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Vulvodynia

Pelvic floor muscle activation in response to pressure stimuli applied to the vulvar vestibule: an observational study comparing women with and without provoked vestibulodynia
Linda McLean, Flavia Ignacio Antonio, Marina Petter Rodrigues, Caroline Pukall
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https://pubmed.ncbi.nlm.nih.gov/39657064/

Background: The nature of pelvic floor muscle (PFM) involvement in provoked vestibulodynia (PVD) is poorly understood. **Aim:** We aimed to determine if PFM electromyographic (EMG) activity in anticipation of or response to pressure applied to the posterior vaginal fourchette differs between those with and without PVD, and if the magnitude of PFM response is associated with pressure pain sensitivity, psychological or psychosexual function. **Outcomes:** EMG amplitude of the pubovisceralis (PV), bulbocavernosus (BC), and external anal sphincter (EAS) muscles. Secondary outcomes were EMG activation of the hip adductor brevis and upper trapezius muscles, questionnaire scores reflecting psychological/psychosexual outcomes, pressure pain threshold (PPT) at the vulvar vestibule, pain reported on a tampon test, and heart rate/heart rate variability. **Results:** Compared to controls, EMG activation of the PV and EAS, but not the BC, was higher in anticipation of the pressure applied to the vaginal fourchette, was higher in all PFMs while the pressure was applied, and remained higher than baseline after the pressure was removed among those with PVD. EMG response amplitudes were modulated by the intensity of the pressure applied, with the largest responses reaching over 40% MVC in the EAS among those with PVD. PFM EMG amplitudes were associated with greater pain sensitivity and lower sexual function, but not with pain catastrophizing, central sensitization, depression, anxiety, or stress. **Clinical implications:** While some anticipatory activation was observed, EMG responses were primarily observed during and after the application of the pressure. Among those with PVD, digital assessment of PFM tone might reflect PFM responses to pain at the vulvar vestibule, and interventions to reduce local pain sensitivity may be an important first step to successful improvements in vaginal function. **Strengths and limitations:** This study includes a robust analysis of EMG activation. However, the cross-sectional design precludes the determination of causal relationships. **Conclusions:** Those with PVD demonstrate higher PFM responses and a higher prevalence of anticipatory activation in the PV and EAS muscles than controls in response to pressure applied at the vulvar vestibule.

Pelvic floor muscle activation amplitude at rest, during voluntary contraction, and during Valsalva maneuver-a comparison between those with and without provoked vestibulodynia

Linda McLean, Flavia Ignacio Antonio, Marina Petter Rodrigues, Caroline Pukall

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https://pubmed.ncbi.nlm.nih.gov/39657059/

Background: The neuromuscular contribution to increased tone of the pelvic floor muscles (PFMs) observed among those with provoked vestibulodynia (PVD) is unclear. **Aim:** To determine if PFM activity differs between those with provoked PVD and pain free controls, and if the extent of PFM activation at rest or during activities is associated with pain sensitivity at the vulvar vestibule, psychological, and/or psychosexual outcomes. **Outcomes:** EMG signal amplitude recorded at rest, during maximum voluntary contraction (MVC), and during maximal effort Valsalva maneuver, pressure pain threshold at the vulvar vestibule, and patient-reported psychological (stress, anxiety, pain catastrophizing, central sensitization) and psychosexual (sexual function) outcomes. **Results:** Participants with PVD had higher activation compared to controls in all PFMs studied when at rest and during Valsalva maneuver. There were no group differences in EMG amplitude recorded from the puboviscerali during MVC (Cohen's d = 0.11), but greater activation was recorded from the bulbocavernosus (d = 0.67) and the external anal sphincter(d = 0.54) among those with PVD. When EMG amplitudes at rest and on Valsalva were normalized to activation during MVC, group differences were no longer evident, except at the puboviscerali, where tonic EMG amplitude was higher among those with PVD (d = 0.42). While those with PVD had lower vulvar pressure pain thresholds than controls, there were no associations between PFM EMG amplitude and vulvar pain sensitivity nor psychological or psychosexual problems. **Clinical implications:** Women with PVD demonstrate evidence of PFM overactivity, yet the extent of EMG activation is not associated with vulvar pressure pain sensitivity nor psychological/psychosexual outcomes. Interventions aimed at reducing excitatory neural drive to these muscles may be important for successful intervention. **Strengths and limitations:** This study includes a robust analysis of PFM EMG. The analysis of multiple outcomes may have increased the risk statistical error, however the results of hypothesis testing were consistent across the three PFMs studied. The findings are generalizable to those with PVD without vaginismus. **Conclusions:** Those with PVD demonstrate higher PFM activity in the bulbocavernosus, puboviscerali, and external anal sphincter muscles at rest, during voluntary contraction (bulbocavernosus and external anal sphincter) and during Valsalva maneuver; yet greater activation amplitude during these tasks is not associated with greater vulvar pressure pain sensitivity nor psychological or psychosexual function.

Phase 2 randomized study of abobotulinumtoxinA in patients with provoked vestibulodynia: dose-finding results

Andrew Goldstein, Rachel Rubin, et al.

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https://pubmed.ncbi.nlm.nih.gov/39953376/

Background: Hypertonicity of the pelvic floor muscles is commonly associated with provoked vestibulodynia (PVD); therefore, patients may benefit from treatments that relax the pelvic floor. **Aim:** To define optimal (safe and efficacious) doses of abobotulinumtoxinA (aboBoNT-A) for the treatment of PVD associated with hypertonic pelvic floor muscle dysfunction and to explore use of a novel endpoint for pain assessment for PVD. **Outcomes:** The primary endpoint was safety. Additionally, a novel composite endpoint, dilator maximum tested size was evaluated. This endpoint combined assessment of vaginal-dilator tolerability with patient-reported pain assessment on an 11-point numeric

rating scale, used as a surrogate measure of sexual activity in this study. **Results:** All treatment-emergent adverse events (AEs) were mild or moderate in intensity, with no serious AEs or AEs leading to withdrawal reported in the double-blind period. AEs of special interest (urinary incontinence, anal sphincter atonia) were observed at low incidence and predominantly with higher aboBoNT-A doses. The dilator test composite score might be a useful endpoint for pain assessment, with a greater reduction in pain score noted for the 300 U dose group compared with other dose groups and placebo. **Clinical implications:** aboBoNT-A was well tolerated in patients with PVD and a novel method for assessing dilator-induced pain was introduced. **Strengths and limitations:** The study provided valuable data on use of aboBoNT-A in women with primary or secondary PVD and introduced a novel composite endpoint for assessing dilator-induced pain. Study limitations included the small sample size, limiting formal statistical analysis. **Conclusion:** aboBoNT-A was well tolerated in patients with PVD with no safety signals reported. Further studies are warranted to demonstrate clinically meaningful benefits with repeated treatment.

Photobiomodulation therapy for the treatment of vulvar pain among those with provoked vestibulodynia: a randomized controlled trial
Flavia I Antonio, Caroline Pukall, Linda McLean
J Sex Med. 2025 Feb 13:qdaf011. doi: 10.1093/jsxmed/qdaf011.
https://pubmed.ncbi.nlm.nih.gov/39940084/

Background: Provoked vestibulodynia (PVD) is characterized by recurring pain confined to the vulvar vestibule; histological studies show inflammatory mediators and neural proliferation in the vulvar tissues. **Objective:** To determine whether a 15-session photobiomodulation (PBM) intervention is more effective than sham-PBM for reducing vulvar pain. Secondary objectives were to evaluate the effect of the PBM intervention on broader domains of vulvar pain, psychological outcomes, sexual function, perceived improvement and satisfaction, as well as to describe adverse events and adherence. **Design:** Randomized controlled trial. **Participants:** Participants with PVD were recruited from the local community. **Allocation:** Randomized allocation to real- or sham-PBM (1:1) was concealed from participants and all members of the research team until after data analysis was complete. **Outcomes:** Primary outcomes: pressure pain threshold (PPT), pain reported on the tampon test, and vulvar pain sensitivity reported on the Vulvar Pain Assessment Questionnaire (VPAQ). Secondary outcomes: pain-related domains reported on the VPAQ, sexual function, depression, anxiety and stress, pain catastrophizing, central sensitization to pain, Patient Global Perception of Improvement (PGPI), Perceived overall percent improvement (P%I), perceived satisfaction with treatment (%), adherence and adverse events. The primary end point was one week following the last PBM intervention session. **Intervention:** Fifteen sessions of a real- or sham-PBM intervention were delivered over an 8-week period, progressing through five stages of incremental exposure to light in the red and near-infrared spectra applied to the vulvar vestibule, the perineum, and the sacral region. **Results:** Thirty participants (16 real-PBM, 14 sham-PBM) enrolled and received their intended intervention; one (sham-PBM) was lost to follow-up. Vulvar pain was reduced more in the real- compared to the sham-PBM group; between group differences were 28.2-112.0 g/cm2 (d = 0.61) for PPT, 0.1-2.5 1(d = 0.60) for pain reported on the tampon test, and 0.1-0.9 (d = 0.87) for pain sensations reported on the VPAQ. Changes in other pain-related domains reported on the VPAQ, psychological outcomes and sexual function were not different between the real- and sham-PBM groups. Adherence to the intervention was nearly 100% among those who completed the study. Most participants in both groups were satisfied or very satisfied with the intervention (real-PBM = 80%; sham-PBM = 64%), with no group differences in satisfaction or perception of improvement. **Conclusions:** The PBM intervention resulted in greater reductions in vulvar

pain than the sham intervention. However, patients did not perceive that the real-PBM was significantly better than the sham-PBM intervention, and the intervention did not impact psychological outcomes or sexual function. ClinicalTrials.gov Identifier: NCT04234542.

Comorbid bladder pain syndrome and vulvodynia - a cross-sectional analysis of the UNICORN-4 study
Nobuo Okui
BMC Womens Health. 2025 Feb 19;25(1):72. doi: 10.1186/s12905-025-03602-9.
https://pubmed.ncbi.nlm.nih.gov/39972456/

Background: Bladder Pain Syndrome/Interstitial Cystitis (BPS/IC) and vulvodynia often coexist, exacerbating patient symptoms and complicating the diagnosis and treatment. This study aimed to identify distinct subtypes within a BPS/IC and vulvodynia cohort and evaluate their symptom profiles, psychological characteristics, and sexual function indicators. **Results:** Three distinct clusters were identified. Cluster 1 exhibited moderate bladder-specific symptoms and psychological distress. Cluster 2 had severe bladder symptoms and the highest psychological distress. Cluster 3, defined as the vulvodynia-predominant subtype, featured severe vulvodynia, significant psychological distress, and minimal bladder symptoms, aligning with a non-urologic pelvic pain phenotype. Sexual function was significantly impaired across all clusters, with Cluster 3 showing the most severe dysfunction. **Conclusions:** This study highlights the heterogeneity within BPS/IC and vulvodynia populations. The identification of a vulvodynia-predominant subtype and non-urologic pelvic pain phenotype emphasizes the need for personalized treatment strategies addressing both physical and psychological factors, particularly sexual dysfunction and psychological distress.

Combining Acmella oleracea and Boswellia serrata extracts: a novel pharmacological approach in inflammatory vestibulodynia
Antimo Fusco, Michela Perrone, et al.
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https://pubmed.ncbi.nlm.nih.gov/39691401/

Vulvodynia is a chronic pain condition that affects the vulvar area, often resulting in significant discomfort and a reduced quality of life. Current treatments for vulvodynia are limited, and there is a need for more effective therapeutic options. Acmella oleracea, known for its spilanthol content, and Boswellia serrata, rich in boswellic acids, have been explored for their potential analgesic properties in pain management. In this study, vulvodynia-like symptoms were induced in female mice using Complete Freund's adjuvant (CFA). After the induction of symptoms, the mice were treated with a combination of Acmella oleracea and Boswellia serrata extracts (AO + BS). Behavioral pain assessments were conducted to monitor the effects of the treatment. Additionally, biochemical and functional evaluations were performed to measure spinal microgliosis and neuronal overexcitation. The combination of Acmella oleracea and Boswellia serrata (AO + BS) resulted in a significant reduction of vulvar hypersensitivity in mice. Besides alleviating pain, AO + BS therapy also reduced spinal microgliosis and neuronal overexcitation in mice with vulvodynia. The findings suggest that the AO + BS combination has the potential to alleviate vulvodynia associated pain through mechanisms involving the reduction of spinal microgliosis and neuronal overexcitation. These results point to the therapeutic promise of these plant extracts for chronic pain conditions like vulvodynia. The combination of Acmella oleracea and Boswellia serrata shows potential as a treatment for vulvodynia. However, further studies are needed to explore the underlying mechanisms and to optimize the dosage for clinical use.

The Involvement of Glutamate-mGluR5 Signaling in the Development of Vulvar Hypersensitivity
Yaseen Awad-Igbaria, Saher Abu-Ata, et al.
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https://pubmed.ncbi.nlm.nih.gov/39859236/

Provoked vulvodynia (PV) is the leading cause of vulvar pain and dyspareunia. The etiology of PV is multifactorial and remains poorly understood. PV is associated with a history of repeated vulvar inflammation and is often accompanied by sensory neuromodulation as a result of activation of the metabotropic glutamate receptor 5 (mGluR5) in the sensory nerve terminals. Therefore, this study aims to examine the role of glutamate-mGluR5 signaling during the initial inflammatory phase in chronic vulvar pain development in an animal model of PV. Thermal and mechanical vulvar sensitivity was assessed for three weeks following zymosan vulvar challenges. Anxiety-like behavior and locomotor activity were assessed at the end of the experiment. To investigate the role of glutamate mGluR5, the MTEP (mGluR5 antagonist) was injected into the vulva during vulvar inflammation. On the other hand, glutamate or CHPG (mGluR5 agonist) were injected in order to examine the effects of mGluR5 activation. RT-PCR was performed to assess changes in the transcription of genes related to neuroinflammation, neuromodulation, and neuroplasticity in the spinal cord (L6-S3). Zymosan-induced inflammation resulted in a significant thermal and mechanical vulvar hypersensitivity that persisted for over a month after the zymosan injection. However, local treatment with MTEP enhanced the vulvar mechanical and thermal hypersensitivity. On the other hand, activation of the mGluR5 via injection of glutamate or CHPG into the vulva leads to long-lasting vulvar mechanical and thermal hypersensitivity. The activation of the glutamate pathway was found to be accompanied by an increase in the transcription level of genes related to neuroinflammation and neuroplasticity in the sacral spine region. The present findings indicate that vulvar hypersensitivity is mediated by mGluR5 activation during inflammation. Hence, modulation of the mGluR5 pathway during the critical period of inflammation contributes to preventing chronic vulvar pain development. Conversely, activation of the mGluR5 pathway leads to long-lasting mechanical and thermal hypersensitivity.

Localized provoked vulvodynia as an immune-mediated inflammatory disease: rationale for a new line of research
Jorma Paavonen, Robert C Brunham
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https://pubmed.ncbi.nlm.nih.gov/39742333/

Localized provoked vulvodynia (LPV), also called vulvar vestibulitis or provoked vestibulodynia, is a major cause of dyspareunia that severely impacts sexual health. At the tissue level, lymphocytic inflammation and hyperinnervation are characteristic pathological features, explaining the main symptoms and signs. A recent experimental animal study suggests that the histopathological findings of LPV may be due to mucosal CD4 Th17 immune responses to microbial antigens. We hypothesize that LPV is an immune-mediated inflammatory disease and challenge the concept of LPV as a chronic pain syndrome of unknown cause. Since most treatment modalities currently used in LPV are no better than placebo, we therefore warrant future research investigating the possible presence of CD4 Th17 cells and IL17 cytokine in affected tissues together with treatment trials that include inhibitors of the IL17 pathway.

Obstetric outcomes in women with vulvodynia and vaginismus: a systematic review
Sophie Baril, Andréanne Marion, Haim A Abenhaim
Arch Gynecol Obstet. 2025 Jan;311(1):1-11. doi: 10.1007/s00404-024-07871-x. Epub 2024 Dec 18.
https://pubmed.ncbi.nlm.nih.gov/39694904/

Purpose: Vulvodynia and vaginismus are pain disorders associated with adverse pregnancy outcomes. The few published studies addressing this topic were limited in terms of the different outcomes studied; hence, the purpose of our study was to perform the first systematic review examining maternal, neonatal and obstetric outcomes in patients with vulvodynia and/or vaginismus (VV). **Results:** The search strategy yielded 1118 citations, of which 10 were included. A total of 2209 patients with a diagnosis of VV prior to pregnancy were identified over a 27-year study period. Compared with women without VV, women with VV were more likely to deliver by cesarean sect. (40.3 vs 29.8%, $p < 0.001$). Cesarean sections were more likely elective (41.0 vs 35.7%) and performed in response to maternal request (26.0 vs 9.5%) for women with VV. Of those who delivered vaginally, instrumental deliveries were more common among women with VV (16.7 vs 6.2%, $p < 0.001$), with more perineal injuries as well (43.0 vs 32.7% $p < 0.001$). **Conclusion:** Vaginismus/vulvodynia are high-risk conditions during pregnancy with increased rates of cesarean sections performed for elective reasons and upon maternal request. Offering support, education, and treatment for these conditions prior to pregnancy is important to reduce the rate of avoidable cesarean sections.

The Association Between Urological Conditions Across the Life Course and Provoked Vulvodynia
Bernard L Harlow, Hanna Mühlrad, et al.
J Womens Health (Larchmt). 2025 Feb 17. doi: 10.1089/jwh.2024.0933.
https://pubmed.ncbi.nlm.nih.gov/39957362/

Objective: Vulvodynia is a condition characterized by chronic pain and discomfort in the vulvar region often accompanied with physical and psychological comorbidities. Interstitial cystitis (IC)/bladder pain syndrome (BPS), a chronic condition characterized by bladder pain and urinary urgency, has repeatedly been shown to comorbidly be present in a large proportion of women with vulvodynia. However, recent studies have shown that women with vulvodynia experienced additional bladder-related symptoms beyond that of just IC/BPS. ***Materials and Methods:*** Using Swedish National Registry data, we assessed the association between urological symptoms in the presence and absence of IC/BPS in women with vulvodynia/vaginismus relative to women with no vulvar pain history. ***Results:*** After adjustment for birth year, parity, education, and residential location, women with vulvar pain had a 2.2-fold greater risk of cystitis or urethritis as expected (95% confidence interval [CI] 1.9-2.6). However, when women with cystitis codes were excluded, those with urethra disorders or other urinary symptoms codes were 1.9 times more likely to be vulvar pain cases (95% CI 1.7-2.1). ***Conclusions:*** These findings support the belief that vulvodynia is not limited to being comorbid with IC/BPS but may also likely be associated with a wide range of urological disorders.

The role of interoceptive sensibility on central sensitization to pain in vulvodynia
Federica Scarpina, Maria Elena Navarra, Giorgia Varallo, Roberto Bernorio
J Sex Med. 2025 Jan 9:qdae203. doi: 10.1093/jsxmed/qdae203.
https://pubmed.ncbi.nlm.nih.gov/39787715/

Background: Interoception may be linked to central sensitization in chronic pain.
Aim: We aimed to provide evidence about the role of interoceptive sensibility on central sensitization in vulvodynia. **Outcomes:** Interoceptive sensibility and symptoms of central sensitization were measured with the Multidimensional Assessment of Interoceptive Awareness and the Central Sensitization Inventory, respectively. **Results:** A lower level of trust and a higher level of emotional awareness predicted a higher number of central sensitization symptoms in our sample. **Clinical implications:** Our evidence may increase the researchers' and physicians' attention toward the involvement of the central nervous system in pain phenomenology in vulvodynia. **Strengths and limitations:** No ad-hoc control sample was collected. No behavioral assessments about interoception were performed. **Conclusion:** As registered in other chronic pain conditions, interoceptive sensibility may play a crucial role in the expressions of symptoms of central sensitization in vulvodynia

Female Pelvic Conditions: Dyspareunia and Vulvodynia
Bonnie Brown
FP Essent. 2024 Dec:547:8-15.
https://pubmed.ncbi.nlm.nih.gov/39692792/

Genito-pelvic pain/penetration disorder is a relatively new term encompassing both dyspareunia (recurrent pain with intercourse) and vaginismus (involuntary contraction of the pelvic floor with attempted penetration). Symptoms are often multifactorial. Thus, a detailed history and sensitive patient-centered examination are essential to identify and treat the underlying cause(s). Additional laboratory or imaging studies are not routinely indicated but may be helpful to rule out infectious etiologies or evaluate pelvic organ pathology in cases of deep dyspareunia. Treatment may include patient education about the condition, avoidance or modifications of irritants or triggers, use of vaginal lubricants and moisturizers, hormone therapy, pelvic floor physical therapy, and psychosocial interventions as indicated. Vulvodynia is a separate but related condition and is a diagnosis of exclusion. It is defined as vulvar pain for at least 3 months without another clearly identifiable cause. High-quality studies on the treatment of vulvodynia are limited. However, pelvic floor physical therapy and psychosocial interventions such as cognitive behavior therapy have the most consistent evidence of benefit.

Evaluation of polygenic risk scores for hormones and receptors levels in patients with vestibulodynia: a case-control study
Filippo Murina, Cecilia Fochesato, et al.
J Sex Med. 2025 Jan 12:qdae201. doi: 10.1093/jsxmed/qdae201.
https://pubmed.ncbi.nlm.nih.gov/39799433/

Background: Vulvodynia is a multifactorial disease affecting 7%-16% of reproductive-aged women in general population; however, little is still known about the genetics underlying this complex disease.
Aim: To compare polygenic risk scores for hormones and receptors levels in a case-control study to investigate their role in vulvodynia and their correlation with clinical phenotypes. **Outcomes:** The genomic predisposition to hormones and receptors levels, together with clinical endophenotypes, can support VBD diagnosis and personalized treatment of related pain condition. **Results:** Thirty women with VBD and 30 controls were recruited. Significant differences between cases and controls were observed for body mass index, vestibular mucosa thickness, vestibular trophic health, pelvic floor hypertone and pain sensitivity ($P < .05$). Cases showed a genomic predisposition to higher levels of

membrane-associated progesterone receptor component 1 compared to controls (P < .05). When considering the clinical endophenotypes, cases showed significant correlations between their polygenic risk scores with several clinical measures: predicted genomic levels of testosterone and estrogen receptor and the vestibular mucosa thickness values (estimates: 9.74E-09 and 9.16E-08, respectively; P < .05); predicted genomic levels of prolactin and Neurometer data at 250 Hz (-2.15E-07; P < .05); predicted genomic levels of prolactin, membrane-associated progesterone receptor component 2 and mineralocorticoid receptor and Neurometer data at 5 Hz (-3.75E-07, -3.43E-07 and -3.06E-07, respectively; P < .05). **Clinical implications:** Introduction of polygenic risk scores evaluation in clinical practice can assist early diagnosis and personalized therapeutic treatment of VBD. **Strengths and limitations:** Polygenic risk scores and clinical data allowed the identification of disease endophenotypes and highlighted the possibility of a personalized therapeutic approach. As limitations, these data should be confirmed on a larger cohort and polygenic risk score calculation should be adapted to ancestries other than European. **Conclusion:** Cases showed significant differences compared to controls on both clinical and genetic data and specific endophenotypes necessary to classify disease development and treatment were identified.

Low-dose naltrexone as a treatment for vulvodynia: A case series
Renee T Sullender, R Gina Silverstein, et al.
Case Rep Womens Health. 2024 Dec 13:45:e00677. doi: 10.1016/j.crwh.2024.e00677. eCollection 2025 Mar.
https://pubmed.ncbi.nlm.nih.gov/39802731/

Vulvodynia is a chronic vulvar pain condition that can be challenging to treat and often requires multi-antagonist at opioid receptors and may have utility in treating chronic pain conditions. In a specialty gynecology clinic at an academic medical center, patients with poorly controlled vulvodynia who had failed standard treatments were offered LDN as an adjunct pain treatment. This case series describes the experience of three patients with chronic vulvodynia who added LDN to their treatment regimen. All patients reported subjective improvement in their symptoms without side-effects. Additional research is needed on the efficacy of LDN for chronic pelvic pain conditions such as vulvodynia as well as the long-term safety profile of such use.

The Vulvodynia Primary Care Toolkit: results of a mixed-method evaluation with community-based family physicians in British Columbia
Katherine E Hunker, Melanie Altas, et al.
Fam Pract. 2025 Jan 17;42(1):cmaf002. doi: 10.1093/fampra/cmaf002.
https://pubmed.ncbi.nlm.nih.gov/39834268/

Background: Healthcare providers often lack awareness, knowledge, and confidence in managing vulvodynia, which can lead to difficulties with diagnosis and treatment for individuals with the condition. **Objective:** To develop and test an educational online toolkit tailored to supporting community-based primary care providers with diagnosis, treatment, and patient support for vulvodynia. **Results:** The toolkit was adopted into clinical care, being used an average of 4.1 times per physician (SD = 2.7) during the test period. The toolkit demonstrated high acceptability, as evidenced by a high level of reported satisfaction with the toolkit and the amount of information it contained. The toolkit increased self-reported knowledge and confidence in diagnosing (P = .003), treating (P < .001), and supporting (P < .001) patients with vulvodynia. Through reflexive thematic analysis, we generated five themes from

interview data that represented physicians' experiences: (i) There are facilitators and barriers to toolkit use in practice, (ii) the toolkit is valued by family physicians, (iii) the toolkit is educational, (iv) the toolkit is empowering, and (v) the toolkit improves vulvodynia management and referrals. **Conclusion:** An online educational toolkit tailored to community-based primary care settings supports the management of patients with vulvodynia by family physicians. Our findings lay the foundation for the upscaling of this tool.

Chronic Pelvic Pain

Effect of the First Laparoscopy in an Adolescent and Young Adult Female Population and Its Association With Chronic Pelvic Pain: A Randomised Controlled Trial
Kimberly Nguyen, Joyce Wu, et al.
Aust N Z J Obstet Gynaecol. 2024 Dec 31. doi: 10.1111/ajo.13930.
https://pubmed.ncbi.nlm.nih.gov/39739556/

Background: Chronic pelvic pain (CPP) is a common and debilitating presentation for adolescent and young adult females. Medical management is often utilised as first line therapy with surgical management considered if medical treatment has been unsuccessful. Laparoscopy in this young population remains controversial due to the high recurrence rate of pain, requirement for repeat surgeries and surgical risks. There is a need for prospective, longitudinal studies comparing medical and surgical management to guide management of young patients with CPP. **Aims:** To determine the effect of the first laparoscopy in an adolescent and young adult female population and assess its association with CPP. **Materials and methods:** Patients aged 16-25 will be recruited from the gynaecological service at the study sites. Consented participants will be randomised to the surgical or non-surgical arms. Those in the surgical arm will have a laparoscopy performed and those in the non-surgical arm will be medically managed. At recruitment and at 6 weeks, 6 months, 12 months and 24 months follow-up, patients will complete a number of validated questionnaires assessing pain and quality of life. An amendment was made to methodology to include patients who will choose their management pathway for CPP. **Results:** An independent t-test or Mann-Whitney U test will be used to compare the questionnaire scores between the surgical and non-surgical groups. For questionnaire scores at baseline and follow-up within the same arm, a paired t-test or Wilcoxon signed-rank test will be used. A p-value of < 0.05 will be statistically significant.

Brain functional connectivity changes on fMRI in patients with chronic pelvic pain treated with the Neuro Emotional Technique: a randomised controlled trial
Daniel A Monti, Faezeh Vedaei, et al.
J Obstet Gynaecol. 2025 Dec;45(1):2472767. doi: 10.1080/01443615.2025.2472767. Epub 2025 Mar 14.
https://pubmed.ncbi.nlm.nih.gov/40083279/

Background: Chronic pelvic pain is a substantial clinical challenge that profoundly impacts quality of life for many women. The Neuro Emotional Technique (NET) is a novel mind-body intervention designed to attenuate emotional arousal of distressing thoughts and pain. This study evaluated functional connectivity changes in key areas of the brain in patients with chronic pelvic pain receiving the NET intervention. The goal was to assess whether the NET intervention was associated with functional connectivity (FC) changes in the brain related to reductions in emotional distress and pain, particularly in the limbic areas, sensory/pain regions, and cerebellum. **Results:** Compared to the control group, the NET

group demonstrated significant improvements in pain interference and pain intensity, and in emotional measures such anxiety and depression. Functional connectivity in the NET group compared to controls, was significantly decreased in the amygdala, cerebellum, and postcentral gyrus. There were also significant correlations between FC changes and changes in clinical measures. **Conclusions:** This study is an initial step towards describing a neurological signature of reducing emotional distress in women with chronic pelvic pain. Specifically, FC changes between the cerebellum and the amygdala and sensory areas appears to be associated with a reduction in pain and the effects of that pain. Future, larger clinical trials are warranted to further evaluate these mechanisms and NET as a potential therapeutic intervention in patients with chronic pelvic pain.

Clinical outcomes of a digital musculoskeletal women's pelvic health program: an observational, longitudinal study with comparison group
Mindy Hong, Rachel Foster Kirk, et al.
BMC Womens Health. 2025 Jan 11;25(1):18. doi: 10.1186/s12905-024-03475-4.
https://pubmed.ncbi.nlm.nih.gov/39794797/

Background: Chronic pelvic pain is a common yet undertreated condition that significantly impacts quality of life for women worldwide. Digital exercise therapy designed to target pelvic pain can improve symptomology while reducing time and cost-related barriers to in-person clinical care. **Results:** A total of 797 participants (intervention: 495, nonparticipants: 302) were included in the sample. Baseline mean (SD) age was 41.5 (11.7) years and mean pain was 45.7 (18.5) out of 100. Compared to baseline, the intervention group showed significantly more pain improvement at 4 and 12 weeks versus nonparticipants after adjusting for baseline factors. The intervention group's pain scores decreased by 44.5% at 4 weeks and 53.6% at 12 weeks. The intervention group's adjusted pain scores decreased from 42.0 (95% CI: [39.4, 44.7]) at baseline to 23.3 (95% CI: [20.5, 26.2]) at 4 weeks to 19.5 (95% CI: [16.7, 22.4]) at 12 weeks. In contrast, nonparticipants' pain scores decreased by 21.6% at 4 weeks and 32.7% at 12 weeks. Nonparticipants' adjusted pain scores decreased from 42.1 (95% CI: [38.4, 45.9]) at baseline to 33.0 (95% CI: [29.2, 36.8]) at 4 weeks to 28.3 (95% CI: [24.5, 32.2]) at 12 weeks. After adjustments, the probability of the intervention group screening for moderate or severe depression was significantly lower by 11.0% at 12 weeks versus nonparticipants. There were no significant differences in anxiety outcomes between groups at baseline, week 4, or week 12. CONCLUSIONS: A digital women's pelvic health program may help reduce short-term pelvic pain and depression symptoms.

Practical Application of Value-Based Medicine in Chronic Pelvic Pain: A Qualitative Study
M C Wissing, S E I van der Wal, et al.
J Eval Clin Pract. 2025 Feb;31(1):e14295. doi: 10.1111/jep.14295.
https://pubmed.ncbi.nlm.nih.gov/39733252/

Rationale: Chronic pelvic pain syndrome (CPPS) is prevalent and a complex multifactorial condition. The incidence is rising. CPPS patients may benefit from multidisciplinary care in a structured care pathway. **Aim and objectives:** The aim of this explorative study is to give an overview of patient and healthcare provider perspectives on the current patient journey to implement these perspectives in a CPPS care pathway. **Results:** Five overarching key topics were identified: structured start of the patient journey, execution of the patient journey, follow-up after the patient journey, administration during the patient journey, and communication and education. The following recommendations were formulated based on the prioritised points: implementation of a multidisciplinary approach from the start of the journey,

adding a case manager and expanding the multidisciplinary team, providing a collaborative triage, updating the questionnaires, improving communication, developing a rehabilitation programme, and reducing waiting times. **Conclusion:** Stakeholder focus groups using the nominal group technique was a pivotal step in the development of our CPPS care pathway. This step led to fundamental recommendations, of which a personalised treatment plan at an earlier stage in the patient journey might be the most impactful. This is now implemented, and we monitor the effects on outcomes, quality of life and patient's satisfaction.

Perineal and Rectal Nerve Recruitment Order Varies During Pudendal Neurostimulator Implant Surgery

Po-Ju Chen, Amador C Lagunas, et al.
Neurourol Urodyn. 2025 Feb 10. doi: 10.1002/nau.70010.
https://pubmed.ncbi.nlm.nih.gov/39927446/

Introduction: Pudendal nerve stimulation (PNS) is an off-label therapy for patients experiencing pelvic pain and voiding dysfunction. The pudendal nerve has two efferent branches to the rectum and perineum. Only the rectal branch is monitored via external anal sphincter electromyography during the implant procedure to help determine the lead position. We examined intraoperative PNS-driven urethral pressures to infer nerve recruitment order and tracked patient reported outcomes.
Results: Data was collected from thirteen intraoperative sessions. Seven participants had rectal nerve recruitment first, four participants had perineal nerve recruitment first, and two participants had mixed nerve recruitment during intraoperative PNS. The average normalized urethral pressure change was 4.7% at the EAS threshold, 59.2% at twice EAS threshold, and 68.2% at three times the EAS threshold. Urethral pressure changes for each participant often varied between different active PNS electrodes. Participants had significant improvements in pelvic pain and bladder function survey scores with PNS ($p < 0.04$). There was no relationship between nerve recruitment order and changes in any surveys.
Conclusion: PNS can recruit the perineal nerve before the rectal nerve. Each lead electrode may trigger different urethral response patterns within a participant. This study provided new insights into the effect of PNS on the recruitment of nerves in the pelvis and may help guide future surgical placement of PNS systems.

Clinical application of repetitive transcranial magnetic stimulation in the treatment of chronic pelvic pain syndrome: a scoping review

Chunmei Luo, Baocheng Zhang, et al.
Front Neurol. 2025 Feb 26:16:1499133. doi: 10.3389/fneur.2025.1499133. eCollection 2025.
https://pubmed.ncbi.nlm.nih.gov/40083455/

Introduction: Chronic pelvic pain syndrome is a common condition characterized by persistent symptoms that are difficult to treat. Repetitive transcranial magnetic stimulation (rTMS) is considered a safe treatment option for alleviating chronic pelvic pain, but different stimulation protocols can affect pain relief outcomes. Establishing an optimal stimulation protocol can enhance the uniformity and consistency of rTMS to provide a potentially effective therapeutic intervention. This review sought to systematically review and assess the existing literature on transcranial magnetic stimulation in patients experiencing chronic pelvic pain syndrome, evaluate the therapeutic efficacy, and determine the most effective stimulation protocol. **Results:** A total of eight studies were ultimately incorporated into the analysis. These comprised two randomized controlled trials, one self-controlled trial, two case reports,

and three prospective studies. All studies demonstrated a notable reduction in pain scores post-treatment. **Conclusion:** rTMS has demonstrated efficacy in alleviating pain in individuals suffering from chronic pelvic pain syndrome. It is regarded as a safe intervention with minimal adverse effects. Nonetheless, the variability observed across studies hindered our ability to conclusively determine the most effective stimulation sites and parameters. Additional research is essential to reduce bias, enhance methodological rigor, and ascertain the optimal conditions and indications for brain stimulation to optimize the therapeutic effectiveness of rTMS.

Evaluation and Treatment of Sexual Pain Disorders
Analea Beckman, Chailee Moss, Andrew T Goldstein
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Pain that occurs during sexual activity is highly prevalent during a woman's lifetime, affecting ∼15% of women. The etiology of dyspareunia is multifactorial. Therefore, treatment must be individualized. This paper reviews the evaluation and treatment of the several common causes of dyspareunia and/or pelvic pain, including hormonally associated vestibulodynia, inflammation-associated vestibulodynia, neuroproliferative vestibulodynia, overactive pelvic floor muscle dysfunction, vulvar dysesthesia, persistent genital arousal disorder, and painful bladder syndrome.

Chronic Primary Pelvic Pain Syndromes in Women: A Comprehensive Review
Luisa Pinto, Mariana Soutinho, et al.
Cureus. 2024 Dec 1;16(12):e74918. doi: 10.7759/cureus.74918. eCollection 2024 Dec.
https://pubmed.ncbi.nlm.nih.gov/39742169/

Chronic pelvic pain (CPP) in women is a multifactorial and complex condition. It often remains undiagnosed or inadequately treated. Despite its high prevalence, CPP continues to be a taboo subject, leading to delays in seeking medical care. Chronic primary pelvic pain syndromes (CPPPS) are pain conditions without an obvious underlying diagnosis, including painful bladder syndrome, vulvodynia, genito-pelvic pain/penetration disorder, levator ani syndrome, proctalgia fugax, myofascial syndrome, pudendal neuralgia, and coccyx pain syndrome. A comprehensive review of the literature was conducted to understand the most common forms of CPPPS in women, focusing on diagnostic criteria, pathophysiology, and treatment options. Due to the complexity of CPPPS and varied treatment responses, management requires a multidisciplinary approach. Although various treatment modalities exist, no single strategy is universally effective, emphasizing the need for individualized care. Future research should prioritize refining diagnostic criteria and investigating new therapeutic strategies.

Chronic pelvic pain treatment understanding what matters: a social media survey
Selina Johnson, Emma Evans, Dharani K Hapangama
Reprod Fertil. 2025 Jan 10;6(1):e240038. doi: 10.1530/RAF-24-0038. Print 2025 Jan 1.
https://pubmed.ncbi.nlm.nih.gov/39826244/

Abstract: Chronic pelvic pain (CPP) is a debilitating condition that reduces quality of life (QoL). In the United Kingdom, there is currently no standardised treatment pathway for women suffering from CPP. Therefore, it is essential to understand individuals' concerns regarding CPP, their treatment experiences

and what they seek from treatment. To do this, we conducted a two-month social media survey focused on the UK population to explore treatment experiences and identify the factors that people consider important to managing their condition. Of 1,279 respondents, women who completed ≥50% of the questions were included (n = 864; 68%). Results suggest that many women are living with moderate-intensity CPP and experience symptoms for 6 years (average) before receiving a diagnosis. Initially, most women see general practitioners and gynaecologists (90%), with varied care beyond these providers. Using an adapted STarT Back tool, 85% of respondents were classified as medium-high risk of poor outcomes based on physical, psychosocial, and psychological risk. Thematic analysis identified that people desire treatment validation/understanding, self-management, and support to manage pain and QoL. Notably, only 26% of respondents report satisfaction with their healthcare experience, suggesting that current treatment approaches do not address these themes. In conclusion, results suggest that treatment should focus on quality-of-life improvement to enhance CPP treatment outcomes and satisfaction. Findings endorse the need for improved and standardised treatment approaches that address patients' needs. **Lay summary:** CPP is persistent pain in the lower abdomen or pelvis for at least 6 months. It is common and affects approximately 1 in 6 women in the UK. To improve treatment, it is important to understand people's treatment experiences and treatment needs. We conducted a social media survey to understand how people with CPP experience treatment and what they would like from treatment. The survey was posted online for two months (May and June 2023) and received 897 responses. Responses suggested that people experience long waits before receiving help for their pain and that treatment journeys vary greatly. Overall, people reported low treatment satisfaction. People felt that effective treatment should improve pain and QoL. Themes of understanding their pain, knowing how to manage their pain and understanding treatments were identified as important. Clinicians should consider QoL and pain education as part of treatment.

Trajectories of mHealth-Tracked Mental Health and Their Predictors in Female Chronic Pelvic Pain Disorders

Emily L Leventhal, Nivedita Nukavarapu, et al.

J Pain Res. 2025 Feb 26:18:899-913. doi: 10.2147/JPR.S499102. eCollection 2025.
https://pubmed.ncbi.nlm.nih.gov/40034107/

Background: Female chronic pelvic pain disorders (CPPDs) affect 1 in 7 women worldwide and are characterized by psychosocial comorbidities, including a reduced quality of life and 2-10-fold increased risk of depression and anxiety. Despite its prevalence and morbidity, CPPDs are often inadequately managed with few patients experiencing relief from any medical intervention. Characterizing mental health symptom trajectories and lifestyle predictors of mental health is a starting point for enhancing patient self-efficacy in managing symptoms. Here, we investigate the association between mental health, pain, and physical activity (PA) in females with CPPD and demonstrate a method for handling multi-modal mobile health (mHealth) data. **Data analysis:** We used penalized functional regression (PFR) to regress weekly GMH-T (GMH-T) on MVPA and weekly pain outcomes while adjusting for baseline measures, time in study, and the random intercept of the individual. We converted 7-day MVPA data into a single smooth using spline basis functions to model the potential non-linear relationship. **Results:** MVPA was a significant, curvilinear predictor of GMH-T ($F=18.989$, $p<0.001$), independent of pain measures and prior psychiatric diagnosis. Physical functioning was positively associated with GMH-T, while pain was negatively associated with GMH-T ($B=2.24$, $B=-1.16$, respectively; $p<0.05$). **Conclusion:** These findings suggest that engaging in MVPA is beneficial to the mental health of females with CPPD. Additionally, this study demonstrates the potential of ambulatory mHealth-based data combined with functional models for delineating inter-individual and temporal variability.

Persistent Genital Arousal Disorder

Prevalence of restless genital syndrome and its impact on quality of life in women with restless legs syndrome

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Background: Restless genital syndrome (RGS), also known as persistent genital arousal disorder, is a distressing condition characterized by unwanted genital arousal in the absence of sexual desire. This study explores the prevalence of RGS in women with restless legs syndrome (RLS), investigates the associated psychological impacts, and assesses the overall effect on quality of life.
Results: Approximately 44.9% of the participants with RLS also reported symptoms of RGS. Significant findings included increased nighttime and rest-related exacerbation of RGS symptoms. Compared with those without RGS, participants with RGS presented significantly higher anxiety and depression scores. Moreover, RGS significantly impacted physical health and social relationships, as indicated by lower WHOQOL-BREF scores. **Conclusion:** This study highlights a significant overlap between RGS and RLS, with substantial impacts on psychological well-being and quality of life. These findings underscore the importance of considering RGS in the clinical management of RLS, suggesting a need for integrated treatment strategies to address both the neurological and the psychological aspects of these conditions.

Investigating brain activity at rest in patients with persistent genital arousal disorder (PGAD) using functional magnetic resonance imaging

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https://pubmed.ncbi.nlm.nih.gov/39934180/

Persistent genital arousal disorder (PGAD) is a rare disease causing high emotional distress eminently impacting the individual's quality of life. Experts in this field assume that the disease is caused by a multifaceted interplay of different etiologies which may share a common neurobiological basis. However, only one functional neuroimaging investigation exist, and a more in-depth comprehension of the neurobiological foundation is required. Therefore, this study aims to provide new insights into how the functional integration of brain regions may relate to PGAD. By using the functional magnetic resonance imaging (fMRI) technique, functional connectivity at rest (rs-FC) was compared between patients suffering PGAD (n = 26) and healthy controls (n = 26). Patients with PGAD showed different pattern in connectivity within brain structures putatively associated with the psychological and somatic dimensions of the disease including the right amygdala, left anterior cingulate cortex, right insula cortex, thalamic nuclei and prefrontal regions as seeds. The majority of these showed differences in brain connectivity pattern to the precuneus and prefrontal regions. The study offers preliminary insights into the characteristics and relevant neural mechanisms of PGAD. Nevertheless, since this study did not identify any peripheral correlates that would corroborate the interpretation of these findings, they were interpreted from a more theoretical perspective, thereby offering potential areas of focus for future research.

Persistent Genital Arousal Disorder/Genito-Pelvic Dysesthesia (PGAD/GPD): From Diagnostic Approach to Treatment - A Narrative Review

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https://pubmed.ncbi.nlm.nih.gov/39849997/

Persistent Genital Arousal Disorder/Genito-Pelvic Dysesthesia (PGAD/GPD) is characterized by persistent or recurrent unwanted genital arousal, causing significant distress to the affected individual. Classified as a sexual dysfunction, PGAD/GPD is predominantly described in women and severely affect their quality of life with psychological repercussions. Despite its morbidity, PGAD/GPD remains unfamiliar to healthcare professionals. This article provides a narrative review of the disorder, addressing current literature on its pathophysiology, diagnosis, and treatment approaches from a biopsychosocial perspective. The aim is to increase awareness among healthcare providers, enabling appropriate management strategies for PGAD/GPD and improving patient overall well-being.

Persistent Genital Arousal Disorder/Genitopelvic Dysesthesia

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Persistent genital arousal disorder/genitopelvic dysesthesia (PGAD/GPD) is a distressing condition characterized by persistent or recurrent, unwanted, or intrusive sensations of genital arousal that occur in the absence of subjective feelings of sexual desire that persist for at least 3 months. Despite its negative psychosocial impact, including high levels of suicidal ideation, it is not well known by most health care providers and can easily be misdiagnosed or remain undiagnosed. This paper describes a detailed biopsychosocial regional algorithm for the assessment and management of PGAD/GPD and draws attention to the need for multidisciplinary approaches to its effective management.

A Novel Use of Terbutaline: Persistent Genital Arousal Disorder in the Emergency Department

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J Emerg Med. 2025 Feb:69:81-83. doi: 10.1016/j.jemermed.2024.08.023. Epub 2024 Sep 7.
https://pubmed.ncbi.nlm.nih.gov/39894705/

Background: Persistent genital arousal disorder/genito-pelvic dysesthesia (PGAD/GPD) is a highly distressing, multifactorial disorder characterized by persistent unwanted physiologic genital arousal in the absence of sexual desire. This poorly understood disorder is thought to be derived from a complex dysregulation of biopsychosocial factors with common underlying neurological dysfunction that has yet to be adequately studied. With frequently evolving diagnostic criteria, lack of a standardized treatment algorithm, and few evidence-based treatment options, this disease is largely unrecognized and difficult to treat once identified. **Case report:** A 25-year-old woman presented to the Emergency Department (ED) with persistent and refractory symptoms of genital arousal not responsive to previously documented treatments, and the novel use of a β-adrenergic agent, terbutaline, leading to cessation of symptoms. With her initial presentation, lorazepam, haloperidol, and viscous lidocaine intravaginally provided relief for approximately 24 h until the patient returned. At her subsequent presentation, the patient received additional doses of lorazepam and intravaginal lidocaine, as well as consults with Urology and Obstetrics and Gynecology. Her symptoms eventually ceased by administration of

terbutaline. WHY SHOULD AN EMERGENCY PHYSICIAN BE AWARE OF THIS?: Although presentation of PGAD to the ED is rare, emergency physicians should be prepared with treatment options to assist patients with this distressing diagnosis. This case highlights the novel use of terbutaline, a β-agonist, in cessation of PGAD symptoms when first-line benzodiazepines and antipsychotics fail.

Genitourinary Syndrome of Menopause/Vulvovaginal Atrophy

Photobiomodulation in post menopause genitourinary syndrome-Study protocol for a randomized, double-blind, controlled clinical protocol
Silvia Regina Dos Santos Pereira, Raquel Agnelli Mesquita-Ferrari, et al.
PLoS One. 2024 Dec 2;19(12):e0313324. doi: 10.1371/journal.pone.0313324. eCollection 2024.
https://pubmed.ncbi.nlm.nih.gov/39621728/

Introduction: Genitourinary Syndrome of Menopause (GSM) defines a set of symptoms associated with an estrogen deficit involving alterations in organs genitourinary and that results in several urinary, genital, and sexual alterations. Brazilian women live about a third of their life after menopause, where hormonal changes occur along with clinical manifestations, characterized by vaginal and vulvar dryness, burning sensation, discomfort, vulvovaginal irritation, lack of lubrication, dyspareunia and urinary incontinence. Fractionated photothermolysis and radiofrequency systems, alone or in combination were tested to improve GSM. **Objective:** The goal of this study is to elaborate a protocol to evaluate the clinical response of patients with symptoms of GSM after the application of photobiomodulation in the vulvar region. **Method:** In this randomized, double-blind, placebo-controlled study protocol, women over 50 years of age who are in the postmenopausal period (amenorrhea for at least 12 months, with no pathology involved) with one or more symptoms of GSM will be randomly divided into two groups. The treatment group (n = 30) will receive four consecutive applications, weekly, using DMC laser diode (λ = 808 nm), 4J per point, 100mW of power, 1,016W/cm2, 8 sites in the vulvar region, The Placebo Group (n = 30) will be handled as treated, but with the laser turned off. The quality of life will be assessed using female sexual functioning index (FSFI-6), urinary incontinence questionnaire (ICIQ-SF), Quality of life will be analyzed using the female sexual functioning index (FSFI-6). The intensity of menopausal symptoms will be evaluated using a visual analogue scale (VAS), the vulvo vaginal atrophy will be measured by the Vaginal Health Index (VHI). Also, the vaginal temperature will be measured using a thermal camera, the pressure of the pelvic floor force (vaginal dynamometer) and a 1-hour Pad Test will be performed to quantify the urinary loss. With this procedure, we intend to obtain an overall better life quality and diminished symptoms in women with GSM. All assessments will be performed prior to the first irradiation and after the last one.

Clinical and histomorphometric evaluation of the vagina following treatment with CO_2 laser, radiofrequency, and promestriene for genitourinary syndrome of menopause in breast cancer survivors on adjuvant therapy
Gabriela C Cantarelli, Ana M H M Bianchi-Ferraro, et al.
Maturitas. 2025 Jan:191:108155. doi: 10.1016/j.maturitas.2024.108155. Epub 2024 Nov 14.
https://pubmed.ncbi.nlm.nih.gov/39566128/

Purpose: To perform clinical and histomorphometric evaluations of the vagina before and after treatment for genitourinary syndrome of menopause with CO_2 laser, fractional radiofrequency, and promestriene in breast cancer survivors using adjuvant endocrine therapy. **Results:** Sixty-two women

completed the study protocol (21 laser, 20 radiofrequency, and 21 promestriene). While histological differences (vaginal thickness [p = 0.002] and number of stromal papillae [p = 0.004]) were observed between the pretreatment samples of tamoxifen and anastrozole users, the symptoms did not differ between them. A decrease in symptom intensity ($p < 0.05$) and an improvement in the Vaginal Health Index ($p < 0.001$) were observed post-treatment, regardless of the type of adjuvant endocrine therapy used. Most pretreatment vaginal samples did not indicate histological atrophy, and no significant histological differences were observed after treatment. No clinical or histological damage was observed. **Conclusion:** CO_2 laser and radiofrequency therapies could be considered alternative treatments for genitourinary syndrome of menopause in breast cancer survivors receiving adjuvant therapy. These treatments promoted significant improvements comparable to those delivered by promestriene, without histological or clinical tissue damage.

Topical high concentration oxygen with hyaluronic acid: A safe and effective treatment for vaginal atrophy and sexual function improvement
Alessandra Lami, Andra Catalina Manta, et al.
Post Reprod Health. 2024 Dec 15:20533691241307804. doi: 10.1177/20533691241307804.
https://pubmed.ncbi.nlm.nih.gov/39676053/

Background: Genitourinary syndrome of menopause (GSM) is a condition affecting many postmenopausal women. Among the available treatments, the vaginal natural oxygenation device (VNOD) is a new promising option. **Aim:** To evaluate the safety and the effectiveness of vaginal high concentration (HC) oxygen (O_2) and hyaluronic acid (HA) in postmenopausal women with vaginal atrophy (VA). **Results:** Treatment was well-tolerated. In study 1, in the treatment group we recorded significant improvements in VHI score (*p*-value 0.001), VMV (*p*-value 0.005) and in the psychosocial, physical and sexual domains of the MeNQoL compared to sham group. In study 2, all women experienced a significant improvement in VHI (*p*-value <0.001), FSFI total score (*p*-value 0.007), desire (*p*-value 0.004), lubrication (*p*-value 0.006), satisfaction (*p*-value 0.042), pain (*p*-value 0.001) domains, FSDS score (*p*-value 0.003) and MeNQoL sexual domain (*p*-value <0.001). **Conclusion:** The preliminary results of this study suggest that VNOD is a safe and effective treatment for VA in postmenopausal women, and improves sexual function.

Impact of a Single Session of Hybrid Carbon Dioxide 10600 Nanometer and 1540 Nanometer Laser With Platelet-Rich Plasma Treatment in the Genital Area to Treat Female Sexual Dysfunction: A Pilot Study
Jose M Togo Sr, Thania M Hurtado
Cureus. 2024 Dec 19;16(12):e75990. doi: 10.7759/cureus.75990. eCollection 2024 Dec.
https://pubmed.ncbi.nlm.nih.gov/39703829/

Background Female sexual dysfunction (FSD) affects a significant portion of the female population, negatively impacting quality of life. New therapeutic approaches, such as the combination of laser therapy and platelet-rich plasma (PRP), are being explored as potential treatments to enhance sexual function in affected women. Methods This original study involved 23 women aged 37 to 72, all diagnosed with varying degrees of FSD (mild, moderate, severe). The participants underwent a pre-treatment evaluation using a custom-designed Likert scale (Female Sexual Health Questionnaire) designed by the authors to evaluate the symptoms of the patients. The treatment involved a single session combining hybrid carbon dioxide 10600 nm and 1540 nm laser therapy with PRP applied to the

genital area. One month post-treatment, participants were reassessed using the same questionnaire. Results Of the 23 patients studied, 65.2% (15 patients) exhibited hypoactive sexual desire, and 73.33% of them (11 out of 15) demonstrated improvement post-treatment (P = 0.00048). Overall sexual satisfaction increased by 28.2% (P = 0.0032), and lubrication improved in 54.5% of patients (P = 0.0027). Significant reductions in dyspareunia were observed, with 80% of patients experiencing pain relief (P = 0.0035). Patients with moderate dysfunction showed the highest response, with 100% (6 out of 6) demonstrating improvement across domains (P = 0.0009). Postmenopausal women experienced a 30.9% improvement in sexual function (P = 0.007), while premenopausal women exhibited a 7.5% improvement (P = 0.04). Statistically significant changes were also noted in the frequency of orgasm (P = 0.0058) and genital sensitivity in patients with moderate dysfunction. Conclusion Our data indicated significant improvements in FSD, particularly in moderate to severe dysfunction, with positive changes in key aspects of sexual function such as lubrication, desire, and ease of orgasm. However, the limited number of participants and short follow-up in this pilot study highlight the need for further investigation into hybrid CO2/1540 nm laser therapy combined with PRP as a therapeutic option for female sexual dysfunction.

Use of radiofrequency ablation of the vaginal canal for genitourinary syndrome of menopause
Rodger Rothenberger, Elaine Kopinga, et al.
J Sex Med. 2025 Jan 3;22(1):51-56. doi: 10.1093/jsxmed/qdae133.
https://pubmed.ncbi.nlm.nih.gov/39496542/

Background: Genitourinary syndrome of menopause (GSM) is a prevalent condition with a constellation of symptoms including burning, dryness, dyspareunia, and irritative lower urinary tract symptoms that result from vulvovaginal atrophic changes. Though hormonal therapy is a mainstay of treatment in GSM, some patients may pursue nonhormonal therapies. **Aim:** To determine the efficacy of radiofrequency ablation of the vaginal canal with the MorpheusV applicator in reducing the symptoms of GSM. **Outcomes:** The primary endpoint was VHIS at 6-month posttreatment. Secondary endpoints were VHIS at 3 months, Visual analog scale (VAS) pain with each treatment, 3- and 6-month measurements of urogenital distress inventory-6 (UDI-6), and female sexual function index (FSFI) questionnaires. **Results:** From 2021 to 2023, 71 women were enrolled in the study with 51 followed to the 6-month follow-up time point. Treatments were found to be low in VAS pain score with mean values of 2.13 ± 2.1, 2.55 ± 2.38, and 2.18 ± 2.14 at treatments 1, 2, and 3 respectively. An improvement in VHIS score was seen from baseline to 3 months after the last treatment (15.00 ± 5.37 vs. 19.62 ± 4.44) and sustained at 6 months (20.23 ± 4.12) ($P < .001$). Significant improvements in both UDI-6 and FSFI were also noted. Between baseline and 6 months after treatment (FSFI: 18.81 ± 9.57 vs. 22.81 ± 10.34, $P < 0.001$; UDI-6: 39.58 ± 15.98 vs. 22.42 ± 14.03, $P < 0.001$). No adverse events were encountered by any subject during this study. **Clinical implications:** A therapy that is safe and effective in the treatment of both GSM and lower urinary tract symptoms without the use of hormonal methods is clinically impactful for the many patients who cannot receive or do not desire to receive these medications. **Strengths and limitations:** Strengths of this study include the utilization of 3 treatment sessions, with follow-up of subjects to 6-month posttreatment with a comprehensive assessment of patient symptoms. Limitations include the unblinded nature of the study and the lack of a comparator group. **Conclusion:** The data from this study suggests that radiofrequency ablation of the vaginal canal by the MorpheusV applicator is a safe and effective intervention for GSM. It also shows subjective improvements in stress urinary incontinence, urge urinary incontinence, and sexual function.

Signs and symptoms of vulvovaginal atrophy (VVA) in clinical practice - the possible involvement of thyroid autoimmunity in genitourinary syndrome of menopause (GSM)
Laura Cucinella, Federica Barbagallo, et al.
Gynecol Endocrinol. 2025 Dec;41(1):2458705. doi: 10.1080/09513590.2025.2458705. Epub 2025 Feb 6.
https://pubmed.ncbi.nlm.nih.gov/39912594/

Background: Thyroid autoimmune disorders (ADs) are common in midlife women and can impact various aspects of health, including sexual function. The effect of thyroid autoimmunity on the clinical manifestations of vulvovaginal atrophy (VVA) remains unclear. **Objective:** To explore the relationship between thyroid ADs and VVA signs and symptoms in a sample of postmenopausal women. **Results:** Among 112 women enrolled, 28 had thyroid ADs. A significantly higher percentage of women with thyroid ADs showed vaginal atrophy (75 vs. 45.2%, $p < .05$). A greater proportion of women with thyroid ADs exhibited vulvar atrophy or both vaginal and vulvar atrophy, though these differences were not statistically significant. Women with thyroid ADs reported significantly higher scores for dryness, burning/itching, irritation/inflammation, and dyspareunia compared to those without it. A higher percentage of women with thyroid ADs experienced severe dyspareunia (45 vs. 20.6%, $p < .05$), severe burning/itching (33.3 vs. 9.1%, $p < .05$), and severe stress urinary incontinence (17.9 vs. 3.6%, $p < 0.05$). **Conclusions:** This study suggests that thyroid ADs may contribute to genital aging, with an apparent greater involvement in vaginal signs of atrophy. Women with thyroid ADs reported more severe VVA symptoms, but specific symptomatological clusters should be investigated in larger samples. Our data support the need to explore further the role of thyroid disorders in VVA.

Assessment of the Efficacy and Safety of a Dual-Wavelength Diode Laser System for the Treatment of Vulvovaginal Atrophy in Women Without a History of Breast Cancer and in Patients with a History of Breast Cancer
Gaetano Perrini, Silvia Actis, et al.
J Clin Med. 2025 Jan 26;14(3):801. doi: 10.3390/jcm14030801.
https://pubmed.ncbi.nlm.nih.gov/39941472/

Background/Objectives: Vaginal laser therapy is a promising treatment for menopausal vulvovaginal atrophy (VVA). This study evaluates the efficacy of a dual-wavelength diode laser (980 + 1470 nm) in treating VVA. **Results**: Significant improvements in the VHI and reduced dyspareunia were observed at T4 compared to T0 in all groups. The improvement was already seen after the first procedure, with further improvement after the other procedures, being persistent at the 1-month follow-up. The Schiller test showed significant improvements from T0 to T4 in all groups. The VMI showed a significant improvement from T0 to T4 in the overall group and group B. The FSFI questionnaires showed a significant improvement in all areas for the whole population, whereas the FDSF-R questionnaire showed an improvement only in the overall group. Procedural pain was low (mean VAS 1.6), and no side effects were reported. **Conclusions**: The dual-wavelength diode laser is an effective and safe option for the treatment of VVA in patients with and without a history of BC.

Efficacy and Safety of Non-Ablative Dual Wavelength Diode Laser Therapy for Genitourinary Syndrome of Menopause: A Single-Center Prospective Study
Salvatore Giovanni Vitale, Stefania Saponara, et al.
Adv Ther. 2024 Dec;41(12):4617-4627. doi: 10.1007/s12325-024-03004-7. Epub 2024 Oct 29.
https://pubmed.ncbi.nlm.nih.gov/39470875/

Introduction: This study evaluates the efficacy and safety of non-ablative diode laser therapy for genitourinary syndrome of menopause (GSM) in post-menopausal women unable to use hormonal therapies. **Results:** Significant improvements were observed in VHIS, increasing from 12 to 19.27 at 6 months ($p < 0.001$). GSM symptoms improved significantly: vaginal dryness scores decreased from 7.72 ± 2.37 to 3.72 ± 2.53, burning sensation scores dropped from 6.00 ± 3.22 to 1.90 ± 1.81, and dyspareunia scores reduced from 8.09 ± 2.11 to 3.90 ± 2.58 (all $p < 0.016$). Sexual function improved, indicated by FSFI-6 scores increasing from 12.27 ± 7.29 to 19.30 ± 6.24 ($p < 0.016$) and SQOL-F scores rising from 63.18 ± 22.93 to 71.45 ± 23.31. No adverse events were reported. **Conclusion:** Non-ablative diode laser therapy is effective and safe for managing GSM symptoms in post-menopausal women, offering significant symptom relief and enhancing sexual health without serious side effects. Further research with a larger cohort and extended follow-up is needed to confirm these findings.

Optimizing the regenerative potential of vaginal fibroblasts: The role of autologous platelet-rich plasma and hyaluronic acid in vitro
Sarah Berndt, Solange Vischer, Antoine Turzi, Patrick Dällenbach
Maturitas. 2025 Mar:194:108196. doi: 10.1016/j.maturitas.2025.108196. Epub 2025 Jan 15.
https://pubmed.ncbi.nlm.nih.gov/39842262/

Objective: Many postmenopausal women suffering from vulvovaginal atrophy are looking for non-hormonal treatments. Platelet-rich plasma (PRP) therapy has emerged as a novel and promising approach for gynecological applications. PRP is an autologous blood product rich in growth factors used to stimulate tissue regeneration. On the other hand, hyaluronic acid (HA) is used as a treatment for vaginal dryness as it improves tissue hydration thanks to its strong capacity to retain water. This study examines the in vitro effects of PRP alone or combined with HA on vaginal fibroblasts (VFs) isolated from mucosal samples of postmenopausal women undergoing surgery for vaginal prolapse. **Results:** VFs cultured with PRP or PRP-HA showed dose-dependent higher proliferation compared with the control condition, with increased S and G2M cell cycle phases correlating with enhanced proliferation. Expression of vimentin, a protein that plays a key role in maintaining cellular structure and function, was stable, while alpha-SMA decreased, indicating a shift from myofibroblasts to fibroblasts. Collagen production, crucial for wound healing and tissue regeneration, increased under PRP or PRP-HA treatment. PRP and PRP-HA also prevented cell senescence in long-term low-density cultures. These findings were consistent across 2D and 3D culture systems. **Conclusions:** This study provides in vitro evidence supporting the potential of PRP and PRP-HA as autologous treatments for vaginal rejuvenation.

Development and Bioavailability Assessment of an Estriol-Containing Vaginal Hydrogel
Peter Takacs, Barbara Kozma, et al.
Gels. 2024 Dec 13;10(12):823. doi: 10.3390/gels10120823.
https://pubmed.ncbi.nlm.nih.gov/39727581/

Genitourinary syndrome of menopause (GSM) affects a significant percentage of postmenopausal women and manifests as vaginal dryness, irritation, and urinary discomfort, typically treated with vaginal estrogens. Hydrogels are preferred over creams due to their superior comfort and mucoadhesive properties. This study introduces a novel vaginal gel formulation containing hydroxyethyl cellulose (HEC) and estriol-hydroxypropyl-β-cyclodextrin complex (E3-HPBCD) for the treatment of GSM. The estriol (E3) release profile of the gel was evaluated using a Franz diffusion cell system, and its permeability was tested on reconstructed human vaginal epithelium. Biocompatibility was assessed using (3-[4,5-

dimethylthiazol-2-yl]-2,5-diphenyltetrazolium bromide) (MTT), lactate dehydrogenase (LDH) assays, and real-time cell analysis (RTCA) on human skin keratinocyte (HaCaT) cells, which showed increased cell viability and no obvious cytotoxicity. The results indicated that efficient E3 release and satisfactory epithelial permeability with HPBCD provide the bioavailability of E3. These results suggest the potential of the gel as a biocompatible and effective alternative for the treatment of GSM. Further studies are required to assess the long-term safety and clinical efficacy.

GO-MAE: Self-supervised pre-training via masked autoencoder for OCT image classification of gynecology
Haoran Wang, Xinyu Guo, et al.
Neural Netw. 2025 Jan:181:106817. doi: 10.1016/j.neunet.2024.106817. Epub 2024 Oct 18.
https://pubmed.ncbi.nlm.nih.gov/39500244/

Genitourinary syndrome of menopause (GSM) is a physiological disorder caused by reduced levels of oestrogen in menopausal women. Gradually, its symptoms worsen with age and prolonged menopausal status, which gravely impacts the quality of life as well as the physical and mental health of the patients. In this regard, optical coherence tomography (OCT) system effectively reduces the patient's burden in clinical diagnosis with its noncontact, noninvasive tomographic imaging process. Consequently, supervised computer vision models applied on OCT images have yielded excellent results for disease diagnosis. However, manual labeling on an extensive number of medical images is expensive and time-consuming. To this end, this paper proposes GO-MAE, a pretraining framework for self-supervised learning of GSM OCT images based on Masked Autoencoder (MAE). To the best of our knowledge, this is the first study that applies self-supervised learning methods on the field of GSM disease screening. Focusing on the semantic complexity and feature sparsity of GSM OCT images, the objective of this study is two-pronged: first, a dynamic masking strategy is introduced for OCT characteristics in downstream tasks. This method can reduce the interference of invalid features on the model and shorten the training time. In the encoder design of MAE, we propose a convolutional neural network and transformer parallel network architecture (C&T), which aims to fuse the local and global representations of the relevant lesions in an interactive manner such that the model can still learn the richer differences between the feature information without labels. Thereafter, a series of experimental results on the acquired GSM-OCT dataset revealed that GO-MAE yields significant improvements over existing state-of-the-art techniques. Furthermore, the superiority of the model in terms of robustness and interpretability was verified through a series of comparative experiments and visualization operations, which consequently demonstrated its great potential for screening GSM symptoms.

Pudendal Neuralgia

Does pudendal nerve block improve perioperative pain following OnabotulinumtoxinA injection for myofascial pelvic pain?
Paulette Coombs, Gregory Lewis, et al.
Eur J Obstet Gynecol Reprod Biol. 2025 Mar:306:64-68. doi: 10.1016/j.ejogrb.2024.12.055. Epub 2025 Jan 2.
https://pubmed.ncbi.nlm.nih.gov/39793344/

Objective: OnabotulinumtoxinA (BTA) injections are useful for treatment of myofascial pelvic pain. Concurrent pudendal nerve block (PNB) has been suggested to decrease postoperative pain, as BTA

does not take an immediate effect. The efficacy of PNB for this purpose has not been well elucidated. We aim to determine if PNB improves pain in the postoperative period following pelvic floor BTA injections. **Design:** A subgroup analysis was performed from a retrospective cohort study including 202 patients encompassing 416 BTA injections at a single high volume, academic institution. Post Anesthesia Care Unit (PACU) visual analog scale (VAS) pain score and oral morphine equivalents (OME) data between 2018 and 2022 were reviewed. **Results:** A total of 64 patients met inclusion criteria, encompassing 96 BTA injection events. Thirty-three BTA injections were done with concurrent PNB (BTA/PNB), while 63 injections were performed without PNB (BTA). Demographics of patients were similar in both groups. Mean VAS upon discharge from PACU was 1.7 for BTA alone and 1.9 for BTA/PNB ($p = 0.610$). Mean time (minutes) in PACU was 100.7 for BTA alone and 100.5 for BTA/PNB ($p = 0.692$). Mean OMEs given in PACU were 12.5 for BTA alone and 15.0 for BTA/PNB ($p = 0.443$). **Conclusion:** This study may suggest a limited benefit of PNB at improving postoperative pain following pelvic floor BTA injection. Additional research is needed to determine the efficacy of PNB at time of pelvic floor BTA injections.

Laparoscopic Pudendal Nerve Release at the Level of Sacrospinous Ligament
Baris Mulayim, Sema Mulayim
Int Urogynecol J. 2025 Jan 24. doi: 10.1007/s00192-025-06062-9.
https://pubmed.ncbi.nlm.nih.gov/39853365/

Introduction and hypothesis: Pudendal nerve release can be managed by the laparoscopic approach for pudendal nerve entrapment. **Results:** The operation was finished without any complication and the patient was discharged after the operation day. Pain decreased on her postoperative examination. Follow-up visits will be continued at 3 and 6 months. **Conclusions:** Laparoscopic pudendal nerve release is reproducible, effective, safe, and has a steep learning curve method for the management of pudendal nerve entrapment.

Development and validation of a pudendal nerve block simulation-based educational intervention
Dhanalakshmi Thiyagarajan, Catherine Wheatley, et al.
Int J Gynaecol Obstet. 2025 Feb 18. doi: 10.1002/ijgo.70012.
https://pubmed.ncbi.nlm.nih.gov/39963808/

Objective: Pudendal nerve block in modern obstetric practice is essential to providing comprehensive care. However, as clinical exposure declines, training opportunities also diminish. We aimed to develop and study an effective and reproducible simulation-based educational intervention for teaching pudendal nerve block. **Results:** A total of 56 subjects (OBGYN residents, fellows, and attendings; family medicine residents, and attendings; and certified nurse midwives) participated in the simulation-based educational intervention. Competence, comfort, and confidence with identifying appropriate candidates, discussing benefits and risks, offering and performing, and identifying and managing complications of the procedure were higher at baseline for practicing clinicians and increased significantly after participating in the intervention for both residents and practicing clinicians (P value for all <0.001). Procedural competence as assessed by the checklist was not significantly different between residents and practicing clinicians (P value 0.96). **Conclusion:** A pudendal nerve block simulation-based educational intervention allows residents and practicing clinicians to develop knowledge, comfort, and confidence in identifying patient candidates, discussing risks and benefits, offering and performing the procedure, and identifying and managing resultant complications.

Pudendal Neuralgia: A Review of the Current Literature
Rosalynn R Z Conic, Prabhleen Kaur, Lynn R Kohan
Curr Pain Headache Rep. 2025 Jan 28;29(1):38. doi: 10.1007/s11916-024-01354-z.
https://pubmed.ncbi.nlm.nih.gov/39873912/

Purpose of review: This paper aims to review pudendal neuralgia pathophysiology, risk factors, diagnosis, and treatment options. **Recent findings:** Conservative and pharmacologic options are first line treatments for the treatment of pudendal neuralgia. Interventional treatment such as, pudendal nerve blocks can be tried if first line treatments feel to provide adequate analgesia. If pudendal nerve blocks provide sufficient relief but have a short duration, decompressive surgery may be considered. Neuromodulation is also a viable option. Emerging techniques such as pulsed radiofrequency ablation, cryotherapy, lipofilling, and repetitive transcranial magnetic stimulation are promising; however, more studies are needed to evaluate safety and effectiveness. Current study data is generally poor, and unstandardized. Further research is needed to identify the optimal treatment approach and evaluate the effects of pudendal neuralgia on mental health and quality of life.

Dermatological Conditions

The Barriers and Perceived Benefits to Vulvar Self-Examination in the Management of Vulvar Lichen Sclerosus
Sarah R Adamson, Anneliese Willems, et al.
J Low Genit Tract Dis. 2025 Jan 1;29(1):76-80. doi: 10.1097/LGT.0000000000000848. Epub 2024 Sep 26.
https://pubmed.ncbi.nlm.nih.gov/39324990/

Objectives: It is common practice to advise people with vulvar lichen sclerosus to perform vulvar self-examination (VSE) to optimize topical therapy and detect changes that may represent active disease, scarring, and/or squamous cell carcinoma development. The aim of this study was to better understand people's willingness and potential barriers to performing VSE. **Materials and methods:** A cross-sectional survey was undertaken of all patients with vulvar LS presenting to a tertiary referral vulvar dermatology clinic in Australia, from June 2022 to January 2023. Patients who did not speak and read English were excluded. Ethics approval was obtained. **Results:** Seventy-eight (66%) of 118 eligible patients completed the survey. Fifty-three (68%) of patients had examined their vulva at least once. Forty-one (49%) had been recommended VSE by a medical practitioner. All those recommended VSE had performed VSE at least once. In contrast, only 10 (27%) of the 37 patients not recommended VSE by a health professional had ever performed VSE. Seventy-nine percent of all patients reported that they were very likely or likely to perform VSE if it was recommended. Patients with higher education level and tampon use were more likely to perform VSE. Self-reported back problems were associated with being less likely to perform VSE. **Conclusions:** More widespread VSE may result in earlier detection of the complications of vulvar lichen sclerosus. Most women would perform VSE if recommended by a health care provider; however, currently only half are receiving this advice. Further research should be performed to determine whether VSE affects clinical outcomes.

Long-term evolution of prepubertal-onset anogenital lichen sclerosus: A 35-year retrospective and cross-sectional study from a single tertiary care maternal and pediatric center
Sheila Vallée, Violaine Deneux, et al.
J Am Acad Dermatol. 2024 Dec 3:S0190-9622(24)03291-2. doi: 10.1016/j.jaad.2024.09.086.
https://pubmed.ncbi.nlm.nih.gov/39637982/

Background: Anogenital lichen sclerosus (ALS) in children may persist after puberty with potential clinical repercussions. **Objective:** The purpose of this study was to evaluate post pubertal evolution of girls with ALS diagnosed in the prepubertal period based on physical examination, the persistence of functional symptoms and the effect on quality of life. **Results:** Signs of active disease after puberty based on physical examination were present in 92% (N=23) of examined patients. A high proportion of cases with persistent ALS after puberty were asymptomatic (47%, N=14). **Limitations:** This is a single center retrospective study with a limited number of patients. Half of our original cohort could not be reached or declined a follow-up visit. **Conclusion:** Prepubertal lichen sclerosus is a chronic condition that can be asymptomatic after puberty despite continued disease activity. We recommend long-term follow-up of patients with prepubertal ALS to prevent associated morbidity.

Efficacy and safety of 5-aminolevulinic acid photodynamic therapy in refractory genital lichen sclerosus
Weiwei Shi, Fang Wang, Liangliang Chen, Ruzhi Zhang
Photodiagnosis Photodyn Ther. 2024 Dec 5:104439. doi: 10.1016/j.pdpdt.2024.104439.
https://pubmed.ncbi.nlm.nih.gov/39645011/

Background: Genital lichen sclerosus (GLS) is a chronic inflammatory skin disease affecting the genital and anal areas. Treatment of refractory remains a challenge in clinical practice. **Objective:** This study aimed to evaluate the efficacy and safety of 5-aminolevulinic acid photodynamic therapy (5-ALA PDT) for refractory GLS. **Results:** After treatment, most patients experienced significant relief of pruritus, improved skin elasticity and color, and reduced lesion area. After 6 treatment sessions, 11 patients (31.43%) achieved complete resolution of pruritus, with 3 patients (8.57%) achieving complete remission after 3 sessions. Cattaneo scores decreased significantly after treatment and during follow-up ($P<0.05$). Adverse reactions were mainly mild pain, which could be relieved by ice compression or oral analgesics. **Conclusions:** 5-ALA PDT shows significant efficacy and good safety for refractory GLS, improving the clinical symptoms and signs of patients, and warrants wider clinical application.

AI-powered visual diagnosis of vulvar lichen sclerosus: A pilot study
Philippe Gottfrois, Jie Zhu, et al.
J Eur Acad Dermatol Venereol. 2024 Dec;38(12):2280-2285. doi: 10.1111/jdv.20306. Epub 2024 Aug 28.
https://pubmed.ncbi.nlm.nih.gov/39194285/

Background: Vulvar lichen sclerosus (VLS) is a chronic inflammatory skin condition associated with significant impairment of quality of life and potential risk of malignant transformation. However, diagnosis of VLS is often delayed due to its variable clinical presentation and shame-related late consultation. Machine learning (ML)-trained image recognition software could potentially facilitate early diagnosis of VLS. **Objective:** To develop a ML-trained image-based model for the detection of VLS. **Results:** A total of 684 VLS images and 403 non-VLS images (70% healthy vulva and 30% with other vulvar diseases) were included after the selection process. A deep learning algorithm was developed by

training on 775 images (469 VLS and 306 non-VLS) and testing on 312 images (215 VLS and 97 non-VLS). This algorithm performed accurately in discriminating between VLS and non-VLS cases (including healthy individuals and non-VLS dermatoses), with mean values of 0.94, 0.99 and 0.95 for recall, precision and accuracy, respectively. **Conclusions:** This pilot project demonstrated that our image-based deep learning model can effectively discriminate between VLS and non-VLS skin, representing a promising tool for future use by clinicians and possibly patients. However, prospective studies are needed to validate the applicability and accuracy of our model in a real-world setting.

Adalimumab Use in Severe Recalcitrant Vulval Lichen Sclerosus and Vulval Lichen Planus
Ashling Courtney, Sarah Rose Adamson, Emma Veysey
J Low Genit Tract Dis. 2024 Dec 9. doi: 10.1097/LGT.0000000000000862.
https://pubmed.ncbi.nlm.nih.gov/39652414/

Objectives: This case series aims to evaluate the demographic features, disease characteristics, and treatment outcomes of 8 patients receiving subcutaneous (SC) adalimumab for severe, refractory vulval lichen sclerosus (VLS) and/or vulval lichen planus (VLP). Both conditions are chronic inflammatory dermatoses that significantly impair quality of life, and although first-line treatment typically involves potent to ultrapotent topical corticosteroids, managing severe cases is challenging due to a lack of FDA-approved systemic therapies. Adalimumab, a TNF-α inhibitor, may offer a promising alternative by targeting the inflammatory cytokine implicated in the pathogenesis of both conditions.
Results: Adalimumab was well tolerated by 6 of 8 patients who received treatment for at least 9 months. Varying degrees of clinical improvement were observed in cutaneous signs and PROMs, including significant reductions in vulval life quality index scores for 6 patients. Architectural changes remained stable throughout treatment for all patients. **Conclusion:** This case series indicates that SC adalimumab may be a treatment option for patients with severe, refractory VLS and VLP, as demonstrated by significant improvements in PROMs. The observed clinical benefits suggest that adalimumab targets key inflammatory pathways in these conditions. Controlled trials are necessary to further validate these findings and define adalimumab's role in managing severe refractory VLS and VLP. Future research should also investigate long-term efficacy and safety, as well as potential predictors of treatment response, to optimize care for this challenging patient population.

First use of cord blood platelet-rich plasma in the treatment of vulvar lichen sclerosus: a preliminary study towards a randomized controlled trial
Veronica Boero, Carlotta Caia, et al.
Blood Transfus. 2024 Dec 17. doi: 10.2450/BloodTransfus.875.
https://pubmed.ncbi.nlm.nih.gov/39804749/

Background: Although topical corticosteroids (TCS) represent first-line treatment for vulvar lichen sclerosus (VLS) and as such should be prescribed to all women at time of diagnosis, approximately 30% of patients do not experience complete symptom resolution following such treatment. TCS may not effectively improve vulvar trophism and elasticity, both of which are crucial for sexual function. Owing to its regenerative and healing properties, cord blood platelet-rich plasma (CB-PRP) may represent an efficacious supplementary therapy, to be administered following first line treatment with TCS. The primary aim of this study was to assess safety and tolerability of CB-PRP in women with VLS. **Materials and methods:** This is a pilot study which precedes a randomized controlled trial of CB-PRP vs placebo in women with VLS. Ten consecutive patients with VLS, who had previously undergone standard TCS-

treatment, received three vulvar CB-PRP injections monthly. Follow-up was conducted three months after the last injection using vulvoscopy and validated questionnaires to evaluate safety and tolerability, as well as patient satisfaction, symptom improvement, sexual function, psychological well-being, quality of life, frequency of TCS application as a maintenance treatment, vulvar trophism and architectural modifications. **Results:** No adverse clinical effects were observed. Five patients (50%) were either satisfied or very satisfied with the procedure, four (40%) were uncertain about their satisfaction with the treatment. One patient (10%) dropped out for personal reasons and was classified as unsatisfied according to an intention-to-treat analysis. At follow-up median numeric rating scale scores were significantly reduced for vulvar burning compared to baseline ($p<0.05$) there was a trend toward improvement in itching, dyspareunia, and dysuria. A significant improvement in sexual arousal and satisfaction was observed in all treated women ($p<0.05$).

Efficacy of Fractional CO_2 Laser Therapy in Improving Symptoms and Quality of Life in Women with Refractory Vulvar Lichen Sclerosus: A Prospective Observational Study
Ana Gil-Villalba, Ángela Ayén-Rodríguez, et al.
Life (Basel). 2024 Dec 18;14(12):1678. doi: 10.3390/life14121678.
https://pubmed.ncbi.nlm.nih.gov/39768385/

Lichen sclerosus (LS) is a chronic inflammatory condition predominantly affecting the anogenital region of postmenopausal women. It is associated with considerable aesthetic and functional impairments and an increased risk of squamous cell carcinoma. While high-potency topical corticosteroids remain the cornerstone of treatment, therapeutic options for patients with refractory LS are scarce. Fractional CO_2 laser therapy has emerged as a potential second-line intervention aiming to mitigate symptoms and improve quality of life. This prospective observational study investigated the short-term efficacy and safety of fractional CO_2 laser therapy in 75 women with refractory LS who underwent four treatment sessions between January 2022 and February 2024. Sixty-nine patients completed the protocol, demonstrating significant reductions in key symptoms, including pruritus (VAS score from 7.53 ± 3.02 to 4.08 ± 3.07), pain (5.83 ± 3.84 to 2.42 ± 2.85), and dyspareunia (8.26 ± 2.82 to 6.34 ± 3.30). Quality of life, sexual function, and psychological well-being also improved, as evidenced by reductions in Dermatology Life Quality Index (DLQI) scores (10.72 ± 7.25 to 5.94 ± 5.16), enhancements in sexual function (FSFI scores from 10.48 ± 8.46 to 15.52 ± 9.59), and decreased depression severity (BDI scores from 16.66 ± 12.64 to 5.94 ± 5.16). Importantly, no adverse effects were reported during the study period. Although these findings highlight the potential of fractional CO_2 laser therapy as a safe and effective adjunct for refractory LS, it is essential to acknowledge the study's limitations, particularly the relatively short follow-up period. Longer-term studies are warranted to confirm sustained benefits and to evaluate the broader applicability of this approach.

Amitriptyline for the treatment of vulvodynia in patients with vulvar lichen sclerosus: a case series of 20 patients
Gaetano Licata, Eugenia Veronica Di Brizzi, et al.
Int J Dermatol. 2025 Jan 5. doi: 10.1111/ijd.17634.
https://pubmed.ncbi.nlm.nih.gov/39757140/

Vulvar Lichen Sclerosus (VLS) is a chronic autoimmune disease that often leads to vulvodynia, a debilitating chronic pain condition in the vulvar region. Treating vulvodynia in the context of VLS presents a significant therapeutic challenge due to the lack of standardized protocols. This article

presents a case series of 20 women treated with amitriptyline for vulvodynia secondary to VLS, accompanied by an extended review of the literature. The results suggest that amitriptyline may offer significant pain relief and improvements in the patients' quality of life, although adverse effects need to be carefully managed. Further studies are needed to validate these findings in larger controlled trials.

Blue diode laser as supportive therapy for the management of vulvar lichen sclerosus
Serena Bergamo, Margherita Gobbo, et al.
Dermatol Reports. 2024 Aug 9;17(1):10046. doi: 10.4081/dr.2024.10046.
https://pubmed.ncbi.nlm.nih.gov/39963016/

Vulvar lichen sclerosus is a chronic inflammatory condition characterized by the thinning and atrophy of the skin and mucosa surrounding the vulva and anus. This study evaluates the efficacy of a treatment protocol utilizing blue-diode laser photobiomodulation in managing vulval lichen sclerosus symptoms in a cohort of 12 female patients. The treatment protocol consisted of laser sessions 3 times a week for 2 weeks and follow-up sessions over a 16-week period. Objective and subjective parameters were assessed before treatment, at the end of treatment, and at 4-month follow-up visits. Results demonstrated significant reductions in subjective symptoms, such as itching and pain, as well as improvements in objective signs, including erythema and fissures. No side effects were observed, indicating the safety and tolerability of laser treatment. These findings suggest that photobiomodulation can be an effective therapeutic option for patients with vulval lichen sclerosus, with future research aimed at refining treatment protocols and evaluating its long-term benefits.

A Guide to Screening for Autoimmune Diseases in Patients With Vulvar Lichen Sclerosus
Annabel Guttentag, Marlene Wijaya ,et al.
Australas J Dermatol. 2025 Feb 14. doi: 10.1111/ajd.14434.
https://pubmed.ncbi.nlm.nih.gov/39953774/

Background: The aetiology of vulvar lichen sclerosus (VLS) remains unknown. However, there is evidence that in addition to a genetic predisposition, autoimmunity contributes to the pathogenesis. **Objectives:** The objective of this study was to determine the prevalence of autoimmune disease and positive autoantibody serology in patients with VLS. **Results:** Autoimmune disease was found in 24.5% and 34.6% of children and adults with VLS, respectively. The most prevalent autoimmune conditions were psoriasis, Hashimoto's thyroiditis, lichen planus, and vitiligo. Antinuclear antibodies were common and found in 31.0% of patients. Thyroid peroxidase and thyroglobulin antibodies were present in 16.1% and 18.9% of cases, respectively. Thyroid function, determined by thyroid stimulating hormone, was abnormal in 8.2% of patients. 5.3% of patients had positive parietal cell antibodies, and 5.9% had low vitamin B12 levels. **Conclusions:** This work provides support that VLS is of an autoimmune aetiology, and that there is an association between VLS and autoimmune diseases. The high proportion of patients with an abnormal thyroid test, positive thyroid antibodies, and intrinsic factor and gastric parietal cell antibodies with low vitamin B12 levels, warrants screening for thyroid disease and pernicious anaemia in patients with VLS. Initial autoimmune screening in VLS can be rationalised to TSH, vitamin B12 levels, intrinsic factor and parietal cell antibodies. Thyroid antibodiy testing shouls be performed in hypothyroid patients.

Characterizing the Frequency and Severity of Clinical Signs and Architectural Changes in Vulvar Lichen Sclerosus

Madeline Ngo, Hannah R Chang, Melissa M Mauskar

J Low Genit Tract Dis. 2025 Jan 1;29(1):96-98. doi: 10.1097/LGT.0000000000000860. Epub 2024 Dec 2.
https://pubmed.ncbi.nlm.nih.gov/39620889/

Untreated vulvar lichen sclerosus (VLS) can have a significant negative impact on quality of life, increase the risk of neoplastic transformation, and lead to irreversible architectural changes. Early and appropriate management using ultrapotent topical steroids is crucial to alleviate symptoms and prevent long-term complications. This study aimed to characterize clinical signs and architectural changes of 364 VLS patients at a tertiary center. The majority of the patients had sought care from ≥1 provider previously, were referred by a physician, had undergone prior vulvar biopsies, and had previously tried topical steroids. The authors observed predominantly mild clinical signs alongside more frequent severe architectural changes. These findings highlight the increased need for nuanced clinical evaluation, sufficient lifelong maintenance therapy to prevent architectural changes, and improved clinical scoring systems to differentiate between active VLS disease and residual damage.

Expert opinion on characteristics of vulval lichen sclerosus: initial identification of important clinical features through an international electronic Delphi consensus study

Rosalind C Simpson, Michael Birchall, et al.

Clin Exp Dermatol. 2025 Feb 24;50(3):590-596. doi: 10.1093/ced/llae393.
https://pubmed.ncbi.nlm.nih.gov/39358862/

Background: Lichen sclerosus (LS) is a chronic inflammatory condition that mainly affects genital skin. It causes distressing symptoms that impact daily quality of life, as well as progressive anatomical changes and a potential risk of cancer. Vulval LS is often misdiagnosed and treatment delayed. If nonexperts can be supported to identify clinical features of LS, they may diagnose the condition sooner and commence timely treatment or refer a patient for assessment and confirmatory biopsy. **Objectives:** To reach international expert consensus on clinical diagnostic features for vulval LS. **Results:** In total, 47 participants from 14 countries completed round 1, with 42 (89%) retained by round 3 when consensus was determined. Round 4 was completed by 36 (77%) participants. Participants completing all four rounds predominantly included healthcare professionals (n = 28/36; 78%) and patient support group representatives (n = 7/36; 19%). In round 1, 21 diagnostic features were rated. Participants suggested an additional 10 features, which were subsequently added to the round 2 survey. After three rounds, consensus was achieved for five diagnostic features: whiteness, itch, changes in anatomy, burying of the clitoral area and improvement in response to topical steroids. There were also 12 features rated as 'important but not critical' and participants subsequently ranked them in the fourth round. **Conclusions:** Experts agreed on 5 critical diagnostic features for vulval LS in adults and an additional 12 features that may also be important. Future research should assess these clinical features for diagnostic validity through a multicentre diagnostic test accuracy study.

Vulvar Lichen Sclerosus: A Literature Review with Consideration of Integrative Therapies

Kathleen Jade

Integr Med (Encinitas). 2025 Feb;24(1):16-25.
https://pubmed.ncbi.nlm.nih.gov/39896832/

Vulvar lichen sclerosus (VLS) is a chronic inflammatory skin condition characterized by vulvar pruritus, pain, dyspareunia, and architectural changes, including significant and permanent scarring and deformity of the vulva if left untreated. Untreated VLS significantly increases the risk of invasive squamous cell carcinoma, even in asymptomatic patients. However, there is an overall paucity of preclinical and clinical research on VLS. Although the disease is becoming more commonly recognized, it is often under- or misdiagnosed and its prevalence is likely underestimated. While the exact underlying etiology is still unknown, VLS is most likely an autoimmune disorder within the background of genetic predisposition and environmental triggers. The skin and gut microbiomes also appear to be involved. The first line treatment for VLS, ultrapotent topical corticosteroids, helps relieve symptoms and reduce the risk of architectural changes and vulvar cancer. The second-line medications and treatments with more limited evidence of efficacy include topical calcineurin inhibitors, topical hormones, platelet-rich plasma, and fractional CO_2 laser therapy. Surgical intervention may also be required. Additionally, some VLS patients and practitioners report improvements with diet and lifestyle changes, nutritional supplements, low-dose naltrexone, botanical medicines, and other integrative treatments, although clinical research on these integrative therapies for VLS is generally lacking. This review aims to describe VLS in adult women, summarize the recently published literature, and provide a clinical overview that includes evidence-based integrative therapies.

Update vulval dermatology - diagnostics and therapy
Christine Brägelmann, Linn Wölber, et al.
J Dtsch Dermatol Ges. 2024 Dec 23. doi: 10.1111/ddg.15541.
https://pubmed.ncbi.nlm.nih.gov/39711289/

The vulva is a periorificial skin area and as such represents a transitional zone with unique functional and physiological characteristics. Knowledge of its anatomy is limited among both the general population and healthcare professionals, and unrealistic expectations of normal proportions are common. Ignorance of anatomical variations can cause unnecessary anxiety. In Germany, specialists in gynecology and obstetrics most commonly treat neoplastic vulvar dermatoses, while chronic inflammatory dermatoses commonly affecting the female genitalia (such as psoriasis, atopic dermatitis, hidradenitis suppurativa, and vitiligo) are typically treated by dermatologists. Both specialties treat infectious vulvar dermatoses and sexually transmitted infections. Certain dermatoses, such as lichen sclerosus, lichen planus, and lichen simplex chronicus, tend to affect the vulva preferentially; however, terminology can be confusing. Therefore, this article provides basic information on vulvar anatomy and physiology and summarizes recommendations for the diagnosis and management of the most common vulvar dermatoses, with a special focus on chronic inflammatory dermatoses, to provide a useful guide for all involved specialists in daily practice. Interdisciplinary collaboration and the establishment of dedicated consultation hours may help to improve the clinical care of vulvar dermatoses.

Hidden hurts: life with lichen sclerosus - a patient's perspective
Elena Galentine, Camille M Powers, et al.
Br J Dermatol. 2024 Dec 23;192(1):153-154. doi: 10.1093/bjd/ljae357.
https://pubmed.ncbi.nlm.nih.gov/39267204/

A patient with vulvar lichen sclerosus bravely shares her experiences living with this hidden, painful, life-altering and potentially stigmatizing vulvar condition. Complemented by a clinician's perspective on the complexities of managing such patients, this piece aims to illuminate the many psychosocial challenges

posed by lichen sclerosus. Through this dual narrative, we seek to deepen providers' knowledge of the impact lichen sclerosus has on patients' lives and the nuanced care required to support them.

Labial adhesions due to vulvovaginal lichen planus suspected to be caused by angiotensin II receptor blocker

Yugo Sawada, Yasuhide Kitagawa, et al.

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https://pubmed.ncbi.nlm.nih.gov/40034908/

Introduction: Lichenoid drug eruption, induced by gold or cardiovascular drugs, is one of the causes of lichen planus, and vulvovaginal erosive lichen planus can cause labial adhesions. However, few studies have focused on drugs as a cause of labial adhesions. **Case presentation:** We encountered a 78-year-old woman with labial adhesions, vulvodynia, and itching of the vulva. The cause was thought to be lichenoid drug eruption from an angiotensin II receptor blocker. After discontinuation of the drug, vulvodynia and pruritus resolved quickly, the pathology showed improvement, and labial adhesions did not recur after detachment. **Conclusion:** An angiotensin II receptor blocker was a suspected cause of vulvovaginal erosive lichen planus, which causes labial adhesions. Physicians should recognize the possible cause of labial adhesions secondary to lichenoid drug eruption.