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CLINICAL ARTICLE

Biopsychosocial correlates of persistent postsurgical pain in women with endometriosis

Erin T. Carey [a,e,*], Caitlin E. Martin [b], Matthew T. Siedhoff [a], Eric D. Bair [c], Sawsan As-Sanie [d]

[a] Division of Advanced Laparoscopy and Pelvic Pain, University of North Carolina at Chapel Hill, Chapel Hill, USA
[b] School of Medicine, Johns Hopkins University, Baltimore, USA
[c] Endodontics and Biostatistics, University of North Carolina at Chapel Hill, Chapel Hill, USA
[d] Department of Obstetrics and Gynecology, University of Michigan, Ann Arbor, USA
[e] Center for Pelvic Pain and Sexual Health University of Kansas, Kansas City, USA

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ABSTRACT

Objective: To examine pain and biopsychosocial correlates over time for women with persistent postsurgical pain after surgery for endometriosis. *Methods:* Cross-sectional study of women who underwent any endometriosis surgery between 2003 and 2006. Following surgery, patients completed validated questionnaires (Short-Form McGill Pain Questionnaire, 12-item Short-Form Health Survey, Beck Depression Inventory, Coping Strategies Questionnaire catastrophizing subscale). The primary outcome was pelvic pain intensity, measured by the McGill total pain score. Bivariate comparisons between each potential predictor and pain intensity were performed using the χ^2 and *t* tests, 1-way analysis of variance, and simple linear regression. *Results:* In total, 79 completed the questionnaires and were included in the present analysis. The McGill affective pain score was negatively correlated with age (β-coefficient –0.12, $P = 0.002$) and positively correlated with catastrophization (β-coefficient 0.66, $P = 0.01$). Women with a history of dyspareunia scored significantly higher on the McGill total pain score ($P < 0.001$); there was no association between pain intensity and endometriosis severity. *Conclusion:* Younger age and catastrophization are correlated with persistent pain following surgery for endometriosis. The severity of endometriosis does not predict persistent pain. Further evaluation of psychosocial factors may identify patients who are least likely to benefit from surgeries for endometriosis-associated pelvic pain.

1. Introduction

Endometriosis is a benign gynecologic disease, affecting 10–15% of reproductive-aged women and being associated with pelvic pain and infertility [1]. Standard treatment of endometriosis includes a combination of medical and surgical management [2]. Although the surgical destruction of endometriosis lesions may result in short-term improvement of most women with pelvic pain, up to 30% of women report no postoperative improvement in pain, and of those that do improve, many have recurrence of symptoms. The degree of short-term pain improvement among the remainder varies [3] and pain frequently recurs without evidence of recurrent disease. Long-term predictors of pain outcomes following endometriosis surgery have not been adequately described; however, postsurgical pain intensity following the excision of endometriosis is associated with the preoperative pain severity [4]. Despite these findings, endometriosis pain severity does not correlate with the stage of disease, indicating a multifactorial etiology of chronic pain in these patients [5].

Depression, somatic awareness, and catastrophization (the emotional distress associated with the feeling that their pain is the worst possible and unlikely to improve) are associated with increased pain intensity in women with pelvic pain prior to gynecologic surgery [6]. In addition to biologic measures, psychosocial dynamics (i.e. depression, anxiety, and coping mechanisms for pain) have been considered additional features affecting the complicated evaluation of chronic pain associated with endometriosis [7–9]. We previously reported that catastrophization and depression have been associated with poor short-term pain outcomes in women with endometriosis [8]; however, absent from the current literature are the association of catastrophization and depression with long-term pain follow-up. This information becomes even more important when weighing the patient risk–benefit ratio prior to performing a surgical intervention for a pain complaint.

The primary aim of the present study was to investigate biopsychosocial factors associated with persistent postsurgical pain (PPSP) in women with endometriosis who have previously undergone surgical intervention for chronic pelvic pain. Psychosocial variables contribute significantly to postoperative outcome measures and are not aptly described in the gynecologic surgery literature.

* Corresponding author at: Department of Obstetrics and Gynecology, University of Kansas, 10777 Nall Avenue Suite 200, Overland Park, KS 66211, USA. Tel.: +1 913 588 6200, +1 816 719 9877; fax: +1 913 945 6036.
E-mail address: erintcarey@gmail.com (E.T. Carey).

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2. Materials and methods

The study included women in the age range 18–50 years who were English-speaking and literate, and who had endometriosis that was laparoscopically treated and pathologically confirmed between April 1, 2003, and September 30, 2006, at a single tertiary referral center—the University of North Carolina. During this time period, 224 women underwent surgery, and of these, 142 eligible women had valid contact information (Fig. 1). In total, 133 women were successfully recruited for study participation and 84 (63.1%) completed the follow-up questionnaires. Five women were excluded from the study as a result of missing the primary pain measurement outcome. The Institutional Review Board of the University of North Carolina, Chapel Hill, NC, USA, approved the study and written informed consent was obtained.

Surgical procedures varied depending on stage of disease and symptoms. Intraoperative findings were taken from the operative reports using a standardized case report form. The stage of disease was documented by the revised American Society for Reproductive Medicine staging system [10].

Eligible women were invited to participate via phone call in October 2008, 2–5 years following the incident surgery for endometriosis. Consenting participants received questionnaires by mail, including a health history form asking for variables such as age, years of education, race, marital status, number of surgeries for pelvic pain, history of hysterectomy, and comorbid pain conditions such as chronic headaches (migraines), irritable bowel syndrome, interstitial cystitis, fibromyalgia, temporomandibular disorder, chronic low back pain, and vulvodynia. Medical records were abstracted using a standardized case report form for additional demographic and clinical variables, such as treatments (e.g. medical and surgical) tried since incident endometriosis surgery.

In addition, the participants completed several validated questionnaires that assessed pain severity and psychologic traits. The primary outcome of persistent pelvic pain was measured by the Short-Form McGill Pain Questionnaire (SF-MPQ) [11]. Because the questionnaires were sent several years after endometriosis surgery, the preoperative values are not known.

The SF-MPQ comprises 2 measurement components: the Pain Rating Index; and the Present Pain Intensity visual analog scale. The Pain Rating Index comprises 15 qualitative reports of pain, specifically 11 sensory and 4 affective components. Participants used a 0–3 pain-intensity scale to document the amount of daily pain experienced in the previous 2 weeks (0 = none, 1 = mild, 2 = moderate, 3 = severe), and the sum of the sensory and affective components produced the McGill total pain score [11]. The test–retest reliability of the SF-MPQ is well established [12], with high intraclass correlations for the subtotal and total pain scores in patients with chronic pain. Given that the 2 components differ in respect to their association with clinical and psychometric variables of interest (sensory and affective components of pain), an exploratory analysis was performed comparing these components separately.

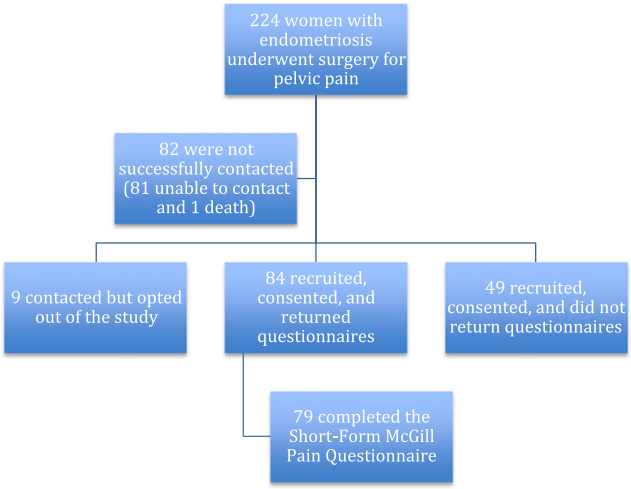

Fig. 1. Flow diagram of study participants.

Participants also completed the Mental Component Summary, a mental health subscale of the 12-item Short-Form Health Survey, with higher numbers associated with improved mental health. The internal consistency using Cronbach α is 0.87 and the test–retest reliability is good (correlation coefficient 0.76) [13].

The Beck Depression Inventory (BDI) was administered to investigate depression symptoms. The BDI consists of 21 items, with higher numbers associated with worse depression. The internal consistency is relatively high, with Cronbach α ranging from 0.79 to 0.90 [14].

Catastrophization was measure by the subscale of the Coping Strategies Questionnaire (CSQ) [15]. The subscale is scored on a scale from 0 to 6, with higher scores indicating worse levels of catastrophizing (none to severe). The internal consistency and reliability are high (Cronbach α, 0.78) [15], and the score is a predictor of health outcomes in chronic pain [16]. In the present study, the CSQ score was evaluated as a continuous scale in the bivariate analysis.

The statistical analysis was performed using Stata version 7.0 (StataCorp; College Station, TX, USA). Five patients did not fully complete the McGill pain scale and were not included in the analysis, but there was otherwise minimal missing data and no imputation was necessary. Bivariate comparisons were performed between each variable and the continuous McGill total pain score as well its affective and sensory components, using χ^2 tests and t tests for binary variables, 1-way analysis of variance for categorical variables with more than 2 categories, and simple linear regression for continuous variables. $P < 0.05$ was considered statistically significant.

3. Results

In total, 79 women completed the follow-up questionnaires. They were aged 24–50 years and primarily non-Hispanic white (65 [82%]), nulliparous (42 [53%]), married (57 [72%]), with at least some college education (70 [89%]). The duration of pelvic pain was 11.9 ± 0.9 years (mean ± standard error), and 36 (46%) women had undergone at least 3 surgeries for the treatment of pelvic pain (Table 1). Fifty-five (70%) women self-reported a diagnosis of at least 1 comorbid pain condition (e.g. fibromyalgia, irritable bowel syndrome, vulvodynia) on the questionnaire, and 19 (24%) women reported 2 or more comorbid pain disorders. Forty-one (52%) women reported a history of depression and/or anxiety.

At the index endometriosis surgery, 28 (35%) women also underwent a hysterectomy (14 [17.7%] with a concurrent bilateral salpingo-oophorectomy) (Table 2). Conventional clinical factors, such as the type of surgery performed or the stage of endometriosis, were not associated with long-term pain outcomes.

The present cohort overall scored slightly above the 25th percentile of the US female population [13] in their physical health and mental health statuses, with Short-form 12 Health Survey scores (mean ± standard error) of 45.59 ± 1.2 and 44.29 ± 1.26, respectively. There was a broad range of reported McGill total pain scores ranging from mild to severe, with a mean of 8.7 ± 1.1 (Table 2). Thirty-nine (49.4%) women reported dyspareunia (Table 3), and of the women with menstrual periods, 13 (27%) reported painful menses. Women with dyspareunia reported a McGill total pain score of 13.2 (95% confidence interval [CI], 10.15–16.25), which was higher ($P < 0.001$) than that in women who did not report dyspareunia (pain score 3.8 [95% CI, 1.53–6.14]). Additionally, women reporting dyspareunia scored 1.7 points higher on the McGill affective pain score than