cancer Consensus Group (EGCCCG) in the year 2004 has found widespread approval by many colleagues throughout the world. In November 2006,

the group met a second time under the auspices of the Department of Urology of the Amsterdam Medical Center, Amsterdam, The Netherlands.

Methods: Medical oncologists, urological surgeons, radiation oncologists as well as pathologists from several European countries reviewed and discussed the data that had emerged since the 2002 conference, and incorporated the new data into updated and revised guidelines. As for the first meeting, the methodology of evidence-based medicine (EBM) was applied. The results of the discussion were compiled by the writing committee. All participants have agreed to this final update.

Results: The first part of the consensus paper describes the clinical presentation of the primary tumor, its treatment, the importance and treatment of testicular intraepithelial neoplasia (TIN), histological classification, staging and prognostic factors, and treatment of stage I seminoma and non-seminoma.

Conclusions: Whereas the vast majority of the recommendations made in 2004 remain valid 3 yr later, refinements in the treatment of early- and advanced-stage testicular cancer have emerged from clinical trials. Despite technical improvements, expert clinical skills will continue to be one of the major determinants for the prognosis of patients with germ cell cancer. In addition, the particular needs of testicular cancer survivors have been acknowledged.

European consensus conference on diagnosis and treatment of germ cell cancer: a report of the second meeting of the European Germ Cell Cancer Consensus Group (EGCCCG): part II

Krege S, Beyer J, Souchon R, Albers P, Albrecht W, Algaba F, et al.

Department of Urology, Krankenhaus Maria-Hilf, Krefeld, Germany

Eur Urol. 2008; 53: 497-513

Objectives: The first consensus report that had been presented by the European Germ Cell Cancer Consensus Group (EGCCCG) in 2004 has found widespread approval by many colleagues throughout the world. In November 2006, the group met a second time under the auspices of the Department of Urology of the Amsterdam Medical Center, The Netherlands.

Methods: Medical oncologists, urologic surgeons, radiation oncologists as well as pathologists from several European countries reviewed and discussed the data that had emerged since the 2002 conference and incorporated the new data into updated and revised guidelines. As for the first meeting the methodology of evidence-based medicine (EBM) was applied. The results of the discussion were compiled by the writing committee. All participants have agreed to this final update.

Results: The second part of the consensus paper includes the treatment of metastasised disease, residual tumour resection, salvage therapy, follow-up, and late toxicities.

Conclusions: Whereas the vast majority of the recommendations made in 2004 remain valid 3 yr later, refinements in the treatment of early-stage as well as of advanced-stage testicular cancer have emerged from clinical trials. Despite technical improvements, expert clinical skills will continue to be one of the major determinants for the prognosis of patients with germ cell cancer. In addition, the particular needs of testicular cancer survivors have been acknowledged.

Editorial Comment

A large multidisciplinary and international team of oncological specialists from Europe involved in the treatment of testicular tumors met and brought out these two consensus papers on diagnosis, staging and treatment of seminomatous and non-seminomatous testicular cancer.

The recommendations are based on evidence and on the broad clinical experience of the group and are invaluable for every urologist dealing with testicular cancer. The recommendations are clearly outlined and give

detailed help in almost every case, from low-risk tumor with virtually 100% survival to high-risk cancer to almost 50% cure rate if treated appropriately. Again, these consensus papers are highly recommended reading.

Dr. Andreas Bohle
Professor of Urology
HELIOS Agnes Karll Hospital
Bad Schwartau, Germany
E-mail: boehle@urologie-bad-schwartau.de

Local progression among men with conservatively treated localized prostate cancer: results from the Transatlantic Prostate Group

Eastham JA, Kattan MW, Fearn P, Fisher G, Berney DM, Oliver T, et al.

Department of Urology, Memorial Sloan-Kettering Cancer Center, New York, New York, USA

Eur Urol. 2008; 53: 347-54

Objectives: Men with clinically detected localized prostate cancer treated without curative intent are at risk of complications from local tumor growth. We investigated rates of local progression and need for local therapy among such men.

Methods: Men diagnosed with prostate cancer during 1990-1996 were identified from cancer registries throughout the United Kingdom. Inclusion criteria were age < or =76 yr at diagnosis, PSA level < or =100 ng/ml, and, within 6 mo after diagnosis, no radiation therapy, radical prostatectomy, evidence of metastatic disease, or death. Local progression was defined as increase in clinical stage from T1/2 to T3/T4 disease, T3 to T4 disease, and/or need for transurethral resection of the prostate (TURP) to relieve symptoms >6 mo after cancer diagnosis.

Results: The study included 2333 men with median follow-up of 85 mo (range: 6-174). Diagnosis was by TURP in 1255 men (54%), needle biopsy in 1039 (45%), and unspecified in 39 (2%). Only 29% were treated with hormonal therapy within 6 mo of diagnosis. Local progression occurred in 335 men, including 212 undergoing TURP. Factors most predictive of local progression on multivariable analysis were PSA at diagnosis and Gleason score of the diagnostic tissue (detrimental), and early hormonal therapy (protective). We present a nomogram that predicts the likelihood of local progression within 120 mo after diagnosis.

Conclusions: Men with clinically detected localized prostate cancer managed without curative intent have an approximately 15% risk for local progression within 10 yr of diagnosis. Among those with progression, the need for treatment is common, even among men diagnosed by TURP. When counseling men who are candidates for management without curative intent, the likelihood of symptoms from local progression must be considered.

Editorial Comment

The course of conservatively treated patients with prostate cancer is largely unknown. These patients are rarely found in clinical trials and therefore, knowledge is sparse. This multi-institutional group of authors followed a large cohort of 2333 patients for a median of 85 months and determined the rate of progression. The results are hampered by the fact that 54% of cases were detected by initial transurethral resection of the prostate, that is, by symptoms of prostate cancer. Still, the 10-year disease-specific mortality rate was 24%. Roughly, 15% of patients had progression, most within 5 years after diagnosis. Most important risk factors were high initial PSA, T3 disease and Gleason grade 4. Interestingly, early hormonal treatment was associated with significantly less progression. As the authors state correctly, these findings suggest that there is a subgroup of

men with prostate cancer in whom conservative management might be the preferred option. Men with worrisome clinical features in contrast might benefit from treatment that is more active.

Dr. Andreas Bohle
Professor of Urology
HELIOS Agnes Karll Hospital
Bad Schwartau, Germany
E-mail: boehle@urologie-bad-schwartau.de

NEUROLOGY & FEMALE UROLOGY

Identification of risk factors for genital prolapse recurrence

Salvatore S, Athanasiou S, Digesu GA, Soligo M, Sotiropoulou M, Serati M, Antsaklis A, Milani R
Department of Obstetrics & Gynecology, Insubria University, Varese, Italy
Neurourol Urodyn. 2009; 28: 301-4

Aims: To assess the relationship between prolapse recurrence and some risk factors in a group of women submitted to reconstructive pelvic surgery.

Methods: Women referred to our Urogynaecological Units complaining of prolapse symptoms were prospectively included. We excluded women who were affected by apical vaginal prolapse > stage I after a previous hysterectomy. All women had pelvic surgery with traditional techniques without using grafts. Each woman was reassessed at 1, 6, and 12 months and then yearly postoperatively. We defined as prolapse recurrence a vaginal descent > or = II stage involving the operated compartments.

Results: A total of 360 consecutive women were recruited and submitted to vaginal reconstructive pelvic surgery. At a mean follow-up of 26 months, 36 women (10%) had a recurrent prolapse. A preoperative vaginal descent > or = III stage was the only significant risk factor for recurrence (P = 0.02, OR 2.4, 1.1-5.1 95% CI).

Conclusions: Women with prolapse > or = III stage had a significant higher risk of developing prolapse recurrence after surgical repair without grafts.

Editorial Comment

The authors review their population of females who underwent reconstructive vaginal surgery for pelvic prolapse. They excluded patients who had already had prolapse surgery or who had > stage II vaginal prolapse after previous hysterectomy. None of their patients had graft utilized in the reconstructive repair or had a synchronous concomitant anti-incontinence operation. The authors found that the only truly significant risk factor for recurrence of pelvic prolapse in their study was preoperative vaginal prolapse \geq stage III.

An interesting study in that it treats a relatively pure population of patients who were treated for prolapse that had no previous anti-prolapse procedure performed, did not utilize any graft as part of the repair and did not have a synchronous anti-incontinence operation performed at the time of the surgery. The authors do self identify one of the weaknesses of this study in that they define recurrent prolapse as > stage II in the same operating vaginal compartment thus ignoring any potential vaginal vector shifts causing a production of prolapse in a separate compartment. That being said, I found it to be an excellent article of reference, which reviews classic pelvic floor reconstructions without potential complicating factors of graft material or concomitant anti-incontinence operations. Though current reports are highlighting the downside of graft materials, the

authors wisely point out that the use of graft in > stage III prolapse may be rewarding in view of the potential recurrence rates of same.

Dr. Steven P. Petrou

*Professor of Urology, Associate Dean
Mayo School of Graduate Medical Education
Jacksonville, Florida, USA
E-mail: petrou.steven@mayo.edu*

The adjustable continence therapy system for recurrent female stress urinary incontinence: 1-year results of the North America Clinical Study Group

Aboseif SR, Franke EI, Nash SD, Slutsky JN, Baum NH, Tu le M, Galloway NT, Pommerville PJ, Sutherland SE, Bresette JF

Department of Urology, Kaiser Permanente, Los Angeles, California, USA

J Urol. 2009; 181: 2187-91

Purpose: We determined the efficacy, safety, adjustability and technical feasibility of the adjustable continence therapy device (Uromedica, Plymouth, Minnesota) for the treatment of recurrent female stress urinary incontinence.

Materials and Methods: Female patients with recurrent stress urinary incontinence were enrolled in the study and a defined set of exclusionary criteria were followed. Baseline and regular follow-up tests to determine eligibility, and to measure subjective and objective improvement were performed. A trocar was passed fluoroscopically and with digital vaginal guidance to the urethrovaginal junction through small incisions between the labia majora and minora. The adjustable continence therapy device was delivered and the balloons were filled with isotonic contrast. The injection ports for balloon inflation were placed in a subcutaneous pocket in each labia majora. Device adjustments were performed percutaneously in the clinic postoperatively. An approved investigational device exemption Food and Drug Administration protocol was followed to record all adverse events.

Results: A total of 162 subjects underwent implantation with 1 year of data available on 140. Mean Stamey score improved by 1 grade or more in 76.4% (107 of 140) of subjects. Improvement in the mean incontinence quality of life questionnaire score was noted at 36.5 to 70.7 ($p < 0.001$). Reductions in mean Urogenital Distress Inventory (60.3 to 33.4) and Incontinence Impact Questionnaire (54.4 to 23.4) scores also occurred ($p < 0.001$). Mean provocative pad weight decreased from 49.6 to 11.2 gm ($p < 0.001$). Of the patients 52% (67 of 130) were dry at 1 year (less than 2 gm on provocative pad weight testing) and 80% (102 of 126) were improved (greater than 50% reduction on provocative pad weight testing). Complications occurred in 24.4% (38 of 156) of patients. Explantation was required in 18.3% (28 of 153) of the patients during 1 year. In terms of the complications 96.0% were considered to be mild or moderate.

Conclusions: The Uromedica adjustable continence therapy device is an effective, simple, safe and minimally invasive treatment for recurrent female stress urinary incontinence. It can be easily adjusted percutaneously to enhance efficacy and complications are usually easily manageable. Explantation does not preclude later repeat implantation.

Editorial Comment

The authors describe a balloon system to provide support and urethral coaptation in those patients plagued with female stress incontinence. The authors describe a 52% dry rate at 1 year as well as an 80% im-

provement rate. Of the patients studied, approximately 18% required removal of the device. Of those cases that need explantation, 50% of the women still opted to be reimplemented within 12 months after the initial device removal. Presumably, secondary to position of the adjustment port, sexual activity was associated with a higher complication rate.

An interesting technology, which is not overly dissimilar to the genitourinary spheroidal membrane, which had its greatest degree of clinical exposure in the mid-1990s (1). Problems with the genitourinary spheroidal membrane at that time included the lack of ability for secondary and tertiary adjustments as well as the tendency of the device to float into non-therapeutic positions in the retropubic space. It seems that the adjustment port of this device, which is placed at the labia majora, may help anchor the support balloons and keep them from migrating to non-therapeutic positions as well as providing a method for adjustment. Perhaps these modifications will allow it to have a greater shelf life than that experienced by the genitourinary spheroidal membrane.

Reference

1. Darson MF, Malizia AA, Barrett DM: Periurethral injection of the genitourinary spheroidal membrane. *J Endourol.* 1996; 10: 283-6.

Dr. Steven P. Petrou

*Professor of Urology, Associate Dean
Mayo School of Graduate Medical Education
Jacksonville, Florida, USA
E-mail: petrou.steven@mayo.edu*

PEDIATRIC UROLOGY

Long-term followup of dextranomer/hyaluronic acid injection for vesicoureteral reflux: late failure warrants continued followup

Lee EK, Gatti JM, Demarco RT, Murphy JP

Kansas University Medical Center, Kansas City, Kansas and Children's Mercy Hospital, Kansas City, Missouri, USA

J Urol. 2009; 181: 1869-74; discussion 1874-5

Purpose: Dextranomer/hyaluronic acid injection of ureteral orifices is a popular option in the treatment of vesicoureteral reflux, with success rates ranging from 69% to 89%. We found only 1 study that followed patients beyond the initial postoperative voiding cystourethrogram, which describes a 96% success rate at 2 to 5 years but defines success as "nondilating" reflux. We examined our dextranomer/hyaluronic acid series to evaluate the long-term (1-year) outcome in children who had resolution of reflux on initial postoperative voiding cystourethrography.

Materials and Methods: We retrospectively reviewed our dextranomer/hyaluronic acid experience from February of 2002 to December of 2005. We determined initial success on early (6 to 12-week) postoperative voiding cystourethrogram. We then evaluated long-term success by obtaining a voiding cystourethrogram at 1 year postoperatively in patients who were initially cured of reflux. In addition, success rates between the first and second halves of our experience were evaluated to account for surgeon experience and modification of technique.

Results: Our total success rate at initial voiding cystourethrogram was 73% (246 of 337 total ureters). The success rate in the first half of our experience was 65.9% (112 of 170 ureters) and in the second half was 80.2% (134 of 167). A total of 150 ureteral units with initial successful dextranomer/hyaluronic acid treatment were evaluated at 1 year by voiding cystourethrogram. Of these ureters 111 had continued resolution of vesicoureteral reflux, for a long-term success rate of 74%. Including initial postoperative failures, the complete 1-year total success rate was 46.1% (111 of 241 ureters).

Conclusions: Although the reflux resolution rates at initial postoperative voiding cystourethrogram approach those of open surgery, there is a significant failure rate at 1 year, which warrants long-term followup.

Editorial Comment

This manuscript shows an almost 4-year experience with 219 patients and 337 ureters. The 6-12 week postoperative VCUGs showed a success rate of 73% and a one year VCUG on the same patients who had initial resolution showed a lower 74% success rate. Considering the overall patients altogether, the total success rate at one year was 46.1%. 74 of their 219 patients dropped out of the study and did not complete the VCUG at one year after surgery. The authors did note that switching to the HIT technique improved their early success from 65.9 to 80.2%. However, at one year after surgery their success rate was essentially identical at 74.2 and 73.8%. There was no statistical difference in STING versus HIT techniques in their study. If the data was broken down by grade of reflux, 100% of Grade I reflux was gone one year later, and 79.8% of Grade II reflux was gone one year later. Grade III reflux was 37.2%. The authors suggest that Deflux may be considered in low-grade refluxes but the long-term outlook for higher grades of reflux is particularly disappointing.

This manuscript brings into question the long-term success of injection therapy for reflux and in particular, the need for long-term radiographic follow up for these patients. If the criterion for success is absence of reflux, Deflux treatment will need to be reconsidered by those who take care of this disease in children.

Dr. Brent W. Snow

Division of Urology

University of Utah Health Sci Ctr

Salt Lake City, Utah, USA

E-mail: brent.snow@hsc.utah.edu

Long-term outcome of laparoscopic Fowler-Stephens orchiopexy in boys with intra-abdominal testis

Esposito C, Vallone G, Savanelli A, Settini A

Department of Pediatrics, "Federico II" University of Naples, Naples, Italy

J Urol. 2009; 181: 1851-6

Purpose: We reviewed the records of 36 pediatric patients operated on between 1990 and 1997 for high intra-abdominal testes, using the 2-step Fowler-Stephens procedure via laparoscopy.

Materials and Methods: Patients were followed for 10 to 17 years. Three patients who had undergone the second stage by open procedure were excluded from study. The 33 remaining patients were contacted by telephone, and 12 (7 with right and 5 with left intra-abdominal testes) agreed to undergo clinical and instrumental examination. Patient age ranged from 13 to 26 years (average 14.7). All patients underwent clinical examination and volumetric measurement of both testes using color Doppler ultrasound.

Results: Two of the 12 patients (16.7%) had an atrophic testis in the scrotum and 10 (83.3%) had a viable testis in the scrotum. The operated testis was always smaller than the normal testis, despite the good vascularization

detected on echo color Doppler ultrasound. One patient had ultrasound evidence of bilateral microcalcifications with normal vascularization. Mann-Whitney test showed there was a statistically significant difference between the volume of the operated testis and the normal testis.

Conclusions: It is extremely difficult to perform studies on the long-term outcome of surgical procedures. We describe the outcome at more than 10 years postoperatively, and demonstrate that greater than 83% of patients who underwent a 2-step Fowler-Stephens procedure using laparoscopy had satisfactory results. The operated testis was always significantly smaller compared to the normal testis but was well vascularized.

Editorial Comment

The authors reviewed laparoscopic Fowler-Stephens orchiopexy results for a total of 36 patients in their series with 10-17 years of follow up. 33 of the patients had 1st and 2nd stage Fowler-Stephens procedures done laparoscopically. 13 of the 25 available patients refused clinical follow up reporting a viable testis in the scrotum. 12 patients agreed to follow up. 2 had atrophic testicles and 10 had testicles in the scrotum, 7 in the lower scrotum and 3 in the upper median part of the scrotum. Ultrasound showed bilateral microcalcifications in both testicles of 1 patient with normal tumor markers. Each of the operated on testicles showed good blood flow in the scrotum, however the operated on testicle was always smaller than the contralateral testicle.

It is interesting that 83.3% of the patients had viable testes greater than 10 years after staged laparoscopic Fowler-Stephens orchiopexies. It is disappointing that semen analyses were not available on these patients and history of fertility was not available due to the age of the patients. It is rewarding to note that Fowler-Stephens orchiopexies have good results and good long-term outcomes and the procedure should be considered with enthusiasm.

Dr. Brent W. Snow

Division of Urology

University of Utah Health Sci Ctr

Salt Lake City, Utah, USA

E-mail: brent.snow@hsc.utah.edu