#667 Sweet Relief: A Novel Approach to Vulvodynia and Vaginal Pain Management with 5% Dextrose Water and Lidocaine Hydrodissection

Evelyn Yang[1,2], Ming-Che Wu[3], Gin-Den Chen[1,2], Yun-Han Liao[1,2]

1. Department of Obstetrics and Gynecology, Chung Shan Medical University Hospital, Taichung, Taiwan.
2. Department of Obstetrics and Gynecology, School of Medicine, College of Medicine, Chung Shan Medical University, Taichung, Taiwan.
3. Department of Physical Medicine and Rehabilitation, New Taiping Cheng Ching Hospital, Taichung, Taiwan.

Aims of Study

Vulvodynia is a persistent vulvar pain lasting at least 3 months without a clearly identifiable cause. The prevalence of vulvodynia has been reported to be from 7% to 16% of women and may be generalized to the whole vulvar area or localized to specific locations. Vulvodynia may be categorized as provoked, unprovoked, or mixed. Vulvodynia causes severe pain and has is also associated with reduced sexual desire, negative personal relationships, and decreased sexual satisfaction. While the underlying mechanism of vulvodynia is poorly understood, studies have found an association between vulvodynia and other diseases which affect the nervous system, implying that there is a neuropathic component to the disease. Traditionally, treatment for vulvodynia included topical, oral and injectable therapies, physiotherapy, psychological therapies, and laser therapies, among others. However, for many patients, treatment is often ineffective or short-lasting with severe rebounding pain post-treatment. In recent years, there have been a number of studies conducted which have treated a variety of neurological diseases such as carpal tunnel syndrome, nerve entrapment and acute sciatica by utilizing nerve hydrodissection with 5% dextrose water (D5W). Since it has been well established that vulvodynia has a neuropathic component, we hypothesized that hydrodissection of the pain points with D5W and lidocaine would also relieve the pain symptoms associated with vulvodynia. The aim of this study was to determine the most common sites of vulvodynia as well as assess the efficacy and safety of utilizing hydrodissection in treating vulvodynia.

Study Design, Materials, and Methods

This prospective study included women who presented with symptoms of vulvodynia including pain, dyspareunia, and sexual dysfunction for more than three months between January 2023 and February 2024. Individualized treatment plans were discussed with each patient to assess the amount of pain. At each visit, thorough inspection and palpation of the vulvar area and the vaginal canal were done. All pain points were recorded. Each pain point was treated with a submucosal injection of a combination of D5W and lidocaine while the patient was awake to determine the effect of injection. Patients were asked to complete questionnaires before the start of treatment and after each subsequent injection session either during in-person clinic visits or by telephone follow-up afterwards. Informed written consent was obtained from all study subjects. Vulvodynia pain severity was self-evaluated by study participants on a 10cm visual analogue scale (VAS). All statistical analyses were performed using SAS software version 9.4 (SAS Institute, Inc., Cary NC, USA). The changes from baseline in the subject assessment of pain symptoms were evaluated using the students. Statistical significance was set at $p<0.05$.

Results

Forty-nine women who presented with vulvodynia were treated with submucosal hydrodissection using a combination of D5W and lidocaine. The mean age of the women was 47.5±12.57 years (±SD) with a range from 25 to 82 years old. The associated vulvodynia pain points which were recorded at the initial visit were presented in Table 1. Since most women presented with more than one pain point, all relevant pain points were recorded. 51.02% of women presented with a pain point at the hymen ring, 30.61% of women presented with a pain point at bilateral paraurethral sulci, 28.57% at the postpartum scar area, and 26.53% at bilateral pubococcygeal muscle areas. Less common sites of pain were the individual left or right pubococcygeus muscle, the clitoris and the posterior vestibule. Women were noted to have pain at the posterior vestibule only if they had no prior history of vaginal delivery, if the women had prior history of vaginal delivery, the pain was categorized as the postpartum scar area. The efficacy of the hydrodissection with D5W and lidocaine on vulvodynia pain symptoms was measured using VAS. These results are presented in Table 2. The mean baseline score of pain-VAS (±SD) was 8.00±1.00. Upon follow-up after individualized treatment plans according to the severity and persistence of each patients' pain symptoms, the mean pain-VAS (±SD) was 3.04±1.06. On average, these results were able to be sustained for three to six months. There were no adverse events reported during or after treatment in all patients.

Interpretation of Results

There have been very few studies reporting the distribution of specific trigger points for women with vulvodynia. In this study, we found that women almost never had only one pain point, instead presenting with a multitude of pain points. On average, most women presented with two to three specific pain points. The most common pain point was at the hymen ring (51.02%) with the most commonly identified pain points at the 4 o'clock, 6 o'clock, and 8 o'clock positions on the hymen ring.

The second most common pain point was at the bilateral paraurethral sulci (30.61%) while the third was at the postpartum scar area (28.57%). These findings were in an interesting contrast to most studies on vulvodynia which merely state that vulvodynia may affect the clitoris or posterior vestibule. When, in fact, only one patient in our study presented with pain at the clitoris. Vulvodynia is notoriously difficult to treat with women often suffering in silence due to ineffective treatment modalities. Recently, there has been a push for individualized treatment plans for patients with vulvodynia simply due to its differing presentations, pain points and effectiveness of treatments in each patient. While a large majority of patients undergo multi-modal therapies such as a combination of oral, injection and topical medication in addition to pelvic floor rehabilitation or physiotherapy. Often, these treatments may be effective in the short-term but many wane in efficacy over time. In the past ten years, there have been many studies and clinical trials investigating the effectiveness of hydrodissection with 5% dextrose water in a variety of nerve-related diseases including carpal tunnel syndrome, peripheral nerve entrapment and sciatica. While the etiology of vulvodynia has yet to be found, it is generally accepted to have a neurological component. The present study evaluated the safety and efficacy of a novel treatment to utilize targeted submucosal hydrodissection with a combination of D5W and lidocaine at each vulvodynia pain point. The results presented in this study showed statistically significant improvement in the assessment of vulvodynia related pain symptoms by the visual analogue scale. There was a statistically significant decrease in pain-VAS scores pre- and post- treatment with a calculated decrease of 4.96±1.15 in pain. This correlated to a p-value of less than 0.0001. This significant decrease in symptoms was able to be maintained on an average of three to six months' post-treatment. In all patients, there were no severe adverse effects associated with injection sessions reported.

Conclusions

In conclusion, the most common trigger points associated with vulvodynia were the hymen ring, bilateral paraurethral sulci, and the postpartum scar area. Furthermore, the findings are optimistic that submucosal hydrodissection of pain points with lidocaine and D5W is an effective and safe treatment modality for vulvodynia. Significant improvements in pain were noted post-treatment and were able to be sustained for an average of at least three to six months. Further studies are necessary to assess the long-term efficacy of this treatment.

Pain Point	Percentage of Patients
Hymen	51.02% (25/49)
Bilateral paraurethral sulcus	30.61% (15/49)
Postpartum scar	28.57% (14/49)
Bilateral pubococcygeal muscle	26.53% (13/49)
Left pubococcygeal muscle	6.12% (3/49)
Posterior vestibule	4.08% (2/49)
Right pubococcygeal muscle	4.08% (2/49)
Clitoris	2.04% (1/49)

	Pain VAS Score			
	Before Treatment	After Treatment	Difference	P-value
N	49	49		
Range	(6, 10)	(1, 5)		
Mean (SD)	8.00 (1.00)	3.04 (1.06)	-4.96 (1.15)	< 0.0001
Median (IQR)	8 (7, 8)	3 (2, 4)		

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