Treatment of Primary Deep Dyspareunia with Laparoscopic Uterosacral Nerve Ablation Procedure: A Pilot Study

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Background: This pilot study was undertaken to evaluate the effect of laparoscopic uterosacral nerve ablation (LUNA) for treatment of primary deep dyspareunia.

Methods: Between July 2002 and June 2003, 12 consecutive patients diagnosed with primary deep dyspareunia were treated with the LUNA procedure. The evaluation scoring system included the Hospital Anxiety and Depression Scale and the revised Sabbatsberg Sexual Rating Scale, done at baseline and 3, 6, and 12 months after LUNA.

Results: At the initial 3-month follow-up period, 3 patients were very satisfied with their treatment, 5 were satisfied, 2 uncertain, 1 dissatisfied, and 1 very dissatisfied. The corresponding figures at the 12-month follow-up visit were 2, 4, 4, 1, and 1, respectively. Overall, 8 (66.7%) patients in this trial were very satisfied or satisfied at the initial postoperative evaluation and 6 of them (50.0%) remained satisfied at the final evaluation.

Conclusion: Over half of the study patients felt satisfied with the results of treatment with LUNA. Further prospective controlled clinical trials are mandatory to validate its effectiveness. [*J Chin Med Assoc* 2006;69(3):110–114]

Key Words: deep dyspareunia, laparoscopic uterosacral nerve ablation, uterosacral ligament

Introduction

Dyspareunia, literally "bad or difficult mating", is sexual dysfunction manifested as painful or difficult sexual intercourse.[1] In women, it is generally defined as genital pain occurring with penetration or during or after intercourse but not exclusively vaginismus (a common type of insertional dyspareunia caused by intense involuntary contraction of the perineal muscles surrounding the outer one third of the vagina).[2] A condition rare in men, dyspareunia affects an estimated 10–15% of sexually active women.[3] The etiologic theorizing has also been mostly dualistic, with gynecology focusing on cases associated with observable peripheral pathology and psychiatry/psychology focusing on cases where no such pathology was evident. Dyspareunia is classified by onset (primary versus secondary), frequency (complete versus situational), and location of pain (insertional versus deep).[4]

Deep dyspareunia, often described as deep pelvic pain resulting from deep penile thrusting during sexual intercourse, is also common and has many causes. Major causes include pelvic inflammatory disease; gynecologic, pelvic, or abdominal surgery; postoperative adhesions; endometriosis; genital or pelvic tumors; irritable bowel syndrome; urinary tract infections; and ovarian cysts. Also a common cause is positional, with deep thrusting by the woman's partner hitting an ovary (equivalent to hitting or squeezing a man's testicle).[5] A diagnosis integrating medical and psychosexual factors

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is the first step in the effective treatment of dyspareunia, a condition requiring physiopathologically oriented treatment of the organic factors and therapy related to the individual's and couple's psychosexual issues.[6] So far, there have been very few articles mentioned about the specific treatment for deep dyspareunia. The 2 procedures that have been documented for the treatment of deep dyspareunia were laparoscopic uterosacral ligament ablation (LUNA) and uterine ventrosuspension. As described in Vercellini et al's article,[7] LUNA was originally performed to treat dysmenorrhea associated with endometriosis, and accidentally LUNA was found to have efficacy for deep dyspareunia.[8]

In this pilot study, we sought to investigate the role of LUNA in the treatment of deep dyspareunia.

Methods

This prospective pilot study was undertaken between July 2002 and June 2003 to evaluate the efficacy of LUNA for the treatment of primary deep dyspareunia. Consecutive patients with clinical evidence of primary deep dyspareunia were included upon giving informed consent. LUNA, with a therapeutic intent, was performed to cauterize the bilateral uterosacral ligament using an electric bipolar instrument (Valleylab, CO, USA). The optimal site of coagulation of the sensory nerves in the uterosacral ligament was chosen according to Fujii et al.[9] To prevent the potential side effect of uterine prolapse, we decided to coagulate the uterosacral ligament only, instead of transecting it.[10] Patients with a previous clinical or endoscopic diagnosis of endometriosis or with other diseases that might cause deep dyspareunia (such as chronic pelvic inflammatory disease, pelvic varices, or genital malformations) were excluded. Other exclusion criteria were the presence of a congenital vaginal anomaly; existence of pelvic congestion; previous diagnosis of gastrointestinal, urologic, and orthopedic diseases in which pain may radiate to the pelvic area; and known psychiatric disturbances.

During the study period, 12 patients complaining of deep dyspareunia were prospectively evaluated by adherence to a strict protocol that consisted of pelvic examination, ultrasonography, and questionnaires to determine psychologic status and sexual functioning. Pelvic symptoms and physical findings were assessed at each follow-up visit by 1 senior physician (H.C.H.) on a modification of a published scale.[11]

After the LUNA procedure, patients underwent clinical evaluation at months 3, 6, and 12. Patients were withdrawn from the study if, after the surgery, they used any type of hormonal therapy that could affect pain symptoms. At baseline and each follow-up visit, all patients were asked to complete the submitted forms of the Hospital Anxiety and Depression Scale (HADS)[12] and the revised Sabbatsberg Sexual Rating Scale (rSSRS).[13]

The HADS was originally developed for use in hospital settings, as the name suggests. It was designed as a self-completed questionnaire to assess patients' anxiety and depression during inpatient care according to 2 subscales. Both subscales comprise 7 questions, rated from a score of 0 to 3 depending on the severity of the problem described in each question. The 2 subscales can also be aggregated to provide an overall anxiety and depression score. The HADS has shown to be a reliable instrument for screening, and a valid measure of severity of these mood disorders in patients under investigation in medical and surgical departments.

The rSSRS is a 12-item questionnaire for the assessment of sexual functioning. For each item, there are 5 possible answers, scored from 0 to 4 points (from the lowest to the highest sexual satisification). The scores of 12 items are then summed and transformed to a scale of 0 to 100. Scores between these values represent the percentage of the total possible score. The validity and reliability of this questionnaire have been demonstrated.

The submitted HADS and rSSRS forms were interpreted by one of the authors (M.S.Y.) blinded to patients and treatment. At the final 12-month follow-up evaluation, all patients were requested to rate the overall degree of satisification with their treatment on a 5-category Likert scale (very satisfied, satisfied, uncertain, dissatisfied, very dissatisfied).

Statistical analysis was performed using a computer-based statistical package (SPSS version 10.0; SPSS Inc., Chicago, IL, USA). Variables were compared statistically using the Friedman test or Wilcoxon test, where appropriate. A p value of less than 0.05 was considered to be statistically significant.

Results

By strict adherence to the protocol for diagnostic evaluation of primary deep dyspareunia, 12 patients were identified and enrolled into the study. Baseline clinical characteristics and median pelvic pain, rSSRS, and HADS scores are listed in Table 1. The mean and standard deviation of surgical time for the LUNA procedure was 24 ± 9 minutes. The mean age of the study patients was 34.9 ± 5.6 years, and the mean

parity was 1.4 ± 0.9. The median and percentile profile for HADS score (anxiety, depression, total) and rSSRS score of study subjects are given in Figures 1–4.

We found a significant decrease in scores over follow-up visits, which reflected the potential role of LUNA for the treatment of pure deep dyspareunia. The rSSRS score showed gradual improvement in sexual function over the follow-up period and a statistically significant improvement was evident in 12 months.

The Likert scale showed that, at the initial 3-month follow-up visit, 3 of the 12 study subjects were very satisfied with their treatment, 5 were satisfied, 2 uncertain, 1 dissatisfied, and 1 very dissatisfied. Corresponding figures at the final 12-month follow-up visit were 2, 4, 4, 1, and 1, respectively. Overall, 8 (66.7%) of 12 patients were very satisfied or satisfied at the initial postoperative evaluation, while 6 (50.0%) were satisfied at the final evaluation.

At the same time, the authors also found that, at the initial evaluation, 6 (75%) of the 8 patients who were satisfied with LUNA also had improvement of menstrual pain, and the results were maintained throughout the follow-up period.

Table 1. Baseline clinical characteristics of the 12 study patients

Cases	Age, yr	Parity	History of dysmenorrhea	Duration of preoperative dyspareunia, yr	Chronic pelvic pain	Pelvic symptom score	HADS anxiety score	HADS depression score	HADS total score	rSSRS score
1	28	1	+	3	+	5	5	6	11	68
2	34	0	+	6	–	7	6	8	14	74
3	30	2	–	1	–	8	5	9	14	65
4	38	1	+	2.6	+	6	8	11	19	54
5	43	1	+	4	+	8	2	7	9	65
6	37	3	+	3	+	9	7	8	15	58
7	36	2	–	5	–	6	9	17	26	73
8	45	0	+	0.7	–	7	10	12	22	57
9	30	1	+	1	+	9	6	7	13	46
10	29	1	+	2	+	5	8	8	16	22
11	39	2	+	2	–	4	11	13	24	54
12	30	3	–	6	–	5	8	14	22	18

HADS = Hospital Anxiety and Depression Scale; rSSRS = revised Sabbatsberg Sexual Rating Scale.

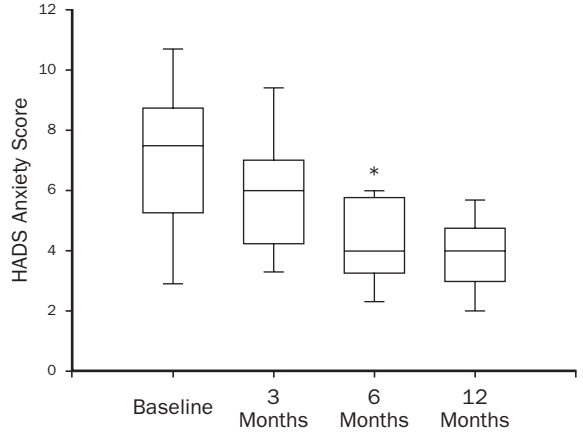

Figure 1. Box-plot diagram for Hospital Anxiety and Depression Scale (HADS) anxiety score at baseline evaluation and serial follow-up visits. This box contains the middle half of the scores in the distribution. The lowest line denotes the 10th percentile value and the highest line denotes the 90th percentile value. *$p < 0.05$, as compared to baseline value, by Wilcoxon test.

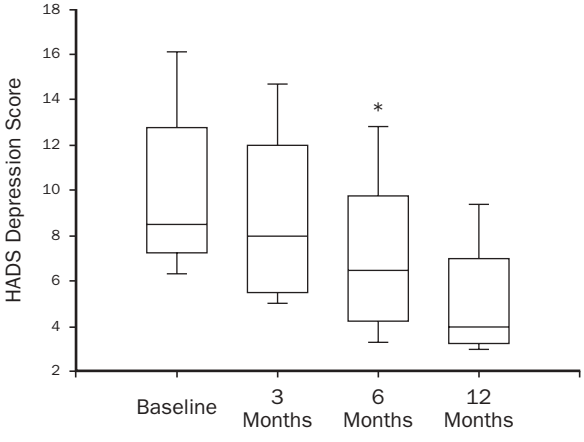

Figure 2. Box-plot diagram for Hospital Anxiety and Depression Scale (HADS) depression score at baseline evaluation and serial follow-up visits. This box contains the middle half of the scores in the distribution. The lowest line denotes the 10th percentile value and the highest line denotes the 90th percentile value. *$p < 0.05$, as compared to baseline value, by Wilcoxon test.

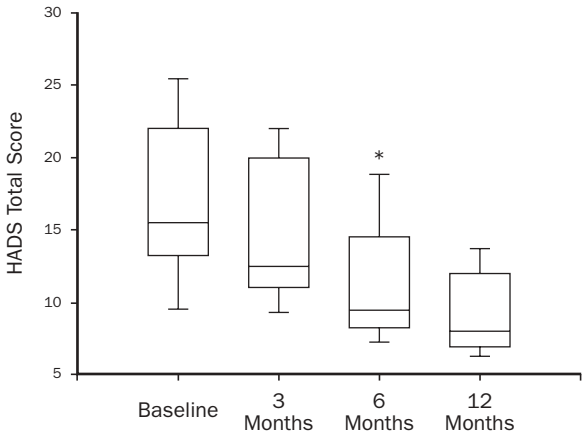

Figure 3. Box-plot diagram for Hospital Anxiety and Depression Scale (HADS) total score at baseline evaluation and serial follow-up visits. This box contains the middle half of the scores in the distribution. The lowest line denotes the 10th percentile value and the highest line denotes the 90th percentile value. *$p < 0.05$, as compared to baseline value, by Wilcoxon test.

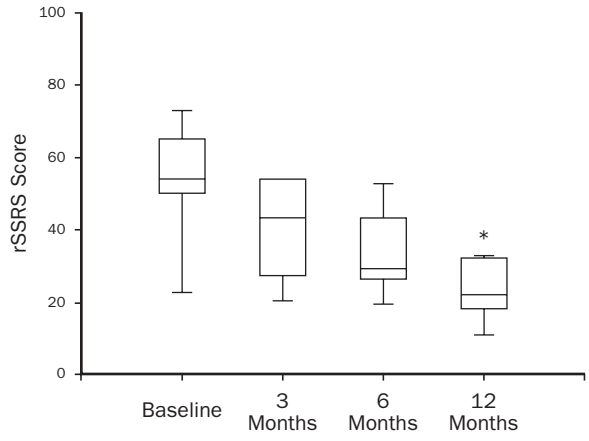

Figure 4. Box-plot diagram for revised Sabbatsberg Sexual Rating Scale (rSSRS) score at baseline evaluation and serial follow-up visits. This box contains the middle half of the scores in the distribution. The lowest line denotes the 10th percentile value and the highest line denotes the 90th percentile value. *$p < 0.05$, as compared to baseline value, by Wilcoxon test.

No side effects attributable to pelvic denervation, specifically changes in urinary bladder and intestinal function, were observed. Of note, postoperatively, only 2 patients had mild fever and 3 patients had mid-pelvic pain that lasted less than 3 days, which resolved spontaneously after conservative treatment. No patients had *de novo* dyspareunia, and frequencies of orgasms were not affected. Preoperatively, 7 patients needed lubricants for assisting intercourse and only 2 patients maintained such assistance at the final 12-month visit ($p < 0.05$, by Chi-square test).

Discussion

The Lee-Frankenhauser sensory nerve plexuses and parasympathetic ganglia in the uterosacral ligaments carry pain from the uterus, cervix, and other pelvic structures.[14] Theoretically, interruption of these nerve trunks by LUNA may alleviate deep dyspareunia. However, the balance of benefits and risks of this intervention has not been reliably assessed. LUNA has, nevertheless, been introduced into practice, although opinion regarding its value is not yet solidified and there remain controversies regarding indications for LUNA.

Dyspareunia is a symptom of multiple and verified disease states and may have multiple causes with components of both organic and psychiatric dysfunction. It is classified by onset (primary versus secondary), frequency (complete versus situational), and location of pain (insertional versus deep). Women suffering from dyspareunia shuttle back and forth from mental health professionals to physicians searching for a cure, with little empirical evidence available as to the ways in which dyspareunic pain may be mediated. Traditionally, it was thought that superficial dyspareunia (at or around the vaginal entrance) is likely to have a psychogenic origin, whereas deep dyspareunia is likely to have an organic cause. These explanations are no longer considered helpful. It is important to try to identify the history of pain; its site, sort, severity, onset, and duration; and any other associated factors. Meana et al[15] found that the location of pain and its onset with an episode of intercourse were the strongest predictors of presence and type of organicity.

Treatment of dyspareunia should be directed at underlying causes. It can be as simple as prescribing antibiotics for vaginal infection or may involve hormonal or surgical therapy for endometriosis. Adjunctive therapy, such as prescription of a vaginal lubricant or local anesthetic or institution of pelvic relaxation exercises, may also be useful.

The original intent of LUNA was to treat the problem of dysmenorrhea with or without endometriosis. In the current study, we found it can play a promising role in the treatment of primary deep dyspareunia and that it had a comparable effectiveness with uterine ventrosuspension, as published by Halperin et al.[8] More important, the side effects of LUNA were negligible.

In conclusion, LUNA was promising for the treatment of primary deep dyspareunia, which potentially extended the indications of LUNA. Further large-scale randomized controlled trials are needed to verify its real effect.

Acknowledgments

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