ORIGINAL RESEARCH—PELVIC FLOOR

"Diagnostic Investigation of the Pelvic Floor": A Helpful Tool in the Approach in Patients with Complaints of Micturition, Defecation, and/or Sexual Dysfunction

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DOI: 10.1111/j.1743-6109.2007.00725.x

ABSTRACT

Introduction. Pelvic floor dysfunction is recognized to be related to lower urinary tract dysfunction and to lower gastrointestinal symptoms, and is an influential factor in dysfunction and subsequent behavior of the genital system in both men and women. Caregivers should be informed regarding normal pelvic floor function in general and should be able to identify specific aspects of pelvic floor dysfunction in patients with related symptoms. In our hospital, this diagnostic consultation is indicated as Diagnostic Investigation of Pelvic Floor Function (DIPFF).
Aim. This study looked at pelvic floor dysfunction related to specific complaints.
Methods. DIPFF consists of a medical history, a physical examination, including the International Continence Society (ICS) pelvic organ prolapse quantification system in female patients, and a biofeedback registration using a vaginal or anal probe. Based on our experience, we defined an elevated rest tone as greater than 2 μV using intravaginal or intra-anal electromyography.
Main Outcome Measures. Stratification of patients with a single complaint, a combination of two or three complaints of the micturition, defecation or sexual (all compartments of the pelvic floor) resulted in subgroups of respectively 30, 74, and 133 patients.
Results. A total of 238 patients with complaints of micturition, defecation, and/or sexual function were included in this study. Electromyographic analysis revealed an elevated rest tone of the pelvic floor in 141 patients. In 184 patients, we found an involuntary relaxation of the pelvic floor.
Conclusion. In our retrospective study, we found that 77.2% of patients who presented to the clinic with urinary, gastro or sexual complaints had measurable pelvic floor dysfunction (69.3% overactive rest tone and 7.9% under active rest tone). In relation to the ICS terminology, there is a need for a well-defined normal vs. elevated rest tone of the pelvic floor. **Voorham-van der Zalm PJ, Lycklama à Nijeholt GAB, Elzevier HW, Putter H, and Pelger RCM. "Diagnostic Investigation of the Pelvic Floor": A helpful tool in the approach in patients with complaints of micturition, defecation, and/or sexual dysfunction. J Sex Med 2008;5:864–871.**

Key Words. Pelvic Floor; Diagnostic Investigation; Voiding Dysfunction; Defecation; Sexual Function

Introduction

The pelvic floor controls isolated and integrated functions, sustains proper anatomic relationships between pelvic visceral organs and its outlets, and shares the basic mechanism with various visceral organs that control their function [1]. The pelvic floor, consisting of muscular and fascial components, is the binding element between these organs. Pelvic floor dysfunction is recognized to be related to lower urinary tract dysfunction and, more recently, to lower gastrointestinal symptoms as well [1]. It is also considered to be an influential factor in dysfunction

and subsequent behavior of the genital system in both men and women [1]. These multisystemic functions point to the importance of caregiver awareness regarding normal pelvic floor function in general and the need for tools to diagnose specific dysfunction in patients with related symptoms.

However, literature is scarce on the topic of the diagnostic investigation of pelvic floor and there is a lack of uniformity in the description of the anatomy per se and the nomenclature of the pelvic floor [2–4]. The pelvic floor comprises of several layers: from superior to inferior, the supportive connective tissue of the endopelvic fascia, the pelvic diaphragm (levator ani and coccygeus muscle), the perineal membrane (urogenital diaphragm), and the superficial layer (bulbospongiosus, ischiocavernosus, and superficial transverse perineal muscles) [5]. The iliococcygeus, pubococcygeus, and puborectalis muscles make up the levator ani muscle of and play an important role in the prevention of pelvic organ prolapse and incontinence.

The perineal membrane is a fibrous muscular layer directly below the pelvic diaphragm. The current concept is that the muscular contents of this layer are formed by the distal part of the external urethral sphincter muscle (compressor urethrae and urethrovaginalis part of the external urethral sphincter). The bulbospongiosus and ischiocavernosus muscles of the superficial layer also have a role in sexual function, while the superficial transverse perineal muscle has a supportive role. Pelvic floor muscle contraction presumably involves the contraction of these muscles groups.

Continence is achieved when the pressure resulting from the direct action of the puborectal muscle as such and the external anal and urethral sphincters is greater than the pressure exerted on the bladder through abdominal Valsalva or bladder smooth muscle contraction [2,3,6,7]. Stress urinary incontinence is the complaint of involuntary leakage on effort or exertion, or on sneezing or coughing. Urge urinary incontinence is the complaint of involuntary leakage accompanied by or immediately preceded by urgency [8].

The assessment of the function of the pelvic floor muscles, e.g., concerning in muscle strength, tone, endurance, and coordination, is difficult because of a lack of simple to use and reliable measurement techniques, and a lack of cutoff values for pathologic conditions. Furthermore, the reproducibility of testing is questionable.

Literature describes different techniques for the evaluation of pelvic floor function using transperineal ultrasound, manual muscle testing, and squeeze pressure measurements [9–17]. A standardization of both biofeedback technology and the methodology for its application to the pelvic floor muscle assessment and rehabilitation is also lacking [18]. Kegel [19] was the first to report the efficacy of pelvic floor muscle exercises in treating urinary incontinence in women. Since then, manometric pressure measures and surface electromyography (sEMG) instrumentation have been used as a biofeedback adjunct to pelvic muscle rehabilitation. This feedback helps to isolate the specific muscles and can assist in motivation by visibly displaying pelvic floor muscle activity and progress. sEMG electrodes placed on the abdomen can help prevent the inadvertent overuse of the abdominal muscles when attempting pelvic floor contractions and help train abdominal pelvic synergy in contracting the pelvic floor muscles while experiencing intra-abdominal pressures, such as coughing [20–24]. The behavioral approach of biofeedback-assisted pelvic floor rehabilitation focuses on the healthy functioning of the pelvic floor musculature, which sets the tone for the whole micturition, defecation, and/or sexual function process.

Before beginning therapy, specialists use various diagnostic tools such as urodynamics, a voiding diary, defecogram, or even MRI. However, current diagnostic models have stressed the importance of a physical exam, as well as the assessment of the relationship between pelvic floor function, sexual function, isolated functioning, and the awareness of the relationship between structures like the bladder, rectum, anus, and vagina [7,17,25–28]. The aim of this study was, in this perspective, before starting treatment, to perform a specific diagnostic workup focused on pelvic floor function. In our hospital, this diagnostic consultation is indicated as Diagnostic Investigation of Pelvic Floor Function (DIPFF).

Materials and Methods

Patients with complaints of micturition, defecation, and/or sexual dysfunction related to pelvic floor dysfunction were retrospectively selected from the database of the Pelvic Floor Center at the Leiden University Medical Center (LUMC). We informed our medical ethical committee on this study.