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Long-Term Outcome of Laparoscopic Presacral Neurectomy for the Treatment of Central Pelvic Pain Attributed to Endometriosis

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Objective: To evaluate the long-term pain reduction achieved by laparoscopic presacral neurectomy.

Methods: One hundred seventy-six women with median (range) age 30 (18–45) years underwent presacral neurectomy combined with excision and vaporization of endometriotic lesions and were observed, using structured questionnaires, for up to 72 months postoperatively. The study included a convenience sample of the first 100 questionnaires returned. Forty of the women were studied for 12–23 months, and 60 for 24–72 months. The main outcome measures were reduction of pelvic pain, dysmenorrhea, and dyspareunia after surgery.

Results: Pelvic pain, dysmenorrhea, and dyspareunia were reportedly reduced by more than 50% in 74, 61, and 55 patients, respectively, more than 12 months after laparoscopic presacral neurectomy. More than 50% reduction in pelvic pain was reported by 69.8%, 77.3%, 71.4%, and 84.6% of the patients, respectively, with endometriosis stages I–IV, using the revised classification of the American Fertility Society. Comparatively, more than 50% reduction in dysmenorrhea was reported by 52.8% of the patients with stage I endometriosis, 68.2% with stage II, 71.4% with stage III, and 69.2% with stage IV. Reduction of dyspareunia by more than 50% was reported by 54.7% of the patients with stage I endometriosis, 50.0% with stage II, 28.6% with stage III, and 61.5% with stage IV.

Conclusion: Long-term outcome of laparoscopic presacral neurectomy is satisfactory in the majority of patients. The stage of endometriosis is not related directly to the degree of pain improvement achieved. (*Obstet Gynecol* 1998;91:701–4.

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Presacral neurectomy for the treatment of pelvic pain associated with endometriosis has been reported to be effective.^{1,2} However, it has been pointed out that careful selection of patients with deep central pelvic pain is a prerequisite to ensure the high success of the procedure.^{3–5} Laparoscopic presacral neurectomy has been shown to have a short-term success rate similar to that of laparotomy, with an apparently lower rate of postoperative morbidity.^{5–8} However, the lack of long-term follow-up with the new approach is of concern because the time required for re-innervation usually is 12–18 months or longer.⁹ The literature only rarely identifies the outcome of patients studied for more than 24 months.³ An additional uncertainty regarding previously reported results of laparoscopic neurectomy in women with endometriosis is the lack of stratification of the cumulative results according to the extent of the disease.¹⁰

The aim of the present study was to assess the degree of long-term pain reduction achieved after laparoscopic presacral neurectomy in patients with central pelvic pain and endometriosis, according to the severity of the disease and the duration of follow-up.

Materials and Methods

The surgical technique and early follow-up of the initial series of patients have been reported previously.^{6,11} The study population included 176 women aged 18–45 years who underwent laparoscopic surgery between October 1990 and April 1993. Each had severe chronic and recurrent central pelvic pain. Women with adnexal pain, malignant or infectious disease, or large uterine

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Table 1. Pain Reduction on Follow-up After Laparoscopic Presacral Neurectomy

	Degree of improvement				
	> 80%	50-80%	< 50%	None	No response
Pelvic pain					
12-23 mo (n = 40)	14 (35.0)	18 (45.0)	4 (10.0)	4 (10.0)	0
24-72 mo (n = 60)	29 (48.3)	13 (21.7)	13 (21.7)	4 (6.7)	1 (1.7)
Dysmenorrhea					
12-23 mo (n = 40)	11 (27.5)	12 (30.0)	8 (20.0)	2 (5.0)	7 (17.5)
24-72 mo (n = 60)	22 (36.7)	16 (26.7)	10 (16.7)	9 (15.0)	3 (5.0)

Data are presented as n (%).

myomas were not offered the procedure. The severity of endometriosis was classified during laparoscopy according to the revised American Fertility Society classification.¹² In five women, no endometriosis was diagnosed during the current operative laparoscopy.

Questionnaires were mailed to the homes of all women. The present analysis was based on a convenience sample of the first 100 questionnaires returned. The questionnaires consisted of multiple-choice questions. The women were asked to specify the degree of reduction after surgery for pelvic pain, pain associated with menstruation (dysmenorrhea), and pain during intercourse (dyspareunia), according to a scale that included no reduction, less than 50% reduction, 50-80% reduction, or more than 80% reduction.

Power calculations to determine the sample size necessary for our study were based on published results suggesting that reduction in pain following presacral neurectomy by laparotomy was achieved by about 75% of the women.^{1,2} Thus, with a required significance level $\alpha = .05$ and a power (1- β) of .80, a study group of 99 subjects was required, assuming that a random control group of similar size was available from previous reports, to determine a rate of pain reduction lower than 55% for women after laparoscopic presacral neurectomy. Statistical analysis was performed using the χ^2 or the Fisher exact test as appropriate, according to the size of the groups compared. Statistical significance was accepted at $P < .05$.

Results

Pelvic pain, dysmenorrhea, and dyspareunia were reduced reportedly by more than 50% in 74, 61, and 55 of the women, respectively, more than 12 months after laparoscopic presacral neurectomy. The degree of reduction in pelvic pain and dysmenorrhea achieved after

12-23 months and 24 or more months of follow-up is presented in Table 1. No statistically significant difference in the degree of pain reduction was found between the two follow-up periods. Of the 100 women studied, 95 were diagnosed with endometriosis. Table 2 shows the degree of reduction from pelvic pain and dysmenorrhea after surgery, stratified in 95 of the study patients according to the revised American Fertility Society classification of endometriosis.¹²

More than 50% reduction in pelvic pain was reported by 69.8%, 77.3%, 71.4%, and 84.6% of the women, for endometriosis stages I through IV, respectively, using the revised classification of the American Fertility Society.¹² In comparison, more than 50% reduction in dysmenorrhea was reported by 52.8% of the women with stage I endometriosis, 68.2% with stage II, 71.4% with stage III, and 69.2% with stage IV.

Dyspareunia was reduced by more than 50% in 23 of the 40 women studied for 12-23 months and in 32 of the 60 who were observed for 24 months or longer (55 patients total). On the basis of the stage of endometriosis for each woman, the achieved rate of reduction from dyspareunia was 54.7% (29 of 53) for stage I, 50% (11 of 22) for stage II, 28.6% (two of seven) for stage III, and 61.5% (eight of 13) for stage IV.

Table 2. Pain Reduction After Laparoscopic Presacral Neurectomy by Stage of Endometriosis¹²

	Degree of improvement				
	> 80%	50-80%	< 50%	None ^a	No response
Pelvic pain					
Stage I (n = 53)	18 (34.0)	19 (35.8)	10 (18.9)	5 (9.4)	1 (1.9)
Stage II (n = 22)	13 (59.1)	4 (18.2)	3 (13.6)	2 (9.1)	0
Stage III (n = 7)	2 (28.6)	3 (42.9)	1 (14.3)	1 (14.3)	0
Stage IV (n = 13)	8 (61.5)	3 (23.1)	2 (15.4)	0	0
Total (n = 95)	41 (43.2)	29 (30.5)	16 (16.8)	8 (8.4)	1 (1.1)
Dysmenorrhea					
Stage I (n = 53)	12 (22.6)	16 (30.2)	14 (26.4)	5 (9.4)	6 (11.3)
Stage II (n = 22)	10 (45.5)	5 (22.7)	3 (13.6)	2 (9.1)	2 (9.1)
Stage III (n = 7)	2 (28.6)	3 (42.7)	0	2 (28.6)	0
Stage IV (n = 13)	7 (53.8)	2 (15.4)	1 (7.7)	1 (7.7)	2 (15.4)
Total (n = 95)	31 (32.6)	26 (27.4)	18 (18.9)	10 (10.5)	10 (10.5)

Data are presented as n (%).

Discussion

Central pelvic pain was reduced substantially in 74% of the women who underwent laparoscopic ablation of endometriosis and presacral neurectomy. This is very similar to results reported with either laparotomy (range 73–80%)^{1,2} or laparoscopy (range 73–89%).⁸ No direct relationship was found between the pain reduction achieved postoperatively and the stage of endometriosis. The proportion of patients with marked pain reduction after 24 or more months of follow-up was not significantly lower than the results after only 12–23 months of follow-up.

It has been observed that the revised classification of endometriosis of the American Fertility Society¹² is not associated consistently with severity of pelvic pain symptoms.¹⁰ The revised classification of endometriosis was devised primarily for infertility patients to formulate a prognosis in terms of reproductive outcome. However, this classification also is used arbitrarily to stage the disease in other women, such as patients complaining of pelvic pain. Published reports^{13–17} on the correlation between endometriosis-associated pain and the extent of the disease as assessed with the revised classification yielded conflicting results. However, even in a series that found a correlation between the stage of endometriosis and the severity of dysmenorrhea, the frequency of dysmenorrhea for women with endometriosis (stages I–IV) was not significantly different than that for those without endometriosis.^{14,17} The severity of deep dyspareunia was correlated inversely with the stage of endometriosis.¹⁷

One of the limitations of the present study is the lack of a control group. However, we were discouraged from offering the patients no treatment in a blinded manner, because a previous randomized study³ was stopped in an early stage by the monitoring committee, which considered it "unethical to continue to deprive the patients with central dysmenorrhea of the benefit of pain improvement that could be afforded with presacral neurectomy." A subsequent randomized study⁴ of presacral neurectomy for the treatment of pelvic pain associated with endometriosis showed that surgery reduced the midline component of menstrual pain markedly. However, no significant improvement was achieved in the frequency and severity of dysmenorrhea, pelvic pain, and dyspareunia 12 months after surgery.⁴

Sutton et al¹⁸ published recently the results of a randomized trial of laparoscopic uterine nerve ablation and laser ablation of endometriotic deposits compared with diagnostic laparoscopy in women with minimal to moderate endometriosis. In contrast to the study by Candiani et al,⁴ the women and the nurses who as-

essed the severity of pain were blinded to the procedure performed.¹⁸ A significant decrease in pelvic pain was noted 6 months after surgery. A limitation of this study was that it could not be determined whether the beneficial effect was attributed to the laparoscopic laser ablation of endometriosis or to the laparoscopic uterine nerve ablation.¹⁸

A recent randomized study¹⁹ has shown that laparoscopic presacral neurectomy provides longer-lasting pain reduction than laparoscopic uterine nerve ablation, although the former takes more time to perform. Although the precise role of the uterosacral ligaments in supporting the uterus has not been defined fully, there is concern that laparoscopic uterine nerve ablation may result sometimes in uterine prolapse.²⁰ This emphasizes the need to consider both long-term results and long-term complications when offering young women a surgical procedure for pain relief.

Presacral neurectomy, whether performed by laparotomy or laparoscopy, cannot be expected to be complete and effective in all cases as a result of neurologic variability and occasional technical difficulties in removing all nerve fibers within the Cotte triangle. The laparoscopic approach may aid the experienced surgeon in performing an optimal neurectomy through better exposure and magnification of the presacral area. The laparoscopic approach is associated with a very favorable low morbidity rate and rapid postoperative recovery. However, the key to success remains appropriate patient selection, because the procedure is likely to be effective only in women with central pelvic pain.

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