



Review

Personalizing pelvic floor reconstructive surgery in aging women



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ABSTRACT

Pelvic floor dysfunction is a growingly frequent condition in aging individuals. Urinary or rectal incontinence, constipation, pelvic organ prolapse, pelvic pain or sexual dysfunction are common problems in this age range. Such conditions carry a severe impact on quality of life, but also limit individual independence in daily activities, favor social isolation and carry health risks. Diagnosis and treatment of pelvic floor dysfunction in aging women is tricky, since multiple interfering conditions affecting muscle tone and nerve function are common in these individuals. Diabetes mellitus, sarcopenia, use of drugs that affect cognition or impact bowel or urinary function are just a few examples. These conditions need to be thoroughly taken into account during pre-operative work up for their potential impact on the success of surgery and vice versa. Functional reconstruction aimed at treating symptoms rather than anatomic defects is key to success. The recent advancements in surgical treatment of urinary incontinence and pelvic organ prolapse allow for more options to achieve the best surgery in each patient.

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1. Introduction

Life expectancy has increased worldwide in developed Countries and this has led to a proportionate increase in the prevalence of women affected by pelvic floor dysfunction requiring surgery [1]. Such condition derives in part by the endocrine modifications encountered with menopause and in part by the aging process.

Personal impact of pelvic organ prolapse, urinary/fecal incontinence or obstruction is often dramatic, imposing severe limitations to independence, ability to execute basic living tasks, to engage in social interactions, and favoring isolation in aging women [2].

In a provocative editorial in 2006 [3], Wilkinson said “unlike cancer, urinary incontinence and prolapse usually are not life-threatening. Unlike in obstetrics, the disorder does not have a self-limited course ... the impression that remains is that urogynecologic disorders are only addressed in women who have the luxury of time to access urogynecologic services and the ability to pay”. Thanks to the growing sensitization of policy- and

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decision-makers by physicians and civil right groups, this is slowly changing, and preventing and treating pelvic floor dysfunction in the elderly is nowadays beginning to be considered in many Western societies a public health priority.

And this is rightly so, if one considers that in the US alone, in 2050, 25% of the population will be over 60 years of age and that women over 85 years will increase from 1.9% in 2010 to 4.3% in 2050 [4], leading to an estimated growth of 50% request in urogynecologic services [5].

Prevalence of urinary incontinence in the general population ranges from 5% to 69% depending on how it is defined [6]. A UK survey showed a prevalence of 11.6% in women aged 65 and over. Incontinence was described as 'moderate' or 'severe' in one-fifth of those who reported it and, even among these, less than one-third were receiving health or social services for the condition [7]. The Leicestershire Incontinence Study found that 33.6% of the population reported significant urinary symptoms but only 6.2% found these troublesome, and only 2.4% both bothersome and socially disabling. This is partially confirmed by an extensive review of urinary incontinence literature of 2003 which revealed a median prevalence of female urinary incontinence around 27.6%, in the following order of frequency: stress urinary incontinence (50%), mixed urinary incontinence (32%) and finally urge incontinence (14%) [8]. Whatever the real prevalence of the condition, it is clear that the incidence of pelvic floor dysfunction increases exponentially with age [9].

Urinary incontinence and pelvic organ prolapse have been considered for a long time a necessary compound of aging and their consequences have been accepted in spite of the enormous impact on quality of life. The use of aids such as diapers, sleepers for the night and pessaries has become widespread in elder women, and this has brought along significant direct costs to patients and to those health services covering for these tools.

Access to surgical treatment has been traditionally limited in ageing women with pelvic floor dysfunction. Concurrence of chronic systemic diseases has often been a discouraging factor to candidate these women for surgery [10]. Indeed, a 13.6-fold higher postoperative morbidity and mortality has been shown in elder women undergoing surgical pelvic floor reconstruction [11]. In addition, the previously available surgical techniques often required long hospital stays and were associated with low success rates [12].

Cultural evolution and more widespread access to information by elder individuals have in part dismantled the hesitancy to seek cure for pelvic floor dysfunction and a raised attention in physicians and patients to these issues is supporting access to pelvic floor physicians.

The treatment armamentarium to address pelvic floor dysfunction has been rapidly changing in the recent years due to the development of new classes of drugs and to the evolution of more effective and minimally invasive reconstructive surgical techniques.

The development of sub-urethral slings and bulking agents and the availability of botulin toxin and of implantable neuromodulatory devices has revolutionized the treatment of both stress and urge urinary incontinence, allowing achieving extremely high efficacy with very short (often daily) hospital stays. Short procedures that can be performed under loco-regional anesthesia make it nowadays possible to treat urinary incontinence even in very old patients with complex co-morbidities.

Evolution of knowledge and surgical techniques has made great strides also on the side of treatment of pelvic organ prolapse. The most innovative concept has been to do less but do it better, in a personalized fashion [13]. Development of mesh augmentation and of refined devices allowing for more efficient apical suspension has allowed the shortening of procedures and the abandonment

of demolitive techniques. Advancement of skills and technology has also made available complex procedures for surgical correction of multi-compartmental prolapses through mini-invasive approaches, therefore making it easier to extend the use of surgery to elder individuals. Overall, modern evolution of this medical and surgical field creates a perfect setting where a widespread and disabling problem can be addressed by more effective strategies, thereby potentially driving major improvements in quality of life in ageing women.

2. Challenges in pelvic floor reconstruction in ageing women

Tailoring surgical strategies is one of the most engaging parts of pelvic floor reconstruction. Surgery can be adapted to accomplish goals that can be very different based on the age and functional status of the patient.

Reconstruction of a failed pelvic floor can be obtained through re-creation of an anatomical support that resembles as much as possible the original. But it can also be achieved through an attempt to solve specific complaints, even without correcting completely anatomy. This is often the case in elderly individuals, where a multitude of factors affects the final result of any reconstructive surgery. This is due to the possibility that aging-associated changes in the function of the bladder or of the rectum may be unveiled or compensated by an untailed reconstruction. Thus a thorough understanding of the underlining functional status of pelvic organs is much more important in aging women than in younger ones before proceeding to surgery.

A simple evaluation of bladder function both during filling as well as during voiding is a critical step for pre-surgical assessment [14]. Urodynamic signs of overactive bladder are frequently found in aging individuals, even in the absence of clinical symptoms. This condition is more frequent in elder women because of multiple causes, often difficult to detect and to correct [15]. Atrophy of the uro-genital mucosae often increases the sensitivity of the bladder wall to filling and to bacterial contamination, enhancing muscarinic activity within the bladder. According to the integral theory of Papa Petros [16], intermediate or advanced prolapse of the bladder may per se induce bladder hyperactivity because of the stretching of the nerve fibers endowed in the elongated utero-sacral ligaments.

A correct understanding of the functional ability to empty the bladder is also key to surgical planning. Advanced bladder prolapse is frequently associated with clinical urinary outlet obstruction, with difficult and incomplete voiding. Post-void residual urine volume is directly linked to vesico-urethral reflux and to recurrent urinary infections. These are dangerous per se, but also represent the most common cause of urinary urgency. On the other side, bladder outlet obstruction due to advanced cystocele can mask a latent stress urinary incontinence that will develop upon surgical anatomic correction. Understanding these variables is important to provide correct information to patients, in addition to providing an adequate surgical plan.

An extremely important diagnostic item before considering any pelvic floor reconstructive treatment in an elderly individual is to identify the presence of a hypotonic bladder. This condition is common in this age range due to bladder muscle atrophy and to altered nerve control. It is not unusual that a woman with a partially denervated bladder presents with a leading symptom of urinary incontinence due to bladder sphincter insufficiency. If a concomitant bladder muscle weakness is not recognized the performance of anti-incontinence procedures such as retro-pubic or trans-obturator slings may solve incontinence, while creating obstruction. This may require later removal of the mesh but in frail women may eventually lead to irreversible bladder over-distension requiring self-catheterization for the rest of life.

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