The Overactive Pelvic Floor and Sexual Dysfunction

Anna Padoa, MD
Urogynecology and Pelvic Floor Service
Assaf Harofeh Medical Center
Topics

- Role of the pelvic floor in sexual function
- OPF and sexual dysfunction in women and in men
- Female genito-pelvic pain/penetration disorder
- Emotional issues and pelvic floor overactivity
- Clinical approach overview
The Pelvic Floor and Female Sexual Function

- **Kegel, 1948:**
  - a technique for strengthening the striated pelvic floor musculature as a treatment for urinary stress incontinence. "Several women reported enhanced erotic sensations in their genitals and a greater ability to experience orgasm."

- Pubococcygeal muscle strength was found to be higher in orgasmic than anorgasmic women.


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Masters and Johnson, 1966: voluntary and involuntary pelvic floor contractions occur during sexual arousal in both genders.

Involuntary and rhythmic contractions of the pelvic floor muscles seen during orgasm, with 0.8-second intervals.

The intensity of the pelvic floor contractions during arousal and orgasm appeared to decrease with age.


Bohlen and colleagues observed three different patterns of orgasmic contractions in eleven women aged 24-33.

- First type: a small number of regular contractions subjectively indicated orgasm onset.
- Second type: twice as many regular contractions followed by additional irregular contractions.
- Third type: a small number of women reported experiencing orgasm without any pelvic floor contractions.

The Pelvic Floor and Female Sexual Function

- Sherfey, 1974: venous congestion and stretching of the pelvic muscles stimulate muscle nerve endings such that they begin to contract. These muscular contractions, perceived as pleasurable, constitute the experience of orgasm.

- Shafik, 2008: involuntary pelvic floor activity during stimulation of the clitoris, which he considered to be a clitoromotor reflex.

- The levator ani is involved in vaginal elongation, uterine elevation and vaginal muscle contractions, possibly facilitating the male genital response, resulting from penile thrusting.


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Does pelvic floor muscle training enhance sexual arousal and orgasm?

- Messe and Geer, 1985:
  - Vaginal contractions without additional sexual stimulation enhanced both genital and subjective sexual arousal relative to baseline

- Possible mechanisms:
  - Increased stimulation of stretch and pressure receptors during intercourse may lead to enhanced arousal and orgasmic potential
  - Pubococcygeus exercises might focus a woman's attention on her genitals; this shift in attention might result in an increased perception of pleasure

Does pelvic floor muscle training enhance sexual arousal and orgasm?

- In women who were coitally orgasmic in less than 30% of intercourse events, PFMT did increase pubococcygeus strength with no improvement on coital orgasmic frequency.

- 46 women with orgasm difficulties practicing PFMT over a 12-week period vs. relaxation vs. attention control group: no difference inorgasmic outcome.

- 32 sexually active postmenopausal women who all had the ability to contract their pelvic floor muscles: PFMT had no impact on sexual function.

Conclusion:

Contrary to the promising findings of the early studies, women who do not have a low tone pelvic floor and who seek to enhance sexual arousal and orgasms, have not much to gain from pelvic floor muscle training.

A relaxed pelvic floor and mindful attention to sexual stimuli and bodily sensations seems a more effective means of enhancing sexual arousal and orgasm.
Sexual function in women with pelvic floor dysfunction

- Studies on pelvic floor dysfunction and sexual dysfunction: conflicting results

- Limitation: no distinction between high-tone and low-tone pelvic floor dysfunction

A relaxed or low tone pelvic floor is associated with better sexual function.

Sexual arousal and orgasmic pleasure are not enhanced by high tonus of the voluntary, striated muscles of the pelvic floor.

- 85 patients referred to physical therapy were divided in a high and low pelvic floor tone:
  - women in the middle age group: better sexual function than younger (< 30 yrs) and older (> 50 yrs) women
  - women with low tone pelvic floor had higher sexual function scores than women with OPF
  - Women with a low tone pelvic floor had lower FSFI sexual pain scores.


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Female genital pain can result from various causes, including inflammation, dermatoses and infections.

Up to 16% of the female population is diagnosed with vulvar pain syndromes, also known as vulvodynia, defined as genital pain in the absence of an identifiable cause.
Female Genital Pain and Penetration Disorders

- DD of vulvovaginal pain disorders, ISVVD – 2003

A) Vulvar Pain Related to a Specific Disorder

1. Infectious (e.g. candidiasis, herpes, etc)
2. Inflammatory (e.g. lichen planus, immunobullous disorders, etc.)
3. Neoplastic (e.g. Paget’s disease, squamous cell carcinoma, etc.)
4. Neurologic (e.g. herpes neuralgia, spinal nerve compression, etc.)

B) Vulvodynia

1. Generalized
   1. Provoked (sexual, nonsexual, or both)
   2. Unprovoked
   3. Mixed (provoked and unprovoked)
2. Localized (vestibulodynia - previously known as vulvar vestibulitis, clitorodynia, hemivulvodynia, etc.)
   1. Provoked (sexual, nonsexual, or both)
   2. Unprovoked
   3. Mixed (provoked and unprovoked)
Provoked Vestibulodynia (PVD)

Symptoms

- History of introital dyspareunia
- Sometimes partial or complete cessation of intercourse because it is too painful
- Pain with tampon use, bicycle riding etc
- Tenderness may be confined to the posterior or anterior vestibule
- Can be primary or secondary

Examination

- Inspection
- Q-tip examination
- Pelvic floor muscle tone assessment
Female genito-pelvic pain/penetration disorder

**Provoked Vestibulodynia**
A sharp/burning pain at the entrance of the vagina in response to vestibular touch or attempted vaginal entry

**Vaginismus (DSMIV-TR)**
Recurrent or persistent involuntary spasm of the musculature of the outer third of the vagina interfering with intercourse, characterized by high tone pelvic floor, chronically or in situations of attempted penetration (by any object)

**DSM-5: genito-pelvic pain/penetration disorder**

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Provoked Vestibulodynia (PVD)

Possible Causes:

- **Chronic inflammation**: e.g., following repeated vuvlovaginal infections

- **Neurogenic vulnerability**: an initiating event or series of events may lead to chronic vulvar pain

- **Genetic variations**: may predispose some patients to exaggerated inflammatory responses
Goldstein's classification of PVD:

1. **Hormonally mediated**- after OC, menopause, breastfeeding. Low Testosterone, low libido, dryness. Whole vestibule involved.

2. **Hypertonic pelvic muscle dysfunction**- other symptoms of hypertonicity, musculoskeletal disorders, anxiety. Posterior vestibule involved

3. **Neuroproliferative**- increased number of nociceptors in the vestibular mucosa. Congenital or acquired. Tenderness of the entire vestibule
OPF and sexual arousal in women with sexual pain disorders

- Apparently, genital response in women with dyspareunia is not impaired.

- Genital response was found to be impaired, however, by fear of pain.

- Brauer et al: diminished genital arousal in women with dyspareunia, but equally great in sexually functioning women, during erotic film viewing when the participant was under the threat of a painful stimulus at her ankle (= fear of pain).

Brauer M et al Arch Sex Behav 2006;35:191-200
Fear of pain may result in increased pelvic floor activity, as part of a defensive reaction.

The pelvic floor musculature, like other muscle groups, is indirectly innervated by the limbic system and therefore highly reactive to emotional stimuli and states.

van der Velde et al: increased pelvic floor EMG in women with and without vaginismus in response to an anxiety provoking film.

van der Velde J et al, Int Urogynecol J Pelvic Floor Dysfunct 2001;12:328–31
Empirical evidence shows increased pelvic muscle activity to be associated with reduced blood flow to the vagina.

In women with PVD, the combination of increased PF muscle activity and lack of lubrication causes increased friction resulting in pain, tissue damage or irritation of the skin.

Or, increased pelvic muscle activity may result in muscle pain, reduced blood flow to the vulva and vagina, and consequently, as a result of fear of pain, in reduced lubrication.

Erectile function

- Contractions of the ischiocavernosus:
  - Induce suprasystolic intracavernosal pressures, reduce venous return
  - Stabilizes the erect penis

- Contraction of the bulbocavernosus:
  - Contributes to engorgement of the glans penis and corpus spongiosum
  - Causes increased intraspongiosal pressure and slows venous drainage of blood from the corpora cavernosum, by compressing the deep dorsal vein of the penis

- Contraction of the BC and IC, can improve erection by increasing maximum inflow pressure, as well as likely compensate for veno-occlusive dysfunction
The Pelvic Floor and Male Sexual Function

Ejaculatory function

- Involuntary contraction of the BC muscle expels contents from the urethra during ejaculation.

- Rhythmic contractions of the external urethral sphincter during ejaculation suck the seminal fluid into the posterior urethra while relaxed and ejects it into the bulbous urethra upon contraction.

- Strong BC muscle contractions will increase maximal engorgement of the corpus spongiosum, increase urethral pressure and facilitate ejaculation of prostatic and seminal vesicle fluid.

- Strong BC contraction may also enhance and intensify orgasmic pleasure during ejaculation.

Siegel AL. Urology. 2014;84(1):1-7
Shafik A. Int Urogynecol J Pelvic Floor Dysfunct. 2000;11(6):361-76
Dorey G et al, BJU Int. 2005;96(4):595-7

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The Pelvic Floor and Male Sexual Function

- Voluntary PF activation: more efficient in men who have full erectile function than in those with erectile dysfunction.

- Efficiency of maximal PF contraction: negatively correlated with age in a group of impotent men.

- Rehabilitation of PF muscle function: effective at improving erectile function and especially beneficial in men with mild or moderate veno-occlusive dysfunction.

Dorey G et al, BJU Int. 2005;96(4):595-7
OPF and sexual function in men (CP/CPPS)

- **Pathophysiology of CP/CPPS:** High muscle tone and shortening of the levator ani and external rotators of the hips are involved.

- **More pelvic floor muscle spasm and tension in men with CP/CPPS than in healthy men,** with up to 50% of sufferers showing signs of musculoskeletal dysfunction.

- Zermann et al: 88.3% of CPPS pts had tenderness of PF muscles and poor to absent PF function.

- Trans-abdominal ultrasound in men with CPPS: reduced mobility of PF muscles.

**References:**

- Shoskes DA et al, J Urol. 2008;179(2):556-60
- Khorasani B et al, Urology. 2012;80(3):673-7
OPF and sexual function in men (CP/CPPS)

- **Tension myalgia**, associated with high PF muscle tone: a significant component of pain and sexual dysfunction in men with CP/CPPS

- **OPF as a cause of erectile dysfunction**: Spasm of the PFMs can provide extrinsic compression that impairs pudendal arterial inflow

- **Transperineal ultrasound in CCPS men**: acute anorectal angle during PF contraction and at rest, correlated with pain, sexual dysfunction, anxiety

Davis SN et al, J Sex Med. 2011;8(11):3173-80
Pelvic floor overactivity as an emotional response

- In cases of actual or imminent physical or mental pain the pelvic floor muscles will involuntarily, and often unconsciously, contract.

- Pelvic floor activity was found to be significantly enhanced during sexually threatening film excerpts, but also during anxiety evoking film clips without sexual content.

- In sexual abuse survivors, the pattern of pelvic floor activity was highest during the sexually threatening film clip and the film clip with consensual sexual content.

Pelvic floor overactivity as an emotional response - PTSD

Yehuda, Lehrner and Rosenbaum, 2015:

Sexual difficulties in individuals with PTSD:

the hormonal and neural circuit activation that normally leads to positively valenced sexual arousal and activity is already overactive in PTSD, possibly through reduced anterior cingulated activity, but leads to anxiety, fear, and other PTSD symptoms, such that sexual arousal signals impending threat rather than pleasure.

Pelvic floor overactivity as an emotional response - PTSD

- The relation between childhood victimization and pain in adulthood seems to be moderated by the presence of PTSD in adulthood.

- PTSD is a major mediator in the relationship between the experience of rape and adverse health outcomes and a direct predictor of sexual problems.

- Rape victims as compared to controls: 2.7 times more likely to have PF dysfunction (provoked vulvodynia, LUTS and IBS) and 2.4 times more likely to have a sexual dysfunction.

Pelvic floor overactivity and other sexual and emotional issues

**Attachment style**

related to sexual pain. Granot and colleagues found that women with dyspareunia were more likely to be insecurely attached.

**Painful orgasm**

related to involuntary clonic pelvic floor contractions associated with orgasm, which become painful in women with a chronically overactive pelvic floor.

**Patients with OPF often have**

other stress-related complaints: neck/shoulder area pain, (tension and sexual arousal) headaches

**Behavioural issues**

like a limited non-coital sexual repertoire, add to the likelihood of sexual arousal being insufficient for pain free intercourse

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Granot M et al, J Sex Marital Ther, 2011;37:1-16
Treatment of OPF

A multidisciplinary approach must be adopted, including:

- Physiotherapy
- Psychosocial treatment
- Medical Treatment
Psychosocial Treatment of OPF

The Fear Avoidance Model of Pain

Provide the patient with an extended and detailed version of the fear avoidance model of pain – the “vicious cycle of pain”

Vlaeyen JWS, Linton SJ. Pain. 2000 Apr 1;85(3):317–32

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Psychosocial Treatment of OPF

- Ask the patient to personalize how the “links in the chain” in the vicious cycle apply to her specific situation.

- Explain that treatment can tackle any of the links of the chain.

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Psychosocial Treatment of OPF

A very basic description of the Gate Control Theory of Pain can assist in identifying thoughts, feelings, activities, and circumstances that “open the gate” to (more) pain.


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Psychosocial Treatment of OPF

- **Address anxiety:** The Rosenbaum mindfulness approach

Step 1: Lying on the table. The client is asked to lie on the table, fully dressed, covered with a sheet. She is asked to rate her level of anxiety from low to high (0–5), and then asked what she needs in order to reach the number 0. These needs may include lying on her side in a more protected posture, the practitioner moving away from the table, or, she may need to get up off the table and go back to sitting in the chair, where she was able to rate herself at 0. Other “lowering anxiety” tools are introduced including deep breathing techniques. The exercise is repeated until she is able to lie on the table on her back with her knees flexed and together, and rate herself at 0–1.

Step 2: Lying on the bed, fully dressed (with pants) and covered with a sheet, the client is asked to bend her knees and separate her legs. She is reminded that if she feels anxious with her knees open, she may do what she needs to relieve her anxiety, which is likely to be a return to the position of knees bent and together. This exercise is repeated until she is able to rate her anxiety level with her legs apart at 0–1.

Step 3: As in Step 2 but without the sheet. Covering herself again with the sheet is considered to be one of the lowering anxiety options available to her.

Step 4: As in Step 2 but wearing shorts instead of long pants, first with and then without, the sheet.

Step 5: As in Step 2 but with underwear only, with and without the sheet.

Step 6: As in Step 2 without underwear, with and without the sheet.


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Psychosocial Treatment of OPF

- Include the partner in treatment: a “team approach”

**Explain Basson’s model and its relevance**

- normalizes that several factors can interfere with a physically and emotionally satisfying sexual event
- normalizes the low levels of libido in long-term, committed relationships
- Assures the woman that she can stop the cycle at any time without guilt

Davis HJ, Reissing ED. Sex Relatsh Ther. 2007;22(2):245–54

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Medical Treatment of OPF: PVD

- Evidence for a lack of benefit of:
  - topical 5% lidocaine, oral desipramine, and botulinum-toxin injections

- Insufficient evidence regarding:
  - steroid and anesthetics injections
  - multilevel nerve blocks
  - interferon
  - capsaicin
  - topical gabapentin

Medical Treatment of OPF: PVD

Goldstein’s approach:

**Neuroproliferative PVD:**
- topical anaesthetics
- antidepressants,
- antiseizure drugs
- capsaicin cream
- vulvar vestibulectomy

**Hormonally mediated PVD:**
- stopping hormonal contraception
- topical estradiol (with or without testosterone) to the vestibule

**Hypertonic pelvic muscle dysfunction:**
- physiotherapy,
- muscle relaxants (valium suppositories)
- Botulinum toxin injections
- cognitive behavioral therapy
Medical treatment options for OPF (conflicting evidence):

1. BTTA injections
2. Diazepam suppositories
3. Cyclobenzaprine (Amrix)
4. Topical nitroglycerin
5. Gabapentin
6. Amitriptyline
Surgical Treatment of PVD

Vulvar Vestibulectomy

Vestibule excision with vaginal advancement:
- A U-shaped area of the vestibule, inner labial fold, and lower portion of the hymenal ring is excised
- A piece of posterior vaginal wall is dissected from the underlying tissue to cover the excised area
- “modified vestibulectomy”: excision is limited to half-way up the vestibule
Surgical Treatment of PVD

- Efficacy of surgical therapy:
  - Case series including 1138 patients reported an effect varying between 31% and 100%, for patients who reported at least some improvement.
  - Twelve studies reported complete relief as an outcome and the median effect size was 67%.

- Complications:
  1. Bleeding, Hematoma
  2. Infection
  3. Complete or partial wound separation
  4. Bartholin duct cyst formation
  5. Anal sphincter weakness
  6. Uneven healing requiring further surgery
  7. Vaginismus
  8. Vaginal stenosis


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