

# When the pain does not go away – a case report on a comprehensive biopsychosocial physiotherapy approach for refractory vulvodynia treatment

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## Abstract

**Background:** Vulvodynia is a chronic primary pain condition marked by persistent vulvar pain lasting more than three months, often accompanied by various potential contributing factors. Traditionally, it has been misunderstood as either solely a physical or psychological disorder. However, contemporary recommendations for managing persistent pain underscore the necessity of adopting a broader, patient-centered approach that extends beyond the conventional biomedical model.

**Aims:** This case report aims to illustrate a comprehensive, biopsychosocial physiotherapy approach designed for the treatment of refractory vulvodynia.

**Case report:** A 28-year-old woman sought help at the physiotherapy clinic, presenting with refractory vulvodynia and concurrent low back pain. Previous biomedically-focused interventions, including surgery, had proven ineffective. The presented physiotherapy approach centered on central pain mechanisms and encompassed patient-centered, values-based goals, pain neuroscience education, as well as local and global gentle manual therapy techniques and therapeutic exercises. The Numerical Pain Rating Scale (NRPS) gauged

## Key words

Pelvic floor, vulvodynia, chronic pain, conservative treatment, case report.

pain levels during the cotton-swab test (vestibular allodynia) and pelvic floor palpation. Additional outcomes were assessed through the Oswestry Low Back Pain Disability Questionnaire (ODI). Pre and post-treatment evaluations were conducted over a 10-week period. Following the completion of 10 weekly sessions, pain during the cotton-swab test and pelvic floor palpation diminished from 8 to 2 points on the NRPS. ODI scores decreased from 9 to 3 points. These changes exceeded the

minimal clinically important change estimated for the utilized outcome measures. Subsequently, the patient was able to resume activities that had previously been compromised by her pain.

**Summary:** Physiotherapy within the biopsychosocial framework emerges as a promising treatment avenue for women grappling with refractory vulvodynia. Further research to assess the effectiveness of this approach is warranted.

## Introduction

Vulvodynia is a chronic primary pain condition which frequently overlooked in clinical settings. A lifetime prevalence estimates ranging from 7% to 16%, with indications of an increasing incidence [1]. This condition is marked by enduring vulvar pain persisting for more than three months, associated with various potential factors [2]. Its etiology is not linked to any identified disease or pathology but rather points to multifactorial contributing mechanisms, incorporating psychosocial, muscular, inflammatory, and neuroproliferative components [3-5]. Vulvodynia imposes a substantial psychosocial burden on women and their partners [6]. Despite the array of available treatment modalities, a subset of patients continues to grapple with persistent pain, even after undergoing surgical interventions such as vestibulectomy [4].

For numerous years, vulvodynia was misconstrued, perceived solely through the lens of a physical or psychological condition [7]. Contemporary perspectives now embrace a more comprehensive approach, recognizing the interplay of multiple factors in shaping the experience and impact of pain [6]. Aligned with this shift, the International Association for the Study of Pain (IASP) recently introduced a novel classification of chronic pain for the 11th revision of the Inter-

national Statistical Classification of Diseases and Related Health Problems (ICD-11) by the World Health Organization [8].

The current classification portrays pain as a complex, multifaceted phenomenon, not merely a symptom but potentially a disease in itself. In this system, vulvodynia finds its place within the category of 'chronic primary pain,' where pain is the primary issue and cannot be better explained by another condition [6,8]. A newly introduced mechanistic pain descriptor by IASP, termed nociplastic pain presentation, is often associated with this ICD-11 category [9]. This descriptor signifies heightened responsiveness to sensory input without clear evidence of a nociceptive or neuropathic cause. Central sensitization (CS) is frequently proposed as a potential underlying mechanism driving these nociplastic changes [10,11].

In vulvodynia, nociplastic pain and central sensitization (CS) may be triggered initially by an inflammatory response to trauma or injury to the vulvar tissue [12], but can also occur independently of peripheral injury or inflammation. Over time, these processes can lead to alterations in the nervous system, heightening its responsiveness to pain [13]. Furthermore, the intricate nature of pain and resistance to peripheral

treatments often stem from the presence of other dysfunctions or pathologies that share similar underlying mechanisms (neurological, endocrine, immune) and are influenced by various biopsychosocial factors [14].

These overlapping and co-prevalent conditions are collectively termed Chronic Overlapping Pain Conditions (COPCs), encompassing both pelvic (e.g., vulvodynia) and nonpelvic (e.g., nonspecific low back pain) conditions [15]. Recognizing central pain mechanisms, such as CS, identifying potential peripheral pain drivers sustaining CS, and acknowledging the presence of COPCs can significantly impact treatment outcomes. This awareness is critical for comprehensive pain management to prevent the use of ineffective, costly, and invasive treatments [16].

Given the intricate pain mechanisms involved in vulvodynia, it becomes paramount to critically assess and adapt therapeutic approaches, especially within physiotherapy settings. Recent recommendations for treating persistent pain conditions underscore the necessity of adopting a more comprehensive, patient-centered approach that transcends the confines of the traditional biomedical model [17].

## Aims

This case report seeks to showcase a comprehensive physiotherapy approach that integrates the biopsychosocial framework and incorporates current insights from pain science in the management of refractory vulvodynia, which persists despite prior surgical intervention.

## Case report

A 28-year-old patient presented at the physiotherapy clinic with refractory vulvodynia accompanied by symptoms of low back pain. The onset of pain was gradual, initially described as an "itch-like sensation akin to vaginitis," progressing to a burning sensation in the vulva. Eventually, it reached an acute and unbearable level, compelling the patient to lie down. The pain extended to the vulvovaginal area and lumbar region, with the

patient rating it at 9/10 on the 11-point Numeric Pain Rating Scale (NPRS) [18].

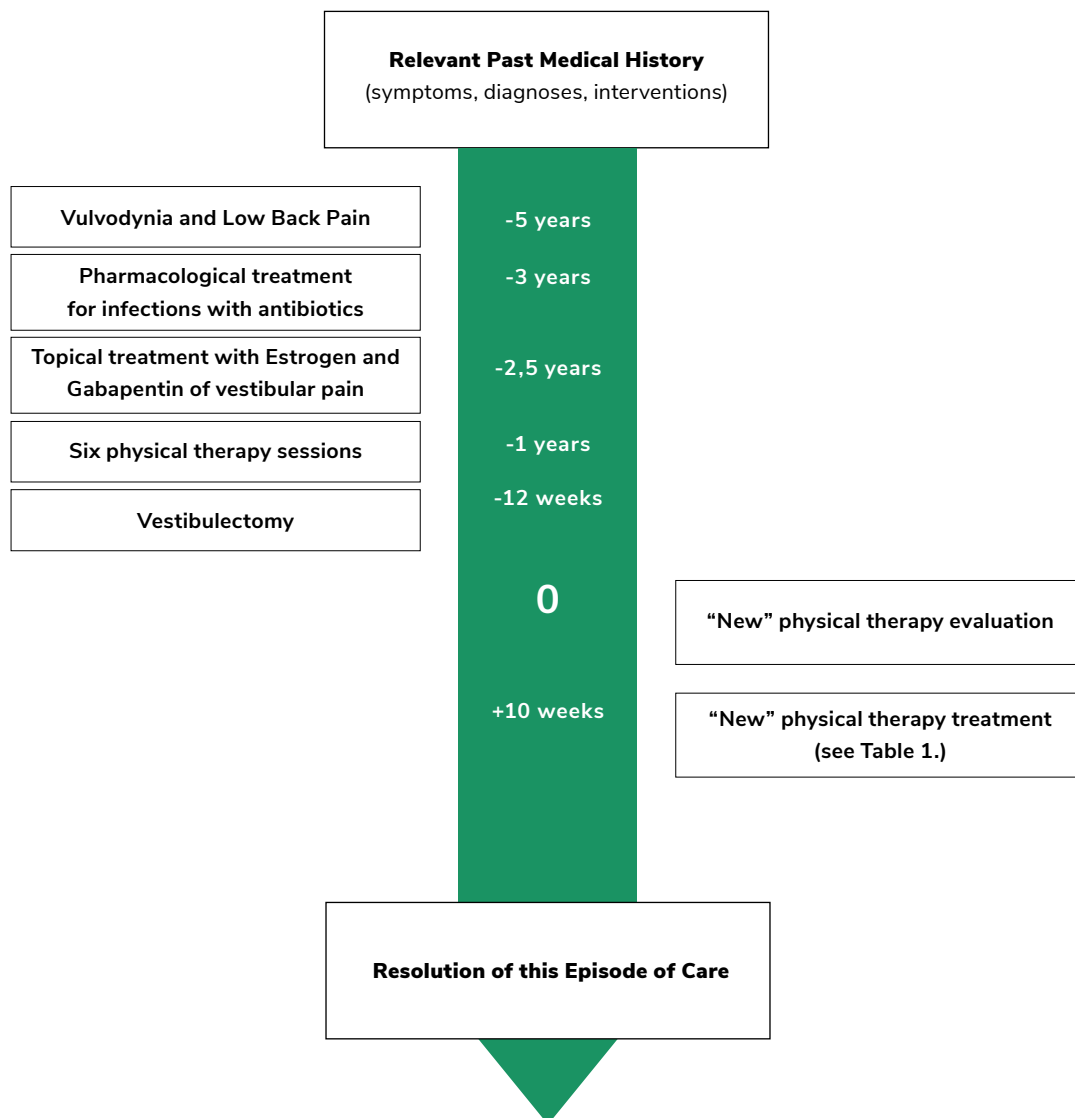
Daily activities such as sitting, prolonged standing, and wearing jeans exacerbated the pain, impacting her role as an office manager. Additionally, the patient reported pain during sexual intercourse, resulting in prolonged abstinence due to intense pain at the vaginal introitus. Initial treatments included antibiotics for infections, intravaginal suppository treatments with estrogen, and gabapentin. She underwent six physiotherapy sessions at another clinic, but discontinued the treatment, citing that internal manual therapy techniques were excessively painful and exacerbated her symptoms. Subsequently, she opted for a vestibulectomy after ineffective conservative measures.

Post-vestibulectomy, the patient's condition stabilized, but she continued to report pain, albeit reduced from 9 to 8 on the NPRS scale. Despite the removal of the vestibule, the burning sensation and pain persisted in the area where the vestibule had been, significantly restricting her daily activities, including sexual and physical endeavors. Twelve weeks post-surgery, due to persistent pain, she sought another physiotherapy evaluation and treatment, choosing our clinic after having previously received physiotherapy elsewhere.

## Diagnostic evaluation - the "new" physiotherapy assessment

Outcome measures were assessed both before and after treatment. During the initial evaluation, the patient reported spontaneous pain in the vulva and low back, scoring 8/10 on the Numeric Pain Rating Scale (NRPS). To assess vestibular allodynia, a diagnostic criterion for vulvodynia [19], a cotton-swab test was conducted with light pressure at five different vestibular locations (2, 4, 6, 8, 11). At each location, the patient rated her pain intensity as 8/10 on the NRPS. Pelvic floor muscles were evaluated by digital palpation in a supine crook-lying position, with the obturator internus and levator ani muscles bilaterally palpated, eliciting pain rated at 8/10 on the NRPS.

**Figure 1.** Timeline of previous medical history.



Although the patient's primary concern was pain in the surgically removed vestibular area, she also reported discomfort and pain in the low back (sensation of stiffness during movement, exacerbated in weight-bearing positions). A spine examination was performed to assess movements that might provoke symptoms, but none of the examined movements exacerbated her pain. Additional outcome measures included functional limitations assessed through the Oswestry Disability Index (ODI) [20]. The scale comprises 10

questions, with a score of 0-5 for each section of six statements, yielding a total score of 0-50. The ODI questionnaire was completed, with the highest score of 5 points reported in the sexual activity domain. Pain intensity, lifting, sitting, and standing were each rated at 1 point, resulting in a total of 9 points.

Apart from the mentioned complaints, the patient reported no other health issues, and there were no significant hereditary, autoimmune, tumoral, or genetic diseases in the patient's family

history linked to her current condition. Additionally, screening for adverse childhood experiences (ACEs) revealed no pertinent incidents influencing the patient's symptoms or treatment outcomes. Despite previous discouraging and ineffective treatments, the patient was motivated to alleviate her symptoms. Her primary treatment goals were to resume sexual activity without pain, return to running and Pilates, sit without cushion support, stand without low back and vulvar pain symptoms, and wear skinny and high-waisted pants. The patient provided written informed consent for the publication of this case report.

### Physiotherapy intervention

Based on the patient's history, marked by ineffective biomedically-oriented treatments such as local physiotherapy techniques, medications, and surgery, and the findings from a complex physical examination revealing a long-term, multiregional pain condition impacting function and reducing quality of life, suspicions of central sensitization (CS) and nociplastic pain presentation arose. In response, a novel physiotherapy intervention was proposed, incorporating a comprehensive, patient-centered strategy that integrated non-no-ciceptive manual therapy (NNMT) and graded exposure interventions. These were specifically tailored to address the intricate pain presentation believed to involve central pain mechanisms.

The treatment plan featured patient-centered, values-based goals, pain neuroscience education (PNE), NNMT (both internal and external approaches, including dermo-neuro-modulating) [21], sensory integration [22], and therapeutic exercise [23]. The personalized education aimed at addressing the patient's unique presentation and needs, fostering active involvement in discussions about the meaning of pain, while ensuring a delicate approach to challenging beliefs to maintain a positive therapeutic alliance. The intervention consisted of ten weekly 60-minute sessions, with the patient receiving a daily 5-minute home ex-

ercise program after each session. This program included external tissue touch with tolerable pressure, labia majora spreading, and the application of cold vaginal cones to alleviate irritation and swelling. The specifics of the treatment plan are outlined in **Table 1**. Following the treatment phases proposed by Vadyken and Hilton [24], the plan included Assessment, Desensitization, Graded Imagery and Graded Exposure, and Supported Independence.

Remarkably, the patient exhibited excellent adherence to the treatment regimen, actively participating in all scheduled sessions and diligently engaging in prescribed home exercises. Both the internal interventions and therapeutic exercises were well-tolerated, with no reported adverse effects throughout the program's duration. This speaks to the safety and patient-specific adaptation of the treatment protocols, allowing for a linear progression in the treatment process.

### Findings

Following the completion of 10 physiotherapy sessions, pain, as measured by the Numeric Pain Rating Scale (NPRS) during both the cotton-swab test and pelvic floor palpation, significantly decreased from 8 to 2 points, marking a remarkable 75% reduction for both vestibular allodynia and pelvic floor pain. This reduction is considered a substantial and clinically relevant improvement [25]. Furthermore, the Oswestry Disability Index (ODI) witnessed a notable decrease from 9 to 3 points, signifying a 66% reduction in the overall score. These changes surpassed the threshold for the minimal clinically important change [26].

As a result of these improvements, the patient successfully reintegrated into activities that were previously hindered by her pain, such as wearing skinny pants and engaging in prolonged sitting. Moreover, she resumed sexual and physical activities, including running, marking a significant enhancement in her overall quality of life.

**Table 1.** Detailed treatment description.

Session #	Session focus	Description
1	ASSESSMENT: Evaluation and planning (60 min) 116	Clinical examination Understanding patient's beliefs and needs Therapy goals setting and establishing therapeutic alliance
2	DESENTISIZATION: Patient education (60 min)	Personalized education of anatomy and function of the pelvic and lumbar pain PNE on sensitized nervous system & persistent pain and how physiotherapy treatment can affect pain modification (neuro-plasticity of nervous system)
3-5	DESENTISIZATION: Gentle, internal, non-nociceptive manual therapy including DNM techniques (30min-15min providing manual therapy the rest explanation of procedures and home exercise programme)	DNM is gentle skin movements to desensitize vestibular area, regain normal sensitivity and tolerance and as a preparation for internal techniques and to increase circulation and reduce swelling sensation. DNM techniques to vulvar and vaginal area applied in the crook lying position.  Remaining <i>per vaginam</i> non-nociceptive manual techniques included gentle muscle stretching with contraction and relaxation of the pelvic floor to regain muscle control, perception, and coordination, and gentle pressure on tender point of LA and OI  HEP: external self-touch by spreading labia majora and applying cold vaginal cones for 5 min every day
6-10	GRADED EXPOSURE: Sensory integration and graded exposure, continuation of manual therapy (60min)	Exercises on Swiss ball: hip circles & pelvis rotation.  Graded exposure on different surfaces (wood, metal, cushions) to regain comfortable sitting  Education about analgesic effect of exercise  Exercises: Squats, lunges, step-ups, deadlifts (20kg, 4 sets, 6 reps, 3min pause after every set)  Non-nociceptive manual treatment at vagina's introitus, deep breaths, manual pelvic floor stretches, pinch grip technique with the pointer finger at the entrance of the vagina and the thumb at the perineum, providing pressure while folding the tissue in and out.  HEP-twice-weekly program of exercise made during the therapy and additional 30-minute daily aerobic activity, in case of need use internal manual techniques.
After treatment	SUPPORTED INDEPENDENCE Recommendations for self-management	Continuation exercises and autotherapy techniques every other day for recovery and desensitization of vulvar area and to reduce low back pain.  Recommendations regarding regular physical activity.  Flare-up management

**Abbreviations:** PNE – Pain Neuroscience Education, DNM – Dermo-Neuro-Modulation, LA – Levator Ani, OI – obturator internus, HEP – Home Exercise Programme.

## Discussion

This case report introduces an innovative physiotherapy approach, recognizing the intricate nature of persistent pain mechanisms. The approach integrates person-centered goal setting, pain neuroscience education (PNE), graded exposure and activity, non-nociceptive manual therapy (NNMT), and exercise. Implemented within the biopsychosocial framework and drawing from current pain science findings, this comprehensive physiotherapy strategy resulted in significant and clinically meaningful improvements in both pain levels and overall function. Notably, this case report represents the inaugural instance of applying such a comprehensive physiotherapy approach to address refractory vulvodynia following an unsuccessful surgical procedure.

Recent recommendations emphasize the need for addressing persistent pain through a multifaceted, person-centered, biopsychosocial perspective [27]. This approach has already demonstrated success in managing various chronic pain conditions, particularly in cases of persistent lower back pain [28–31]. Similar strategies, featuring a multimodal approach within the biopsychosocial framework and incorporating psychologically informed practices, are emerging in the context of persistent pelvic pain and sexual pain disorders [32]. However, the available data is limited, with only a handful of randomized controlled trials (RCTs) reported [33–36].

To comprehensively address individuals experiencing pain, various components must be integrated. These components extend beyond mere pain relief and aim to enhance overall health [37], cultivate coping mechanisms to boost patients' self-efficacy, and prioritize functional improvement over mere pain reduction [34]. The therapeutic alliance holds a pivotal role in this approach, as it has been recognized as crucial in the treatment of vulvodynia [38]. Despite the inherent challenges in establishing trust, especially due to prior ineffective treatments, physiotherapists play a critical role in this lengthy and delicate pro-

cess. Personalized goal-setting and shared decision-making are essential for person-centered care [27,39], striving to fully comprehend the patient's needs, bolster their pain self-efficacy, address their beliefs surrounding their pain experience, and enhance their understanding of their condition.

After ensuring that the foundational elements focused on communication and interactions were met, the presented treatment encompassed PNE, NNMT, and graded exposure techniques [33]. PNE, widely applied across various musculoskeletal conditions for several years, aims to reduce pain and disability, enhance patient understanding of pain and associated dysfunctions, promote a positive outlook on movement, and influence psychosocial factors [40]. It is crucial that educational interventions be patient-focused, involving attentive conversations to validate and comprehend their condition [41]. This approach, rooted in conversation and dialogue [42], enables patients to engage in a therapeutic relationship and shared decision-making, fostering change and facilitating the path to healing [39,43].

While the role of manual therapy in treating persistent pain has been subject to recent scrutiny, it remains potentially impactful [44]. Rather than solely normalizing pelvic floor muscle tone, it can also contribute to desensitization [45]. Recent research underscores the need for clinicians to reassess their approach [46]. Instead of viewing manual therapy techniques as mere fixing tools, they should be considered active treatment options, used collaboratively with the patient. Through graded exposure, these techniques can challenge patients' expectations, altering pain perception through positive experiences [47]. For example, applying NNMT techniques when the patient anticipates pain in the affected area can be particularly effective [21].

Exercise and movement prescription represent another integral component of persistent pain treatment, as highlighted in the presented re-

port. Incorporating therapeutic exercise is vital for modulating a hypersensitive nervous system, inducing an analgesic effect, and reintroducing patients to their favorite activities, thereby boosting self-efficacy [48,49]. Including exercise in rehabilitation programs can also trigger chemical changes by reducing cortisol levels and enhancing mental health [50].

### **Strengths and limitations**

Vestibulectomy is often considered the last resort in treating vulvodynia. Consequently, women who do not respond to this procedure may experience feelings of overwhelming despair [6,51]. Our case report suggests that the presented approach could prove beneficial even for this specific group. This discovery conveys a crucial message of hope to women grappling with refractory vulvodynia and the practitioners guiding their treatment, emerging as a notable strength of our report.

While structure-centered models for treating persistent pain conditions have long been under scrutiny [52], they still persist as a prevalent clinical approach [53]. Despite physiotherapists acknowledging the importance of integrating biopsychosocial frameworks into their practice, there is a reported gap in understanding, leading to underutilization [54]. This case report aims to inspire and guide clinicians in making this pivotal shift.

However, limitations include a restricted number of outcome measures and the absence of follow-up data due to the retrospective nature of the study (the composition of this case report was not initially planned). Incorporating comprehensive measures such as pain quality, sexual function, and patient perspectives would undoubtedly augment the significance of the presented results.

### **Conclusions**

This case report underscores the potential efficacy of the presented comprehensive physiotherapy approach in treating refractory vulvodynia, even in cases persisting after vestibulectomy. Leverag-

ing an approach commonly employed in various musculoskeletal pain conditions, it shows promise in addressing the unique needs of patients experiencing pelvic and perineal pain. To solidify its applicability and unveil potential benefits for individuals grappling with this challenging condition, future studies should delve deeper, employing more robust study designs. Establishing a strong foundation through such research will pave the way for broader adoption of this approach in clinical settings.

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