

Vulvodynia: A Common and Under-Recognized Pain Disorder in Women and Female Adolescents

Integrating Current Knowledge into Clinical Practice

Reference List

Section 1: Historical Perspective

Bornstein J, Goldstein AT, Stockdale CK, Bergeron S, Pukall C, Zolnoun D, Coady D; consensus vulvar pain terminology committee of the International Society for the Study of Vulvovaginal Disease (ISSVD), the International Society for the Study of Women's Sexual Health (ISSWSH), and the International Pelvic Pain Society (IPPS). 2015 ISSVD, ISSWSH, and IPPS Consensus Terminology and Classification of Persistent Vulvar Pain and Vulvodynia. *J Low Genit Tract Dis* 2016;20:126–30.

Haefner HK. Report of the International Society for the Study of Vulvovaginal Disease terminology and classification of vulvodynia. *J Low Genit Tract Dis*. 2007 Jan;11(1):48-9.

Kelly HA. Dyspareunia. In: Kelly HA, ed. *Gynecology*. New York: D. Appleton and Company; 1928: 235-239.

Moyal-Barracco M, Lynch PJ. 2003 ISSVD terminology and classification of vulvodynia: a historical perspective. *J Reprod Med*. 2004 Oct;49(10):772-7.

McElhiney J, Kelly S, Rosen R, Bachmann G. Satyriasis: the antiquity term for vulvodynia? *J Sex Med*. 2006 Jan;3(1):161-3.

McKay M. Burning vulva syndrome: report of the ISSVD task force. *J Reprod Med*. 1984;29: 457.

Skene AJC. Diseases of the external organs of generation. In: Skene AJC, ed. *Treatise of the Diseases of Women*. New York: D. Appleton and Company; 1888:77-99.

Thomas TG. *Practical Treatise on the Diseases of Women*. Philadelphia: Henry C. Lea's Son & Company; 1880.

Section 2: Magnitude of the Problem

Arnold LD, Bachmann GA, Rosen R, Rhoads GG. Assessment of vulvodynia symptoms in a sample of US women: a prevalence survey with a nested case control study. *Am J Obstet Gynecol* 2007;196:128.e1-6.

Donaldson RL, Meana M. Early dyspareunia experience in young women: confusion, consequences, and help-seeking barriers. *J Sex Med* 2011;8:814-23.

Harlow BL, Kunitz CG, Nguyen RH, Rydell SA, Turner RM, MacLehose RF. Prevalence of symptoms consistent with a diagnosis of vulvodynia: population-based estimates from 2 geographic regions. *Am J Obstet Gynecol* 2014;210:40.e1-8.

Harlow BL, Stewart EG. A population-based assessment of chronic unexplained vulvar pain: have we underestimated the prevalence of vulvodynia? *J Am Med Womens Assoc* 2003;58:82-8.

Johnson NS, Harwood EM, Nguyen RH. "You have to go through it and have your children": reproductive experiences among women with vulvodynia. *BMC Pregnancy Childbirth* 2015:114.

Landry T, Bergeron S. How young does vulvo-vaginal pain begin? Prevalence and characteristics of dyspareunia in adolescents. *J Sex Med* 2009;6:927-35.

Nguyen RH, Ecklund AM, MacLehose RF, Veasley C, Harlow BL. Co-morbid pain conditions and feelings of invalidation and isolation among women with vulvodynia. *Psychol Health Med* 2012;17:589-98.

Nguyen RH, MacLehose RF, Veasley C, Turner RM, Harlow BL, Horvath KJ. Comfort in discussing vulvar pain in social relationships among women with vulvodynia. *J Reprod Med* 2012;57:109-14.

Nguyen RH, Mathur C, Wynings EM, Williams DA, Harlow BL. Remission of vulvar pain among women with primary vulvodynia. *J Low Genit Tract Dis* 2015;19:62-7.

Piper CK, Legocki LJ, Moravek MB, Lavin K, Haefner HK, Wade K, Reed BD. Experience of symptoms, sexual function, and attitudes toward counseling of women newly diagnosed with vulvodynia. *J Low Genit Tract Dis* 2012;16:447-53.

Reed BD, Cantor LE. Vulvodynia in preadolescent girls. *J Low Genit Tract Dis* 2008;12:257-61.

Reed BD, Crawford S, Couper M, Cave C, Haefner HK. Pain at the vulvar vestibule: a web-based survey. *J Low Genit Tract Dis* 2004;8:48-57.

Reed BD, Haefner HK, Harlow SD, Gorenflo DW, Sen A. Reliability and validity of self-reported symptoms for predicting vulvodynia. *Obstet Gynecol* 2006;108:906-13.

Reed BD, Haefner HK, Sen A, Gorenflo DW. Vulvodynia incidence and remission rates among adult women: a 2-year follow-up study. *Obstet Gynecol* 2008;112(2 Pt 1):231-7.

Reed BD, Harlow SD, Sen A, Legocki LJ, Edwards RM, Arato N, Haefner HK. Prevalence and demographic characteristics of vulvodynia in a population-based sample. *Am J Obstet Gynecol* 2012;206:170.e1-9.

Reed BD, Legocki LJ, Plegue MA, Sen A, Haefner HK, Harlow SD. Factors associated with vulvodynia incidence. *Obstet Gynecol* 2014;123:225-31.

Xie Y, Shi L, Xiong X, Wu E, Veasley C, Dade C. Economic burden and quality of life of vulvodynia in the United States. *Curr Med Res Opin* 2012;28:601-8.

Section 3: Anatomy and Neurobiology of the Urogenital Tract

Barber MD, Bremer RE, Thor KB, Dolber PC, Kuehl TJ, Coates KW. Innervation of the female levator ani muscles. *Am J Obstet Gynecol* 2002;187:64-71.

Farage M, Miller KW, Zolnoun D, Ledger WJ. Assessing sensory perception on the vulva and on extragenital sites. *The Open Women's Health Journal* 2012;6:6-18.

Farage MA, Maibach HI. *The vulva: anatomy, physiology and pathology*. New York: Informa Healthcare USA, Inc. 2006.

Grigorescu BA, Lazarou G, Olson TR. Innervation of the levator ani muscles: description of the nerve branches to the pubococcygeus, iliococcygeus and puborectalis muscles. *Int Urogynecol J* 2008;19:107-16.

Herschorn S. Female pelvic floor anatomy: the pelvic floor, supporting structures, and pelvic organs. *Rev Urol* 2004;6(5):S2-S10.

Krantz KE. The anatomy and physiology of the vulva and vagina and the anatomy of the urethra and bladder, In: Phillip EE, Barnes J, Newton M, ed. *Scientific Foundations of Obstetrics and Gynaecology*. Chicago: Yearbook Publishers. 1977. pp. 65-78.

Peng PWH, Antolak Jr SJ, Gordon AS. Pudendal neuralgia. In: Goldstein AT, Pukall CF, Goldstein I, ed. *Female sexual pain disorders*. Chichester: Blackwell Publishing Limited. 2009. pp. 112-8.

Wesselmann U, Burnett AL, Heinberg LJ. The urogenital and rectal pain syndromes. *Pain* 1997;73:269-94.

Woodruff JD, Friedrich EG Jr. The vestibule. *Clin Obstet Gynecol* 1985;28:134-41.

Section 4: Terminology and Classification

Bornstein J, Goldstein AT, Stockdale CK, Bergeron S, Pukall C, Zolnoun D, Coady D; consensus vulvar pain terminology committee of the International Society for the Study of Vulvovaginal Disease (ISSVD), the International Society for the Study of Women's Sexual Health (ISSWSH), and the International Pelvic Pain Society (IPPS). 2015 ISSVD, ISSWSH, and IPPS Consensus Terminology and Classification of Persistent Vulvar Pain and Vulvodynia. *J Low Genit Tract Dis* 2016;20:126-30.

Section 5: Pathophysiology

Bornstein J, Goldshmid N, Sabo E. Hyperinnervation and mast cell activation may be used as histopathologic diagnostic criteria for vulvar vestibulitis. *Obstet Gynecol Invest* 2004;58:171-8.

Bornstein J, Goldstein AT, Stockdale CK, Bergeron S, Pukall C, Zolnoun D, Coady D; consensus vulvar pain terminology committee of the International Society for the Study of Vulvovaginal Disease (ISSVD), the International Society for the Study of Women's Sexual Health (ISSWSH), and the International Pelvic Pain Society (IPPS). 2015 ISSVD, ISSWSH, and IPPS Consensus Terminology and Classification of Persistent Vulvar Pain and Vulvodynia. *J Low Genit Tract Dis* 2016;20:126-30.

Bornstein J, Zarfati D, Goldshmid N, Stolar Z, Lahat N, Abramovici H. Vestibulodynia - a subset of vulvar vestibulitis or a novel syndrome. *Am J Obstet Gynecol* 1997;177:1439-43.

Bornstein J, Zarfati D, Sela S, Cohen Y, Ophir E. Involvement of heparanase in the pathogenesis of localized vulvodynia. *Int J Gynecol Pathol* 2008;27:136-41.

Vulvodynia Pathophysiology

1. Giesecke J, Reed BD, Haefner HK, Giesecke T, Clauw DJ, Gracely RH. Quantitative sensory testing in vulvodynia patients and increased peripheral pressure pain sensitivity. *Obstet Gynecol*. 2004 Jul;104(1):126-33.
2. Bohm-Starke N, Hilliges M, Falconer C, Rylander E. Increased intraepithelial innervation in women with vulvar vestibulitis syndrome. *Gynecol Obstet Invest*. 1998;46(4):256-60.
3. Tympanidis P, Terenghi G, Dowd P. Increased innervation of the vulval vestibule in patients with vulvodynia. *Br J Dermatol*. 2003 May;148(5):1021-7.

4. Weström LV, Willén R. Vestibular nerve fiber proliferation in vulvar vestibulitis syndrome. *Obstet Gynecol.* 1998 Apr;91(4):572-6.
5. Bornstein J, Goldschmid N, Sabo E. Hyperinnervation and mast cell activation may be used as histopathologic diagnostic criteria for vulvar vestibulitis. *Gynecol Obstet Invest.* 2004;58(3):171-8.
6. Halperin R, Zehavi S, Vaknin Z, Ben-Ami I, Pansky M, Schneider D. The major histopathologic characteristics in the vulvar vestibulitis syndrome. *Gynecol Obstet Invest.* 2005;59(2):75-9.
7. Bornstein J, Cohen Y, Zarfati D, Sela S, Ophir E. Involvement of heparanase in the pathogenesis of localized vulvodynia. *Int J Gynecol Pathol.* 2008 Jan;27(1):136-41.
8. Foster DC, Hasday JD. Elevated tissue levels of interleukin-1 beta and tumor necrosis factor-alpha in vulvar vestibulitis. *Obstet Gynecol.* 1997 Feb;89(2):291-6.
9. Foster DC, Piekarczyk KH, Murant TI, LaPoint R, Haidaris CG, Phipps RP. Enhanced synthesis of proinflammatory cytokines by vulvar vestibular fibroblasts: implications for vulvar vestibulitis. *Am J Obstet Gynecol.* 2007 Apr;196(4):346.e1-8.
10. Perrigouard C, Dreval A, Cribier B, Lipsker D. Vulvar vestibulitis syndrome: a clinicopathological study of 14 cases. *Ann Dermatol Venereol.* 2008 May;135(5):367-72.
11. Slone S, Reynolds L, Gall S, Peiper S, Martin A, Ackermann D, O'Connor D. Localization of chromogranin, synaptophysin, serotonin, and CXCR2 in neuroendocrine cells of the minor vestibular glands: an immunohistochemical study. *Int J Gynecol Pathol.* 1999 Oct;18(4):360-5.
12. Farage MA, Singh M, Ledger WJ. Investigation of the sensitivity of a cross-polarized light visualization system to detect subclinical erythema and dryness in women with vulvovaginitis. *Am J Obstet Gynecol.* 2009 Jul;201(1):20.e1-6.
13. Gerber S, Bongiovanni AM, Ledger WJ, Witkin SS. A deficiency in interferon-alpha production in women with vulvar vestibulitis. *Am J Obstet Gynecol.* 2002 Mar;186(3):361-4.
14. Gerber S, Bongiovanni AM, Ledger WJ, Witkin SS. Defective regulation of the proinflammatory immune response in women with vulvar vestibulitis syndrome. *Am J Obstet Gynecol.* 2002 Apr;186(4):696-700.
15. Lev-Sagie A, Prus D, Linhares IM, Lavy Y, Ledger WJ, Witkin SS. Polymorphism in a gene coding for the inflammasome component NALP3 and recurrent vulvovaginal candidiasis in women with vulvar vestibulitis syndrome. *Am J Obstet Gynecol.* 2009 Mar;200(3):303.e1-6.
16. Eva LJ, Rolfe KJ, MacLean AB, Reid WM, Fong AC, Crow J, Perrett CW. Is localized, provoked vulvodynia an inflammatory condition? *J Reprod Med.* 2007 May;52(5):379-84.
17. Bohm-Starke N, Falconer C, Rylander E, Hilliges M. The expression of cyclooxygenase 2 and inducible nitric oxide synthase indicates no active inflammation in vulvar vestibulitis. *Acta Obstet Gynecol Scand.* 2001 Jul;80(7):638-44.
18. Bohm-Starke N, Hilliges M, Blomgren B, Falconer C, Rylander E. Increased blood flow and erythema in the posterior vestibular mucosa in vulvar vestibulitis. *Obstet Gynecol.* 2001 Dec;98(6):1067-74.

19. Tympanidis P, Casula MA, Yiangou Y, Terenghi G, Dowd P, Anand P. Increased vanilloid receptor VR1 innervation in vulvodynia. *Eur J Pain*. 2004 Apr;8(2):129-33.
20. Johannesson U, Sahlin L, Masironi B, Hilliges M, Blomgren B, Rylander E, Bohm-Starke N. Steroid receptor expression and morphology in provoked vestibulodynia. *Am J Obstet Gynecol*. 2008 Mar;198(3):311.e1-6.
21. Goetsch MF, Morgan TK, Korcheva VB, Li H, Peters D, Leclair CM. Histologic and receptor analysis of primary and secondary vestibulodynia and controls: a prospective study. *Am J Obstet Gynecol*. 2010 Jun;202(6):614.e1-8.
22. Leclair CM, Goetsch MF, Korcheva VB, Anderson R, Peters D, Morgan TK. Differences in primary compared with secondary vestibulodynia by immunohistochemistry. *Obstet Gynecol*. 2011 Jun;117(6):1307-13.
23. Eva LJ, MacLean AB, Reid WM, Rolfe KJ, Perrett CW. Estrogen receptor expression in vulvar vestibulitis syndrome. *Am J Obstet Gynecol*. 2003 Aug;189(2):458-61.
24. Babula O, Bongiovanni AM, Ledger WJ, Witkin SS. Immunoglobulin E antibodies to seminal fluid in women with vulvar vestibulitis syndrome: relation to onset and timing of symptoms. *Am J Obstet Gynecol*. 2004 Mar;190(3):663-7.
25. Weidinger S, Ring J, Köhn FM. IgE-mediated allergy against human seminal plasma. *Chem Immunol Allergy*. 2005;88:128-38.
26. Reissing ED, Brown C, Lord MJ, Binik YM, Khalifé S. Pelvic floor muscle functioning in women with vulvar vestibulitis syndrome. *J Psychosom Obstet Gynaecol*. 2005 Jun;26(2):107-13.
27. Jeremias J, Ledger WJ, Witkin SS. Interleukin 1 receptor antagonist gene polymorphism in women with vulvar vestibulitis. *Am J Obstet Gynecol*. 2000 Feb;182(2):283-5.
28. Gerber S, Bongiovanni AM, Ledger WJ, Witkin SS. Interleukin-1beta gene polymorphism in women with vulvar vestibulitis syndrome. *Eur J Obstet Gynecol Reprod Biol*. 2003 Mar 26;107(1):74-7.
29. Babula O, Linhares IM, Bongiovanni AM, Ledger WJ, Witkin SS. Association between primary vulvar vestibulitis syndrome, defective induction of tumor necrosis factor-alpha, and carriage of the mannose-binding lectin codon 54 gene polymorphism. *Am J Obstet Gynecol*. 2008 Jan;198(1):101.e1-4.
30. Foster DC, Sazenski TM, Stodgell CJ. Impact of genetic variation in interleukin-1 receptor antagonist and melanocortin-1 receptor genes on vulvar vestibulitis syndrome. *J Reprod Med*. 2004 Jul;49(7):503-9.
31. Lev-Sagie A, Linhares IM, Ledger WJ, Witkin SS. A manganese superoxide dismutase gene polymorphism and development of vulvar vestibulitis syndrome following physical vaginal trauma. *Int J Gynecol Obstet*. 2010 22N. 2:59-64.
32. Pukall CF, Baron M, Amsel R, Khalifé S, Binik YM. Tender point examination in women with vulvar vestibulitis syndrome. *Clin J Pain*. 2006 Sep;22(7):601-9.
33. Pukall CF, Strigo IA, Binik YM, Amsel R, Khalifé S, Bushnell MC. Neural correlates of painful genital touch in women with vulvar vestibulitis syndrome. *Pain*. 2005 May;115(1-2):118-27.
34. Foster DC, Dworkin RH, Wood RW. Effects of intradermal foot and forearm capsaicin injections in normal and vulvodynia-afflicted women. *Pain*. 2005 Sep;117(1-2):128-36.

35. Johannesson U, de Boussard CN, Brodda Jansen G, Bohm-Starke N. Evidence of diffuse noxious inhibitory controls (DNIC) elicited by cold noxious stimulation in patients with provoked vestibulodynia. *Pain*. 2007 Jul;130(1-2):31-9.
36. Schweinhardt P, Kuchinad A, Pukall CF, Bushnell MC. Increased gray matter density in young women with chronic vulvar pain. *Pain*. 2008 Dec;140(3):411-9.
37. Jantos M, Burns NR. Vulvodynia. Development of a psychosexual profile. *J Reprod Med*. 2007 Jan;52(1):63-71.
38. Witkin SS, Gerber S, Ledger WJ. Differential characterization of women with vulvar vestibulitis syndrome. *Am J Obstet Gynecol*. 2002 Sep;187(3):589-94.
39. Bornstein J, Maman M, Abramovici H. "Primary" versus "secondary" vulvar vestibulitis: one disease, two variants. *Am J Obstet Gynecol*. 2001 Jan;184(2):28-31.
40. Goetsch MF. Vulvar vestibulitis: prevalence and historic features in a general gynecologic practice population. *Am J Obstet Gynecol*. 1991 Jun;164(6 Pt 1):1609-14.
41. Greenstein A, Sarig J, Chen J, Matzkin H, Lessing JB, Abramov L. Childhood nocturnal enuresis in vulvar vestibulitis syndrome. *J Reprod Med*. 2005 Jan;50(1):49-52.
42. Granot M, Friedman M, Yarnitsky D, Tamir A, Zimmer EZ. Primary and secondary vulvar vestibulitis syndrome: systemic pain perception and psychophysical characteristics. *Am J Obstet Gynecol*. 2004 Jul;191(1):138-42.
43. Sutton KS, Pukall CF, Chamberlain S. Pain, psychosocial, sexual, and psychophysical characteristics of women with primary vs. secondary provoked vestibulodynia. *J Sex Med*. 2009 Jan;6(1):205-14.
44. Burrows LJ, Klingman D, Pukall CF, Goldstein AT. Umbilical hypersensitivity in women with primary vestibulodynia. *J Reprod Med*. 2008 Jun;53(6):413-6.
45. Zolnoun D, Park EM, Moore CG, Liebert CA, Tu FF, As-Sanie S. Somatization and psychological distress among women with vulvar vestibulitis syndrome. *Int J Gynaecol Obstet*. 2008 Oct;103(1):38-43.
46. Bornstein J, Goldik Z, Stolar Z, Zarfati D, Abramovici H. Predicting the outcome of surgical treatment of vulvar vestibulitis. *Obstet Gynecol*. 1997 May;89(5 Pt 1):695-8.
47. Bohm-Starke N, Rylander E. Surgery for localized, provoked vestibulodynia: a long-term follow-up study. *J Reprod Med*. 2008 Feb;53(2):83-9.
48. Harris D, Coady D, Robinson-Papp J. Autonomic testing for small fiber neuropathies in vulvodynia patients. Abstract presented at ISSVD XXI World Congress. *J Low Genit Tract Dis* 2011 Oct;15(5).
49. Murina F, Bianco V, Radici G, Felice R, Signaroldi M. Electrodiagnostic functional sensory evaluation of patients with generalized vulvodynia: a pilot study. *J Low Genit Tract Dis*. 2010 Jul;14(3):221-4.
50. Zhang Z, Zolnoun DA, Francisco EM, Holden JK, Dennis RG, Tommerdahl M. Altered central sensitization in subgroups of women with vulvodynia. *Clin J Pain*. 2011 Nov;27(9):755-63.

Section 6: Differential Diagnosis

Risk Factors

Arnold LD, Bachmann GA, Rosen R, Kelly S, Rhoads GG. Vulvodynia: characteristics and associations with comorbidities and quality of life. *Obstet Gynecol* 2006;107:617-24.

Babula O, Danielsson I, Sjoberg I, Ledger WJ, Witkin SS. Altered distribution of mannose-binding lectin alleles at exon I codon 54 in women with vulvar vestibulitis syndrome. *Am J Obstet Gynecol* 2004;191:762-6.

Babula O, Linhares IM, Bongiovanni AM, Ledger WJ, Witkin SS. Association between primary vulvar vestibulitis syndrome, defective induction of tumor necrosis factor-alpha, and carriage of the mannose-binding lectin codon 54 gene polymorphism. *Am J Obstet Gynecol* 2008;198:101.e1-4.

Battaglia C, Battaglia B, Mancini F, Busacchi P, Paganotto MC, Morotti E, Venturoli S. Sexual behavior and oral contraceptives: a pilot study. *J Sex Med* 2012;9:550-7.

Bazin S, Bouchard C, Brisson J, Morin C, Meisels A, Fortier M. Vulvar vestibulitis syndrome: an exploratory case-control study. *Obstet Gynecol* 1994;83:47-50.

Berglund AL, Nigaard L, Rylander E. Vulvar pain, sexual behavior and genital infections in a young population: a pilot study. *Acta Obstet Gynecol Scand* 2002;81:738-42.

Bohm-Starke N. Medical and physical predictors of localized provoked vulvodynia. *Acta Obstet Gynecol Scand* 2010;89:1504-10.

Bohm-Starke N, Johannesson U, Hilliges M, Rylander E, Torebjörk E. Decreased mechanical pain threshold in the vestibular mucosa of women using oral contraceptives: a contributing factor in vulvar vestibulitis? *J Reprod Med* 2004;49:888-92.

Bornstein J, Cohen Y, Zarfati D, Sela S, Ophir E. Involvement of heparanase in the pathogenesis of localized vulvodynia. *Int J Gynecol Pathol* 2008;27:136-41.

Bornstein J, Goldschmid N, Sabo E. Hyperinnervation and mast cell activation may be used as histopathologic diagnostic criteria for vulvar vestibulitis. *Gynecol Obstet Invest* 2004;58:171-8.

Bouchard C, Brisson J, Fortier M, Morin C, Blanchette C. Use of oral contraceptive pills and vulvar vestibulitis: a case-control study. *Am J Epidemiol* 2002;156:254-61.

Breshears LM, Peterson ML, Harlow BL. Gene expression analysis reveals altered immunoinflammatory response in patients with Provoked Vestibulodynia. Abstract presented at ISSVD XXI World Congress. *J Low Genit Tract Dis* 2011;15.

Coombs A, Edwards L. Erosive Vulvovaginal Lichen Planus and Vulvodynia: an association? Abstract presented at the ISSVD XXI World Congress. *J Low Genit Tract Dis* 2011;15.

Dalton VK, Haefner HK, Reed BD, Senapati S, Cook A. Victimization in patients with vulvar dysesthesia/vestibulodynia. Is there an increased prevalence? *J Reprod Med* 2002;47:829-34.

Driul L, Bertozzi S, Londero AP, Fruscalzo A, Rusalen A, Marchesoni D, Di Benedetto P. Risk factors for chronic pelvic pain in a cohort of primipara and secundipara at one year after delivery: association of chronic pelvic pain with autoimmune pathologies. *Minerva Ginecol* 2011;63:181-7.

Edgardh K, Abdelnoor M. Vulvar vestibulitis and risk factors: a population-based case-control study in Oslo. *Acta Derm Venereol* 2007;87:350-4.

Edwards L, Mason M, Phillips M, Norton J, Boyle M. Childhood sexual and physical abuse. Incidence in patients with vulvodynia. *J Reprod Med* 1997;42:135-9.

Falik-Zaccai TC, Kalfon L, Azran A, Farajun Y, Tubin E, Hemo O, et al. A novel genetic association for primary severe Localized Provoked Vestibulodynia. Abstract presented at ISSVD XXI World Congress. *J Low Genit Tract Dis* 2011;15.

Farmer MA, Taylor AM, Bailey AL, Tuttle AH, MacIntyre LC, Milagrosa ZE, et al. Repeated vulvovaginal fungal infections cause persistent pain in a mouse model of vulvodynia. *Sci Transl Med* 2011;3:101ra91.

Ferris DG, Dekle C, Litaker MS. Women's use of over-the-counter antifungal medications for gynecologic symptoms. *J Fam Pract* 1996;42:595-600.

Ferris DG, Nyirjesy P, Sobel JD, Soper D, Pavletic A, Litaker MS. Over-the-counter antifungal drug misuse associated with patient-diagnosed vulvovaginal candidiasis. *Obstet Gynecol* 2002;99:419-25.

Foster DC, Piekarz KH, Murant TI, LaPoint R, Haidaris CG, Phipps RP. Enhanced synthesis of proinflammatory cytokines by vulvar vestibular fibroblasts: implications for vulvar vestibulitis. *Am J Obstet Gynecol* 2007;196:346.e1-8.

Foster DC, Hasday JD. Elevated tissue levels of interleukin-1 beta and tumor necrosis factor-alpha in vulvar vestibulitis. *Obstet Gynecol* 1997;89:291-6.

Foster DC, Sazenski TM, Stodgell CJ. Impact of genetic variation in interleukin-1 receptor antagonist and melanocortin-1 receptor genes on vulvar vestibulitis syndrome. *J Reprod Med* 2004;49:503-9.

Gerber S, Bongiovanni AM, Ledger WJ, Witkin SS. Interleukin-1beta gene polymorphism in women with vulvar vestibulitis syndrome. *Eur J Obstet Gynecol Reprod Biol* 2003;107:74-7.

Gerber S, Bongiovanni AM, Ledger WJ, Witkin SS. Defective regulation of the proinflammatory immune response in women with vulvar vestibulitis syndrome. *Am J Obstet Gynecol* 2002;186:696-700.

Granot M, Friedman M, Yarnitsky D, Tamir A, Zimmer EZ. Primary and secondary vulvar vestibulitis syndrome: systemic pain perception and psychophysical characteristics. *Am J Obstet Gynecol* 2004;191:138-42.

Greenstein A, Ben-Aroya Z, Fass O, Militscher I, Roslik Y, Chen J, et al. Vulvar vestibulitis syndrome and estrogen dose of oral contraceptive pills. *J Sex Med* 2007;4:1679-83.

Greenstein A, Sarig J, Chen J, Matzkin H, Lessing JB, Abramov L. Childhood nocturnal enuresis in vulvar vestibulitis syndrome. *J Reprod Med* 2005;50:49-52.

Harlow BL, He W, Nguyen RH. Allergic reactions and risk of vulvodynia. *Ann Epidemiol* 2009;19:771-7.

Harlow BL, Stewart EG. Adult-onset vulvodynia in relation to childhood violence victimization. *Am J Epidemiol* 2005;161:871-80.

Harlow BL, Stewart EG. A population-based assessment of chronic unexplained vulvar pain: have we underestimated the prevalence of vulvodynia? *J Am Med Womens Assoc* 2003;58:82-8.

Harlow BL, Vitonis AF, Stewart EG. Influence of oral contraceptive use on the risk of adult-onset vulvodynia. *J Reprod Med* 2008;53:102-10.

Harlow BL, Wise LA, Stewart EG. Prevalence and predictors of chronic lower genital tract discomfort. *Am J Obstet Gynecol* 2001;185:545-50.

Hedding U, Bohm-Starke N, Grönbladh A, Nyberg F, Nilsson KW, Johannesson U. GCH1-polymorphism and pain sensitivity among women with provoked vestibulodynia. *Mol Pain* 2012;8:68.

Jeremias J, Ledger WJ, Witkin SS. Interleukin 1 receptor antagonist gene polymorphism in women with vulvar vestibulitis. *Am J Obstet Gynecol* 2000;182:283-5.

Khandker M, Brady SS, Vitonis AF, Maclehose RF, Stewart EG, Harlow BL. The influence of depression and anxiety on risk of adult onset vulvodynia. *J Womens Health* 2011;20:1445-51.

Landry T, Bergeron S. How young does vulvo-vaginal pain begin? Prevalence and characteristics of dyspareunia in adolescents. *J Sex Med* 2009;6:927-35.

Ledger WJ, Monif GR. A growing concern: inability to diagnose vulvovaginal infections correctly. *Obstet Gynecol* 2004;103:782-4.

Legocki L, Edwards RM, Harlow SD, Sen A, Haefner HK, Reed BD. Childhood urogenital hypersensitivity among adult women with and without vulvodynia. Abstract presented at ISSVD XXI World Congress. *J Low Genit Tract Dis* 2011;15.

Lev-Sagie A, Prus D, Linhares IM, Lavy Y, Ledger WJ, Witkin SS. Polymorphism in a gene coding for the inflammasome component NALP3 and recurrent vulvovaginal candidiasis in women with vulvar vestibulitis syndrome. *Am J Obstet Gynecol* 2009;200:303.e1-6.

Nguyen RH, Swanson D, Harlow BL. Urogenital infections in relation to the occurrence of vulvodynia. *J Reprod Med* 2009;54:385-92.

Plante AF, Kamm MA. Life events in patients with vulvodynia. *BJOG* 2008;115:509-14.

Ramirez De Knott HM, McCormick TS, Do SO, Goodman W, Ghannoum MA, Cooper KD, et al. Cutaneous hypersensitivity to *Candida albicans* in idiopathic vulvodynia. *Contact Dermatitis* 2005;53:214-8.

Reed BD, Haefner HK, Punch MR, Roth RS, Gorenflo DW, Gillespie BW. Psychosocial and sexual functioning in women with vulvodynia and chronic pelvic pain. A comparative evaluation. *J Reprod Med* 2000;45:624-32.

Reed BD, Payne CM, Harlow SD, Legocki LJ, Haefner HK, Sen A. Urogenital symptoms and pain history as precursors of vulvodynia: a longitudinal study. *J Womens Health* 2012;21:1139-43.

Schwartz A, Taras D, Rusch K, Rusch V. Throwing the dice for the diagnosis of vaginal complaints? *Ann Clin Microbiol Antimicrob* 2006;5:4.

Sjöberg I, Nylander Lundqvist EN. Vulvar vestibulitis in the north of Sweden. An epidemiologic case-control study. *J Reprod Med* 1997;42:166-8.

Rule-Out Diagnoses

Abed H, Rahn DD, Lowenstein L, Balk EM, Clemons JL, Rogers RG, et al. Incidence and management of graft erosion, wound granulation, and dyspareunia following vaginal prolapse repair with graft materials: a systematic review. *Int Urogynecol J* 2011;22:789-98.

Alkatout I, Schubert M, Garbrecht N, Weigel MT, Jonat W, Mundhenke C, et al. Vulvar cancer: epidemiology, clinical presentation, and management options. *Int J Womens Health* 2015;7:305-13.

Baumgart J, Nilsson K, Evers AS, Kallak TK, Poromaa IS. Sexual dysfunction in women on adjuvant endocrine therapy after breast cancer. *Menopause* 2013;20:162-8.

Bekker MD, Hogewoning CR, Wallner C, Elzevier HW, DeRuiter MC. The somatic and autonomic innervations of the clitoris: preliminary evidence of sexual dysfunction after minimally invasive slings. *J Sex Med* 2012;9:1566-78.

Bornstein J, Goldstein AT, Stockdale CK, Bergeron S, Pukall C, Zolnoun D, Coady D; consensus vulvar pain terminology committee of the International Society for the Study of Vulvovaginal Disease (ISSVD), the International Society for the Study of Women's Sexual Health (ISSWSH), and the International Pelvic Pain Society (IPPS). 2015 ISSVD, ISSWSH, and IPPS Consensus Terminology and Classification of Persistent Vulvar Pain and Vulvodynia. *J Low Genit Tract Dis* 2016;20:126–30.

Burrows LJ, Shaw HA, Goldstein AT. The vulvar dermatoses. *J Sex Med* 2008;5:276-83.

Chi CC, Kirtschig G, Baldo M, Lewis F, Wang SH, Wojnarowska F. Systematic review and meta-analysis of randomized controlled trials on topical interventions for genital lichen sclerosus. *J Am Acad Dermatol* 2012;67:305-12.

Finch A, Metcalfe KA, Chiang JK, Elit L, McLaughlin J, Springate C, et al. The impact of prophylactic salpingo-oophorectomy on menopausal symptoms and sexual function in women who carry a BRCA mutation. *Gynecol Oncol* 2011;121:163-8.

Haefner HK. Report of the International Society for the Study of Vulvovaginal Disease terminology and classification of vulvodynia. *J Low Genit Tract Dis* 2007;11:48-9.

Hiers RH, Long D, North RB, Oaklander AL. Hiding in plain sight: a case of Tarlov perineural cysts. *J Pain* 2010;11:833-7.

Insola A, Granata G, Padua L. Alcock canal syndrome due to obturator internus muscle fibrosis. *Muscle Nerve* 2010;42:431-2.

Kimberlin DW, Rouse DJ. Clinical practice. Genital herpes. *N Engl J Med* 2004;350:1970-7.

Labat JJ, Delavierre D, Sibert L, Rigaud J. Symptomatic approach to chronic pudendal pain. *Prog Urol* 2010;20:922-9.

Ledger WJ, Witkin SS. *Vulvovaginal Infections*. London: Manson Publishing. 2007.

Lewis FM, Bogliatto F. Erosive vulval lichen planus--a diagnosis not to be missed: a clinical review. *Eur J Obstet Gynecol Reprod Biol* 2013;171:214-9.

Loprinzi CL, Wolf SL, Barton DL, Laack NN. Symptom management in premenopausal patients with breast cancer. *Lancet Oncol* 2008;9:993-1001.

Margesson LJ. Contact dermatitis of the vulva. *Dermatol Ther* 2004;17:20-7.

Masata J, Hubka P, Martan A. Pudendal neuralgia following transobturator inside-out tape procedure (TVT-O) – case report and anatomical study. *Int Urogynecol J* 2012;23:505-7.

Moyal-Barracco M, Wendling J. Vulvar dermatosis. *Best Pract Res Clin Obstet Gynaecol* 2014;28:946-58.

Nyirjesy P. Vulvovaginal candidiasis and bacterial vaginosis. *Infect Dis Clin North Am* 2008;22:637-52.

Oaklander AL, Rissmiller JG. Postherpetic neuralgia after shingles: an under-recognized cause of chronic vulvar pain. *Obstet Gynecol* 2002;99:625-8.

Paulson JD, Baker J. De novo pudendal neuropathy after TOT-O surgery for stress urinary incontinence. *JSL* 2011;15:326-30.

Parnell BA, Johnson EA, Zolnoun DA. Genitofemoral and perineal neuralgia after transobturator midurethral sling. *Obstet Gynecol* 2012;119:428-31.

Peng PWH, Antolak Jr SJ, Gordon AS. Pudendal Neuralgia. In: Goldstein AT, Pukall CF, Goldstein I, ed. *Female Sexual Pain Disorders*. Chichester: Blackwell Publishing Limited. 2009. pp. 112-8.

Schwebke JR, Burgess D. Trichomoniasis. *Clin Microbiol Rev* 2004;17:794-803.

Soper D. Trichomoniasis: under control or undercontrolled? *Am J Obstet Gynecol* 2004;190:281-90.

Stavraka C, Ford A, Ghaem-Maghami S, Crook T, Agarwal R, Gabra H, Blagden S. A study of symptoms described by ovarian cancer survivors. *Gynecol Oncol* 2012;125:59-64.

Kollberg KS, Waldenström AC, Bergmark K, Dunberger G, Rossander A, Wilderäng U, et al. Reduced vaginal elasticity, reduced lubrication, and deep and superficial dyspareunia in irradiated gynecological cancer survivors. *Acta Oncol* 2015;54:772-9.

Tan IL, Polydefkis MJ, Ebenezer GJ, Hauer P, McArthur JC. Peripheral nerve toxic effects of nitrofurantoin. *Arch Neurol* 2012;69:265-8.

Turmo M, Echevarria M, Rubio P, Almeida C. Development of chronic pain after episiotomy. *Rev Esp Anesthesiol Reanim* 2015;62:436-42.

United Nations Children's Fund, Female Genital Mutilation/Cutting: What might the future hold? UNICEF: New York, 2014.

Van de Kelft E, Van Vyve M. Chronic perineal pain related to sacral meningeal cysts. *Neurosurgery* 1991;29:223-6.

Vulvodynia Assessment

Bergeron S, Binik YM, Khalifé S, Pagidas K, Glazer HI. Vulvar vestibulitis syndrome: reliability of diagnosis and evaluation of current diagnostic criteria. *Obstet Gynecol* 2001;98:45-51.

Bornstein J, Goldstein AT, Stockdale CK, Bergeron S, Pukall C, Zolnoun D, Coady D; consensus vulvar pain terminology committee of the International Society for the Study of Vulvovaginal Disease (ISSVD), the International Society for the Study of Women's Sexual Health (ISSWSH), and the International Pelvic Pain Society (IPPS). 2015 ISSVD, ISSWSH, and IPPS Consensus Terminology and Classification of Persistent Vulvar Pain and Vulvodynia. *J Low Genit Tract Dis* 2016;20:126–30.

Burrows LJ, Klingman D, Pukall CF, Goldstein AT. Umbilical hypersensitivity in women with primary vestibulodynia. *J Reprod Med* 2008;53:413-6.

Desrochers G, Bergeron S, Landry T, Jodoin M. Do psychosexual factors play a role in the etiology of provoked vestibulodynia? A critical review. *J Sex Marital Ther* 2008;34:198-226.

Edwards L. Subsets of vulvodynia: overlapping characteristics. *J Reprod Med* 2004;49:883-7.

Farage MA, Singh M, Ledger WJ. Investigation of the sensitivity of a cross-polarized light visualization system to detect subclinical erythema and dryness in women with vulvovaginitis. *Am J Obstet Gynecol* 2009;201:20.e1-6.

Haefner HK. Report of the International Society for the Study of Vulvovaginal Disease terminology and classification of vulvodynia. *J Low Genit Tract Dis* 2007;11:48-9.

Haefner HK, Collins ME, Davis GD, Edwards L, Foster DC, Hartmann ED, Kaufman RH, Lynch PJ, Margesson LJ, Moyal-Barracco M, Piper CK, Reed BD, Stewart EG, Wilkinson EJ. The vulvodynia guideline. *J Low Genit Tract Dis* 2005;9:40-51.

Harlow BL, Stewart EG. A population-based assessment of chronic unexplained vulvar pain: have we underestimated the prevalence of vulvodynia? *J Am Med Womens Assoc* 2003;58:82-8.

Harlow BL, Vazquez G, MacLehose RF, Erickson DJ, Oakes JM, Duval SJ. Self-reported vulvar pain characteristics and their association with clinically confirmed vestibulodynia. *J Womens Health* 2009;18:1333-40.

Kennedy CM, Nygaard IE, Bradley CS, Galask RP. Bladder and bowel symptoms among women with vulvar disease: are they universal? *J Reprod Med* 2007;52:1073-8.

McCormack WM. Two urogenital sinus syndromes. Interstitial cystitis and focal vulvitis. *J Reprod Med* 1990;35:873-6.

Peters K, Girdler B, Carrico D, Ibrahim I, Diokno A. Painful bladder syndrome/interstitial cystitis and vulvodynia: a clinical correlation. *Int Urogynecol J Pelvic Floor Dysfunct* 2008;19:665-9.

Pukall CF, Baron M, Amsel R, Khalifé S, Binik YM. Tender point examination in women with vulvar vestibulitis syndrome. *Clin J Pain* 2006;22:601-9.

Pukall CF, Strigo IA, Binik YM, Amsel R, Khalifé S, Bushnell MC. Neural correlates of painful genital touch in women with vulvar vestibulitis syndrome. *Pain* 2005;115:118-27.

Reed BD, Gorenflo DW, Haefner HK. Generalized vulvar dysesthesia vs. vestibulodynia. Are they distinct diagnoses? *J Reprod Med* 2003;48:858-64.

Warren JW, Langenberg P, Greenberg P, Diggs C, Jacobs S, Wesselmann U. Sites of pain from interstitial cystitis/painful bladder syndrome. *J Urol* 2008;180:1373-7.

Zolnoun D, Bair E, Essick G, Gracely R, Goyal V, Maixner W. Reliability and reproducibility of novel methodology for assessment of pressure pain sensitivity in pelvis. *J Pain* 2012;13:910-20.

Zolnoun DA, Rohl J, Moore CG, Perinetti-Liebert C, Lamvu GM, Maixner W. Overlap between orofacial pain and vulvar vestibulitis syndrome. *Clin J Pain* 2008;24:187-91.

Vestibulodynia: A Diagnostic Algorithm

King M, Rubin R, Goldstein A. Current Uses of Surgery for the Treatment of Genital Pain. Current Sexual Health Reports. 2014, Oct 3. Volume 6, Issue 4, pp. 252-8.

Comorbidity References

Chronic Headache

Nappi RE, Terreno E, Tassorelli C, Sances G, Allena M, Guaschino E, Anonaci F, Albani F, Polatti F. Sexual function and distress in women treated for primary headaches in a tertiary university center. J Sex Med. 2012 Mar;9(3):761-9.

Xie Y, Shi L, Xiong X, Wu E, Veasley C, Dade C. Economic burden and quality of life of vulvodynia in the United States. Curr Med Res Opin. 2012 Apr;28(4):601-8.

Endometriosis

Gardella B, Porru D, Nappi RE, Daccò MD, Chiesa A, Spinillo A. Interstitial cystitis is associated with vulvodynia and sexual dysfunction – a case-control study. J Sex Med. 2011 Jun;8(6):1726-34.

Nguyen RH, Ecklund AM, Maclehose RF, Veasley C, Harlow BL. Co-morbid pain conditions and feelings of invalidation and isolation among women with vulvodynia. Psychol Health Med. 2012;17(5):589-98.

Xie Y, Shi L, Xiong X, Wu E, Veasley C, Dade C. Economic burden and quality of life of vulvodynia in the United States. Curr Med Res Opin. 2012 Apr;28(4):601-8.

Fibromyalgia & Chronic Fatigue Syndrome

Arnold LD, Bachmann GA, Rosen R, Rhoads GG. Assessment of vulvodynia symptoms in a sample of US women: a prevalence survey with a nested case control study. Am J Obstet Gynecol. 2007 Feb;196(2):128.e1-6.

Nguyen RH, Ecklund AM, Maclehose RF, Veasley C, Harlow BL. Co-morbid pain conditions and feelings of invalidation and isolation among women with vulvodynia. Psychol Health Med. 2012;17(5):589-98

Pukall CF, Baron M, Amsel R, Khalifé S, Binik YM. Tender point examination in women with vulvar vestibulitis syndrome. Clin J Pain. 2006 Sep;22(7):601-9.

Pukall CF, Strigo IA, Binik YM, Amsel R, Khalifé S, Bushnell MC. Neural correlates of painful genital touch in women with vulvar vestibulitis syndrome. *Pain*. 2005 May;115(1-2):118-27.

Reed BD, Harlow SD, Sen A, Rayna E, Chen D, Haefner HK. Relationship between vulvodynia and chronic comorbid pain conditions. *Obstet Gynecol* 2012 Jul;120(1):145-51.

Xie Y, Shi L, Xiong X, Wu E, Veasley C, Dade C. Economic burden and quality of life of vulvodynia in the United States. *Curr Med Res Opin* 2012 Apr;28(4):601-8.

Interstitial Cystitis/Painful Bladder Syndrome

Alagiri M, Chottiner S, Ratner V, Slade D, Hanno PM. Interstitial cystitis: unexplained associations with other chronic disease and pain syndromes. *Urology*. 1997 May;49(5A Suppl):52-7.

Bohm-Starke N, Hilliges M, Falconer C, Rylander E. Increased intraepithelial innervation in women with vulvar vestibulitis syndrome. *Gynecol Obstet Invest*. 1998;46(4):256-60.

Bornstein J, Goldschmid N, Sabo E. Hyperinnervation and mast cell activation may be used as histopathologic diagnostic criteria for vulvar vestibulitis. *Gynecol Obstet Invest*. 2004;58(3):171-8.

Burrows LJ, Klingman D, Pukall CF, Goldstein AT. Umbilical hypersensitivity in women with primary vestibulodynia. *J Reprod Med*. 2008 Jun;53(6):413-6.

Carrico DJ, Sherer KL, Peters KM. The relationship of interstitial cystitis/painful bladder syndrome to vulvodynia. *Urol Nurs*. 2009 Jul-Aug;29(4):233-8.

Foster DC, Hasday JD. Elevated tissue levels of interleukin-1 beta and tumor necrosis factor-alpha in vulvar vestibulitis. *Obstet Gynecol*. 1997 Feb;89(2):291-6.

Gardella B, Porru D, Nappi RE, Daccò MD, Chiesa A, Spinillo A. Interstitial cystitis is associated with vulvodynia and sexual dysfunction – a case-control study. *J Sex Med*. 2011 Jun;8(6):1726-34.

Gerber S, Bongiovanni AM, Ledger WJ, Witkin SS. Interleukin-1beta gene polymorphism in women with vulvar vestibulitis syndrome. *Eur J Obstet Gynecol Reprod Biol*. 2003 Mar 26;107(1):74-7.

Gunter J. Is there an association between vulvodynia and interstitial cystitis? *Obstet Gynecol*. 2000; 95:S4.

Hohenfellner M, Nunes L, Schmidt RA, Lampel A, Thüroff JW, Tanagho EA. Interstitial cystitis: increased sympathetic innervation and related neuropeptide synthesis. *J Urol.* 1992 Mar;147(3):587-91.

Jeremias J, Ledger WJ, Witkin SS. Interleukin 1 receptor antagonist gene polymorphism in women with vulvar vestibulitis. *Am J Obstet Gynecol.* 2000 Feb;182(2):283-5.

Kahn BS, Tatro C, Parsons CL, Willems JJ. Prevalence of interstitial cystitis in vulvodynia patients detected by bladder potassium sensitivity. *J Sex Med.* 2010 Feb;7(2 Pt 2):996-1002.

Kennedy CM, Nygaard IE, Bradley CS, Galask RP. Bladder and bowel symptoms among women with vulvar disease: are they universal? *J Reprod Med.* 2007 Dec;52(12):1073-8.

McCormack WM. Two urogenital sinus syndromes. Interstitial cystitis and focal vulvitis. *J Reprod Med.* 1990 Sep;35(9):873-6.

Nguyen RH, Ecklund AM, Macle hose RF, Veasley C, Harlow BL. Co-morbid pain conditions and feelings of invalidation and isolation among women with vulvodynia. *Psychol Health Med.* 2012;17(5):589-98.

Peters K, Girdler B, Carrico D, Ibrahim I, Diokno A. Painful bladder syndrome/interstitial cystitis and vulvodynia: a clinical correlation. *Int Urogynecol J Pelvic Floor Dysfunct.* 2008 May;19(5):665-9.

Reed BD, Harlow SD, Sen A, Rayna E, Chen D, Haefner HK. Relationship between vulvodynia and chronic comorbid pain conditions. *Obst and Gyn.* 2012 Jul;120(1):145-51.

Rodríguez MA, Afari N, Buchwald DS; National Institute of Diabetes and Digestive and Kidney Diseases Working Group on Urological Chronic Pelvic Pain. Evidence for overlap between urological and nonurological unexplained clinical conditions. *J Urol.* 2013 Jan;189(1 Suppl):S66-74.

Stewart EG, Berger BM. Parallel pathologies? Vulvar vestibulitis and interstitial cystitis. *J Reprod Med.* 1997 Mar;42(3):131-4.

Theoharides TC, Kempuraj D, Sant GR. Mast cell involvement in interstitial cystitis: a review of human and experimental evidence. *Urology.* 2001 Jun;57(6 Suppl 1):47-55.

Warren JW, Howard FM, Cross RK, Good JL, Weissman MM, Wesselmann U, Langenberg P, Greenberg P, Clauw DJ. Antecedent nonbladder syndromes in case-control study of interstitial cystitis/painful bladder syndrome. *Urology.* 2009 Jan;73(1):52-7.

Warren JW, Langenberg P, Greenberg P, Diggs C, Jacobs S, Wesselmann U. Sites of pain from interstitial cystitis/painful bladder syndrome. *J Urol*. 2008 Oct;180(4):1373-7.

Wesselmann U. Interstitial cystitis: a chronic visceral pain syndrome. *Urology*. 2001 Jun;57(6 Suppl 1):32-9.

Weström LV, Willén R. Vestibular nerve fiber proliferation in vulvar vestibulitis syndrome. *Obstet Gynecol*. 1998 Apr;91(4):572-6.

Wu EQ, Birnbaum H, Mareva M, Parece A, Huang Z, Mallett D, Taitel H. Interstitial Cystitis: Cost, treatment and co-morbidities in an employed population. *Pharmacoeconomics*. 2006;24(1):55-65.

Xie Y, Shi L, Xiong X, Wu E, Veasley C, Dade C. Economic burden and quality of life of vulvodynia in the United States. *Curr Med Res Opin*. 2012 Apr;28(4):601-8.

Irritable Bowel Syndrome

Arnold LD, Bachmann GA, Rosen R, Rhoads GG. Assessment of vulvodynia symptoms in a sample of US women: a prevalence survey with a nested case control study. *Am J Obstet Gynecol*. 2007 Feb;196(2):128.e1-6.

Kennedy CM, Nygaard IE, Bradley CS, Galask RP. Bladder and bowel symptoms among women with vulvar disease: are they universal? *J Reprod Med*. 2007 Dec;52(12):1073-8.

Nguyen RH, Ecklund AM, Maclehose RF, Veasley C, Harlow BL. Co-morbid pain conditions and feelings of invalidation and isolation among women with vulvodynia. *Psychol Health Med*. 2012;17(5):589-98.

Reed BD, Harlow SD, Sen A, Rayna E, Chen D, Haefner HK. Relationship between vulvodynia and chronic comorbid pain conditions. *Obst and Gyn*. 2012 Jul;120(1):145-51.

Xie Y, Shi L, Xiong X, Wu E, Veasley C, Dade C. Economic burden and quality of life of vulvodynia in the United States. *Curr Med Res Opin*. 2012 Apr;28(4):601-8.

Orofacial Pain

Xie Y, Shi L, Xiong X, Wu E, Veasley C, Dade C. Economic burden and quality of life of vulvodynia in the United States. *Curr Med Res Opin.* 2012 Apr;28(4):601-8.

Zolnoun DA, Rohl J, Moore CG, Perinetti-Liebert C, Lamvu GM, Maixner W. Overlap between orofacial pain and vulvar vestibulitis syndrome. *Clin J Pain.* 2008 Mar-Apr;24(3):187-91.

Psychosocial and Sexual Impairment

Bergeron S, Rosen NO, Morin M. Genital pain in women: Beyond interference with intercourse. *Pain.* 2011 Jun;152(6): 1223-5.

Desrochers G, Bergeron S, Landry T, Jodoin M. Do psychosexual factors play a role in the etiology of provoked vestibulodynia? A critical review. *J Sex Marital Ther* 2008;34:198-226.

Section 7: Treatment Options

General Principles

Andrews JC. Vulvodynia interventions – systematic review and evidence grading. *Obstet Gynecol Surv* 2011;66:299-315.

Brotto LA, Yong P, Smith KB, Sadownik LA. Impact of a multidisciplinary vulvodynia program on sexual functioning and dyspareunia. *J Sex Med* 2015;12:238-247.

Davis SN, Bergeron S, Binik YM, Lambert B. Women with provoked vestibulodynia experience clinically significant reductions in pain regardless of treatment: results from a 2-year follow-up study. *J Sex Med* 2013;12:3080-7.

Heddini U, Bohm-Starke N, Nilsson KW, Johannesson U. Provoked vestibulodynia – medical factors and comorbidity associated with treatment outcome. *J Sex Med* 2012;9:1400-6.

Jodoin M, Bergeron S, Khalife S, Dupuis MJ, Desrochers G, Leclerc B. Attributions about pain as predictors of psychological symptomatology, sexual function, and dyadic adjustment in women with vestibulodynia. *Arch Sex Behav* 2011;40:87-97.

Labat JJ, Bensignor M, Boutet M, Delavierre D, Sibert L, Rigaud J. The doctor-patient relationship in chronic pelvic and perineal pain. *Prog Urol* 2010;20:911-6.

Nguyen RHN, Mathur C, Wynings EM, Williams DA, Harlow BL. Remission of vulvar pain among women with primary vulvodynia. *J Low Genit Tract Dis* 2015;19:62-7.

Sadownik, LA, Seal BN, Brotto LA. Provoked vestibulodynia-women's experience of participating in a multidisciplinary vulvodynia program. *J Sex Med* 2012;9:1086-93.

Spoelstra SK, Dijkstra JR, van Driel MF, Weijmar Schultz WC. Long-term results of an individualized, multifaceted, and multidisciplinary therapeutic approach to provoked vestibulodynia. *J Sex Med* 2011;8:489-96.

Stockdale CK, Lawson HW. 2013 Vulvodynia Guideline Update. *J Low Genit Tract Dis* 2014;18:93-100.

Ventolini G, Barhan S, Duke J. Vulvodynia, a step-wise therapeutic prospective cohort study. *J Obstet Gynaecol* 2009;29:648-50.

Treatment References

1. Haefner HK, Collins ME, Davis GD, Edwards L, Foster DC, Hartmann ED, Kaufman RH, Lynch PJ, Margesson LJ, Moyal-Barracco M, Piper CK, Reed BD, Stewart EG, Wilkinson EJ. The vulvodynia guideline. *J Low Genit Tract Dis* 2005;9:40-51.
2. McKay M. Dysesthetic ("essential") vulvodynia. Treatment with amitriptyline. *J Reprod Med* 1993;38:9-13.
3. Munday PE. Response to treatment in dysaesthetic vulvodynia. *J Obstet Gynaecol* 2001;21:610-3.
4. Reed BD, Caron AM, Gorenflo DW, Haefner HK. Treatment of vulvodynia with tricyclic antidepressants: efficacy and associated factors. *J Low Genit Tract Dis* 2006;10:245-51.
5. Ben-David B, Friedman M. Gabapentin therapy for vulvodynia. *Anesth Analg* 1999;89:1459-60.
6. Bates CM, Timmins DJ. Vulvodynia--new and more effective approaches to therapy. *Int J STD AIDS* 2002;13:210-2.
7. Harris G, Horowitz B, Borgida A. Evaluation of gabapentin in the treatment of generalized vulvodynia, unprovoked. *J Reprod Med* 2007;52:103-6.
8. Meltzer-Brody SE, Zolnoun D, Steege JF, Rinaldi KL, Leserman J. Open-label trial of lamotrigine focusing on efficacy in vulvodynia. *J Reprod Med* 2009;54:171-8.
9. Jerome L. Pregabalin-induced remission in a 62-year-old woman with a 20-year history of vulvodynia. *Pain Res Manag* 2007;12:212-4.
10. Boardman LA, Cooper AS, Blais LR, Raker CA. Topical gabapentin in the treatment of localized and generalized vulvodynia. *Obstet Gynecol* 2008;112:579-85.
11. Benrubi GI, Drummond J. Management of vulvodynia with blockade of the perineal nerve with local anesthetic and steroids (abstract). *J Reprod Med* 1988;33:715-6.
12. Peng PW, Tumber PS. Ultrasound-guided interventional procedures for patients with chronic pelvic pain - a description of techniques and review of literature. *Pain Physician* 2008;11:215-24.
13. Choi SS, Lee PB, Kim YC, Kim HJ, Lee SC. C-arm-guided pudendal nerve block: a new technique. *Int J Clin Pract* 2006;60:553-6.

14. Naja MZ, Al-Tannir MA, Maaliki H, El-Rajab M, Ziade MF, Zeidan A. Nerve-stimulator-guided repeated pudendal nerve block for treatment of pudendal neuralgia. *Eur J Anaesthesiol* 2006;23:442-4.
15. Thoumas D, Leroi AM, Mauillon J, Muller JM, Benozio M, Denis P, Freger P. Pudendal neuralgia: CT-guided pudendal nerve block technique. *Abdom Imaging* 1999;24:309-12.
16. Whiteside JL, Walters MD, Mekhail N. Spinal cord stimulation for intractable vulvar pain. A case report. *J Reprod Med* 2003;48:821-3.
17. Feler CA, Whitworth LA, Fernandez J. Sacral neuromodulation for chronic pain conditions. *Anesthesiol Clin North America* 2003;21:785-95.
18. Nair AR, Klapper A, Kushnerik V, Margulis I, Del Priore G. Spinal cord stimulator for the treatment of a woman with vulvovaginal burning and deep pelvic pain. *Obstet Gynecol* 2008;111:545-7.
19. Cecilio SB, Zaghi S, Cecilio LB, Correa CF, Fregni F. Exploring a novel therapeutic approach with noninvasive cortical stimulation for vulvodynia. *Am J Obstet Gynecol* 2008;199:e6-7.
20. Glazer HI, Jantos M, Hartmann EH, Swencionis C. Electromyographic comparisons of the pelvic floor in women with dysesthetic vulvodynia and asymptomatic women. *J Reprod Med* 1998;43:959-62.
21. Glazer HI. Dysesthetic vulvodynia. Long-term follow-up after treatment with surface electromyography-assisted pelvic floor muscle rehabilitation. *J Reprod Med* 2000;45:798-802.
22. Hartmann EH, Nelson C. The perceived effectiveness of physical therapy treatment on women complaining of chronic vulvar pain and diagnosed with either vulvar vestibulitis syndrome or dysesthetic vulvodynia. *J Sect Womens Health* 2001;25:13-18.
23. Forth HL, Cramp MC, Drechsler WI. Does physiotherapy treatment improve the self-reported pain levels and quality of life of women with vulvodynia? A pilot study. *J Obstet Gynaecol* 2009;29:423-9.
24. Baggish MS, Sze EH, Johnson R. Urinary oxalate excretion and its role in vulvar pain syndrome. *Am J Obstet Gynecol* 1997;177:507-11.
25. Harlow BL, Abenhaim HA, Vitonis AF, Harnack L. Influence of dietary oxalates on the risk of adult-onset vulvodynia. *J Reprod Med* 2008;53:171-8.
26. Masheb RM, Kerns RD, Lozano C, Minkin MJ, Richman S. A randomized clinical trial for women with vulvodynia: Cognitive-behavioral therapy vs. supportive psychotherapy. *Pain* 2009;141:31-40.
27. Bergeron S, Binik YM, Khalife S, Meana M, Berkley KJ, Pagidas K. The treatment of vulvar vestibulitis syndrome: towards a multimodal approach. *Sexual and Marital Therapy*. 1997;12:305-11.
28. Ventolini G, Barhan S, Duke J. Vulvodynia, a step-wise therapeutic prospective cohort study. *J Obstet Gynaecol* 2009;29:648-50.
29. Landry T, Bergeron S, Dupuis MJ, Desrochers G. The treatment of provoked vestibulodynia: a critical review. *Clin J Pain* 2008;24:155-71.
30. Zolnoun DA, Hartmann KE, Steege JF. Overnight 5% lidocaine ointment for treatment of vulvar vestibulitis. *Obstet Gynecol* 2003;102:84-7.

31. Danielsson I, Torstensson T, Brodda-Jansen G, Bohm-Starke N. EMG biofeedback versus topical lidocaine gel: a randomized study for the treatment of women with vulvar vestibulitis. *Acta Obstet Gynecol Scand* 2006;85:1360-7.
32. Nyirjesy P, Halpern M. Medical management of vulvar vestibulitis: results of a sequential treatment plan. *Infect Dis Obstet Gynecol* 1995;3:193-7.
33. Foster DC, Duguid K. Open label study of oral desipramine and topical lidocaine for the treatment of vulvar vestibulitis. Abstract, Conference on Mechanism and Treatment of Neuropathic Pain. Rochester, New York, 1998.
34. Bohm-Starke N, Brodda-Jansen G, Linder J, Danielsson I. The result of treatment on vestibular and general pain thresholds in women with provoked vestibulodynia. *Clin J Pain* 2007;23:598-604.
35. Dualé C, Daveau J, Cardot JM, Boyer-Grand A, Schoeffler P, Dubray C. Cutaneous amitriptyline in human volunteers: differential effects on the components of sensory information. *Anesthesiology* 2008;108:714-21.
36. Glazer HI, Rodke G, Swencionis C, Hertz R, Young AW. Treatment of vulvar vestibulitis syndrome with electromyographic biofeedback of pelvic floor musculature. *J Reprod Med* 1995;40:283-90.
37. Bergeron S, Binik YM, Khalifé S, Pagidas K, Glazer HI, Meana M, Amsel R. A randomized comparison of group cognitive--behavioral therapy, surface electromyographic biofeedback, and vestibulectomy in the treatment of dyspareunia resulting from vulvar vestibulitis. *Pain* 2001;91:297-306.
38. McKay E, Kaufman RH, Doctor U, Berkova Z, Glazer H, Redko V. Treating vulvar vestibulitis with electromyographic biofeedback of pelvic floor musculature. *J Reprod Med* 2001;46:337-42.
39. Bergeron S, Brown C, Lord MJ, Oala M, Binik YM, Khalifé S. Physical therapy for vulvar vestibulitis syndrome: a retrospective study. *J Sex Marital Ther* 2002;28:183-92.
40. Hartmann D, Strauhal MJ, Nelson CA. Treatment of women in the United States with localized, provoked vulvodynia: practice survey of women's health physical therapists. *J Reprod Med* 2007;52:48-52.
41. Reissing ED, Brown C, Lord MJ, Binik YM, Khalifé S. Pelvic floor muscle functioning in women with vulvar vestibulitis syndrome. *J Psychosom Obstet Gynaecol* 2005;26:107-13.
42. Bergeron S, Khalifé S, Glazer HI, Binik YM. Surgical and behavioral treatments for vestibulodynia: two-and-one-half year follow-up and predictors of outcome. *Obstet Gynecol* 2008;111:159-66.
43. Rosenbaum TY, Owens A. The role of pelvic floor physical therapy in the treatment of pelvic and genital pain-related sexual dysfunction. *J Sex Med* 2008;5:513-23.
44. Backman H, Widenbrant M, Bohm-Starke N, Dahlof LG. Combined physical and psychosexual therapy for provoked vestibulodynia-an evaluation of a multidisciplinary treatment model. *J Sex Res* 2008;45:378-85.
45. Goldfinger C, Pukall CF, Gentilcore-Saulnier E, McLean L, Chamberlain S. A prospective study of pelvic floor physical therapy: pain and psychosexual outcomes in provoked vestibulodynia. *J Sex Med* 2009;6:1955-68.

46. Murina F, Bernorio R, Palmiotto R. The use of amielle vaginal trainers as adjuvant in the treatment of vestibulodynia: an observational multicentric study. *Medscape J Med* 2008;10:23.
47. Strauhal MJ, Frahm J, Morrison P, Featherstone W, Hartman D, Florendo J, Parker S. Vulvar pain: a comprehensive review. *Journal of Women's Health Physical Therapy* 2006;31:7-26.
48. Rapkin AJ, McDonald JS, Morgan M. Multilevel local anesthetic nerve blockade for the treatment of vulvar vestibulitis syndrome. *Am J Obstet Gynecol* 2008;198:41.e1-5.
49. Haefner HK. Critique of new gynecologic surgical procedures: surgery for vulvar vestibulitis. *Clin Obstet Gynecol* 2000;43:689-700.
50. Bergeron S, Bouchard C, Fortier M, Binik YM, Khalifé S. The surgical treatment of vulvar vestibulitis syndrome: a follow-up study. *J Sex Marital Ther* 1997;23:317-25.
51. Bergeron S, Binik YM, Khalifé S, Pagidas K. Vulvar vestibulitis syndrome: a critical review. *Clin J Pain* 1997;13:27-42.
52. Traas MA, Bekkers RL, Dony JM, Blom M, van Haren AW, Hendriks JC, et al. Surgical treatment for the vulvar vestibulitis syndrome. *Obstet Gynecol* 2006 Feb;107:256-62.
53. Goldstein A. Surgical techniques: Surgery for Vulvar Vestibulitis syndrome. *J Sex Med* 2006;3:559-62.
54. Goldstein AT, Klingman D, Christopher K, Johnson C, Marinoff SC. Surgical treatment of vulvar vestibulitis syndrome: outcome assessment derived from a postoperative questionnaire. *J Sex Med* 2006;3:923-31.
55. Bohm-Starke N, Rylander E. Surgery for localized, provoked vestibulodynia: a long-term follow-up study. *J Reprod Med* 2008;53:83-9.
56. Eva LJ, Narain S, Orakwue CO, Luesley DM. Is modified vestibulectomy for localized provoked vulvodynia an effective long-term treatment? A follow-up study. *J Reprod Med* 2008;53:435-40.
57. Goetsch MF. Simplified surgical revision of the vulvar vestibule for vulvar vestibulitis. *Am J Obstet Gynecol* 1996;174:1701-5; discussion 1705-7.
58. Lavy Y, Lev-Sagie A, Hamani Y, Zacut D, Ben-Chetrit A. Modified vulvar vestibulectomy: simple and effective surgery for the treatment of vulvar vestibulitis. *Eur J Obstet Gynecol Reprod Biol* 2005;120:91-5.
59. Goetsch MF. Surgery combined with muscle therapy for dyspareunia from vulvar vestibulitis: an observational study. *J Reprod Med* 2007;52:597-603.
60. Goetsch MF. Patients' assessments of a superficial modified vestibulectomy for vestibulodynia. *J Reprod Med* 2008;53:407-12.
61. Bornstein J, Goldik Z, Stolar Z, Zarfati D, Abramovici H. Predicting the outcome of surgical treatment of vulvar vestibulitis. *Obstet Gynecol* 1997;89:695-8.
62. Bornstein J, Maman M, Abramovici H. "Primary" versus "secondary" vulvar vestibulitis: one disease, two variants. *Am J Obstet Gynecol* 2001;184:28-31.
63. Schover LR, Youngs DD, Cannata R. Psychosexual aspects of the evaluation and management of vulvar vestibulitis. *Am J Obstet Gynecol* 1992;167:630-6.
64. Granot M, Friedman M, Yarnitsky D, Tamir A, Zimmer EZ. Primary and secondary vulvar vestibulitis syndrome: systemic pain perception and psychophysical characteristics. *Am J Obstet Gynecol* 2004;191:138-42.

65. Schneider D, Yaron M, Bukovsky I, Soffer Y, Halperin R. Outcome of surgical treatment for superficial dyspareunia from vulvar vestibulitis. *J Reprod Med*. 2001 Mar;46(3):227-31.
66. ter Kuile MM, Weijnenborg PT. A cognitive-behavioral group program for women with vulvar vestibulitis syndrome (VVS): factors associated with treatment success. *J Sex Marital Ther* 2006;32:199-213.
67. Munday PE. Treatment of vulval vestibulitis with a potent topical steroid. *Sex Transm Infect* 2004;80:154-5.
68. Bornstein J, Pascal B, Abramovici H. Intramuscular beta-interferon treatment for severe vulvar vestibulitis. *J Reprod Med* 1993;38:117-20.
69. Marinoff SC, Turner ML, Hirsch RP, Richard G. Intralesional alpha interferon. Cost-effective therapy for vulvar vestibulitis syndrome. *J Reprod Med* 1993;38:19-24.
70. Nyirjesy P, Sobel JD, Weitz MV, Leaman DJ, Small MJ, Gelone SP. Cromolyn cream for recalcitrant idiopathic vulvar vestibulitis: results of a placebo controlled study. *Sex Transm Infect* 2001;77:53-7.
71. Murina F, Tassan P, Roberti P, Bianco V. Treatment of vulvar vestibulitis with submucous infiltrations of methylprednisolone and lidocaine. *J Low Genit Tract Dis* 2002;6:62.
72. Segal D, Tifheret H, Lazer S. Submucous infiltration of betamethasone and lidocaine in the treatment of vulvar vestibulitis. *Eur J Obstet Gynecol Reprod Biol* 2003;107:105-6.
73. Dede M, Yenen MC, Yilmaz A, Baser I. Successful treatment of persistent vulvodynia with submucous infiltration of betamethasone and lidocaine. *Eur J Obstet Gynecol Reprod Biol* 2006;124:258-9.
74. Solomons CC, Melmed MH, Heitler SM. Calcium citrate for vulvar vestibulitis. A case report. *J Reprod Med* 1991;36:879-82.
75. Greenstein A, Militscher I, Chen J, Matzkin H, Lessing JB, Abramov L. Hyperoxaluria in women with vulvar vestibulitis syndrome. *J Reprod Med* 2006;51:500-2.
76. Gunter J, Brewer A, Tawfik O. Botulinum toxin a for vulvodynia: a case report. *J Pain*. 2004 May;5(4):238-40.
77. Yoon H, Chung WS, Shim BS. Botulinum toxin A for the management of vulvodynia. *Int J Impot Res*. 2007 Jan-Feb;19(1):84-7.
78. Brown CS, Glazer HI, Vogt V, Menkes D, Bachmann G. Subjective and objective outcomes of botulinum toxin type A treatment in vestibulodynia: pilot data. *J Reprod Med*. 2006 Aug;51(8):635-41.
79. Dykstra DD, Presthus J. Botulinum toxin type A for the treatment of provoked vestibulodynia: an open-label, pilot study. *J Reprod Med*. 2006 Jun;51(6):467-70.
80. Jeynes LC, Gauci CA. Evidence for the use of botulinum toxin in the chronic pain setting--a review of the literature. *Pain Pract*. 2008 Jul-Aug;8(4):269-76.
81. Rao A, Abbott J. Using botulinum toxin for pelvic indications in women. *Aust N Z J Obstet Gynaecol*. 2009 Aug;49(4):352-7.
82. Petersen CD, Giraldo A, Lundvall L, Kristensen E. Botulinum toxin type A-a novel treatment for provoked vestibulodynia? Results from a randomized, placebo controlled, double blinded study. *J Sex Med* 2009;6:2523-37.
83. Kamdar N, Fisher L, MacNeill C. Improvement in vulvar vestibulitis with montelukast. *J Reprod Med* 2007;52:912-6.

84. Walsh KE, Berman JR, Berman LA, Vierregger K. Safety and efficacy of topical nitroglycerin for treatment of vulvar pain in women with vulvodynia: a pilot study. *J Gend Specif Med* 2002;5:21-7.
85. Steinberg AC, Oyama IA, Rejba AE, Kellogg-Spadt S, Whitmore KE. Capsaicin for the treatment of vulvar vestibulitis. *Am J Obstet Gynecol* 2005;192:1549-53.
86. Leclair CM, Goetsch MF, Lee KK, Jensen JT. KTP-nd:YAG laser therapy for the treatment of vestibulodynia: a follow-up study. *J Reprod Med* 2007;52:53-8.
87. Zawislak AA, McCarron PA, McCluggage WG, Donnelly RF, Price JH, McClelland HR, Woolfson AD. Novel bioadhesive patch-type system for photodynamic vulvodynia therapy after delivery of 5-aminolevulinic acid: preliminary evaluation. *J Reprod Med* 2007;52:645-53.
88. Murina F, Bianco V, Radici G, Felice R, Di Martino M, Nicolini U. Transcutaneous electrical nerve stimulation to treat vestibulodynia: a randomised controlled trial. *BJOG* 2008;115:1165-70.
89. Dionisi B, Anglana F, Inghirami P, Lippa P, Senatori R. Use of transcutaneous electrical stimulation and biofeedback for the treatment of vulvodynia (vulvar vestibular syndrome): result of 3 years of experience. *Minerva Ginecol* 2008;60:485-91.
90. Ramsay LB, Wright J Jr, Fischer JR. Sacral neuromodulation in the treatment of vulvar vestibulitis syndrome. *Obstet Gynecol* 2009;114:487-9.
91. Leo RJ. A systematic review of the utility of antidepressant pharmacology in the treatment of vulvodynia pain. *J Sex Med* 2013;10:2000-8.
92. Pagano R, Wong S. Use of amitriptyline cream in the management of entry dyspareunia due to provoked vestibulodynia. *J Low Genit Tract Dis* 2012;16:394-7.
93. McDonald JS, Rapkin AJ. Multilevel local anesthetic nerve blockade for the treatment of generalized vulvodynia: a pilot study. *J Sex Med* 2012;9:2919-26.
94. Hartmann D. Treatment outcomes of physical therapy for vestibulodynia: an international case series. Abstract presented at the XXI ISSVD World Congress. *J Low Genit Tract Dis* 2011;15.
95. Jodoin M, Bergeron S, Khalife S, Dupuis MJ, Desrochers G, Leclerc B. Attributions about pain as predictors of psychological symptomatology, sexual function, and dyadic adjustment in women with vestibulodynia. *Arch Sex Behav* 2011;40:87-97.
96. Eanes A, Bair E, Martin C, Iyer P, Zolnoun D. Psychosexual correlates of persistent postsurgical pain in patients with vulvodynia. *Int J Gynaecol Obstet* 2011;113:225-8.
97. Bazin S, Lefebvre J, Fortier M, Brisson J, Brouillette F, Bujold E, Bouchard C. Evaluation of an estrogen vaginal cream for the treatment of dyspareunia: a double-blind randomized trial. *J Obstet Gynaecol Can* 2011;33:838-43.
98. Carrico DJ, Peters KM. Vaginal diazepam use with urogenital pain/pelvic floor dysfunction: serum diazepam levels and efficacy data. *Urol Nurs*. 2011 Sep-Oct;31(5):279-84,299.
99. Murina F, Graziottin A, Felice R, Radici G, Tognocchi C. Effect of palmitoylethanolamide polidatin combination in patients with vestibulodynia treated with transcutaneous electrical nerve stimulation (TENS) therapy: a randomized double blind - controlled trial. Abstract presented at the XXI ISSVD World Congress. *J Low Genit Tract Dis* 2011;15.

100. Louppe JM, Nguyen JP, Robert R, Buffenoir K, de Chauvigny E, Riant T, Pereon Y, Labatt JJ, Nizard J. Motor cortex stimulation in refractory pelvic and perineal pain: report of two successful cases. *Neurourol Urodyn* 2013;32:53-7.
101. Farajun Y, Zarfati D, Abramov L, Livoff A, Bornstein J. Enoxaparin treatment for vulvodynia: a randomized controlled trial. *Obstet Gynecol* 2012;120:565-72.
102. Donders GG, Bellen G. Cream with cutaneous fibroblast lysate for the treatment of provoked vestibulodynia: A double-blind randomized placebo-controlled crossover study. *J Low Genit Tract Dis* 2012;16:427-36.
103. Battaglia C, Battaglia B, Mancini F, Busacchi P, Paganotto MC, Morotti E, Venturoli S. Sexual behavior and oral contraceptives: a pilot study. *J Sex Med* 2012;9:550-7.
104. Goldstein A, Burrows L, Goldstein I. Can oral contraceptives cause vestibulodynia? *J Sex Med* 2010;7:1585-7.
105. Leo RJ. A systematic review of the utility of anticonvulsant pharmacotherapy in the treatment of vulvodynia pain. *J Sex Med* 2013;10:2000-2008.
106. Jeon Y, Kim Y, Shim B, Yoon H, Park Y, Shim B, Jeong W, Lee D. A retrospective study of the management of vulvodynia. *Korean J Urology* 2013;54:48-52.
107. Bornstein J, Tuma R, Farajun Y, Azran A, Zarfati D. Topical nifedipine for the treatment of localized provoked vulvodynia: a placebo-controlled study. *J Pain* 2010;11:1403-9.
108. Eppsteiner E, Boardman L, Stockdale CK. Vulvodynia. *Best Practice & Research Clinic Obstet Gynecol* 2014;28:1000-12.
109. Nyirjesy P, Lev-Sagie A, Mathew L, Culhane JF. Topical amitriptyline-baclofen cream for the treatment of provoked vestibulodynia. *J Low Genit Tract Dis* 2009;14:230-6.
110. Burrows LJ, Goldstein AT. The treatment of vestibulodynia with topical estradiol and testosterone. *J Sex Med* 2013;1:30-3.
111. Rapkin AJ, McDonald JS, Morgan M. Multilevel local anesthetic nerve blockade for the treatment of vulvar vestibulitis syndrome. *AJOF* 2012;198:41.e1-5.
112. Polpetta NC, Giralgo PC, Teatin Juliato CR, Gomes Do Amaral RL, Moreno Linhares I, Romero Leal Passos M. Clinical and therapeutic aspects of vulvodynia: the importance of physical therapy. *Minerva Ginecol* 2012;64:437-45.
113. Corsini-Munt S, Bergeron S, Rosen NO, Mayrand MH, Delisle. Feasibility and preliminary effectiveness of a novel cognitive-behavioral couple therapy for provoked vestibulodynia: a pilot study. *J Sex Med* 2014;10:2515-27.
114. Tommola P, Unkila-Kallio L, Paaavonen J. Long-term well-being after surgical or conservative treatment of severe vulvar vestibulitis. *Acta Obstet Gynecol Scand* 2012;91:1086-93.
115. Swanson CL, Rueter JA, Olson JE, Weaver AL, Stanhope CR. Localized provoked vestibulodynia; outcomes after modified vestibulectomy. *J Reprod Med* 2014;59:121-6.
116. Brokenshire C, Pagano R, Scurry J. The value of histology in predicting the effectiveness of vulvar vestibulectomy in provoked vestibulodynia. *J Low Genit Tract Dis* 2014;2:109-14.
117. Weinschenk S, Brocker K, Hotz L, Strowitzki T, Joos S, HUNTER (Heidelberg University Neural Therapy Education and Research) Group. Successful therapy of vulvodynia with local anesthetics: a case report. *Forsch Komplementmed* 2013;20:138-43.

118. Butrick CW. Pelvic floor hypertonic disorders: identification and management. *Obstet Gynecol Clin N Amer* 2009;36:707-22.
119. Rogalski MJ, Kellogg-Spadt S, Hoffman AR, Fariello JY, Whitmore KE. Retrospective chart review of vaginal diazepam suppository use in high-tone pelvic floor dysfunction. *Int Urogynecol J* 2010;21:895-9.
120. Vallinga MS, Spoelstra SK, Hemel ILM, van de Wiel HBM, Weijmar Schultz WCM. Transcutaneous electrical nerve stimulation as an additional treatment for women suffering from therapy-resistant provoked vestibulodynia: a feasibility study. *J Sex Med* 2015;12:228-37.
121. Elkattah R, Trotter-Ross W, Huffaker RK. Percutaneous tibial nerve stimulation as an off-label treatment of clitoral pain. *Female Pelvic Med Reconstr Surgery* 2014;20:e1-e4.
122. Murina F, Araziottin A, Felice R, Radici G, Tognocchi C. Vestibulodynia: synergy between palmitoylethanolamide + transpodydatin and transcutaneous electrical nerve stimulation. *J Low Genit Tract Dis* 2013;17:111-6.
123. Keppel Hesselink JM, Kopsky DJ, Sajben NL. Vulvodynia and proctodynia treated with topical baclofen 5% and palmitoylethanolamide. *Arch Gynecol Obstet* 2014;290:389-93.
124. De Andres J, Sanchis-Lopez N, Asensio-Samper JM, Fabregat-Cid G, Dolz VM. Peripheral subcutaneous vulvar stimulation in the management of severe and refractory vulvodynia. *Obstet Gynecol* 2013;121:495-8.
125. Kestranek J, Spacek J, Ryska P, Adamkov J, Matula V, Buchta V. Radiofrequency therapy for severe idiopathic vulvodynia. *J Low Genit Tract Dis* 2013;4:e1-4.
126. Pelletier F, Parratte B, Penz S, Moreno JP, Aubin F, Humbert P. Efficacy of high doses of botulinum toxin A for treating provoked vestibulodynia. *Brit J Derm* 2011;164:617-22.
127. De Andres J, Sanchis-Lopez N, et al. Vulvodynia – an evidence-based literature review and proposed treatment algorithm. *Pain Pract* 2015;1: doi: 10.1111/ papr.12274.
128. Bornstein J, Abramovici H. Combination of sub-total perineoplasty and Interferon for vulvar vestibulitis - A comparative study. *Gynecol Obstet Invest* 1997;44:53-4.
129. Kandyba K, Binik YM. Hypnotherapy as a treatment for vulvar vestibulitis syndrome: a case report. *J Sex Marital Ther.* 2003;3:237-242.
130. Pukall C, Kandyba, Amsel R, Khalife S, Binik Y. Effectiveness of hypnosis for the treatment of vulvar vestibulitis syndrome: a preliminary investigation. *J Sex Med* 2007;2:417-425.
131. Gardella B, Iacobone AD, Porru D, Musacchi V, Dominoni M, Tinelli C, et al. Effect of local estrogen therapy (LET) on urinary and sexual symptoms in premenopausal women with interstitial cystitis/bladder pain syndrome (IC/BPS). *Gynecol Endocrinol* 2015;31:828-32.
132. Brown C, Bachmann G, Foster D, Rawlinson L, Wan J, Ling F. Milnacipran in provoked vestibulodynia: efficacy and predictors of treatment success. *J Low Genit Tract Dis* 2015;2:140-4.
133. Danielsson I, Sjoberg I, Ostman C. Acupuncture for the treatment of vulvar vestibulitis: a pilot study. *Acta Obstet Gynecol Scand* 2001;80:437-41.

134. Schlaeger JM, Xu N, Majta CL, Park CG, Wilkie DJ. Acupuncture for the treatment of vulvodynia: a randomized wait-list controlled pilot study. *J Sex Med* 2015;12:1019-27.
135. Nguyen RH, Turner RM, Sieling J, Williams DA, Hodges JS, Harlow BL. Feasibility of collecting vulvar pain variability and its correlates using prospective collection with smartphones. *Pain Res Treat* 2014;2014:659863.