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Vulvodynia

Vestibulodynia: Clinical characteristics, first-line treatments, and factors associated with escalation of treatment with EMG-guided injections of botulinum toxin in a retrospective french cohort study
C Neuville, B Parratte, et al.
Ann Dermatol Venereol. 2024 Apr 27;151(2):103277. doi: 10.1016/j.annder.2024.103277.
https://pubmed.ncbi.nlm.nih.gov/38678773/

Background: Vestibulodynia is a highly prevalent chronic pain disorder affecting the vulva having a major impact on women's physical, psychological, and sexual well-being. It remains an underrecognized disease that responds insufficiently to therapies such as physiotherapy and medication.
Aim: To assess the global efficacy of first-line therapies and factors associated with treatment escalation in women with vestibulodynia. **Patients and methods:** This retrospective cohort study was conducted at the dermatology outpatient clinic of the University Hospital in Besancon (France) between 2013 and 2017 and follow-up until 2021. **Results:** Among 132 patients, the mean [standard deviation] age at diagnosis was 27.2 [±9.45] years, with an average duration of symptoms of 42.3 [±37.92] months. Most cases comprised provoked (75.0%) or secondary (72.7%) vestibulodynia. At least one comorbid pain or psychologic condition was identified respectively in 63 (47.7%) and 23 patients (54.5%). Vulvar hyperesthesia associated with pelvic floor muscle dysfunction was present in 121 patients (91.6%) and vulvar erethism was noted in 94 patients (71.2%). First-line treatments consisted of pelvic floor physiotherapy with biofeedback in 85% of patients, associated with amitriptyline in 36% of cases, and of additional lidocaine cream in 17%. Fifty-two patients (39%) presented at least a good response to first-line treatment, with only 21 (15%) being in complete remission, irrespective of therapeutic strategy ($p = 0.25$). Botulinum toxin injections were performed in 54 patients. Patients with either primary vestibulodynia ($p = 0.04$) or spontaneous vestibulodynia ($p = 0.03$) were more likely to receive this treatment. **Conclusion:** Our study highlights the current lack of efficacy of first-line treatments in vestibulodynia. Considering the high prevalence of muscular dysfunction, botulinum toxin injections are of particular interest despite a lack of randomized controlled trials in this indication.

Development of aids to relieve vulvodynia during the postpartum period
Kaori Watanabe, Yumiko Totsu
Glob Health Med. 2024 Apr 30;6(2):149-155. doi: 10.35772/ghm.2023.01045.
https://pubmed.ncbi.nlm.nih.gov/38690132/

Postpartum women live with a low quality of life due to pain caused by episiotomy and perineal laceration. In particular, they endure pain when sitting for long periods of time to breastfeed. The purpose of this study is to develop a sitting aid to alleviate postpartum vulvodynia. This study was conducted in the following four phases from July 2017 to May 2019. They are: material selection and molding, cleaning and disinfection testing, pressure distribution measurement testing, and trial testing by postpartum women. The main material was a 100% polypropylene object with a three-dimensional reticular fiber spring structure and fiber density of 3.8 kg/m^2. As a result, a sitting aid that withstands washing and disinfection well in the medical field and is breathable. It had moderate resilience and elasticity and reduced pressure on the seating surface for women weighing approximately 45 kg and 55 kg, but we were skeptical about its use for women weighing more than that. The completed sitting aid is noninvasively effective in improving the quality of life of many postpartum women, but the density and thickness of the main material should be re-examined to meet the needs of women in a wider weight range. In addition, a self-administered questionnaire survey of trial users revealed that some women did not experience relief from vulvodynia even after using the sitting aid. Such women also had physical problems such as discomfort in the lower back, difficulty breastfeeding, and difficulty standing up. For women with multiple physical problems, individual causes should be addressed.

A survey of patient tolerance and satisfaction with capsaicin for neuroproliferative vestibulodynia
Isabella Kopits, Jill M Krapf, et al.
Sex Med. 2024 Mar 27;12(1):qfae012. doi: 10.1093/sexmed/qfae012. eCollection 2024 Feb.
https://pubmed.ncbi.nlm.nih.gov/38545420/

Background: Topical capsaicin has been used to treat vulvodynia but has been poorly studied for use in neuroproliferative provoked vestibulodynia (PVD); capsaicin decreases allodynia by blocking vanilloid receptors (TRPV1) on C-afferent nociceptors, but the therapy causes discomfort to the point of intolerance in some patients. **Aim:** The present study evaluated tolerability and efficacy of topical capsaicin to treat neuroproliferative PVD. **Outcomes:** Among tolerant patients, capsaicin significantly decreased vestibular pain, but tolerance was highly variable. **Results:** Twenty-five patients responded to the follow-up questionnaire. The average age at presentation was 30 years (range, 18-52 years). Eighty percent of patients tolerated capsaicin application for the full 20 minutes within a median time of 1 to 2 weeks. Of the 16 patients reporting tolerance to 20-minute application, 12 (60%) experienced improvement in vestibular pain. On an 11-point numeric rating scale, the mean pain score was 8.96 and the median score was 10 with first application. Among all participants, 16 (64%) had reduction in pain during treatment. Fifty-six percent of patients would recommend capsaicin as a treatment for vulvar pain. Qualitative content analysis focused on categories of efficacy, value, and feasibility, which indicated that those able to tolerate the treatment experienced improvement while using the medication. The mean Female Sexual Distress Scale-Revised score was 35.96 at baseline compared with 25.09 at follow-up ($P < .0001$). On a numeric rating scale, the mean self-reported vulvar pain score was 8.2 at baseline compared with 5.35 when using capsaicin consistently ($P < .0001$). The mean FSFI pain domain score was 2.45 at baseline compared with 0.98 at follow-up ($P = .005$). While not statistically significant, the mean total FSFI score was 15.44 at baseline compared with 17.84 at follow-up ($P = .3730$). **Clinical implications:** Capsaicin is helpful for some patients with PVD, but thorough counseling is

important because of highly variable tolerance. **Strengths and limitations:** Strengths include examination of a poorly studied therapy and inclusion of narrative responses from patients to inform counseling. Limitations include small sample size, retrospective design, and low survey response rate. **Conclusion:** Patients should be appropriately selected and thoroughly counseled given high levels of intolerance, but capsaicin therapy may be considered for patients with neuroproliferative PVD who have failed conservative treatments and wish to avoid surgery.

Development of a core outcome set for treatment studies for provoked vestibulodynia
Nina Bohm-Starke, Caroline Pukall, et al.
J Sex Med. 2024 Mar 21:qdae035. doi: 10.1093/jsxmed/qdae035.
https://pubmed.ncbi.nlm.nih.gov/38515322/

Background: There is an inconsistency in treatment outcomes used in clinical trials for provoked vestibulodynia (PVD), which makes it impossible to compare the effects of different interventions. **Aim:** In this study, we completed the first step in creating a core outcome set (COS), defining what outcomes should be measured in clinical trials for PVD. **Outcomes:** Consensus on what outcomes to include in a COS for PVD. **Results:** Forty scientific articles and 92 study protocols were reviewed for outcomes. Of those, 36 articles and 25 protocols were eligible, resulting in 402 outcomes, which were then categorized into 63 unique outcomes. Participants consisted of patients, relatives/partners of patients, health care professionals, and researchers. Out of 463 who registered for participation, 319 and 213 responded to the first and second surveys, respectively. The consensus meeting consisted of 18 members and resulted in 6 outcomes for the COS to be measured in all treatment trials regardless of intervention: insertional pain (nonsexual), insertional pain (sexual), provoked vulvar pain by pressure/contact, pain-related interference on one's life, pain interference on sexual life, and sexual function. **Clinical implications:** Critical outcomes to be measured in clinical trials will allow for accurate comparison of outcomes across treatment interventions and provide solid treatment recommendations. **Strengths and limitations:** The major strengths of the study are the adherence to methodological recommendations and the intentional focus on aspects of diversity of participating stakeholders (eg, status such as patients with lived experience and researchers, inclusiveness with respect to sexual identity), the latter of which will allow for broader application and relevance of the COS. Among the limitations of the study are the low rate of participants outside North America and Europe and the lower response rate (about 50%) for the second Delphi survey. **Conclusion:** In this international project, patients, health care professionals, and researchers have decided what critical outcomes are to be used in future clinical trials for PVD. Before the COS can be fully implemented, there is also a need to decide on how and preferably when the outcomes should be measured.

Exploring Localized Provoked Vulvodynia: Insights from Animal Model Research
Yara Nakhleh-Francis, Yaseen Awad-Igbaria, et al.
Int J Mol Sci. 2024 Apr 11;25(8):4261. doi: 10.3390/ijms25084261.
https://pubmed.ncbi.nlm.nih.gov/38673846/

Provoked vulvodynia represents a challenging chronic pain condition, characterized by its multifactorial origins. The inherent complexities of human-based studies have necessitated the use of animal models to enrich our understanding of vulvodynia's pathophysiology. This review aims to provide an exhaustive examination of the various animal models employed in this research domain. A comprehensive search was conducted on PubMed, utilizing keywords such as "vulvodynia", "chronic vulvar pain", "vulvodynia

induction", and "animal models of vulvodynia" to identify pertinent studies. The search yielded three primary animal models for vulvodynia: inflammation-induced, allergy-induced, and hormone-induced. Additionally, six agents capable of triggering the condition through diverse pathways were identified, including factors contributing to hyperinnervation, mast cell proliferation, involvement of other immune cells, inflammatory cytokines, and neurotransmitters. This review systematically outlines the various animal models developed to study the pathogenesis of provoked vulvodynia. Understanding these models is crucial for the exploration of preventative measures, the development of novel treatments, and the overall advancement of research within the field.

Pharmacological Treatments for Localized Provoked Vulvodynia: A Scoping Review
Krisztina Bajzak, Alex Rains, et al.
Int J Sex Health. 2023 Jul 4;35(3):427-443. doi: 10.1080/19317611.2023.2222114. eCollection 2023.
https://pubmed.ncbi.nlm.nih.gov/38601726/

Introduction: Localized provoked vulvodynia (LPV) is a chronic pain condition without an identifiable cause that is localized to a portion of the vulva and provoked by pressure or touch. LPV is a commonly occurring but poorly understood condition lacking consensus on management. **Results:** This review evaluated 18 papers reporting on the efficacy or effectiveness of oral, topical, and injectable medications. Seven of the studies were randomized controlled trials. Oral gabapentin and oral desipramine showed some improvement in sexual function compared to placebo. Small sample sizes and methodological issues limited confidence in interpreting findings. Pain was reduced in descriptive studies of tricyclic antidepressants, milnacipran, injectable anesthetics, and botulinum toxin. Where pain did not improve with treatment, some oral medications improved participants' mood and sexual function. Some topical agents may be effective in reducing peripherally mediated neuropathic pain. Botulinum toxin was the most well-studied injectable but yielded mixed outcomes related to pain, quality of life, and sexual function. **Conclusion:** There is a lack of convincing evidence to draw conclusions about the efficacy or effectiveness of pharmacological therapies for LPV. The breadth of therapies for treating LPV warrants the development of evidence-based, consensus guidelines for measuring treatment outcomes and improving comparisons across studies. Recommendations for research include addressing methodological shortcomings and diversifying the participant pool to increase the generalizability of findings.

Efficacy of Rehabilitative Techniques on Pain Relief in Patients with Vulvodynia: A Systematic Review and Meta-Analysis
Dario Calafiore, Nicola Marotta, et al.
Phys Ther. 2024 Apr 2:pzae054. doi: 10.1093/ptj/pzae054.
https://pubmed.ncbi.nlm.nih.gov/38564267/

Objective: Vulvodynia is a chronic clinical condition characterized by provoked or non-provoked vulvar pain for at least 3 months of unknown etiology. The onset of vulvodynia involves a complex interplay of peripheral and central pain mechanisms, such as pelvic floor muscle and autonomic dysfunction, and interpersonal factors. A stepwise approach of pelvic floor physical therapy as medical management is suggested. In this scenario, by this meta-analysis of randomized controlled trials, we aimed to evaluate the efficacy of rehabilitation interventions in patients with vulvodynia. **Results:** Meta-analysis showed that all these rehabilitative approaches had an overall effect size of -1.43 (95% CI = -2.69 to -0.17) in decreasing vulvodynia pain in terms of the visual analog scale. In the subgroup analysis, a significant

effect size in acupuncture (effect size = -2.36; 95% CI = -3.83 to -0.89) and extracorporeal shockwave therapy (effect size = -2.94; 95% CI = -4.31 to -1.57; I2 = 58%) was observed. According to the Cochrane risk-of-bias tool, a low risk of bias for outcome selection in 89% of studies. **Conclusions:** Findings from this meta-analysis suggested that the physical agent modalities and complementary medicine techniques in people with vulvodynia appear to be more effective than placebo, sham, or waiting list. Further evidence on physical agent modalities and complementary therapies are warranted in the future. **Impact:** This was the first systematic review and meta-analysis of randomized controlled trials to provide evidence on the efficacy of rehabilitation interventions in patients with vulvodynia.

Beyond vulvodynia: from a correct diagnosis to a multidisciplinary care program. A referral center experience

Veronica Boero, Giulia Emily Cetera, et al.
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https://pubmed.ncbi.nlm.nih.gov/38634899/

Background: Vulvodynia is a chronic pain condition without an identifiable cause. As such, it is a diagnosis of exclusion, and all other causes of vulvar pain should be excluded. Although a standard treatment for vulvodynia has not been established yet, multidisciplinary care programs appear to be effective. **Purpose:** The aim of this retrospective monocentric study was to analyze the prevalence of vulvodynia among women referred to our institution for a suspected diagnosis and to evaluate the efficacy of a multidimensional treatment plan. The primary outcome was the prevalence of vulvodynia following differential diagnosis. Secondary outcomes included: prevalence of the differential diagnoses, symptom resolution rate following treatment, and the relation between persistence of symptoms and (a) patients' age; (b) coexisting chronic overlapping pain conditions (COPCs). **Results:** After having ruled out all other causes of vulvar pain, only 40.1% of women were considered as affected by vulvodynia. The most frequent differential diagnoses included lower genital tract infections (25.3%), vulvar lichen sclerosus (17.6%) and vulvovaginal atrophy (8.2%). Following a multidisciplinary care program, resolution of symptoms was observed in 13.6% cases, improvement in 64.3% and persistence in 21.9%. We did not find a statistically significant association between persistence of symptoms and age > 38 years (OR 2.10; p = 0.30). Women with one or more COPCs other than vulvodynia had a 75% increased risk of not obtaining a resolution of symptoms (OR 1.75; p = 0.44). **Conclusion:** A thorough differential diagnosis and a multidisciplinary care program may represent a first way out of the muddle in the management of these patients.

Spinal neuronal activity and neuroinflammatory component in a mouse model of CFA-induced vestibulodynia

Serena Boccella, Michela Perrone, et al.
Brain Behav Immun. 2024 Apr 16:119:408-415. doi: 10.1016/j.bbi.2024.04.012.
https://pubmed.ncbi.nlm.nih.gov/38636564/

Vestibulodynia is a complex pain disorder characterized by chronic discomfort in the vulvar region, often accompanied by tactile allodynia and spontaneous pain. In patients a depressive behaviour is also observed. In this study, we have used a model of vestibulodynia induced by complete Freund's adjuvant (CFA) focusing our investigation on the spinal cord neurons and microglia. We investigated tactile allodynia, spontaneous pain, and depressive-like behavior as key behavioral markers of vestibulodynia. In addition, we conducted in vivo electrophysiological recordings to provide, for the first time to our

knowledge, the characterization of the spinal sacral neuronal activity in the L6-S1 dorsal horn of the spinal cord. Furthermore, we examined microglia activation in the L6-S1 dorsal horn using immunofluorescence, unveiling hypertrophic phenotypes indicative of neuroinflammation in the spinal cord. This represents a novel insight into the role of microglia in vestibulodynia pathology. To address the therapeutic aspect, we employed pharmacological interventions using GABApentin, amitriptyline, and PeaPol. Remarkably, all three drugs, also used in clinic, showed efficacy in alleviating tactile allodynia and depressive-like behavior. Concurrently, we also observed a normalization of the altered neuronal firing and a reduction of microglia hypertrophic phenotypes. In conclusion, our study provides a comprehensive understanding of the CFA-induced model of vestibulodynia, encompassing behavioral, neurophysiological and neuroinflammatory aspects. These data pave the way to investigate spinal cord first pain plasticity in vestibulodynia.

Physical Modalities for the Treatment of Localized Provoked Vulvodynia: A Scoping Review of the Literature from 2010 to 2023
Victoria A Jackman, Krisztina Bajzak, et al.
Int J Womens Health. 2024 May 6:16:769-781. doi: 10.2147/IJWH.S445167. eCollection 2024.
https://pubmed.ncbi.nlm.nih.gov/38737495/

Introduction: Localized provoked vulvodynia (LPV) is a prevalent sexual health condition with significant negative impacts on quality of life. There is a lack of consensus regarding effective management. **Methods:** We used Arksey and O'Malley's five-step method to identify, collate, and evaluate literature published between 2010 and 2023. The scoping review investigated the efficacy or effectiveness of interventions in the management of LPV. The aim of this paper is to map the literature on the efficacy or effectiveness of physical interventions. **Results:** The review produced 19 primary studies of physical interventions for LPV. These include acupuncture, laser therapy, physiotherapy, transcutaneous electrical nerve stimulation, low-intensity shockwave therapy, transcranial direct current stimulation, and vestibulectomy. **Conclusion:** Published studies that investigated a range of physical treatments for LPV showed some positive effects, except for transcranial direct-current stimulation. The remaining modalities demonstrated improved sexual pain and treatment satisfaction, when measured. Findings were mixed for non-sexual pain. There was insufficient evidence to draw conclusions regarding other outcomes. Researchers are encouraged to conduct larger, high-quality studies that sample more diverse patient populations and use patient-oriented outcomes to assess effectiveness of physical modalities. **Keywords:** TENS; acupuncture; chronic vulvar pain; dyspareunia; laser therapy; low-intensity shockwave therapy; physical therapy; physiotherapy; tDCS; transcranial direct-current stimulation; transcutaneous electrical nerve stimulation; vestibulectomy; vestibulodynia.

Does One Measure Fit All? The Role of Experimentally Induced Pain Tests in the Assessment of Women with Provoked Vestibular Pain
Ahinoam Lev-Sagie, Nosaiba Rayan-Gharra, et al.
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https://www.dovepress.com/does-one-measure-fit-all-the-role-of-experimentally-induced-pain-tests-peer-reviewed-fulltext-article-IJWH

Purpose: A diagnostic algorithm was recently suggested to address the underlying mechanisms of provoked-vestibulodynia (PVD). It delineates four subgroups (Hormonal-associated, Augmented-anterior, Hymenal-associated and Hypertonicity-associated), each manifesting a distinctive vulvar pain-

hypersensitivity regarding location (circumferential vs posterior-only vestibulodynia) and pain characteristics. We aimed to explore the significance of various experimentally induced vulvar pain measures in the manifestation of pain hypersensitivity in each subgroup. **Results:** Compared to controls, augmented vulvar pain-hypersensitivity and hypertonicity were observed among patients ($p < 0.001$). ANOVA revealed no subgroup differences in dyspareunia severity. Nevertheless, some experimentally induced-pain measures were differently correlated with dyspareunia intensity in each subgroup, allowing discrimination of subgroups according to the unique findings of vulvar pain-hypersensitivity. The degree of pelvic floor muscle-hypertonicity mediated the association between vulvar pain-hypersensitivity and dyspareunia severity, emphasizing the key role of hypertonicity in distinguishing between subgroups. **Conclusion:** The findings offer more evidence of variations among PVD subtypes, demonstrating that insertional dyspareunia may originate from dissimilar alterations in the mucosal and muscular tissues. The results also emphasize the significance of utilizing a wide battery of tests to capture different experimentally induced-pain measures, revealing the unique patterns of vulvar pain-hypersensitivity in each subgroup.

Psychosocial Factors Associated With Vulvodynia

Janice F Queiroz, Antonio C Q Aquino, et al.

J Low Genit Tract Dis. 2024 May 2. doi: 10.1097/LGT.0000000000000822.
https://pubmed.ncbi.nlm.nih.gov/38697126/

Objectives: We set out to identify the psychosocial factors associated with vulvodynia and the effects on sexuality, mental health, and quality of life. **Materials and methods:** PubMed, LILACS, Embase, CINAHL, Web of Science, Scopus, and PsycINFO were searched in August 2023. Two authors selected and extracted the data independently. The risk of bias was assessed using the Newcastle-Ottawa Scale for Observational Studies. To rank the strength of evidence, the Grading of Recommendations Assessment, Development and Evaluation Working Group (GRADE) approach was utilized. **Results:** A total of 3,182 articles were identified. Twenty-two observational studies (8 cohorts and 14 case-controls) met the eligibility criteria and were included, comprising 2,624 patients. Vulvodynia has been associated with psychological factors (anxiety and depression) and social factors (childhood exposure to physical and sexual abuse, posttraumatic stress, and domestic abuse). Concerning sexual function, the most frequent outcomes were dyspareunia and sexual dysfunction. Only one study assessed quality of life, which showed that women with chronic vulvar pain had greater difficulty performing physical activities and experienced negative moods and feelings. The assessment of the risk of bias showed that the average quality of studies was good to excellent. However, the studies failed to select the nonexposed cohort or control group to describe the results, and often, the study population was rather small, which made it impossible to carry out a meta-analysis. **Conclusions:** The certainty of evidence for the associations between anxiety and depression, vulvodynia, and sexual functioning suggests that combating these factors could improve overall quality of life in vulvodynia patients.

Chronic Pelvic Pain

Unsupervised Machine Learning Reveals a Vulvodynia-Predominant Subtype in Bladder Pain Syndrome/Interstitial Cystitis

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https://www.cureus.com/articles/263008-unsupervised-machine-learning-reveals-a-vulvodynia-predominant-subtype-in-bladder-pain-syndromeinterstitial-cystitis?score_article=true#!/

Background: Bladder pain syndrome/interstitial cystitis (BPS/IC) is a chronic condition characterized by pelvic pain and urinary symptoms. Despite its significant impact on patients' quality of life, the heterogeneity of BPS/IC symptoms and the presence of comorbidities such as vulvodynia may not be adequately captured by validated questionnaires. Identifying vulvodynia in BPS/IC patients is crucial for providing appropriate treatment options. This study aimed to identify subtypes of BPS/IC patients using unsupervised machine learning and to investigate the prevalence of vulvodynia in eachsubtype. **Results:** Unsupervised machine learning revealed three distinct clusters of BPS/IC patients. Clusters 0 and 2 differed significantly, with Cluster 2 characterized by significantly higher vulvodynia scores compared to other clusters ($P < 0.001$). In contrast, Cluster 2 had lower bladder pain scores (ICSI and ICPI) and overactive bladder symptom scores (OABq SF and OABSS) compared to other clusters. Clusters 0 and 1 were characterized by a predominance of bladder pain and urinary frequency symptoms, with Cluster 0 exhibiting more severe symptoms. **Conclusions:** Our study identified distinct subtypes of BPS/IC patients using unsupervised machine learning, with Cluster 2 representing a vulvodynia-predominant subtype. This finding, along with the potential of targeted therapies such as non-ablative erbium YAG laser for vulvodynia, underscores the importance of assessing extravesical symptoms, particularly vulvodynia, for the diagnosis and treatment of BPS/IC. A tailored approach, including laser therapy for vulvodynia-predominant patients, may be necessary for optimal management of BPS/IC. The vulvodynia swab test plays a crucial role in assessing vulvodynia symptoms, underlining the limitations of validated questionnaires in capturing the full spectrum of BPS/IC symptoms. A comprehensive evaluation of patients, including the vulvodynia swab test, is essential for accurate subtyping and management of BPS/IC. Further research with larger sample sizes and investigation of the relationship between identified subtypes and other clinical data is warranted to advance our understanding and management of BPS/IC.

Changes in Pelvic Floor Ultrasonographic Features after Flat Magnetic Stimulation in Women with Chronic Pelvic Pain and Levator Ani Muscle Hypertonicity

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https://pubmed.ncbi.nlm.nih.gov/38541100/

Background and Objectives: Chronic pelvic pain (CPP) represents a major public health problem for women with a significant impact on their quality of life. In many cases of CPP, due to gynecological causes-such as endometriosis and vulvodynia-improper pelvic floor muscle relaxation can be identified. Treatment of CPP with pelvic floor hypertonicity (PFH) usually involves a multimodal approach. Traditional magnetic stimulation has been proposed as medical technology to manage muscle hypertonicity and pelvic pain conditions through nerve stimulation, neuromodulation, and muscle relaxation. New Flat Magnetic Stimulation (FMS)-which involves homogeneous rather than curved

electromagnetic fields-has the potential to induce sacral S2-S4 roots neuromodulation, muscle decontraction, and blood circulation improvement. However, the benefits of this new technology on chronic pelvic pain symptoms and biometrical muscular parameters are poorly known. In this study, we want to evaluate the modification of the sonographic aspect of the levator ani muscle before and after treatment with Flat Magnetic Stimulation in women with chronic pelvic pain and levator ani hypertonicity, along with symptoms evolution. **Results:** In total, 11 patients completed baseline evaluation, treatment, and postoperative evaluation in the period of interest. All patients underwent eight sessions of Flat Magnetic Stimulation according to the protocol. Adjuvant pharmacological treatment was used in five (45.5%) patients. Specifically, we observed a significant increase in both ARA and LAMD comparing baseline and post-treatment measurements ($p < 0.001$). Quality of life scale scores at baseline and after treatment demonstrated a significant improvement in both tools ($p < 0.0001$). **Conclusions:** Flat Magnetic Stimulation, with or without adjuvant pharmacological treatment, demonstrated safety and efficacy in reducing pelvic floor hypertonicity, resulting in improvement in symptoms' severity and sonographic parameters of muscular spasm.

Efficacy of in-office lysis of clitoral adhesions with excision of keratin pearls on clitoral pain and sexual function: a pre-post interventional study

Jill M Krapf, Isabella Kopits, et al.

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https://pubmed.ncbi.nlm.nih.gov/38515327/

Background: Keratin pearls are foci of central keratinization within concentric layers of squamous cells that can form under the clitoral prepuce and cause pain (clitorodynia); in-office removal of keratin pearls may reduce clitoral pain and improve sexual function. **Aim:** This study aims to investigate clitoral pain and sexual function in women with partial clitoral phimosis and keratin pearls before and after in-office lysis of clitoral adhesions with keratin pearl excision (LCA-KPE). **Outcomes:** An 11-point pain visual analog scale was utilized to determine pre- and postprocedure clitoral discomfort and difficulty with orgasm. Female sexual dysfunction was measured with the Female Sexual Function Index (FSFI) and Female Sexual Distress Scale-Revised. **Results:** A total of 32 of 74 patients who met inclusion criteria completed postprocedure surveys (43% response rate). Mean clitoral pain for respondents was 6.91 at baseline and 2.50 after LCA-KPE ($P < .001$). Mean difficulty with orgasm was significantly decreased from 5.45 at baseline to 3.13 after LCA-KPE ($P < .001$). Participants had a mean FSFI total score of 17.68 after treatment compared with a mean total baseline FSFI of 12.12 ($P = .017$). The mean FSFI score for pain was 2.43 at follow-up compared with 1.37 at baseline ($P = .049$). There was no significant difference in the mean Female Sexual Distress Scale-Revised score before vs after the procedure ($P = .27$). Qualitative themes described the procedure as painful but worthwhile, with 77% of participants reporting the overall experience as positive. Recurrence rate overall was 28%, with a median of 2 repeat procedures. **Clinical implications:** Recognizing keratin pearls as a structural cause of clitoral pain and offering in-office treatment is an important tool in addressing clitorodynia and improving sexual function. **Strengths and limitations:** This is the largest study to date documenting the occurrence, identifying associated pain conditions, and evaluating procedural outcomes for clitoral keratin pearls. This study was limited by a relatively small sample size. **Conclusion:** In-office LCA-KPE significantly reduced clitoral discomfort and difficulty with orgasm.

Vaginal and rectal microbiome contribute to genital inflammation in chronic pelvic pain
Nicole Jimenez, Taylor Norton, et al.
BMC Medicine volume 22, Article number: 283 (2024) Published: 08 July 2024
https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-024-03500-1

Background: Chronic pelvic pain (CPP) is a multifactorial syndrome that can substantially affect a patient's quality of life. Endometriosis is one cause of CPP, and alterations of the immune and microbiome profiles have been observed in patients with endometriosis. The objective of this pilot study was to investigate differences in the vaginal and gastrointestinal microbiomes and cervicovaginal immune microenvironment in patients with CPP and endometriosis diagnosis compared to those with CPP without endometriosis and no CPP. **Results:** Significant differences were observed between participants with CPP alone, CPP-Endo, and surgical controls for body mass index, ethnicity, diagnosis of ovarian cysts, and diagnosis of fibroids. In rectal microbiome analysis, both CPP alone and CPP-Endo exhibited lower alpha diversity than controls, and both CPP groups revealed enrichment of irritable bowel syndrome-associated bacteria. CPP-Endo exhibited an increased abundance of vaginal *Streptococcus anginosus* and rectal *Ruminococcus*. Patients with CPP and endometrioma (s) demonstrated increased vaginal *Streptococcus*, *Lactobacillus,* and *Prevotella* compared to other endometriosis sites. Further, abnormal uterine bleeding was associated with an increased abundance of bacterial vaginosis-associated bacteria. Immunoproteomic profiles were distinctly clustered by CPP alone and CPP-Endo compared to controls. CPP-Endo was enriched in TNFα, MDC, and IL-1α. **Conclusions:** Vaginal and rectal microbiomes were observed to differ between patients with CPP alone and CPP with endometriosis, which may be useful in personalized treatment for individuals with CPP and endometriosis from those with other causes of CPP. Further investigation is warranted in patients with additional co-occurring conditions, such as AUB/fibroids, which add additional complexity to these conditions and reveal the enrichment of distinct pathogenic bacteria in both mucosal sites. This study provides foundational microbiome-immunoproteomic knowledge related to chronic pelvic pain, endometriosis, and co-occurring gynecologic conditions that can help improve the treatment of patients seeking care for pain.

Vasculogenic female sexual dysfunction: vaginal engorgement and clitoral erectile insufficiency syndromes
I Goldstein, J R Berman
Int J Impot Res. 1998 May:10 Suppl 2:S84-90; discussion S98-101.
https://pubmed.ncbi.nlm.nih.gov/9647967/

The first phase of the female sexual response, associated with neurotransmitter-mediated vascular smooth muscle relaxation, results in increased vaginal lubrication, wall engorgement and luminal diameter as well as increased clitoral length and diameter. Specific physiologic impairments of vasculogenic female sexual dysfunction include vaginal engorgement and clitoral erectile insufficiency syndromes. These syndromes exist when during sexual stimulation abnormal arterial circulation into the vagina or clitoris, usually from atherosclerotic vascular disease, interferes with normal vascular physiologic processes. Clinical symptoms may include delayed vaginal engorgement, diminished vaginal lubrication, pain or discomfort with intercourse, diminished vaginal sensation, diminished vaginal orgasm, diminished clitoral sensation or diminished clitoral orgasm. An animal model of this syndrome, with significant physiologic responses between the control and the atherosclerotic pelvic nerve stimulated hemodynamic responses, is discussed. Non-atherosclerotic, traumatic vascular disease of the ilio-hypogastric-pudendal arterial bed from pelvic fractures or blunt perineal trauma may also result in

diminished vaginal/clitoral arterial blood flow following sexual stimulation. Diagnostic studies assessing the hemodynamic integrity of the ilio-hypogastric-pudendal arterial bed to the vagina and clitoris and new oral/topical pharmacologic strategies for enhancing vaginal/clitoral blood flow in patients with vasculogenic female sexual dysfunction are discussed. There is a growing body of evidence that women with sexual dysfunction will commonly have physiologic abnormalities, such as vasculogenic female sexual dysfunction, contributing to their overall sexual health problems

Symptomatology and knowledge regarding pelvic floor dysfunctions and influence of gender stereotypes in female athletes
Elisa Bosch-Donate, Elena Vico-Moreno, et al.
Sci Rep. 2024 May 14;14(1):11052. doi: 10.1038/s41598-024-61464-x.
https://pubmed.ncbi.nlm.nih.gov/38744879/

Pelvic floor dysfunctions (PFD) are highly prevalent among females who do athletics, a sport requiring jumping, strength, and running. Although educational approaches are useful options, the educational need for this particular population remains unknown. The objective of the present study was to describe the level of knowledge regarding PFD and its relationship with symptomatology and gender stereotypes in female athletes in Spain. A total of 255 female athletes completed an anonymous online survey to explore their knowledge regarding urinary incontinence (UI), pelvic organ prolapse (POP), anal incontinence (AI), and sexual dysfunction (SexD), as well as their PFD symptoms and gender stereotyped beliefs related to sport. Educational level and sports characteristics (training volume, experience, and athletic modality) were also explored. Participants demonstrated a low level of knowledge in terms of POP (52.5%), AI (64.0%), and SexD (40%), but not for UI (70.8%). The proportion of PFD complaints was 63.5% for dyspareunia, 51.8% for urine leakage, 42.4% for pelvic pain, 17.3% for AI, and 9.0% for POP, with no associations with knowledge ($p > 0.05$). Lower knowledge about UI and SexD was related to greater gender stereotypes ($p < 0.05$) and rejection of professional healthcare ($p = 0.010$). As a conclusion, the level of knowledge about PFD was low in female athletes who train and compete in athletics in Spain, mainly with regard to sexual dysfunction. Although 63.5% of athletes had dyspareunia and 51.8% urinary leakages, symptomatology was not associated with level of knowledge. However, a lower level of knowledge was associated with more stereotyped beliefs and rejection of professional healthcare for PFD. These findings confirm the need to design appropriate educational interventions to disseminate information on all the types of PFD, particularly sexual contents. The potential influence of gender stereotypes makes it appropriate to include the gender perspective in these interventions.

High Comorbidity of Gastrointestinal Disorders Among Those Seeking Care for Dyspareunia
Casey Silvernale, Grace Harris, et al.
Clin Gastroenterol Hepatol. 2024 Jan 10:S1542-3565(24)00044-2. doi: 10.1016/j.cgh.2024.01.002.
https://pubmed.ncbi.nlm.nih.gov/38216024/

Dyspareunia, defined as genital pain that occurs before, during, or after sexual intercourse, is the most commonly diagnosed form of female sexual dysfunction. As high as 43% of women experience some form of sexual dysfunction, but the etiology of these conditions is not well understood.[1] Prior research on sexual dysfunction in gastrointestinal (GI) patients has focused primarily on inflammatory bowel disease (IBD) alone. [2,3] More than 49% of females with IBD have been reported to experience sexual dysfunction.[4] Not yet understood is the prevalence of comorbid GI conditions among those seeking care for dyspareunia.[5] Thus, we sought to characterize GI disorders within a dyspareunia patient population.

The association between vulvodynia and interstitial cystitis/bladder pain syndrome: A systematic review

Sara Bosio, Silvia Perossini, et al.

Int J Gynaecol Obstet. 2024 Apr 24. doi: 10.1002/ijgo.15538.
https://pubmed.ncbi.nlm.nih.gov/38655714/

Background: Vulvodynia (VVD) is a debilitating chronic vulvar pain significantly affecting patients' quality of life. Interstitial cystitis/bladder pain syndrome (IC/BPS) is a chronic and complex illness characterized by an unpleasant sensation related to the filling of the bladder and it strongly impacts patients' lives. The exact mechanisms of the two syndromes remain unknown, but there is an overlap between suspected pathophysiologies. **Objective:** To present an overview of the current research on the association between VVD and IC/BPS. **Search strategy:** A systematic search of three electronic databases was conducted. Studies examining the correlation between VVD and IC/BPS with male and female patients aged over 18 years were included. **Selection criteria:** Studies assessing the coexistence of VVD and IC/BPS were included. Reviews, letters to the editor, conference abstracts, book chapters, guidelines, Cochrane reviews, and expert opinions were excluded. **Data collection and analysis:** Two reviewers screened the studies for eligibility. Eligible studies were screened for quality. **Main results:** A total of 13 studies were included in the final review. Among them, 11 presented a positive association between the two syndromes. The studies highlighted that VVD and IC/BPS share common comorbidities and possibly etiopathogenic pathways. **Conclusion:** VVD and IC/BPS are both complex and multifactorial syndromes. This review highlights an association between them, but additional studies on the topic should be conducted for a more precise conclusion.

Chronic Pelvic Pain, Vulvar Pain Disorders, and Proteomics Profiles: New Discoveries, New Hopes

Chiara Di Tucci, Ludovico Muzii

Biomedicines. 2023 Dec 19;12(1):1. doi: 10.3390/biomedicines12010001.
https://pubmed.ncbi.nlm.nih.gov/38275362/

Chronic pelvic pain (CPP) is generally defined as non-cyclic pain perceived in the pelvic area that has persisted from three to six months or longer and is unrelated to pregnancy. The etiology of CPP is complex, multifactorial, with heterogeneous presentation, and includes several diseases such as endometriosis, adenomyosis, and interstitial cystitis/bladder pain syndrome. It may also be associated with sexual dysfunction, musculoskeletal disorders, and comorbid psychiatric symptoms. Vulvar pain disorders (VPDs) are typically categorized separately from chronic pelvic pain; among all VPDs, vulvodynia is a chronic vulvar pain of unknown etiology, lasting at least 3 months and that might be associated with other potentially linked factors. Proteomics represents a useful approach to study the proteome profiles of clinical samples. In this review, we have considered a selection of articles that have analyzed the protein abundance and novel protein species from various biological samples, including eutopic/ectopic endometrium, urine, serum, follicular, peritoneal fluid, and cervical mucus, potentially involved in the pathogenesis and progression of CPP and VPDs. These findings could represent valuable targets for paving the way for the differential diagnosis and therapeutic management of CPP and VDPs, thereby optimizing both the prevention and treatment of these conditions.

Women's sexual health improvement: sexual quality of life and pelvic floor muscle assessment in asymptomatic women
Ewa Baszak-Radomańska, Jadwiga Wańczyk-Baszak, et al.
Front Med (Lausanne). 2024 Feb 21:11:1289418. doi: 10.3389/fmed.2024.1289418. eCollection 2024.
https://pubmed.ncbi.nlm.nih.gov/38449880/

Introduction: Problems related to the quality of sexual life in gynecological practice are usually neglected. This study aimed to highlight the significance of this area of concern and evaluate the usefulness of tools, such as patient-reported outcomes (PROs) and pelvic floor examination, to improve women's sexual wellbeing and to identify predictors of poor quality of sexual life during the well-woman annual visit. **Results:** The majority of subjects experienced high sexual wellbeing (82.0% with SQOL score of ≥84), with a mean of 85.7 points. SQOL scores were lower for psychiatric disorders or symptoms (37.0% of subjects), although they did not correlate with age, BMI, parity, contraception use, history of vulvovaginal symptoms, neurosurgical/orthopedic problems, and rectal, bowel, or bladder symptoms. Patients with dyspareunia (16.0% of participants, although they denied it during the face-to-face consultation) had a 3.6 times higher prevalence of low or moderate quality of sexual life. The VAMP protocol score was low in asymptomatic women, 33.0% met positive criteria (VAMP+, NRS ≥3) for pelvic floor dysfunction (overactivity), although at borderline levels. VAMP+ was positively correlated with chronic pain and genitourinary symptoms, but neither with dyspareunia nor incontinence, and was unrelated to the SQOL score (p = 0.151). **Conclusion:** Women's sexual health is a global health priority. Finding a way to start a discussion with an asymptomatic patient is crucial to increasing patients' interest in disclosing a sexual health problem to be resolved. PROs or simple questions about sexual wellbeing direct the discussion mainly toward the at-risk group for sexual deterioration: those with mental health problems and women with dyspareunia. Dyspareunia is considered a predictor of decreased quality of sexual life, a major sexual disorder that should not be overlooked. Gynecological consultation should resolve concerns, identify the problem, and refer for professional sexual care if still needed.

Genitourinary Syndrome of Menopause/Vulvovaginal Atrophy

Comparison of the effect of noninvasive radiofrequency with vaginal estrogen and vaginal moisturizer in the treatment of vulvovaginal atrophy in postmenopausal women: a randomized clinical trial
Anna Valéria Gueldini de Moraes, Lucia Costa-Paiva, et al.
Menopause. 2024 Apr 1;31(4):288-302. doi: 10.1097/GME.0000000000002326. Epub 2024 Feb 26.
https://pubmed.ncbi.nlm.nih.gov/38412393/

Objective: To compare the effect of noninvasive radiofrequency (RF) with vaginal estrogen (E), and vaginal moisturizer (M) on improving vulvovaginal atrophy (VVA) in women with genitourinary syndrome of menopause. **Results:** After 4 months, the Vaginal Health Index showed an increase of 6.6 points in mean total score in the RF arm, also in the E arm (+7.3 points), with no significant improvement in the M arm (+1.5 points) (interaction effect: RF, E ≠ M, P < 0.001). Regarding vaginal maturation, there was a significant increase in superficial cells in the E arm (+31.3), with no significant changes in the RF (+9.3) and M (-0.5) arms (interaction effect: E ≠ M, P < 0.001). Vaginal pH decreased significantly in the E arm (-1.25), with a similar response in the RF arm (-1.7), with no significant improvement in the M arm (-0.25) (interaction effect: RF, E ≠ M, P < 0.001).There was a significant improvement in the MRS score for VVA symptoms in the three intervention arms, with no predominance of any arm, whereas the

improvement in the total MRS score for urogenital symptoms showed a predominance of the RF arm (ΔRF: -7.8; ΔE: -3.5; ΔM: -2.3; RF ≠ E, M). According to histopathologic analysis, there was no statistically significant increase in glycogenation (P = 0.691) or epithelial cone height (P = 0.935), despite an increase in the median delta (difference between pretreatment and posttreatment) in the three intervention arms (glycogenation: RF arm Δ = +118.4%; E arm Δ = +130.9%; M arm Δ = +24.9%; epithelial cone height: RF arm Δ = +33.5%; E arm Δ = +18.6%; M arm Δ = +22.3%). **Conclusion:** The effect of noninvasive RF on the treatment of vulvovaginal symptoms of genitourinary syndrome of menopause was similar to vaginal estrogen, except for hormonal cytology, and superior to vaginal moisturizer, with improvement in some histomorphometric parameters. These findings are promising, especially for the population that cannot or prefers not to use vaginal estrogen therapy.

Efficacy and safety of a device that combines multipolar radiofrequency with pulsed electromagnetic field for the treatment of vulvovaginal atrophy: a randomized, sham-controlled trial
Rossella E Nappi, Silvia Martella, et al.
J Sex Med. 2024 Feb 27;21(3):203-210. doi: 10.1093/jsxmed/qdad166.
https://pubmed.ncbi.nlm.nih.gov/38286753/

Background: Vulvovaginal atrophy (VVA) negatively affects the sexual well-being and quality of life of postmenopausal women, yet it is underreported and undertreated. **Aim:** The study sought to investigate the efficacy and safety of a nonablative, noncoagulative multipolar radiofrequency (RF) and pulsed electromagnetic field-based device (PEMF) in treatment of symptoms related to VVA.
Outcomes: Changes from baseline VHI, pH, FSFI, VL, and sexual satisfaction scores between the active and sham groups were compared before and after treatment. **Results:** Mean VHI scores in the active group were significantly better compared with the sham group after treatment at all but the last FU visit (P < .001). A greater decrease in pH (active over sham) was seen at 1 and 4 months after treatment (P < .05). FSFI improvement was shown in the active group; however, it was not significantly better than sham improvement at all FU visits. Subject sexual satisfaction in the active group showed better improvement over sham at all FU visits (P < .05), while VL evaluations saw greater improvement in the active group at 4, 6, and 12 months posttreatment (P < .05). Treatment satisfaction was greater in the active group and pain was minimal in both groups. No serious adverse effects were reported. **Clinical implications:** As a noninvasive alternative to traditional surgical and topical procedures, 3 sessions of noninvasive combination RF/PEMF safely demonstrated improvement in symptoms related to VVA.
Strengths and limitations: This study was strengthened by the randomized, sham-controlled design; large sample size; and extended FU period. The study assessments were decreased at later FU visits due to the global COVID pandemic, and this was a key limitation to the study. **Conclusion:** Nonablative, noncoagulative multipolar RF/PEMF therapy was safe, improved symptoms associated with VVA, and improved female sexual function while yielding high subject satisfaction.

Randomized trial: treatment of genitourinary syndrome of menopause using radiofrequency
A Joris, V Di Pietrantonio, J Praet, et al.
Climacteric. 2024 Apr;27(2):210-214. doi: 10.1080/13697137.2024.2302425. Epub 2024 Jan 22.
https://pubmed.ncbi.nlm.nih.gov/38251861/

Objective: A randomized controlled study was conducted to evaluate the safety and efficacy of radiofrequency treatment in postmenopausal women not willing to use or presenting a contraindication for menopause hormone therapy (MHT) and suffering from genitourinary syndrome of menopause

(GSM). **Methods:** A prospective randomized open study evaluated the effect of radiofrequency treatment versus a gel (control group) in postmenopausal women suffering from GSM. Patients were assessed at baseline and after 10-12 weeks of treatment for severity of vulvovaginal atrophy, dyspareunia, pH, vaginal smear maturation index, Vaginal Health Index and Female Sexual Function Index. The difference at baseline and after 10-12 weeks of treatment and the difference in improvement were tested between groups by a two-sample *t*-test and the Mann-Whitney test. **Results:** Due to the COVID-19 pandemic, we were only able to treat 48 patients (24 patients using radiofrequency and 24 patients using a gel). Globally, at the end of the study, there were no differences in changes of the measured outcomes between the group of women treated with radiofrequency and the control group. **Conclusion:** Radiofrequency treatment was found to be safe, but was not superior to a gel, although the study lacked power. The study was registered at ClinicalTrials.gov (NCT03857893).

Carbon dioxide laser therapy for the management of genitourinary syndrome of menopause: A meta-analysis of randomized controlled trials

Yihua Ni, Junyu Lian

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https://pubmed.ncbi.nlm.nih.gov/38223331/

Genitourinary symptoms of menopause (GSM) affect ~50% of women after menopause. Recently, CO_2 laser therapy has been used for managing GSM but without high quality evidence. The present review assessed the effectiveness of CO_2 laser therapy in the management of GSM. PubMed, Embase, Web of Science, CENTRAL and Scopus databases were searched for randomized controlled trials (RCTs), published up to June 30, 2023, comparing CO_2 laser and sham laser treatments for GSM management. The outcomes of interest included Female Sexual Function Index (FSFI), Vaginal Health Index (VHI) and visual analog scale (VAS) for dyspareunia, dryness, burning, itching and dysuria. A total of seven RCTs were included in the review and meta-analysis, with 6/7 studies using three sessions of laser therapy, 4-8 weeks apart. Meta-analysis demonstrated no statistically significant difference in FSFI [mean difference (MD), -1.48; 95% CI, -5.85, 2.89; I^2=45%] and VHI scores (MD, -0.18; 95% CI, -1.66, 1.31; I^2 =72%) between laser and control groups. Meta-analysis also demonstrated no statistically significant difference in VAS scores for dyspareunia (MD, -1.63; 95% CI; -4.06, 0.80; I^2=91%), dryness (MD, -1.30; 95% CI, -3.14, 0.53; I^2=75%), burning (MD, -0.76; 95% CI, -2.03; 0.51 I^2=56%), itching (MD, -0.28; 95% CI, -0.95, 0.38; I^2=0%) and dysuria (MD, 0.15; 95% CI, -0.37, 0.67; I^2=23%) between the groups. The included RCTs had low risk of bias. In conclusion, meta-analyses of high-quality sham-controlled RCTs indicated that CO_2 may not have any beneficial effect on GSM. Limited data and high heterogeneity in meta-analyses in this area of research are important limitations that need to be addressed by future RCTs.

Prospective, multicenter, uncontrolled study on the effectiveness and safety of a hyaluronic acid water-based vaginal lubricant in alleviating vaginal dryness and dyspareunia

Manuel Sánchez-Prieto, Carmen Pingarrón, et al.

Gynecol Endocrinol. 2024 Mar 5;40(1):2317268. doi: 10.1080/09513590.2024.2317268. Epub 2024 Mar 12.

https://pubmed.ncbi.nlm.nih.gov/38468593/

Background: Vaginal dryness (VD) represents a significant concern affecting women across diverse life stages, encompassing both pre- and postmenopausal women at any age. Dyspareunia, defined by genital pain that can be experienced before, during, or after intercourse, is often associated with vaginal

dryness. **Aim:** This study aimed to evaluate the effectiveness and safety of a water-based vaginal lubricant with hyaluronic acid to reduce sexual discomfort associated with vaginal dryness. **Results:** Significant improvements were observed in the FSFI scores, indicating enhanced sexual function ($p < .001$). Vaginal dryness symptoms, including irritation, dryness, itching, and dyspareunia, significantly decreased after product use ($p < .001$). **Clinical implications:** This study contributes to the limited scientific knowledge on the application of lubricants in the context of symptoms associated with VD. **Strengths & limitations:** In addition to the short study period, inherent limitations of the study design, and lack of placebo control, it is pertinent to acknowledge that some of the pros used in this study were not based on validated questionnaires. However, as far as we know, this study is the only one that analyzes well-being and sexual pleasure as results using a lubricant formulated with hyaluronic acid. **Conclusion:** This tested vaginal lubricant with hyaluronic acid has demonstrated efficacy in improving vaginal dryness and female sexual function, particularly in reducing pain and improving lubrication during sexual intercourse, and showed a favorable safety profile, with minimal and transient adverse events.

Diffuse reflectance spectroscopy and imaging for non-invasive objective assessment of genitourinary syndrome of menopause: a pilot study
U S Dinish, Susan Logan, et al.
Sci Rep. 2024 Jan 11;14(1):1085. doi: 10.1038/s41598-023-49655-4.
https://pubmed.ncbi.nlm.nih.gov/38212347/

The genitourinary symptom of menopause (GSM) affects up to 65% of women, resulting in symptoms such as vulvovaginal dryness, discomfort, and dysuria, which significantly impacts quality of life. The current assessment methods rely on subjective questionnaires that can be influenced by individual differences, as well as invasive measurements that are time-consuming and not easily accessible. In this study, we explore the potential of a non-invasive and objective assessment tool called diffuse reflectance spectroscopy and imaging (DRSI) to evaluate tissue chromophores, including water, lipid, oxyhemoglobin, and deoxyhemoglobin. These measurements provide information about moisture content, lipid levels, oxygen saturation, and blood fraction, which can serve as surrogate markers for genital estrogen levels. Our findings reveal distinct differences in these chromophores among pre, peri, and postmenopausal subjects. By using lipid and blood fraction tissue chromophores in a K-Nearest Neighbour classifier model, we achieved a prediction accuracy of 65% compared to vaginal maturation index (VMI) that is clinically used to assess estrogen-related hormonal changes. When age was included as the third feature, the accuracy increased to 78%. We believe that by refining the study protocol and configuring the fiber probe to examine tissue chromophores both in the superficial vulva skin for epidermal water content and the deeper layers, DRSI has the potential to provide objective diagnosis and aid in monitoring the treatment outcome of GSM.

Real-world performance and safety of vaginal ovules in reducing the vaginal symptoms associated with vulvovaginal atrophy and postmenopausal sexual dysfunction
Dominic-Gabriel Iliescu, Ramona Petrita, et al.
Biomed Rep. 2024 Jan 9;20(3):35. doi: 10.3892/br.2024.1723. eCollection 2024 Mar.
https://pubmed.ncbi.nlm.nih.gov/38312435/

Decreasing estrogen levels during the postmenopausal period results in tissue atrophy and physiological changes, such as thinning of the vaginal epithelium, prolapse and decreased pelvic floor strength and

control. Sexual dysfunction associated with vaginal dryness occurs in postmenopausal patients. The present study (trial no. NCT05654610) was designed as an observational, multicenter, real-world clinical investigation to evaluate the performance and safety of the medical device Halova® ovules in decreasing vaginal symptoms associated with vulvovaginal atrophy and sexual dysfunction. A total of 249 female participants were treated with Halova ovules, both in monotherapy and in combination with vaginal lubricants. The primary objective was to evaluate the tolerability of Halova ovules in the management of symptoms associated with perimenopause or genitourinary syndrome of menopause. The evolution of clinical manifestations such as vaginal dryness, dysuria, dyspareunia and endometrial thickness was defined a secondary objective. Halova ovules were rated with 'excellent' clinical performance by 92.74% of participants as a standalone treatment and 95.71% of the study participants when used in association with vaginal lubricants. Sexual dysfunction-associated parameters, such as vaginal dryness and dyspareunia, were reduced by similar percentages in each arm, 82% (monotherapy) and 80% (polytherapy) for vaginal dryness and 72% in monotherapy vs. 48% polytherapy reducing dyspareunia. No adverse reactions associated with treatment with Halova were reported. The medical device demonstrated anti-atrophic activity in the genitourinary tract, resulting in significantly improved symptoms associated with normal sexual functioning.

Lower Urinary Tract Symptoms in Greek Women After Menopause: The LADY Study
Irene Lambrinoudaki, Nikoletta Mili, et al.
Int Urogynecol J. 2024 Mar;35(3):627-636. doi: 10.1007/s00192-024-05724-4. Epub 2024 Jan 27.
https://pubmed.ncbi.nlm.nih.gov/38280043/

Introduction and hypothesis: The genitourinary syndrome of menopause (GSM), apart from symptoms related to vulvovaginal atrophy (VVA), also consists of lower urinary tract symptoms (LUTS). Based on the common embryological origin of the genital and lower urinary system, the presence of estrogen receptors, and the high prevalence of VVA and LUTS in the menopausal population, the two conditions can coexist. This study is aimed at investigating the prevalence and risk factors of LUTS in a sample of Greek peri- and postmenopausal women. **Methods:** Four hundred and fifty (450) women, aged 40-70 years, attending three outpatient gynecology clinics for routine examination, completed a structured interview and responded to a validated questionnaire (International Consultation on Incontinence Questionnaire Female Lower Urinary Tract Symptoms, ICIQ-FLUTS). **Results:** Urinary urgency or frequency affected 51.6% and dysuria 43.6% of the participants. Mild urgency or frequency was described by 25.6%, moderate by 14.4%, and severe by 11.6% of the women. Mild dysuria was reported by 26.26%, moderate by 5.8%, and severe by 11.6%. Age, weight, BMI, and number of pregnancies and abortions correlated with a higher ICIQ-FLUTS score. Women with moderate/severe symptoms of VVA, such as irritation, a burning sensation, and pruritus of the vulva or vagina, had a higher ICIQ-FLUTS score than women without such symptoms (beta coefficient 2.42, CI 1.204, 3.635, $p < 0.001$). **Conclusions:** Lower urinary tract symptoms are very common among peri- and postmenopausal women and are linked to symptoms of VVA. Our data support the need for prompt evaluation of women transitioning to menopause, as these symptoms compromise the quality of life.

Study of Vulvovaginal Atrophy and Genitourinary Syndrome of Menopause and Its Impact on the Quality of Life of Postmenopausal Women in Central India
Samiksha C Ulhe, Neema Acharya, et al.
Cureus. 2024 Feb 24;16(2):e54802. doi: 10.7759/cureus.54802. eCollection 2024 Feb.
https://pubmed.ncbi.nlm.nih.gov/38529421/

Background Urogenital health is a necessary part of health for all women, especially in the postmenopausal age group. We suspected that the increased incidence of vulvovaginal atrophy (VVA) had some or other effects on the quality of life of older women. So, we aimed to study VVA/genitourinary syndrome of menopause (GSM) and its impact on the quality of life of postmenopausal women in Central India. Despite its significant prevalence and detrimental impact on women's health, VVA/GSM is underdiagnosed and undertreated. In view of the feminization of aging, VVA management is becoming increasingly crucial. This study contributes to postmenopausal women's understanding that keeping their urogenital and sexual longevity is a critical step toward healthy living and gender equality. Given its relationship with urogynecological conditions, this study will help to evaluate both subjectively and objectively the incidence of symptoms related to VVA and its effects on the quality of life of postmenopausal women. This will eventually help to understand the need to address this issue while making postmenopausal women health-related policies. Potential remedies to overcome the obstacles currently preventing patient-HCP interactions addressing sexual health include providing communication tools to facilitate the "uncomfortable" conversation, educating women, and providing enough training for healthcare professionals. Methods The current study was conducted at a rural tertiary healthcare center in Central India and is a cross-sectional study. The study population taken into consideration were all the postmenopausal women between the age group 45 and 75 years with at least one vulvovaginal symptom attending the Outpatient Department (OPD). The total study sample size was 100 women. Further study was conducted by interview method using a questionnaire by the principal investigator. Data was gathered with the help of a pretested questionnaire in the patient's language. Symptoms related to GSM were studied by the vaginal symptom Bothersomeness Scale. Further, a gynecological clinical examination for the confirmation of VVA was carried out, which included a gynecological physical examination. The Vaginal Health Index (VHI) was calculated for each female using the score scale. Assessment of the quality of life of postmenopausal females using the Day-to-Day Impact of Vaginal Aging (DIVA) Questionnaire was performed. Results The majority of females (34%) who presented with the symptoms were in the category of 55-60 years followed by 22% in the age group of 61-65 years. The most common symptoms experienced by females were vaginal dryness (77%) followed by vaginal discharge (74%). Our study confirmed that 79% of the total females included in the study have a VHI score of less than 15, i.e., they suffer from VVA, thus presenting our incidence at 79%. Conclusion According to the surveys discussed in this research, a significant portion of postmenopausal women have symptoms linked to VVA that have a negative impact on their quality of life, including their sexual relationships and self-esteem.

Vaginal oxytocin: an under- or overrated therapy for GSM?
Paul J Yong, MD, PhD, Susan Kellogg Spadt, PhD, CRNP, et al.
The Journal of Sexual Medicine, Volume 21, Issue 3, March 2024, Pages 195–196, https://doi.org/10.1093/jsxmed/qdad169
https://pubmed.ncbi.nlm.nih.gov/38427533/
https://academic.oup.com/jsm/articleabstract/21/3/195/7614824?redirectedFrom=fulltext&login=false

Genitourinary syndrome of menopause (GSM) is a common cause of genital discomfort and dyspareunia in postmenopausal women, being comprised by a constellation of signs and symptoms directly related to hormonal deficiency.[1,2] Externally, there can be atrophy of the labia and clitoris, introital stenosis, phimosis of the prepuce, loss of subcutaneous fat of the labia and mons, and vulvar thinning and loss of elasticity due to reduced elastin and collagen in the tissue. Vaginally, GSM manifests as dryness with an increase in pH and a decrease in superficial cells and vaginal maturation index, resulting in the mucosa

lacking rugae and becoming friable, hypopigmented, ulcerated, and erythematous with tears and petechiae.[1–3]
Oxytocin is a neuropeptide consisting of 9 amino acids that is synthesized in the supraoptic and paraventricular nuclei of the hypothalamus and then stored and secreted by the posterior pituitary into the bloodstream.[4] However, oxytocin has also been found to be expressed in peripheral organs such as the ovaries and testicles, and in the gastrointestinal and cardiovascular systems.[4] It plays various roles in the body including orgasm, breast milk ejection, and induction of labor by facilitating uterine contractions.[4] Oxytocin is recognized by a G protein–coupled receptor that is expressed in vaginal mucosa and interacts with caveolin scaffolding proteins to induce pro- or antiproliferative signaling pathways.[5]

Vaginal dryness: a review of current understanding and management strategies
J K K Mark, S Samsudin, et al.
Climacteric. 2024 Jun;27(3):236-244. doi: 10.1080/13697137.2024.2306892. Epub 2024 Feb 6.
https://pubmed.ncbi.nlm.nih.gov/38318859/

The issue of vaginal dryness in genitourinary syndrome of menopause (GSM) and its pervasive impact on women's quality of life is often overlooked. Extensive surveys conducted worldwide reveal limited understanding of vaginal dryness among public and health-care providers. Physician knowledge on menopause medicine varies globally, highlighting the need for standardized training. Effective communication between physicians and patients plays a crucial role in diagnosing and treating GSM symptoms. There are multiple treatment options to improve vaginal lubrication, including hormonal and non-hormonal therapies, along with lifestyle modifications. Tailoring treatments to individual patient preferences is crucial for compliance. Overall, GSM is multifaceted, from the prevalence of vaginal dryness to the nuances of treatment preferences. The urgency of widespread education and awareness of this matter must be underscored to meet the aim of enhancing the well-being and quality of life for women.

Insights into the vulvar component of the genitourinary syndrome of menopause (GSM)
Laura Cucinella, Lara Tiranini, et al.
Maturitas. 2024 Apr 25:108006. doi: 10.1016/j.maturitas.2024.108006.
https://pubmed.ncbi.nlm.nih.gov/38704313/

Genitourinary syndrome of menopause is a comprehensive term that groups genital, urinary and sexual signs and symptoms mainly due sex hormone deficiency and aging, with a crucial impact on quality of life of midlife women. While this broad definition captures the common underlying physiopathology and the frequent overlap of symptomatology, improving knowledge about different components of genitourinary syndrome of menopause may be relevant for individualized treatment, with possible implications for efficacy, compliance and satisfaction. This narrative review focuses on the vulvar component of genitourinary syndrome of menopause, highlighting anatomical and functional peculiarities of the vulva that are responsible for some of the self-reported symptoms, as well as specific signs at physical examination. Increasing evidence points towards a pivotal role of vulvar vestibular health in the occurrence of sexual pain, one of the most common and distressing symptoms of genitourinary syndrome of menopause, which should be evaluated with validated scales taking a biopsychosocial perspective. This is an essential step in the recognition of different phenotypes of genitourinary syndrome of menopause and in the assessment of the most effective diagnostic and

therapeutic algorithm. Menopausal vulvar health deserves more research into tailored non-hormonal and hormonal treatment options.

Persistent Genital Arousal Disorder

Persistent Genital Arousal Disorder as an Atypical Presenting Symptom of Central Nervous System Demyelinating Disorder

Üçem, Selen; Buluş, Eser; et al.

Neurology India 71(6):p 1270-1271, Nov–Dec 2023. | DOI: 10.4103/0028-3886.391352

https://pubmed.ncbi.nlm.nih.gov/38174476/

https://journals.lww.com/neur/fulltext/2023/71060/persistent_genital_arousal_disorder_as_an_atypical.33.aspx

Sir,

We report a 24-year-old previously healthy woman with resistant, sudden sexual arousal episodes and tingling sensations in her legs. Her past medical and family history were unsignificant; she had no history suggestive of genitourinary, endocrinological, or psychiatric problems. She did not use any medications currently, nor did she stop any medications recently, including antidepressants. Her neurological examination was significant only for left-sided hyperactive deep tendon reflexes, Achilles clonus, and occasional urinary incontinence with coughing.

The laboratory tests, including a complete blood count, liver and kidney function tests, electrolytes including magnesium and calcium, vitamins including B12, and iron levels, were at normal levels. The MRI of the brain and spinal cord revealed multiple non-contrast-enhancing demyelinating plaques at bilateral periventricular, juxtacortical regions, and C3, C4, and C6 cervical levels, all shorter than the height of one vertebra.

Other lab tests, including anti-nuclear antibodies and an extractable nuclear antigen panel for connective tissue disorders, anti-neutrophil cytoplasmic antibodies for vasculitides, autoimmune encephalitis antibodies for limbic encephalitis, an ACE level for sarcoidosis, and an infectious panel including hepatitis, HIV, Borrelia, and Brucella, were negative. An electroencephalographic study was ordered for possible epileptiform activity, and it resulted in normal results as well.

The patient was referred to multiple sclerosis (MS) for differential diagnosis of MS and for further investigations of her demyelinating lesions

Pudendal nerve blockade for persistent genital arousal disorder (PGAD): A clinical review and case report

Michael J Gyorfi, Alaa Abd-Elsayed

Pain Pract. 2024 Mar 10. doi: 10.1111/papr.13362.

https://pubmed.ncbi.nlm.nih.gov/38462787/

Background: Persistent genital arousal disorder (PGAD) is a condition characterized by unwanted and potentially painful genital sensations or spontaneous orgasms without stimulation. We present a case of a 55-year-old woman with refractory genital arousal disorder that was treated with serial pudendal nerve blocks. **Case:** RW is a 55-year-old woman with chronic pelvic pain, pudendal neuralgia, MDD, SI, GAD, CRPS, and persistent genital arousal disorder for 11 years. Her PGAD was refractory to conservative management, physical therapy, and bilateral clitoral artery embolization. We performed

bilateral pudendal nerve blocks with Kenalog and Bupivacaine, which provided almost complete relief for 2-3 months. We performed a bilateral pudendal nerve radiofrequency ablation; however, there was minimal benefit. RW continues to have significant relief with serial pudendal nerve blocks. **Summary and conclusion:** Persistent genital arousal disorder is often refractory to medication and physical therapy requiring significant intervention such as entrapment surgery or artery embolization. Our case demonstrates pudendal nerve blocks as a potential treatment modality with minimal side effects.

Interpersonal Experiences with Persistent Genital Arousal: Connections between Symptom Disclosure, Partner Responses, and Catastrophizing on Relationship Adjustment and Symptom Severity
Kayla M Mooney, Maeve Mulroy, et al.
J Sex Marital Ther. 2024;50(2):182-196. doi: 10.1080/0092623X.2023.2269931. Epub 2023 Oct 25.
https://pubmed.ncbi.nlm.nih.gov/37878759/

Increased research attention to interpersonal factors in genitopelvic pain conditions, such as vulvodynia, have led to more comprehensive understanding of couple dynamics in pain, sexual, and relationship outcomes. There has been very little examination of interpersonal factors in Persistent Genital Arousal Disorder/Genitopelvic Dysesthesia (PGAD/GPD), a distressing condition involving persistent sensations of arousal and often pain. The aims of the present study were to examine whether individuals disclose their symptoms to intimate partners and whether interpersonal variables (e.g., partner responses, symptom disclosure, and catastrophizing) are related to relationship adjustment and symptom severity. Seventy-six individuals with symptoms of PGAD/GPD participated in a one-time anonymous online survey. Over three-quarters (85.5%) of the sample disclosed their symptoms to their partners in some way. Greater supportive partner responses and lower symptom catastrophizing were related to better relationship adjustment among participants with PGAD/GPD symptoms. Greater symptom catastrophizing also predicted greater PGAD/GPD symptom severity. Partner responses were not related to PGAD/GPD symptom severity. Although interpersonal factors have been linked to symptom severity in chronic pain and genitopelvic pain conditions, the results of the current study suggest that interpersonal factors may play a slightly different role in PGAD/GPD symptom experiences and in the conceptualization of PGAD/GPD more broadly.

Pudendal Neuralgia

Efficacy of ganglion impar block combined with pudendal nerve pulsed radiofrequency for pudendal neuralgia management-a randomized clinical trial
Jiao Ran, Fan Lu, et al.
Trials. 2024 May 13;25(1):316. doi: 10.1186/s13063-024-08152-3.
https://pubmed.ncbi.nlm.nih.gov/38741220/

Background: Pudendal neuralgia is a chronic and debilitating condition. Its prevalence ranges from 5 to 26%. Currently, therapeutic approaches to treat pudendal neuralgia include patient education, medication management, psychological and physical therapy, and procedural interventions, such as nerve block, trigger point injections, and surgery. Drug therapy has a limited effect on pain relief. A pudendal nerve block may cause a significant decrease in pain scores for a short time; however, its efficacy significantly decreases over time. In contrast, pudendal nerve pulsed radiofrequency can provide pain relief for 3 months, and ganglion impar block has been widely used for treating chronic

perineal pain and chronic coccygodynia. This study aimed to determine the efficacy and safety of monotherapy (pudendal nerve pulsed radiofrequency) and combination therapy (pudendal nerve pulsed radiofrequency plus ganglion impar block) in patients with pudendal neuralgia. **Discussion:** This study protocol describes a randomized, controlled clinical trial to determine the efficacy and safety of mono and combination therapies in patients with pudendal neuralgia. The study results will provide valuable information on the potential benefits of this combination therapy and contribute to the development of more effective and safer treatments for patients with pudendal neuralgia.

Accuracy of augmented reality-guided needle placement for pulsed radiofrequency treatment of pudendal neuralgia: a pilot study on a phantom model
Lars L Boogaard, Kim Notten, et al.
PeerJ. 2024 Mar 28:12:e17127. doi: 10.7717/peerj.17127. eCollection 2024.
https://pubmed.ncbi.nlm.nih.gov/38560457/

Background: Pudendal neuralgia (PN) is a chronic neuropathy that causes pain, numbness, and dysfunction in the pelvic region. The current state-of-the-art treatment is pulsed radiofrequency (PRF) in which a needle is supposed to be placed close to the pudendal nerve for neuromodulation. Given the effective range of PRF of 5 mm, the accuracy of needle placement is important. This study aimed to investigate the potential of augmented reality guidance for improving the accuracy of needle placement in pulsed radiofrequency treatment for pudendal neuralgia. **Methods:** In this pilot study, eight subjects performed needle placements onto an in-house developed phantom model of the pelvis using AR guidance. AR guidance is provided using an in-house developed application on the HoloLens 2. The accuracy of needle placement was calculated based on the virtual 3D models of the needle and targeted phantom nerve, derived from CBCT scans. **Results:** The median Euclidean distance between the tip of the needle and the target is found to be 4.37 (IQR 5.16) mm, the median lateral distance is 3.25 (IQR 4.62) mm and the median depth distance is 1.94 (IQR 7.07) mm. **Conclusion:** In this study, the first method is described in which the accuracy of patient-specific needle placement using AR guidance is determined. This method could potentially improve the accuracy of PRF needle placement for pudendal neuralgia, resulting in improved treatment outcomes.

Combined Decompression of Pudendal and Inferior Cluneal Nerves for Entrapment Neuralgias Using Transperitoneal Robotic Laparoscopy: Feasibility and Our 4 Step Technique
Olivier Celhay, Horace Roman, et al.
J Minim Invasive Gynecol. 2024 Mar 26:S1553-4650(24)00152-3. doi: 10.1016/j.jmig.2024.03.009.
https://pubmed.ncbi.nlm.nih.gov/38527704/

Objective: To demonstrate the feasibility of a combined decompression of pudendal and inferior cluneal nerves for entrapment syndrome using a transperitoneal robotic laparoscopy. **Design:** Demonstration of our 4-step technique with narrated video footage. **Setting:** Pudendal and inferior cluneal neuralgias caused by an entrapment syndrome are both responsible for perineal pain [1]. Although more precise data are lacking, these 2 neuralgias are frequently associated. Failure of surgical pudendal nerve decompression in the early 2000 has driven to discover the entity of a potential entrapment syndrome of the posterior cutaneous nerve of the tight and its inferior cluneal branches between the ischium bone and the sacrotuberous ligament [2]. The corresponding neuralgia is responsible for a neuropathic pain to a more posterior part of the perineum and the thigh, without any neurovegetative symptom. In case of failure of medical treatment, surgery can be proposed using an invasive open transgluteal approach as a

standard treatment [3-5]. **Interventions:** Transperitoneal robotic laparoscopy for a mini-invasive releasing of both pudendal and inferior cluneal nerves, following a 4-step technique: 1. Opening of the peritoneum between the external iliac vessels and the umbilical ligament 2. Dissection of the internal iliac and pudendal arteries up to the pudendal nerve 3. Section of the sacrospinous ligament and release of the pudendal nerve 4. Section of the sacrotuberous ligament and release of the inferior cluneal nerve CONCLUSION: Previously, pudendal and inferior cluneal neuralgias have been managed with an invasive open transgluteal surgery. Here, we demonstrate the feasibility of a mini-invasive transperitoneal robotic laparoscopy, with a standardized 4-step surgical technique. VIDEO ABSTRACT.

Management of pudendal neuralgia with electrical stimulation. A systematic review
L Piñeiro-Franco, A Alonso-Calvete, et al.
Actas Urol Esp (Engl Ed). 2024 Feb 15:S2173-5786(24)00008-8. doi: 10.1016/j.acuroe.2024.02.001.
https://pubmed.ncbi.nlm.nih.gov/38365090/

Introduction and objective: Pudendal neuralgia is a severely intense, painful, neuropathic condition, involving the dermatome of the pudendal nerve (S2, S3, S4). The diagnosis is complex and usually takes many years to be made. Techniques that use electrical current have been shown to decrease pain and improve quality of life in patients with this condition. The aim of this review was to analyze the existing literature on the effects of electrical current in the treatment of patients with pudendal neuralgia. **Material and methods:** A literature search was carried out in PubMed, Cinahl, Medline, Cochrane Library, ENFISPO, PEDro, Scopus and Web of Science databases, using the search terms "Electric Stimulation Therapy", "pudendal neuralgia" and "pudendal nerve entrapment". **Results:** The most frequently repeated intervention is pulsed radiofrequency. Other techniques used are transcutaneous electrical nerve stimulation, pulsed electromagnetic field therapy and neuromodulation. All studies show significant improvement in pain, analgesic intake, depression-anxiety or quality of life. **Conclusions:** The application of electrical current seems to be effective in the management of pudendal neuralgia. The scientific evidence is scarce, of poor methodological quality, and its use is based on the efficacy demonstrated in other indications of chronic pain.

Pudendal nerve neurolysis outcomes for urogenital and rectal disorders in patients suffering from pudendal nerve entrapment: A systematic review
Carlo Giulioni, Lucia Pitoni, et al.
Investig Clin Urol. 2024 May;65(3):230-239. doi: 10.4111/icu.20230402.
https://pubmed.ncbi.nlm.nih.gov/38714513/

Purpose: Pudendal neuropathy is an uncommon condition that exhibits several symptoms depending on the site of nerve entrapment. This study aims to evaluate the efficacy of pudendal nerve neurolysis (PNN) in improving lower urinary tract symptoms, anal and/or urinary incontinence, and sexual dysfunctions. **Materials and methods:** A systematic literature search was performed on 20 May 2023 using Scopus, PubMed, and Embase. Only English and adult papers were included. Meeting abstracts and preclinical studies were excluded. **Results:** Twenty-one papers were accepted, revealing significant findings in the field. The study identified four primary sites of pudendal nerve entrapment (PNE), with the most prevalent location likely being at the level of the Alcock canal. Voiding symptoms are commonly exhibited in patients with PNE. PNN improved both urgency and voiding symptoms, and urinary and anal incontinence but is less effective in cases of long-standing entrapment. Regarding sexual function, the recovery of the somatic afferent pathway results in an improvement in erectile

function early after neurolysis. Complete relief of persistent genital arousal disorder occurs in women, although bilateral PNN is necessary to achieve the efficacy. PNN is associated with low-grade complications. **Conclusions:** PNN emerges as a viable option for addressing urinary symptoms, fecal incontinence, erectile dysfunction, and female sexual arousal in patients suffering from PNE with minimal postoperative morbidity.

Pudendal Nerve Neurolysis in Patients Afflicted With Pudendal Nerve Entrapment: A Systematic Review of Surgical Techniques and Their Efficacy
Carlo Giulioni, Giacomo Maria Pirola, et al.
Int Neurourol J. 2024 Mar;28(1):11-21. doi: 10.5213/inj.2448010.005. Epub 2024 Mar 31.
https://pubmed.ncbi.nlm.nih.gov/38569616/

To assess the effectiveness and safety of various techniques of pudendal nerve neurolysis (PNN) in patients with pudendal nerve entrapment (PNE). A comprehensive literature search was conducted on May 20th, 2023, using Scopus, PubMed, and Embase databases. Only studies in English involving adults were accepted, while meeting abstracts and preclinical studies were excluded. A total of 34 papers were included. Transperineal PNN emerged as a promising technique, demonstrating significant potential in alleviating pain, restoring erectile function in males, and improving the resolution of urinary stress incontinence in females. Furthermore, the bilateral approach consistently yielded positive outcomes in addressing urinary symptoms. The transgluteal technique appeared particularly suitable for cases of posterior PNE, situated between the sacrospinous ligament and the lesser sciatic foramen. A progressive amelioration of painful symptoms was observed during follow-up. Minimally invasive PNN is evolving and enables decompression along the entire proximal tract up to the Alcock canal, minimizing the risk of comorbidities. In addition to reducing pudendal neuralgia, robot-assisted and laparoscopic approaches determined a reduction in lower urinary tract symptoms and an improvement in erectile function, though further studies are required to corroborate these findings. PNN emerges as an effective treatment for PNE with minimal morbidity. Therefore, PNN should be tailored according to the site of PNE to enhance functional outcomes and improve patient quality of life.

Fluoroscopy-Guided Transgluteal Pudendal Nerve Block for Pudendal Neuralgia: A Retrospective Case Series
Danielle Levin, Daniel Van Florcke, et al.
J Clin Med. 2024 Apr 30;13(9):2636. doi: 10.3390/jcm13092636.
https://pubmed.ncbi.nlm.nih.gov/38731163/

Background/Objective: Pudendal neuralgia is a distressing condition that presents with pain in the perineum. While a positive anesthetic pudendal nerve block is one of the essential criteria for diagnosing this condition, this block can also provide a therapeutic effect for those afflicted with pudendal neuralgia. There are multiple ways in which a pudendal nerve block can be performed. The objective of this study is to share our results and follow-up of fluoroscopy-guided transgluteal pudendal nerve blocks. **Methods:** This is a retrospective case series. Included were 101 patients who met four out of the five Nantes criteria (pain in the anatomical territory of the pudendal nerve, pain worsened by sitting, pain that does not wake the patient up at night, and no objective sensory loss on clinical examination) who did not respond to conservative treatment and subsequently underwent a fluoroscopy-guided transgluteal pudendal nerve block. Therapeutic success was defined as a 30% or greater reduction in pain. Success rates were calculated, and the duration over which that success was

sustained was recorded. **Results:** For achieving at least 30% relief of pain, using worst-case analysis, the success rate at two weeks was 49.4% (95% CI: 38.5%, 60.3%). In addition to pain relief, patients experienced other therapeutic benefits, such as reductions in medication use and improvements in activities of daily living. **Conclusions:** Fluoroscopy-guided transgluteal pudendal nerve block appears to be effective in patients who have pudendal neuralgia that is resistant to conservative therapy, with good short-term success.

Dermatological Disorders

Low-level laser therapy: an efficient supplement to treatments of vulvar Lichen sclerosus to improve quality of life
Pia Kirstine Berthelsen, Sidsel Eb Ipsen, et al.
J Obstet Gynaecol. 2024 Dec;44(1):2349965. doi: 10.1080/01443615.2024.2349965. Epub 2024 May 10.
https://pubmed.ncbi.nlm.nih.gov/38727718/

Background: Lichen sclerosus (LS) is a chronic, inflammatory disease of the genital and extra genital skin, causing pruritus, soreness, pain and dyspareunia. The aim of this study was to investigate whether Low Level Laser Therapy (LLLT) can improve the quality of life in women with Lichen sclerosus (LS) and insufficient topical treatment. **Methods:** In a descriptive prospective observational study conducted between 02.01.2016 and 08.01.2018, we included 100 women with LS with insufficient topical treatment because of poor response of symptoms. All participants received ten LLLT treatments (808 nm and 500 mW) over a period of 8 weeks. The first four treatments were planned as two treatments per week. The remaining six treatments were planned as once a week. A Danish health-related quality of life tool (HRQoL test) monitored the effect. **Results:** A total of 94 patients completed the study, median age of 62 [InterQuartile Range 53-69]. There was a statistically significant improvement in seven of the eight domains of the HRQoL test after ten LLLT. We found the results of DoloTest to be statistically significant in all of the groups except for smoking ($p < 0.094$). **Conclusions:** LLLT treatment can improve the quality of life in women with LS.

Clinical efficacy analysis of 5-aminolevulinic acid photodynamic therapy for vulvar lichen sclerosus
Zhongyu Qu, Xueyan Lin, et al.
Photodiagnosis Photodyn Ther. 2024 Mar 3:46:104035. doi: 10.1016/j.pdpdt.2024.104035.
https://pubmed.ncbi.nlm.nih.gov/38442799/

Objective: The purpose of this study is to analyze the efficacy of photodynamic therapy in the treatment of vulvar lichen sclerosus who do not respond to topical glucocorticoid therapy, analyze whether there are factors that affect the efficacy, and identify adverse reactions to the treatment. **Method:** This retrospective study included 42 patients with vulval lichen sclerosis treated with ALA-PDT. Basic data of all patients were collected, and the clinical symptoms and signs of the patients before treatment were evaluated. After one year of treatment, the clinical efficacy was evaluated and analyzed whether there were any factors that affected the treatment effect. **Result:** One year after the ALA-PDT treatment, the clinical effective rate was 64.29 % (27/42), the general effective rate was 19.05 % (8/42), the ineffective rate was 4.76 % (2/42), and the recurrence rate was 11.90 % (5/42). There was no correlation between menopause, number of births given, body mass index, duration of disease, treatment times and treatment effect. For patients with severe itching and atrophy, PDT was less effective. Adverse effects

were minimal and no structural complications were reported. **Conclusion:** ALA-PDT can obviously alleviate itching in VLS patients, improve skin elasticity, skin color and reduce lesion area. ALA-PDT for VLS has a low recurrence rate and few side effects.

Use of systemic therapies for vulvar lichen sclerosus and vulvovaginal lichen planus: a survey study of dermatologists and gynecologists

Celeste Richardson, BS, Alexa Kassels, BS, et al.
Int J Womens Dermatol. 2024 Jun; 10(2): e146. Published online 2024 Apr 18
doi: 10.1097/JW9.0000000000000146
https://pubmed.ncbi.nlm.nih.gov/38638164/
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11025704/

Vulvar lichen sclerosus (VLS) and vulvovaginal lichen planus (VLP) are chronic autoimmune inflammatory processes that significantly affect the quality of life. Topical immunosuppression with high-potency corticosteroids is the first-line treatment for both conditions.[1] However, for refractory disease, systemic agents may be appropriate. Various studies report that 30 to 50% of patients with VLP do not achieve symptomatic control with topicals alone,[2] and about 25% of patients who initially responded to topical steroids eventually require a second-line therapy.[3] Approximately 60 to 70% of VLS patients experience complete remission with first-line therapy, with 30 to 40% of patients remaining symptomatic.[4] There are currently no guidelines for the use of systemic therapies in these vulvar conditions.[5] We sought to understand how clinicians utilize systemic agents for VLS and VLP treatment.
A 15-question, institutional review board-exempt, online REDCap survey was distributed worldwide using the International Society for the Study of Vulvovaginal Disease listserv. The survey was sent out twice, 1 month apart. Seventy-one participants completed the survey (14% response rate). Seventy-six percent were gynecologists, 22% dermatologists, and 3% urogynecologists, with most practicing for >20 years in dedicated vulvar clinics (Table (Table11).

Alternations in the human skin, gut and vaginal microbiomes in perimenopausal or postmenopausal Vulvar lichen sclerosus

Xiaolei Ma, Guangdong Wen, et al.
Sci Rep. 2024 Apr 10;14(1):8429. doi: 10.1038/s41598-024-58983-y.
https://pubmed.ncbi.nlm.nih.gov/38600101/

Vulvar lichen sclerosus (VLS) is a chronic and progressive dermatologic condition that can cause physical dysfunction, disfigurement, and impaired quality of life. However, the etiology of VLS remains unknown. The vulvar skin, intestinal and vaginal microbiomes have been postulated to play important roles in the pathogenesis of this disease. The aim of this study was to compare the compositional characteristics of the vulvar skin, vagina, and gut microbiota between perimenopausal or postmenopausal VLS patients and healthy controls. The study involved six perimenopausal or postmenopausal VLS patients which were based on characteristic clinical manifestations and histologic confirmation and five healthy controls. The pruritus severity of each patient was evaluated using the NRS scale, and the dermatology-specific health-related quality of life was assessed using the Skindex-16. Metagenomic sequencing was performed, and the results were analyzed for alpha and beta diversity. LEfSe analysis were used to investigate the microbial alterations in vulvar skin, gut and vagina. KEGG databases were used to analyze differences in functional abundance. The study found significant differences in alpha diversity between the two groups in stool and vaginal samples ($P < 0.05$). Patients with VLS had a higher abundance of

Enterobacter cloacae, Flavobacterium_branchiophilum, Mediterranea_sp._An20, Parabacteroides_johnsoniiand Streptococcus_bovimastitidis on the vulvar skin, while Corynebacterium_sp._zg-913 was less abundant compared to the control group. The relative abundance of Sphingomonas_sp._SCN_67_18, Sphingobium_sp._Ant17, and Pontibacter_sp_BT213 was significantly higher in the gut samples of patients with VLS.Paenibacillus_popilliae,Gemella_asaccharolytica, and Coriobacteriales_bacterium_DNF00809 compared to the control group. Additionally, the vaginal samples of patients with VLS exhibited a significantly lower relative abundance of Bacteroidales_bacterium_43_8, Bacteroides_sp._CAG:20, Blautia_sp._AM28-10, Fibrobacter_sp._UWB16, Lachnospiraceae_bacterium_AM25-39, Holdemania_filiformis, Lachnospiraceae_bacterium_GAM79, and Tolumonas_sp. Additionally, the butyrate-producing bacterium SS3/4 showed a significant difference compared to the controls. The study found a negative relationship between Sphingobium_sp._Ant17 in stool and Skindex-16 ($P < 0.05$), while Mediterranea_sp._An20 had a positive correlation with Skindex-16 ($P < 0.05$) in the skin. Additionally, our functional analysis revealed alterations in Aminoacyl_tRNA_biosynthesis, Glutathione_metabolism, the pentose phosphate pathway, and Alanine__aspartate_and_glutamate_metabolism in the VLS patient group. The study suggests that perimenopausal or postmenopausal patients with VLS have a modified microbiome in the vulvar skin, gut, and vagina. This modification is linked to abnormal energy metabolism, increased oxidative stress, and abnormal amino acid metabolism.

Is there a role for platelet rich plasma injection in vulvar lichen sclerosus? A self-controlled pilot study
Veronica Boero, Giulia Emily Cetera, et al.
Arch Gynecol Obstet. 2024 Mar 24. doi: 10.1007/s00404-024-07424-2.
https://pubmed.ncbi.nlm.nih.gov/38523203/

Background: Owing to the evidence that as many as 30-40% of patients with vulvar lichen sclerosus (VLS) fail to report a remission of symptoms with first-line corticosteroid treatment (TCS), especially as what regards dyspareunia, we aimed to analyze patients' satisfaction following vulvar injection of autologous platelet-rich plasma (PRP). This is intended as an adjunctive treatment, to be used following TCS, and appears to promote tissue repair. It may also possibly have immunomodulatory proprieties. **Materials and methods:** Patients with VLS were considered eligible for this pilot study if, despite having been treated with a 3-month TCS regimen, they reported a persistence of symptoms. PRP was produced in a referral center using a manual method and a standardized protocol. Each patient received three treatments 4 to 6 weeks apart. **Results:** A total of 50 patients with a median age of 53 years [IQR 38-59 years] were included in the study. 6 months after the last injection of PRP all patients were either satisfied or very satisfied with the treatment (100%; 95% CI 93-100%). Median NRS scores for itching, burning, dyspareunia and dysuria were significantly reduced ($p < 0.05$) and FSFI, HADS and SF-12 questionnaires revealed a significant improvement in sexual function, psychological wellbeing and quality of life ($p < 0.05$). The number of patients reporting the need for maintenance TCS treatment was reduced by 42% ($p < 0.001$) and an improvement in vulvar elasticity and color was reported in all patients. **Conclusion:** Following standard medical therapy, PRP may be effective not only in improving , but also in restoring function.

Clinical outcomes with utilization of high-potency topical steroids in patients with lichen sclerosus-associated vulvar cancer

Nujsaubnusi C Vue, Jessica Sassani, et al.

Gynecol Oncol. 2024 May 10:187:58-63. doi: 10.1016/j.ygyno.2024.05.003.
https://pubmed.ncbi.nlm.nih.gov/38733953/

Objectives: To evaluate the impact of high-potency topical steroid use on risk of recurrence of lichen sclerosus-associated vulvar cancer. **Results:** A total of 49 patients were included, with 36 patients receiving steroid treatment and 13 patients in the expectant management group. The median age of diagnosis was 68. The average BMI was 31.7 +/- 7.0. The median length of follow up was 41 months. The majority of patients were diagnosed with stage I VSCC. There was no difference in demographics or oncologic management of vulvar cancer between the two cohorts. Overall recurrence was decreased among patients who received steroid treatment when compared to patients who did not, 12 patients (33.3%) versus 9 patients (69.2%) respectively (p = 0.048). **Conclusions:** High-potency topical steroid use following treatment of lichen sclerosus-associated vulvar squamous cell carcinoma is associated with decreased risk of recurrence and prolonged median time to recurrence.

A Longitudinal Mult institutional Study of Vulvar Lichen Sclerosus: From Childhood to Perimenopause

Jacopo Di Giuseppe, Giovanni Delli Carpini, et al.

J Low Genit Tract Dis. 2024 Apr 24. doi: 10.1097/LGT.0000000000000816. Online ahead of print.
https://pubmed.ncbi.nlm.nih.gov/38661348/

Objective: The main outcome of this study was the evaluation of clinical characteristics, comorbidities, and therapeutic approaches in patients with vulvar lichen sclerosus (VLS) aged from childhood to perimenopause. Secondly, it was intended to compare these characteristics according to the menarchal status. **Methods:** Patients less than 45 years of age with a diagnosis of VLS from January 2002 to June 2022 in 10 referral centers were included in this retrospective longitudinal study. The univariate analysis compared the dependent variables according to menarchal status. **Results:** One hundred eighty-six patients met the inclusion criteria. At diagnosis, between 25% and 40% of premenarchal patients reported signs related to subepithelial hemorrhage. A significantly greater presence of bleeding ($p < .005$), easy bruising ($p = .028$), fissures ($p = .008$), petechiae/splinter hemorrhages ($p < .001$), and bleeding/blistering or open sores ($p = .011$) was observed in premenarchal patients with respect to the postmenarchal group. The perineum ($p = .013$) and the perianal region ($p < .001$) were significantly more involved in the premenarchal group. Topical calcineurin inhibitors were more used in the premenarchal population ($p = .004$), whereas vitamin E oil and moisturizers were more used in the postmenarchal population ($p = .047$). **Conclusions:** Vulvar lichen sclerosus is a chronic condition that can cause vulvar changes that result in severe morbidity and affects sexual function and quality of life, even before menopause. Vulvar lichen sclerosus continues to be misdiagnosed in this population. This may lead to an average delay from symptom onset to diagnosis. Evaluating clinical manifestations of VLS in premenarchal and postmenarchal age allowed us to find different clinical characteristics between the 2 periods suggestive of the diagnosis.

Vulvar Lichenoid Dermatoses With Emphasis on the Distinction Between Lichen Sclerosus and Lichen Planus: A 10-Year Study

Sueallen Lorna D'Souza, Gayatri Ravikumar, et al.

J Low Genit Tract Dis. 2024 Apr 1;28(2):189-197. doi: 10.1097/LGT.0000000000000789.
https://pubmed.ncbi.nlm.nih.gov/38518217/

Objectives: Lichen planus (LP) and lichen sclerosus (LS) are the most common vulvar lichenoid dermatoses. The diagnostic challenges are due to site-specific variation in microscopic appearance and small-sized biopsies. Authentication of diagnostic criteria to distinguish LS and LP to uncover any resemblance or divergence in presentation of these conditions is attempted. **Results:** There were 28 cases of vulvar LP and 72 cases of LS, with a median age of 51 and 60 years, respectively. Depigmentation and atrophy were the major clinical features in LS, whereas ulcers/erosions and erythema were more prevalent in LP with a significantly higher incidence of oral involvement. The most diagnostic feature in LS was diffuse dermal sclerosis (76.8%) and interstitial pattern of inflammation (81.4%), whereas the characteristic features in LP cases was a lichenoid pattern of inflammation (85.7%), necrotic keratinocytes, and lymphocytic exocytosis. In 44.4% of LS, unconventional features like compact orthokeratosis, parakeratosis, thickened/wedge-shaped hypergranulosis, and sawtooth rete pegs were noted. Lichen sclerosus with lichenoid inflammation (21.4%) mimicked LP, from which it was distinguished by presence of thickened or diminished granular layer with basal melanin absence (60%) and dermal homogenization (80%). **Conclusion:** Although the classical, well-established variant of LS poses no diagnostic difficulty, the unconventional variant may mimic LP. Identification of the subtle histological clues demonstrated in this study can help to arrive at the correct diagnosis.

Attitudes Toward Proactive Topical Corticosteroid Use Among Women With Vulval Lichen Sclerosus

Sophie Rees, Susanne Arnold, et al.

J Low Genit Tract Dis. 2024 Apr 1;28(2):183-188. doi: 10.1097/LGT.0000000000000791.
https://pubmed.ncbi.nlm.nih.gov/38518216/

Objectives: Some practitioners are adopting proactive topical corticosteroid (TCS) therapy for vulval lichen sclerosus (VLS). We sought to understand patient attitudes toward proactive TCS therapy for VLS in a context in which proactive therapy is adopted. **Methods:** Four online focus group discussions with 12 participants. Data analysis was informed by social constructionist grounded theory. **Results:** All participants had accepted a proactive regimen. Three themes were developed from the analysis: "Coming to accept proactive therapy," "Motivators to maintaining a proactive regimen," and "The importance of a routine that fits me." Within each theme are subthemes illustrating different dimensions of the theme. **Conclusions:** Accepting proactive TCS therapy for VLS requires incorporating regular TCS use into a patient's identity, unlearning previous understandings regarding the safety of long-term TCS use, and adopting a regimen that fits within patients' lives and minimizes the loss of autonomy.

The Need of Differential Diagnosis Between Vulvar Lichen Sclerosus and Autoimmune Dermatoses in Adolescent Girls

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Introduction: Vulvar lichen sclerosus (VLS) is a chronic inflammatory condition affecting the anogenital region, which can manifest in prepubertal or adolescent patients. The prevailing theories point to autoimmune and genetic factors. The primary symptoms of VLS typically include vulvar itching, discomfort, dysuria, and constipation. Physical examination often reveals a characteristic figure 8 pattern, involving the labia minora, clitoral hood, and perianal region. However, these symptoms and the age of onset are nonspecific and require differentiation from autoimmune dermatoses such as bullous diseases, pemphigus diseases, epidermolysis bullosa acquisita, and dermatitis herpetiformis. We performed this study to distinguish VLS from autoimmune dermatoses, and in doing so, uncover the underlying causes of chronic vulvar changes. This knowledge will enable healthcare providers to offer appropriate medical care to affected patients. **Results:** The analysis of the study group revealed that the most commonly observed signs and symptoms included: itching, soreness, burning sensations, and excoriation, as well as erythema or/and pallor of the skin and perineal mucosa. Among the assessed antibodies, only anti-GAF3x antibodies and ANA antibodies were detected. However, the results did not reach statistical significance ($p > 0.5$).

Outcome Measures in Adult Vulvar Lichen Sclerosus: A Systematic Review
Beth Morrel, Marianne J Ten Kate-Booij, et al.
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Objectives: Core outcome domains (CODs) for treatment of adult vulvar lichen sclerosus (VLS) have recently been established through a Delphi study. A number of measuring tools are available for evaluating VLS. The aim of this study is to identify available standardized measurement tools for the major CODs for VLS that have recently been defined, namely, physical findings and quality of life (QoL) specific to VLS. **Materials and methods:** A systematic search through September 8, 2023, for measuring tools applicable to VLS regarding physical findings and QoL including sexual function or sexual well-being and self-image was performed. **Results:** Thirty-five studies were included in the systematic review describing 26 tools covering the following 6 outcome domains: QoL-general health, QoL-lichen sclerosus specific, symptoms, clinical signs, emotional impact, and sexual functioning.
Conclusions: In current research, there is no uniformity in use of measurement tools for evaluating VLS. The established CODs to evaluate treatment of VLS are applicable for evaluating disease course as well. A comprehensive study to reach consensus regarding measurement of physical findings, QoL-lichen sclerosus specific, sexuality, and self-image taking the predetermined CODs and other factors such as age into account is needed.

Outcome Measures in Adult Vulvar Lichen Sclerosus: A Case Series of Women Diagnosed as Juveniles
Beth Morrel, Marianne J Ten Kate-Booij, et al.
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Objectives: Studies on the consequences of juvenile vulvar lichen sclerosus (JVLS) in adulthood are limited. A number of measuring tools are available for analyzing adult vulvar lichen sclerosus (VLS), but these have not been applied in studies on JVLS. The aim is to study physical findings, quality of life, sexual well-being, and self-image in adult women with a history of juvenile VLS. **Materials and methods:** Adult women with a biopsy proven history of JVLS were recruited to be examined and surveyed using available standardized measurement tools. This took place in an outpatient setting by

physicians who were not involved in the treatment of participants. **Results:** Twenty-seven women (median age 29 years) with a history of JVLS and median time since biopsy of 19.5 years were recruited. Of these women, 59% currently had symptoms, 63% had signs of active disease, and 85% had moderate to severe architectural changes. Despite these residual signs, vulvar specific-quality of life and vulvar self-image scored favorably while generic health-related quality of life was somewhat effected. **Conclusions:** JVLS has consequences in adulthood involving physical findings and vulvar quality of life. The use of standardized outcome measures for clinical practice and research purposes facilitates a better understanding of the sequelae to JVLS.