WOMEN'S SEXUAL HEALTH

Anatomic Sites and Associated Clinical Factors for Deep Dyspareunia

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ABSTRACT

Introduction: Deep dyspareunia negatively affects women's sexual function. There is a known association between deep dyspareunia and endometriosis of the cul-de-sac or uterosacral ligaments in reproductive-age women; however, other factors are less clear in this population.

Aim: To identify anatomic sites and associated clinical factors for deep dyspareunia in reproductive-age women at a referral center.

Methods: This study involved the analysis of cross-sectional baseline data from a prospective database of 548 women (87% consent rate) recruited from December 2013 through April 2015 at a tertiary referral center for endometriosis and/or pelvic pain. Exclusion criteria included menopausal status, age at least 50 years, previous hysterectomy or oophorectomy, and not sexually active. We performed a standardized endovaginal ultrasound-assisted pelvic examination to palpate anatomic structures for tenderness and reproduce deep dyspareunia. Multivariable regression was used to determine which tender anatomic structures were independently associated with deep dyspareunia severity and to identify clinical factors independently associated with each tender anatomic site.

Main Outcome Measure: Severity of deep dyspareunia on a numeric pain rating scale of 0 to 10.

Results: Severity of deep dyspareunia (scale = 0−10) was independently associated with tenderness of the bladder (b = 0.88, $P = .018$), pelvic floor (levator ani) (b = 0.66, $P = .038$), cervix and uterus (b = 0.88, $P = .008$), and cul-de-sac or uterosacral ligaments (b = 1.39, $P < .001$), but not with the adnexa (b = −0.16, $P = 0.87$). The number of tender anatomic sites was significantly correlated with more severe deep dyspareunia (Spearman r = 0.34, $P < .001$). For associated clinical factors, greater depression symptom severity was specifically associated with tenderness of the bladder (b = 1.05, $P = .008$) and pelvic floor (b = 1.07, $P < .001$). A history of miscarriage was specifically associated with tenderness of the cervix and uterus (b = 2.24, $P = .001$). Endometriosis was specifically associated with tenderness of the cul-de-sac or uterosacral ligaments (b = 3.54, $P < .001$).

Conclusions: In reproductive-age women at a tertiary referral center, deep dyspareunia was independently associated not only with tenderness of the cul-de-sac and uterosacral ligaments but also with tenderness of the bladder, pelvic floor, and cervix and uterus. **Yong PJ, Williams C, Yosef A, et al. Anatomic Sites and Associated Clinical Factors for Deep Dyspareunia. Sex Med 2017;5:e184−e195.**

Key Words: Bladder; Depression; Dyspareunia; Endometriosis; Miscarriage; Pelvic Floor

INTRODUCTION

Endometriosis affects 10% of reproductive-age women, and approximately half of women with endometriosis have deep dyspareunia (pelvic pain with intercourse).[1−3] The consequences of deep dyspareunia have been demonstrated in multiple studies, including negative effects on sexual function, relationships, and quality of life.[4−7] Deep dyspareunia is differentiated from superficial dyspareunia (introital pain with intercourse),[6] which is due primarily to vulvodynia.

There has been a call for more research into the pathophysiology of deep dyspareunia.[2,8] Endometriosis of the cul-de-sac or uterosacral ligaments, especially deep (infiltrating) endometriosis of this region, is a known risk factor for deep dyspareunia.[9−11] Treatment trials also have shown that management of endometriosis can alleviate deep dyspareunia in some patients.[6,12−14]

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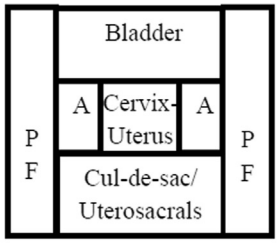
However, there is still phenotypic variability in deep dyspareunia that cannot be accounted for by the endometriosis alone. For example, clinicians will observe that one patient with cul-de-sac or uterosacral endometriosis might have severe deep dyspareunia, whereas another patient with the same cul-de-sac or uterosacral endometriosis might have minimal pain with intercourse. This was demonstrated in a study of women with cul-de-sac or uterosacral endometriosis: although cul-de-sac or uterosacral endometriosis increases the risk for deep dyspareunia, there was still wide variability in severity of deep dyspareunia reported by this population of women.[15]

Thus, treatment of cul-de-sac or uterosacral endometriosis, although important, cannot be the sole management approach for deep dyspareunia. That is, there must be other causes of deep dyspareunia in this population of women. In addition to the cul-de-sac or uterosacral ligaments, deep dyspareunia could arise from contact with several other pelvic structures with proximity to the vagina (Figure 1): the bladder, the pelvic floor musculature, the cervix and uterus, and the adnexa. In some women, at least one of these anatomic structures can become tender and contact during deep penetration can lead to pain and deep dyspareunia. However, it is important to empirically validate whether tenderness of each anatomic site is associated with deep dyspareunia, similar to the cul-de-sac or uterosacral ligaments, so that clinicians know whether tenderness of each site can be a contributor to a patient's deep dyspareunia and thus a potential treatment target. It also is important to provide some insight into the underlying etiologic factors for each tender anatomic site, which in turn would guide management. For example, it is clear that surgical excision of cul-de-sac or uterosacral endometriosis can be a treatment for deep dyspareunia.[12] However, what is less clear are the clinical conditions or risk factors that could give rise to tender bladder, pelvic floor, cervix and uterus, or adnexa, which also could be potential therapeutic targets for deep dyspareunia.

Therefore, our primary research question was whether tenderness in other pelvic structures (bladder, pelvic floor, cervix and uterus, and adnexa)—in addition to the known importance of tenderness of the cul-de-sac or uterosacral ligaments in endometriosis—is associated with severity of deep dyspareunia. Using multivariable regression, our hypothesis was that each of these pelvic structures would have an independent association with severity of deep dyspareunia. The clinical importance of this analysis is that it establishes whether tenderness of each anatomic site potentially has an independent contribution to deep dyspareunia. This guides the clinician in formulating a differential diagnosis for the deep dyspareunia. For example, in a given patient, deep dyspareunia could be due to independent contributions from the cul-de-sac or uterosacral ligaments, the bladder, the pelvic floor, and the uterus and cervix, each of which might require specific management, as described below.

Our secondary question was whether there are specific clinical factors associated with tenderness of each pelvic structure to provide insight into possible etiologic mechanisms for the development of tenderness. Endometriosis commonly grows in the cul-de-sac or uterosacral ligaments, and thus we hypothesized that endometriosis would be associated with tenderness of the cul-de-sac or uterosacral ligaments as described earlier. However,



Anatomic site	Endovaginal ultrasound-assisted pelvic examination	Tenderness
Bladder	Single digit palpation of the bladder at the anterior vaginal wall.	Present/ Absent
Pelvic floor (PF)	Single digit palpation of the levator ani bilaterally at 3 o'clock and 9 o'clock.	Present/ Absent
Cervix-uterus	Single digit palpation of the cervix (cervical motion tenderness) and uterine fundus, and endovaginal ultrasound palpation of the visualized cervix and fundus.	Present/ Absent
Cul-de-sac/ Uterosacrals	Single digit palpation and endovaginal ultrasound palpation of the right uterosacral, cul-de-sac, or left uterosacral.	Present/ Absent
Adnexa (A)	Single digit palpation of the paracervical regions at 3 o'clock and 9 o'clock, and endovaginal ultrasound palpation of each visualized ovary.	Present/ Absent

Figure 1. Putative anatomic sites in the vaginal canal that could be contacted during deep penetration and lead to deep dyspareunia. A standardized endovaginal ultrasound-assisted pelvic examination was carried out to palpate each anatomic site for tenderness (present vs absent) to objectively reproduce deep dyspareunia, as previously published.[16–18]