

WORKSHOP A1 — THE OVERACTIVE PELVIC FLOOR: DOES IT EXIST

Chair: Tjeerd Wiersma, Marijke Slieker-ten Hove

THE OVERACTIVE PELVIC FLOOR

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Can a muscle group present in a shortened state or generate an abnormal but habitual patterned response in isolation from other structures? It is unlikely that one muscle group changes its response, resting position, firing rate and recruitment pattern without contribution from other body systems. This presentation will firstly outline the co-existence of identifiable organic disease and evaluate evidence of pelvic floor overactivity. There are a number of symptoms and dysfunctions that accompany pelvic floor dysfunction that cannot be quantified but are by patient attribution; these will be presented and their possible role in pelvic floor pathology debated.

Terminology can generate confusion. What exactly is an overactive floor and can it be quantified, easily observed and accurately and uniformly described? Does the similarity of label associate the overactive pelvic floor with detrusor instability? Is dyssynergia of functional origin necessarily associated with changes of state seen in the overactive pelvic floor. If so, are dysfunctional voiding patterns and defecation disorders indicative of pelvic floor pathology? Due to differences in definition it proved problematic to conduct a true systematic review of papers reporting on the overactive pelvic floor. Evidence is largely from single non-randomised clinical studies.

There is much in the literature about chronic pelvic pain presentations and altered pelvic floor muscle activity. The presentation will review the evidence linking various pelvic pain syndromes to abnormalities in the pelvic skeletal muscles. Since it is unlikely that pain occurs independently from neural input, the contribution attributed to both the neural and psychological state will also be reviewed.

Finally the presentation will explore the disorders of pelvic floor seen in childhood with the signs and symptoms of overactivity that have been reported in adults. Current understanding of the paediatric pelvic floor will be reviewed in an effort to identify whether the overactive pelvic floor of adulthood is a continuum of childhood dysfunction or a separate entity.

NEUROPHYSIOLOGICAL BACKGROUNDS OF THE OVERACTIVE PELVIC FLOOR

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In general neurological terms overactivity of striated muscle can be due to an upper motor neuron lesion, an extrapyramidal disorder, a dystonic disorder or channelopathy causing muscle membrane instability. All these conditions can probably affect the pelvic floor in various guises. Since the function of the bladder or the rectum is either to store or eliminate body wastes, significant functional consequences can result from a failure of relaxation of the sphincters of these organs, which is the physiological process whereby voluntary elimination processes are initiated. However the situation may be complicated by the effect of the neurological disorder itself on organ function - either directly or as a result of reflex activity. If the underlying neurological disorder is a generalized one an adverse effect on sexual function would be expected.

Upper motor neurone lesion.

Loss of the physiological inhibitory input onto the stretch reflex of striated musculature results in spasticity. Thus suprasacral cord lesions, or even cerebral lesions affecting bilateral descending pathways, can cause a "spastic pelvic floor". It is most unlikely that this condition could occur without other gross neurology. However the same neurological lesions will also have an effect on the neural control of the organs themselves so that although detrusor sphincter dyssynergia may be regarded as a manifestation of an upper motor neurone lesion, detrusor function is also disrupted and it is this aspect of the problem that dominates the clinical picture. In advanced MS a failure of effacement of puborectalis may cause difficulties with defecation.

Extrapyramidal disorders

The type of movement disorder affecting striated muscle associated with extrapyramidal disorders such as Parkinson's Disease is somewhat different and is referred to a "rigidity" rather than spasticity. Rigidity or at

least “bradykinesia” of the sphincter has been described as contributing to sphincter obstruction during voiding and a failure of relaxation of puborectalis may cause constipation in patients with advanced Parkinson’s Disease.

Dystonias

The pathogenesis of dystonic conditions is still poorly understood but these disorders may either be generalised, segmental or focal. In other skeletal muscle groups focal dystonias may produce conditions recognized as blepharospasm, torticollis, or writer’s cramp but the manifestation of this same pathophysiology in the pelvic floor has yet to be well defined. This group of disorders has in the past often been mis-attributed to psychogenic causes.

Myopathic Channelopathies

There is now a range of disorders which are recognized as being due to a ion-channel abnormalities which allows excitable membrane (either nerve or muscle) to become overactive and cause either neurological symptoms or inappropriate striated muscle contraction. Myotonic dystrophy is one such example of this type of disorder.

In the author’s view, a specific hormonally associated channelopathy of the striated urethral sphincter can occur in some young women causing ephaptic transmission in the muscle, a failure of sphincter relaxation and urinary retention. It is not proposed that this is the cause of retention in all female patients and ancillary measures of the urethral pressure profile and sphincter volume may be helpful in distinguishing the different causes of retention. The extent to which an associated disorder of the smooth muscle malfunction contributes has not been defined and with current methods is difficult to assess.

IS PELVIC FLOOR DYSFUNCTION SEEN IN THE OFFICE OF THE UROLOGIST?

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Chronic pelvic pain and/or interstitial cystitis are often associated with pelvic floor dysfunction. In the absence of identifiable somatic pathology these patients represent one of the most confounding and challenging problems to the physician. These patients complain irritative voiding symptoms. Pain may or may not be associated with bladder filling and emptying.

In many ways, current medical practice still follows a traditional Cartesian view of a mind-body dichotomy. Symptoms are seen as being physical (real) or mental, which is outside the understanding of many physicians. This view implies that a person’s pain experience is proportional to the amount of physical damage – the more damage, the more pain. If there is no obvious illness, but the patient complaints of pain and voiding dysfunction are intense the search for the cause of the pain often culminates in surgery. Unfortunately, lasting pain relief can be expected only if the surgery has indeed alleviated an underlying physical problem and if this dysfunction was actually the main cause of the patient’s pain complaint. Many patients who are not helped by surgery are declared as drug addicted and psychotic. At this point the patient is angry and feels betrayed and humiliated. Often she/he continues the search for a cure elsewhere.

An accurate history is the most important element of the work up. Urinary urgency and frequency, urge incontinence and/ or urinary retention, nocturia, dyspareunia, constipation and/ or diarrhoea and pelvic pain are cardinal symptoms. Importantly patients report urinary frequency in an attempt to relieve pelvic or lower abdominal pain and only seldom because of fear of incontinence. To evaluate bladder function it is recommended for the patients to complete a voiding diary over 4 days. This gives valid information on patient behavior and on bladder function, voided volumes and diurnal changes. Episodes of hesitancy and intermittency as well as sensation of incomplete emptying are often present. At the physical examination patients typically demonstrate suprapubic and pelvic floor tenderness in the absence of other local pathology. During pelvic floor exam often it is possible to reproduce their symptoms and trigger the pain. These patients have limited and often no ability to identify the pelvic floor muscles. The urodynamic study shows hypersensitivity of the urethra; often low functional bladder capacity and spastic activity of the urethral sphincter during the filling as well as during the voiding phase (dyssynergic voiding pattern).

Patients with irritative voiding symptoms should be evaluated by cystoscopy and bladder biopsy under anesthesia.

Triggering conditions may result from rigid toilet training, problems of bedwetting in childhood, sexual or physical abuse and/ or recurrent urinary tract infections. These result later in pelvic floor dysfunction, chronic voiding dysfunction, urethral spasticity resulting in urethral hypersensitivity, abnormalities in the bladder mucosal lining which allow submucosal exposure to Tamm-Horsfall proteins and chemically induced inflamma-

tion from urinary contact. These initial events likely result in an inflammatory cascade and visceral pain complex propagated by a neurogenic inflammatory process.

Pelvic floor dysfunction may explain why many patients with IC also have gynecological (endometriosis, dyspareunia) or gastro-intestinal (irritable bowel, constipation) and urological (interstitial cystitis) problems at the same time. Urine storage and voiding are regulated by neural circuitry in the brain and spinal cord and require co-ordination of activity in the various smooth and striated muscles of the pelvis. Control of the sphincters and pelvic floor muscles is only learned with postnatal maturation of the central nervous system. If this voiding pattern is learned in an abnormal fashion pelvic floor dysfunction can occur and result in hypersensitivity and spasticity of the urethral sphincter mechanism and bladder. This culminates over time into chronic pelvic pain.

Different approaches have been used for the treatment of these patients. I am seeing positive results with medications that include amitriptyline, muscle relaxants and alpha-blockers. Changes in diet and lifestyle are the cure in some patients.

Fundamental is the treatment of the muscle dysfunction by the, physical therapist, biofeedback and intravaginal or transrectal electrical stimulation are in many cases very helpful, but need to be done by physicians and physical therapist that are educated in pelvic floor dysfunction, myofascial trigger points and treatment of chronic pain.

Pain medications as gabapentin, hydrocodone and other opioids may be helpful, at least to get the pain under control to be able to become functioning

In resistant cases sacral nerve stimulation (Interstim) gives excellent therapeutic responses. It has been observed that the use of sacral nerve stimulation for the treatment of urge incontinence, urgency and frequency as well as urinary retention improved dramatically the voiding symptoms as well as the pain symptoms of these patients. These observations led to the understanding that IC is linked to pelvic floor dysfunction.

These patients are coming to our office and ask for help. Their pain is severely limiting their activities of daily living and adversely affecting their quality of life experiencing continues urge makes it difficult to concentrate on their job. Some of these patients have to go to the bathroom every 10-15 minutes. We have to keep in mind that chronic pain and its associated irritative voiding symptoms limit normal function of the person, including recreation, employment, and other social and daily activities. There is not one quick fix available for these patients and if a physician does not feel inclined to treat these patients or is uncomfortable with the diagnosis of IC he or she refer them to a colleague interested and with expertise in this disease. Multidisciplinary evaluation and treatment of these patients is recommended and should include urologists, gynecologists, gastroenterologists, psychologists, anesthesiologists, and specially physical therapist.

We have to keep in mind that each patient is different and needs a personalized approach. We need to learn to see these patients as a whole person and not treat only one symptom. The physicians and the patient need to work together to find for each one the best solution. What is helpful in one patient is often not helpful in others. We need to keep an open mind and especially we need to listen to the patient. Then it can be extremely gratifying to be able to help at least some of these patients.

GYNAECOLOGIC SYMPTOMS IN RELATION WITH AN OVERACTIVE PELVIC FLOOR

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No abstract available

ANORECTAL SYMPTOMS IN RELATION WITH AN OVERACTIVE PELVIC FLOOR

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Introduction

Imaging techniques, such as dynamic rectal examination (DRE) play an important role in the evaluation of functional anorectal abnormalities. DRE provides a dynamic assessment of the act of defecation by recording the rectal expulsion of a barium paste that approximates the consistency of faeces. Its main purpose is to provide both qualitative and quantitative information on all aspects of anorectal and pelvic floor function, anal sphincter function and the effectiveness of rectal evacuation.

DRE is an important procedure to diagnose a rectocele, enterocele, intussusception and/or overactive pelvic floor. Since a number of treatment methods, which successfully can restore the dynamics of rectal evacua-

tion, have been developed speed and completeness of rectal emptying is clinically important and therefore need to be recorded.

Rectocele

A rectocele can be defined as an -anterior or posterior- bulge, of the rectal wall beyond the extrapolated line of the wall. The formation of an anterior rectocele -often apparent during defecation- may reflect relative weakness of the rectovaginal septum. At the end of the defecation, residual rectal contents may be left in the rectocele ('trapping'). Significantly ($p < 0.0001$) more anterior rectoceles were found in female patients and in female control subjects than in males. Anterior rectoceles may occur in individuals without complaints of the anorectal region and should therefore particularly in women be considered as a "normal" phenomenon. The main symptoms associated with a rectocele are usually a feeling of incomplete bowel movement, often requiring digital pressure to the vagina or perineum to facilitate emptying, together with aching after a bowel movement. Barium trapping in the rectocele is considered to be important in explaining the repeated sensation of rectal fullness after defecation. In our own series no correlation could be found between the typical symptoms of a rectocele and either barium trapping within the rectocele or the size of the rectocele with DRE. It has been suggested that rectoceles may be the result of repeated straining secondary to a pre-existing disorder of defecation rather than to the rectocele being the primary cause of the obstructive symptoms. This may also explain why rectocele repair is often unsuccessful in relieving symptoms. When surgical repair of a rectocele detected at physical examination is considered, preoperative DRE should be performed to exclude other causes of obstructed defecation. DRE demonstration of a rectal intussusception may change the operative procedure e.g. to correct the intussusception instead of the rectocele. In patients with an anterior rectocele, in whom other causes of obstructed defecation are ruled out, surgical rectocele repair should be considered. In our opinion there are two indications for operating on an anterior rectocele. First if a patient needs vaginal digital support to facilitate defecation. Second in cases of disturbed sexual intercourse.

Enterocoele

An enterocoele is a peritoneal sac that has herniated downwards along the ventral rectal wall. As DRE is routinely performed with small bowel and vaginal contrast, loops of small bowel are then seen to fill the gap between the vagina and the rectum. Therefore this is an objective method of detecting enterocoeles. Sometimes the enterocoele is identified only at the end of the defecation, after repeated straining. A sigmoidocoele which is a prolapse of redundant sigmoid colon into a deep pouch of Douglas is less common than an enterocoele. An enterocoele may be pressed into the direction of the introitus vaginae. If there is an associated rectocele, this can be pushed downward by the enterocoele and finally evacuated. Clinically it can be difficult to diagnose an enterocoele. Patients with previous pelvic surgery are predisposed to the formation of an enterocoele. In female patients with constipation there was a higher incidence of severe enterocoeles in patients with a hysterectomy (22%) compared to the group without hysterectomy (9%). Chronically increased intra-abdominal pressure may cause an enterocoele with or without a previous pelvic operation.

Intussusception

Intussusception of the rectum is an invagination of the rectal wall, which begins as a circular fold 6 to 8 cm up in the rectum and develops into a condition in which the entire rectal wall folds in towards the rectal lumen. In connection with straining this folding inwards progresses and deepens to form a ring pocket, so that it finally fills the entire ampulla. This may reach down to, into or through the anal canal (rectal prolapse). A minimal folding inwards which disappears after the bolus has passed is probably caused by a transient prolapse of the rectal wall and should not be considered pathological. The most common complaint of the patient is difficulty in bowel emptying. Pain, blood loss upon defecation and/or incontinence of gas and/or faeces, sometimes combined with mucus discharge which often leads to pruritis ani. Upon hard straining the obstructive sensation increases. In order to empty their bowels many patients have to extract the faeces manually, while others have to exert pressure with their hands about the anus and perineum and enemas may be ineffective. Rectal prolapse (extra-anal intussusception) may be transient and difficult to reproduce, while intrarectal intussusception may be overlooked on clinical examination and is seldom revealed by proctoscopy. When the intussusception reaches into the anal canal this gives rise to maximal dilatation. These patients often complain of fecal incontinence in between defecation while they have the feeling of an obstacle or incomplete emptying during defecation. A longstanding intussusception may lead to the solitary rectal ulcer syndrome.

Overactive pelvic floor syndrome

"Overactive pelvic floor syndrome" denotes a persistent contraction of the pelvic floor muscles, representing a functional disorder of the pelvic floor muscles causing a functional outlet obstruction. The question arises, however, whether persistent contraction is due to the conscious action of an embarrassed patient, thus only occurring during the investigation, or whether it really represents a functional disorder of the pelvic floor mus-

cle resulting in outlet obstruction. The anorectal angle normally increases on straining as a result of relaxation of the puborectal muscle. The extent of increase may range from 20° to 40°. In a small group of patients with impaired evacuation, DRE demonstrated either an unchanged or decreased anorectal angle on straining or defecation, which findings frequently result from a persistent or paradoxical increase of the puborectal muscle impression. This appearance is often quite persistent and the evacuation may only be achieved after multiple attempts at straining and defecation.

Suggested readings:

- The value of oral and vaginal contrast in Dynamic Rectal Examination (Defecography).
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THE DIAGNOSIS BY THE PHYSICAL THERAPIST OF AN OVERACTIVE PELVIC FLOOR

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The aim of this workshop is to give a review of the reliability and validity of several different methods of assessing pelvic floor function. Most studies are based on the evaluation of the strength, the endurance, pelvic floor muscle thickness, urethral or vaginal pressure or recruitment of motor units.

Minimal attention is given on the evaluation of the overactive pelvic floor.

Pelvic floor muscle function can be evaluated by

- vaginal palpation
- surface EMG
- vaginal pressure measurement
- observation,
- vaginal cone
- needle and wire EMG,
- transvaginal, transrectal and transperineal ultrasound to measure pelvic floor muscle thickness,
- MRI (magnetic resonance imaging)
- urethral pressure measurement
- abdominal leak point pressure

Only the first five methods can be used in the physiotherapy setting. Muscle testing depends on the cooperation of the person being tested, experience of the tester and the position of the subject.

Intra- and inter-reproducibility: Different scoring systems have been tested for intra- and inter-reproducibility.

Validity: Correlation between pelvic muscle strength and vaginal squeeze pressure, measurements by surface EMG and vaginal cones, correlations between pelvic muscle strength, incontinence(24h pad-test) and vaginal cones were researched.

Hypertonic pelvic floor

Based on studies concerning physiotherapy of MS patients, the necessity of evaluating the pelvic floor was high. A digital scale for hypertonic muscles was developed based on the Asworth scale. The reproducibility was researched and correlated with urodynamic findings.

Another evaluation was made based on the efficacy of physiotherapy for patients with dysuria. They concluded that needle EMG is necessary to find out which patients benefit or not from relaxation therapy.

A third method of evaluation was based on studies on the efficacy of physiotherapy for children and adults with obstipation, dysfunctional voiding and recidives of urinary infection. They based their results on reduction in symptoms together with EMG-surface electrodes.

Stress urinary incontinence in females occurs with age. The maintenance of continence depends on an adequate urethral closure function. The urethral striated muscular component decreased with age. The urethral and paraurethral structures become progressively deficient. This results in a lower maximal urethral closure pressure, smaller pressure transmission rate, insufficient pelvic floor contractility on the urethra and a lower leak point pressure in stress incontinent patients. The pelvic floor muscles are significantly thinner in women with stress incontinence than in healthy women.

Although a lot of physiotherapists discuss on findings of an overactive pelvic floor in a part of these patients, nothing can be found in the literature.