JOURNAL OF WOMEN'S HEALTH
Volume 23, Number 9, 2014
© Mary Ann Liebert, Inc.
DOI: 10.1089/jwh.2014.4805

The Impact of Vulvar Lichen Sclerosus on Sexual Dysfunction

Hope K. Haefner, MD,[1] Nely Z. Aldrich, MD,[2] Vanessa K. Dalton, MD, MPH,[1] Hélène M. Gagné, MD,[3] Stephanie B. Marcus, MD,[4] Divya A. Patel, MPH, PhD,[1] and Mitchell B. Berger, MD, PhD[1]

Abstract

Background: Lichen sclerosus (LS) is a chronic inflammatory condition that is known to arise on the vulva. Many women with LS report vulvar pain, often affecting a patient's quality of life. In this study, the sexual function of LS patients, with and without pain, was compared to control populations.
Materials and Methods: A case-control study to examine the relationship between LS and sexual dysfunction was conducted. A total of 335 women presenting to the gynecology clinic were included in the study: 197 women with biopsy confirmed LS were compared to two control groups (95 asymptomatic women were ''healthy'' controls and 43 women had vulvovaginal candidiasis) on self-reported current health complaints, medical and surgical history and current symptoms such as pain and itching, type and frequency of sexual activity, and satisfaction with sexual activity.
Results: Women with LS reported less frequent sexual activity than healthy controls ($p = 0.007$) and Candida controls ($p = 0.04$). Currently sexually active women with LS were significantly less likely to report vaginal intercourse (71.6%) than healthy controls (89.0%, $p = 0.003$) or Candida controls (100%, $p = 0.0003$), even though similar proportions of all three groups reported that vaginal intercourse was important. Satisfaction towards the quality of current sexual activity was significantly lower among women with LS compared with both the healthy and Candida control groups. 23.7% of women with LS reported that sexual activity was rarely or never satisfactory as compared with 0% of healthy controls ($p < 0.0001$) and 6.5% of Candida controls ($p = 0.03$).
Conclusion: Women with LS have less frequent sexual activity and less satisfying sexual activity when compared with controls.

Introduction

Lichen sclerosus (LS) is a chronic, inflammatory skin condition with a tendency to affect the external genitalia.[1] Lichen sclerosus often results in significant disfiguration of the vulva. It is characterized by an array of symptoms that impact a patient's life both mentally and physically.

Lichen sclerosus may cause significant vulvar changes, often resulting in disfiguration of the vulva, affecting quality of life. It is plausible that anatomical changes resulting from this disease process may result in sexual dysfunction. However, very little research investigating the effects of vulvar LS on sexual dysfunction has been conducted. It is important to understand the impact of LS on women's lives in regard to their sexual activity.

The objective of this study was to determine whether LS was associated with a higher prevalence of sexual dysfunction as compared with control groups consisting of women presenting to a gynecology clinic for routine screening/preventative care and women with Candida infections. We hypothesized that women with LS experienced more sexual dysfunction and were less satisfied with sexual activities compared with women without lichen sclerosus.

Materials and Methods

A case-control study design was utilized to examine the relationship between LS of the vulva and sexual dysfunction. The study protocol was approved by the Institutional Review Board of the University of Michigan Health System.

Inclusion of cases and controls

Three groups of patients were recruited: cases with lichen sclerosus and two control groups. The cases and a vulvar Candidiasis-specific control group were recruited from women presenting for care at the University of Michigan Center for Vulvar Diseases. All cases had biopsy-confirmed lichen sclerosus. Candida controls were included if no other vulvar

[1]Department of Obstetrics and Gynecology, The University of Michigan Health System, Ann Arbor, Michigan.
[2]Department of Dermatology, University Hospitals Case Medical Center, Cleveland, Ohio.
[3]Department of Obstetrics, Gynaecology, and Newborn Care, The University of Ottawa, Ottawa, Ontario, Canada.
[4]Department of Pediatrics, William Beaumont Hospital, Royal Oak, Michigan.

pathology was identified and *Candida* was identified by either microscopy examination or culture. The second control group consisted of healthy controls sampled from women presenting to a gynecology clinic for routine screening and preventative care. The healthy controls had no other vulvar or vaginal diagnoses and denied pelvic or vulvar pain on the intake questionnaire. To further ensure comparability of cases and controls on the primary outcome of interest, the study population was limited to women of reproductive age (18–45 years). The final sample included 197 lichen sclerosus cases, 95 healthy controls, and 43 Candida controls.

Intake questionnaire

Subjects self-completed an intake questionnaire addressing current health complaints, medical and surgical history and current symptoms such as pain and itching, type and frequency of sexual activity, and satisfaction with sexual activity. For those with pain, the level and quality of pain were measured using a modified version of the McGill pain scale.[2,3] Sexual practices were assessed using closed-ended items addressing the type (oral, vaginal, or anal) and frequency of each of these activities. Quality of current sexual activity was categorized as ''never or rarely satisfactory'' or ''sometimes or generally very satisfactory.'' Frequency of orgasm was categorized as never/infrequently, sometimes, or always. Interest in sex was assessed on a five-point scale from 1 (no interest) to 5 (high interest); for analysis purposes, this was categorized as not interested (1–2), neutral (3), or interested (4–5). Importance of vaginal sexual activity was assessed on a five-point scale, from 1 (not important) to 5 (very important); for analysis purposes, this was categorized as not important (1–2), neutral (3), or important (4–5).

Statistical analysis

Demographic characteristics of cases and healthy controls and Candida controls were compared using chi-squared tests for categorical variables and Student *t*-tests for continuous variables. Self-reported vulvar pain was compared between cases and Candida controls using a Fisher's exact test. Healthy controls were not compared with cases on vulvar pain because they were selected based on a response of ''no'' to the vulvar pain question. Self-reported sexual behaviors were compared between cases and both control groups using chi-squared tests. Discordance of self-reported attitudes towards sexual activity and actual sexual behaviors were compared using chi-squared tests or Fisher's exacts tests where appropriate. All *p*-values were two-sided and were considered statistically significant at $p < 0.05$.

Results

A total of 335 women met our inclusion criteria: 197 women with LS (cases), 95 asymptomatic women (healthy controls), and 43 women with vulvovaginal candidiasis (Candida controls). Over three-fourths (76.1%) of cases and 88.4% of Candida controls reported current vulvar pain ($p = 0.14$). Demographic characteristics of the cases and controls are shown in Table 1. Women with LS were significantly older

Table 1. Demographic Characteristics of Lichen Sclerosus Cases and Controls of Reproductive Age ($n = 335$)

Characteristic	*Overall* (N = *335*) n *(%)*	*Cases* (N = *197*) n *(%)*	*Healthy controls* (N = *95*) n *(%)*	p[1]	*Candida controls* (N = *43*) n *(%)*	p[2]
Age (mean, SD)	32.3 (7.3)	35.4 (6.1)	29.5 (7.3)	< 0.0001	33.8 (6.4)	0.19
Race				< 0.0001		0.10
Caucasian	243 (72.5)	139 (70.6)	68 (71.6)		36 (83.7)	
African American	19 (5.7)	4 (2.0)	13 (13.7)		2 (4.7)	
Other	25 (7.5)	6 (3.1)	14 (14.7)		5 (11.6)	
Missing	48 (14.3)	48 (24.4)	0 (0)		0 (0)	
Relationship status				< 0.0001		0.85
Single	53 (15.8)	17 (8.6)	32 (33.7)		4 (9.3)	
Married/cohabitating/stable relationship	242 (72.2)	155 (78.7)	52 (54.7)		35 (81.4)	
Separated/divorced	23 (6.9)	11 (5.6)	9 (9.5)		3 (7.0)	
Widowed	13 (3.9)	12 (6.1)	0 (0)		1 (2.3)	
Missing	4 (1.2)	2 (1.0)	2 (2.1)		0 (0)	
Education				0.51		0.91
Up to high school graduate	55 (16.4)	27 (13.7)	21 (22.1)		7 (16.3)	
Some college/technical or trade school	91 (27.2)	50 (25.4)	25 (26.3)		16 (37.2)	
College graduate	76 (22.7)	37 (18.8)	29 (30.5)		10 (23.3)	
Graduate or professional school	63 (18.8)	35 (17.8)	20 (21.1)		8 (18.6)	
Missing	50 (14.9)	48 (24.4)	0 (0)		2 (4.7)	
Household income ($)				0.008		0.08
< 10,000	20 (6.0)	6 (3.1)	14 (14.7)		0 (0)	
10,000–29,999	45 (13.4)	19 (9.6)	17 (17.9)		9 (20.9)	
30,000–50,000	59 (17.6)	26 (13.2)	21 (22.1)		12 (27.9)	
> 50,000	141 (42.1)	84 (42.6)	40 (42.1)		17 (39.5)	
Missing	70 (20.9)	62 (31.5)	3 (3.2)		5 (11.6)	

[1] *p*-Value for comparison of characteristic between cases and healthy controls.
[2] *p*-Value for comparison of characteristic between cases and candida controls.
SD, standard deviation.

($p < 0.0001$), more likely to be married ($p < 0.0001$) and of higher household income ($p = 0.008$) than the healthy controls. The LS cases were similar to Candida controls with respect to age, race, relationship status, education, and household income (all p-values > 0.05).

Characteristics of sexual behavior including frequency, type, and quality of sexual activity and frequency of orgasm are shown in Table 2. Women with LS reported significantly less frequent sexual activity than either healthy controls or Candida controls ($p = 0.007$ and $p = 0.04$ respectively). Although similar proportions of the currently sexually active women in all three study groups reported that vaginal sexual activity was important, women with LS who were currently sexually active were significantly less likely to report vaginal intercourse than either healthy controls (71.6% vs. 89.0%, $p = 0.003$) or Candida controls (100%, $p = 0.0003$) Satisfaction towards the quality of current sexual activity was significantly lower among women with LS compared to both healthy and Candida controls who were currently sexually active: 23.7% of women with LS reported that sexual activity was rarely or never satisfactory as compared to none of the healthy controls ($p < 0.0001$) and 6.5% of Candida controls ($p = 0.03$). By contrast, sexually active women with LS report less frequent orgasms than healthy controls ($p < 0.0001$), but have similar rates of orgasm as the Candida controls ($p = 0.22$).

Discordance between attitudes towards sexual activity and sexual behaviors of cases and controls is shown in Table 3. Of the women with LS, 15.3% felt that vaginal sexual activity was important but their current quality of sexual activity was rarely or never satisfactory, compared with none of the healthy controls ($p < 0.0001$) and 4.7% of the Candida controls ($p = 0.07$).

Table 2. Characteristics of Sexual Behavior Among Cases and Controls of Reproductive Age

Characteristic	*Overall* n *(%)*	*Cases* n *(%)*	*Healthy controls* n *(%)*	p[1]	*Candida controls*	p[2]
Frequency of sexual activity, all participants ($N = 335$)				0.007		0.04
Never sexually active	20 (6.0)	12 (6.1)	8 (8.4)		0 (0)	
Less than once per week	128 (38.2)	86 (43.7)	30 (31.6)		12 (27.9)	
At least once per week	133 (39.7)	62 (31.5)	52 (54.7)		19 (44.2)	
Missing	54 (16.1)	37 (18.8)	5 (5.3)		12 (27.9)	
Type of current sexual activity,[3] currently sexually active participants ($N = 261$)						
Vaginal sex	210 (80.5)	106 (71.6)	73 (89.0)	0.003	31 (100)	0.0003
Oral sex	132 (50.6)	63 (42.6)	44 (53.7)	0.11	25 (80.7)	< 0.0001
Anal sex	15 (5.8)	6 (4.1)	5 (6.1)	0.49	4 (12.9)	0.07
Masturbation	73 (28.0)	31 (21.0)	31 (37.8)	0.006	11 (35.5)	0.08
Instruments for orgasm	35 (13.4)	15 (10.1)	12 (14.6)	0.31	8 (25.8)	0.02
Quality of current sexual activity, currently sexually active participants ($N = 261$)				< 0.0001		0.03
Never or rarely satisfactory	37 (14.2)	35 (23.7)	0 (0)		2 (6.5)	
Sometimes or generally very satisfactory	204 (78.2)	100 (67.6)	76 (92.7)		28 (90.3)	
Missing	20 (7.7)	13 (8.8)	6 (7.3)		1 (3.2)	
Frequency of orgasm, currently sexually active participants ($n = 261$)				< 0.0001		0.22
Never/infrequently	32 (12.3)	25 (16.9)	2 (2.4)		5 (16.1)	
Sometimes	76 (29.1)	65 (43.9)	0 (0.0)		11 (35.5)	
Always	127 (48.7)	38 (25.7)	75 (91.5)		14 (45.2)	
Missing	26 (10.0)	20 (13.5)	5 (6.1)		1 (3.2)	
Interest in sex,[4] currently sexually active participants ($N = 261$)				0.01		0.14
Not interested	45 (17.2)	35 (23.7)	7 (8.5)		3 (9.7)	
Neutral	78 (29.9)	42 (28.4)	27 (32.9)		9 (29.0)	
Interested	131 (50.2)	65 (43.9)	47 (57.3)		19 (61.3)	
Missing	7 (2.7)	6 (4.1)	1 (1.2)		0 (0)	
Importance of vaginal sexual activity,[5] currently sexually active participants ($N = 261$)				0.20		0.17
Not important	29 (11.1)	17 (11.5)	11 (13.4)		1 (3.2)	
Neutral	59 (22.6)	30 (20.3)	25 (30.5)		4 (12.9)	
Important	164 (62.8)	94 (63.5)	44 (53.7)		26 (83.9)	
Missing	9 (3.5)	7 (4.7)	2 (2.4)		0 (0)	

[1] p-Value for comparison of characteristic between cases and controls.
[2] p-Value for comparison of characteristic between cases and Candida controls.
[3] Types are not mutually exclusive (participants could indicate more than one type of sexual activity).
[4] Scale of 1 (no interest) to 5 (high interest), categorized as interested (4–5), neutral (3) or not interested (1–2).
[5] Scale of 1 (not important) to 5 (very important), categorized as important (4–5), neutral (3) or not important (1–2).

Table 3. Discordant Attitudes and Sexual Behaviors of Lichen Sclerosus Cases and Controls of Reproductive Age (n = 335)

	Overall (n = *335*) n *(%)*	*Cases* (n = *197*) n *(%)*	*Healthy controls* (n = *95*) n *(%)*	p[1]	*Candida controls* (n = *43*) n *(%)*	p[2]
I am interested in sexual activity, but I am not currently engaging in vaginal sexual intercourse.	33 (9.9)	21 (10.7)	9 (9.5)	0.46	3 (7.0)	0.58
I am interested in sexual activity, but my current quality of sexual activity is rarely or never satisfactory.	18 (5.4)	18 (9.1)	0 (0)	< 0.001[3]	0 (0)	0.05[3]
Vaginal sexual activity is important to me, but I am not currently engaging in vaginal sexual intercourse.	41 (12.2)	30 (15.2)	8 (8.4)	0.04	3 (7.0)	0.21[3]
Vaginal sexual activity is important to me, but my current quality of sexual activity is rarely or never satisfactory.	32 (9.6)	30 (15.3)	0 (0)	< 0.0001[3]	2 (4.7)	0.07[3]

[1]Chi-squared *p*-Value for comparison between cases and healthy controls.
[2]Chi-squared *p*-Value for comparison between cases and candida controls.
[3]Fisher's exact test *p*-Value.

Discussion

Lichen sclerosus of the vulva is a chronic condition affecting women throughout their lifespan. The pathophysiology of LS is unknown; however, various genetic, autoimmune, and local factors have been implicated. The cause is probably multifactorial. The majority of descriptive studies on LS have focused mainly on vulvar pruritus and irritation; however, other symptoms may be present. Vulvar LS has been associated with numerous bladder, bowel, and other pain comorbidities including dyspareunia, burning sensation, and dysuria.[4,5] Vulvar scarring often occurs, at times resulting in problems with intercourse. In patients with advanced disease, the introitus may become narrowed resulting in painful sexual intercourse or preventing intercourse altogether.[6]

The relationships between vulvar pain, sexual dysfunction, and LS are poorly understood. These symptoms are present for many women suffering from this disease.[7,8] Studies have evaluated LS and pain showing a significant impact on a woman's quality of life.[5,9–20]

Limited data are available focusing specifically on the effect of LS on quality of life (QoL) and sexual function. Two studies have shown that patients with LS report significant impact on all major QoL domains (including those related to sexual issues) except school/studying and work.[7,21] The results from our subjects suggest a similar negative influence of LS on sexual function as was shown in these other studies. van de Nieuwenhof and colleagues explored details of sexual function in women with LS and healthy controls, demonstrating that subjects with LS reported significantly lower sexual satisfaction and function than controls.[7] Although these findings are similar to those from our study, there are several notable differences in the study methodologies that need to be highlighted. Their group recruited women with self-reported LS, whereas the subjects in our study all had documented biopsy-proven disease. Furthermore, the healthy controls in the study by van de Nieuwenhof were friends of patients with dermatologic diseases, whereas our controls were women presenting for routine health maintenance examinations in the gynecology clinic. Their participants were also older than our subjects.

Little research has focused on describing the severity and character of vulvar pain or the characteristics of sexual activity in LS patients compared with healthy individuals. In a questionnaire of 45 women analyzed with the diagnosis of LS, 75.5% of them reported dyspareunia and reduced frequency of intercourse; with apareunia in 42.2%.[8] LeFevre, et al., similarly found that substantial proportions of women with LS reported dyspareunia, vulvar burning, and vulvar pain, with complete symptom relief after treatment ranging from approximately 47%–92%.[9] Patient discomfort due to the physical effects of LS is the likely cause of sexual dysfunction in these women. Lichen sclerosus may cause erosions, fissures, scarring, labial fusion, and introital stenosis that impacts women's lives in regards to their sexual activity and level of vulvar pain.[21] Our study represents a comparison between LS patients, with and without pain, to control populations of gynecological patients without vulvar pathology and women with vulvovaginal Candida infections. Although similar proportions of the LS patients and Candida controls in our study reported vulvar pain, the women with lichen sclerosus report less frequent sexual activity and lower sexual satisfaction. Possible explanations for this discrepancy include differences in the quality of pain experienced by these two groups of women, anatomic changes associated with LS but not with vulvar Candidiasis, differences in psychological distress and/or satisfaction with genital appearance related to these diseases, and duration of these diseases.

Numerous studies suggest that topical treatments may be effective for pain control in women with LS. However, these same treatments may not result in improved sexual function. For example, two different studies have shown that topical immunomodulators result in significant symptomatic relief and histopathologic improvement, yet substantial proportions of women using these treatments report persistent sexual dysfunction.[8,22]

To further explore sexual dysfunction, the current study analyzed the frequency, type, and quality of sexual activity

and the quality and orgasms compared with a control group. Lichen sclerosus cases were less frequently sexually active than either of the control groups. Those patients with LS that were sexually active were significantly less likely to report vaginal intercourse than either healthy controls or Candida controls. Several strategies exist for managing the patient with lichen sclerosus and sexual dysfunction.[23,24] LS may cause scarring, labial fusion, and introital stenosis, at times requiring surgical treatment.[25–27] Unfortunately, despite treatment for lichen sclerosus, a recent study found that women with LS continue to have significant sexual dysfunction.[22] The impact of LS on quality of life by inducing dyspareunia and reducing interest for sexual engagement because of pain requires further investigation.[28] More research is also needed to explore whether specifically targeting LS-associated pain effectively treats sexual dysfunction. At this time, it is also unclear if increasing awareness of the possibility of sexual dysfunction among patients with lichen sclerosus results in in earlier intervention, and if this improves their quality of life.

One limitation to this study is that the age, race, relationship status and household income were significantly different when comparing cases to healthy controls. Another limitation is that while we are confident of the case definition, the referral patterns to a specialty clinic may pose some issue for generalizing of these findings to all women with lichen sclerosus. Despite these limitations, we have confirmed that it is important to evaluate the impact of LS on sexual function, emphasizing the need for health care providers to address sexual function when treating patients with LS.

Conclusions

Our findings suggest that women with vulvar lichen sclerosus suffer from a greater degree of sexual dysfunction than both healthy women and those with Candida infections. This study highlights the need for attention to sexual functioning when treating patients with lichen sclerosus.

Acknowledgment

We gratefully acknowledge investigator support for Mitchell B. Berger, MD, PhD, through the Eunice Kennedy Shriver National Institute of Child Health and Human Development BIRCWH Career Development Award #K12-HD-001438.

Disclosure Statement

No competing financial interests exist.

References

1. Murphy R. Lichen sclerosus. Dermatol Clin 2010;28:707–715.
2. Melzack R. The McGill Pain Questionnaire: Major properties and scoring methods. Pain 1975;1:277–299.
3. Melzack R. The McGill pain questionnaire: from description to measurement. Anesthesiology 2005;103:199–202.
4. Hagedorn M, Buxmeyer B, Schmitt Y, Bauknecht T. Survey of genital lichen sclerosus in women and men. Arch Gynecol Obstet 2002;266:86–91.
5. Berger MB, Damico NJ, Menees SB, Fenner DE, Haefner HK. Rates of self-reported urinary, gastrointestinal, and pain comorbidities in women with vulvar lichen sclerosus. J Low Genit Tract Dis 2012;16:285–289.
6. Gunthert AR, Duclos K, Jahns BG, Krause E, Amann E, Limacher A, et al. Clinical scoring system for vulvar lichen sclerosus. J Sex Med 2012;9:2342–2350.
7. Van de Nieuwenhof HP, Meeuwis KA, Nieboer TE, Vergeer MC, Massuger LF, De Hullu JA. The effect of vulvar lichen sclerosus on quality of life and sexual functioning. J Psychosom Obstet Gynaecol 2010;31:279–284.
8. Dalziel KL. Effect of lichen sclerosus on sexual function and parturition. J Reprod Med 1995;40:351–354.
9. LeFevre C, Hoffstetter S, Meyer S, Gavard J. Management of lichen sclerosus with triamcinolone ointment: Effectiveness in reduction of patient symptom scores. J Low Genit Tract Dis 2011;15:205–259.
10. Goldstein AT, Creasey A, Pfau R, Phillips D, Burrows LJ. A double-blind, randomized controlled trial of clobetasol versus pimecrolimus in patients with vulvar lichen sclerosus. J Am Acad Dermatol 2011;64:e99–104.
11. Nissi R, Eriksen H, Risteli J, Niemimaa M. Pimecrolimus cream 1% in the treatment of lichen sclerosus. Gynecol Obstet Invest 2007;63:151–154.
12. Simpkin S, Oakley A. Clinical review of 202 patients with vulval lichen sclerosus: A possible association with psoriasis. Australas J Dermatol 2007;48:28–31.
13. Danby CS, Margesson LJ. Approach to the diagnosis and treatment of vulvar pain. Dermatol Ther 2010;23:485–504.
14. Ponte M, Klemperer E, Sahay A, Chren MM. Effects of vulvodynia on quality of life. J Am Acad Dermatol 2009;60:70–76.
15. Meffert JJ, Davis BM, Grimwood RE. Lichen sclerosus. J Am Acad Dermatol 1995;32:393–416; quiz 7–8.
16. Powell JJ, Wojnarowska F. Lichen sclerosus. Lancet 1999;353:1777–1783.
17. Jensen JT, Wilder K, Carr K, Romm J, Hansen A. Quality of life and sexual function after evaluation and treatment at a referral center for vulvovaginal disorders. Am J Obstet Gynecol 2003;188:1629–1635; discussion 35–37.
18. Basra MK, Fenech R, Gatt RM, Salek MS, Finlay AY. The Dermatology Life Quality Index 1994–2007: A comprehensive review of validation data and clinical results. Br J Dermatol 2008;159:997–1035.
19. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI)–A simple practical measure for routine clinical use. Clin Exp Dermatol 1994;19:210–216.
20. Rosen R, Brown C, Heiman J, et al. The Female Sexual Function Index (FSFI): A multidimensional self-report instrument for the assessment of female sexual function. J Sex Marital Ther 2000;26:191–208.
21. Neill SM, Lewis FM, Tatnall FM, Cox NH. British Association of Dermatologists' guidelines for the management of lichen sclerosus 2010. Br J Dermatol 2010;163:672–682.
22. Burrows LJ, Creasey A, Goldstein AT. The treatment of vulvar lichen sclerosus and female sexual dysfunction. J Sex Med 2011;8:219–222.
23. Pinelli S, D'Erme AM, Lotti T. Management of sexual dysfunction due to vulvar lichen sclerosus in postmenopausal women. Dermatol Ther 2013;26:79–82.

24. Smith YR, Haefner HK. Vulvar lichen sclerosus: Pathophysiology and treatment. Am J Clin Dermatol 2004; 5:105–125.
25. Gurumurthy M, Morah N, Gioffre G, Cruickshank ME. The surgical management of complications of vulval lichen sclerosus. Eur J Obstet Gynecol Reprod Biol 2012;162:79–82.
26. Bradford J, Fischer G. Surgical division of labial adhesions in vulvar lichen sclerosus and lichen planus. J Low Genit Tract Dis 2013;17:48–50.
27. Rouzier R, Haddad B, Deyrolle C, Pelisse M, Moyal-Barracco M, Paniel BJ. Perineoplasty for the treatment of introital stenosis related to vulvar lichen sclerosus. Am J Obstet Gynecol 2002;186:49–52.
28. Basson R, Wierman ME, van Lankveld J, Brotto L. Summary of the recommendations on sexual dysfunctions in women. J Sex Med 2010;7:314–326.

Address correspondence to:
Hope K. Haefner, MD
Department of Obstetrics and Gynecology
The University of Michigan Health System
L 4000 Women's Hospital 1500 East Medical Center Drive
Ann Arbor, MI 48109

E-mail: haefner@umich.edu

This article has been cited by:

1. Avery A. Whitis, Susan W. Lipinski, Catherine S. Bradley, Colleen K. Stockdale. 2017. Association of Vulvar Symptoms With Pelvic Organ Prolapse and Urinary Incontinence. *Journal of Lower Genital Tract Disease* **21**:4, 315-318. [Crossref]
2. Anuja Vyas. 2017. Genital Lichen Sclerosus and its Mimics. *Obstetrics and Gynecology Clinics of North America* **44**:3, 389-406. [Crossref]
3. F. R. Pérez-López, P. Vieira-Baptista. 2017. Lichen sclerosus in women: a review. *Climacteric* **20**:4, 339-347. [Crossref]
4. Jonathan Frost, Linmarie Ludeman, Kathryn Hillaby, Robert Gornall, Gavin Lloyd, Catherine Kendall, Angela C. Shore, Nick Stone. 2017. Raman spectroscopy and multivariate analysis for the non invasive diagnosis of clinically inconclusive vulval lichen sclerosus. *The Analyst* **142**:8, 1200-1206. [Crossref]
5. John B. Gebhart, Jennifer J. Schmitt. 2016. Surgical Management of the Constricted or Obliterated Vagina. *Obstetrics & Gynecology* **128**:2, 284-291. [Crossref]
6. Marieke Brauer, Rik H.W. van Lunsen, Ellen T.M. Laan, Matthé P.M. Burger. 2016. A Qualitative Study on Experiences After Vulvar Surgery in Women With Lichen Sclerosus and Sexual Pain. *The Journal of Sexual Medicine* **13**:7, 1080-1090. [Crossref]
7. Marieke Brauer, Rik van Lunsen, Matthé Burger, Ellen Laan. 2015. Motives for Vulvar Surgery of Women with Lichen Sclerosus. *The Journal of Sexual Medicine* **12**:12, 2462-2473. [Crossref]
8. Pedro Vieira-Baptista, Claudia Marchitelli, Hope K. Haefner. 2015. The "Genitourinary Syndrome of Menopause". *Journal of Lower Genital Tract Disease* **19**:4, 362-363. [Crossref]
9. Susan Kellogg Spadt, Elizabeth Kusturiss. 2015. Vulvar Dermatoses: A Primer for the Sexual Medicine Clinician. *Sexual Medicine Reviews* **3**:3, 126-136. [Crossref]
10. Rafael Comino, Pluvio J. Coronado, Montserrat Cararach, Anibal Nieto, Juan C. Martinez-Escoriza, Alberto Salamanca, Luis M. Torres-Garcia, Jose A. Vidart, Nicolás Mendoza, Aureli Torne, Rafael Sánchez-Borrego. 2015. Spanish consensus on vulvar disorders in postmenopausal women. *Maturitas* **80**:2, 226-233. [Crossref]