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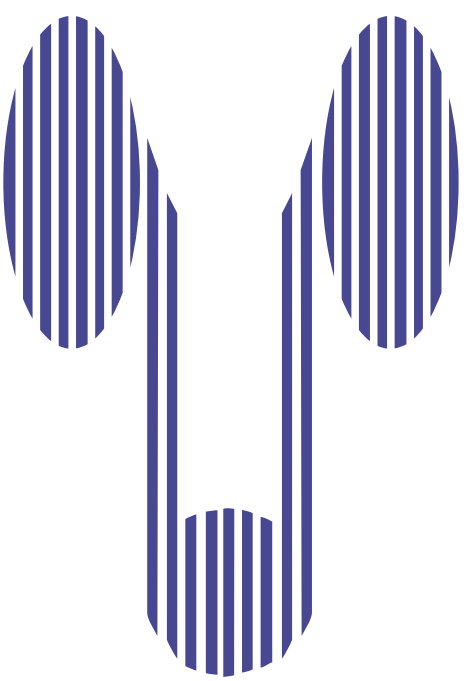

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EDITOR'S COMMENT

The September - October 2005 issue of the International Braz J Urol presents interesting contributions, and the Editor's Comment highlights some important papers.

Doctor Al-Qudah and colleagues, from Wayne State University School of Medicine, Detroit, Michigan, USA, performed voiding cystourethrogram (VCUG) on their anterior urethroplasty patients on days 3 (anastomotic) and 7 (buccal) in an effort to determine the earliest day for removal of the urethral catheter (page 459). Seventeen patients had early catheter removal (12 anastomotic and 5 ventral buccal onlay urethroplasty) and were compared to 12 who had late removal (7 anastomotic and 5 buccal). The authors concluded that catheter removal after anastomotic and buccal mucosal urethroplasty could be safely attempted on the 3rd and 7th postoperative days respectively, with a low rate of extravasation on VCUG. It was pointed out that eliminating the catheter as soon as possible should improve patient comfort without harming results and decrease the overall negative impact of surgery on the patient. Doctor Mostafa A. Al-Rifaei, from University of Alexandria, Egypt, and Doctor Sava V. Perovic, from University of Belgrade, Belgrade, Serbia and Montenegro, provided editorial comments on this paper.

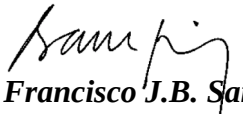
Doctor Nicanor and co-workers, from Hospital for Sick Children, University of Toronto, Ontario, Canada, presented on page 477 their experience with the urofacial or Ochoa syndrome, which is a rare disease characterized by the presence of functional obstructive uropathy associated with peculiar facial features when patients attempt to smile or laugh. Because of lack of recognition of the disease, many patients remain without proper diagnosis or adequate treatment, which can ultimately result in upper tract deterioration and eventual renal failure. The authors identified 3 patients who presented initially with acute renal failure, urinary tract infection and severe dysfunctional elimination. Two patients (aged 4 and 9 years) presented with the typical facial features when attempting to smile or laugh. One newborn presented with urinary and fecal retention and septicemia. The authors pointed out that their series demonstrates that early recognition of this rare syndrome is necessary to adequately treat and prevent upper tract deterioration in these unique individuals.

Doctor Dall'Oglio and co-workers, from Federal University of Sao Paulo, Brazil, studied on page 437 the relationship between preoperative PSA levels and clinical outcome following radical prostatectomy in men with clinical stage T1c. There authors found no biochemical recurrence of disease when the PSA was lower than 4 ng/mL, regardless of Gleason score. Biochemical recurrence-free survival according to PSA between 0-4; 4.1-10; 10.1-20 and > 20 ng/mL was 100%, 87.6%, 79% and 68.8% for Gleason scores 2-6, and 100%; 79.4%; 40% and 100% for Gleason

scores 7-8 respectively. When all individuals were grouped, regardless of their Gleason scores, the probability of biochemical recurrence-free survival was 100%, 65.1%, 53.4% and 72.2% according to PSA between 0-4; 4.1-10; 10.1-20 and > 20 ng/mL respectively. Based on these results, the conclusion is that the non-palpable prostate cancer presents higher chances of cure only when the PSA is inferior to 4 ng/mL.

Doctor Danilovic and colleagues, from University of Sao Paulo Medical School, Brazil, evaluated on page 431 the likelihood of retrograde double-J stenting in urgent ureteral drainage according to obstructing pathology. Forty-three consecutive patients (47 procedures) with ureteral obstruction who needed urgent decompression were studied. Failure in retrograde ureteral stenting occurred in 9% (2/22) and 52% (13/25) of the attempts in patients with intrinsic and extrinsic obstruction respectively ($p < 0.001$). All attempts of retrograde catheter insertion failed in obstructions caused by prostate or bladder pathologies (6/6). The authors concluded that retrograde double-J stenting has a low probability of success in extrinsic ureteral obstruction caused by prostate or bladder disease. They proposed that such cases might be best managed with percutaneous nephrostomy. Dr. Mahesh R. Desai, from Muljibhai Patel Urological Hospital, Gujarat, India, provided an interesting editorial comment on this paper.

Doctor Branco and colleagues from Red Cross Hospital, Parana, Brazil, reported on page 421 their experience with right laparoscopic live donor nephrectomies. Operative data and postoperative outcomes were collected, including surgical time, estimated blood loss, warm ischemia time, length of hospital stay, conversion to laparotomy and complications after operating on 28 patients. The data obtained confirm the safety and feasibility of right laparoscopic donor nephrectomy. The authors suggest that the right kidney should not be avoided for laparoscopic donor nephrectomy when indicated. Doctor Cassio Andreoni, from Federal University of Sao Paulo, Brazil, provided an editorial comment on this paper.



Dr. Francisco J.B. Sampaio
Editor-in-Chief

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HAND-ASSISTED RIGHT LAPAROSCOPIC LIVE DONOR NEPHRECTOMY

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ABSTRACT

Purpose: Laparoscopic live donor nephrectomy has acquired an important role in the era of minimally invasive surgery. Laparoscopic harvesting of the right kidney is technically more challenging than that of the left kidney because of the short right renal vein and the need to retract the liver away from the right kidney. The aim of this article is to report our experience with right laparoscopic live donor nephrectomies.

Materials and Methods: We performed a retrospective review of 28 patients who underwent right laparoscopic donor nephrectomies at our service. Operative data and postoperative outcomes were collected, including surgical time, estimated blood loss, warm ischemia time, length of hospital stay, conversion to laparotomy and complications.

Results: The procedure was performed successfully in all 28 patients. The mean operative time was 83.8 minutes (range 45 to 180 minutes), with an estimated blood loss of 111.4 mL (range 40 to 350 mL) and warm ischemia time of 3 minutes (range 1.5 to 8 minutes). No donor needed conversion to open surgery and all kidneys showed immediate function after implantation. The average time to initial fluid intake was 12 hours (range 8 to 24 hours). Two cases of postoperative ileus and a case of hematoma on the hand-port site were observed. The mean postoperative hospital stay was 3 days (range 1 to 7 days).

Conclusions: Our data confirm the safety and feasibility of right laparoscopic donor nephrectomy and we believe that the right kidney should not be avoided for laparoscopic donor nephrectomy when indicated.

Key words: laparoscopy; living donors; nephrectomy; transplantation
Int Braz J Urol. 2005; 31: 421-30

INTRODUCTION

The advent of laparoscopic donor nephrectomy has resulted in decreased donor morbidity with less pain, shorter hospital stays, earlier return to work and regular activity, and improved cosmetics compared with the conventional open donor nephrectomy approach (1,2). These benefits of the minimally invasive approach to kidney donation are reflected by studies that demonstrate an increased willingness to donate when the laparoscopic technique is available (3-5).

As in open live donor nephrectomy, the left kidney is preferred for laparoscopic donor nephrectomy because of its longer renal vein, which facilitates the implantation process (6,7), and because the

liver does not need to be retracted when left nephrectomy is performed (8). However, because the "better" kidney should always remain with the donor (9), occasionally the right kidney must be transplanted.

Early experience with right laparoscopic donor nephrectomy was marked by a high incidence of venous thrombosis and graft loss (8), which has since improved with experience and with technical modifications of the procedure (8,10). Recently, many articles have been published demonstrating the safety and feasibility of right donor nephrectomies (6,7,11-14), which has allowed transplant centers to maintain the benefits of the laparoscopic era while adhering to the fundamental principles of patient selection established during the open surgery era (12). The purpose of this study is to report our initial experience with right laparoscopic live donor nephrectomy.

MATERIALS AND METHODS

All potential living kidney donors presented to our department from May 2002 to August 2004 were considered for laparoscopic nephrectomy. Each potential donor underwent a standard preoperative immunologic and medical evaluation to confirm his/her suitability. The exams requested to delineate renal vascular anatomy preoperatively were those usually performed for conventional renal donors, including digital angiography and intravenous pyelogram.

The rationale for donor kidney selection for laparoscopic donor nephrectomy was identical to the standard principles used for open donor nephrectomy. In the setting of "all things being equal," the left kidney was selected because of the longer left renal vein. However, if the left renal vascular anatomy was unfavorable compared with that of the right or if a right renal condition was identified, the right kidney was selected (12). We have always preserved the basic tenet that "the better kidney should remain in situ for the donor" when we have chosen which kidney would be removed (9).

Operative data and postoperative courses were reviewed. Information on donor age, sex, and previous medical history were collected. Surgical demographics included operative time, warm ischemia time, estimated blood loss, and intraoperative complications. Operative time was defined as the time from the initial skin incision to closure of the external oblique fascia of the HandPort incision (7). Warm ischemia time was defined as time elapsed from the application of haemostatic clips to the renal artery until the kidney was perfused with cold preservation fluid (7). The measured postoperative parameters included the time to first oral intake and hospital stay.

Surgical Technique

The donor is positioned in a traditional left lateral decubitus position on the operating room table with the kidney rest fully elevated and the bed in a flexed position. An axillary roll is placed beneath the donor's arm and the right arm is maintained on an armrest in a flexed functional position (Figure-1).

A 6 to 8-centimeter skin incision is performed in the right iliac fossa. The abdominal cavity is carefully inspected and a wet surgical towel is placed to mobilize the colon and to assist with any bleeding. After reflecting the colon medially by incising the lateral peritoneal reflection, the ureter is identified and isolated with a Penrose drain. The HandPort (Lap Disc® - Ethicon Endo-Surgery, Cincinnati, Ohio, USA) is placed through the incision (Figure-2) and the abdomen is inflated with carbon dioxide to an intra-abdominal pressure of 12 to 14 mmHg.

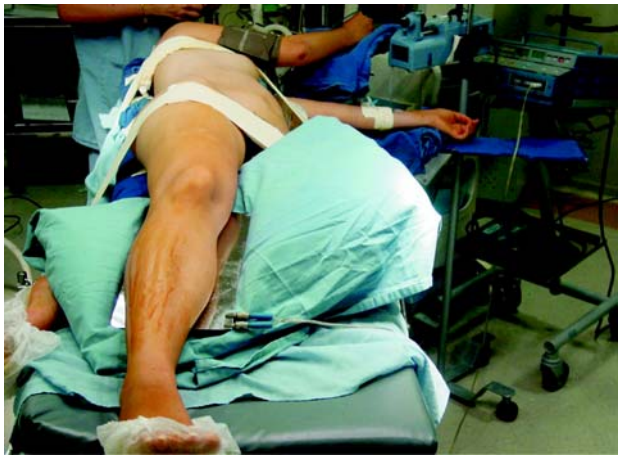

Figure 1 – *The patient is placed in the 45-degree left lateral decubitus position with slight flexion of the operating table to extend the ipsilateral flank gently.*

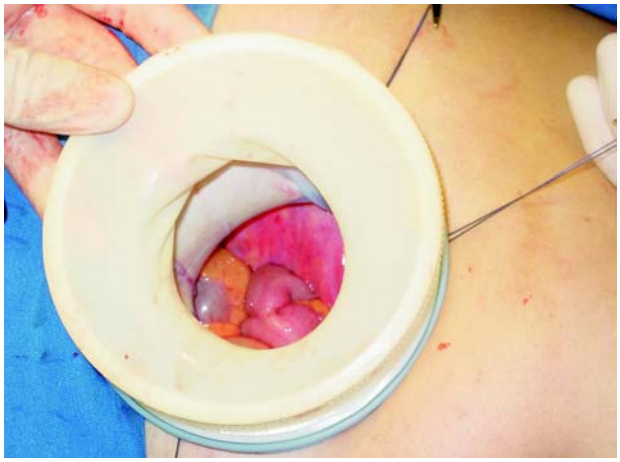

Figure 2 – *Placement of the HandPort in the right iliac fossa.*

Subsequently, a 10 mm trocar is placed in the periumbilical area for the 30-degree laparoscope; 2 additional 10 mm trocars are placed, one approximately halfway between the xiphoid and the umbilicus, and the other in the right middle axillary line at the umbilical level. A 5 mm trocar is then placed in the right side to retract the liver (Figure-3).

Dissection continues at the lower renal pole, posterior renal portion and superior renal pole. This can be conducted easier since the intra-abdominal hand facilitates control of the kidney and prevents rotation and potential damage to the renal hilum. The ureter isolated by the Penrose drain is dissected in a superior and inferior direction up to the crossing of the iliac vessels, taking care with the periureteral tissue (between the lower pole and ureter), which must be left intact to prevent devascularization of the ureter. The renal vessels are dissected and freed of surrounding tissues (Figure-4). All side branches are clipped using LT-300 titanium clips (Ethicon Endo-Surgery) and divided. It is imperative to clear the adipose/lymphatic tissues off the artery and vein completely so that the hemostatic clips may hold the vessel walls securely without risk of dislodgement. The renal artery and vein are dissected free to the level of the aorta and inferior vena cava, respectively. Throughout the operation, urine output is monitored and maintained with fluids and mannitol.

Several methods have been introduced to ligate the renal vessels. In our series, renal artery ligature was performed using LT-300 titanium clips or Hem-o-lok clips (Weck Closure Systems, Research Triangle Park, North Carolina, USA) and, in most cases, the technique of venous control with cotton suture and LT-300 titanium clips was used. We also tried the Hem-o-lok clips to right renal vein ligature and the caval suture after division of the renal vein with a cuff of the vena cava.

After completely isolating the renal artery and vein, the kidney was retracted laterally with the assistant hand. A number “0” cotton suture was passed laparoscopically around the vein before the renal ar-

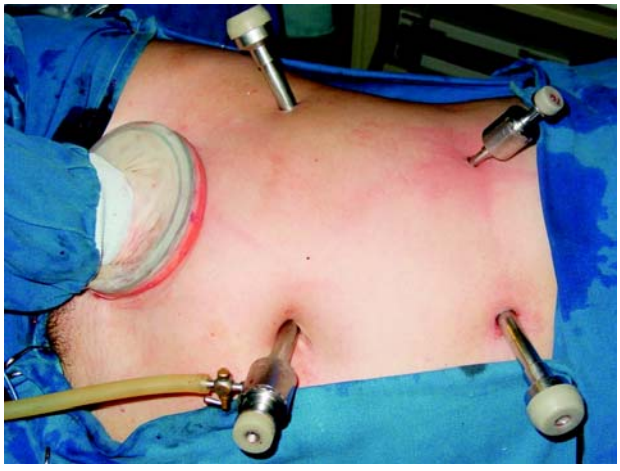

Figure 3 – *Position of the trocars.*

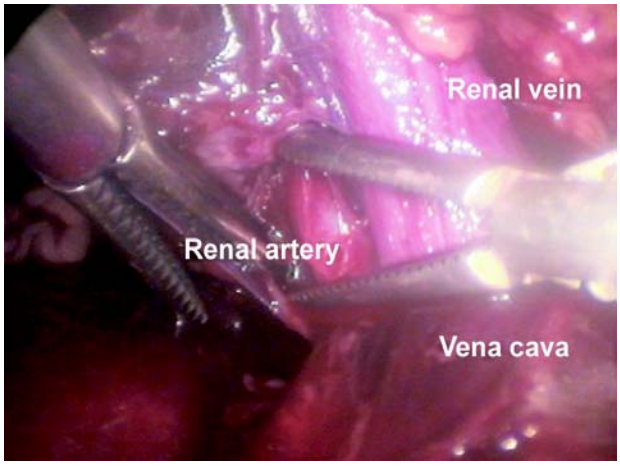

Figure 4 – *Identification of the renal vessels.*

tery ligature, leaving the loose knot to be tightened just after sectioning the artery. The artery was ligated on the aorta side with 2 titanium clips (or Hem-o-lok clips when available) and divided sharply distal to the 2 clips. The renal vein ligature was performed by tightening the knot and placing 2 titanium clips next to it on the lateral edge of the vena cava (Figure-5). (When we perform this ligature using Hem-o-lok clips, the cotton suture is not necessary because the Hem-o-lok clip is longer than the LT-300 titanium clip, and this allows the ligature of the whole renal vein circumference). The vein was cut distal with laparoscopic scissors (Figure-6). As with the renal artery, no clips or staples were left on the vein of the graft.

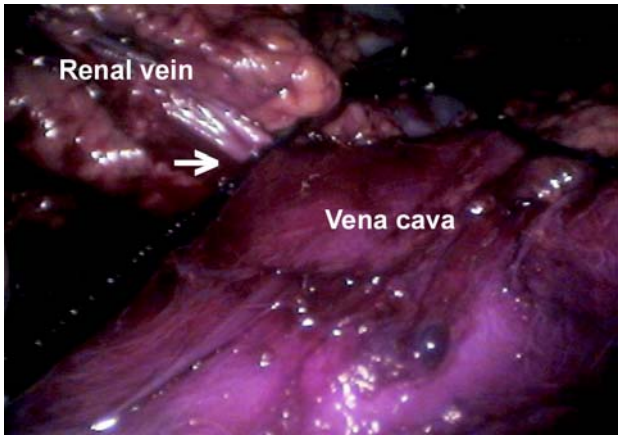

Figure 5 – *Reducing the caliber of the renal vein and tightening the knot (arrow).*

When a caval suture is performed, a Satinsky clamp is introduced into the abdominal cavity through the HandPort incision after the renal artery ligature, and the clamp is placed on the inferior vena cava. Renal vessels are divided, thereby allowing the division of the renal vein with a cuff of the vena cava (Figure-7) and maximizing the renal vein length. The cavotomy is sutured laparoscopically with 4-0 Prolene and afterwards the Satinsky clamp is released from the vena cava (15).

The kidney is removed through the hand-assisted device and the ureter is sectioned under direct vision. The kidney is then placed in an iced preservative and delivered to the recipient team for grafting. After the abdomen is checked for bleeding, the trocar sites are closed under direct vision and the pneumoperitoneum is evacuated (Figure-8).

Some cases were performed by retroperitoneoscopic approach with four ports. This procedure starts with a skin incision of 1 to 2 cm just below the tip of the twelfth rib. The flank muscle fibers are separated by blunt dissection. After sharp incision of the anterior thoracolumbar fascia, an initial retroperitoneal space is created by index finger dissection. A 10 mm trocar is placed through the incision for the 30-degree laparoscope, and the retroperitoneal working space is created using the laparoscope and gas insufflation. Two additional 10 mm trocars and one 5 mm trocar (for upper renal pole exposure) are inserted in a typical diamond arrange-

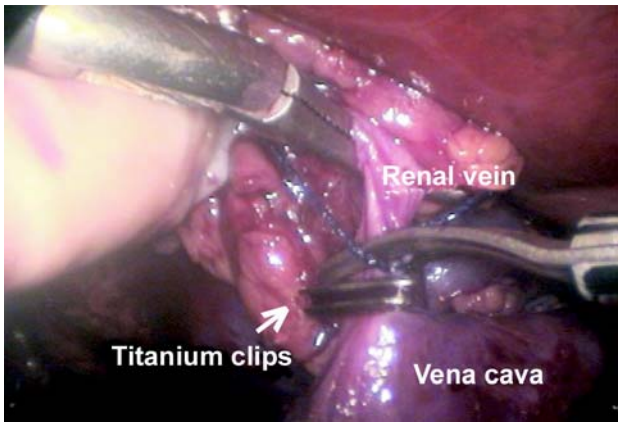

Figure 6 – *Two titanium clips are placed and the renal vein is sectioned close to the vena cava.*

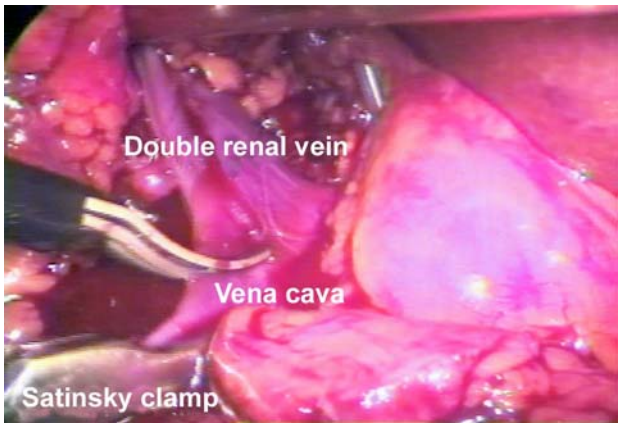

Figure 7 – *The Satinsky clamp is placed on the vena cava and the renal vein is divided with a cuff of the vena cava.*

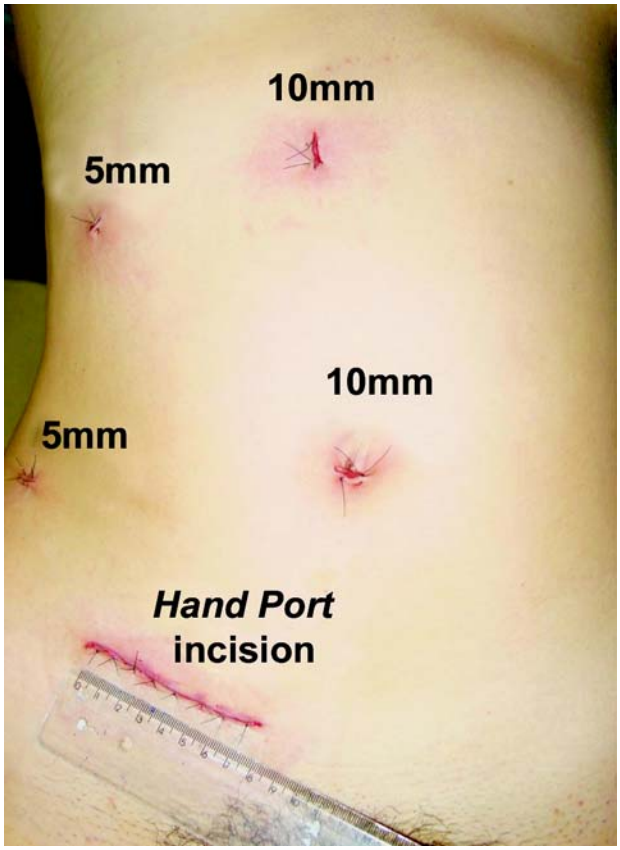

Figure 8 – *Final aspect of the surgery.*

ment. After identification of the psoas muscle, the Gerota's fascia is incised laterally and the ureter as well as the renal vessels are dissected (Figure-9). The kidney is then completely freed of covering fatty tissue. A 6-centimeter skin incision is performed over the iliac crest for the assistant's hand. The ureter is divided under direct vision and the pneumoperitoneum is again insufflated. The renal vessels ligature is performed as previously mentioned – the vein with LT-300 titanium clips and cotton suture (Figure-10), and the artery with LT-300 titanium clips. The kidney is then removed from the retroperitoneal cavity through the iliac crest incision.

RESULTS

Between May 2002 and September 2004, a total of 70 healthy donors underwent laparoscopic nephrectomy for kidney transplantation in our unit, of which 28 (40%) were on the right side. Indications for selecting the right side were multiple left renal vessels (n = 18), right renal artery fibromuscular dysplasia (n = 2), right renal cyst (n = 2), early branching of the left renal artery (n = 2), right ureterocele (n = 1), right renal ptosis (n = 1), right renal artery aneurysm (n = 1) and left ureteral duplicity (n = 1). The procedure was performed successfully in all cases, and no patients required conversion to laparotomy. There were 13 male and 15 female patients, and the mean age was 34.8 ± 8 years (range 21 to 52 years). The surgery was performed by hand-assisted transperitoneal approach in 24 patients (85.7%) and by pure retroperitoneoscopic approach in the remaining 4 cases (14.3%).

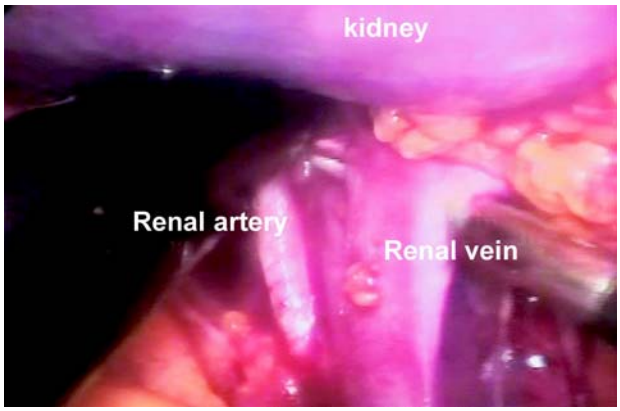

Figure 9 – *Dissection of the renal vessels by retroperitoneoscopy.*

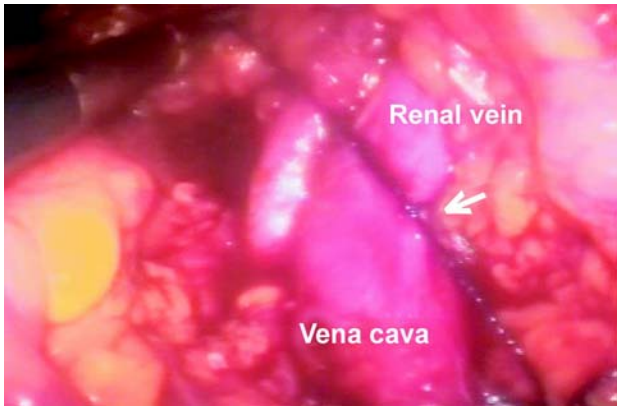

Figure 10 – *Retroperitoneoscopic right renal vein ligature with cotton 2-0 suture (arrow).*

Anatomically, 24 patients had single right renal artery (85.7%), 3 patients had double right renal arteries (10.7%) and another one had triple right renal arteries (3.6%). Twenty-six patients had single right renal vein (92.9%), and 2 donors had double right renal veins (7.1%).

We used LT-300 titanium clips and cotton suture for venous control in 24 patients (85.8%), Hem-o-lok clip in 2 patients (7.1%) and caval sutures in 2 patients (7.1%). The right renal artery was ligated using LT-300 titanium clip in 26 patients (92.9%) and Hem-o-lok clip in 2 patients (7.1%).

The mean operative time in our series was 83.8 ± 37.2 minutes (range 45 to 180 minutes). Estimated blood loss was 111.4 ± 61.9 mL (range 40 to 350 mL) per patient and none required transfusion. Warm ischemia time was 3.0 ± 1.4 minutes (range 1.5 to 8 minutes). We had no intraoperative complications and all kidneys showed immediate function after implantation.

All patients were allowed a liquid diet as soon as they were fully awake. The average time to initial fluid intake was 12.0 ± 3.9 hours (range 8 to 24 hours). The 3 postoperative donor complications in our series consisted of 2 cases of postoperative ileus (7.1%), which resolved spontaneously in 7 days, as well as a case of hematoma (3.6%) at the HandPort site, which was opened and drained. The mean postoperative hospital stay was 3.0 ± 1.5 days (range 1 to 7 days).

COMMENTS

Since the first successful case of laparoscopic live-donor nephrectomy reported by Ratner et al. in 1995 (16), laparoscopy has emerged as an alternative to open surgery in donor nephrectomy for transplantation (1,17-21), and recently it has become the standard of care at increasing numbers of renal transplant programs worldwide (22).

Advantages to the laparoscopic approach are self-evident and well described, and include a reduction in postoperative discomfort, narcotic requirements and hospital stays, shortened recoveries, improved cosmetic results and a more rapid return to regular activities and work (1-4,21-27). All these benefits are obtained using laparoscopic technique with an equivalent renal graft outcome compared with open surgery (1,28). Moreover, some centers have documented an increase in the number of donations and have attributed this increase to a less invasive surgical procedure that is more acceptable to the donor (5,21,25).

Several reports have confirmed some advantages of the hand-assisted technique described in 1998 by Wolf et al. (29). By using the hand, the surgeon can facilitate complete mobilization of the colon, easily exposing the kidney and the aorta. In addition, tissue planes are more easily defined using the intraperitoneal hand for retraction (26). Surgical time is comparable to open nephrectomy and tends to decrease with the learning curve. It can be performed with safety and without harm to the donor and the graft function (30). Comparisons of hand-assisted laparoscopic with standard laparoscopic donor nephrectomies have not demonstrated any statistically significant differences in analgesic requirements, hospital stays, or allograft function. Significantly shorter operative and warm ischemia times have been demonstrated in the hand-assisted laparoscopic groups compared with the standard laparoscopic groups (1,11,24,27).

To date, most laparoscopic live donor nephrectomies have been performed on the left side because the shorter length of the right renal vein poses technical challenges for the transplant surgeon in implanting the kidney into the recipient (8,31). Yet several indications should prompt consideration of the right rather than the left kidney, including multiple renal arteries, a smaller right kidney or undiagnosed lesions within the right donor kidney (6,13,14,31). Some authors have questioned whether surgical technique rather than appropriate selection criteria is driving the side of kidney selected for the laparoscopic operation (32). The ability to perform right laparoscopic donor nephrectomy allows the inclusion of those donors with only right kidneys suitable for donation (13).

Mandal et al. (8) reported a significant rate (37.5%) of graft loss in their early experience with 8 right kidneys. These losses were attributable to thromboses postulated to be from the short, thin-walled renal vein. Subsequently, certain technical modifications were proposed in an attempt to overcome the short length of the right renal vein. The Johns Hopkins

group (8) shifted the Endo-GIA stapler port to the right lower quadrant. In this manner, the stapler was placed across the renal vein in a plane parallel to the vena cava in an effort to maximize the vein length. In the presence of a right renal vein shorter than 3 cm, this group also suggested a subcostal incision for open placement of a Satinsky clamp on the inferior vena cava and for graft extraction. This allowed division of the renal vein with a cuff of the vena cava and closure of the cavotomy through the incision. Recently, Turk et al. (11) described the use of a laparoscopic Satinsky clamp for side clamping of the vena cava to obtain a caval cuff at right renal vein transection, followed by laparoscopic suturing of the vena cava in 4 patients. The largest single-center experience is from Rotterdam where the right kidney is preferred (33). They reported an unusually high rate of 73% of right laparoscopic donor nephrectomies with no differences in thrombosis, graft loss or complications compared to the left kidney.

Several groups currently advocate the retroperitoneal approach, especially for right donor nephrectomies (11,34,35). This approach allows direct visualization of the aortocaval junction ensuring the maximal renal vein length possible. However, the retroperitoneal working space is smaller (13), and prior expertise with this approach is necessary before attempting retroperitoneal laparoscopic donor nephrectomy (12). We performed more than 40 laparoscopic transperitoneal donor nephrectomies before using the retroperitoneal approach. The choice of laparoscopic approach (whether trans- or retro-peritoneal) was at the discretion of the surgeon. The advantages of retroperitoneoscopic surgery over transperitoneal access are that bowel mobilization is not required, retraction of the solid viscera is not needed, the risk of inadvertent gut injury and ileus is minimized, contamination of the peritoneal cavity is avoided, previous abdominal surgery does not preclude this approach and there is a lower incidence of long-term complications, such as port site hernia and bowel obstruction.

In many respects, the right kidney is easier to remove, with less extensive colonic dissection and absence of splenic/pancreatic attachments. The typical absence of gonadal, adrenal and lumbar branches makes control of the renal vein more straightforward (13).

When evaluating our results and comparing them with those of the major university transplant centers, we found that our data compare favorably with the results of their reports. Overall, mean operative time from skin incision to closure was 83.8 minutes and this was shorter than reported in almost all other studies (115 to 218 minutes) (6,7,11-14,33,36). Our average estimated blood loss of 111.4 mL compares well with the reported average blood loss of 71 and 302 mL (6,7,11,12,14,33,36). Mean warm ischemia time was 3 minutes, which is comparable with other reported studies (6,14,33,36), and superior to the experiences of Ng et al. (12) and Boorjian et al. (7), which reported 1.7 and 1.9 minutes, respectively.

Considering the complications in donors, we had 2 cases of postoperative ileus (7.1%) with spontaneous resolution in seven days. Actually, the major postoperative problem in laparoscopic donors is bowel function. Ileus prolongs hospitalization and causes readmissions. Donors report that bowel function is not really normal for 7 to 10 days. Some prolonged bowel recovery may be due to unrecognized pancreatitis (36). The two cases of prolonged ileus occurred at the beginning of our series and we observed that by placing the HandPort again after kidney removal and aspirating blood and blood clots, we did not have any other case of postoperative bowel functioning disorder. Another complication observed in our series was a case of hematoma (3.6%) at the HandPort site, which was opened and drained.

Up to 1.6% of patients undergoing right laparoscopic nephrectomies need conversion to an open method (36). Fortunately, as seen in other series (7,12,13), we had no conversions.

Our mean hospital stay of 3 days is a little longer than that reported recently by other major centers, which have an average hospital stay of between 1.8 and 2.6 days (6,7,12,13,36). With the increasing experience in laparoscopic nephrectomies, we started discharging our patients sooner (24 to 48 hours after surgery) in the last nine cases.

CONCLUSIONS

Our data confirm the safety and feasibility of right laparoscopic donor nephrectomy and, based on

these findings, we state that the right kidney should not be avoided for laparoscopic donor nephrectomy when indicated.

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EDITORIAL COMMENT

Laparoscopic nephrectomy has gained increasing popularity since the early experimental works by Gill et al. in 1994 (1) at Washington University, and the first surgery performed in humans by Ratner et al. (2) at Johns Hopkins University. Currently, the leading institutions in USA and Europe have been preferentially using the laparoscopic approach rather than the conventional open technique due to shorter hospitalization times, less postoperative pain and shorter convalescence times, even if there are few differences in terms of surgical time, bleeding, complications and warm ischemia time, as observed in 2 recently published prospective works (3,4).

In most case of live donors for kidney transplantation, the performance of laparoscopic nephrectomy has led to improved technique, allowing some contraindications to be abandoned and turning the minimally invasive technique into the preferential approach.

In this issue of the Int Braz J Urol, the authors report a significant series of 28 cases of laparoscopic nephrectomy in kidney donors in most cases performed with the "hand-assisted" technique for removal of the right kidney. In many institutions, right nephrectomy is considered to be a contraindication for laparoscopy due to the usually shorter length of the renal vein on this side. The authors reported good results with minor complication (7% of ileus, and one case of hematoma on the incision), thus corroborating the safe indication for laparoscopic nephrectomy on the right side as well.

On the other hand, some conventional surgeons have tested the surgery with "mini-incision" in order to minimize the effects and sequelae of the classic incision so that conventional surgery could be superposed to the laparoscopic technique. In 2003, Perry et al. (5) published a prospective analysis of patients undergoing laparoscopic nephrectomy with another group undergoing nephrectomy with "mini-incision" and still found statistically significant advantages for the laparoscopic surgery in terms of postoperative pain throughout the first month, introduction of oral diet, return to usual activities, esthetic satisfaction and a better emotional role as verified by validated quality of life questionnaires. Such evidence could be due to the fact that, despite incisions performed for removal of the kidney in both groups, the abdominal incision in the lower quadrant is more benign, thus providing a better postoperative period.

Despite much recent scientific evidence, increasingly more surgeons performing surgery worldwide, continuous technological advancements, the decrease in limitations and the increase in donations at institutions that offer laparoscopy, many institutions still don't offer this technique, for reasons that are unclear. For example, at Washington University where it all started, the transplantation team does not yet perform laparoscopic nephrectomy, in spite of the early contribution and constant advancements in the field provided by their neighbors, who are trying more and more to explore the maze of scientific advances and progress. I often prefer to think and act like Spencer Johnson, M.D. (6) in his book, "Who moved my cheese?": it is safer to search in the maze than remain without the cheese.

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LIKELIHOOD OF RETROGRADE DOUBLE-J STENTING ACCORDING TO URETERAL OBSTRUCTING PATHOLOGY

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ABSTRACT

Objectives: To evaluate the likelihood of retrograde double-J stenting in urgent ureteral drainage according to obstructing pathology.

Materials and Methods: From July 2002 to January 2003, 43 consecutive patients with ureteral obstruction who needed urgent decompression were evaluated at our institution, where we performed a total of 47 procedures. Emergency was defined as ureteral obstruction associated with infection, obstructive acute renal failure, or refractory pain. Ureteral obstruction was defined as intrinsic and extrinsic based on etiology and evaluated by ultrasound. Patients submitted to previous double-J stenting were excluded. Failures in retrograde ureteral stenting were treated with percutaneous nephrostomy. Results were analyzed with Fisher's exact test and regression analysis.

Results: Failure in retrograde ureteral stenting occurred in 9% (2/22) and 52% (13/25) of the attempts in patients with intrinsic and extrinsic obstruction respectively ($p < 0.001$). Failures in stenting extrinsic obstructions occurred due to lack of identification of the ureteral meatus in 77% and impossibility of catheter progression in 23% ($p < 0.05$). All attempts of retrograde catheter insertion failed in obstructions caused by prostate or bladder pathologies (6/6). Inability to identify the ureteral meatus was the cause of all failures.

Conclusion: Retrograde double-J stenting has a low probability of success in extrinsic ureteral obstruction caused by prostate or bladder disease. Such cases might be best managed with percutaneous nephrostomy.

Key words: ureter; obstruction; drainage; stents
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INTRODUCTION

Ureteral obstruction often presents as urological urgency demanding surgical treatment with urinary diversion (1-5). The first successful endoscopic ureteral drainage using a silicone catheter was reported by Zimskind et al. in 1967 (6). During the last decade, double-J stenting has been widely used by urologists. Despite endourological technical advances, retrograde double-J stenting may be cumbersome or impossible. Alternatively, one may prefer percutaneous nephrostomy, an efficient method but with the inconvenience of being an external diversion (1-5,7,8). The choice of double-J stenting or percutaneous nephrostomy for urgent ureteral decompression is controversial and oriented by surgeon preference (4). There are a few studies on this issue and most of them are retrospective involving elective procedures (1,2,5,7-9). We conducted a prospective study to evaluate the success of retrograde

double-J stenting in urgent ureteral drainage and to define criteria for selection of decompression method in order to reduce cost and to avoid time loss.

MATERIALS AND METHODS

Between July 2002 and January 2003, 43 consecutive patients with ureteral obstruction and need of urgent decompression were evaluated at our institution, where we performed a total of 47 procedures. The need for urgent decompression was defined as ureteral obstruction associated with infection, obstructive acute renal failure, or refractory pain. All patients were evaluated with x-ray (KUB) and ultrasound in order to diagnose obstructive uropathy (10). Non-enhanced spiral CT was performed when standard evaluation was not satisfactory. Patients submitted to previous retrograde double-J stenting were excluded.

Ureteral obstruction was classified accordingly to etiology as intrinsic (inside the ureteral lumen) or extrinsic (outside the ureteral lumen) (1,9,11,12).

All procedures were performed under general anesthesia, with fluoroscopic C-arm guidance (13). Retrograde pyelography was performed previously to each procedure when it was possible to identify the ureteral meatus. This was done using an open-ended ureteral catheter. This catheter was then used to pass a 0.35 mm hydrophilic guide wire (13). A non-hydrophilic polyurethane double-J ureteral catheter of various sizes (4,7;6;7 Fr) was used according to surgeon's preference (14,15).

The adequate positioning of the double-J stent was confirmed by fluoroscopy at the end of the procedure. Failures in retrograde ureteral stenting were immediately treated with percutaneous nephrostomy. The percutaneous nephrostomy kit used was 14F/4.6 mm. The success of percutaneous nephrostomy placement was confirmed with antegrade pyelography after the procedure.

Statistical analysis was performed with Fisher's exact test and regression analysis, with $p < 0.05$ considered significant.

RESULTS

Intrinsic and extrinsic lesions were responsible for 47% and 53% of the obstructions respectively (Table-1).

Intrinsic (Table-2) and extrinsic (Table-3) groups were sex and age matched (Table-4).

The need for ureteral decompression differed between groups. The main indication for decompression in the intrinsic group was pyelonephritis (77%) and in the extrinsic group it was acute renal failure (88%). The site of obstruction was preferentially distal in extrinsic lesions, and proximal in intrinsic ones (84% vs. 41%, $p < 0.001$), and renal dilation was more pronounced in the extrinsic group (27% vs. 44%, $p < 0.05$).

The results show that retrograde ureteral stenting success was significantly lower in patients with extrinsic ureteral obstruction (Table-5).

Retrograde ureteral stenting failures in intrinsic obstruction were caused by non-progression of the hydrophilic guide wire and by non-identification of the ureteral meatus (one case each). Failures in extrinsic obstruction were caused by non-progression of the hydrophilic guide wire in 3 patients (23%) and by non-identification of the ureteral meatus in 10 patients (77%) ($p < 0.05$).

Table 1 *– Specific causes of ureteral obstruction in 47 kidneys.*

	N Kidneys (%)
Intrinsic	**22 (47)**
Stone disease	21
Ureteral tumor	1
Extrinsic	**25 (53)**
BPH	1
Colorectal carcinoma	5
Ovarian carcinoma	2
Uterine carcinoma	8
Prostate cancer	4
Endometrial carcinoma	1
Pancreas carcinoma	1
Testis cancer	1
Bladder cancer	1
Lymphoma	1

Table 2 – *General data of the patients with intrinsic ureteral obstruction.*

Case	Sex	Age	Etiology	Side	Indication	Dilation	Site	Success
1	Male	53y	Stone	Right	Pyelonephritis	Moderate	Distal	Yes
2	Male	10y	Stone	Left	Pain	Mild	Proximal	Yes
3	Female	46y	Stone	Left	Pyelonephritis	Severe	Proximal	Yes
4	Male	46y	Stone	Right	Pyelonephritis	Severe	Proximal	Yes
5	Female	64y	Stone	Left	Pyelonephritis	Mild	Proximal	Yes
6	Female	42y	Stone	Right	Pain	Mild	Distal	Yes
7	Female	67y	Stone	Right	Pyelonephritis	Mild	Distal	Yes
8	Male	39y	Stone	Right	Pyelonephritis	Mild	Distal	Yes
9	Female	42y	Stone	Left	Pain	Mild	Medium	Yes
10	Female	22y	Stone	Right	Pyelonephritis	Mild	Distal	Yes
11	Male	52y	Stone	Right	Pyelonephritis	Mild	Medium	Yes
12	Female	21y	Stone	Right	Pyelonephritis	Moderate	Medium	Yes
13	Female	48y	Stone	Right	Acute Renal Failure	Severe	Medium	No
14	Male	69y	Stone	Left	Pyelonephritis	Severe	Proximal	Yes
15	Female	49y	Stone	Right	Pyelonephritis	Mild	Distal	Yes
16	Female	48y	Stone	Right	Pyelonephritis	Moderate	Proximal	Yes
17	Female	79y	Stone	Left	Pyelonephritis	Moderate	Proximal	Yes
18	Male	47y	Stone	Left	Pyelonephritis	Severe	Distal	Yes
19	Female	40y	Stone	Left	Pyelonephritis	Mild	Distal	Yes
20	Female	43y	Stone	Left	Pyelonephritis	Moderate	Proximal	Yes
21	Male	63y	Stone	Left	Pyelonephritis	Moderate	Distal	No
22	Female	56y	Ureteral Tumor	Right	Acute Renal Failure	Severe	Proximal	Yes

All attempts of catheter insertion failed in obstructions caused by prostate or bladder pathologies (Table-6). Inability to identify the ureteral meatus was the cause of all failures.

One retrograde double-J insertion became complicated with ureteral perforation distally to the extrinsic obstruction and was managed with percutaneous nephrostomy. Follow-up was uneventful.

COMMENTS

The cornerstone for acute ureteral obstruction treatment is ureteral decompression. The ideal method should be minimally invasive, fast, and inexpensive. Currently, the most common methods in these situations are insertion of double-J catheter or placement of percutaneous nephrostomy. There is no consensus in the literature about which one is more appropriate, and usually the choice is left to the surgeon's preference (4). We evaluate the urgent ureteral decompression in patients with ureteral obstruction due to intrinsic and extrinsic pathologies. Retrograde double-J stenting failed in 9% (2/22) of intrinsic obstruction and in 52% (13/25) of extrinsic obstruction ($p < 0.001$). Yossepowitch and coworkers had a similar success index in patients with intrinsic ureteral obstruction and higher success index in selected cases of extrinsic obstruction (1). When the ureteral meatus was identified, retrograde pyelography was performed previously to each procedure. It did not alter the previous diagnosis of intra- or extra-ureteral obstruction, nevertheless it was useful to the detection of unexpected ureteral kinking. Failures of retrograde catheter insertion in extrinsic obstruction occurred due to non-identification of the ureteral meatus in 77% of the cases. Identification of ureteral meatus in patients with lower urinary tract conditions such as prostate and bladder pathologies was not possible in 100%

Table 3 – *General data of the patients with extrinsic ureteral obstruction.*

Case	Sex	Age	Etiology	Indication	Dilation	Site	Success
1	Male	84y	BPH	ARF	Severe	Distal	No
2	Male	66y	Prostate Tumor	ARF	Severe	Distal	No
3	Male	71y	Prostate Tumor	ARF	Moderate	Distal	No
4	Male	56y	Bladder Tumor	ARF	Severe	Distal	No
5	Female	30y	Uterine Tumor	ARF	Moderate	Distal	No
6	Female	49y	Lymphoma	ARF	Moderate	Distal	No
7	Male	75y	Prostate Tumor	ARF	Severe	Distal	No
8	Male	75y	Prostate Tumor	ARF	Moderate	Distal	No
9	Male	67y	Colorectal Tumor	ARF	Moderate	Distal	No
10	Male	34y	Testis Tumor	ARF	Severe	Distal	No
11	Female	78y	Uterine Tumor	ARF	Severe	Distal	Yes
12	Female	78y	Uterine Tumor	ARF	Severe	Distal	Yes
13	Female	41y	Uterine Tumor	ARF	Moderate	Distal	Yes
14	Female	30y	Uterine Tumor	ARF	Moderate	Distal	Yes
15	Female	57y	Uterine Tumor	ARF	Severe	Distal	Yes
16	Female	57y	Uterine Tumor	ARF	Moderate	Distal	Yes
17	Female	25y	Ovarian Tumor	ARF	Mild	Distal	Yes
18	Female	52y	Ovarian Tumor	ARF	Mild	Distal	Yes
19	Male	67y	Colorectal Tumor	ARF	Moderate	Distal	Yes
20	Female	36y	Uterine Tumor	Pyelonephritis	Severe	Distal	No
21	Female	46y	Colorectal Tumor	ARF	Severe	Distal	No
22	Female	67y	Pancreas Tumor	ARF	Mild	Medium	Yes
23	Female	64y	Colorectal Tumor	Pyelonephritis	Moderate	Medium	Yes
24	Female	75y	Endometrial Tumor	Pyelonephritis	Moderate	Distal	Yes
25	Female	35y	Colorectal Tumor	ARF	Severe	Distal	No

ARF = acute renal failure, BPH = benign prostate hyperplasia

Table 4 – *Demographic data of intrinsic and extrinsic obstruction cases.*

Sex	Intrinsic	Extrinsic	P value
Male	8	8	0.852
Female	14	13	
Mean age (range)	47.5 (10-79)	55 (30-84)	0.119

Table 5 – *Success index of double-J insertion between groups.*

	Intrinsic (%)	Extrinsic (%)	P value
Success	20 (81)	12 (48)	< 0.001
Failure	2 (9)	13 (52)	

Table 6 – *Success index of double-J insertion versus type of disease causing extrinsic ureteral obstruction.*

	Prostate and Bladder (%)	Other Tumors (%)	P value
Success	0	12 (63.2)	< 0.05
Failure	6 (100)	7 (36.8)	

of cases. Therefore, attempts of retrograde catheter insertion in patients with lower urinary tract conditions may be avoided, giving preference to percutaneous nephrostomy.

Pearle and associates concluded that double-J catheter and percutaneous nephrostomy are equally good methods for ureteral decompression in obstruc-

tive ureterolithiasis associated with infection (7). However, double-J catheters are prone to obstruct when used for long periods. Docimo & DeWolf reported a 30-day re-obstruction index up to 53% in extrinsic ureteral obstruction (9). Such problem may be adequately dealt with by simultaneous insertion of 2 double-J catheters in the obstructed ureteral unit (4,11,12).

The impact in quality of life caused by temporary urinary diversion was accessed by Joshi & colleagues and no functional or psychosocial difference between double-J catheter and percutaneous nephrostomy in ureteral decompression was found (5). Nevertheless, patients were followed for only 30 days. Possibly a longer follow-up may disclose differences between both methods. Our impression is that an external prosthesis promotes progressive loss of quality of life caused by more hospital visits due to nephrostomy displacement or infection.

The choice of ureteral drainage method should take cost into account. Both procedures are expensive as they are performed in the operating room under fluoroscopy. The double-J catheter used in the present study costs US$ 47 and the percutaneous nephrostomy kit costs US$ 88. As the double-J catheter ensures adequate ureteral drainage, similar impact in quality of life and lower cost, it should be considered the preferential method for ureteral decompression except for selected cases.

CONCLUSIONS

Retrograde double-J stenting has a low probability of success in extrinsic ureteral obstruction caused by prostate or bladder disease. Such cases might be best managed with percutaneous nephrostomy.

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EDITORIAL COMMENT

Double-J stenting has become an important endourological procedure in ureteral obstructive pathology. Successful stenting would reduce the morbidity of extrinsic ureteral obstruction. The authors reported a low success rate, especially in lower ureteral obstruction due to bladder or prostate pathology. Deployment of metallic ureteral stents would be a solution for overcoming the obstruction in this situation. Success would depend upon passing a guide wire. Failures in the retrograde approach can be overcome by antegrade stenting under ultrasound guided and fluoroscopic control. The upper tracts are usually dilated and easy to puncture. The guide wire can be negotiated into the bladder by using an angiography curved tip catheter. Once the guide wire is in the bladder it can be pulled outside the urethra by cystoscopy. By pulling the guide wire in the opposite direction the curvatures can be straightened out, making it easy to dilate over which one can put either double-J stent or metallic stent.

In my experience, combining an antegrade and retrograde approach to ureteral obstruction success can be increased remarkably.

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SERUM PSA AND CURE PERSPECTIVE FOR PROSTATE CANCER IN MALES WITH NONPALPABLE TUMOR

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ABSTRACT

Introduction: Many studies have shown the association between PSA levels and the subsequent detection of prostate cancer. In the present trial, we have studied the relationship between preoperative PSA levels and clinical outcome following radical prostatectomy in men with clinical stage T1c.

Materials and Methods: 257 individuals with clinical stage T1c undergoing retropubic radical prostatectomy were selected in the period from 1991 to 2000. Following surgery, biochemical recurrence-free survival curves were constructed according to PSA levels between 0-4; 4.1-10; 10.1-20 and > 20 ng/mL.

Results: Of the total of 257 selected patients, 206 (80%) had Gleason scores from 2 to 6 and 51 (20%), presented Gleason scores 7 and 8, as defined by the pathological report from prostate biopsy. There was no biochemical recurrence of disease when the PSA was lower than 4, regardless of Gleason score. Biochemical recurrence-free survival according to PSA between 0-4; 4.1-10; 10.1-20 and > 20 was 100%, 87.6%, 79% and 68.8% for Gleason scores 2-6 and 100%; 79.4%; 40% and 100% for Gleason scores 7-8 respectively. When all individuals were grouped, regardless of their Gleason scores, the probability of biochemical recurrence-free survival was 100%, 65.1%, 53.4% and 72.2% according to PSA between 0-4; 4.1-10; 10.1-20 and > 20 ng/mL respectively.

Conclusion: Non-palpable prostate cancer presents higher chances of cure when the PSA is inferior to 4 ng/mL.

Key words: prostate-specific antigen; prostatic neoplasms; prostatectomy; treatment outcome
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INTRODUCTION

Approximately 75% of men over 50 years old are screened for prostate cancer (PCa) by testing the prostate-specific antigen (PSA) (1); among those with altered PSA, two thirds will be identified as having PCa in stage T1c (2).

The indication for prostate biopsy when the PSA exceeds 4 ng/mL should be assessed on an individual basis, especially after recent data that showed PCa in 23.9 to 26.9% of men with PSA between 2 and 4 ng/mL (3).

One concern about the indiscriminate use of PSA is the diagnosis of insignificant tumors (4) and the treatment of eventual tumors with low biological aggressiveness. However, despite the initial identification of PCa, 25 to 33% of individuals will die as a consequence of the disease, though the majority is

identified as T1c (2). The detection of early PCa increases the chances of disease confined to the prostate with lower risks of cancer recurrence following the treatment (5), while some authors already believe that the disease-related mortality is decreasing (6).

Due to the increasing debate concerning the upper normal limits for PSA (7), this study aims to assess preoperative PSA levels in individuals with PCa clinical stage T1c undergoing radical prostatectomy, as well as their postoperative outcome.

MATERIALS AND METHODS

The study assessed 257 men presenting a clinical diagnosis of PCa stage T1c, with a mean age of 63.2 ± 7.5 years (47 - 76). The mean preoperative serum PSA was 8.7 ± 5.6 ng/mL (0.3-32.0), and the mean postoperative follow-up time was 85.4 ± 6.1 months. These were retrospectively assessed.

The initial PSA was collected before prostate biopsy. During staging, all patients underwent anamnesis and physical examinations, alkaline phosphatase dosing, total and prostatic acid phosphatase, pelvic computerized tomography and bone scintigraphy in order to rule out extraprostatic disease.

All participants underwent retropubic radical prostatectomies with bilateral pelvic iliac lymphadenectomy at our institution from March 1991 to November 2000. The same surgeon (MS) performed all surgical procedures and the same pathologist (KRL) performed all pathological analyses.

Clinical staging was defined according to the American Joint Committee on Cancer classification (8), and histological grade according to Gleason score (9).

For selection of this group, cases receiving neoadjuvant or adjuvant hormone therapy (14 patients), as well as adjuvant radiotherapy (one patient), were excluded.

Postoperatively, patients were assessed every 2 months during the first year, then every 6 months for 5 years, and yearly from them on. During each assessment, patients underwent digital rectal examinations of the prostate cavity and analysis of serum PSA. Imaging exams (chest radiography, bone scintigraphy, abdominal tomography) were repeated every year. Biochemical progression was defined as a serum PSA higher than or equal to 0.4 ng/mL, a cut-off value that was used by other authors as well (10).

The preoperative PSA was divided into categories of from 0 to 4 ng/mL, 4.1 to 10 ng/mL, 10.1 to 20 ng/mL and higher than 20 ng/mL. (The distribution of patients according to preoperative PSA is in Table-1). Initially, we divided the patients into 2 groups: low risk (Gleason scores 2-6) and high risk (Gleason scores 7-10). Subsequently, we grouped all individuals together to build the survival curve.

For the statistical analysis, we used an approach of survival analysis considering the biochemical recurrence of the disease as the event of interest, defined by a PSA value higher than or equal to 0.4 ng/mL. For the disease-free survival curves, we used the Kaplan-Meier method and the Breslow and Log-Rank tests. A Cox regression model with proportional risks was adjusted on the multivariate analysis. P values < 0.05 were considered to be statistically significant.

RESULTS

Table-1 presents the distribution of 257 patients with clinical stage T1c showing the incidence in relation to PSA values, where we can observe that 60% of them had PSA between 4.1 and 10.0.

Table-2 presents the 206 patients with clinical stage T1c and Gleason scores of 2-6 (low risk) in relation to PSA levels and events in relation to the assessed PSA categories. In Figure-1, we can see that PSA levels influenced the disease-free survival rates of patients with clinical stage T1c (p = 0.008). We can also observe that none of the patients with PSA

Table 1 – *PSA distribution in patients with clinical stage T1c.*

PSA	N (%)
0 - 4.0	17 (6.7)
4.1 - 10.0	155 (60.3)
10.1 - 20.0	67 (26)
> 20.0	18 (7)
Total	257 (100.0)

Table 2 – *Distribution of patients with clinical stage T1c and Gleason scores 2-6, according to PSA levels.*

PSA Levels	N Patients	N Events	% Censorships
0 - 4.0	12	-	100.0%
4.1 - 10.0	121	15	87.6%
10.1 - 20.0	57	12	79.0%
> 20.0	16	5	68.8%

between 0 and 4.0 presented a recurrence of disease during the assessment period. When PSA levels oscillated between 4.1 and 20 ng/mL, they showed the same prognosis (p = 0.102) in relation to the expectancy of biochemical recurrence-free survival.

Table-3 represents the distribution of 51 patients with clinical stage T1c and Gleason scores of 7 and 8 according to PSA levels. It is important to stress that there was no patient with a Gleason score of 9 or 10. The survival probability curve for bio-

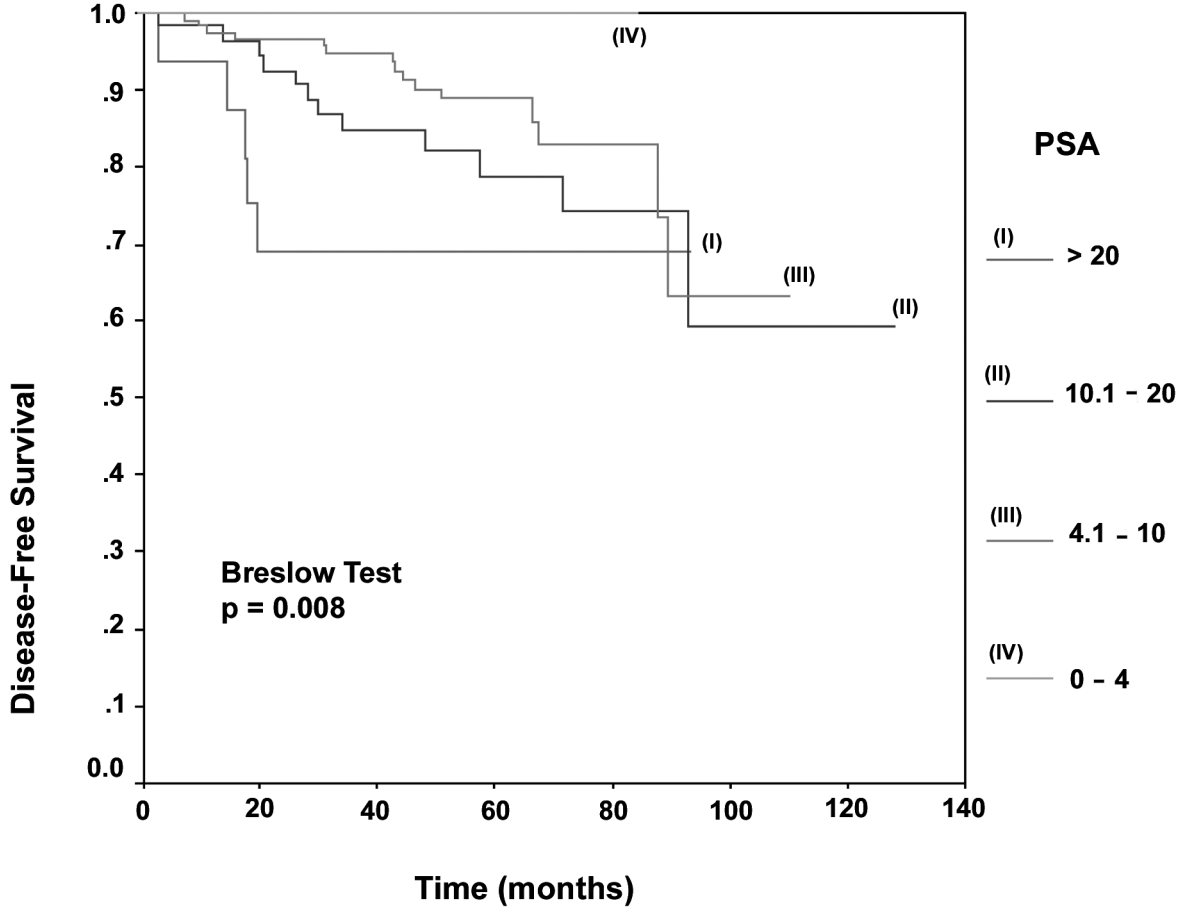

Figure 1 – *Probability curve for recurrence-free survival according to PSA categories in patients with clinical stage T1c, and Gleason scores 2 - 6.*

Table 3 – *Distribution of patients with clinical stage T1c and Gleason scores 7 - 8, according to PSA levels.*

PSA Levels	N Patients	N Events	% Censorship
0 - 4.0	5	0	100.0%
4.1 - 10.0	34	7	79.4%
10.1 - 20.0	10	6	40.0%
> 20.0	2	0	100.0%

chemical recurrence of disease according to PSA categories for patients with clinical stage T1c, Gleason scores 7 and 8 (Figure-2) show statistical significance (p = 0.039), when comparing PSA levels < 4 ng/mL, 4.1-10 ng/mL and 10.1-20 ng/mL. Only 2 patients had Gleason 7-8 and PSA > 20 ng/mL; however, they did not present recurrence of disease. These particular individuals had a follow-up of 19.5 months. Moreover, both specific individuals had PSA values of 21 ng/mL and 23.5 ng/mL.

Finally, we constructed a graph (Figure-3) which groups all individuals, regardless of Gleason score, which is summarized in Table-4. In addition to the absence of biochemical recurrence with PSA < 4

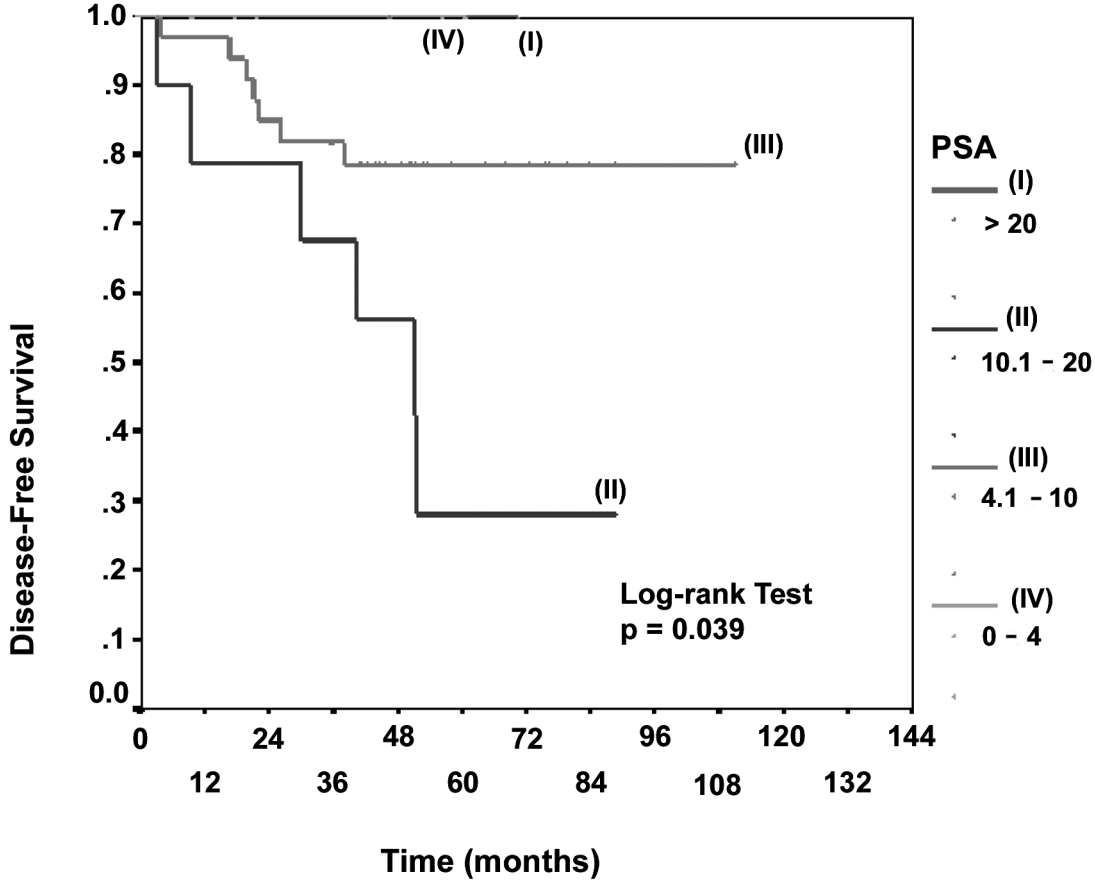

Figure 2 – *Probability curve for recurrence-free survival according to PSA categories in patients with clinical stage T1c, and Gleason scores 7 - 8.*

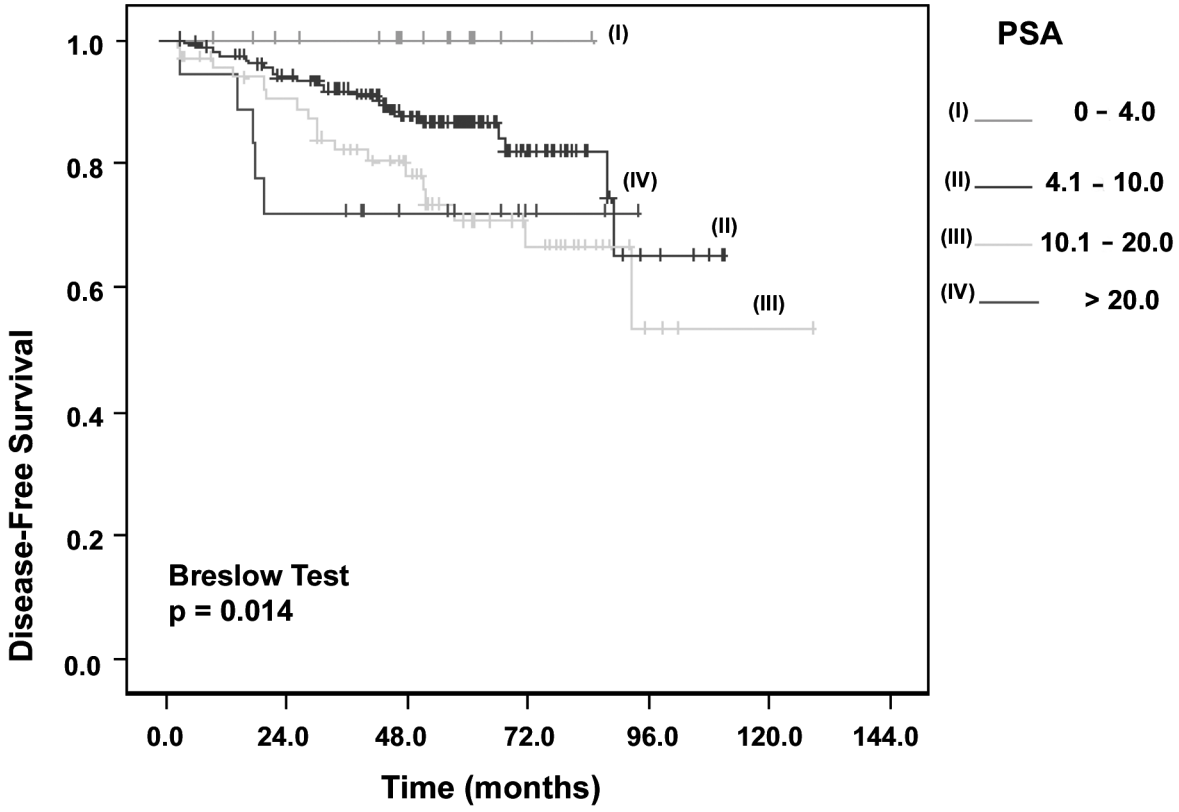

Figure 3 – *Probability curve for recurrence-free survival according to PSA categories in patients with clinical stage T1c, and Gleason scores 2 - 8.*

ng/mL, even after a median follow-up of 85.4 months, it is important to stress that, for individuals with PSA 4.1 to 10.0 ng/mL after 89.1 months, the probability of remaining free of biochemical recurrence is 65.1%. For patients with PSA of 10.1 to 20.0 ng/mL, after 92.6 months the probability of being free of biochemical recurrence is 53.4%. Finally, in men with PSA > 20.0 ng/mL, the probability of being free of biochemical recurrence is 72.2%; however, in this particular group, we stress that the median follow-up was substantially shorter – only 19.5 months.

COMMENTS

The study demonstrated that the life expectancy free of biochemical recurrence in individuals with PCa clinical stage T1c and undergoing radical prostatectomy is higher in those with PSA inferior to 4.

Table 4 – *Distribution of patients with clinical stage T1c and Gleason scores 2 - 8, according to PSA levels.*

PSA Levels	N Patients	N Events	% Censorship
0 - 4.0	17	-	100.0%
4.1 - 10.0	155	22	85.8%
10.1 - 20.0	67	18	73.1%
> 20.0	18	5	72.2%

From 1986 and 1999, the use of PSA for screening has reduced the incidence of metastatic PCa from 50 to 70% (11). Considered more lethal than cardiac disease for between 60 and 80 year olds, the PCa is currently diagnosed in its localized form in 86% of men (12). Additionally, pathological changes of the prostate are identified during autopsies in 64% of men aged between 60 and 70 years of age (13).

The assessment of PSA for screening PCa has enabled an early diagnosis and treatment of the disease. This statement can be corroborated by one study, which compared men with PCa clinical stage T1c and PSA between 2.6 and 4 ng/mL, and individuals with PSA between 4.1-10 ng/mL (5). The study demonstrated that in the first group there are higher chances of organ-confined disease and lower tumor volume.

Johansson et al. (14) showed that observation could be dangerous to men with a life expectancy of over 10 years, demonstrating that after 15 years under a surveillance regimen the cancer-specific mortality increased from 15 to 44/1000, progression-free survival dropped from 45% to 36%, metastasis-free survival decreased from 76.9% to 51.2% and cancer-specific survival dropped from 78.7% to 54.4%. These figures confirm that a long follow-up is required in PCa so that the benefits of early diagnosis and treatment can be observed. Additionally, the probability of death due to disease progression after 15-year surveillance increases from 4 to 30% with Gleason scores of 2-6 and 42 to 87% for Gleason scores of 7-10 (15).

In individuals under a surveillance regimen, the need for treatment was confirmed in 57% and 73.2% after 2 and 4 years respectively, with an increase in Gleason score in 24% of men after 3.8 years (16).

It is possible that non-palpable prostate tumors evidence significant disease, since this study has revealed a 12.4% chance of biochemical recurrence in individuals with PSA from 4.1 to 10 ng/mL and 21% when PSA are between 10.1 and 20 ng/mL, in spite of stage T1c even in low risk tumors, with Gleason scores of 2-6. On the other hand, when we group all individuals regardless of Gleason score, the expectancy of biochemical recurrence-free survival remains at 100% when PSA < 4 ng/mL and decreases drastically to 65.1 % and 53.4 % when the PSA is 4.1 - 10 and 10.1 - 20 ng/mL respectively.

When analyzing Figure-2, for PSA levels of 4.1-10 ng/mL and 10.1-20 ng/mL, it is important to stress that the biochemical recurrence-free survival drops from 79.4% to 40% when only the Gleason score 7-8 is assessed, however it is 100% both in individuals with PSA lower than four and in the two patients with PSA higher than 20 ng/mL. However, when all individuals are grouped (both low and high risk tumors as represented in Figure-3), the apparently contradictory probability of biochemical recurrence occurring in 72.2% of men with PSA > 20 ng/mL is broken down – especially if we observe that in those particular cases the follow-up lasted only 19.5 months. Probably this percentage will decrease with evolving follow-up.

The need for surveillance in men between the fifth and the sixth decades of life should be considered. Some authors, by the way, advocate the performance of prostate biopsy establishing a PSA value up to 2.6 ng/mL as the upper normal limit (8) for men aged less than 60 years of age (11).

Since the classical concept by Whitmore (17) about the paradox existing in the treatment of PCa (is cure required when it is possible, or is it possible when it is required?), with the wide use of PSA in screening and the dramatic increase in the detection of organ-confined disease, the concept of clinically significant disease has become very important due to the risk of over treating the PCa. The main studies comparing radical prostatectomy with a surveillance regimen have been initiated in order to answer these questions. The Scandinavian prospective randomized study (6) assessing the development of metastasis in localized PCa has shown that metastases occurred in 13.4% and 27.3% for the surgery and the surveillance regimen groups respectively; in the untreated group the risk of metastases was 37% higher than in the group undergoing surgery with a median follow-up of 6 years. The risk of death after 8 years was 7.1% and 13.6% for the surgery and the surveillance regimen groups respectively; after a 10-year follow-up the risk of death increases to 16.8% in untreated men.

The concern to avoid over treatment in men with PCa should be carefully considered, however,

the majority of T1c tumors are already significant tumors; that is, they present one of the following features on biopsy: Gleason patter 4, = 3 positive fragments on biopsy and a fragment more than 50% affected by tumor (18). Carter et al. (19) obtained 31% of progression of disease during the first year of surveillance regimen in low risk tumors on the initial biopsy; that is, absence of primary Gleason pattern 4/5, < 3 positive fragments /12, no fragment more than 50% affected and PSA density of < 0.15).

With the possibility of over treating the PCa, currently 25% of men undergoing radical prostatectomy require a second therapy during the first 5 years following surgery (20). This figure begs the question of the correct PSA value that should be considered normal for each individual.

In order to illustrate the great dilemma concerning PCa screening, we need to evaluate the following situation: in Brazil, according to data from the Ministry of Health in 2005, there are approximately 23 million men between 40 and 79 years old. Among these men, and if we apply the worldwide statistics to our country, approximately 92% of men have PSA < 4 ng/mL. Of those 8% of individuals with PSA > 4, we will find 25% or 500,000 men with PCa. These figures are, to say the least, disturbing.

This study has some limitations, since it is retrospective and the digital rectal examination can be subjective. On the other hand, we considered as a positive factor the fact that it as a homogeneous group with follow-up longer than 7 years, which was assessed and operated on by the same surgeon.

We must make every effort to understand the natural history of prostate cancer, which is often unpredictable, and try to find the best moment for indicating prostate biopsy based on PSA.

CONCLUSION

With the acknowledgement of limitations in accuracy for identifying men with small volume cancer prostate, the attitude of avoiding biopsy can delay the diagnosis and result in losing the opportunity to cure.

Adriana Sañudo performed the statistical analysis

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PREDICTION OF PATHOLOGICAL STAGE IN PROSTATE CANCER THROUGH THE PERCENTAGE OF INVOLVED FRAGMENTS UPON BIOPSY

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ABSTRACT

Introduction: The need for defining the extension of disease in patients undergoing radical prostatectomy due to prostate adenocarcinoma is a relevant factor cure in such individuals. In order to identify a new independent preoperative factor for predicting the extension of prostate cancer, we assessed the role of the percentage of positive fragments upon biopsy.

Materials and Methods: A retrospective study compared the percentage of positive fragments on biopsy with the extension of disease as defined by the pathological examination of the surgical specimen from 898 patients undergoing radical prostatectomy due to clinically localized prostate cancer.

Results: On the univariate analysis, the percentage of positive fragments on biopsy showed a statistical significance for predicting confined disease ($p < 0.001$), which was found in 66.7% of the cases under study. Additionally, we observed that the total number of removed fragments exerts no influence on the extension of the disease ($p = 0.567$).

Conclusion: the percentage of positive fragments is an independent factor for predicting the pathological stage of prostate adenocarcinoma, and the number of removed fragments is not related to the extension of the disease.

Key words: prostatic neoplasms; biopsy; needle; neoplasm staging
Int Braz J Urol. 2005; 31: 445-51

INTRODUCTION

According to data from the National Cancer Institute at the Ministry of Health, between 1979 and 2000 there was an increase of 141% in mortality due to prostate adenocarcinoma in Brazil, making this disease the second cause of death from tumors in males, second only to lung cancer. Prostate cancer also represents the second most prevalent malignant neoplasm, behind skin cancer. In 2003 in Brazil, 35,240 new cases were predicted, with 8230 deaths due to prostate adenocarcinoma (1). These figures are approximately 10 times lower than those estimated for the United States of America by the National Cancer Institute, where prostate cancer was responsible for 10% of deaths from malignant neoplasms in 2004, second only to lung cancer (2).

Among the available treatments in cases of localized prostate adenocarcinoma, the most frequently performed is radical prostatectomy, which is used in 52% of patients, followed by external radiotherapy or brachytherapy, which is used in approximately 20% of patients (3).

The great challenge in clinical practice is to perform an accurate early diagnosis of confined disease, since in more than 30% of cases judged as localized, the subsequent pathological study shows more advanced disease than was initially expected (4).

Aiming to clinically define the presence of localized disease, and thus, the feasibility for curative treatment, most experts consider especially the initial PSA levels, the tumor extension upon digital rectal examination and the degree of neoplastic differentiation as assessed by the Gleason score (5). New parameters for predicting the chances of disease recurrence and the presence of organ-confined tumors have also been studied (6,7), including the number of fragments positive to cancer on biopsy, which seems to represent an independent prognostic factor (8).

Considering that the percentage of fragments involved by tumor on biopsy represents an important prognostic factor (6,9), we devised the present study, which intends to analyze the preoperative predictive role of the percentage of positive fragments upon biopsy for predicting the extension of disease.

MATERIALS AND METHODS

We retrospectively analyzed 960 patients diagnosed with localized prostate cancer undergoing retropubic radical prostatectomy whose medical charts recorded the total number of biopsied fragments, the number of fragments with cancer, the Gleason score on biopsy, the serum PSA levels and the pathological exam of the surgical specimen. Fifty-four patients who had received neoadjuvant treatment were excluded, as were 8 patients whose diagnosis was obtained by endoscopic resection of the prostate or transvesical prostatectomy, thus totaling 62 excluded cases and 898 inclusions. Patient ages ranged from 40 to 83 years, with a mean age of 62.9 years.

The clinical staging (Table-1) used the TNM classification (10). For this purpose, auxiliary examinations were performed, including digital rectal examination, transrectal ultrasound of the prostate, abdominal and pelvic computerized tomography or magnetic resonance imaging, bone scintigraphy and thorax radiography.

Patients underwent retropubic radical prostatectomy with bilateral selective iliac lymphadenectomy. All interventions were performed by the same surgeon (MS).

All surgical specimens consisting of the prostate, seminal vesicles and obturator lymph nodes were assessed by the same pathology (KML).

The specimens were fixed in 10% formol for approximately 6 hours and underwent a routine starting with measuring and weighing the gland. Thin transversal sections were performed on the surgical margins relative to the bladder neck and the prostate apex. Using the urethra as a reference, the remaining gland was immersed in India ink stain and then sequentially sliced each 3 millimeters. 8 to 10 sections from each lobe were included for histological examination. Seminal vesicles were sectioned at the base and prepared for histological examination following longitudinal sectioning. Obturator lymph nodes were dissected and sliced in order to go through pathological examination.

Following the usual preparation in paraffin, the sections were stained by HE and analyzed under binocular light microscope. Parameters assessed were:

Infiltration of periprostatic tissue – Periprostatic involvement was defined as the neoplastic invasion of fat tissue and periprostatic neurovascular plexus. In such cases, the disease was classified as non-confined.

Infiltration of seminal vesicles – The involvement of seminal vesicles was considered only when their parenchyma – and not the adventitial region – was involved in the tumor.

Metastases to lymph nodes – Obturator lymph nodes that were involved by tumor were classified as having metastases.

Table 1 – *Patient distribution according to clinical stage.*

Clinical Stage	N (%)
T1c	432 (48)
T2a	218 (24.3)
T2b	173 (19.3)
T2c	68 (7.6)
T3a	7 (0.8)
Total	898 (100.0)

Postoperative pathological staging – the TNM staging system was used for the final analysis (10). The distribution of patients under study is reported in Table-2.

The frequency of organ-confined disease, periprostatic extension and invasion of seminal vesicles was compared with the percentage of positive fragments. For this purpose, the percentage of positive fragments was divided into four categories: 0 - 25%; 25.1 - 50%; 50.1 - 75% and 75.1 - 100%. We also divided the number of fragments collected on biopsy into 3 categories: less than 6; 6; and more than 6, and compared them with the extension of disease.

Table 2 – *Patient distribution according to postoperative pathological stage.*

Pathological Stage	N (%)
T2a	194 (21.6)
T2b	168 (18.7)
T2c	237 (26.4)
T3a	182 (20.3)
T3a/N+	1 (0.1)
T3b	11 (1.2)
T3c	95 (10.6)
T3c/N+	7 (0.8)
T4a	1 (0.1)
T4a/N+	2 (0.2)
Total	898 (100.0)

Statistical Analysis

In order to compare the percentages of positive fragments on biopsy with confined or non-confined disease, we used the Pearson's Qui-Square test (univariate analysis). For comparing the mean percentage of positive fragments on biopsy with confined or non-confined disease, we used the student's t test following the analysis of distribution normality for percentages of positive fragments. A significance level of 5% was adopted, with results being considered as statistically significant when they showed $p < 0.05$.

RESULTS

Figure-1 shows that the number of fragments removed on biopsy did not interfere with the patho-

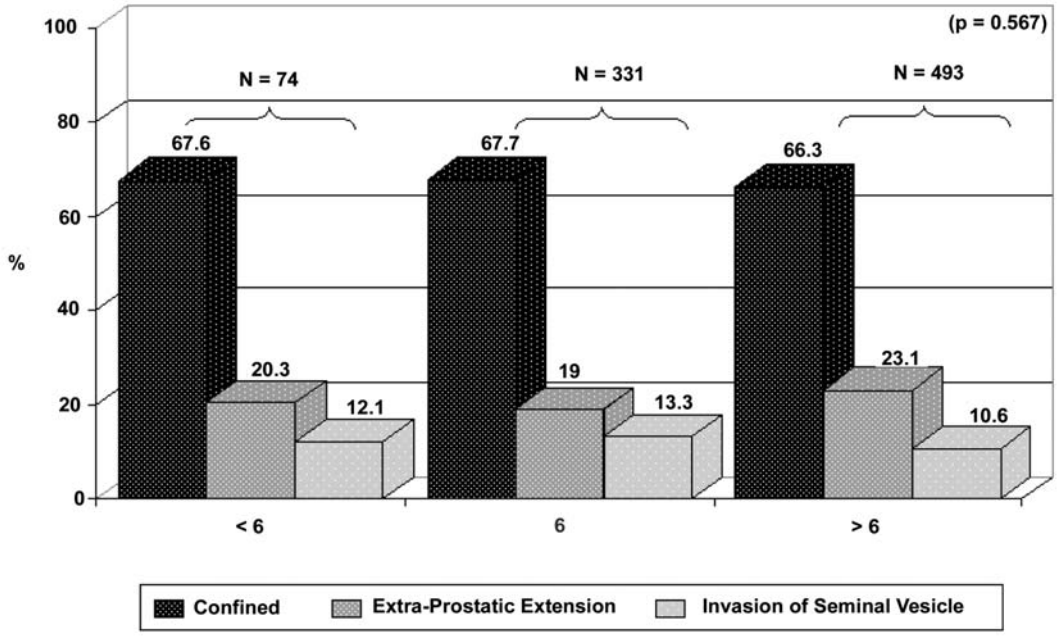

Figure 1 – *Distribution of total number of collected fragments and distribution of lesions identified on biopsy.*

logical results of surgical specimens (p = 0.567), thus evidencing the uniformity of cases under study.

Figure-2 compares the percentage of positive fragments and the presence of organ-confined disease. According to the data obtained in the study, there is a positive association between the percentage of positive fragments on biopsy and the stage of disease (p < 0.001).

Table-3 compares the mean percentage of positive fragments between confined and non-confined disease. The percentage of positive fragments on average is 9.72% (± 1.68) higher in patients with non-confined disease (p < 0.001).

Table-4 shows that regardless of results from the surgical specimen, approximately 55% of patients had more than six fragments removed.

In Table-5 we can see that regardless of results from the surgical specimen, the average of collected fragments was 8 ± 3, with a minimum of 2 and a maximum of 22 fragments removed on biopsy.

We can see in Table-6 that regardless of results from the surgical specimens, the average of positive fragments was 3.2 ± 2.1, with the minimal number of positive fragments being one and the maximal 20.

Table 3 – *Descriptive measures for the percentage of affected fragments on biopsy according to the presence of confined or non-confined cancer.*

	Confined	**Non Confined**
Mean	38%	47.7%
Standard deviation	22.7%	25.4%
Median	33.3%	50%
Minimum	5.3%	5%
Maximum	100.0%	100.0%
Total	601	297

COMMENTS

In our study, 66.7% of patients had neoplasm confined to the gland following radical prostatectomy, with this figure ranging from 13 to 82% (11,12). This variation depends mainly on Gleason score, PSA,

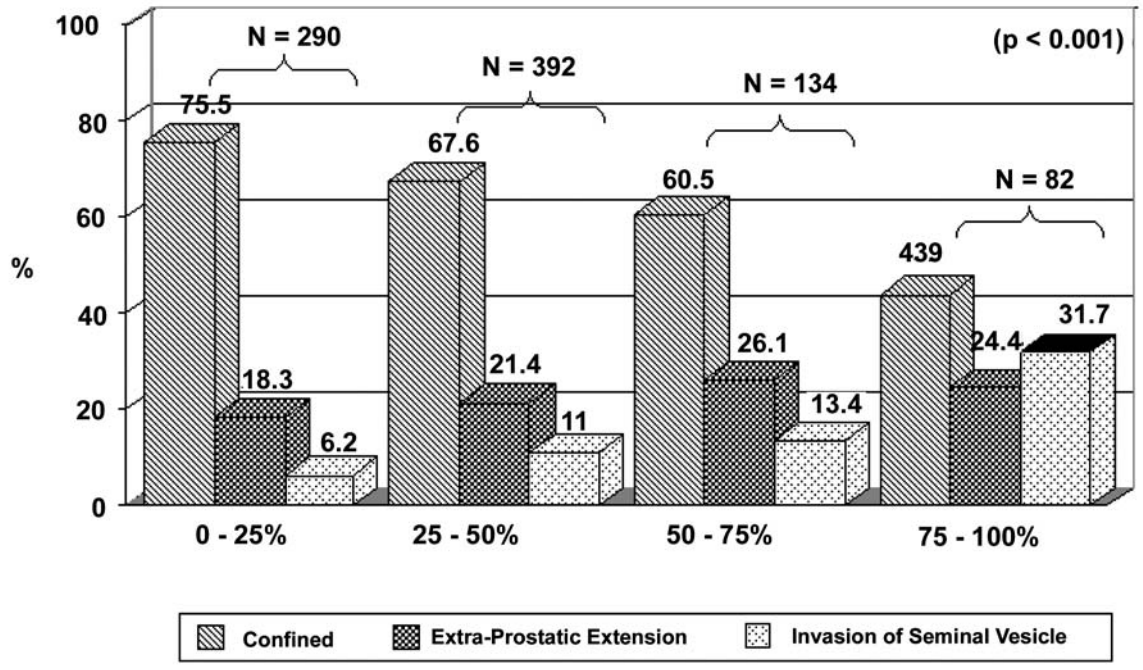

Figure 2 – *Distribution of percentage of positive fragments according to the extension of prostate cancer.*

Table 4 – *Patient distribution according to the number of collected fragments and pathological result.*

N Fragments	Confined	Extra-prostatic Extension	Invasion of Seminal Vesicle	Total Number of Fragments
< 6	50 (67.6%)	15 (20.3%)	9 (12.1%)	74 (8.2%)
6	224 (67.7%)	63 (19%)	44 (13.3%)	331 (36.9%)
> 6	327 (66.3%)	114 (23.1%)	52 (10.6%)	493 (54.9%)
Total	601 (66.9%)	192 (21.4%)	105 (11.7%)	898 (100.0%)

clinical stage and, currently, the percentage of positive fragments on biopsy.

D'Amico et al. (9) observed that the percentage of positive fragments on biopsy is an important parameter for predicting confined disease, demonstrating that when less than 34% of the fragments are affected, 79% of the patients have gland-confined disease, and when the number of affected fragments is greater than 50%, only 43% have confined disease. In our work, we observed that when there are less than 25% of fragments affected by tumor, the chance of confined disease is 75.5%, and only 43.9% of individuals with more than 75% of positive fragments on biopsy have confined disease.

When comparing the percentage of fragments involved in cancer with the possibility of involvement of the seminal vesicles by the neoplasm, we verified that when only one fragment has neoplasm, the risk of seminal vesicles being positive to cancer is 6%; however, when there are six fragments involved, this risk raises to 83% (4). Our study revealed that involvement of the seminal vesicles in 6.2% of patients when less than 25% of fragments had cancer, versus 31.7% when more than 75% were affected.

The importance of the number of positive fragments on biopsy for predicting confined disease is related to the number of positive fragments and the results obtained with radical prostatectomy. When the disease is confined, the average of positive fragments is 35%, while in individuals with non-confined disease this average rises to 55% (7). In our work, we found similar figures, with an average of 38% for confined disease versus 47.7% for non-confined disease.

The percentage of positive fragments has a linear relationship with tumor volume in the surgical specimen (13). Additionally, for each 1% increase in the affected fragments, the risk of non-confined disease increases by 2% (14).

In cases followed over 5 years, Epstein et al. (15) observed that approximately 26% of patients with less than 4 cc of tumor in the surgical specimen evidenced a recurrence of the disease and almost 50% of patients with more than 4 cc had a progression in the disease, thus demonstrating the importance of tumor volume for the outcome of disease. Similarly, Stamey et al. (16) confirmed the prognostic importance of tumor volume and reported that 86% of patients with volume between 0.5 and 2.0 cc did not experience a

Table 5 – *Descriptive measures for total number of collected fragments according to tumor location.*

	Confined	Extra-prostatic Extension	Invasion of Seminal Vesicle	Total Number of Fragments
Mean	8.17	8.13	7.97	8.14
Standard deviation	3.4	2.99	3.49	3.33
Median	7	6	6	7
Minimum	2	2	2	2
Maximum	22	19	22	22
Total	601	192	105	898

Table 6 – *Descriptive measures for total number of fragments with cancer according to tumor location.*

	Confined	Extra-prostatic Extension	Invasion of Seminal Vesicle	Total Number of Fragments
Mean	2.9	3.4	4.1	3.2
Standard deviation	2	2	2.5	2.1
Median	2	4	4	3
Minimum	1	1	1	1
Maximum	20	12	13	20
Total	601	192	105	898

progression of the disease, in opposition to patients with more than 12 cc of tumor volume, of which 96% evidenced a biochemical recurrence of the disease. Upon understanding the importance of tumor volume in relation to the risks of recurrence of disease, the number of positive fragments on biopsy has been used to predict the occurrence of non-confined disease and recurrence following radical prostatectomy (9,17). Nevertheless, some polemics involve the subject, since some studies suggest that we should not consider the percentage of positive fragments but the percentage of cancer found in each fragment, which would be a more accurate predictive factor (18). However, studies comparing the percentage of positive fragments on biopsy with the percentage of tissue affected by cancer (14,19) have demonstrated that both methods are strongly associated with the definition of non-confined disease (20). Since the final result appears to be equal, and the calculation of the area with cancer in the fragments is more time-consuming and complex, it is advantageous to use the percentage of positive fragments on biopsy in the clinical practice.

Prostate adenocarcinoma is the third cause of death from cancer in males in the world, and its incidence and mortality are increasing in our country, due to the increase in life expectancy, improvement and dissemination of diagnostics methods, and unknown etiopathogenic factors. In order to improve the accurate preoperative diagnosis of confined disease, we should intensify the studies on the parameters that should be used, thus allowing more effective interventions and, consequently, increasing the chances of cure for patients with this disease. In this context, the present study aimed to define and consolidate a new parameter that should be considered for assessing the extension of disease preoperatively.

CONCLUSION

The percentage of positive fragments on biopsy is an independent preoperative factor (univariate analysis) for predicting the pathological stage of prostate cancer in the surgical specimen, and the number of fragments removed on biopsy has no influence on the extension of disease.

Adriana Sanudo performed the statistical analysis.

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ASSESSMENT OF SEXUAL FUNCTION IN PATIENTS UNDERGOING VASECTOMY USING THE INTERNATIONAL INDEX OF ERECTILE FUNCTION

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ABSTRACT

Introduction: The present study aims to prospectively compare the sexual function in males before and after vasectomy surgery using the international index of erectile function (IIEF).

Materials and Methods: From October to December 2002, sixty-four patients who were candidates for male sterilization in the vasectomy program of the Urology Section at the General Hospital of the University of São Paulo were included. The same investigator applied the IIEF before and 90 days after the surgery. The mean scores obtained on pre and postoperative visits for all domains of sexual function were analyzed and compared with the Wilcoxon test.

Results: The mean patient age was 35 years (range from 25 to 48 years) and the mean number of children per man was 3. The total mean score of the IIEF was 64.06 before surgery and 65.64 after the procedure, with this difference considered statistically significant ($p < 0.001$). Sixty-seven per cent of the patients improved their scores, versus 17% and 16% who showed worsening or no change at all in IIEF scores following surgery, respectively. Of the 5 sexual function domains, desire and sexual satisfaction presented statistically significant improvement.

Conclusion: This study showed that vasectomy caused a positive impact on sexual function, especially on desire and sexual satisfaction, in the majority of men undergoing surgery. There was no case of surgery-related erectile dysfunction.

Key words: vasectomy; sexual activity; questionnaires; IIEF
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INTRODUCTION

Currently, voluntary male sterilization through vasectomy is a very common procedure, which presents low complication rates (1-4). Post-vasectomy sexual dysfunction has been reported in the literature and is defined as a psychological complication of the surgery (5-7). Though many papers have reported post-vasectomy complications, only a few deal with psychological or sexual issues (7,8). In general, the incidence of psychological or sexual problems following vasectomy has been reported at between 1 and 3% (8). However, none of these studies used the international index of erectile function (IIEF) for assessing post-vasectomy erectile function.

The IIEF is a questionnaire developed in 1997, for assessing the efficacy of sildenafil in patients treated for erectile dysfunction (9). Since then, it has been used as the gold-standard tool for assessing efficacy in results from several clinical trials regardless of the type of treatment or population under study. Recently, an extensive review of IIEF applica-

tion in several subpopulations was published, although it did not include vasectomized patients (10). The questionnaire consisted of 15 items that should be answered by the patient himself with no interference from third parties. In 1999, through the "First Consultation on Erectile Dysfunction," the World Health Organization adopted the IIEF as the main tool for assessing efficacy in clinical studies (11). The IIEF has been already validated in 32 languages, including Portuguese (12).

The object of this study is to prospectively assess through the IIEF the change in sexual function following voluntary vasectomy.

MATERIALS AND METHODS

We selected 65 patients from October to December 2002 who had appointments scheduled for the vasectomy program of the Urology Section at the General Hospital of the University of São Paulo. Ages ranged from 25 to 48 years (35 ± 6).

On average, patients had 3 living children (± 1) ranging from 1 to 6 years of age. The mean age of the youngest child was 18 months (± 20 months), ranging from 4 months to 12 years (Figure-1).

This study was approved by the Institutional Medical Ethics Committee, and all couples signed the informed consent form in order to participate in the research. On the day of the first interview, both the patient and his partner signed the responsibility form in accordance with Law 9.263 from January 12, 1996 regarding the regulation of family planning (13).

We included patients who were candidates for vasectomy who were in accordance with the aforementioned law, and who complied with the following requirements: 1) two living children or, 2) older than 25 years. Additionally, the aforementioned law states that a minimum period of 60 days should be observed between the manifestation of will and the surgical act. During this period, the interested individual will be provided with access to a fertility regulation service, including counseling by a multidisciplinary team aiming to discourage early sterilization (13,14). All couples that were interviewed and participated in this study have respected this period. One patient was excluded because he had abstained from sexual intercourse during the 4 weeks preceding the application of the questionnaire at the first interview. Therefore, the study group was composed of 64 men.

The study design involved applying the IIEF with 15 questions (IIEF-15) on a first occasion before surgery, which was called visit 1, and then a second time, called visit 2, on average 93 days follow-

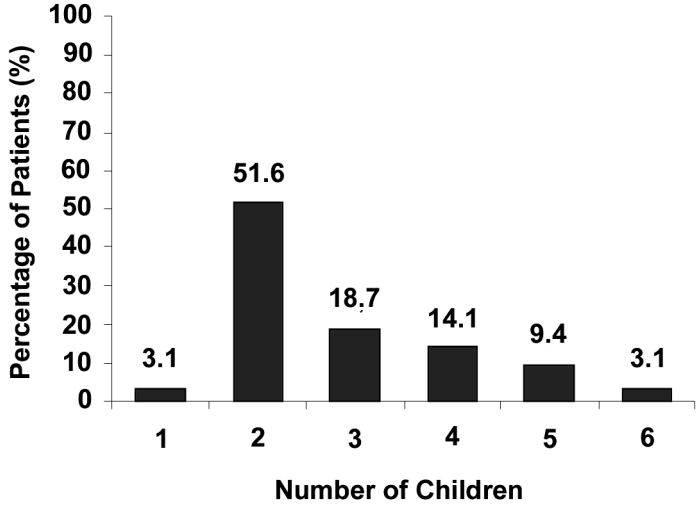

Figure 1 – *Number of children per vasectomized patient.*

ing vasectomy (70 to 126 days). Patients completed the questionnaire during visit 1 on the same day that the social worker conducted the interview and requested the signature of the informed consent and responsibility term. Thus, the patients would have to comply with the 60-day period and would be able to discuss with their partners other commercially available contraceptive methods. The same physician (EB) always performed both visits.

The IIEF-15 was fully applied to the patient according to the Portuguese-validated version (12). The questions are divided into 5 sexual function domains: erectile function (questions 1 to 5 and 15), sexual satisfaction (questions 6, 7 and 8), orgasm (questions 9 and 10), sexual desire (questions 11 and 12) and overall satisfaction (questions 13 and 14). Each question has a value ranging numerically from 0 to 5, with the lowest value presenting the poorer sexual response. Therefore, the total possible score is 75. The total score of items relative to erectile function as adopted by the "1st International Consultation on Erectile Dysfunction" are questions 1 to 5 and 15 (11). Based on this score, the degree of erectile dysfunction is defined as normal (> 25), mild (21 to 24), moderate (16 to 20) and severe (< 15).

On visit 2, the IIEF-15 was applied again in the same way as on visit 1. This follow-up visit was performed on the seventh postoperative day by the same physician that performed the surgery. Also on visit 2, the patient was given the results of the seminal analysis, which had been performed approximately 60 days following the vasectomy.

The vasectomy procedure was performed at the hospital's outpatient clinic using the traditional technique.

The quantitative variables were represented by mean and standard deviation, and qualitative variables were absolute and relative frequency. Non-parametric tests were used due to the nature of quantitative data; discrete continuous variables. Comparison between assessments on visits 1 and 2 in relation to the scores obtained on isolate questions, the sum of questions in each domain, and the total score, was performed by the Wilcoxon test for related samples. A significance level of $p < 0.05$ was adopted.

RESULTS

In relation to the 5 sexual function domains, statistically significant variations were found for the domains of sexual desire and sexual satisfaction ($p = 0.05$ and $p = 0.003$, respectively), with the score on visit 2 being significantly higher than on visit 1 (Tables-1 and 2).

Table 1 – *Score and questions related to the sexual desire domain of the IIEF on visits 1 and 2 (n = 64).*

IIEF – Sexual Desire Domain	Visit 1 Mean ± SD	Visit 2 Mean ± SD	P value (Wilcoxon test)
Score	7.75 ± 1.40	8.25 ± 1.11	0.005 *
Question 11	4.16 ± 0.93	4.36 ± 0.70	0.082
Question 12	3.59 ± 0.77	3.89 ± 0.76	0.001 *

Table 2 – *Score and questions related to the sexual satisfaction domain of the IIEF on visits 1 and 2 (n = 64).*

IIEF – Sexual Satisfaction Domain	Visit 1 Mean ± SD	Visit 2 Mean ± SD	P value (Wilcoxon test)
Score	11.59 ± 2.27	12.16 ± 2.08	0.003 *
Question 6	3.14 ± 1.40	3.61 ± 1.00	0.002 *
Question 7	4.47 ± 0.94	4.50 ± 0.80	0.586
Question 8	3.98 ± 0.75	4.05 ± 0.81	0.413

Concerning the erectile function domain, we did not observe in any of the 64 studied patients a postoperative sum lower than 26, thus indicating that there was no case of erectile dysfunction related to vasectomy surgery in this study (Table-3).

No statistically significant variation was found for scores in the domains of orgasm and overall satisfaction between the visits, though an increase in the score sum was identified on visit 2 (Tables-4 and 5).

Table-6 presents the results for mean score of the total score IIEF-15 between visits 1 and 2 where a statistically significant variation was found between visits ($p < 0.001$), with the score on visit 2 being significantly higher than on visit 1.

Figure-2 shows the distribution of the 64 patients relative to the comparison between total scores on visits 1 and 2.

COMMENTS

Voluntary male sterilization or vasectomy has become the best contraceptive method performed on males, primarily because of its simplicity, effectiveness, and low complication rates (15). Approximately 100 million men have already been vasectomized

Table 3 – *Score and questions related to the erectile function domain of the IIEF on visits 1 and 2 (n = 64).*

IIEF – Erectile Function Domain	Visit 1 Mean ± SD	Visit 2 Mean ± SD	P value (Wilcoxon test)
Score	26.80 ± 3.41	27.05 ± 3.50	0.212
Question 1	4.61 ± 0.81	4.53 ± 0.84	0.791
Question 2	4.63 ± 0.72	4.55 ± 0.82	0.748
Question 3	4.63 ± 0.70	4.58 ± 0.77	1.000
Question 4	4.34 ± 0.95	4.58 ± 0.81	0.034 *
Question 5	4.75 ± 0.85	4.81 ± 0.71	0.683
Question 15	3.84 ± 0.80	4.00 ± 0.76	0.019 *

Table 4 – *Score and questions related to the orgasm domain of the IIEF on visits 1 and 2 (n = 64).*

IIEF – Orgasm Domain	Visit 1 Mean ± SD	Visit 2 Mean ± SD	P value (Wilcoxon test)
Score	9.03 ± 1.45	9.19 ± 1.51	0.136
Question 9	4.67 ± 0.62	4.66 ± 0.76	0.874
Question 10	4.36 ± 1.12	4.53 ± 0.87	0.128

Table 5 – *Score and questions related to the overall satisfaction domain of the IIEF on visits 1 and 2 (n = 64).*

IIEF – Overall Satisfaction Domain	Visit 1 Mean ± SD	Visit 2 Mean ± SD	P value (Wilcoxon test)
Score	8.89 ± 1.43	9.00 ± 1.40	0.268
Question 13	4.39 ± 0.75	4.48 ± 0.73	0.289
Question 14	4.50 ± 0.78	4.52 ± 0.76	0.855

Table 6 *– Total score of the IIEF applied on visits 1 and 2 (n = 64).*

IIEF – 15	Visit 1 Mean ± SD	Visit 2 Mean ± SD	P value (Wilcoxon test)
Total Score	64.06 ± 7.49	65.64 ± 7.89	< 0.001 *

worldwide as a method of family planning (16). One great concern for men who choose this sterilization method has always been the capacity of maintaining a satisfactory sexual life following surgery (7).

Erectile dysfunction is considered to be a serious psychological complication following a vasectomy surgery (7). Though the procedure has been proven not to cause any damage to erection or ejaculation mechanisms, 0.3 % of patients operated in one study have complained of erectile dysfunction (1). According to this same author, in one study with 1000 men undergoing vasectomy who were given questionnaires, the results were as follows: 99% of the men and 95% of their wives were happy with the surgical result; concerning their sexual life, 60% stated that it was better, 2.5% worse and 37% reported that their sexual performance had not changed at all.

In one of the largest series published on vasectomy performed by the same surgeon totaling 6248 cases, post-vasectomy sexual dysfunction was reported by 39 men (4). In this paper, no specific validated tool or questionnaire was used to identify sexual or erectile dysfunction, which could certainly lead to an inaccurate number of men with this complaint.

Contrarily, in other publications the psychological effects of vasectomy are uniformly positive, improving sexual intercourse, harmony between the couple, libido and increasing sexual frequency (17-19). One exception for the series of positive results is the anecdotal and curious case published in 1980 where a man reported having changed his sexual preference and becoming homosexual as a direct consequence of the surgery (20).

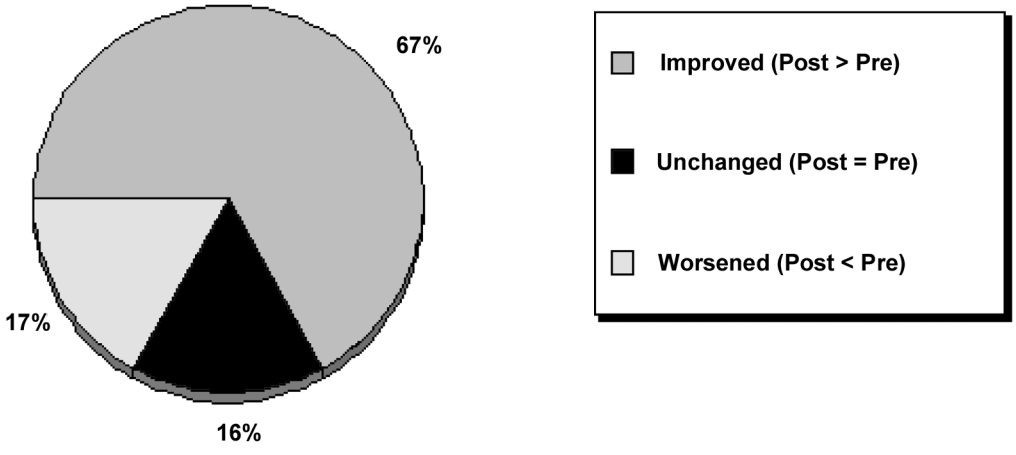

Figure 2 *– Comparison between total scores on the IIEF applied on visits 1 and 2 (n = 64).*

In this study, the first one using the IIEF-15 as a tool for assessing sexual changes following vasectomy, the mean total score before and after vasectomy was 64.06 and 65.64 respectively, out of a total of 75 points. This difference, which is favorable to vasectomy, was statistically significant. This data is strongly representative and means an overall improvement in sexual function following surgery.

When considering the IIEF in the domain of erectile function (questions 1 to 5 and 15), the mean score before and after surgery was 26.80 and 27.05, respectively. Though the difference was not statistically significant, it shows that the vasectomy did not have any psychologically negative impact that could contribute to the development of erectile dysfunction, as other studies have stressed.

Performance anxiety can be caused by several factors, such as stress and fear, which culminate in a discharge of the neurohormones, adrenaline and noradrenaline, with consequent contraction in the cavernous smooth muscles and resulting detumescence and, thus, inability to maintain an erection long enough to complete sexual intercourse. Question 4 of the IIEF related to the ability to maintain an erect penis inside the partner following penetration. In this study, this item had a statistically higher score on visit 2, thus suggesting that men feel more secure and self-assured during coitus following surgery.

Additionally, in relation to self-assurance, when we analyze the statistical differences in the mean scores between visits for question 15, which refers to the self-assurance of men in obtaining and maintaining an erection, we stress the theory that following vasectomy surgery male self-assurance can be increased during coitus. We believe that male self-assurance increases as a consequence of his unconcern with pregnancy following sterilization. When considering question 6 of the IIEF, which refers to sexual frequency during the past 4 weeks, the mean score on the pre-vasectomy visit was 3.14, which means sexual intercourse 5 to 6 times per month. Following surgery there was an increase in sexual frequency represented by the increase in the score for this item to 3.61, which was statistically significant. This data suggests that patients have a greater frequency of sexual intercourse after undergoing sterilization, mainly because they do not have to worry anymore about family planning or an unwanted pregnancy.

Other relevant data taken from this study was the finding that 67% of patients under study have improved their total of IIEF items when comparing visits 1 and 2, which means a slight tendency towards an improvement in sexual function following vasectomy surgery. On the other hand, only 17% of operated men have decreased their IIEF totals 90 days following surgery. It is worth stressing that even if these patients have lower IEFF totals following surgery, no case was considered as clinically significant. In other words, based on the IIEF no patient was categorized as having ED following surgery.

Among the patients whose mean score had worsened following vasectomy, we identified a statistically significant difference in questions 1, 2 and 8 of the IIEF. Questions 1 and 2 refer to erectile function itself. Question 8 concerns sexual satisfaction. Though no case of ED has been diagnosed using the IIEF criteria in this group of patients (n = 11), we attribute this decrease in score to several reasons, including anxiety and expectation generated for the waiting time until the sperm analysis result, use of condoms until being certain of having achieved azoospermia and fear of pain during ejaculation.

An interesting finding was the significant improvement seen in the domains of desire and sexual satisfaction, when comparing pre and postoperative visits, once again confirming the influence and positive impact that vasectomy can have on the sexual life of these men. When considering other sexual function domains, such as orgasm and overall satisfaction, there was no significant difference between the score from the previous visit and that obtained 90 days following vasectomy.

CONCLUSION

We observed an improvement in sexual function, especially in the domains of desire and sexual satisfaction, in this group of patients undergoing vasectomy. There was no case of surgery-related erectile dysfunction.

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EARLY CATHETER REMOVAL AFTER ANTERIOR ANASTOMOTIC (3 DAYS) AND VENTRAL BUCCAL MUCOSAL ONLAY (7 DAYS) URETHROPLASTY

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ABSTRACT

Introduction: Physicians who perform urethroplasty have varying opinions about when the urinary catheter should be removed post-operatively, but research on this subject has not yet appeared in the literature. We performed voiding cystourethrogram (VCUG) on our anterior urethroplasty patients on days 3 (anastomotic) and 7 (buccal) in an effort to determine the earliest day for removal of the urethral catheter.

Materials and Methods: Retrospective chart review of 29 urethroplasty patients from October 2002 - August 2004 was performed at two reconstructive urology centers. 17 patients had early catheter removal (12 anastomotic and 5 ventral buccal onlay urethroplasty) and were compared to 12 who had late removal (7 anastomotic and 5 buccal).

Results: Of those with early catheter removal, 2/12 (17%) of anastomotic urethroplasty patients had extravasation, which resolved by the following week and 0/5 (0%) of the buccal mucosal urethroplasty patients had extravasation. Patients with late catheter removal underwent VCUG 6-14 days (mean 8 days) after anastomotic urethroplasty and 9-14 days (mean 12 days) after buccal mucosal urethroplasty. 0% of the anastomotic urethroplasty had leakage after the late VCUG and 1/5 (20%) of the buccal patients had extravasation after the VCUG. Recurrences were low in all patient groups.

Conclusion: Catheter removal after anastomotic and buccal mucosal urethroplasty can be safely attempted on the 3rd and 7th post-operative days respectively, with a low rate of extravasation on VCUG. Eliminating the catheter as soon as possible should improve patient comfort without harming results and decrease the overall negative impact of surgery on the patient.

Key words: urethra; urethral stricture; surgery; catheter; device removal
Int Braz J Urol. 2005; 31: 459-64

INTRODUCTION

Urethroplasty is a common procedure performed in many centers around the world. While physicians agree on many details of the procedure, some controversy still exists about other specific details of urethroplasty patient care. The earliest feasible time to remove the catheter after surgery is a point of significant discordance in the literature. The shortest time to remove the catheter after anterior anastomotic urethroplasty seen in the literature is 7 days, and can range as high as 14 days (Table-1). The earliest time to remove the catheter reported after buccal mucosal urethroplasty is 7 days (but with concurrent suprapubic drainage for 14 days) and ranges as high as 28 days (Table-2). To our knowledge, there are no re-

Table 1 – *Reported Foley catheter removal times after anastomotic urethroplasty.*

Reference	N	Stricture Length (cm)	Catheter Removal Time (days)	RUG Leak Rate (%)
Santucci et al. (2002) (6)	168	1.7	14	1
Micheli et al. (2002) (10)	74	0.5-3	7	-
Jakse & Marberger (1986) (11)	105	1-4	10	10
Azoury (1976) (12)	13	-	21	-

Table 2 – *Reported Foley catheter removal times after buccal mucosal graft onlay urethroplasty.*

Reference	Type of Urethroplasty	N	Stricture Length (cm)	Catheter Removal Time (days)	RUG Leak Rate (%)
Kellner et al. (2004) (13)	Ventral	23	3.7	14-21	?
Fichtner et al. (2004) (14)	Ventral	32	4.3	10 *	6
Pansadoro et al. (2003) (15)	Ventral and dorsal	65	4	7 **	?
Heinke et al. (2003) (16)	Ventral	38	?	21	?
Kane et al. (2002) (17)	Ventral	53	?	14-21	?
Andrich et al. (2001) (18)	Ventral and dorsal	71	?	21	?
Meneghini et al. (2001) (19)	Ventral	20	2.8	21-28	?

** Suprapubic urine diversion for 21 days, ** Suprapubic urine diversion for 14 days*

ports that specifically study this parameter, and time of catheter removal remains largely a matter of physician opinion. In order to determine the earliest feasible time to remove the urethral catheter, we performed voiding cystourethrogram (VCUG) in our anterior urethroplasty patients on the third postoperative day (POD) (the 4th day if this fell on a weekend) after anastomotic urethroplasty and on the 7th POD after ventral buccal mucosal onlay urethroplasty.

There are several reasons why early catheter removal is desirable in urethroplasty patients. First, studies of patients with urethral catheters after prostate surgery have established that removal of the catheter improves both patient comfort and mobility (1). Second, there is some theoretical harm from the catheter on the just-completed delicate repair. All catheters result in some inflammatory reaction (2), with silicone catheters causing the least (but still measurable) amount in experimental studies (3). Third, in general, removing the urethral catheter earlier following surgery will decrease the total discomfort of the patient after urethroplasty. Decreasing the total impact of surgery makes urethroplasty a more palatable option for patients and more comparable to lesser impact surgery, such as direct visual internal urethrotomy (DVIU). DVIU has been shown not to be effective against recurrent strictures (4,5), but it remains extremely popular, likely because it is so easy to perform and easy on the patient. As innovations in urethroplasty continue to decrease the impact of surgery, perhaps inappropriate persistence with DVIU, especially in those with little chance of lasting cures, will decrease.

MATERIALS AND METHODS

We performed a retrospective chart review of 32 patients with anterior urethra stricture who underwent anastomotic urethroplasty (19 patients) and ventral buccal mucosal onlay urethroplasty (10 patients) in the period from October 2002 to August 2004 at 2 referral centers for urologic reconstruction. One patient with previous local radiotherapy and 2 patients with end stage renal disease on dialysis were excluded

from the study because of expectations for poor healing. Urethroplasty was performed by 2 surgeons (RAS, AGC). Patients were divided into 2 groups. In the early catheter removal group, we performed a VCUG on POD 3 (day 4 if it fell on a weekend) on anterior anastomotic urethroplasty patients (n = 12) and on POD 7 on ventral buccal mucosal graft urethroplasty patients (n = 5). In the late catheter removal group, we performed VCUG on average 8 days after surgery for anastomotic urethroplasty, and on average 12 days after surgery for buccal mucosal urethroplasty. We compared the 2 groups by the rate of leakage seen on VCUG and the recurrence rate. Patients who had extravasation in the first VCUG had replacement of the Foley catheter and a second VCUG in 7 days. Patients were followed closely after surgery for recurrence, as has been previously described (6). Review of urinary symptoms, urinary flow rates and postvoid residuals were measured 3,6,9,12 and 24 months after surgery (7). Patients are considered to have undergone retrograde urethrogram (RUG) if obstructive voiding signs or symptoms recur after urethroplasty.

RESULTS

The average patient age was 43 years (range 19-75 years) and stricture length measured by preoperative RUG was 1.2 cm (range 0.5-3 cm) for anastomotic and 3.6 cm (range 2.5-5 cm) for buccal urethroplasty. Cause of stricture was inflammatory in 8 patients, trauma in 6, iatrogenic in 3, and unknown in 12 patients. Patient follow-up averaged 14 months (range 3-30 months).

Anastomotic Urethroplasty

In the early group (12 patients), 2 (17%) of the anastomotic urethroplasty patients had extravasation in the first VCUG. The other 10 patients (83%) had a normal VCUG and the Foley removed at the same time (Figure-1). Patients with extravasation had their Foley replaced and the VCUG repeated after one week, which was normal in both cases. In the late group (7 patients), 100% of the VCUGs were normal and the patients had their Foley removed (Figure-2). There were 2 recurrences: 1 (8%) in the early group and 1 (14%) in the late group.

Ventral Buccal Mucosal Graft Onlay Urethroplasty

In the early group (5 patients), 100% had a normal VCUG and all had their Foley removed on the 7th POD. In the late group (5 patients), one patient (20%) had extravasation and the other 4 patients were normal and had their Foley removed (Figures-1 and 2). The second VCUG was normal and Foley removed. The recurrence rate was 0% in both groups.

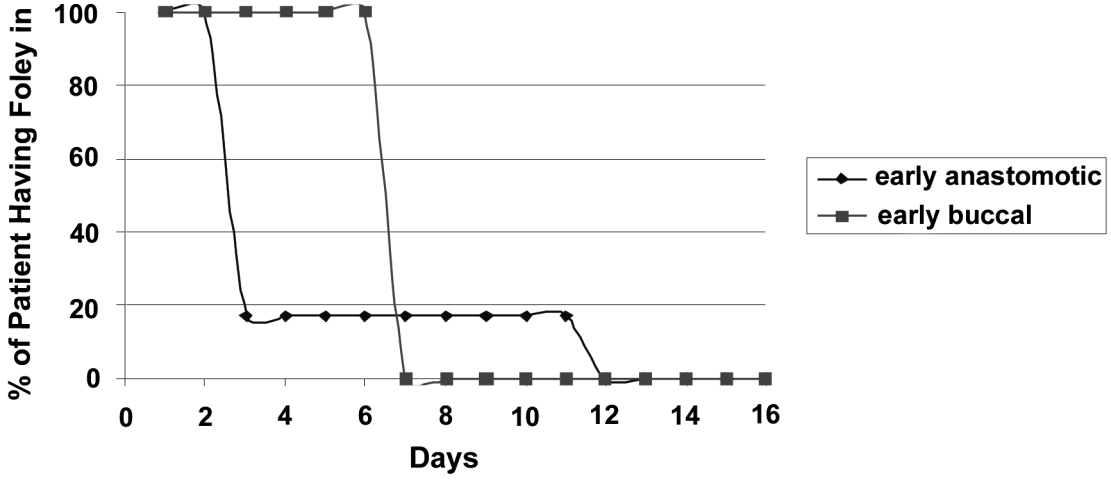

Figure 1 – *Foley catheter removal times after anterior urethroplasty using an early removal protocol.*

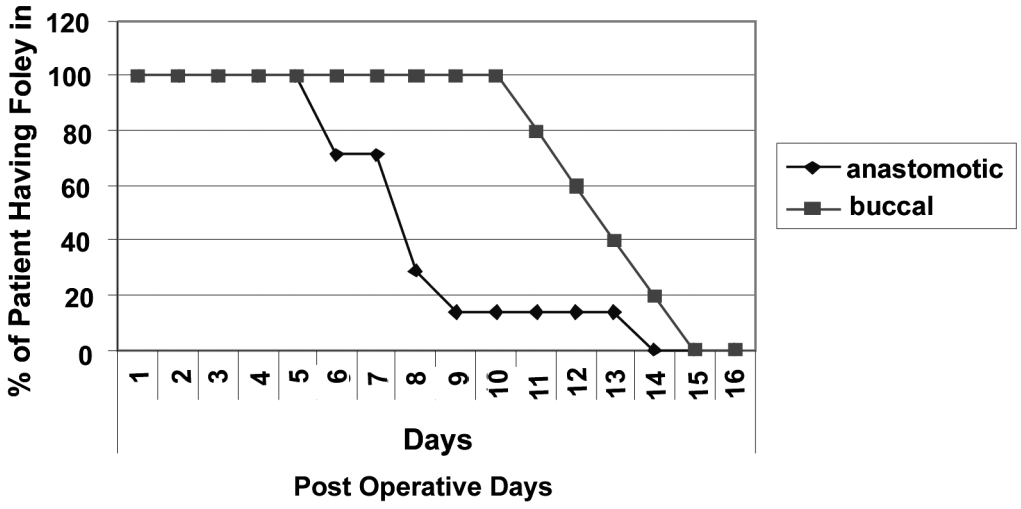

Figure 2 – *Foley catheter removal times after anterior urethroplasty using a late removal protocol.*

COMMENTS

The best interval period for catheterization after urethroplasty is unknown, and most published recommendations represent expert opinion only. For anastomotic urethroplasty, suggested catheterization periods range from 7 to 21 days, but only 2 reports mention the rate of extravasation when this timing is followed: 1% in 1 series and 10% in another, however this second series mixed anterior and posterior urethroplasty patients (Table-1). In our anastomotic urethroplasty patients with early catheter removal, on POD 3 there was a 17% rate of extravasation. All of these patients subsequently had catheters removed on POD 10. The stricture recurrence rate was equivalent in these 2 groups.

While this rate of leakage is higher than previously reported after longer catheterization times, it shows that over 80% of patients can have their Foley removed after anastomotic urethroplasty within 3 days time. In addition to increasing patient comfort, this approach provides some logistical benefits to the patient. In those centers that routinely admit the patient for 3-4 days postoperatively, removing the Foley catheter on POD 3 will allow the patient to be discharged without a catheter. This will improve patient comfort, eliminate troublesome catheter care at home and also allow out-of-town patients to return home without needing further acute follow-up.

For buccal mucosal graft ventral onlay urethroplasty, recommended catheterization periods range from 14 to 28 days (Table-2). In 2 series, the Foley is removed on POD 7 and POD 10, but urine is diverted suprapubically for another 7-14 days. When we removed the Foley on POD 7 after buccal mucosal urethroplasty, no patient in our series had urinary extravasation. One patient in the late Foley removal group had leakage, and the Foley was removed 7 days later after a normal VCUG was obtained. The stricture recurrence rate was equivalent whether or not the Foley was removed early or late.

Prolonged catheterization is consistently reported by our patients and those of other physicians (1,8) as the most troublesome part of their surgery experience, and we believe that limiting this unpleasant experience significantly decreases the negative "impact" of surgery. As we learn to decrease the requirements for postoperative stay, in some cases using same-day surgery (9), then an anastomotic urethroplasty becomes more comparable to minimally invasive therapies like direct visual internal urethrotomy (DVIU) with its attendant short catheter times (usually 3 days), and thus potentially more acceptable to both patient and surgeon.

CONCLUSION

Catheter removal after anastomotic and buccal mucosal urethroplasty can be safely attempted on the 3rd and 7th postoperative days respectively, with a low rate of extravasation on VCUG. Getting the Foley out earlier did not increase recurrence rates on short-term follow-up. Eliminating the catheter as soon as possible has beneficial effects on patient comfort and the overall negative "impact" of surgery.

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EDITORIAL COMMENT

In spite of the great advances in urethral reconstructive surgery, there are still many controversies. Considerable controversy is related to the urinary drainage after urethroplasty. This generates many questions: using of intra-urethral or suprapubic catheter, or both; how long and by whom; which size (12-20 Ch) and type of the catheter? According to the different authors, duration of urinary drainage ranges from 1-3 weeks. There is also suprapubic drainage with small fenestrated or grooved stents, which only pass the level of urethral repair. There is not unique approach, regarding urinary drainage after urethroplasty - it depends on the type of urethroplasty and surgeon's preference. There is no comparable study in the present literature.

In this present study, the authors evaluated early removal of intraurethral catheter after anterior anastomotic and ventral buccal mucosa onlay urethroplasty on the third and seventh days, respectively. They had control group of patients with the same types of urethroplasty with late removal of the catheter on eight and twelfth days, respectively. Outcome was the same in both groups. Early versus late catheter removal has several advantages: catheter in native urethra may cause significant morbidity, such as irritative symptoms and discomfort, may interfere with urethral secretion and ejaculation that may be the cause of infection. However, the most important question is by whom early catheter removal should be done. Only very experienced and skillful surgeons with referral population and familiar with this demanding field of surgery can achieve such a success, as in this study. These results could hardly be reproduced by the surgeon who performs urethroplasty occasionally. Early catheter removal after urethroplasty is intriguing, but limited on relatively small number of the patients with short-term results. Long-term results are awaited with great interest.

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EDITORIAL COMMENT

For some years ago, I used to remove the urethral catheter 3 to 5 days after ventral urethroplasty and 7 to 10 days after ventral buccal onlay urethroplasty with good results.

I began this technique after an intentionally early removal of urethral catheter in 2 patients and results were very satisfactory.

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Case Report

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COLLECTING DUCT CARCINOMA ASSOCIATED WITH ONCOCYTOMA

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ABSTRACT

Collecting duct carcinoma (CDC) is a rare, highly aggressive malignant neoplasm that arises from the collecting duct epithelium of the kidney. CDC was reported to coexist with renal cell and transitional cell carcinomas. We report a rare case of CDC associated with oncocytoma, confirmed by the characteristic histological appearance and immunohistochemistry. We also review the epidemiological, histological and immunohistochemical criteria for diagnosis, in addition to the genetic and cytogenetic aberrations reported in the literature. Identification and reporting CDC is important for the establishment of treatment strategies and monitoring prognosis.

Key words: kidney neoplasms; collecting ducts, kidney; oncocytoma
Int Braz J Urol. 2005; 31: 465-9

CASE REPORT

A 66-year old male with a history of non-insulin dependent diabetes, hypertension and chronic prostatitis presented gross hematuria, abdominal pain and renal failure. At the time of diagnosis, a CT scan showed a 4 cm poorly enhancing mass at the anterior aspect of the lower pole of the kidney, with associated lymph node and spinal cord metastasis. The patient underwent radical nephrectomy and was placed on hemodialysis until he died shortly following the procedure.

Pathologic Findings

The main tumor mass was 6.0 x 5.0 x 5.0 cm in the lower pole of the kidney. The cut surface was firm and grayish white with focal areas of hemorrhage and necrosis. In addition, there were multiple coalescing small grayish nodules scattered throughout the kidney.

Microscopically, the tumor consisted of a high-grade tubulopapillary and solid lesion. Micropapillary to frank papillary patterns with central fibrovascular stalks were present. Nuclei were large, vesicular and possessed large prominent nucleoli. In some areas, the tumor showed a tubuloglandular pattern on a background of a desmoplastic stroma infiltrated by inflammatory cells. Extensive tumor necrosis with calcification was present. Tumor cells infiltrated the renal capsule, perirenal fat, and the adrenal gland. Extensive lymphatic and vascular invasion were present. On immunohistochemistry, tumor cells were positive to Ulex European agglutinin 1 lectin, vimentin, and distal tubular marker EMA (Figure-1). Another nodule of a renal oncocytoma, measuring 1.0 cm in diameter with extensive hemorrhage was also found in the renal cortex (Figure-2). This was positive for AE1/AE3, negative for CK7 and Hale's colloidal iron and shows mitochondria on electron microscopy.

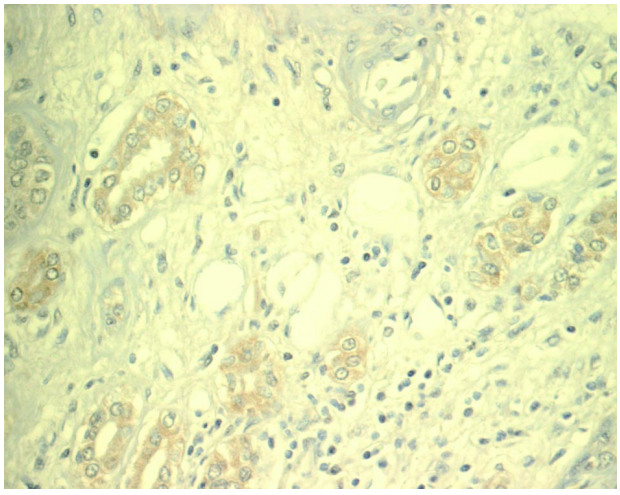

Figure 1 – *Immunohistochemistry shows positivity to Ulex European agglutinin 1 lectin, which strongly supports the diagnosis of CDC.*

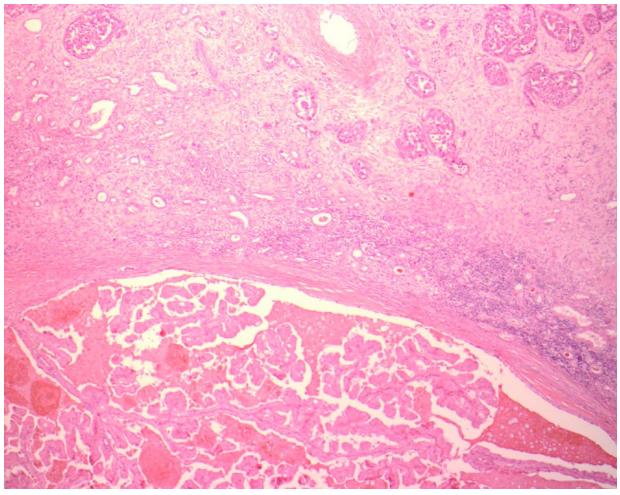

Figure 2 – *HE staining showing the co-existence of CDC (top), with a nodule of oncocytoma (bottom).*

COMMENTS

Collecting duct carcinoma (CDC) is a rare, highly aggressive renal cell carcinoma. On presentation, CDC is metastasized to regional lymph nodes in about 80% of cases. There is a white male preponderance (1).

Grossly, the tumor may commence at the cortico-medullary junction but due to its aggressiveness, can spread to the entire kidney and beyond on diagnosis. Unlike conventional renal cell carcinoma, CDC is not usually circumscribed, shows no bright yellow coloration and only small to punctate hemmorrhagic areas. Microscopically, CDC is a high-grade malignancy with large vesicular nuclei and large prominent nucleoli. There is no accumulation of macrophages in the stroma. These features assist in differentiating CDC from papillary renal cell carcinoma. On immunohistochemical studies, tumor cell positivity with antibodies to Ulex European agglutinin 1 lectin strongly suggests the diagnosis of CDC. The tumor is also positive to peanut agglutinin (PNA), vimentin, lysozyme, distal tubular marker EMA, and high molecular weight cytokeratin, and negative for proximal tubular markers (Leu-M1) (2). This is in contrast to conventional (clear cell) renal cell carcinoma, which expresses pancytokeratin but is negative for high molecular weight cytokeratin. CDC produces intracellular mucin, which can be demonstrated by mucicarmine and PAS stains.

Chromosomal features of CDC are distinct. Comparative genomic hybridization revealed a gain of chromosomal material on chromosome 3 and a loss of chromosomal material on chromosomes 12 and 22 (3). There is also a loss of heterozygosity of 8p and 13q. A loss of chromosome arms 6p, 8p, 13q and 21q was reported in 40-50% of cases.

The coexistence of multiple primary cancers in the kidney has been reported. CDC is reported to co-exist with other renal tumors as RCC and transitional cell carcinoma. To our knowledge, this is the first report that shows this rare coincidence of CDC with oncocytoma. The association of CDC with oncocytoma is not surprising, since a similar origin from the distal nephron was postulated for both.

Oncocytoma should be differentiated from the closely related chromophobe renal cell carcinoma (CRCC). In CRCC, the nuclei are wrinkled with hyperchromatic nuclei while those of oncocytoma are perfectly round. Binucleation and multinucleation is more common in CRCC. Well-defined cell membranes and perinuclear halos are seen in CRCC. The cytoplasm Hale's colloid iron staining is only positive in CRCC. In electron microscopy, CRCC shows cytoplasmic vesicles while oncocytoma shows mitochondria.

In conclusion, we report on a case of CDC which shows a rare association with renal oncocytoma. Accumulation of data on CDC will allow for the establishment of better treatment strategies and monitoring prognosis.

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EDITORIAL COMMENT

Adult Renal Epithelial Neoplasms

The case report presented on page 465, "Collecting Duct Carcinoma Associated with Oncocytoma," gives us an opportunity to comment on the importance of classifying the renal epithelial neoplasms in adults. The most recent WHO publication brings the classification shown in Table-1 (1). Such neoplasms have completely distinct macroscopic, microscopic, genetic features and clinical behavior, and a proper histological classification is fundamentally important when determining the prognosis and management of these tumors.

Oncocytoma is a benign epithelial neoplasm. There are no consistent reports of recurrence or metastases, and surgical treatment is curative.

Table-1

Classification of Renal Epithelial Neoplasms - WHO 2004
Clear cell carcinoma
Multilocular clear cell carcinoma
Papillary renal cell carcinoma
Chromophobe renal cell carcinoma
Collecting duct or Bellini's carcinoma
Renal medullary carcinoma
Carcinomas with Xp11translocation
Carcinoma associated with neuroblastoma
Spindle cell and mucinous tubular carcinoma
Unclassified renal cell carcinomas
Papillary adenoma
Oncocytoma

Among the malignant tumors, the collecting duct (or Bellini's) carcinomas are the most aggressive. They are fortunately rare (< 1%), affect young individuals and only half of the cases present metastatic disease. Interestingly, they respond poorly to immunotherapy, the classical treatment for renal cell carcinomas, and appear to be responsive to chemotherapy (2).

Clear cell carcinoma, the most common type (70%), is the second most aggressive with a mean survival of 69% in 5 years (3). Its cystic or multilocular variant shows a very good behavior, with 100% of survival in 5 years (4). 75% of the time, its carcinogenesis route is related to loss of the VHL gene, which controls the hypoxia-induced factor (HIF-1) related to angiogenesis, pH control, glucose transport, cell proliferation and migration (5). The importance of this knowledge is the development of new treatment lines using inhibitors of tyrosine kinase and of the RAS/RAF signaling pathway, which are the focus in several clinical trials, with encouraging results (6).

The sarcomatoid carcinoma is not a histological subtype, but a dedifferentiation of any CCR types. It represents a poor prognosis factor by itself (7).

The spindle cell and mucinous tubular carcinomas are typically low-grade tumors and show good clinical behavior (8). Other tumors, whether equally rare or recently described, have a still unknown behavior, and both urologists and pathologists must be alert in order to recognize these new entities.

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EDITORIAL COMMENT

Renal cell carcinoma is a tumor comprising several histologic subtypes, the molecular hallmarks of which support their classification as distinct entities. The most common form is clear cell or conventional renal carcinoma, which has been associated with mutations in the von Hippel-Lindau gene and loss of hetrozygosity at chromosome 3p. Next in frequency is papillary renal cell carcinoma associated

with trisomies of chromosomes 7 and 17 and loss of chromosome Y. Chromophobe renal cell carcinoma is associated with numerous specific chromosomal losses. Chromosomal and genetic studies of collecting duct carcinomas are limited. The most characteristic changes of these aggressive tumors are deletions involving chromosomes 1,6,8,14,15,21, and 22. Renal oncocytoma, a benign neoplasm, most often does not present any chromosomal abnormalities.

Multicentricity is a relatively common finding in papillary renal cell carcinomas. Renal clear cell carcinoma occurs in 38 to 55 percent of patients with von Hippel-Lindau syndrome. Lesions tend to be bilateral and multicentric, are often associated with cysts, and occur at an earlier age than sporadic renal clear cell carcinoma.

Association of histologic subtypes is a rare event in kidney tumors. The reported case on page 465, "Collecting Duct Carcinoma Associated with Oncocytoma," seems to be the first report of an association of collecting duct carcinoma (a very aggressive tumor) and oncocytoma (a benign tumor). Recently, an intriguing association of renal tumors was reported. The Birt-Hogg-Dubé (BHD) syndrome has been reported in association with renal tumors of a variety of histologic types (1). BHD was originally described in 1977 as genodermatosis characterized by autosomal dominantly inherited pale yellow-white dome-shaped papules on the face, neck, and upper trunk (2). In addition to cutaneous lesions, BHD confers an increased incidence of renal tumors, lung cysts, and spontaneous pneumothorax, and have linked the BHD gene to chromosome presence of an unusual hybrid form of renal tumors with elements of oncocytoma, chromophobe renal cell carcinoma, and occasional areas reminiscent of renal clear cell carcinoma.

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Case Report
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RIGHT ATRIAL MIGRATION OF NEPHROSTOMY CATHETER

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ABSTRACT

Percutaneous tube nephrostomy (PTN) placement is associated with bleeding complications in a small proportion of cases. We study a case of inadvertent renal vein catheterization during PTN tube change with catheter right atrial migration treated by fluoroscopically monitored catheter removal.

Key words: nephrostomy, percutaneous; catheter; migration; right atrium
Int Braz J Urol. 2005; 31: 470-1

CASE REPORT

A 63-year-old female who previously underwent pelvic external beam radiotherapy for the treatment of uterine cervical carcinoma that was complicated by distal ureteral obstruction, underwent a CT-guided left percutaneous tube nephrostomy (PTN) in August 2003. The catheter was being periodically changed over a guidewire. In March 2004, she came to the urology emergency room 3 days after losing the catheter, with urine dripping from the nephrostomy orifice. A 6F silicone catheter was negotiated with subsequent urine drainage. After 8 hours, this catheter was removed and a new nephrostomy was attempted over a 0.035" angiographic guidewire inserted through the tract, without radiological monitoring. The tract was dilated under local anesthesia, a silicone 12F Foley catheter was placed there, and the balloon filled with 3 mL of diluted contrast.

After 1 hour, brisk bleeding was noted through the catheter, which eventually stopped due to tube obstruction from clotted blood. The patient felt dizziness, dyspnea and palpitations, but remained hemodynamically stable. A renal ultrasound did not show any perirenal fluid collection, but failed to locate the catheter. An abdominal CT displayed the catheter piercing the kidney's parenchyma, into the left renal vein and up the inferior vena cava (Figure-1). Chest radiography showed the Foley's balloon inflated on the topography of the right atrium (Figure-2). The balloon was deflated and brought about immediate resolution of her symptoms. A Doppler echocardiogram did not demonstrate atrial thrombi. With a cardiac surgery and anesthesiology team standing by, and with hemodynamic non-invasive monitoring, the catheter was pulled back under fluoroscopic visualization. After 5 days, a new CT-guided left PTN was successfully placed under local anesthesia.

COMMENTS

Although hemorrhagic complications in PTN are not uncommon (1,2), interventional treatment is not often necessary; renal artery angiography and embolization is required in 0.8% of the cases in a very large series (3). We were unable to find another report of inadvertent renal vein catheterization dur-

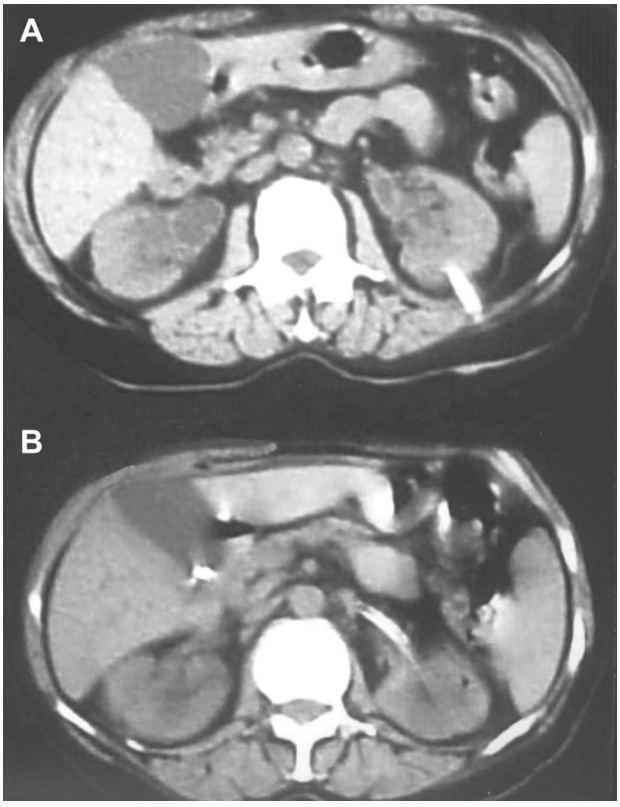

Figure 1 – *A) Nephrostomy tube through renal parenchyma. B) Nephrostomy tube in left renal vein. A radiopaque gallbladder calculus can also be seen.*

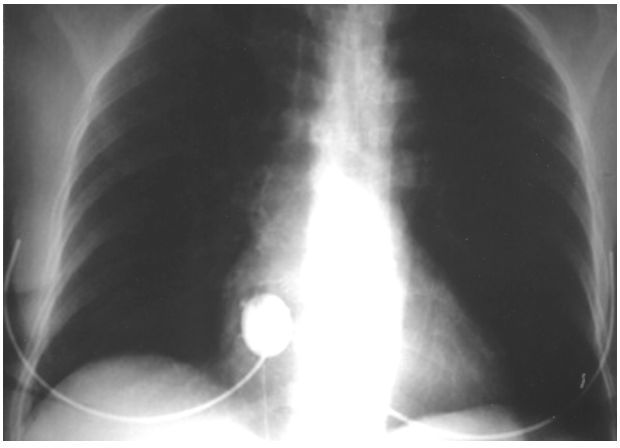

Figure 2 – *Foley balloon in right atrium.*

ing PTN. We suspect that the following chain of events took place: the guidewire perforated a major intrarenal tributary of the left renal vein, the dilation was performed through this injury and the catheter was placed inside the vessel, which simply followed the bloodstream to the right atrium. The patient's coagulation mechanisms were able not only to obstruct the catheter but also to avoid the formation of atrial thrombi and consequent pulmonary embolism.

The lesson learned from this case is that one should never manipulate nephrostomy tract without radiological orientation, even if urine is dripping from the skin orifice. The tract to the renal pelvis might be closed to instrumentation, and even the most delicate instrument is capable of injuring important structures, often with the direst consequences.

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Case Report
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INTRAVESICAL WIRE AS FOREIGN BODY IN URINARY BLADDER

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ABSTRACT

Foreign bodies in the urinary bladder are frequently the objects of jokes among doctors, but they may sometimes cause serious implications to the patients. Here we present our experiences in 3 such cases where long segments of wire were introduced into the urinary bladder through the urethra.

Key words: urinary bladder; foreign bodies; calculus
Int Braz J Urol. 2005; 31: 472-4

INTRODUCTION

A multitude of foreign bodies have been found in the urinary bladder, such as a needle, a bullet, a safety pin, an animal feather, pieces of candle, a thermometer, chewing gum, a Steinman pin, a gauze pack, a toothbrush, a metal hook, and a scalpel blade etc., as reported in the literature (1-3). In most cases, they are either self introduced to produce erotic sensations and sexual gratification or introduced by someone else to get relief from urinary complaints (2). Here we report 3 cases and their successful management.

CASE REPORTS

Case 1 - An 18-year-old boy presented with complaints of dysuria, terminal hematuria and suprapubic pain that had lasted for 2 weeks. A hysical examination was unremarkable. Urinalysis showed plenty of pus cells with significant growth of E. coli in the urine culture. An X-ray of the pelvis showed a coiled up radiopaque shadow in the bladder region (Figure-1). Upon further interrogation, the patient admitted that he was used to masturbating by introducing an electric wire through the urethra. One month previous, he had lost the wire inside his erected penis during this process. Under general anesthesia, a 16-inch long electric wire was removed through cystoscope with an uneventful recovery.

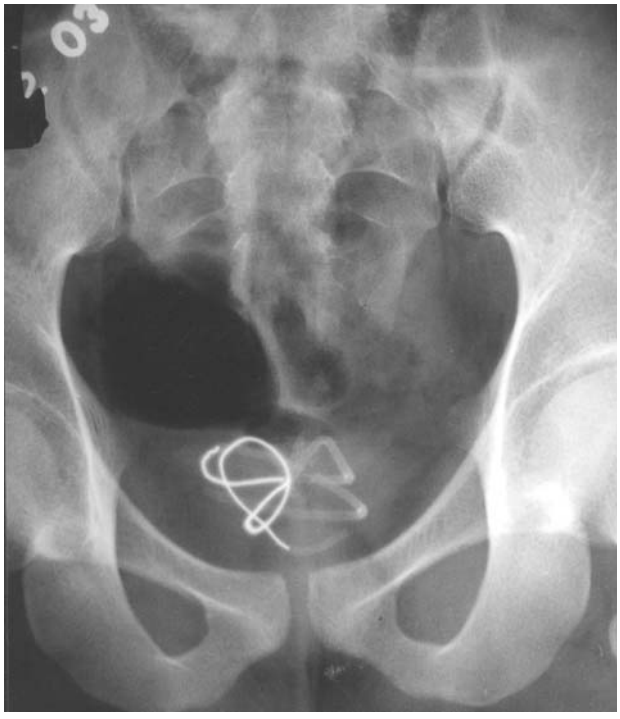

Figure 1 – *X-ray of the pelvis showing coiled up wire in urinary bladder.*

Case 2 - A 22-year-old boy presented severe burning micturation with poor urinary stream over the past 2 months. He had a history of repeated attacks of urinary tract infections in the last few years. A physical examination revealed meatal stenosis with tenderness in the suprapubic region. Urinalysis showed plenty of pus cells along with red blood cells. Urine culture showed the growth of E. coli 10^7 CFU/mL. An X-ray of the pelvis suggested a large bladder stone with a coiled up wire inside it (Figure-2). The parents of the patient admitted that in his childhood a quack had introduced an electric wire through his urethra for treatment of meatal stenosis. They did not know whether it had ever been removed or not. The stone was removed by cystolitholapaxy and the wire was removed by cystoscopy after a meatotomy.

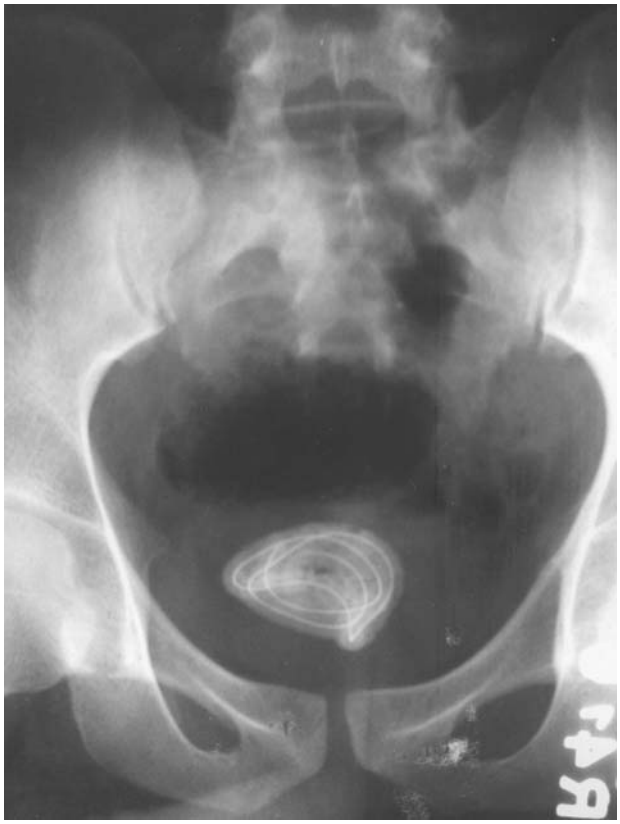

Figure 2 – *X-ray of the pelvis demonstrates a coiled up wire within a stone in the urinary bladder.*

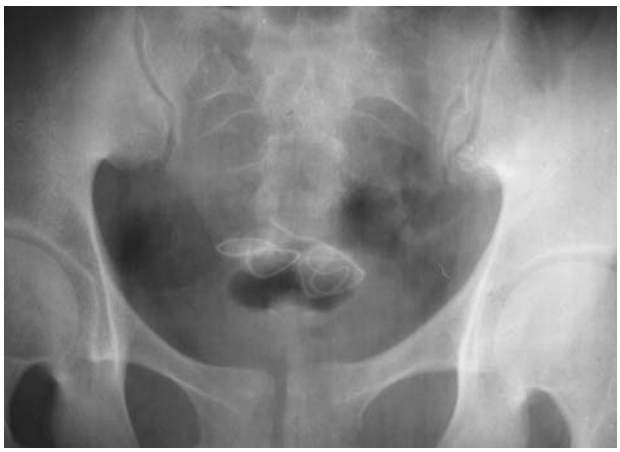

Figure 3 – *X-ray of the pelvis showing coiled up wire in the urinary bladder.*

Case 3 - A 16-year old boy presented with features of acute cystitis for a previous few days. Clinical examination was unremarkable except for suprapubic tenderness. A urine examination showed plenty of pus and red blood cells. Urine culture showed a growth of Pseudomonas 10^6 CFU/mL. A pelvic ultrasound showed an echogenic foreign body in the urinary bladder. An X-ray of the pelvis showed a coiled wire in the urinary bladder (Figure-3). On further interrogation, the patient admitted that a wire was introduced by his sexual partner for more sexual gratification and he had lost the tail end of the wire. Cystoscopy confirmed the wire in the bladder, which was removed under general anesthesia.

COMMENTS

Foreign bodies may find their way into the urinary bladder by accident, deliberate introduction through the urethra or migration from the neighboring organs (1-3). When a wire is introduced through the urethra, part of it remains in the urethra and part goes to the bladder cavity. At the time of micturation, the contracting bladder curled the part of the wire that had partly moved into the bladder from the urethra. Gradually the whole of the wire originally present in the urethra was pulled into the bladder (2). To avoid embarrassment, patients tend to seek treatment late, often waiting until the problem becomes

symptomatic (3). Usually the patients present with urethritis, cystitis, recurrent UTI, or hematuria (1-3). X-rays are sufficient to diagnose such conditions. Intravenous urography rarely gives any additional information, and is indicated only to diagnose radiolucent objects. Cystoscopy gives the final diagnosis in doubtful cases. Managing the situation seeks to remove the foreign body with minimum trauma, and cystoscopic removal is the ideal approach. Where a stone has formed, it should be broken by litholapaxy or intracorporeal lithotripsy together with the removal of the foreign body. Large foreign bodies may be removed by suprapubic cystostomy where endoscopic removal is not possible.

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Case Report

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AGGRESSIVE VAGINAL ANGIOMYXOMA MIMICKING URETHRAL TUMOR

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ABSTRACT

This is a case report of a 32-year-old female patient with a neoplasia mimicking a urethral tumor. Following anterior pelvic exanteration, vulvectomy, bilateral inguinal lymphadenectomy, the pathological study established the diagnosis of aggressive vaginal angiomyxoma, CD-34 labeled.

Key words: urethra; vagina; vulva; angiomyxoma
Int Braz J Urol. 2005; 31: 475-6

INTRODUCTION

Aggressive angiomyxoma is a rare neoplasm of the soft tissues affecting mostly female patients (6:1) in the third decade of life. It affects the genital and pelvic area and has a propensity for local recurrences. This tumor was first described and named aggressive angiomyxoma by Steeper & Rosai in 1983 (1). The characteristics of the tumor are thick-walled, medium sized vessels scattered amongst neoplastic stromal cells in a myxoid-apperaring background. It is sometimes classified as low-grade sarcoma, and metastasis, generally, does not occur (2).

CASE REPORT

A 32-year-old female patient underwent surgery for a urethral tumor in March 2001. On that occasion, the pathological study established the diagnosis of urethral caruncle. Between 2001 and 2002, she had a pregnancy which went to term. On September 2002, she observed a local recurrence. The biopsy was rhabdomyosarcoma. After (30 days), the urethral disease enlarged considerably and large tumors appeared in the inguinal regions. The CT confirmed the extension of the lesions showing a large tumor comprising the urethra, vagina and inguinal regions bilaterally.

Neoadjuvant chemotherapy (QT) was performed between November 2002 and March 2003 with the following schedule: ifosfamide, actinomycin D, vincristine, cyclophosphamide, doxorubicin and VP16. In spite of CT, the tumor increased and tumor exteriorization to the vulva and great enhancement of the inguinal mass occurred (Figure-1).

In March 2003, the patient underwent anterior pelvic exanteration, bilateral inguinal lymphadenectomy, vulvectomy (Figure-2) with autologous myocutaneuos flaps reconstruction and urinary diversion (sigmoid) and colostomy (Hartman's procedure). The surgical procedure evolved without intercurrences. The patient is well and disease-free after a 2 year follow-up.

The pathological examination of the inguinal lesions showed a poorly differentiated neoplasm with necrosis and profuse hemorrhage, suggesting high-grade sarcoma. The vaginal lesions had the characteristics of a fibromyxoid and vascular tumor without atypias or special features, suggesting angiofibroma myxoid. A immunohistochemistry examina-

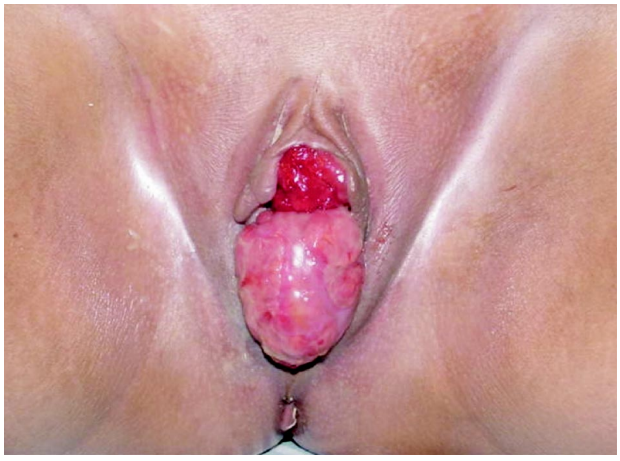

Figure 1 – *Tumor exteriorization through the vulva.*

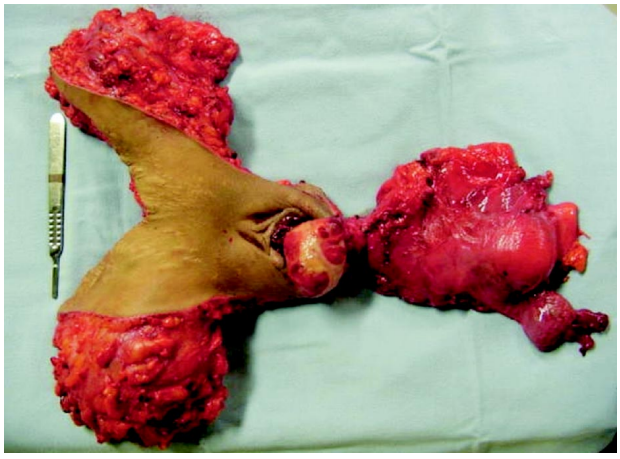

Figure 2 – *Surgical specimen with in bloc bilateral inguinal lymph nodes, vulvectomy and anterior pelvic exenteration.*

tion showed tumor positivity for CD-34 appointed strongly for angiomyxoma.

COMMENTS

Aggressive angiomyxoma is a rare mesenchymal tumor arising from soft tissue of the pelvis and perineum. It almost exclusively involves the genital, perineal and pelvic regions of women, with great incidence occurring in the fourth decade (3).

About 150 cases have been published in the literature since 1983 when it was first described by Steeper & Rosai (1). The tumor has a high recurrence rate with 50-70% of patients exhibiting relapse after surgical resection, often appearing many years after the first excision (2).

The diagnosis of aggressive angiomyxoma is usually made by the pathologist. Its differential diagnosis includes myxoma, myxoid liposarcoma, sarcoma botryoides, myxoid variant of malignant fibrous histiocytoma, nerve sheath myxoma and other soft tissue tumors with secondary myxoid changes (1).

Given the topographical variability of this genital tumor, no standardized surgical procedure has been described in the literature, but its complete excision is crucial for disease eradication (3).

Among the 12 cases of aggressive angiomyxoma pathologic diagnosis of the Amezcua et al. series, with a follow-up ranging from 2 to 60 months (mean of 19 months), 11 patients were still alive and 10 patients were disease-free without any incidence of recurrence (2).

This present case (disease-free after a 2 year follow-up) demands attention because of the presence of complex lesions arising from the urethral meatus mimicking caruncles.

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Pediatric Urology

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EARLY DIAGNOSIS OF THE UROFACIAL SYNDROME IS ESSENTIAL TO PREVENT IRREVERSIBLE RENAL FAILURE

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ABSTRACT

Introduction: The urofacial or Ochoa syndrome is a rare disease characterized by the presence of functional obstructive uropathy associated with peculiar facial features when patients attempt to smile or laugh. Unfortunately, many of these patients remain without proper diagnosis or adequate treatment due to lack of recognition of the disease. This can ultimately result in upper tract deterioration and eventual renal failure. We present our experience with this rare syndrome.

Materials and Methods: We identified 3 patients who presented initially with acute renal failure, urinary tract infection (UTI) and severe dysfunctional elimination. All patients were thoroughly evaluated, including screening for spinal cord anomalies, and were subsequently diagnosed with urofacial syndrome.

Results: At the outset, the two older patients (aged 4 and 9 years) presented with the typical facial features when attempting to smile or laugh. One patient in the newborn period presented with urinary and fecal retention and septicemia and, to our knowledge, represents the youngest case of urofacial syndrome reported so far. All patients were evaluated with ultrasonography, renal scan, voiding cystourethrogram (VCUG) and urodynamics. Findings included hydronephrosis and a thick-walled, trabeculated bladder with poor compliance and detrusor hypereflexia respectively in each patient. All were subsequently treated with clean intermittent catheterization (CIC), antibiotic prophylaxis and anticholinergic therapy. One patient required appendicovesicostomy for CIC due to discomfort secondary to a sensate urethra.

Conclusions: Our series demonstrates that early recognition of this rare syndrome is necessary to adequately treat and prevent upper tract deterioration in these unique individuals. Although the urofacial is difficult to diagnose in infants, cognizance must be maintained in order to prevent severe subsequent sequalae.

Key words: bladder neurogenic; spastic neurogenic bladder; renal failure; syndrome; facies
Int Braz J Urol. 2005; 31: 477-81

INTRODUCTION

In the early 1960s, Bernardo Ochoa followed a group of children with the characteristic symptomatology of neurogenic bladder (recurrent urinary infection, incontinence, constipation, dysuria, frequency, enuresis, bladder trabeculation and vesicoureteral reflux) with no apparent neurological or obstructive abnormality. Furthermore, each patient showed a particular facial expression, i.e., grimacing when they attempted to smile or laugh (1). This unusual disorder was initially considered a local observation, but today over 100 patients have been reported in literature.

The urofacial or Ochoa syndrome is a rare disease that occurs in both sexes and is more frequent when the parents are closely related. It has been determined to be inherited by an autosomal recessive pattern (2). A potential gene has been mapped to chromosome 10q23-q24 (1). Patients with Ochoa syndrome present with functional obstructive uropathy, residual urine, and hydroureteronephrosis. Symptoms are variable and may consist of urinary tract infection (UTI), urgency, frequency, incontinence, polyuria, and polydipsia. Many present with elimination dysfunction (60% constipation and 33% encopresis) (3), and have a characteristic pathognomonic inversion of the facial expression when they attempt to smile or laugh. Interestingly, patients demonstrate emotionally congruent facial expressions when sad or crying.

The laughing and crying centers are located in upper pons of the midbrain close to the micturition center and it has been speculated that this is the possible pathophysiological explanation for this dysfunctional facial characteristic (4).

MATERIALS AND METHODS

We present our experience with three patients with urofacial syndrome. All of them presented initially with acute renal failure, UTI and severe dysfunctional elimination. Follow-up ranged from 2-9 years (average 5 years). All patients underwent voiding cystourethrogram (VCUG), abdominal ultrasound, urodynamic studies and dimercaptosuccinic acid (DMSA) scintigraphy. Spinal magnetic resonance imaging (MRI) was performed in 2 cases.

RESULTS

Case 1: A 4-day-old Caucasian female presented acute urinary and fecal retention. Her symptoms initially spontaneously resolved, however at 48 days of age, she returned to hospital with urinary retention and septicemia. Peritoneal dialysis was started for acute renal failure. Ultrasound showed bilateral hydroureteronephrosis. Voiding cystourethrogram (VCUG) showed bladder trabeculation, grade V bilateral reflux and urinary retention. Clean intermittent catheterization (CIC) was initiated, but upon familial noncompliance a vesicostomy was performed. Urodynamics showed a poorly compliant, hyperactive bladder, high voiding pressures and detrusor-sphincter dyssynergia. Treatment with anticholinergic (propantheline bromide 3 mg/kg/day) resulted in improved bladder capacity and resolution of reflux. Vesicostomy was closed and CIC started at 3 years of age. A trial was attempted with an alpha-blocker (doxazosin) at a dose of 2 mg/day for 6 months without any improvement whatsoever. Nuclear medicine with dimercaptosuccinic acid (DMSA) showed normal kidneys bilaterally. She is presently 9 years old, continues on CIC every 4 hours and remains infection free. Familial pedigree demonstrates no history of Ochoa syndrome. Figure-1 demonstrates the typical facial grimaces associated with the syndrome.

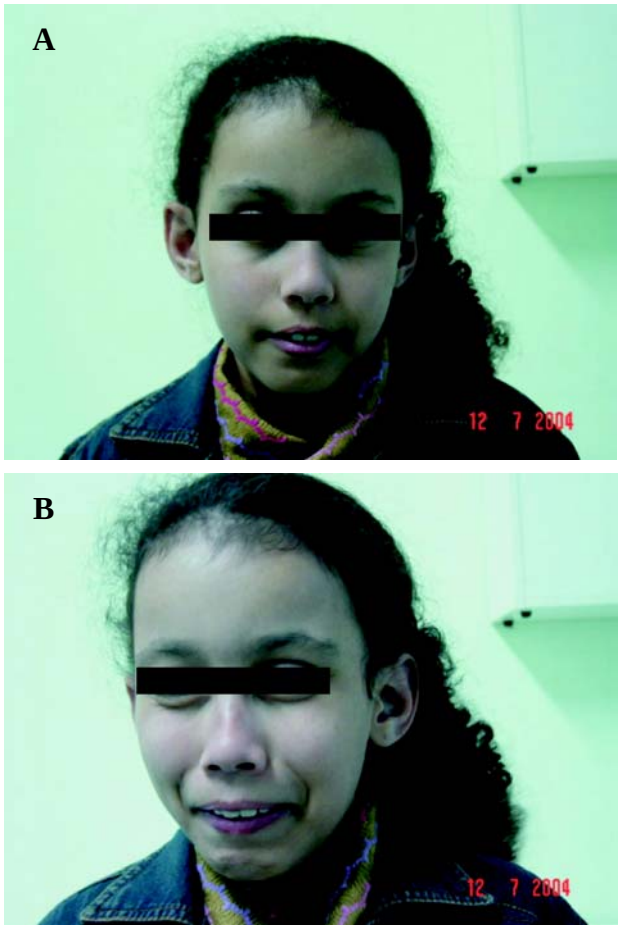

***Figure 1** – Typical facial grimaces associated with Ochoa syndrome.*

Case 2: A 4-year-old Caucasian male, a product of conception between two first cousins, was initially referred to the nephrology clinic for evaluation of hydronephrosis, polyuria and polydipsia. At that time, 14 hour fasting revealed normal urea, creatinine and serum sodium, effectively ruling-out diabetes insipidus. He was concomitantly evaluated by pediatric ophthalmology for non-specific visual disturbances and subsequently underwent a cranial MRI, which was negative for underlying neuro-pathology. He then went to a local emergency department following an episode of gross painless hematuria. Evaluation at that time included an abdominopelvic CT scan that revealed moderate right hydronephrosis. His gross hematuria spontaneously resolved and he was discharged with the diagnosis of acute viral cystitis. Thereafter, he was referred for urologic evaluation and was found to have a long history of irritative and obstructive voiding symptoms. At this time he had elevated creatinine and urea. Physical examination, including the elucidation of a smile, demonstrated the typical urofacial grimacing (Figure-2). The parents revealed that two aunts had similar smile findings but no urinary retention at any time. Evaluation, including renal ultrasonography and VCUG, demonstrated moderate bilateral hydroureteronephrosis and a thick-walled, trabeculated bladder with no evidence of vesico-ureteral reflux (VUR) or posterior urethral valve (PUV) respectively (Figure-3). An MRI of the spine was normal. Urodynamic evaluation demonstrated a poorly compliant, hyperactive bladder with elevated filling pressures. Bilateral renal scarring was noted upon DMSA renal scan (Figure-4). He was initially treated with anticholinergic therapy and CIC, but refused catheterizations from the outset due to a sensate urethra, and an appendicovesicostomy was performed to ease catheterization. Follow-up over the past 2 years has demonstrated normalization of serum creatinine and excellent compliance with respect to CIC every 2 hours plus ongoing high doses of anticholinergic therapy, which resulted in significant improvement of the hydroureteronephrosis.

Case 3: A 9-year-old Caucasian female was referred to the urologic clinic for evaluation of daytime and nocturnal urinary incontinence, urgency and recurrent urinary tract infection. Physical examination revealed the classical finding of Urofacial Syndrome, having the typical smile expression (Figure-5). VCUG demonstrated bladder trabeculation and bilateral grade III VUR. Renal scarring was noted bilaterally upon DMSA renal scan. Urodynamics showed a poorly compliant bladder and detrusor hyperactivity. MRI demonstrated a normal spine and conus medularis. The patient was started on progressive doses of oxybutinin (up to 7.5 mg tid) and CIC, which resulted in markedly improved urinary symptoms. Finally, her family history was also negative for Ochoa syndrome.

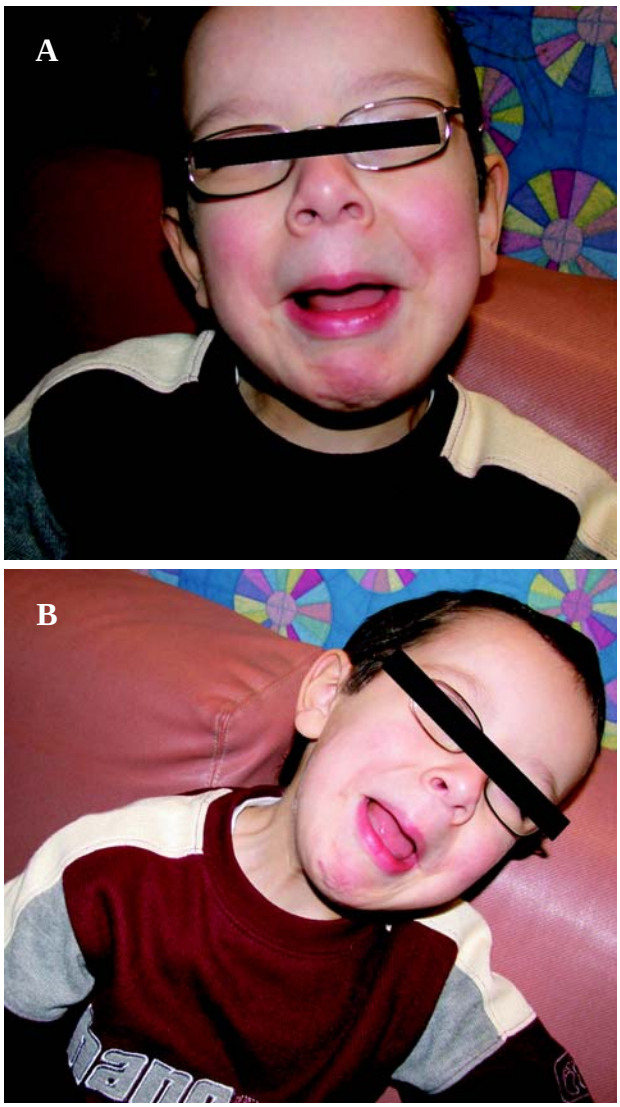

Figure 2 *– Typical facial grimaces associated with Ochoa syndrome.*

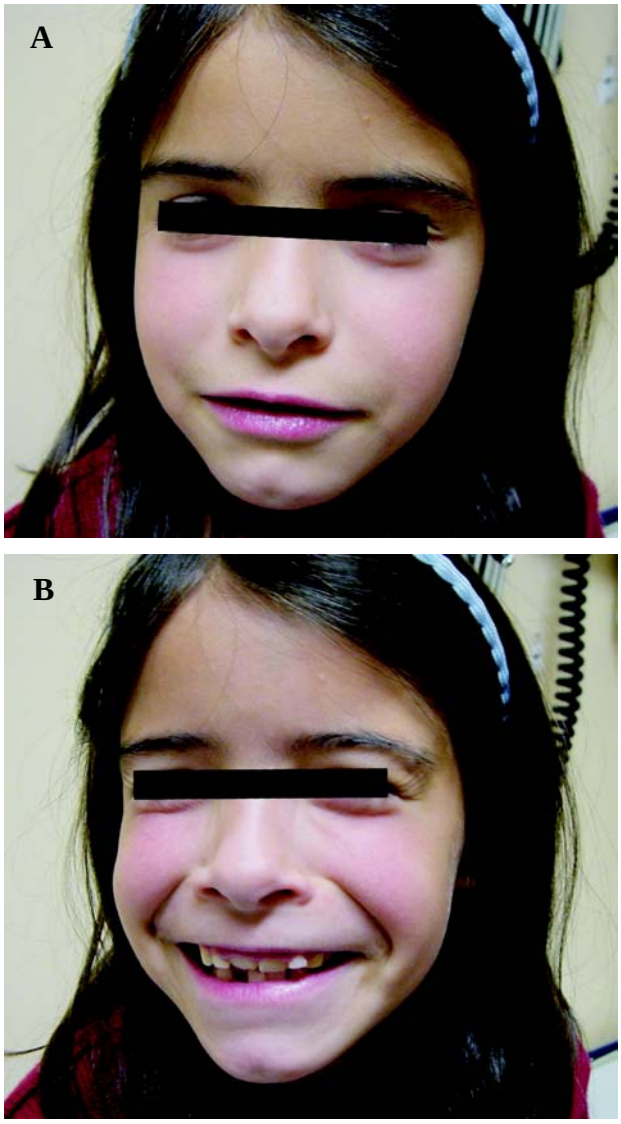

Figure 3 – *Typical facial grimaces associated with Ochoa syndrome.*

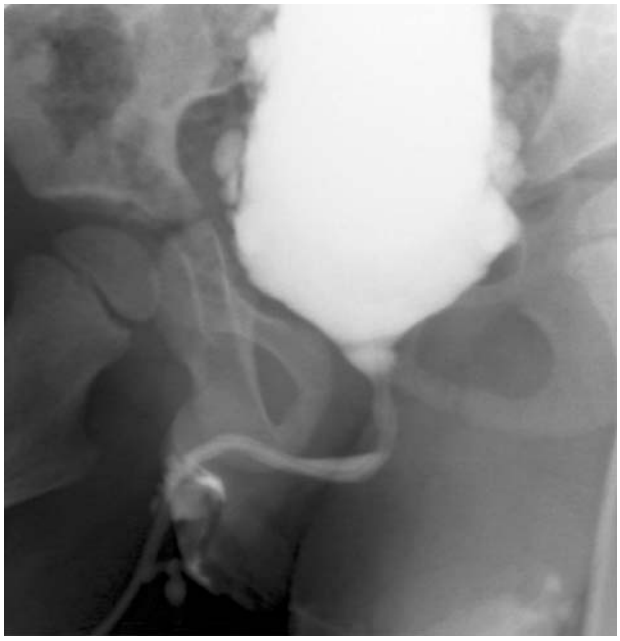

Figure 4 – *VCUG: bladder trabeculation and multiple pseudodiverticula.*

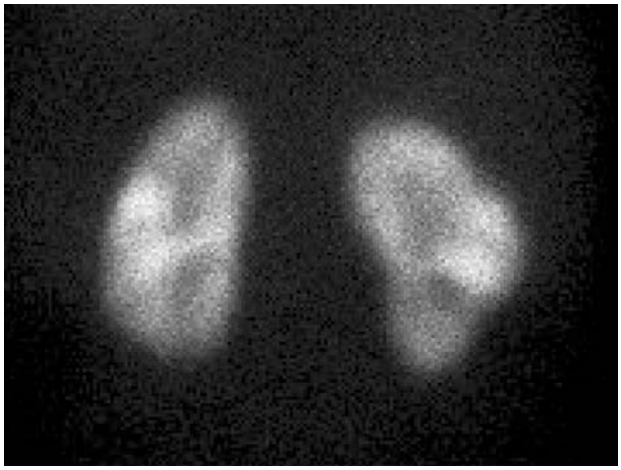

Figure 5 – *DMSA shows foci of decreased cortical function in both kidneys.*

COMMENTS

Although rare, it is important (and extremely simple) to exclude the urofacial syndrome in patients who present with dysfunctional voiding or dysfunctional elimination. Early diagnosis and treatment may prevent irreversible damage to the urinary tract system.

Previously, genetic studies have been carried out in patients with Ochoa syndrome. The observations of normal parents with several affected siblings and parental consanguinity at that time made it clear that inheritance was autosomally recessive, as in our second case (2,5). It is possible that patients with non-neurogenic bladder or Hynman syndrome, subclinical neurological bladder, occult neu-

ropathic bladder, dysfunctional voiding, or dysfunctional elimination may be affected by the same congenital neurologic disorder at the level of the pontine micturition center. However, those with Ochoa syndrome also appear to have concomitant subclinical lesions in the laughing and crying center (1). As spinal lesion may be a potential underlying disorder, an MRI should be performed to rule out other possible etiologies, such as cord tethering, before reaching a final diagnosis.

The presence of renal scarring should be noted and monitored by DMSA renal scans. Urodynamics are important not only to document abnormalities but also for follow-up and disease prognostication. Initially, detrusor hyperreflexia is associated with sphincter dyssinergia, however, in advanced cases, myogenic detrusor failure may ultimately result (6).

The aim of treatment is the restoration of balanced bladder emptying and the prevention of upper tract deterioration. Drug therapy is guided by urodynamic findings and includes anticholinergics and antibiotic prophylaxis if secondary UTI persist despite regular bladder emptying by CIC. Intermittent catheterization is fundamental and patients with sensate urethras may require continent urinary diversion, such as appendicovesicostomy. Polyuric patients should undergo nocturnal bladder emptying with an indwelling nighttime catheter, as this has been shown to improve overall lower and upper urinary tract function (7).

CONCLUSION

Although rare, the urofacial syndrome is an important, well-recognized entity, which, if not treated adequately, may lead to significant morbidity and even mortality from progressive renal deterioration. One must maintain cognizance and screen for this disorder in patients with a history of severe dysfunctional voiding by greeting each patient with a smile at the time of initial consultation.

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RESPONSIVENESS TO THE PORTUGUESE VERSION OF THE INTERNATIONAL CONSULTATION ON INCONTINENCE QUESTIONNAIRE - SHORT FORM (ICIQ-SF) AFTER STRESS URINARY INCONTINENCE SURGERY

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ABSTRACT

Objective: To evaluate the reliability and responsiveness (internal and external) of the Portuguese version of the ICIQ-SF. We assessed the responsiveness of the ICIQ-SF after surgical procedures for the treatment of stress urinary incontinence.

Materials and Methods: Prospective open label study in 2 tertiary referral centers. Sixty-one patients of both genders (54 female and 7 male) were enrolled. Patients were treated using surgical procedures, mostly with synthetic sling (82%). Patients were assessed before surgery and at least 1 month postoperatively using the ICIQ-SF in its translated and validated Portuguese version. Patients also underwent pre-operative urodynamic tests, Stamey incontinence grading and pad usage assessments. After surgery, patients underwent stress tests, Stamey incontinence grading and pad usage assessments.

Results: The mean age was 57.2 (± 11.6) years and the mean duration of follow-up was 7.2 months (± 4.5). Objective parameters such as urodynamic tests (by means of VLPP) and pad usage had significant correlation with changes in post-treatment scores on the ICIQ-SF ($p = 0.0062$ and $p < 0.0001$ respectively). The responsiveness expressed in terms of standardized effect sizes (SES) and standardized response means (SRM) was large for both questionnaires ($p < 0.0001$).

Conclusion: The results showed high responsiveness (large effect sizes I and II) for the Portuguese version of the ICIQ-SF, indicating that this instrument is suitable for measuring outcomes in clinical trials for Brazilian patients with stress urinary incontinence.

Key words: urinary incontinence, stress; urodynamics; prostheses and implants; quality of life; questionnaires

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INTRODUCTION

Patient-reported outcomes including symptoms, functional status and perceived quality of life (QoL) are increasingly used alongside objective clinical measurements to monitor the course of urinary incontinence (UI) and its treatment. Treatment outcomes, as perceived and reported by patients, complement clinical evidence and judgment of efficacy and effectiveness. A number of measures have been de-

veloped to assess the perceived impact of UI, particularly for women, who report symptoms consistent with UI prevalence estimates of between 10% and 30% (1). The King's Health Questionnaire (KHQ) (2) was the first QoL questionnaire translated and validated into Portuguese in Brazil (3). The International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) (4) is a brief instrument used to assess the impact of UI in patients' lives. It has been recently translated into Portuguese and its psychometric parameters, such as validity and reliability, have already been assessed (APPENDIX) (5). The usefulness of instruments designed to measure changes within individuals over time is dependent not only on their reliability and validity, but also on their ability to detect minimal clinically important differences. This psychometric property is called "responsiveness" (6). Responsiveness to the KHQ in its Portuguese version has just been assessed (7). According to Norman et al. (8), there has been an increasing emphasis on responsiveness as an essential characteristic for the use of health-related quality of life measures in studies of therapeutic interventions. The necessity for distinguishing between responsiveness and validity remains because an instrument can be valid and still fail to detect clinically important changes when they occur (9).

Based on the simple construct that "the goal of any therapy is to effect change in health status", our aim was to determine whether the Portuguese version of the ICIQ-SF can be considered reliable before and after treatment, and whether it is sensitive to change in continence status over time (internal and external responsiveness) following surgery to treat genuine stress incontinence (GSI).

MATERIALS AND METHODS

Patients

A total of 61 consecutive patients of both genders complaining of stress urinary incontinence that had been urodynamically diagnosed before treatment. The patients were chosen from two tertiary referral centers (seven male and nine female patients from the first tertiary referral center; 45 female patients from the second tertiary referral center) for this prospective open label study. Eligibility criteria included patients aged over 18 years old who were undergoing surgery for stress urinary incontinence with at least one month of follow up. Patients who were pregnant or currently breastfeeding or who had clinically severe cognitive dysfunction were not enrolled in the study.

Methods

Patients who underwent surgical procedures to treat stress urinary incontinence between September/2003 and November/2004 in both centers were enrolled. They were assessed by subjective and objective parameters, as well as by analysis of the QoL and incontinence impact using the ICIQ-SF.

Measures

Subjective parameters: Stamey incontinence grading (10) (0 = cured; 1 = leakage with stressful activities (coughing, sneezing); 2 = leakage with minimally stressful activities (e.g. walking); 3 = leakage at all times, with any activity) and QoL impact on patients' lives evaluated with the Portuguese version of the ICIQ-SF.

Objective parameters: urodynamic test Valsalva leak point pressure (VLPP) (Uromaster, Dynamed/Brazil), according to the standard protocol (11) and analysis of pad usage (yes/no). If pads were used, the frequency of their usage was recorded (0 = no use; 1 = 1-2 units/day; 2 = 3-4 u/d and 3 = 4 u/d). If patient stated no leakage at all during the postoperative period, no further urodynamic testing was performed.

Outcome Standardization

Stress urinary incontinence was defined as the involuntary leakage of urine during coughing, sneezing or physical exertion. To assess objective outcomes such as stress test after surgical procedure, all the patients were in standing position with the physiological bladder filled to maximum vesical capacity (strong desire or sensation to void without urge). Patients were asked to perform repeated coughing and Valsalva maneuvers. Any transurethral urine

leakage (even drops) was recorded as an objective failure of the surgical procedure and the patients underwent urodynamic testing. The patients were also asked to re-rate their QoL assessment according to ICIQ-SF after at least one-month follow-up.

Quality of Life Questionnaire

The International Consultation on Incontinence Questionnaire - Short Form (ICIQ-SF) is a simple and brief self-administered questionnaire used to assess the level and impact on QoL of urinary incontinence specifically. It is comprised of 3 questions regarding frequency, severity and QoL impact of the UI along with an eight-item scale, which assess the possible causes or situations related to UI. The ICIQ-SF final score is the result of the total of the scores from questions 3, 4 and 5.

Psychometric Properties Evaluation

Reliability

Cronbach's alpha was calculated by using pre- and post-treatment data to assess internal consistency, which is considered the degree of association between the items and scale scores. A minimum value of 0.70 for group comparison was desirable.

Responsiveness

Responsiveness refers to an instrument's ability to detect change (improvement or deterioration) that occurs as a result of therapy or disease progression. Participants who have an indication of clinical change, whether improvement or deterioration, should have a parallel change in their scale scores, while participants who show no change should have stable scale scores (12). Internal responsiveness is the ability of a measurement to change over a particular pre-specified time frame. External responsiveness reflects the extent to which changes in a measurement over a specified time frame relate to corresponding changes in a reference measurement of health status (13).

Statistical Analysis

To assess ICIQ-SF reliability, standardized Cronbach's alpha was used. The assessment of internal responsiveness involves statistical estimation of the size of the effect; i.e. an estimate of the magnitude of the change in health status (13). Standardized effect size (SES or ES I) and standardized response mean (SRM or ES II) provide a standardized measurement of the change in score from an instrument. Both SES and SRM can be considered large (> 0.80), moderate (0.5-0.8) or small (< 0.5) (13). The Exact Mann-Whitney U - test for independent groups was used to compare ICIQ-SF final scores to pad usage and VLPP (external responsiveness). The McNemar test was used to assess significant changes between proportions. Wilcoxon's signed rank test was used to compare the scores between follow-up and baseline. Statistical tests were considered significant at the 5% level.

The software used was SAS (System for Windows - Statistical Analysis System), version 8.2 (SAS Institute Inc., 1999-2001, Cary, NC, USA). The statistical analysis was based on recommendations by Husted et al. (13), Conover (14) and Fleiss (15).

Ethical Approval

The study obtained prior approval from the Ethical Committee of the Medical Sciences School, Unicamp (No. 261/2001). All the participants signed the informed consent statement before being included in this study.

RESULTS

The socio-demographic characteristics of the ICIQ-SF sample population are displayed in Table-1. Forty-six female (75.4%) and 4 male patients (6.6%) underwent synthetic sling procedures; 7 female patients (11.5%) underwent classic sling procedures; 1 female and 3 male patients (1.7% and 4.9% respectively) underwent periurethral injection therapy. The mean Valsalva leak point pressure (VLPP ± SD) was 80.5 ± 31.9 cm H_2O. The mean length of follow-up was 7.2 months (SD = ± 4.5).

The studies of ICIQ-SF reliability by means of Cronbach's alpha, before and after treatment, were 0.85 and 0.95 respectively.

Table 1 – *Background data on sample population assessed by ICIQ-SF.*

Variable	Category	N (%)
Gender	Female	54 (88.5%)
	Male	7 (11.5%)
Age (mean ± SD)		57.2 (11.6)
Race		
	Caucasian	49 (80.3)
	Black	9 (14.7)
	Brown	3 (5)
Literacy	Illiterate	10 (16.4)
	Incomplete elementary school	32 (52.5)
	Complete elementary school	8 (13.2)
	High School	10 (16.4)
	College	1 (1.5)

The great majority of the patients (58 or 95.1%) had a negative stress test after surgical treatment for stress urinary incontinence.

A total of 54 out of 61 patients (88.5%) who filled out the ICIQ-SF considered themselves cured after surgical treatment ($p < 0.0001$, Wilcoxon's signed rank test).

Fifty (82%) out of 61 patients used pads before surgical treatment. After the procedure only 4 (6.6%) were still using them ($p < 0.0001$, McNemar test).

Twenty-five out of 61 patients (41%) changed at least 3 pads per day before treatment. Nevertheless, 57 patients (93.5%) did not use pads at all after surgery.

Responsiveness Study

The study of the internal responsiveness for ICIQ-SF is shown in Table-2. The internal respon-

Table 2 – *Comparison between pre and postoperative scores of the ICIQ-SF and internal responsiveness study (sensitivity to change), using effect size I (SES) and effect size II (SRM), N = 61.*

	Preop Score Mean ± SD	Postop Score	P value*	SES	SRM
Question 3	3.6 ± 1.2	0.3 ± 0.6	0.0001	-3.11	-3.04
Question 4	4.0 ± 1.8	0.5 ± 1.0			
Question 5	7.7 ± 2.1	0.6 ± 1.2			
General score	15.3 ± 4.5	1.4 ± 2.7			

** Wilcoxon's signed rank test*

siveness was quantified using standardized effect size (SES or ES I) and standardized response mean (SRM or ES II), which demonstrated a large effect size. Comparison between pre- and post-operative scores of the ICIQ-SF is also shown in Table-2. We found statistically significant differences between pre- and post-treatment ICIQ-SF scores ($p < 0.0001$). Similar results were found from the study of external responsiveness when the post-treatment final score was compared with an external variable such as pad usage and stress test (Table-3).

COMMENTS

This study investigated the reliability and responsiveness of the ICIQ-SF in Portuguese. Although it was not our main goal, we have now compared the results from the ICIQ-SF responsiveness study with the results from the just-published paper assessing the responsiveness of the Portuguese version of the King's Health Questionnaire.

Nowadays, Quality of Life questionnaires are considered to be one of the most important outcome measures in many clinical studies. Traditionally, there is a consensus that newly developed instruments should be tested for validity and reliability before they can be used in clinical trials. For evaluative instruments designed to measure longitudinal changes in health-related quality of life over time, responsiveness has been proposed as a third requirement (16).

The ICIQ-SF has just been validated and translated into Portuguese (5). The King's Health Questionnaire differs from the ICIQ-SF in many aspects. KHQ was designed for female patients only and assesses the impact of UI in eight domains of the patients' lives. The more comprehensive instrument is, more detailed is the health profile it provides (2). Contrarily, ICIQ-SF is brief and simple to understand and fill in. Furthermore, it is not gender-specific like the KHQ and is intended to be universal (applicable for use in individuals of all ages, genders, backgrounds, patient groups, diagnoses and cultures). A further disadvantage of the KHQ is that it does not attempt to determine clearly the severity of incontinence in terms of the frequency or amount of leakage. In addition, the KHQ has received limited use outside of clinical settings. Conversely, the ICIQ-SF is intended to be brief yet comprehensive enough for use in assessing incontinence and serves as an outcome measure in clinical trials and other research to assess the efficacy of interventions. Moreover, it is suitable for use as an epidemiological tool to determine the distribution of incontinence in populations around the world, allowing international multicenter studies to be made (4). One of the criticisms of the QoL assessment by ICIQ-SF is that the QoL construct is based on one question in a 10-item scale to quantify the burden of urinary incontinence in the perceived quality of a patient's life. It is to be used as a visual analog scale (VAS) where the patients can choose the degree of interference from UI in their lives by ticking or circling a number on a

Table 3 – *Study of the external responsiveness of the ICIQ-SF comparing post-treatment questionnaire final score, pad usage and VLPP.*

Variable	Category	N	Mean	± SD	P value**
Pad usage	No	57	1.0	2.2	< 0.0001
	Yes	4	7.3	2.6	
Stress test	Negative	58	1.2	2.6	0.0062
	Positive	3	5.7	0.6	

***Exact Mann-Whitney Test*

scale ranging from zero to ten (when zero is considered "not interfere at all" and 10 represents "interfere a lot").

According to De Boer et al. (17), their study assessing the role of VAS as a valid and reliable tool for the study of QoL in clinical practice and research found that VAS could be considered a good instrument when compared to multi-item questionnaires. Based on their results, they recommend its use as a global quality of life measure in clinical trials. Indeed, most QoL questionnaires are composed of many items divided into several domains – such as role and physical limitation, personal relationships, emotion, among others. The criticisms of these questionnaires are that they are time-consuming and difficult to use outside clinical settings. Contrarily, the brevity of the ICIQ-SF enables it to be used without greatly increasing the burden on the respondents.

As shown in Table-1, 10 patients (16.4%) were illiterate and an interviewer read the question to ensure important data was not missed. According to data from the 2000 Census (18), the illiteracy rate for Brazilian people of both sexes aged 15 or over is 13.3%, and the mean length of schooling was 5.7 years. Comparing the mean level of schooling of our population sample with the literacy level for the whole Brazilian population, it can be seen that our sample had almost the same overall rate of literacy. These patients were considered unable to understand the questions, so we chose to have the questionnaire read out loud (without explanation of the questions) by a nursing professional who was trained for this task. In our environment, such a procedure is normal, especially in studies that utilize scales. It should be added that, after comparing different methods of administering questionnaires, Weinberger et al. (19) concluded that 70% of the patients preferred interviews and 20% the self-administered forms.

Reliability as measured by Cronbach's Alpha showed a good to excellent degree of association between the scale scores before and after treatment.

Internal responsiveness expressed in terms of the SES and the SRM (Table-2) showed large values for effect size studies for all ICIQ-SF scores. This study highlighted that ICIQ-SF was strongly sensitive to change, enabling it to be used as an important tool in clinical practice or research.

As shown in Table-3 (external responsiveness study), there was a good correlation between the ICIQ-SF general score after treatment regarding pad usage analysis. The ICIQ-SF general score showed a significant difference when the two groups (yes/no) were compared ($p < 0.0001$). Similar results were found when the ICIQ-SF scores were also compared to the post-treatment analysis of Stress test ($p = 0.0062$), showing excellent external responsiveness.

These results are in line to the responsiveness study of KHQ, which yielded good results from the assessed parameters, for both internal and external responsiveness, apart from having excellent reliability (7).

Beaton et al. (20) proposed a new taxonomy for responsiveness based not only on statistical characteristics such as "large effect sizes" but also on a very highly contextualized attribute of an instrument. There are three axes (questions) underlying the new classification system: "who is being analyzed?" (individuals or groups); "which scores are being contrasted?" (over time / one point in time); and "Which type of change is being quantified?" (for example, observed change over important change). So, a questionnaire could, thus, be described as being "responsive to" a given category in this new taxonomy.

The present study demonstrates the relevance of quality of life to the assessed clinical condition. The performance of the ICIQ-SF in this clinical trial suggests that it can be an important addition to the compendium of outcome measures used to assess UI and its treatment. Both ICIQ-SF and KHQ are now available for use in clinical practice and research in Brazil. Our next aim is to check ICIQ-SF sensitivity in a large community-based population epidemiological study, as it is also intended to be used.

In conclusion, the ICIQ-SF appears to capture changes, i.e. it has good internal and external responsiveness. Although brief, it seemed to be robust in the whole study of responsiveness, showing large effect size and excellent correlation with clinical and surgical outcome

APPENDIX *- ICIQ - SF in Portuguese.*

ICIQ-SF EM PORTUGUÊS

Nome do Paciente:_____Data de Hoje:_____/_____/____

Muitas pessoas perdem urina alguma vez. Estamos tentando descobrir quantas pessoas perdem urina e o quanto isso as aborrece. Ficaríamos agradecidos se você pudesse nos responder as seguintes perguntas, pensando em como você tem passado, em média nas **ÚLTIMAS QUATRO SEMANAS**.

1. Data de Nascimento:____/____/____ (Dia / Mês / Ano)

2. Sexo: Feminimo ❑ Masculino ❑

3. Com que freqüência você perde urina? (assinale uma resposta)

Nunca ❑	0
Uma vez por semana ou menos ❑	1
Duas ou três vezes por semana ❑	2
Uma vez ao dia ❑	3
Diversas vezes ao dia ❑	4
O tempo todo ❑	5

4. Gostaríamos de saber a quantidade de urina que você pensa que perde. (assinale uma resposta)

Nenhuma ❑	0
Uma pequena quantidade ❑	2
Uma moderada quantidade ❑	4
Uma grande quantidade ❑	6

5. Em geral, quanto que perder urina interfere em sua vida diária? Por favor, circule um número entre 0 (não interfere) e 10 (interfere muito)

0	1	2	3	4	5	6	7	8	9	10
Não interfere										Interfere muito

ICIQ Escore: soma dos resultados 3+4+5 = _____

6. Quando você perde urina?
(Por favor, assinale todas as alternativas que se aplicam a você).

Nunca ❑
Perco antes de chegar ao banheiro ❑
Perco quando tusso ou espirro ❑
Perco quando estou dormindo ❑
Perco quando estou fazendo atividades físicas ❑
Perco quando terminei de urinar e estou me vestindo ❑
Perco sem razão óbvia ❑
Perco o tempo todo ❑

"Obrigado por você ter respondido as questões"

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EDITORIAL COMMENT

In order to incorporate in a single questionnaire the most relevant aspects of urinary incontinence and its impact on quality of life, the ICIQ, which is more widely used in research studies, was summarized in the ICIQ-SF format, which is directed to clinical application in the daily practice. The three questions on the ICIQ-SF consistently assess frequency, severity and impact on quality of life caused by urinary incontinence. It can be applied to patients of both genders, either young or elderly. Since 2001, it has been validated in several other countries with a native language different from English, such as Spain and Japan (1,2).

Its recent validation for Portuguese was clearly important since it allows the use of this assessment tool in studies on urinary incontinence conducted in Brazil, thus enabling the comparison between results obtained here with those published in urologic international literature.

The present study, which was prospectively performed at two tertiary referral centers, verified the responsiveness of ICIQ-SF, which was applied to patients undergoing surgical treatment for urinary incontinence. The positive correlation between urodynamic findings and e pad test and ICIQ-SF values, as well as its responsiveness with a high level of statistical significance, confirmed the applicability of this questionnaire in its Portuguese version.

Another significant aspect regarding the ICIQ-SF questionnaire is the recent demonstration (3) of equivalence in results – both when it is self-applied (according to its initial proposal) and when it is completed by the physician. This fact is important in our environment where a great deal of patients can have difficulties in interpreting and completing the questionnaire.

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UROLOGICAL SURVEY

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EDITORIAL COMMITTEE

STONE DISEASE

Tamsulosin treatment increases clinical success rate of single extracorporeal shock wave lithotripsy of renal stones

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Objectives: To design a randomized, no-treatment, controlled, prospective study to determine whether the administration of tamsulosin, as adjunctive medical therapy, increases the efficacy of one extracorporeal shock wave lithotripsy (ESWL) session to treat renal stones and decreases the use of analgesic drugs after the procedure.

Methods: A total of 130 patients underwent a single ESWL session to treat solitary radiopaque renal stones 4 to 20 mm in diameter. After treatment, all patients were randomly assigned to receive our standard medical therapy alone (controls) or in association with 0.4 mg tamsulosin daily for a maximum of 12 weeks. All 130 patients were followed up for 3 months or until an alternative treatment was given.

Results: Of the 130 patients, 78.5% of those receiving tamsulosin and 60% of controls had achieved clinical success at 3 months ($P = 0.037$). When we stratified patients according to stone size, for those with a stone size larger than 10 mm, the success rate was significantly greater in the tamsulosin group ($P = 0.028$). Renoureteral colic occurred in 76.9% of patients treated with standard therapy but in only 26.1% of those receiving tamsulosin ($P < 0.001$). The mean cumulative diclofenac dose was 375 mg per patient in the tamsulosin group and 675 mg per patient in the control group ($P < 0.001$).

Conclusions: The results of our study have demonstrated that tamsulosin therapy, as an adjunctive medical therapy after ESWL, is more effective than lithotripsy alone for the treatment of patients with large renal stones and is equally safe. In addition, our results also indicated that adjunctive treatment with tamsulosin could decrease the use of analgesic drugs after ESWL.

Editorial Comment

The benefit of pharmacotherapy in promoting spontaneous passage of ureteral calculi has been demonstrated in a number of randomized clinical trials. Medical regimens consisting of calcium channel blockers in conjunction with corticosteroids, and alpha-adrenergic antagonists with or without corticosteroids, have proven efficacy in facilitating ureteral stone passage, and are being increasing administered to patients presenting with an acute stone event. In a prospective, randomized trial, Gravina and colleagues evaluated the efficacy of the alpha-1-adrenergic receptor antagonist tamsulosin compared with no treatment in patients undergoing shock wave lithotripsy (SWL) for isolated, non-lower pole, renal calculi between 4 and 20 mm in size, in whom corticosteroids were additionally administered to all patients. Stone free rates at 3 months by KUB/renal ultrasound or IVP were superior in the tamsulosin group compared with the control group (78.5% versus 60%, respectively). When stratified by stone size, however, the difference between groups was statistically significant only in patients with larger stones (between 11 and 20 mm). Furthermore, the occurrence of renal colic and the need for analgesics was reduced in the tamsulosin group compared with the control group.

This intriguing study and others have explored the use of adjuvant pharmacotherapy, including potassium citrate (1) and nifedipine and corticosteroids (2), which are aimed at increasing the efficacy of SWL by improving stone clearance. In the kidney, potassium citrate likely acts to reduce aggregation of stone fragments, thereby facilitating discharge of fragments after SWL. In the ureter, nifedipine and deflazacort (2) and tamsulosin (3) are presumed to inhibit uncontrolled contraction of ureteral smooth muscle thereby facilitating spontaneous

stone passage. The mechanism of action of tamsulosin and corticosteroids in promoting passage of fragments after SWL of renal calculi is less readily apparent. Although this drug regimen may facilitate passage of fragments that might otherwise hang up in the ureter, the mechanism by which it enhances clearance of fragments from the collecting system is not clear. Alpha-adrenergic receptors have been identified in the ureter but their presence in the collecting system has not been reported. Further investigation into the action of tamsulosin on the renal collecting system and is warranted, as are further trials looking at the role of tamsulosin alone as adjuvant therapy after SWL.

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Effect of ureteral access sheath on stone-free rates in patients undergoing ureteroscopic management of renal calculi

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Objectives: To evaluate the effect of ureteral access sheaths (UASs) on stone-free rates (SFRs) during ureteroscopic treatment of renal calculi. Several advantages of UASs during flexible ureteroscopy have been documented. However, no study has evaluated their impact on SFRs.

Methods: We retrospectively reviewed all ureteroscopic cases for the management of renal stones performed at our Stone Center. Data were stratified according to the use or lack of use of the UAS. The groups were stratified by stone location within the kidney. Stone-free status was determined at 2 months postoperatively by either intravenous urography with tomograms or noncontrast renal computed tomography in patients with contrast allergies.

Results: A total of 256 ureteroscopic procedures for the removal of renal calculi were performed between 1997 and 2003 (173 with UAS and 83 without). The groups were similar in age, sex, and stone burden. Stents were placed in nearly 80% of patients. The lower renal pole represented the most common presenting location. Stone displacement with a ureteroscopic basket for efficient fragmentation was necessary in 34%. The overall SFR in the UAS group and non-UAS group was 79% and 67%, respectively (P = 0.042). The SFRs were improved for calculi in all portions of the kidney.

Conclusions: In addition to facilitating ureteroscopic access, reducing costs, and lowering intrarenal pressures, the results of the current study suggest that UASs improve SFRs during the management of renal calculi. It is now our current practice to use the UAS routinely during ureteroscopic treatment of renal and upper ureteral calculi.

Editorial Comment

Although the concept of the ureteral access sheath is not new, a recent redesign has resulted in a safer, more user-friendly and versatile product. A number of advantages have been demonstrated with use of the ureteral access sheath, including the ability to repeatedly access the upper tract and a reduction in intrarenal pressures. These benefits alone support the use of a ureteral access sheath in select cases. However, an advantage with regard to stone free rates has not been clinically demonstrated, despite the obvious benefit that stone fragments can be manually removed.

In this retrospective study, L'Esperance and colleagues compared 256 cases of ureteroscopic management of renal calculi with or without a ureteral access sheath and determined that overall stone free rates were higher with (79%) than without (67%) the access sheath. When stratified by location in the collecting system, stone free rates were higher in all locations with the access sheath, although the differences did not reach statistical significance. Interestingly, despite higher stone free rates with use of the access sheath, no attempt was made to manually remove fragments after intracorporeal lithotripsy. Thus flow dynamics associated with the access sheath must encourage passage of fragments from the kidney. An obvious study of interest would be one in which every attempt is made to manually retrieve fragments from the kidney via the access sheath.

This study suffers from the usual limitations of a retrospective series, in that selection bias with regard to patient selection may come into play and the fastidiousness with which the stone is treated could be affected by use of the access sheath. However, the results of this study are encouraging; now, a prospective randomized trial should be performed to confirm these findings. For now, use of a ureteral access sheath may be advantageous not only for lengthy and complex ureteroscopic cases, but perhaps for routine cases as well.

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IMAGING

Prostatic biopsy directed with endorectal MR spectroscopic imaging findings in patients with elevated prostate specific antigen levels and prior negative biopsy findings: early experience

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Radiology. 2005; 236: 903-10

Purpose: To prospectively evaluate the accuracy of transrectal ultrasonography (US)-guided biopsy directed with magnetic resonance (MR) spectroscopic imaging in patients with an elevated prostate specific antigen (PSA) level and negative findings at prior biopsy by using subsequent biopsy results as the reference standard.

Materials and Methods: The committee on human research approved this study, and written informed consent was obtained. MR imaging and MR spectroscopic imaging were performed in 42 men (age range, 45-75 years; average age, 63.3 years; median age, 65 years) with negative findings at two or more prostatic biopsies and at digital rectal examination. MR spectroscopic data were rated on a scale of 1 (benign) to 5 (malignant) on the basis of standardized metabolic criteria. Abnormal voxels were overlaid on the corresponding transverse transrectal US images and used to perform voxel-guided biopsy of the prostate. All patients subsequently received an extended-pattern biopsy scheme.

Results: Thirty-one of 42 patients demonstrated metabolic abnormalities that were suspicious for cancer (voxels with scores > or = 4). Eleven patients with negative MR spectroscopic imaging results also had negative biopsy findings. Cancer was detected in 17 (55%) of 31 men with positive MR spectroscopic imaging findings (voxels with scores > or = 4) with a sensitivity of 100%, specificity of 44%, positive predictive value of 55%, negative predictive value of 100%, and accuracy of 67%. In men with at least one spectroscopic voxel with a score of 5 (12 of 17 men), the sensitivity, specificity, positive and negative predictive values, and accuracy were 71%, 84%, 75%, 81%, and 79%, respectively.

Conclusion: Metabolic data from MR spectroscopic imaging can be transferred to transrectal US images and used to sample regions of cancer in men with rising PSA levels and negative findings at prior biopsy with good accuracy.

Editorial Comment

Despite new biopsy strategies with increased number of cores, many men find themselves in the clinical dilemma of having an elevated or rising PSA level and at least one prostatic biopsy with negative findings. MR spectroscopy is a new technology useful in the evaluation of prostate cancer (localization of cancer to a sextant of the prostate, the estimation of extracapsular extension and the assessment of its aggressiveness). Specifically, MR spectra from regions of prostate cancer show a significant reduction or absence of citrate and polyamines, while the choline level is elevated relative to the creatine level, thus resulting in significant changes in the choline-plus-creatine-to-citrate ratio in regions of cancer (grade IV, above 0.61 and grade V, above 0.86). We performed MR imaging and MR spectroscopic imaging in 42 men with negative findings at 2 or more prostatic biopsies and at digital rectal examination. The authors developed a method of overlaying the abnormal voxels (grade IV and V), detected on MR spectroscopic imaging, on the corresponding transverse transrectal US images and used to perform voxel-guided biopsy of the prostate. In this method, internal and external anatomic landmarks were used. All patients subsequently received an extended-pattern biopsy scheme. Cancer was detected in 17 (55%) of 31 men with positive MR spectroscopic imaging findings. Combination of the extended-pattern biopsy and MR spectroscopic imaging-guided biopsy results yielded a sensitivity of 85%, specificity of 89%, positive predictive value of 58%, negative predictive value of 97%, and accuracy of 89% ($p < 0.5$). These initial results show that radiologists who perform MR imaging, MR spectroscopic imaging examinations, and transrectal US-guided biopsy can transfer metabolic data from MR spectroscopic imaging to transrectal US images and effective use this data to sample regions suspicious of cancer in men with rising PSA levels and prior negative findings at biopsy. The authors found several important additional findings in this study: a) the average prostate volume in patients with cancer was higher than that in patients without cancer (87g vs. 58g, respectively). Five of 13 patients with positive biopsy findings had very large prostates (> 75g); b) in the 17 patients in whom cancer was detected with MR spectroscopic imaging and confirmed at biopsy, 10 (59%) had at least one site of cancer located toward the midline of the peripheral zone (area usually not sampled in most transrectal ultrasound biopsy scheme). This study has however several limitations. First, the accuracy with MR spectroscopic imaging reflects only a prediction of biopsy results, second, the authors did not evaluate the transition zone and third the transfer of spectral abnormalities onto the transrectal US images used for prostate biopsies is currently a manual process that is susceptible to localization errors. We think that MR

spectroscopic imaging of the prostate is useful in patients with elevated PSA and with 2 sets of negative biopsies (one of which include the transition zone). To validate this hypothesis, however, a larger number of patients must be studied with standardized MR spectroscopic techniques.

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Comparison of CT findings in symptomatic and incidentally discovered pheochromocytomas

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Objective: The objective of our study was to determine the prevalence of incidental pheochromocytomas, whether their imaging characteristics differ from those of pheochromocytomas in symptomatic patients, and whether they differ from adenomas using CT densitometry.

Materials and Methods: The records from 335 adrenalectomies performed at our institution from 1995 to 2002 were reviewed, and 71 pheochromocytomas were identified. Thirty-three patients had CT examinations performed at our institution that were available for retrospective review. From electronic and hard-copy medical records, patient age and sex, the indications for imaging, and biochemistry activity were recorded. Pheochromocytomas were classified as symptomatic or incidental on the basis of clinical presentation. These groups were compared for differences in patient age, adrenal mass volume and maximal diameter based on CT dimensions, attenuation on unenhanced CT, attenuation on enhanced CT during the portal phase, the presence of calcifications, low attenuation or cystic changes, biochemical activity, and hypertension. Statistical significance was assessed with the Student's t test or chi-square test, as appropriate.

Results: Nineteen incidental (57.6%) and 14 symptomatic (42.4%) adrenal pheochromocytomas were in the study. There was a significant difference between the two groups as to whether hypertension was present (incidental, 10/19 [52.6%]; symptomatic, 14/14 [100%]; p = 0.0025). We found a trend toward calcification present in more symptomatic patients (incidental, 0/19 [0%]; symptomatic, 4/14 [28.6%]; p = 0.0670). No statistically significant difference was noted in the mean patient age (incidental, 51.7 years; symptomatic, 45.9 years), mean volume of the mass (incidental, 74.0 cm(3); symptomatic, 78.2 cm(3)), mean maximal diameter of the mass (incidental, 5.26 cm; symptomatic, 5.33 cm), mean attenuation on unenhanced CT (incidental, 36.6 H; symptomatic, 34.2 H), mean attenuation on enhanced CT (incidental, 93.7 H; symptomatic, 104.3 H), necrosis score or biochemical activity (incidental, 17/18 [94.4%]; symptomatic, 12/14 [85.7%]). No attenuation value of any pheochromocytoma was less than 10 H on unenhanced CT (median, 35 H; range, 17-59 H).

Conclusion: In our study population, 57.6% of the pheochromocytomas were incidental, more than in most reported series. A history of hypertension was more frequent in the symptomatic group (p = 0.0025), but no radiologic parameters that allow differentiation of incidental and symptomatic pheochromocytomas were found. None of the pheochromocytomas had attenuation values of less than 10 H on unenhanced CT scans.

Editorial Comment

The authors present a retrospective review of the clinical and unenhanced CT densities of 33 pathologically proven adrenal pheochromocytoma. It was radiologically impossible to differentiate incidental and symptomatic incidental pheochromocytomas. Although small series with high incidence of incidentally discovered

pheochromocytoma has been described, the authors report a large series with a very high incidence of this lesion (57.6%). The reported frequency of incidental pheocromocytomas is 1.5 - 23 (1). As we know pheochromocytomas appears usually as a large (> 3 cm in diameter), well-defined mass and with a density near that of muscle on unenhanced CT scans. Small lesions however can be homogeneous. On post contrast scans larger lesions often shows marked and heterogeneous enhancement due to its vascularity and presence of tissue necrosis or internal hemorrhage. In this study the median size of pheochromocytomas was 4.25 cm (ranging from 2.6 to 11.2 cm). The authors pointed out that based on size alone a pheochromocytoma could be mistaken for an adenoma by the radiologist. It is not recommended however to use the size as the only criterion to determine if an adrenal incidentaloma is an adenoma or not. Radiologist should also be aware that all adrenal incidentalomas requires further biochemical investigation to determine if the mass (even with radiologic features of an adenoma), is hormonally active or not. An interesting finding of this report is that no attenuation value of any pheochromocytoma in this series was less than 10 H on unenhanced CT scans (median, 35 H; range, 17-59 H). This information is similar to our experience. In a recent revision of the imaging findings of 8 incidental pheocromocytomas of our series, all lesions presented with a density higher than 27 H on unenhanced CT scans. This finding would make almost impossible an incidental pheocromocytomas to be considered as a lipid-rich adenoma (the majority of lipid-rich adrenal adenomas measures equal to or less than 10 H). We should also remember that sporadic cases of adrenal pheocromocytomas containing sufficient intracellular fat to display CT densities similar to lipid–rich adenoma has been described (2). The authors considered that one of the limitation of this study was the lack of the washout studies. Regarding the washout profiles adrenal pheocromocytomas may display a variable washout pattern; similar to metastases in some cases and similar to adenomas in others. We feel however that this technique has some limitations for the evaluation of adrenal pheocromocytomas, particularly the larger ones. Since determination of washout curves requires that at least two thirds of the mass present homogeneous attenuation and these lesions frequently shows areas of necrosis or hemorrhage, an accurate quantification of washout curve would be more difficult to obtain. A prospective study of a larger number of cases would be interesting.

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UROGENITAL TRAUMA

Erectile dysfunction after a long-distance cycling event: associations with bicycle characteristics

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Purpose: We conducted a prospective cohort study to examine the relationship between bicycle characteristics and the occurrence of erectile dysfunction.

Materials and Methods: Subjects consisted of 463 cyclists completing a cycling event of at least 320 km who were free of erectile dysfunction before their event.

Results: The cumulative incidence of erectile dysfunction after the ride was 4.2% (95% confidence interval [CI] 2.4%-6.8%) and 1.8% (95% CI 0.7%-3.8%) 1 week and 1 month after the event, respectively. Bicycle characteristics associated with an increased risk of erectile dysfunction included a mountain bicycle compared with a road bicycle (risk ratio [RR] 4.1, 95% CI 1.6-12.5), and the relative height of the handlebars parallel with or higher than the saddle compared with the relative handlebar height lower than the saddle (RR 3.0, 95% CI 1.1-9.3). Perineal numbness during the ride was experienced by 31% of the cyclists and was associated with erectile dysfunction (RR 4.4, 95% CI 1.6-12.7). Saddle cutouts were associated with an increased risk of erectile dysfunction among those who experienced numbness (RR 6.0, 95% CI 1.3-27.1), but the association was reversed among those who did not report numbness (RR 0.3, 95% CI 0.0-2.5).

Conclusions: If the associations described are causal, then cyclists on a long-distance ride may be able to decrease the risk of erectile dysfunction by riding a road bicycle instead of a mountain bicycle, keeping handlebar height lower than saddle height and using a saddle without a cutout if perineal numbness is experienced.

Editorial Comment

Although bicycle seats are now commonly sold with labels that purport preserving sexual function and "Urologist approved", the data is inconsistent as if different shaped seats (grooved, cut-out) can prevent urethral stricture or erectile dysfunction. In fact, contrary to other studies, Dettori et al. found no association with saddle tilt, width or padding and impotence. Overall, the above study is nicely designed and executed, yet is weakened by a small cohort size of impotent bicyclists and a high non-responder rate (> 20%). Regardless they found a strong association between transient impotence and perineal numbness, riding with an "upright" posture and impotence. Such complications seem to be logical consequences of pudendal nerve and arterial compression as the course through Alcock's canal and medial to the inferior pubic ramus. Further evidence of arterial compromise is penile transcutaneous oxygen pressure studies in long distance bicyclists, which have shown decreased penis glans perfusion while seated on a saddle.

Although bicycling is an excellent non-impact aerobic exercise, aside from impotence, there are numerous other potential GU complications. In a recent review article, Leibovitch & Mor (1), reviewed the published literature on the common side effects of bicycling as pudendal nerve entrapment syndrome, erectile dysfunction, priapism, hematuria, prostatitis, elevated PSA, perineal folliculitis, and subcutaneous perineal nodules/ induration. Repetitive trauma complications differ from straddle injuries to the bicycle bar, where the bulbar urethra can be damaged by a crush injury against the pubic bone. In such cases, a mid bulbar, short and single stricture typically develops.

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The usefulness of transcatheter arterial embolization for patients with blunt polytrauma showing transient response to fluid resuscitation

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J Trauma. 2004; 57: 271-6; discussion 276-7

Background: This study aimed to determine whether nonsurgical management using transcatheter arterial embolization (TAE) is safe for patients with blunt multiple trauma who transiently respond to the initial fluid resuscitation.

Methods: Contrast computed tomography was performed for patients with blunt abdominal injuries, excluding those who did not respond to initial fluid resuscitation. Angiography was performed for patients with injuries showing contrast extravasation or solid organ injury classified, according to the American Association for the Surgery of Trauma, as grade 3 or higher on computed tomography. Transcatheter arterial embolization was performed when angiography showed arterial extravasation. The protocol was abandoned for any patients who became profoundly hypotensive (with systolic blood pressure 60 mm Hg or lower) during computed tomography or angiography.

Results: Between January 2000 and December 2002, 269 patients with blunt abdominal injuries underwent TAE immediately after admission. Of these patients, 41 had injuries in at least two regions and underwent TAE for these regions. Among them, 22 patients were hemodynamically stable or showed rapid response to fluid resuscitation. The nonsurgical treatment was successful in all these cases. The remaining 19 patients (Injury Severity Score, 37.3 +/- 8.2), who showed a transient response, were the subjects of this study. Of these patients, 15 underwent TAE for injuries in two regions (13 pelvic fractures, 7 splenic injuries, 6 hepatic injuries, 3 facial bleeding, and 1 renal injury), and 4 patients underwent TAE for injuries in three regions (4 had splenic injuries, 3 hepatic injuries, 2 renal injuries, 2 pelvic fractures, and 1 facial bleeding). For all these patients, TAE was successfully performed. Before TAE, the systolic blood pressure was 79.9 +/- 8.4 mm Hg, and the shock index was 1.45 +/- 0.25 mm Hg. After TAE, the corresponding values were 120.6 +/- 19.3 mm Hg and 0.87 +/- 0.16 mm Hg, respectively ($p < 0.001$). The rate of fluid administration required after TAE (214.2 +/- 139.3 mL/hour) was significantly less than that required before TAE (1244.2 +/- 347.1 mL/hour; range, 632-1,728 mL/hour) ($p < 0.001$). The deaths of two patients were classified as nonpreventable on the basis of the Trauma and Injury Severity Score (TRISS), and their respective probabilities of survival were determined to be 0.13 and 0.03.

Conclusion: Nonsurgical management using TAE can be performed safely even for patients with blunt multiple trauma who are in hemorrhagic hypotension if their hemodynamics are improved by resuscitation with 2 L of fluid.

Editorial Comment

This article nicely reviews contemporary treatment methods for unstable pelvic fractures, and presents a easy to follow protocol. In general, pelvic bleeding can be from a venous or arterial source. Methods to control venous bleeding are pelvis stabilization and closure of the pelvic ring. By doing so, the volume of the pelvis is markedly reduced; and thus allows venous bleeding to tamponade and promote hemostatic pathways in a confined space. Furthermore, re-approximated open bony surfaces will control cancellous bleeding. The typical methods employed are non invasive methods, external stabilization or internal stabilization. Placement of an anterior pelvic external fixator is typical; and if the patient is too unstable to go to the operating room, then temporary stabilization is achieved with military anti-shock trousers, pelvic “binder”, or a pelvic “C” clamp in the emergency room.

When pelvic arterial bleeding exists, arteriography and trans-catheter embolization of the bleeding arteries are often required. Pelvic arterial injuries from pelvic fracture are in decreasing frequency, to the internal pudendals, superior gluteal, obturator and lateral sacral arteries. Arteriography is indicated in the presence of ongoing blood loss after intra-abdominal sources have been eliminated and the pelvis, at least temporarily, is stabilized. In stable patients, contrast blush on CT imaging indicates a high likelihood of arterial injury and angiography and embolization should be pursued.

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PATHOLOGY

Propionibacterium acnes associated with inflammation in radical prostatectomy specimens: a possible link to cancer evolution?

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Purpose: Inflammation is commonly observed in the prostate gland and has been implicated in the development of prostate cancer. The etiology of prostatic inflammation is unknown. However, the involvement of a carcinogenic infectious agent has been suggested.

Materials and Methods: Prostatic tissue from 34 consecutive patients with prostate cancer was cultured to detect the presence of bacterial agents. Prostatic inflammation was assessed by histological examination of wholemount tissue sections.

Results: The predominant microorganism detected was Propionibacterium acnes, found in 35% of prostate samples. A significantly higher degree of prostatic inflammation was observed in cases culture positive for P. acnes ($p = 0.007$). P. acnes was separated into 3 groups based on cell surface properties, phenotype and genetic grouping. All skin control isolates were classified as group 1 whereas most prostatic isolates were classified as groups 2 and 3.

Conclusions: P. acnes has been isolated from prostatic tissues in men who underwent radical prostatectomy for localized cancer and has been shown to be positively associated with prostatic inflammation. This inflammation may then be linked to the evolution of carcinoma. Furthermore, organisms infecting these patients with prostate cancer differ genetically and phenotypically from the commonly identified cutaneous P. acnes isolates, suggesting that specific subtypes may be involved in development of prostatic inflammation.

Editorial Comment

This is a very exciting article considering that recently the authors that implicated Helicobacter pylori to the pathogenesis of both peptic ulcer and gastric carcinoma were awarded the Nobel Prize.

Chronic inflammation of longstanding duration has been linked to the development of carcinoma in several organ systems (1-3). In the prostate, chronic inflammation is associated with both postatrophic hyper-

plasia and focal simple atrophy (4). De Marzo et al. (5) propose combining these lesions into a category called proliferative inflammatory atrophy (PIA). The authors suggest that PIA may be a precursor to prostatic adenocarcinoma. They also suggest that there are morphological transitions within the same acinar/duct unit, between high-grade prostatic intraepithelial neoplasia (HGPIN) and PIA that occur frequently (5). This finding supports a model whereby the proliferative epithelium in PIA may progress to HGPIN.

This hypothesis is challenged by others. Anton et al. (6) studying radical prostatectomies concluded that postatrophic hyperplasia is a relatively common lesion present in about one-third of prostates, either with or without prostate carcinoma. The authors found no association between the presence of prostatrophic hyperplasia and the likelihood of cancer and no topographic association between postatrophic hyperplasia and prostate carcinoma foci. This held for both clinical cancer in a radical prostatectomy specimen and incidental cancer in a cystoprostatectomy specimen (6). Bakshi et al. (7) studied 79 consecutive prostate biopsies. 54% of initial biopsies were benign, 42% of the cases showed cancer, and 4% HGPIN or atypia. Postatrophic hyperplasia was seen in 17% of benign initial biopsies with available follow-up. Of these, 75% had associated inflammation. There was no significant difference in the subsequent diagnosis of prostate cancer for groups with postatrophic hyperplasia, partial atrophy, atrophy, or no specific abnormality. The authors conclude that the subcategories of atrophy do not appear to be associated with a significant increase in the risk of diagnosis of prostate cancer subsequently. Billis & Magna (8) studied 100 consecutive autopsies of men older than 40 years. Prostatic atrophy without (group A) and with inflammation (group B) was correlated with age, race, histologic (incidental) carcinoma, HGPIN, and extent of both these lesions. No statistically significant difference was found between the groups. Furthermore, neither a topographical relation nor a morphologic transition was seen between prostatic atrophy and histologic carcinoma or HGPIN. In a recent paper, Postma et al. (9) evaluated whether the incidence of atrophy on sextant biopsies is associated with subsequent prostate cancer detection and did not find a greater prostate cancer or HGPIN incidence during subsequent screening rounds.

The authors of the article surveyed found a positive association between P. acnes and prostatic inflammation, which may be implicated in the development of prostate cancer. However, they comment that it is possible that prostatic inflammation will also be caused by other microorganisms which could not be identified by the study, for example obligate anaerobes or species which are difficult to culture under laboratory conditions. They also comment on a second important limitation of the study related to the lack of appropriate negative controls such as prostate tissue from patients without inflammation, atrophy and cancer.

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Serum PSA level correlates with the needle biopsy extent of atrophy and chronic inflammation, but not with high grade PIN and prostate cancer

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Background: Serum prostate specific antigen (PSA) is the most common marker used to follow men with and without prostate cancer (PCa) and is used as a guide to initiate prostate biopsies. Recently, the value of serum PSA level in predicting the presence or absence of PCa has been questioned.

Design: One hundred consecutive first time saturation prostate biopsies (PBx) performed by a single urologist between February 2003 and May 2004 and reviewed by two pathologists were included in the study. Biopsy criteria were defined as serum total PSA of 2.5 ng/mL or greater and/or abnormal findings on digital rectal examination. All patients underwent a 24-core biopsy protocol. Patient age, PSA, extent (% of tissue involved) of high grade prostatic intraepithelial neoplasia (PIN), % cancer, % atrophy, % chronic inflammation, and presence of acute inflammation were recorded.

Results: The patients were divided in 3 groups: group A (n = 34 with atrophy only), group B (n = 29 with PIN and/or atypical glands), group C (n = 37 with PCa). Atrophy was detected in all cases, ranging from 1.4 to 62.2% of the tissue (mean 22.5%). Chronic inflammation (CI) was present in 98% of the cases, ranging from 0.2 to 44.6% of the tissue (mean 4.5%). Acute inflammation was present in 61% of the cases. The mean PSA and age of the patients for each group were: 7.4 ng/mL and 60.8 years (A); 5.2 ng/mL and 61.7 years (B); 6.0 ng/mL and 65.4 years (C). The difference in mean age between group A (atrophy) and C (PCa) was statistically significant ($p = 0.045$). No correlation was found between PSA and presence or extent of PIN and/or PCa either in the general population (A + B + C) or in the PCa and PIN group (B + C). The presence of PIN was associated with concurrent prostate cancer ($p = 0.003$). Serum PSA level in the general population correlated with the extent of atrophy ($p = 0.022$) and CI ($p = 0.009$).

Conclusions: In this group of patients, preoperative serum PSA level does not correlate with the presence or absence, and extent of PCa and PIN. Atrophy and chronic inflammation are strong contenders for the PSA released into the serum at an increased level. PSA is a marker useful to follow up men with cancer, although its value as screening and staging tool is questionable.

Editorial Comment

The hypothesis that atrophy is a strong contender for the PSA release into the serum is challenging. We have just finished a paper dealing with this subject.

There is evidence that age associated prostatic atrophy may be a manifestation of chronic ischemia due to local arteriosclerosis (1-4). In autopsies, there is a positive and statistically significant association between intense local arteriosclerosis and presence and extent of atrophy (1). The aim of our study was to find any

association between extent of atrophy in prostate needle biopsies and serum prostate-specific antigen (PSA) levels (total, free or free/total ratio).

The study was based on 136 needle prostatic biopsies corresponding to 123 patients. The only diagnosis in all biopsies was focal prostatic atrophy without presence of cancer, high-grade prostatic intraepithelial neoplasia (HGPIN), suspicious for cancer, or prostatitis. The data were analyzed subdividing the patients into 2 groups: with free/total serum PSA ≥ 0.15 (Group 1, 61 biopsies), and with free/total PSA < 0.15 (Group 2, 75 biopsies). The extent of atrophy was evaluated considering either the absolute number or the percentage of cores showing the lesion. Polynomial regression or simple correlation were applied using in each analysis the most suitable function that best fitted to the distribution of the data.

Group 1: there was a positive and statistically significant correlation between extent of atrophy and either free ($p = 0.0076$ and $p = 0.0210$, respectively, for parabolic and linear functions) or free/total PSA ($p = 0.0068$ and $p = 0.0085$, respectively, for 4th degree and parabolic functions); no correlation was found for total PSA. Group 2: no significant correlation was found between extent of atrophy and free, total or free/total PSA.

Considering that age associated prostatic atrophy may be a manifestation of chronic ischemia due to local arteriosclerosis, the results suggest that chronic ischemia may be involved in free PSA serum level elevation in patients with several needle biopsies showing only prostatic atrophy and free/total PSA ≥ 0.15.

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INVESTIGATIVE UROLOGY

A dose-dependent dual effect of oestrogen on voiding in the male mouse?

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BJU Int. 2005; 96: 1126-30

Objectives: To explore the effect of different degrees of oestrogenization on male voiding, by treating adult castrated and 5alpha-dihydrotestosterone (DHT)-maintained male mice with different doses of oestrogens, as exposure of male mice to excessive amounts of oestrogens can cause bladder outlet obstruction (BOO); in addition, male mice lacking oestrogen receptor (ER)alpha (ERKO) or ERbeta (BERKO) were studied to assess the importance of ER subtypes.

Materials and Methods: Castrated, DHT-maintained adult mice were treated with 17beta-oestradiol (E(2); 50 and 250 microg/kg) or oestrone (E(1); 5, 50 and 500 microg/kg) daily for 10 days. Control mice were treated only with the vehicle. BERKO and ERKO mice, and their wild-type littermates used as their controls, remained untreated. Under anaesthesia, the bladder and distal urethra were exposed to record simultaneously the bladder pressure and urinary flow rate from the distal urethra.

Results: E(2)-treated mice showed obstructive voiding, seen as increased bladder pressure, decreased average flow rate and prolonged micturition time. This was also evident when a high dose (500 microg/kg) of E(1) was used. After treatment with a dose of 50 microg/kg, the urodynamic variables were similar to those in the control mice. Surprisingly, after treatment with a low dose (5 microg/kg) all urodynamic variables improved. There was a minor increase in the bladder pressure in BERKO mice; ERKO mice had a significantly lower urinary flow rate.

Conclusions: High doses of oestrogens caused BOO in castrated, DHT-maintained male mice. A small dose of E(1) had a positive effect on voiding, suggesting that oestrogens are needed for normal male voiding. Reduced urinary flow rates in ERKO mice suggest that oestrogen effects on voiding are mediated at least partly via ERalpha.

Editorial Comment

Previous investigation using neonatal DES treatment demonstrated that vesical smooth muscle contractility was not significantly affected (1). However, our results (2) showed that neonatal DES led to a significant vesical extracellular matrix remodeling, which is in line with reports using infravesical surgical obstruction (3,4). Thus, neonatal DES may be an adequate vesical obstruction model, at least with regard to extracellular matrix changes.

The results of the present well done investigation suggest that the effects of estrogens may be dual and dose-dependent. The authors confirmed the obstructive effect of high doses of E_2 in adult castrated male mice maintained with DHT. On the other hand, when the mice were treated with the low dose of E1 the variables measured showed no sign of obstructive voiding. The ERKO mice had lower urinary flow rates and the BERKO mice had a higher mean bladder pressure than their wild-type littermates used as controls. As conclusion, the authors proposed that apart of high doses of estrogens determine obstruction; estrogens may be also needed for normal voiding of the male mouse.

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Anatomical risks of transobturator suburethral tape in the treatment of female stress urinary incontinence

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Eur Urol. 2005; 48: 793-8

Introduction: The objective of this study was to define the anatomical structures crossed by transobturator tape.

Materials: Ten fresh, female anatomical subjects aged 74 to 89 years.

Methods: Transobturator tape was inserted by outside-in way. The position of the tape was verified by perineal and abdominal dissection.

Results: Transobturator tape has a transverse course. It crosses the adductor muscles close to their pubic insertion and passes over the inferior border of the obturator foramen by crossing the obturator membrane, before reaching the middle plane of the perineum after having crossed the obturator internus muscle. The tape passes above the internal pudendal pedicle and then under the levator ani muscle, under the tendinous arch of the pelvic fascia and continues in the middle third of the urethrovaginal septum. It avoids femoral and obturator vessels in the thigh and pudendal vessels in the perineum.

Conclusion: The anatomical course of transobturator tape shows that the anatomical structures crossed by the tape are muscle and fascia and, when the technique is performed correctly, no major neurovascular structures are in contact with the tape.

Editorial Comment

All versions of Tension-free Vaginal Tape present a risk of vesical, vascular, or intestinal lesions. Alternatively, a new transobturator approach has been proposed. Doctor Vincent Delmas, well-known anatomist and urologist, after studying 10 female subjects, presented a thorough study on the course of transobturator tape and identified the anatomical problems encountered. The author concluded that from an anatomical standpoint, the transobturator tape is much safer than any retropubic tape techniques. I strongly recommend carefully read of this paper for all surgeons involved with urethropexy for treating stress urinary incontinence.

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UROLOGICAL ONCOLOGY

Interobserver discrepancy using the 1998 World Health Organization/International Society of Urologic Pathology classification of urothelial neoplasms: practical choices for patient care

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Purpose: Morphological classifications designed by experts to stratify neoplasms according to biological potential must define categories that are reproducible among practitioners or the schemes actually create the

heterogeneous populations that they seek to avoid. The application of the 1998 World Health Organization/ International Society of Urologic Pathology scheme for urothelial neoplasms was studied in a community practice setting. We documented interpretive discrepancies for each category of neoplasm and determined whether a period of pathologist education may have a positive effect on the frequency of discrepant interpretations. The results suggest that patients may benefit from modifying the classification system.

Materials and Methods: A consecutive series of specimens was divided into learning and study sets that were each independently examined by 3 pathologists. Specimens in the learning set were interpreted without previous structured education, while those in the study set were interpreted immediately after intensive education. Interpretations for each specimen were compared and interpretive discrepancies were analyzed.

Results: Case distribution after education was similar among the pathologists but interpretations for any particular specimen often differed. The level of interpretive discrepancies varied according to the morphological similarity among categories in the classification scheme and was not necessarily decreased by education. When pathologists were required to discriminate between papillary urothelial neoplasm of low malignant potential and low grade carcinoma, the discrepancies were 50% after education compared with 39% before education. In contrast, there were no discrepancies when the discrimination was between papillary urothelial neoplasm of low malignant potential and high grade carcinoma or carcinoma in situ. Eliminating categories with poor reproducibility markedly improved the likelihood of unanimous agreement among practitioners but a probably irreducible level of 10% discrepancies remained.

Conclusions: The 1998 World Health Organization/International Society of Urologic Pathology classification of urothelial neoplasms requires certain discriminations that cannot be reliably made by practitioners. Modifying the scheme to create categories of low grade neoplasm and high grade carcinoma would markedly increase its practical value to patients without significantly altering patient care.

Editorial Comment

In 1998, the WHO/International Society of Urological Pathology decided upon a new classification of urothelial neoplasms. Upon reviewing the literature on this subject, I came upon this reference, which gives some insight into the difficulties with classification systems of urothelial neoplasms in general, and with the new classification in special.

After education of pathologists, general agreement on low malignant potential papillary urothelial neoplasms was achieved in 39%, on low grade carcinomas in 23%, whereas agreement was achieved on high grade carcinomas and carcinoma in situ in 80% and 77%, respectively.

For the urologist this means that the information on dangerous carcinomas is quite reliable whereas it is rather unreliable in more benign disease – these however make more than 70% of our cases.

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Intermediate term biochemical progression rates after radical prostatectomy and radiotherapy in patients with screen detected prostate cancer

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J Urol. 2005; 174: 126-30

Purpose: We compared biochemical progression rates measured by increasing prostate specific antigen (PSA) levels using a standard definition of biochemical recurrence among patients with screen detected prostate cancer treated with radical prostatectomy (RP) or radiotherapy (RT).

Materials and Methods: A total of 1,939 patients diagnosed with clinically localized prostate cancer in a community based screening study from 1989 to 1998, followed through 2001, were treated with RP or RT and agreed to enroll in a followup study. This prospective cohort study (median followup 62 months, range 0.2 to 141) used adjusted Cox proportional hazards models to examine time to progression. Selection bias was addressed with propensity scores. Biochemical evidence of cancer progression was defined as PSA greater than 0.2 ng/mL in patients who underwent RP and 3 consecutive PSA increases as recommended by the American Society for Therapeutic Radiology and Oncology criteria for radiotherapy.

Results: Of the patients 17% had evidence of cancer progression. The percentage with progression-free survival at 5 and 9 years for RP was 84% and 76%, respectively, and for RT 80% and 70%, respectively. Cox proportional hazards models produced a hazard ratio of 1.63 (95% CI, 1.12, 2.38) for RT compared with RP, adjusting for clinical stage, Gleason grade, preoperative PSA, biopsy age, treatment year and propensity for treatment type.

Conclusions: With intermediate term followup, patients treated with RT were more likely to have cancer progression than with RP adjusting for demographics, clinical factors, selection bias and treatment year.

Editorial Comment

This paper is an example on the importance to read critically to cautiously interpret any comparison between two therapeutic options.

Here, the outcomes of a large cohort of patients (1,939 patients) treated with radical prostatectomy (RP) or radiation therapy (RT) was compared retrospectively. No information on radiation technique or doses applied are given. On first view, RP fared better than RT. However, no information on “censored” patients is given, and with 282 patiens in the RT group vs 1657 in the RP group it is tempting to assume that after 60 months no meaningful comparison is possible.

What remains is that with either therapeutic possibility, the progression-free outcome is not better than 70% after 10 years.

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Bacillus Calmette-Guerin versus chemotherapy for the intravesical treatment of patients with carcinoma in situ of the bladder: a meta-analysis of the published results of randomized clinical trials

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J Urol. 2005; 174: 86-91; discussion 91-2

Purpose: We determined the short-term and long-term efficacy of bacillus Calmette-Guerin (BCG) and chemotherapy in the treatment of patients with carcinoma in situ (CIS).

Materials and Methods: A meta-analysis was performed on published results of randomized clinical trials comparing intravesical BCG to intravesical chemotherapy.

Results: Nine randomized trials including 700 patients with CIS compared BCG to either mitomycin C (MMC), epirubicin, adriamycin, or sequential MMC/adriamycin. Of 298 patients on BCG 203 (68.1%) had a complete response compared with 158 of 307 patients on chemotherapy (51.5%), a reduction of 47% in the odds of nonresponse on BCG (OR 0.53, $p = 0.0002$). Based on a median followup of 3.6 years, 161 of 345 patients on BCG (46.7%) had no evidence of disease compared with 93 of 355 patients on chemotherapy (26.2%), a reduction of 59% in the odds of treatment failure on BCG (OR 0.41, $p < 0.0001$). Although the long-term benefit of BCG was smaller in trials with MMC, BCG was superior to MMC in trials with maintenance BCG (OR 0.57, $p = 0.04$). The reduction of 26% in the risk of progression on BCG ($p = 0.20$) is consistent with the reduction of 27% ($p = 0.001$) previously reported in a larger superficial bladder cancer meta-analysis.

Conclusions: Intravesical BCG significantly reduces the risk of short and long-term treatment failure compared with intravesical chemotherapy. Therefore, it is considered to be the intravesical agent of choice in the treatment of CIS.

Editorial Comment

Sylvester and coworkers from the EORTC present another extraordinary paper on patients outcomes with superficial bladder cancer. This metaanalytic calculation of all published data on intravesical treatment of CIS reveals that chemotherapy is clearly inferior to immunotherapy with BCG with regard to recurrence, and, more importantly, with regard to progression.

Clearly, these high-risk patients deserve maintenance BCG therapy. If recurrence, or worse, progression occurs while under maintenance therapy, immediate radical cystectomy is justified.

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FEMALE UROLOGY

What is the value of cystoscopy with hydrodistension for interstitial cystitis?

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Urology. 2005; 66: 494-9

Objectives: To determine the utility of cystoscopy with hydrodistension for the diagnosis and therapy of interstitial cystitis. Cystoscopy with hydrodistension is the most commonly performed diagnostic test and procedure in patients with interstitial cystitis.

Methods: Eighty-four consecutive patients with interstitial cystitis (68 women and 16 men) were studied retrospectively. The patients underwent history and physical examination, urinalysis, and urine culture and filled in a voiding diary and pain urgency frequency questionnaire. Cystoscopy with hydrodistension was performed in 47 patients. Patients who had and had not undergone hydrodistension were compared. Patients who underwent hydrodistension were characterized and followed up for response.

Results: The mean patient age was 41 years, mean daily voided volume was 98 mL, mean number of nocturnal episodes was 3, and pain urgency frequency score was 21. Comparing patients undergoing versus not undergoing hydrodistension, pain was reported in 61% versus 25% ($P = 0.03$), vaginal pain in 62% versus 32%

(P = 0.02), and dyspareunia or ejaculatory pain in 67% versus 29% (P < 0.01), respectively. All other parameters were statistically similar. Of the patients undergoing hydrodistension, 43 had follow-up and 24 (56%) reported improvement (mean duration of 2 months). Of the patients with and without improvement, no difference was found in mean age (40 versus 46 years, P = 0.20), duration of symptoms (7 versus 7 years, P = 0.92), anesthetic capacity (722 versus 721 mL, P = 0.99), or glomerulation grade (P = 0.61), respectively.

Conclusions: Cystoscopy with hydrodistension provided little useful information above and beyond the history and physical examination findings. As therapy, 56% of patients reported improvement, but the duration was short lived.

Editorial Comment

The authors describe their contemporary experience with cystoscopy and hydrodistention. They utilize a technique of filling for 2 minutes at 100 cm pressure and then draining and repeating the process. Their bleak long term results, in addition to the companion review in this issue on SNS, highlight the challenge of this disease. Many advocate the use of normal saline as the instillate when hydro distending the bladder to minimize potential complication if there should be a bladder disruption.

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Sacral neuromodulation: long-term experience of one center

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Urology. 2005; 65: 1114-7

Objectives: To perform a retrospective analysis of the long-term results of our experience with neuromodulation. Our center has been involved in the early studies leading to approval of the NeuroStim system of neuromodulation for the treatment of patients presenting with refractory lower urinary symptoms of urgency/frequency with or without incontinence and chronic urinary retention.

Methods: A total of 52 patients have undergone implantation at our center since 1990 using very rigid criteria, including temporary percutaneous nerve evaluation for up to 7 days and a requirement of 50% improvement before consideration for implantation. Patients were followed up closely and a telephone questionnaire was conducted for those patients not seen in the previous 6 months. Of the 52 patients, 11 were not available for evaluation. Of the 41 remaining patients, 22 had urgency/frequency syndrome, 6 had urgency incontinence, 9 had urinary retention, and 4 had interstitial cystitis with intractable pelvic pain.

Results: Of the 41 patients, 5 required explantation. These 5 patients were offered reimplantation but declined. Of the 22 patients in the urgency/frequency group, 10 (45%) had persistent improvement. In the urgency incontinence group, 3 of the 6 patients required explantation, and 1 (17%) reported improvement in the frequency of incontinence episodes. Of the 9 patients in the chronic urinary retention group, 7 (78%) had improvement.

Conclusions: The long-term (up to 13 years) results of neuromodulation in patients presenting with urgency/frequency with and without urge incontinence and urinary retention were reviewed. The long-term results in the first two groups were not maintained over time. The patients with chronic urinary retention, although a small sample, fared better.

Editorial Comment

The authors report on the long-term results of patients treated with sacral neuromodulation for lower urinary tract voiding dysfunction. The authors noted that the greatest success of this therapeutic modality was in patients with chronic urinary retention. They had a less degree of efficacy in patients treated with urgency and frequency and minimal success in patients with urinary urge incontinence.

This is an excellent paper reporting on the long-term results on sacral neuromodulation. It makes excellent reading for those physicians interested in the application of this technology in their practice. It highlights the efficacy of this therapy in the voiding dysfunction of urinary retention and the disappointing results when applied for pelvic pain or urinary urge incontinence. The discussion section is excellent especially in its efficient review of the literature available of the long-term results for chronic sacral neuromodulation. It is quite thought provoking that the technology had its highest success rates in a potentially idiopathic disease process.

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PEDIATRIC UROLOGY

Diagnosis of pediatric urolithiasis: role of ultrasound and computerized tomography

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J Urol. 2005; 174 (4 Pt 1): 1413-6

Purpose: Pediatric urolithiasis is believed to be uncommon, and may present without the classic symptoms of renal colic. The objectives of this study were to describe the presenting features and radiographic evaluation of pediatric urolithiasis, and to determine the accuracy of ultrasound and unenhanced computerized tomography (CT) in detecting urolithiasis.

Materials and Methods: We retrospectively reviewed the charts of children 0 to 18 years old with urolithiasis. Data collected included age, sex, race, presenting symptoms, radiographic studies performed during initial evaluation, calculus location and family history of urolithiasis.

Results: A total of 75 patients had complete data for analysis. Of these patients 54 (72%) had urolithiasis symptoms (flank pain, gross hematuria or both). Patients with urolithiasis symptoms were older at diagnosis (median age 11.9 years vs 1.0 years, $p < 0.001$) and were more likely to have a family history of urolithiasis (54% vs 14%, $p = 0.002$). The 39 CTs performed were accurate in detecting calculi in children with urolithiasis symptoms (96% to 100%) and in those without symptoms (100%). The 36 ultrasounds performed had more variable accuracy in children with urolithiasis symptoms (33% to 100%) vs those without symptoms (89%). Ultrasound failed to detect urolithiasis in 41% of the patients with urolithiasis symptoms, compared to 5% with CT. CT was also highly accurate regardless of calculus location (89% to 100%), whereas ultrasound was again more variable (kidney 90%, kidney and ureter 75%, ureter alone 38%).

Conclusions: Ultrasound failed to detect calculi in 41% of the children with urolithiasis symptoms, whereas CT was highly accurate in all situations. Unenhanced CT should be performed in all children with persistent urolithiasis symptoms and nondiagnostic ultrasound.

Editorial Comment

The authors reviewed their experience with diagnosing urolithiasis in children. In this series, 75 patients were diagnosed with stones over a period of about 18 months. 54 patients had symptoms including 48 with pain and the others, hematuria. The most interesting group for comparing diagnostic modalities was the symptomatic patients. Of the 54 with symptoms, ultrasound made the diagnosis in 10/17 patients (59%) and CT made the diagnosis in 36/37 (97%). Ultrasound was more accurate in patients with renal stones alone (90%) and patients with renal and ureteral stones (75%), but only diagnosed 38% of those with ureteral stones. In contrast, CT was accurate in 89% of kidney stones alone, but in 100% of those cases of ureteral stones (including 6 with both renal and ureteral stones).

Non-contrast CT has largely replaced IVP (and ultrasound) in the evaluation of adults with symptoms consistent with urinary tract calculi. In contrast, most practitioners workup children with symptoms suggestive of calculi using ultrasound. This is primarily because of fears of radiation exposure in children. This series demonstrates that the diagnostic accuracy of ultrasound is unfortunately limited. Of course, in contrast to CT scans, ultrasound is much more operator dependent. It is unclear from this retrospective study where the ultrasounds were performed. Would truly expert pediatric sonographers have done better? If they did not see a ureteral stone, would they have seen enough hydronephrosis to suggest some form of ureteral obstruction that required further evaluation? This is unknown. However, even if so, when a patient is symptomatic in a local emergency department in a community hospital, it is impractical to have an expert pediatric ultrasonographer involved.

Considering that radiation exposure in children is a real issue (and non-contrast CT scans with thin cuts from the top of the kidneys all the way through the pelvis do expose children to a fair amount of radiation), it is still reasonable to obtain an ultrasound initially in a child with a probable calculus by history. However, this study teaches us that, if the ultrasound is negative and the symptoms are suggestive, a non-contrast CT is appropriate.

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Balanitis xerotica obliterans in boys

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J Urol. 2005; 174 (4 Pt 1): 1409-12

Purpose: Balanitis xerotica obliterans (BXO) is a chronic dermatitis of unknown etiology most often involving the glans and prepuce but sometimes extending into the urethra. We report our 10-year experience with BXO in pediatric patients.

Materials and Methods: Our pathology database was queried for all tissue diagnoses of BXO from 1992 to 2002. Available charts were reviewed and patient presentation, clinical and referral history, operative procedure(s) and postoperative course were recorded.

Results: A total of 41 patients had a tissue confirmed diagnosis of BXO. Median patient age was 10.6 years. Of the patients 85% were 8 to 13 years old and all had referrals available for review. The most common referral diagnoses were phimosis (52%), balanitis (13%) and buried penis (10%). No patient had the diagnosis of BXO at referral. Of the patients 19 (46%) underwent curative circumcision or redo circumcision and had no

recurrence at a mean followup of 12.5 months (range 1 to 57). A total of 11 patients (27%) had BXO involvement of the meatus and underwent circumcision combined with meatotomy or meatoplasty. Nine patients (22%) required extensive plastic operation(s) of the penis, including buccal mucosa grafts in 2.

Conclusions: The incidence of BXO in pediatric patients may be higher than previously reported, with the diagnosis rarely made by pediatricians. Our study demonstrates that older patients, those with BXO involvement of the meatus and those with a history of surgery for BXO tend to have a more severe and morbid clinical course.

Editorial Comment

The authors describe a retrospective analysis of their institutional experience with this disease process over 10 years. 41 cases were found and analyzed. The majority was referred for foreskin problems; none were diagnosed with BXO at the time of referral. Of the 41 patients, 23 (56%) had glans involvement and 15 (37%) had meatal involvement. Circumcision was curative (at least in the short-term) for most of the minor cases. However, when BXO involved the meatus, the disease process was much more serious and required more extensive repair.

BXO is largely underdiagnosed. The diagnosis can only be made histologically and many institutions do not require histological examine after routine circumcision. As such, many more cases may be occurring without being recognized. In our experience, BXO was found in many cases of meatal stenosis in patients with previous hypospadias surgery. Again, in most instances, the diagnosis was made only when biopsies of the area were sent for histological analysis. The etiology of the problem in these cases is unclear. Though most were operated on using older techniques, it is uncertain whether we will continue to see the problem in patients with current repairs who are followed for longer periods of time. In any event, when discovered, it appears that the entire involved area must be removed and the tissue replaced, either with uninvolved flaps or grafts. Indeed in the present series several patients required buccal mucosal grafts. Based on the seriousness of the problem and the effect of the diagnosis on prognosis, biopsy is recommended in all questionable cases.

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