Book review

As announced in the Editorial by Bruce Farnsworth (Pelviperineology 2011; 30:5) this is the fourth of a series of articles highlighting the different sections of the book "Pelvic Floor Disorders, Imaging and Multidisciplinary Approach to Management" edited by G.A. Santoro, P. Wieczorek, C. Bartram, Springer Ed, 2010.

Urinary incontinence and voiding dysfunction

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The *fourth section* of the book "Pelvic floor disorders-Imaging and Multidisciplinary Approach to Management" is entitled "Urinary Incontinence and Voiding Dysfunction" and consists of nine chapters divided into two subsections describing diagnostic methods and management of these disturbances.

In the first chapter "Ultrasonography" A. P. Wieczorek, M. M. Woźniak and A. Stankiewicz review basic information about techniques, equipment advantages, limitations, clinical usefulness, and the literature concerning ultrasound assessment in the diagnostics and monitoring of treatment of urinary incontinence (UI) and voiding dysfunctions (VD) with reference to two-dimensional (2D) and three-dimensional (3D) transperineal ultrasound (TPUS), as well as 2D and 3D endovaginal ultrasound (EVUS). Transperineal ultrasound (TPUS, Figure 1a-b) is recognized nowadays as a gold standard technique in the diagnosis of UI and VD and is a very useful method, which allows overall assessment of all anatomical structures (bladder, urethra, vaginal walls, anal canal and rectum) located between the posterior surface of the symphysis pubis and the ventral part of the sacral bone. However, EVUS offers significant amount of additional information providing detailed assessment of the morphology, vascularity, and functionality of the urethral complex and appears to play a relevant role in the management of these pathological conditions. The authors highlight the special role of more sophisticated modalities such as novel 3D, 4D high-frequency, endoluminal ultrasonography. They recommend high-frequency techniques as the ones, which have the biggest impact on the diagnostics and most probably in near future will become gold standard examinations in the diagnostics and monitoring of treatment of urinary incontinence and voiding dysfunctions.

The second chapter "Urodynamics" by E. Ostardo, G. Tuccitto, F. Beniamin and L. Maccatrozzo provides information on urodynamic tests measure parameters related to the storage and voiding functions of the lower urinary tract. Investigations encompass a variety of tests, including uroflowmetry, cystometry, pressure-flow studies, urethral sphincter electromyography, video-urodynamics, urethral pressure profilometry and Valsalva leak point pressure test (Figure 2). The chapter describes in details each of the above mentioned methods, their indications, methodology, clinical usefulness and interpretation of the obtained results. The usefulness of urodynamics remains controversial, however it can provide a pathophysiological explanation of urinary dysfunction, guiding clinical management. If there are persistent criticisms of urodynamics and theirs role in selection patients for invasive management of lower urinary tract dysfunction there may be a need for randomized controlled trials.

The third chapter entitled "Tape Positioning" written by M. Bogusiewicz and T. Rechberger describes the mechanism of action of midurethral slings, techniques of tape po-

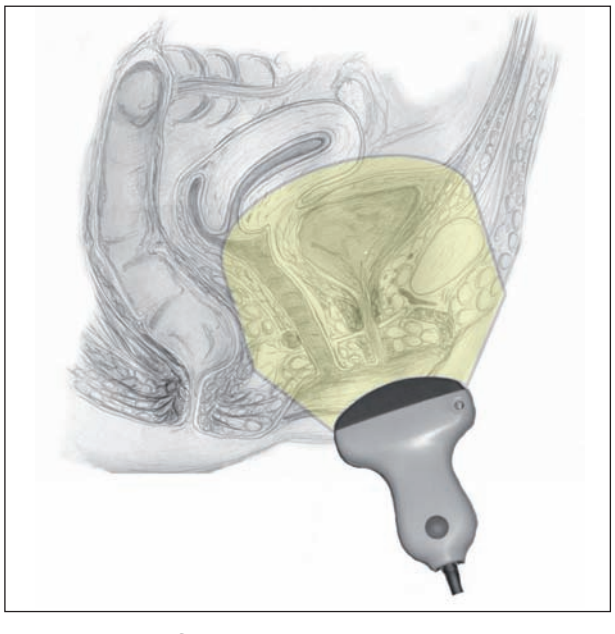

Figure 1a. — TPUS.

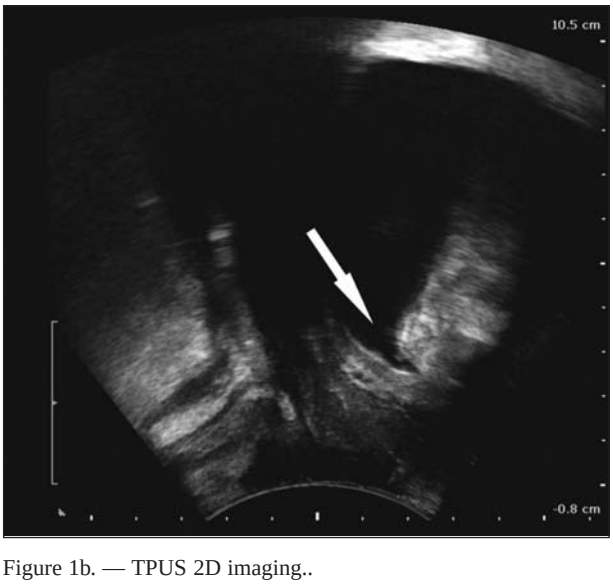

Figure 1b. — TPUS 2D imaging..

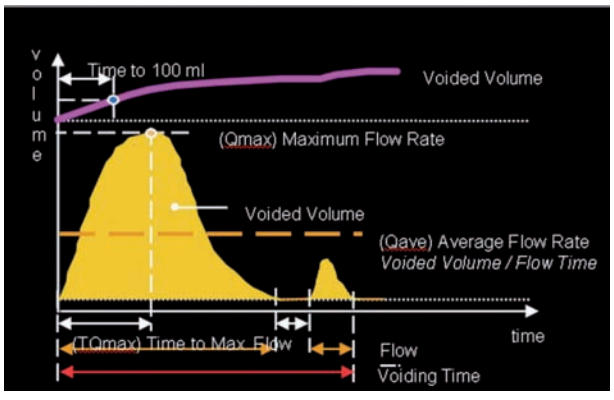

Figure 2. – Urodynamics.

sitioning and postoperative complications. Authors underline that appropriate support of the urethra is crucial for female urinary continence and the reinforcement of suburethral structures by implementation of a non-absorbable tape under the midurethra is a first-choice treatment for stress urinary incontinence in women. Among several currently available techniques for tape placement, procedures utilizing a retropubic or transobturator approach are the most widely used. The main mechanism of retropubic sling action relies on the angulation of the urethra on a fulcrum created by the tape. In the case of a transobturator sling, the urethral angulation occurs in only 24-50% of cured patients and continence is restored mainly as a result of urethral encroachment by the tape. Placement of the tape under the midurethra is associated with the best cure rate, however a subset of patients may be also cured even if the tape is located outside this zone. Regardless of the approach proper tape-location and tension-free placement seem to be crucial for successful treatment outcome, while inappropriate positioning of the tape may increase the risk of postoperative complications.

The fourth chapter "Selection of Midurethral Slings for Women with Stress Urinary Incontinence" by J. K. S. Lee and P. L. Dwyer includes a review of the variety of currently available slings and approaches. Most commonly used slings, showing most favourable safety and efficacy, are made of monofilament polypropylene mesh, however many other slings, including self-made, have been introduced. The choice of procedure is based on the surgeon's experience as well as clinical grounds. Women that respond best to midurethral sling surgery are those who have simple stress urinary incontinence (SUI), no intrinsic sphincter deficiency (ISD)/mixed urinary incontinence (MUI), no previous SUI or prolapse operations, and a mobile urethra. The skill and experience of the individual surgeon is an important factor in patient outcome and selection of the method. Systematic reviews and meta-analyses of randomized controlled trials comparing a retropubic and a transobturator approach have demonstrated equivalence in early to midterm efficacy. For women with urodynamic stress incontinence (USI) and intrinsic sphincter deficiency (ISD), the transobturator route is less effective than the retropubic approach. Available randomized controlled trials data are inadequate for definitive conclusions regarding the choice of slings in other important subgroups.

The fifth chapter written by P. Curti entitled "Injectable Biomaterials" describes in details the intra-urethral injections of bulking agents as an alternative technique to the traditional surgical procedures performed in curing stress urinary incontinence (SUI). The chapter describes different injection techniques performed under general, regional, or local anesthesia, according to the surgeon's preference. The complication rates of SUI injection therapy are acceptable low and can be divided into those that are generic to all substances or agent-specific complications. In order to improve the long-term outcome, newer and more durable substances have been investigated. The technique can be considered a useful option only for patients with comorbidity precluding anesthesia. The long-term efficacy however, is difficult to be established, as most of the published studies analyzed a small number of patients with short follow-up periods. Both periurethral and transurethral injections are equally efficacious, but there is evidence to suggest that the transurethral route results in fewer complications. Injection therapy is less effective than surgery, but has a better safety profile.

The sixth chapter "Artificial Urinary Sphincter in Women" by A. R. Rao and P. Grange describes this method of restoring continence when other methods have failed. Artificial urinary sphincter (AUS) is a surgical device that is implanted to restore continence in men, women, and children. In women, AUS is usually considered as the last resort to restore continence after failure of other anti-incontinence procedures, however, there are also indications for primary insertion of AUS. The procedure requires appropriate patient selection to avoid disappointments. Operative insertion should be performed by a surgeon well versed with the anatomy of the pelvis and possessing sound knowledge of reconstructive techniques, as the procedure can be difficult due to previous surgeries and can carry a significant morbidity. Postoperative follow-up should be rigorous to pick up complications and manage them accordingly. Traditionally and open abdominal approach has been used to implant the AUS, however, recently laparoscopic insertion is gaining popularity with the advantages attributed to minimally invasive surgery.

The seventh chapter by G. Tuccitto, F. Beniamin, E. Ostardo and L. Maccatrozzo is devoted to "Sacral Nerve Stimulation". The chapter describes the method of sacral neuromodulation which is an established treatment in case of non-neurogenic patients. Recent reports have shown that the method has a sustained efficacy and acceptable safety profile in the long term. The most common adverse events such as lead migration, infection, and pain at the implantation site are transient and can be treated effectively. The complication rate using the tined lead is low. It does not carry the risk of systemic side-effects encountered in pharmacologic therapies, or the potential morbidity that open surgical procedures may carry. There are no permanent sequelae following adverse events and the procedure is completely reversible. The major frontiers for sacral neuromodulation in adults are interstitial cystitis and chronic pain syndromes, neurogenic bladder from spinal cord injury, fecal incontinence, constipation and erectile dysfunction. Sacral nerve stimulation should be considered before using a more invasive procedure.

The eighth chapter of the section four written by K. Bo and P. Di Benedetto describes "Biofeedback", which is a common name for a group of experimental procedures where an external sensor is used to give an indication on bodily processes, usually for the purpose of changing the measured quality. Pelvic floor muscle training (PFMT) can be conducted with and without biofeedback. The chapter gives an overview of randomized controlled trials comparing the results of PFMT with and without biofeedback on stress and mixed incontinence. While a few studies showed improved pelvic floor muscle function in favour of using biofeedback, none of the trials showed statistically significant improvement of urinary incontinence when biofeedback was added to the training. Based on the existing evidence from randomized controlled trials PFMT is effective

when used alone, and biofeedback is not necessary to achieve efficacy. However, some patients may be motivated to adhere to a training program and work harder using biofeedback. If available, interested and cooperative patients should be given the option to use this method.

The ninth chapter of this section written by F. Pesce and M. A. Cerruto is entitled "Medical Treatment of Urinary Incontinence, Urinary Retention, and Overactive Bladder". The authors describe pharmacologic management of lower urinary tract dysfunctions. Antimuscarin drugs represent the first-line treatment in case of overactive bladder syndrome (OAB). Over the last 10 years the use of botulinum neurotoxin has revolutionized the treatment of symptoms associated with OAB. The pharmacological treatment of chronic urinary retention with and without urinary incontinence (UI) has the purpose of preventing damage to the upper urinary tract by normalizing bladder emptying and endourethral pressures. Many drugs have been proposed for a range of possible central and peripheral pharmacologic targets in urinary incontinence, but often with disappointing results because of poor efficacy and side-effects. A growing understanding of the biochemistry and physiology of lower urinary tract function – focused mainly on the role of cholinergic and adrenergic receptors – has led to the development of pharmacologic agents with specific lower urinary tract targets. The development of pharmacologic treatment for urinary incontinence is slow, and the use of some drugs that are currently marketed and prescribed is based on tradition rather than evidence-based medicine and patient's expectations.

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