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HIGHLIGHTER

Special Edition

May, 2004

From the President

David F. Green, M.D.

On behalf of the New England Section of The American Urologic Association, I would like to invite you to attend our 73rd Annual meeting to be held September 9-12, 2004 at the Ritz Carlton in Amelia Island, Florida.

The scientific program is shaping up to be one of the best ever. Drs. Doug Dahl and Bill Santis have been working hard to bring some innovations to the program. For the first time, the meeting will begin early Thursday afternoon with a "Hands-On" skill session. Attendees will be able to sign up to practice basic, intermediate, and advanced laproscopic skills with coaching provided by experienced laproscopists. Running concurrently with the skills session will be a series of video presentations, "How I do it" lectures, and practice management lectures.

Dr. Robert Weiss will deliver the Wyland Leadbetter Memorial Lecture. Dr. Peter Carrol from the University of California, San Francisco and Dr. Deborah Lightner from the Mayo Clinic will

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From the Secretary

Kevin R. Loughlin, M.D.

It was good to see many New England Section members at the AUA meeting in San Francisco. Section President Dave Green, the Local Arrangements Committee, and the Scientific Program Committee are continuing to prepare for an outstanding meeting in Amelia Island this September. The meeting will be held September 9-12, so mark your calendars now! All abstracts have been received and the Scientific Program Committee will be finalizing the program shortly.

The election of the New England Section Representative to the AUA Board of Directors is complete and Dick Babayan will succeed Bob Roth in 2005.

The Section Board of Directors elected Liam Hurley of Andover, Massachusetts and Mark Plante of Burlington, Vermont to serve on the Young Leadership Committee of the AUA.

In this issue of the Highlighter, we have asked neurology experts from throughout the Section to give us a summary of some important topics in neuro-urology. I hope you find their contributions interesting and useful.

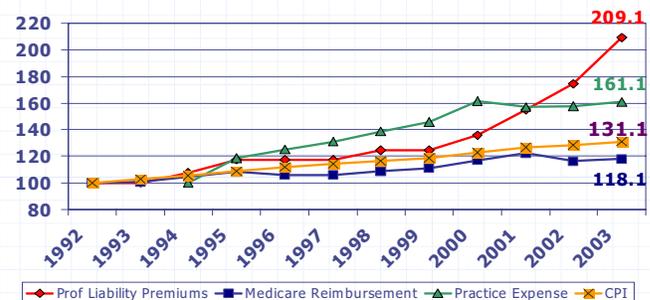
We continue to hold Town Meetings throughout the Section. Charles Alagero, general counsel of the Massachusetts Medical Society, spoke on the liability crisis in Massachusetts. The slide below was presented by Mr. Alagero at the Eastern Massachusetts Town Meeting and graphically depicts the situation in Massachusetts, which is no different than the rest of New England. Mike Ferragamo

presented a coding update for 2005 at the Western Massachusetts meeting and Cherie McNett from the AUA delivered a Medicare update at the Connecticut Meeting. If you have any topics or speakers that you would like to hear in your region, please let me know.

I encourage you to utilize the Section Newsletter and website for job postings and professional news. I look forward to seeing you in Amelia Island in September.

A Losing Battle

MA Professional liability premiums and practice expense vs. Medicare reimbursements



1992= 100

Sources:

ProMutual, Physician Payment Review Commission, AMA, US Bureau of Labor Statistics, Grubb & Ellis

INTRODUCTION TO INTERSTIM SACRAL NERVE NEUROMODULATION

Joseph A. Grocela, MD

Introduction

Medtronic's Interstim Sacral Nerve Neurostimulation has been a helpful adjunct to treatment of my patients with refractory urge urinary incontinence, urgency/frequency syndrome and idiopathic urinary retention. Briefly, Interstim is a pacemaker-like device that is inserted subcutaneously in order to "pace" a sacral electrode. The patients have an external programming device, which enables them to adjust the intensity of the electrical signal to their sacral nerve roots. This technique has been performed in nearly 10,000 patients, world-wide, to date, and there has been roughly a 50-80 percent "success" rate. These rates are excellent, considering that most patients treated with this are failures with traditional and first-line therapies. The reimbursement for Interstim is approximately that of a radical nephrectomy. It is almost universally covered by insurances.

Patient Eligibility

The first group of patients who are eligible for Interstim are patients with clinical urge incontinence. These patients may have tried different medications with intolerable side effects or with poor efficacy of the medications.

Second, patients with urgency/frequency syndrome, likewise, may have found that medications are ineffective. These patients may have some crossover into the urge incontinence category. These patients may include interstitial cystitis, where the above symptomatology is refractory and problematic.

Third, idiopathic urinary retention has been treated with Interstim. These patients may do very well from a quality of life standpoint if they are able to avoid intermittent catheterizations or indwelling catheters. Retention may be due to occult neurologic problems and obstruction from prostatic causes, though these causes should be ruled out before attempting Interstim.

Patient Selection for Test Stimulation (Stage 1)

Before undergoing any type of procedure or consideration of procedure, I make sure that the patient has realistic expectations of results and possible failure. I also remind them that although there is a 50-80% success rate, that means that there is a 20-50% failure rate.

The test stimulation (Stage 1) involves placement of an electrode into the third sacral foramen percutaneously, or with a small incision. A wire is then tunneled subcutaneously out through the back, and this is connected to an external stimulation device about the size of a transistor radio or PDA (depending on whom will be carrying the unit). If the patient improves with this, they will proceed to implantation - Stage 2).

Interestingly, my initial Interstim success rates were not as favorable as they are now. I believe that the multiple electrode epidural lead has improved the outcomes. However, my patient selection has also been fine-tuned. The patients that I initially performed Interstim on were patients that had no other recourse, other than an "experimental" treatment, which should be considered tried and true now.

I have anecdotally found that in my experience, of approximately 200 of these procedures, that the patients that have had the best outcomes were those patients with detrusor instability documented through urodynamic testing. However, not demonstrating detrusor instability in urodynamic testing should not exclude them from

Interstim, as the determination of whether to perform Interstim is a clinical one. In addition, patients with stress urinary incontinence may have significant urge incontinence symptoms, and urodynamic studies will exclude those patients with physiological stress incontinence and crossover clinical urge incontinence symptoms. Thus, urodynamics, while not necessary for performing Interstim, will tend to improve your patient selection.

Men with urgency/frequency or urge incontinence will also benefit from urodynamic studies and, to rule out prostatic obstruction. I think that this is a prudent screening before undergoing Interstim. Female patients with complete idiopathic urinary retention are less likely than men to show urethral obstruction. Therefore, this is a sub-group where urodynamics may be needed on rare occasions.

Before undergoing any type of procedure or consideration of procedure, I make sure that the patient has realistic expectations of results and possible failure.

Performing the Procedures

The sacral nerve roots may be located via bony and ligamentous landmarks, although on many patients this may be difficult to impossible. My personal experience has been that the bony landmarks and flesh landmarks are often far from where you would expect the third sacral nerve root to be. I have found that fluoroscopy with a C-arm is a highly efficient method of decreasing time spent and patient discomfort in placing the needles and electrodes. The placement of the lead in Stage 1 can be like placement of a central line, in that in many circumstances, the S3 nerve foramen can be an almost instantaneous find and other times it can be a more patient search.

My personal preference is having the patient moved from supine to prone under general anesthetic with short-term muscle relaxation, as the muscle components of the sacral nerve roots will need to be tested intraoperatively. This allows the most precise and fewest number of needle sticks in the shortest period of time, without any patient discomfort. I can then locate the S3 nerve root in a very consistent and quick fashion. It also allows for there to be clear muscular response to the electrode placement as a patient under local anesthesia may have pain before a muscular response. However, many patients have had multiple medical problems which would make general anesthetic a hazard, therefore, the procedure can be done under local anesthesia. The fourth sacral nerve root will tend to have a "bellows" reflex where there is tenting of the perineum and perirectal areas. A third sacral nerve root response often includes a "bellows" reflex and a downward going toe response, and an S2 response is a flexion of the foot and ankle as well as calf contraction. There may be internal rotation of the leg also with the S2 response. I feel more confident about my S3 placement if I also cannulate and test the S2 foramen, as a weak toe response may make S3 and S4 difficult to distinguish.

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NEW STRATEGIES IN THE PHARMACOTHERAPY

OF URINARY INCONTINENCE

Anurag K. Das, MD, FACS

Urinary incontinence is a common and problematic condition in middle aged and older women. The prevalence in women is about 28% and rises with age according to recent epidemiologic studies. (Minassian VA. Urinary incontinence is a worldwide problem. In J Gynecol Obstetrics; 82: 327-38, 2003) However, estimates range widely partly because of varying definitions. Urinary incontinence is generally divided into three types: stress, urge, or mixed. In women under the age of 60, stress incontinence is the most common type (~55%), followed by mixed (~25%), and urge (~20%) while in women over age 60, urge and mixed are more common (~35% each) than stress (~30%). (Thom D. Variation in estimates of urinary incontinence prevalence in community: effects of differences in definition, population characteristics, and study type. J Am Geriatr Soc. 1998; 46(4):473-80). While urge incontinence is primarily treated with behavioral modification, pelvic floor rehabilitation, and anti-muscarinic drugs, stress incontinence is primarily treated conservatively with pelvic floor rehabilitation if mild or moderate or surgical procedures if moderate or severe. Mixed incontinence is generally treated based on the more dominant component although most experienced practitioners tend to be more conservative with their approach. In this paper, I will review innovations in the treatment of urinary incontinence likely to occur in the next two years.

Stress incontinence

The treatment of stress incontinence in some ways has not changed significantly in decades while in other ways major changes have occurred. Burch colposuspensions and sling procedures continue to be the mainstay for the treatment of significant, bothersome stress incontinence. The procedures, however, have become less invasive with laparoscopic approaches for the Burch and a variety of synthetic, mid-urethral, tension-free tapes being used as an alternative to the harvested fascial sling. Of the estimated 2-7 million women with stress incontinence only about 130,000 underwent surgery in 1997 (Subak et al. Cost of pelvic organ prolapse surgery in the United States. Obstet Gynecol 2001; 98:646-51). Many of these women may not be troubled enough to warrant surgery, but many may also choose not to undergo a surgical procedure because of cost, time needed for recuperation, and other such factors although the incontinence is quite bothersome. As our understanding of the pathophysiology of stress incontinence has advanced, attempts have been made to develop pharmacotherapeutics for this entity. Two divergent approaches have been taken: one, to develop a specific alpha 1, subtype specific-agonist to increase urethral tone while not causing any increased blood pressure effects; and two, to

increase sphincter activity through 5-HT₂ and alpha 1 receptors by inhibiting serotonin (5-HT) and norepinephrine (NE) uptake. The first drug, in development by Roche, is in Phase 3 trials whilst the second, duloxetine developed by Eli Lilly, is further along in the development process awaiting Food and Drug Administration approval. The external sphincter is primarily innervated by the pudendal nerve which is somatic (under voluntary control) and arises from the S2 and S3 nerve roots. Duloxetine has a stimulatory effect on the pudendal nerve by inhibiting 5HT and NE reuptake at the postsynaptic nerve terminal. This effect increases the tone in the urethral striated muscle and thus helps with continence. Interestingly, the effect occurs only during the filling/ storage cycle of the bladder, but not during detrusor contraction. This occurs because the glutamate is required as an excitatory neurotransmitter for the 5HT and NE mediated external sphincter tone to increase, and glutamate is only available ("on") during bladder filling. Once voluntary voiding is to begin, glutamate is turned "off" and thus the effect of 5HT and NE is mitigated and normal voiding occurs with no known increase in sphincter or voiding pressures. (Burgard EC. Serotonergic modulation of bladder afferent pathways. Urology 62 (Suppl 4A): 10-15, 2003. Thor KB. Serotonin and norepinephrine involvement in efferent pathways to the urethral rhabdosphincter: implications for treating stress incontinence. Urology 62 (Suppl 4A): 3-9,2003.)

Initial phase II study performed in 553 women utilizing a double-blind, randomized, placebo-controlled approach with a 12 week treatment period at duloxetine doses of 20, 40, and 80 mg/day showed 54% (p=0.06), 59% (p=0.002), and 64% (p<0.001) change in the incontinence episode frequency (IEF) compared to placebo at 41%. Patient Global Impression of Improvement (PGI-I) and Incontinence Quality of Life (I-QOL) also showed statistically significant improvements at the 80 mg/day dose. Nausea was the most common side effect and also was the most common reason for treatment discontinuation. (Norton PA et al. Duloxetine versus placebo in the treatment of stress incontinence. Am J Obstet Gynecol. 2002; 187: 40-48)

Phase III larger scale studies utilizing the 80 mg/ day dose confirmed statistically significant reduction in incontinent episodes

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The treatment of stress incontinence in some ways has not changed significantly in decades while in other ways major changes have occurred.

New England Urology Job Search

The New England AUA Highlighter will begin a JOB POSTINGS Section in future issues. If you have a position to fill, are looking for an associate, or are interested in a urology position, you can take advantage of this service and reach your colleagues throughout the region. And remember, the newsletter is also posted on the NEW ENGLAND AUA website: www.auanet.org/NewEngland for increased exposure. Please e-mail your "classified ad" to:

Lorraine O'Grady / lorraine@prri.com

EVALUATION AND MANAGEMENT OF POSTPROSTATECTOMY INCONTINENCE

John J. Smith, MD

All of us offer optimism to our post prostatectomy patient with incontinence, while harboring fear that it might not improve. Let's have patience, keep up the Kegel exercises and prescribe tincture of time. Yet the literature is replete with studies, usually single center studies, with PPI rates of 4 – 30%. It is inevitable that we see these patients, if we do enough surgery! However, it is not inevitable that these patients are offered options to treat their incontinence, short of pads and drip collectors. Of course, the real treatment is prevention. It is unclear whether preservation of the neurovascular bundles aids distal urethral function or if more careful dissection of the apex and around the sphincter is responsible for improved incontinence. The fact remains, there exists no real difference in incontinence rates between those men who are impotent and those with erections suggesting the later argument. While not the topic of this discussion, a review of Hollabaugh et al work in Urology 1998:51, concerning the putative continence nerve-sparing technique may offer tips to improve our continence rates.

Today, incontinence in a male is almost always associated with treatment for prostate cancer. In the past, TURP and even open prostatectomy of benign disease represented a significant etiology; with the advent of alternative surgical therapies, medical treatments, and general decline in the number of TURs, the percentage of incontinence cases from benign disease has fallen sharply. Conversely, the number of cases resulting from radical prostatectomy has increased. SEER age-adjusted prostate cancer incidence rose from 91 per 100,000 cases in the late 1980s to a peak of 190 per 100,000 men in 1992 to about 125 per 100,000 now. This almost assures the continued complication of incontinence regardless of the treatment.

Sphincter dysfunction is the main cause of PPI. Bladder dysfunction may be present, but rarely as the sole cause! Like the BPH patient some patients have preoperative detrusor instability. However, unless this is associated with a loss of bladder compliance, it usually resolves after the "obstruction" is removed. The timing and extent of the evaluation is often driven by the bother factor to the patient, as well as the intensity of the leakage. Simple non-surgical alternatives may include pelvic floor exercises and medication.

A careful history is still important. If a patient tells you he leaks with cough, sneeze and physical exercise, the positive predictive value has been found to be 95% (Nitti). Other historical data should focus on neurologic diseases, peripheral neuropathy, medications, exposure to radiation, and diabetes. Similarly, the physical exam should look for neurologic deficits, rectal sphincter tone, and with a partially full bladder Valsalva and cough maneuvers to permit witnessing of the incontinence. A uroflow and postvoid measurement can rule out overflow incontinence, perhaps caused by anastomotic stricture or residual tissue. Cystoscopy is mandatory before any planned surgical intervention.

Formal urodynamic testing remains the only way to ascertain a precise diagnosis of the etiology. The test can be done within the office with an attentive observer and VCUG films, if access to a sophisticated fluoroscopic urodynamic center is not available. The main goal remains to examine the filling and reservoir status of the bladder and to assess relative competence of the outlet. The distal sphincteric function is calculated by the mean urethral closing pressure, the length of the area of resistance and of course the relative

urethral resistance to pressure as measured by Valsalva and cough tests. The bladder's storage capacity and compliance are also evaluated. From a technical point of view, we like to study patient upright with a 7Fr microtip catheter in place. In addition, the filling phase is slowed to 25 – 50 cc/minute to minimize the possibility of uninhibited contractions. If a patient with a history of SUI does not leak during the exam, take the catheter out. Not uncommonly, in the presence of a mild to moderate anastomotic contraction the catheter "obstructs" the leak. Moreover, if a patient has severe incontinence, lying him down for the study is helpful. We also give this patient a penile clamp to use as an outpatient, leaving it on for 4 hours at a time to see if he still has sensation, capacity or if he will leak through the clamp indicating poor compliance and/or detrusor instability. This is a particular caveat for patients with urinary incontinence greater than 2–3 years, whose bladder may have lost its elasticity and compliance. One does not want to implant a sphincter in a patient such as this without control of the bladder component.

TREATMENT

The treatment of the PPI man with bladder dysfunction alone is rare. However, the form it takes is the same as any patient with bladder dysfunction. After a voiding/leaking diary is obtained, behavioral therapies should be instituted. These include pelvic floor exercises, demonstrated to the patient, timed voiding, and fluid management. We see no data in PPI population to recommend the use of Neotonus chair.

Pharmacologically, anticholinergics are the mainstay of therapy for instability. The use of tricyclics may have a synergistic effect. Refractory urge incontinence can be treated with sacral nerve modulation, although PPI has not been extensively studied with regard to sacral nerve stim. As a last resort, augmentation cystoplasty in its various forms could be offered.

Sphincteric dysfunction, by far the most common disorder in the PPI, can be treated with a number of options. Treatment must be driven by the bother quotient to the patient, quality of life issues and patient expectations. We never tell patients they will be 100% dry all the time!

There are no good studies to document the effective use of alpha adrenergic drugs (Sudafed) or their combination with Imipramine, yet we continue to use them with limited success. Often, it buys you time while seeing if the patient improves, and occasionally some patients with mild PPI clearly benefit.

Great expectations meet the injectable bulking agents in the early 1990s. There are few if any studies to suggest long term success with these agents. Many of us have tried retrograde and antegrade approaches on multiple occasions only to see dry rates of 4 – 15% over 12 months. It is important for the patient to realize multiple injections are needed for "improvement". We rarely use injectables for PPI today as results are not sustainable.

Treatment must be driven by the bother quotient to the patient, quality of life issues and patient expectations. We never tell patients they will be 100% dry all the time!

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At least 13 million adults in the United States experience some form of urinary incontinence. Most are women in whom the prevalence of “bothersome incontinence” increases from 2% between the ages of 20 and 24 years to 9% at 50-54 years and to 16% at 85 years.¹ And, it is estimated that the number of women age 65 and older in 2000 will more than double by 2050. These astonishing figures, coupled with the annual direct costs of urinary incontinence in the United States (estimated between \$12.4 billion for women and \$3.8 billion for men - in 1995 US dollars) emphasizes our need as urologists to address this bothersome condition amongst the elderly.²

Historically, urinary incontinence has been accepted by many patients and physicians as a normal part of the aging process. As a result, patients did not routinely inform their physicians of loss of urinary control and physicians did not inquire. At the present time, approximately 30% of the community dwelling elderly population and at least 50% of the nursing home population are affected by urinary incontinence. In women, stress urinary incontinence (SUI) is the most common type until the age of 65 when the combined prevalence of urge urinary incontinence (UI) and mixed incontinence surpasses it. In men, SUI is rare except after a radical prostatectomy. The most common type of urine loss in the elderly is urge incontinence. This is likely multifactorial because urinary incontinence in the elderly is oftentimes affected by the patient’s mentation, motivation, co-morbidities, manual dexterity, mobility and environment. Therefore a detailed history from the patient and/or caregiver must be obtained before initiating therapy.

In most instances complex urodynamics are not indicated and the incontinence can be characterized from the history, physical examination (including a limited neurological exam) and voiding diary. The history should assess the onset of the incontinence and its relation to other events (deaths, altered mental status, newly diagnosed illnesses, change in mobility, etc.). Additionally, the patient’s current medication list should be reviewed as some medications may aggravate symptoms. For instance, sedative hypnotics, loop diuretics, tricyclic antidepressants, and antihypertensives may all exacerbate symptoms of urinary loss. One must also review the use of medications commonly associated with edema such as NSAIDs, gabapentin, nifedipine and rosiglitazone. If any of these medications are used, the urologist should consult the referring physician regarding treatment alternatives.

The elderly patient with dementia and incontinence is even more challenging. We know that dementia damages the cortical areas of the brain that control voiding inhibition. As a result, the majority of patients with moderate to severe dementia have urinary incontinence. The most common subtype is again UI, however SUI and bladder outlet obstruction can occur in 30% of patients. Some form of cognitive assessment should take place if there is any question regarding the patient’s mental status. If time permits, one may administer the Mini Mental State Examination (MMSE).³ If this is not available, one may test a patient’s recall by asking him/her to repeat three words that you list, or ask the patient to spell WORLD

backwards. The demented patient is usually a poor historian therefore a voiding diary completed by the caregiver is essential. The voiding diary allows one to assess the patient’s functional bladder capacity, severity of frequency, amount and type of fluid intake, the number of incontinent episodes, and the presence and severity of nocturia.

The physical examination should include a complete pelvic examination in females, paying particular attention to the quality of the vaginal tissues. One should assess the presence of vaginal rugations, vaginal lubrication and atrophic vaginitis. In males, one should assess the urethral meatus for stenosis, the presence of phimosis and a routine rectal exam paying particular attention to the rectal tone. The bulbocavernosus reflex should also be assessed in all patients, along with the S2 through S4 nerve roots.

If urge urinary incontinence is diagnosed, one should initially proceed with most conservative measures. Any medications that are known to exacerbate symptoms should be discontinued or decreased. All caffeinated foods and beverages should be eliminated from the diet. Additionally, behavioral therapy should be instituted in the form of timed-voiding with or without biofeedback. Pelvic floor exercises (PFEs) and biofeedback are effective treatments for UI because contraction of the pelvic floor muscles may inhibit the involuntary bladder contractions responsible for UI. Patient motivation is the best indicator of success, as recurrence of urge incontinence will occur if PFEs are discontinued.

Medical therapy for the treatment of UI in the elderly is also effective. In fact, the combination of behavioral therapy and drug therapy is more affective than either treatment approach alone.⁴ Anticholinergics have often been used with caution in this patient population due to potential CNS side effects. The cognitive side effects are dependent upon the drug’s ability to cross the blood-brain barrier which in turn is a reflection of its lipophilicity. Tolterodine is thought to be less lipophilic than oxybutinin and more bladder selective (selective for M2 over M3 receptors), thereby causing less CNS side effects in the elderly.⁵ Over the next 12 months, multiple antimuscarinic agents will be introduced into the market with varying degrees of bladder selectivity and lipophilicity. All of these agents should be critically assessed for their safety and efficacy in the geriatric population and used with some degree of caution. Trospium chloride may be the best alternative in this population due to the fact that it is a quaternary amine and therefore does not cross the blood-brain barrier.

Nocturia amongst the elderly is also of great concern due to its association with sleep disturbance, daytime fatigue, a lower level of general well-being, and an increased risk of nightly falls. According to the International Continence Society, nocturia of 2 or more episodes per night is considered abnormal and is usually bothersome. However, we know that nocturia increases with advancing age and is more frequent in men with nocturnal polyuria. Therefore, before focusing treatment on the nocturia itself, one must carefully examine the patient for signs of fluid overload because the nocturia

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Nocturia amongst the elderly is also of great concern due to its association with sleep disturbance, daytime fatigue, a lower level of general well-being, and an increased risk of nightly falls.

Until a decade ago slings were advocated for complicated cases, patients who had failed multiple procedures such as Kelly plications, needle suspensions or retropubic bladder neck suspensions and for patients with recognized intrinsic sphincter dysfunction. A number of publications in the last half of the 90's helped to fuel the use of the sling as the main surgical procedure for stress incontinence. The AUA guidelines for the surgical treatment of female stress urinary incontinence in 1997 showed that slings were far superior to needle suspensions.¹ Others reported that slings could be used in virtually all stress incontinent patients.^{2,3,4} New developments in sling technology, some of them now obsolete, proved to the practicing urologist that they could easily learn to do a sling with initial good results. We now have a plethora of choices of sling materials and techniques, many of them marketed to patients, and the question is then raised; which sling for which patient?

The gold standard sling is the pubovaginal rectus fascial sling. Popularized by McGuire the sling, which now measures approximately 2 by 6-8 cm, is harvested from the rectus fascia.⁵ The ends of the sling are sutured with heavy sutures which are then passed through the space of Retzius and tied over the rectus muscle. Cure rates with this type of sling range from 80% to 92% and the results are durable.^{3,6} The main concerns with this sling are postoperative voiding dysfunction and recovery from the fascial harvest which is perceived as making the operation "more difficult and painful" and limits the patient's activities for 6 weeks postoperatively.

Proponents of fascia lata generally use a very long piece, 20 cm or more of fascia, which they suture to the rectus fascia. They find the fascia lata harvest less complicated and less painful than harvesting a long piece of fascia from the rectus muscle.

An alternative to harvesting fascia is to use banked cadaveric fascia. Poor results with recurrent stress incontinence and resorption of the sling have been reported with some banked fascia.⁷ Other investigators have reported good results which may be attributed to a single source supplier.⁸ There are some who argue that non-frozen fascia may be more durable than frozen tissue. DNA material has been found in a high percentage of cadaveric tissue samples.⁹ The long term implications in terms of prion transfer are not known.

In addition to reports in the 1990s that slings could be used in all patients with stress incontinence changes in technology and marketing occurred that led many urologists to add sling procedures to their treatment armamentarium. The development of a woven polyester collagen impregnated sling (Protogen) fixed with bone anchors was seen as a quick and easy way to perform a pubovaginal sling. Aggressive marketing led many urologists to adopt the sling as their treatment of choice for stress urinary incontinence. Ultimately the Protogen sling was removed from the market due to a high rate of vaginal erosion.¹⁰ By the time Protogen slings were no longer available allograft tissues consisting of banked human fascia either abdominal or fascia lata in a freeze dried or fresh frozen form had been introduced as a sling material.¹¹ Xenograft material was also readily available. Various bone anchoring systems, placed suprapubically or vaginally, had also been developed.¹²

The next development in sling technology was the mid-urethral sling. The Tension-Free Vaginal Tape (TVT) developed by Ulmsten in 1996 uses a loosely woven polypropylene mesh (Prolene) and supports the midurethral complex without tension.¹³ The TVT is

performed by blindly passing two trocars from below through a vaginal incision, behind the symphysis pubis and out through the suprapubic skin. The procedure is ideally performed with local or spinal anesthesia as a stress test is performed to adjust the sling's tension. Other midurethral slings have since been developed that use needles, similar to those previously used for vaginal needle suspensions, allowing the urologist to use a more familiar antegrade passage of the needles through the space of Retzius. The TVT also can be performed with an abdominal guide that allows for creation of a pathway from above below prior to coupling the trocar to the abdominal guide. There is now five year data for the TVT. Long term data confirms that 85% of patients are cured and 11% are improved after 5 years.¹⁴ Patients with intrinsic sphincter dysfunction have a cure rate of 72% and an improved rate of 14%.¹⁵ Intraoperative complications of the TVT include bladder perforation, bowel injury and major vascular injury resulting in death. Other complications include erosion into the urinary tract and vaginal wall extrusion. A more complete listing of injuries involving synthetic mesh is available on the FDA Med-watch website. (www.fda.gov/medwatch).

Lastly the newest sling is a subfascial hammock that avoids the retropubic space and is placed transversely underneath the urethra from one obturator foramina to the other. This technique has been used to place a polypropylene mesh as well as a silicone tape. The advantage of this approach is that the retropubic space is avoided with less potential for bladder, bowel or major vessel injury.

The surgeon performing slings should be able to offer their patient a variety of procedures. A surgeon needs to know not just how to do a procedure but needs to be able to deal with complications unique to each type of procedure. If a surgeon isn't comfortable dealing with a vaginal extrusion of a synthetic sling or can't do a urethrolysis of what ever sling they have placed one could argue that they shouldn't be doing the procedure. Surgeons who use bone anchors need to know how to deal with bone pain and should know how to remove a bone anchor. One has to also inform the patient of the risks and benefits of the various procedures. It is disheartening to see a patient who has failed a previous sling and to realize that she not only doesn't know the risks of the material that was used but she doesn't have a clue what was used. A well informed patient who has decided to have a sling should be able to decide between the material used and the method used to place the sling.

In my practice patients with pure ISD are offered a PV sling. Patients are counseled on the risks and benefits of autologous vs. xenograft vs. allograft tissues including potential for more discomfort or wound problems with their own fascia and disintegration and passage of DNA material that could theoretically occur with xenografts or allografts. The patient is asked to choose what material she would like.

Patients with pure anatomic SUI with a mobile bladder neck and a VLPP >120 cm of H₂O, are offered a retropubic suspension, a PV sling or a mid urethral sling.

Some considerations in advising patients as to which sling may be best for them include the patient's size and age. The obese patient who historically has more problems with wound healing from the fascial harvest may do well with a synthetic or xenograft sling. However in the very obese there can be some difficulty in palpating

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HOW TO INCORPORATE URODYNAMICS INTO YOUR PRACTICE

Harris E. Foster, Jr., M.D.

INTRODUCTION

Urodynamics encompasses a variety of diagnostic procedures that evaluate lower urinary tract function. As there exists many pathophysiologic conditions with the potential to affect the lower urinary tract, these procedures provide the urologist with powerful tools to delineate specific dysfunctions that require monitoring and/or treatment. Although lower urinary tract dysfunction can result in bothersome symptoms such as frequency, urgency, incontinence, and urinary retention, it is most imperative that conditions which risk renal deterioration be detected and treated by early intervention. The purpose of this article is to review the various urodynamic tests and highlight their usefulness of in the routine urological practice.

URODYNAMIC TESTS

Post Void Residual

Post void residual urine (PVR) measurement is the most basic urodynamic test, assessing the amount of urine remaining in the bladder after micturition. Although typically 30 ml or less, it is known to vary widely. The PVR can be measured by urethral catheterization, ultrasound estimation utilizing a standard ultrasonographic machine, or dedicated device that automatically computes bladder volume. An elevated PVR by definition implies some type of lower urinary tract dysfunction such as poor detrusor function and/or bladder outlet obstruction. Exact delineation of its etiology however requires additional urodynamic testing, particularly an assessment of detrusor function by cystometry.

Cystometrogram

The cystometrogram primarily allows for evaluation of bladder function during filling however can also be utilized to assess the voiding phase. Simply, it characterizes bladder pressure in relation to its volume. Although the filling media can be gas or liquid, the latter is most often utilized as it most closely approximates the normal milieu. Filling rates generally range from 25–100 mls per minute with rates in the middle (i.e. 50 ml/min) being more common.

As there exists many pathophysiologic conditions with the potential to affect the lower urinary tract, these procedures provide the urologist with powerful tools to delineate specific dysfunctions that require monitoring and/or treatment.

A normal bladder is very compliant during filling, in particular, the ratio of the change in bladder volume to change in pressure (DV/DP) is high. Typically, compliance is measured at bladder capacity, with normal values being 30–50 cm H₂O/ml. Abnormal compliance, generally described as less than 15 cm H₂O/ml, is most often seen in patients with bladder outlet obstruction and neurologic diseases which cause vesicourethral dysfunction such as spinal cord injury, multiple sclerosis, and spina bifida. Abnormal compliance has the propensity to cause upper tract deterioration, particu-

larly hydronephrosis and renal insufficiency, therefore it should be recognized early and treated appropriately.

Cystometry can also detect the presence of involuntary bladder contractions during filling. A normal bladder should not contract until there is a volitional desire to void. The presence of involuntary contractions during filling can result in urinary incontinence, hence the utility of this examination in evaluating patients with this complaint. Various neurologic diseases such as those previously mentioned are also associated with this urodynamic finding.

Uroflowmetry

Measurement of the velocity of urine flow during micturition encompasses the urodynamic test uroflowmetry. It is non-invasive and quite simple to interpret. Velocity data is presented as urine flow in milliliters per second with important parameters being maximum and mean flow rate, and voiding time. A voided volume of at least 125 ml is required for a valid study since lower volumes result in artifactually low flow rates. Normal maximum urinary flow rate generally exceeds 20–25 ml/sec. Uroflowmetry is typically used to evaluate the patient with possible lower urinary tract obstruction (i.e. benign prostatic hyperplasia). Unfortunately, the presence of an abnormally low flow rate does not unequivocally prove this to be the case since detrusor dysfunction or bladder outlet obstruction can result in this finding. Nevertheless, uroflowmetry can provide useful information in the management of patients with lower urinary tract dysfunction.

Pressure-Flow Study

The pressure-flow study (PFS) combines both filling and voiding cystometry with uroflowmetry and is the gold standard test for diagnosing unequivocal bladder outlet obstruction. In contrast to standard non-invasive uroflowmetry, the PFS typically measures urinary flow during voiding with a small caliber urethral catheter in place. This allows for the simultaneous measurement of detrusor function during micturition. True detrusor pressure (P_{det}) is calculated by subtracting intraabdominal pressure (P_{abd}) as measured via an intrarectal catheter from the pressure directly measured in the bladder (P_{ves}). Important parameters measured include opening detrusor pressure (that measured at the onset of urinary flow) and detrusor pressure at maximum urinary flow (P_{detQmax}). Plotting P_{det} and Q_{max} as simple points or in real time on graphs, such as that described by Abrams and Griffith, and routinely performed by contemporary urodynamic equipment, provides the urologist an opportunity to determine the cause of lower urinary tract dysfunction. Abnormalities in urine flow rate can then be accurately determined to be secondary to bladder outlet obstruction or detrusor dysfunction. This information can be invaluable when deciding whether or not a bladder outlet reducing procedure (i.e. TURP) is indicated in a patient with bothersome lower urinary tract symptoms.

Electromyography

Electromyographic assessment of skeletal muscle activity in the external urethral sphincter complex is another option in the urodynamic armamentarium. Typically measured via perineal patch placement or needle insertion, this test allows determination of external sphinc-

(continued on next page)

ter activity during filling and voiding. It is expected that external sphincter activity will gradually increase during the filling phase (guarding reflex) and relax during micturition. This coordinated response requires intact pathways from the pontine micturition center (located in the pons) and when discoordinate in the presence of an involuntary bladder contraction, implies an injury between it and the sacral spinal cord (i.e. multiple sclerosis, spinal cord injury, and spina bifida). Electromyography is also useful when combined with the PFS, as it ensures that abnormal increases in detrusor pressure during voiding are not due to a failure of external striated sphincter relaxation.

Urethral Profilometry

Measurement of urethral pressure can sometimes be a useful adjunct when evaluating lower urinary tract function. Similar to measuring intravesical pressure, a separate port on the urodynamic catheter can be withdrawn into the urethra to determine pressure along its length. Urethral pressure can be measured at rest (static urethral profilometry) or during voiding (micturitional urethral profilometry). The former has been used to assess urethral function in patients with stress urinary incontinence and the latter to detect bladder outlet obstruction. Both studies are more difficult to perform and interpret when compared to other more easily performed urodynamic procedures that evaluate these conditions (i.e. valsalva leak point pressure and PFS). Urethral profilometry has subsequently failed to find a place in most routine urodynamic evaluations.

Leak Point Pressures

Measurement of leak point pressures are easy to perform and helpful in evaluating patients with stress urinary incontinence and neurogenic bladder dysfunction. The valsalva leak point pressure (VLPP) is a simple assessment of the amount of intra-abdominal pressure (in the absence of a detrusor contraction) required to drive urine across the urethra. This test is an effective measure of the severity of stress urinary incontinence. Values less than 90-100 cm H₂O (others suggest 60 cm H₂O) indicate the presence of intrinsic sphincter deficiency. This information can guide the choice of surgical procedure (i.e. sling, retropubic urethropexy) in patients with stress urinary incontinence. The detrusor leak point pressure (DLPP) on the other hand is a passive test measuring detrusor pressure during filling at the point urine exits the urethra. This test is helpful in determining whether or not detrusor storage pressures have the potential to damage the upper urinary tract in patients with neurogenic bladders. A DLPP in excess of 40 cm H₂O indicates a significant abnormality in the bladder's low pressure storage capabilities which warrants prompt and appropriate treatment.

Fluoroscopic Urodynamics

The use of fluoroscopy in conjunction with various urodynamic studies can be very informative. Although not required in most instances, it can provide visual information that complements its functional equivalent obtained from the studies mentioned above. Useful information provided by fluoroscopy include bladder appear-

ance (i.e. trabeculation), anatomy of the bladder neck and proximal urethra during filling and voiding, presence or absence of vesicoureteral reflux, and presence of urine loss during leak point pressure testing.

CLINICAL INDICATION FOR URODYNAMICS

As indicated above, there are many clinical situations in which urodynamics can be useful in urological practice. Most commonly, these include evaluation of conditions that have the potential to affect lower urinary tract function and at times the upper urinary tract. Urodynamics should be considered in patients with benign prostatic hyperplasia or lower urinary tract symptoms (LUTS), urinary incontinence, and neurologic diseases known to be associated with vesicourethral dysfunction (i.e. spinal cord injury, stroke, multiple sclerosis, and spina bifida). The goal of urodynamics should be to reproduce the clinical situation of interest. Choice of the specific procedure(s) performed must be dictated by the necessary information required to guide the appropriate therapeutic response and capabilities of the urodynamic equipment available.

Critical in the management of patients with neurogenic vesicourethral dysfunction and helpful in those with lower urinary tract symptoms of non-neurologic etiology, urodynamics provides the urologist with an invaluable tool to optimize clinical care.

Financial Value of Urodynamics in Clinical Practice

Inherent in any discussion of the utility of urodynamics in urological practice must include a dialogue regarding its financial value. Recognizing that financial pressures to the routine practice are numerous and only growing, identifying additional sources of clinical income can not go unrecognized. There are many companies that manufacture urodynamic equipment with prices varying widely depending on the components and perks desired. An appropriate machine should be within the financial capabilities of every urological practice. The codes for the various urodynamic studies are readily available and although the reimbursements are clearly variable, they are still quite reasonable in relation to the effort required.

Conclusions

Urodynamics should be an important component of every urological practice. These tests have evolved from simple manometric measurements of bladder pressure to more detailed assessment of detrusor and urethral function. Critical in the management of patients with neurogenic vesicourethral dysfunction and helpful in those with lower urinary tract symptoms of non-neurologic etiology, urodynamics provides the urologist with an invaluable tool to optimize clinical care. Although not the primary impetus, performance of these tests in the appropriate clinical scenarios can also provide substantial supplemental income to the practice.

Pharmacotherapy of Urinary Incontinence

(continued from page 3)

($p < 0.001$) and improvement in I-QOL parameters ($p < 0.001$). Nausea continued to be the most significant side effect at 23% ($p < 0.001$) compared to 2% in the placebo group and was the most common reason for discontinuation. Other side effects of note included fatigue, insomnia, dry mouth, and constipation. (Dmochowski RR et al. Duloxetine versus placebo for the treatment of North American women with stress urinary incontinence. *J Urol*. 2003; 170: 1259-63) When approved, duloxetine will be a welcome addition for the treatment of stress incontinence serving a large population of women who are bothered but do not want surgical intervention. Patient acceptance will significantly depend on the perceived benefit to side effect ratio, and many women may choose to use the medication on an intermittent basis.

Urge incontinence

Several anti-muscarinics are awaiting FDA approval or have received approvable letters. Trospium has been used in Europe for many years and the purported advantages are decreased CNS related side effects and lack of cytochrome P450 metabolism (decreased drug interactions). Pfizer sold Darifenacin to Novartis after Pfizer acquired Pharmacia and tolterodine (Detrol). Darifenacin is felt to be M3 selective although it remains unclear whether this represents an advantage or a disadvantage. Solifenacin is Yamanouchi's entry into the overactive bladder market and will be marketed under the name Vesicare. Again, the relative advantages or disadvantages compared to oxybutynin and tolterodine are unclear at this point. Unfortunately, there are no truly innovative approaches in the foreseeable future for this population.

Two investigational options are the use of resiniferatoxin (RTX) a potent vanilloid receptor (VR1) analogue or the use of multiple injections of botulinum toxin A directly into the detrusor. RTX is placed in the bladder in a liquid form and binds at the VR1 (vanilloid) receptor thus blocking afferent transmission through the C-fibers. Limited data has shown promise but there are still many unresolved issues with the use of this entity (Lazzeri M et al. Intravesical vanilloids and neurogenic incontinence: ten years experience. *Urol Int*. 2004;72(2):145-9; Fowler CJ. Intravesical treatment of overactive bladder. *Urology*. 2000 May;55(5A Suppl):60-4; discussion 66. Review). Limited trials have also shown the utility of botulinum toxin A in "paralyzing" the detrusor and thus inhibiting detrusor overactivity (Schurch B et al. Treatment of neurogenic incontinence with botulinum toxin A. *N Engl J Med*. 2000 Mar 2;342(9):665; Schurch B et al. Botulinum-A toxin for treating detrusor hyperreflexia in spinal cord injured patients: a new alternative to anticholinergic drugs? Preliminary results. *J Urol*. 2000 Sep;164(3 Pt 1):692-7; Reitz A and Schurch B. Botulinum toxin type B injection for management of type A resistant neurogenic detrusor overactivity. *J Urol*. 2004 Feb;171(2 Pt 1):804; discussion 804-5). Although trials are limited, emptying has not been a major problem with the use of these two pharmacotherapeutic agents.

In conclusion, the population with stress and perhaps mixed incontinence may have a new, innovative pharmacotherapeutic agent, duloxetine, to try. The benefit to side effect ratio will determine whether this approach will represent a significant advance. For the overactive bladder population, several new anti-muscarinic agents will become available. RTX and botulinum toxin, two more innovative options, remain more than 2-3 years away, if ever, as viable options for patients with urge incontinence.

Sling Choices

(continued from page 6)

a trocar or needle as it is being passed. In these patients a subfascial hammock may be a viable option. The age of the patient must also be considered. A synthetic mid-urethral sling or an allograft or zenograft pubovaginal sling may be ideal for the frail octogenarian who may not be looking for a very durable procedure. One may want to avoid a bone anchor system in the same patient if she is severely osteopenic. The 25 year old patient needs to be told that we do not know what the long term results of synthetics are. A synthetic mid urethral sling is an appealing operation to a 25 year old in terms of recovery but will it be just as appealing if she recurs every 10 to 15 years? How much synthetic can we use in patients?

Synthetics are avoided in any patients where sling tension might be beneficial such as the patient with myelodysplasia and a wide open bladder neck. Synthetics are also avoided where there is a higher risk of infection because of contamination. Examples of this would include the sling placed in a neurogenic patient who is also undergoing a bladder augmentation with a bowel segment or the patient who is having a sling placed concomitantly with excision of a periurethral abscess or repair of a urethral diverticulum.

What slings or slings should you do? You should offer your patients a choice of procedures. You should be comfortable doing the procedure and dealing with the complications. If you presently only do one type of sling you should at least tell your patients that there are alternatives so that they may decide to seek another opinion.

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Interstim Sacral Nerve Neuromodulation (continued from page 2)

Once the S3 nerve root is located, lateral C-arm fluoroscopy allows one to place all 4 electrodes so that they “straddle” the sacral bone. The lead is then tunneled out through a subcutaneous incision where a connector is placed. The connector is used to connect the external stimulator unit to a longer external wire, which is tunneled out across the body again. This “zigzag” configuration allow for there to be a “dirty” lead for 1-2 weeks of a test stimulation while allowing a sterile connector to remain in place on the contralateral side of the body.

Implanting the Generator Unit – Stage 2

If a positive response is noted with 50% reduction of frequency, urge incontinence episodes, or improvement of voiding with a 50% reduction of post-void residuals, Interstim should be considered for permanent generator unit implantation. This is done by reopening and extending the incision to the subcutaneous connector, disconnecting the lead to the “dirty” external wire, and then removing the “dirty” wire by having a non-sterile assistant pull the wire out. A pocket is created for a generator unit which is approximately a 4x5cm ellipse and 1cm thick. The lead is connected to the generator unit, and the incisions are irrigated and closed in layers. I recommend having fluoroscopy available on standby at this stage for the rare instances where the lead is difficult to locate. However, almost all of the time one can palpate the connectors through the skin.

Summary

Overall, I have found Medtronic’s Interstim Sacral Nerve Neurostimulation to be an excellent adjunct to my practice in that it enables me to effectively treat patients that I could not before. Considering that these are patients with refractory problems of urge incontinence, urgency/frequency, and retention, the response rates are excellent. Prudent patient selection has improved my implantation and success rate from 50% several years ago to about 95% now. Medtronic’s Interstim is reimbursed well, has excellent technical

support, as well as an excellent safety record. I’m happy to help you start doing these procedures, and start treating your patients with higher quality of care.

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Postprostatectomy Incontinence (continued from page 4)

The male sling has enjoyed a renaissance of sorts in the last couple of years. Resurrected from its inception in 1927 as a gracilis muscle wrap around the urethra, to Stamey and Schaffer’s interpretation of retropubic suspension, it is now being used as a compression in a perineal approach under the urethra. Cadaveric fascia lata and synthetics are currently being employed as slings. Caution is advised in using these, as many patients complain of perineal numbness or pain following the procedure. Additionally, about 40 – 56% of patients are dry at 1-2 years. Moreover, 85% continue to use 2 or fewer pads per day.

The artificial urinary sphincter (AUS) remains the mainstay of treatment in PPI. Even patients with adjuvant radiation, standard techniques have been slightly altered to ensure success. The continence rates are in the 80% range with satisfaction rates exceeding 90%. It represents the best long-term solution to PPI secondary to sphincter dysfunction. There can be early and late complications with the device. These are well documented, including infection, mechanical failure and erosion. Many of these problems have been minimized with the 1987 introduction of a narrow backed cuff. Care must be taken

in selection of patients. They must understand the device as well as have the manual dexterity to activate it. Finally, most patients with PPI have a 10 yr life expectancy. Cost analysis of AUS versus injectables show a high cost per patient for the AUS. However, over time, taken into account repeated procedures direct and indirect costs, effectiveness of treatment and quality of life, AUS is both cost effective and the preferred treatment today.

In the near future, adjustable continence devices, will be available for PPI. Percutaneously implanted, these are small synthetic compression balloons with a port to allow fluid to be added or removed as necessary. Used successfully in women, they will soon be tested on men in the US.

PPI remains a complication of our urologic surgery. The vast majority of the time due to sphincteric incompetence. The treatments are determined by the extent of the incontinence and the patients wishes and expectations. We can only hope further research into the workings of the continence mechanisms will aid in decrease the incidence of this condition. In the meantime, we will continue to seek other effective treatments.

could simply be the result of fluid shifts that occur when the patient assumes a supine position. The voiding log must also be reviewed for nocturnal fluid consumption and the amount of nocturnal urine production. In addition, one must carefully review the amount of hours slept. Many elderly patients sleep greater than eight hours per day, thus greater than two episodes of nocturia may be a reflection of their sleeping habits. Fluid intake should be discontinued two to three hours before retiring if at all possible. If there are no behavioral modifications that can be suggested to the patient, medical therapy can be instituted. Desmopressin 0.2 mg orally and at bedtime has been shown to be effective and safe in this population as long as serum sodium levels are carefully monitored.⁶

Stress urinary incontinence can also affect the quality of life of the older patient and should not be ignored by physicians. Again, treatment should begin with the most conservative measures and progress to the more invasive depending upon the patient's degree of bother and treatment expectations. PFEs are again effective in some patients in combination with vaginal estrogen replacement therapy. Local estrogen increases vascularity and lubrication of the tissues. In doing so, the urethral seal and coaptation are restored. Additionally, it is recommended to start vaginal estrogen therapy six weeks prior to any transvaginal procedure because the improved vascularity promotes wound healing.

The urethral bulking agents, either bovine cross-linked collagen (Contingen, C.R. Bard Inc., Covington, GA) or carbon coated zirconium oxide beads (Durasphere, Advanced UroScience, St. Paul, MN) continue to be effective in the short-term period. However, the durability of both agents remains poor and oftentimes repeat injections are required. If the patient is willing to proceed to more aggressive options, a traditional pubovaginal sling using either autologous or cadaveric fascia can be used. Additionally, the newer distal urethral slings utilizing polypropylene mesh are an excellent alternative for the geriatric population. Both the TVT (Ethicon GyneCare, New Jersey) and the SPARC (American Medical Systems, Inc., Minnetonka, MN) procedures are associated with less morbidity and shorter convalescence than then traditional pubovaginal sling. These procedures are commonly done under spinal or local anesthesia and on an out-patient basis. The tension free transvaginal tape procedure (TVT) has an overall success rate of 82 to 92%, with lower efficacy in patients with intrinsic sphincteric deficiency (61 to 77%). Also, patients older than 70 years with low resting urethral closure

pressures and immobile urethras fare worse (74%).⁷ Most recently, these procedures have been combined with pelvic organ prolapse repairs. Again, the quality of the patient's tissues must be considered before embarking on extensive prolapse repairs. If there are ulcerations of the vaginal mucosa or significant atrophic vaginitis, local estrogen therapy should be started preoperatively. Pessaries and synthetic meshes should be avoided in this group of patients unless the vaginal tissues have been optimized.

Urology visits are the third most common outpatient visits to specialists by individuals in the geriatric age group (ophthalmology is first, and cardiovascular is second).⁸ Therefore, urologists must become familiar with the unique challenges of this population. Some elderly patients are best served with an indwelling urethral catheter or suprapubic tube due to frailty or comorbid conditions. Others demand treatment to maintain some level of independence. As this population continues to grow, and as treatment options for incontinence continue to expand, we must be willing and able to meet these demands by educating ourselves about those treatment options that are suitable and safe in the elderly.

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FUTURE MEETINGS OF THE NEUA

September 9-12, 2004

Ritz Carlton Resort / Amelia Island, Florida

November 2-6, 2005

Joint Meeting with Northeastern Section, AUA

The Southampton Princess / Bermuda

September 28-October 1, 2006

Rhode Island Convention Center and the
Westin Providence / Providence, Rhode Island

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2004 ANNUAL MEETING

September 9-12, 2004

Ritz Carlton Resort
Amelia Island, Florida

HIGHLIGHTS...

Postgraduate Courses /Hands-On Sessions

On Thursday, September 9th, the Section will offer focused Postgraduate Courses and Hands-on Training opportunities.

Thursday Evening Reception / Dinner

"The 8 Flags of Amelia Island" Guests and family members are invited to attend this open-air buffet.

For Golfers (and Non-Golfers)

The Section will host a golf tournament on Friday afternoon, September 10th. For non-golfers who want to know what this game is all about, we will hold a concurrent "golf clinic" hosted by three golf pros.



From the President

(continued from page one)

be guest speakers. Also during the program, Dr. Peter Albertson will give an update on the American Board of Urology recertification program.

We have received 79 abstracts for consideration and this promises an interesting and diverse podium and poster sessions.

We have eliminated the Sunday scientific sessions as most flights home will leave in the late morning and early afternoon.

The Section is honored to welcome Dr. Brendan Fox, the AUA President, to our meeting and we will look forward to Dr. Fox's remarks. As Dr. Fox has been a distinguished member of our section for many years and served us well, his presence will have special significance for all of us.

Drs. Dennis Card and Maureen McCanty and the Local Arrangements Committee have developed an outstanding social program that should have something for everyone. Amelia Island is rich in history, the flags of 8 countries have flown over the island, and local tours will be offered. The Golf Tournament will be held on site and for the first time a 2 hour intro to golf will be offered to non-golfers during the tournament. A great opportunity to learn to swing a club under the tutelage of a PGA Professional! There will be a tour to go behind the scenes at the Ritz and see first hand how a great hotel is managed.

On Thursday night an outdoor themed event "8 Flags of Amelia Island" will enable you to taste the cuisines of those countries that have ruled the island. The Annual President's Reception and Banquet will be an informal event this year so leave your tuxedo at home!

It promises to be a great meeting, so please join us!



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American Urological Association**
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