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ORIGINAL ARTICLE

Pelvic floor rehabilitation in the treatment of dyspareunia in women[☆]

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Available online 9 March 2009

KEYWORDS

Dyspareunia;
Vestibulodynia;
Pelvic floor;
Physical therapy;
Physiotherapy;
Biofeedback

Summary Findings from recent studies suggest that the pelvic floor musculature may play a role in the pathophysiology of dyspareunia, particularly provoked vestibulodynia.

Objective. – The main purpose of this paper is to present the different components of pelvic floor rehabilitation (education, biofeedback, manual and insertion techniques, in addition to electrotherapeutic modalities) and to discuss their effectiveness in the treatment of dyspareunia in women.

Method. – The manuscript was based on a literature search performed in *Pubmed*.

Results. – The present state of knowledge concerning the use of pelvic floor rehabilitation in the treatment of dyspareunia is based on three randomized outcome studies demonstrating the effectiveness of biofeedback and transcutaneous electrical stimulation. Evidence regarding the effectiveness of other modalities stems from studies with either observational or retrospective designs.

Discussion. – Findings suggest that pelvic floor rehabilitation is a promising treatment for vestibulodynia. However, randomized controlled-trials are required in order to document the efficacy of the combined modalities included in pelvic floor rehabilitation and to examine its usefulness as a treatment for other types of sexual pain, such as vaginismus.

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Introduction

Recurrent pain during intercourse, or dyspareunia, is reported to affect 8 to 21% of women (Laumann et al., 1999).

DOI of original article: [10.1016/j.sexol.2009.01.004](https://doi.org/10.1016/j.sexol.2009.01.004).

[☆]  galement en version fran aise dans ce num ro: Morin M, Bergeron S. La r education p rin ale dans le traitement de la dyspareunie chez la femme.

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Provoked vestibulodynia (previously termed *vulvar vestibulitis syndrome*) is suspected to be the most frequent cause of dyspareunia in premenopausal women (Meana et al., 1997; Spector et al., 1993). The etiology of vestibulodynia remains elusive. Several causes have been proposed including embryologic abnormalities, genetic or immune factors, hormonal factors, inflammation, infection and neuropathic changes (Haefner et al., 2005). The involvement of the pelvic floor musculature has also been reported (Mariani, 2002; Zolnoun et al., 2006). Most likely, there is no single cause and a biopsychosocial pain conceptualization is

probably the most useful in guiding the search for etiology and treatment. Based on this theoretical framework, a multimodal pain management approach, of which pelvic floor rehabilitation is an integral part, has been suggested as a promising avenue of intervention (Bergeron et al., 2002a). The main objective of the present paper is to present a literature review focusing on the different pelvic floor rehabilitation modalities employed in the treatment of women with dyspareunia.

Role of the pelvic floor musculature

Several authors have suggested that pelvic floor muscle dysfunction is associated with vestibulodynia (Glazer et al., 1998; Reissing et al., 2004; Reissing et al., 2005; White et al., 1997). Two studies, using intravaginal electromyography (EMG), showed that women with vestibulodynia have higher resting activity, lower strength and endurance as well as increased pelvic floor muscle instability (Glazer et al., 1998; White et al., 1997). Moreover, using vaginal digital palpation, Reissing et al. (2004; 2005) found lower pelvic floor tonicity in women with vestibulodynia compared to controls.

The exact mechanisms by which the pelvic floor muscles contribute to vestibulodynia are unknown. Some theories propose that inflammation of the vulvovaginal mucosa could lead to pelvic floor dysfunction by:

- provoking muscle instability, hypertonicity and poor muscle control (Glazer et al., 1998);
- creating a protection-like defence regarding pain during intercourse (Reissing et al., 2004; Reissing et al., 2005);
- penetrating the underlying muscle to initiate pelvic floor muscle hypersensitivity (Wesselmann, 2001).

In contrast, Zolnoun et al. (2006) suggested that pelvic floor dysfunction could trigger a sensitization process in the mucosa. Whatever the onset, it most probably results in a "vicious cycle" of inflammation and additional muscle contractions (Graven-Nielsen and Arendt-Nielsen, 2002; Svensson et al., 1998).

Furthermore, the lack of consensus concerning terminologies used to characterize the pelvic floor muscle tonicity should be pointed out (hypertonicity, overactivity, spasm, tension, spasticity...). This issue, combined with the lack of objective measures of the pelvic floor, compromises the understanding and investigation of pelvic floor muscles in the pathophysiology of vestibulodynia.

Pelvic floor rehabilitation: a combination of modalities

The physiotherapist specialized in pelvic floor dysfunction can apply many modalities to help women with dyspareunia. As described by Bergeron & Lord (2002b), the main goal of physiotherapy is to rehabilitate the pelvic floor by:

- increasing awareness and proprioception of the musculature;
- improving muscle discrimination and muscle relaxation;
- normalizing muscle tone;

- increasing elasticity of the tissues at the vaginal opening, as well as desensitizing the painful area;
- decreasing fear of vaginal penetration.

These goals are achieved through education, biofeedback, manual and insertion techniques, as well as electrotherapeutic modalities.

Effectiveness of combined modalities

In a retrospective study, 71% of women suffering from vestibulodynia reported more than a moderate improvement of their condition (Bergeron et al., 2002b). This treatment included education, biofeedback, manual and insertion techniques as well as electrical stimulation. Dionisi et al. (2008) observed improvement in pain for 75% of their participants following 10 sessions of electrical stimulation, transcutaneous electrical stimulation (TENS), biofeedback and home exercises. Moreover, Goetsch (2007) suggested that physiotherapy was an effective adjunct to vestibulectomy.

Education

Advice concerning vulvar hygiene habits, behavior modification and stress reduction techniques has been integrated into recent randomized treatment outcome studies (Bergeron et al., 2001; Weijmar Schultz et al., 1996). Teaching patients about pelvic floor muscle anatomy and function is crucial in pelvic floor rehabilitation. Indeed, it has been shown that visual inspection and vaginal palpation are required for instructing correct pelvic floor contraction since verbal instruction alone resulted in inadequate contraction in more than 50% of women (Bo et al., 1990; Bump et al., 1996).

Biofeedback

A success rate of 52% was reported in women with vestibulodynia following 16 weeks of electromyographic (EMG) biofeedback in a retrospective study (Glazer et al., 1995). Similar results were observed in a study conducted by the same research team with a more homogeneous sample of women with vestibulodynia (McKay et al., 2001). A randomized trial was conducted by Bergeron et al. (2001) comparing group cognitive-behavioral sex therapy/pain management, EMG biofeedback and vestibulectomy in women with vestibulodynia. The average reduction of pain during intercourse was of 35% and 34% of women reported great improvement or complete relief of their pain. A 2.5-year follow-up of participants in the same study confirmed that gains were maintained and that in fact, pain intensity was further reduced at long-term follow-up (Bergeron et al., 2008). Danielsson et al. (2006) compared biofeedback to lidocaine and reported a significant improvement in 12/18 (66%) of the participants at a 12-month follow-up. Both studies had treatment adherence problems with the biofeedback group (Bergeron et al., 2001; Danielsson et al., 2006). These authors argued that success and adherence rates would be higher if patients benefited from all the components of pelvic floor rehabilitation as opposed to

biofeedback alone (Bergeron et al., 2001; Danielsson et al., 2006).

Manual therapy

Physiotherapists use several stretching and myofascial techniques to facilitate muscle relaxation, improve blood circulation and mobility in the pelvipereineal region, adjusting postural imbalances, as well as increasing the vaginal opening and desensitizing the area (Fitzgerald and Kotarinos, 2003b; Rosenbaum and Owens, 2008). As reported in section 3.1, most of the studies included manual therapy in a multimodal treatment. In an observational study conducted with men and women presenting different medical conditions resulting in dyspareunia, Wurn et al. (2004) showed a reduction in pain intensity and an improvement in sexual function with manual techniques. However, the authors did not provide much detail concerning the specific techniques applied. Weiss (2001) studied a myofascial release approach in men and women with interstitial cystitis. This approach is interesting considering that trigger points are reported in the majority of women with pelvic floor pain (Fitzgerald and Kotarinos, 2003a)

Dilators – insertion techniques

In an observational study with vestibulodynia women, Idama and Pring (2000) observed a complete resorption of pain in 72% of the participants using a home self-insertion technique. Murina et al. (2008a) studied the effect of adding dilators after one of the following treatments: TENS, infiltration, biofeedback, amitriptyline or pregabalin. Findings suggest that the use of dilators is associated with further improvement in women (Murina et al., 2008a).

Electrotherapeutic modalities and others

Pelvic floor pain reduction was demonstrated using electrical stimulation (Fitzwater et al., 2003; Nappi et al., 2003), high voltage pulsed galvanic stimulation (Morris and Newton, 1987) and TENS (Murina et al., 2008b). These positive findings suggest that these techniques are a worthwhile component of pelvic floor rehabilitation, although future prospective studies are necessary to further document these successful outcomes.

Conclusion

Studies published to date support the effectiveness of pelvic floor rehabilitation in women with dyspareunia. However, considering the retrospective and observational nature of most of the available research, randomized controlled-trials are required to document the efficacy of this promising treatment.

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