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Short-Term Health-Related Quality of Life After Hysterectomy Compared With Myomectomy for Symptomatic Leiomyomas

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Abstract

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A list of enrolling clinical centers and collaborators can be found in Appendix 1, available online at http://links.lww.com/AOG/B437.

Each author has confirmed compliance with the journal's requirements for authorship.

PEER REVIEW HISTORY

Peer reviews and author correspondence are available at http://links.lww.com/AOG/B438.

OBJECTIVE: To compare short-term health-related quality of life (HRQOL) 6–12 weeks after hysterectomy or myomectomy for the treatment of symptomatic leiomyomas.

METHODS: We conducted a prospective comparative effectiveness analysis of data. In an existing multisite registry, we compared 6–12-week postsurgical HRQOL using the disease-specific Uterine Fibroid Symptom Quality of Life and the generic EuroQoL 5-Dimension Health Questionnaire, in women from the ages of 18–54 years with documented leiomyomas undergoing hysterectomy or myomectomy. Propensity score weighting was used to adjust for confounding, and analyses were also stratified by route of surgery.

RESULTS: A total of 1,295 patients (727 with hysterectomy and 568 with myomectomy) enrolled from registry initiation in November 2015 until June 2018 met inclusion criteria. At baseline, leiomyoma-specific HRQOL (44.0±25.4 and 50.2±25.3, $P<.01$), symptom severity (60.7±23.6 and 51.7±24.6, $P<.01$), and generic HRQOL (69.3±20.4 and. 73.4±18.9, $P<.01$) were significantly different between the hysterectomy compared with myomectomy groups, respectively. Differences were eliminated by propensity adjustment. Substantial improvement in HRQOL measures were seen in both groups at 6–12 weeks, with the mean propensity-adjusted symptom severity score 4 points lower in hysterectomy patients (mean difference −4.6; 95% CI −7.0 to −2.3), compared with myomectomy patients. Hysterectomy patients had better scores on the concern and self-consciousness subscales compared with myomectomy patients. When stratified by surgical route, these two subscale findings were similar between minimally invasive hysterectomy and minimally invasive myomectomy. Symptom severity scores did not differ after abdominal myomectomy compared with abdominal hysterectomy, but subscale scores on activity and energy/mood were higher with myomectomy.

CONCLUSION: Both hysterectomy and myomectomy were associated with substantial improvement in HRQOL at short-term follow-up, with small but statistically significant differences in symptom severity and certain subscales.

CLINICAL TRIAL REGISTRATION: ClinicalTrials.gov, NCT02260752.

By age 50, 70% of white women and more than 80% of African American women will have one or more leiomyoma detected by abdominal or pelvic imaging.[1] Although the majority of women with leiomyomas are asymptomatic, 25–30% of affected women experience heavy or prolonged menstrual bleeding, pelvic pain, bulk symptoms (ie, pelvic pressure or genitourinary symptoms), or reproductive dys-function.

Hysterectomy and myomectomy are the most common surgical treatments for women with symptomatic leiomyomas, accounting for approximately 90–95% of all procedures nationally, with hysterectomy alone accounting for 70% of all leiomyoma procedures, with this proportion remaining relatively constant despite the introduction of newer alternatives such as uterine artery embolization and magnetic resonance imaging–guided focused ultrasonography.[2,3]

There is a knowledge gap regarding the comparative effectiveness of hysterectomy and myomectomy on patient-centered measures, such as health-related quality of life (HRQOL) and other patient-reported outcomes.[4,5] Comparing Options for Management: Patient-centered Results for Uterine Fibroids (COMPARE-UF) is a multi-site registry of women

at clinical centers across the United States. A key goal of the registry is to assess the comparative effectiveness of leiomyoma treatments on HRQOL in a generalizable sample of women traversing racial, ethnic, age, and geographically strata.

We report the results of a comparative effectiveness analysis of hysterectomy compared with myomectomy with respect to short-term HRQOL (6–12 weeks) after the procedure. We further compared the effectiveness of each procedure by surgical approach.

METHODS

We conducted a prospective comparative effectiveness analysis of data from the COMPARE-UF study to examine and compare HRQOL scores using the Uterine Fibroid Symptom Quality of Life (QOL),[6–9] a validated disease-specific scale, and the EuroQoL 5-Dimension Health Questionnaire, a generic HRQOL scale. The Duke Institutional Review Board approved the study for the Duke Clinical Research Institute. The institutional review boards at each of the nine clinical centers also approved the study. Informed consent was obtained from participants in accordance with institutional review board–approved protocols.

Participants enrolled in COMPARE-UF from registry initiation on November 11, 2015, until June 22, 2018 (n=2,442), were initially considered for these analyses and then various exclusion criteria applied (Fig. 1). Our goal was to confine the analysis to participants who were potential candidates for both hysterectomy and myomectomy to ensure valid outcome comparisons.

All procedures were performed at the clinical sites. The decision for hysterectomy or myomectomy and choice of procedural route was independent of the COMPARE-UF study protocol. All surgical routes have been included in this analysis.

Trained site coordinators for COMPARE-UF used electronic health records, surgical and outpatient clinic schedules, or both, to assess eligibility of potential participants. After women are deemed eligible, informed consent is obtained and participants complete the baseline survey through a secure, password protected, web-based study portal (SignalPath, LLC, Durham, North Carolina) or via paper questionnaires or phone interviews with clinical site coordinators. Each participant is assigned a unique identifier at the time of enrollment. Participants were asked to complete the short-term, postprocedure survey starting at 6 weeks after the procedure with a target for completion by 12 weeks postprocedure, with surveys completed via web-based portal or telephone interview. Validated measures of HRQOL and other patient-reported outcomes were collected at baseline and at 6–12 weeks after the procedure.

The Uterine Fibroid Symptom QOL is a disease-specific questionnaire that assesses symptom severity and HRQOL in women with leiomyomas.[6–9] It consists of an eight-item symptom severity scale that assesses the frequency and severity of symptoms and 29 items that addressed six aspects of women’s perception of their health-related quality of life with uterine leiomyomas: concern, activities, energy or mood, control, self-consciousness, and sexual function. For example, the concern subscale asks, “over the last 3 months, how much have you had concerns about your leiomyoma symptoms?” Each of these items are scored

on a five-point Likert scale for both components. Fibroid-specific HRQOL (composed of the six domain subscales) and the eight-item symptom severity scale are summed and transformed into a zero-100-point scale. The symptom severity score is inversely related to a patient's perception of health, with higher scores indicating greater severity of symptoms; however, higher leiomyoma-specific HRQOL summary scores indicate better leiomyoma-specific HRQOL and functioning.

General HRQOL was evaluated using the EuroQoL 5-Dimension 5L, an eight-item survey that generates two summary scores.[10] The health status score has five dimensions, including mobility, self-care, usual activities, pain discomfort, and anxiety or depression. Each dimension has five levels: no problems, slight problems, moderate problems, severe problems, and extreme problems. Scores are combined to describe a patient's perception of their health status. The EuroQoL visual analog scale (VAS) is a second component of the questionnaire that measures the patient's self-rated health on a vertical 20-cm visual analogue scale, with endpoints of zero (worst health) and 100 (best health). Participants who completed the VAS by phone were asked to rate their health on a scale of 1–100. Higher scores represent better physical or mental functioning.

We collected self-reported data on socio-demographics at baseline. Information on the type or route of procedure was obtained from review of the operative report. Any surgical complications were obtained from review of clinical records and through participant self-report during the short-term follow-up survey at 6–12 weeks postprocedure. Additional data on the number and type of uterine leiomyoma and leiomyoma volume was collected from clinical imaging documents.

The analytic approach followed the Patient-Centered Outcomes Research Institute's methodology standards.[11] Socio-demographic and clinical factors were compared between the hysterectomy and myomectomy procedure groups, using t-test and chi-square tests. Baseline HRQOL scores from the Uterine Fibroid Symptom QOL, Uterine Fibroid Symptom QOL symptom severity scores, and the EuroQoL 5-Dimension Health Questionnaire VAS were compared between women undergoing hysterectomy and myomectomy. Each subscale score of the Uterine Fibroid Symptom QOL and the EuroQoL 5-Dimension Health Questionnaire was compared between the two procedure groups. Because of the observational design of COMPARE-UF, hysterectomy and myomectomy patients were likely to differ in demographic and clinical characteristics and baseline preoperative scores. We used propensity scoring to adjust for these differences (Appendix 2, available online at http://links.lww.com/AOG/B437).

In multivariate analysis, inverse propensity weighting methods, specifically overlap weighting, were used to adjust for potential confounding.[12,13] The propensity score (probability of receiving a hysterectomy) was estimated using a logistic regression model with hysterectomy (yes or no) as the dependent variable and each participant characteristic considered a potential confounder as independent variables. Potential confounders for inclusion in the propensity model were identified a priori based on clinical experience and included socio-demographics, disease history, symptoms, and baseline quality of life variables. Covariates with baseline missing data were imputed using the full-conditional

specification method in SAS Proc MI, using all variables available in the COMPARE-UF data set. Uterine Fibroid Symptom QOL and EuroQoL 5-Dimension Health Questionnaire measures were also included in the imputation process to improve the accuracy of imputation.[14,15] Given the observed low missing data rate (generally below 5%), a single imputation was used in this analysis (Appendix 3, available online at http://links.lww.com/AOG/B437).

Differences in Uterine Fibroid Symptom QOL subscales and summary scales, and the EuroQoL 5-Dimension Health Questionnaire VAS, were modeled using a linear regression fit on the propensity weighted population to interpret treatment effects as differences in means. The EuroQoL 5-Dimension Health Questionnaire component scales were analyzed as ordinal data using a proportional odds model for increasing levels of quality of life. For all analyses, the models included only a fixed effect for treatment. Potential correlation between patients from the same clinical center was handled by fitting a robust empirical variance estimator, with clustering by clinical center. We conducted a sensitivity analysis among a subgroup of participants with whom data on leiomyoma number, leiomyoma volume, and uterine volume is currently available (n=822; 63% of study sample). All analyses were conducted using SAS Pro.

RESULTS

There were 1,295 participants across eight sites that met the inclusion criteria and comprised of 727 (56.1%) hysterectomy patients and 568 (43.9%) myomectomy patients (Table 1). Forty-nine percent and 51% of these participants underwent a minimally invasive hysterectomy or myomectomy, respectively. Both procedures included participants from all sites with a broad proportion of site-specific myomectomies and hysterectomies. For example, the proportion of myomectomies ranged from 19.2% to 71.7% across sites.

Hysterectomy participants were older, more likely to be white, parous, and have an older age of leiomyoma onset and longer duration of symptomatology compared with myomectomy patients ($P<.01$; Table 1). Hysterectomy patients were also more likely to have bulk-related symptoms and to have undergone previous treatments for leiomyomas before hysterectomy compared with women undergoing myomectomy. They were more likely to have irregular bleeding cycles and more likely to have other associated diagnoses (eg, adenomyosis; endometriosis) that contributed to pain and bleeding. A higher proportion of women undergoing myomectomy reported a family history of leiomyomas compared with hysterectomy patients.

Women planning to undergo hysterectomy had statistically significantly lower mean scores in each of the six subscales of the Uterine Fibroid Symptom QOL compared with those planning to undergo myomectomy (all $P<.04$) (Table 1). A statistically significant lower mean score was reported in the summary score (44.0±25.4 vs 50.2±25.3; $P<.01$). The symptom severity score was higher among women planning hysterectomy compared with those planning myomectomy (60.7±23.6 vs 51.7±24.6), indicating worse symptoms among those scheduled for hysterectomy. Based on the EuroQoL 5-Dimension Health

Questionnaire VAS, hysterectomy patients reported a lower quality of life compared with those planning to undergo myomectomy (69.3±20.4 vs 73.4 ± SD 18.9; $P<.01$, respectively).

After weighting, there were no substantial differences in summary or symptom severity or scores between the two treatment groups at baseline and the difference in weighted means were not statistically significant (−0.2; 95% CI −2.4 to 3.0 and −0.1; 95% CI −2.2 to 1.9, respectively, Table 2). Prepropensity and postpropensity weighting results for other variables are shown in Appendix 2 (http://links.lww.com/AOG/B437). After propensity weighting, an increase in scores across all subscales and the total score was reported for both procedures from baseline to the 6–12-week short-term follow-up (Table 2). Substantial improvements were seen for both procedures across all subscales and total score, as well as symptom severity; weighted mean changes of 20 or more, seen in patients who report being "satisfied" with their treatment,[8] were seen for all scales. Compared with myomectomy, hysterectomy scores were improved from baseline to 6–12 weeks postprocedure for the "concern" and "self-consciousness" subscales, as well as overall symptom severity. After adjustment, hysterectomy patients had summary scores that were similar (1.0; 95% CI −1.2 to 3.2), compared with myomectomy patients at 6–12 weeks postprocedure. However, the 6–12-week postprocedure mean symptom severity score among women undergoing hysterectomy was almost five points lower (−4.6; 95% CI −7.0 to −2. 3) compared with myomectomy patients.

The weighted mean difference in EuroQoL 5-Dimension Health Questionnaire VAS was not significantly different between groups (Table 2). On individual components, a higher proportion of women in the myomectomy group reported "slight depression/anxiety" at short-term follow-up, compared with the hysterectomy group (Appendix 4, available online at http://links.lww.com/AOG/B437).

We performed a sensitivity analysis on the subset of patients for whom abstracted imaging data was available (n=455 hysterectomy, n=367 myomectomy). Adding the number of leiomyomas, total leiomyoma volume, and total uterine volume into the propensity adjustment resulted in only minimal changes in mean scores for the HRQOL outcomes (Appendix 5, available online at http://links.lww.com/AOG/B437).

Comparative findings for minimally invasive hysterectomy and myomectomy were similar to those for the entire cohort (Tables 3 and 4). For the Uterine Fibroid Symptom QOL subscales, women who had a minimally invasive hysterectomy had significantly greater scores for "concern," "self-consciousness," and "energy/mood" compared with those who had a minimally invasive myomectomy. Patients with a minimally invasive hysterectomy had a Uterine Fibroid Symptom QOL summary score (the sum of all six subscales) that was 5.0 points higher (CI 2.8–7.1) compared with the summary score in women undergoing minimally invasive myomectomy. The 6–12-week postprocedure mean symptom severity score was seven points lower (−6.9; 95% CI −9.0 to −4.8) compared with myomectomy patients, indicating statistically significantly higher functioning at short-term follow-up. Comparing abdominal hysterectomy with abdominal myomectomy, overall symptom severity scores were similar, but activity and energy/mood scores were significantly higher among myomectomy patients. There were no substantial differences in generic EuroQoL

5-Dimension Health Questionnaire HRQOL subscales or the VAS between hysterectomy and myomectomy within either route.

DISCUSSION

In this comparative effectiveness analysis of short-term HRQOL among women undergoing hysterectomy or myomectomy, we found similar improvement in generic and leiomyoma-specific HRQOL scores in both treatment groups after propensity adjustment for large differences in baseline characteristics. We did observe small but statistically significant differences between treatment groups in the Uterine Fibroid Symptom QOL–specific subscales (concern, activity, and self-consciousness) and overall symptom severity favoring hysterectomy. In findings stratified by surgical route (abdominal compared with minimally invasive), a lower symptom severity score after hysterectomy compared with myomectomy was observed in the minimally invasive approach but not after abdominal procedures.

Changes of nine to 15 points on the Uterine Fibroid Symptom QOL are considered clinically meaningful,[8] and we believe the most important finding here is that both procedures were associated with 20-point or more improvements from baseline after adjusting for differences in baseline characteristics. Whether the moderate mean differences of five to seven points seen in some scales are clinically meaningful in this context is unclear but does raise interesting questions about potential subtle differences between treatments. For example, the symptom scale of the Uterine Fibroid Symptom QOL is highly sensitive to changes in menstrual bleeding. The presence of normal postoperative bleeding after myomectomy, compared with hysterectomy, may be one factor affecting the observed differences in symptom severity and some of the subscales.

The differences seen within minimally invasive approaches may also be related to differences in patient expectations, patient counseling, or unmeasured factors related to technical difficulty of minimally invasive myomectomy compared with hysterectomy. In addition, because the Uterine Fibroid Symptom QOL asks for symptoms over the previous several weeks, our wide follow-up window, designed to maximize response rates, may lead to variability in responses (although the variation in time since procedure was not systematically different between groups). Finally, as noted below in study limitations, the large sample size and number of comparisons may have resulted in findings of statistical significance by chance alone.

The results of our study are similar to the few previous studies of short-term HRQOL after treatment for leiomyomas, which found significant improvement after both hysterectomy and myomectomy[16,17]

Strengths of this analysis include the large number of participants, racial and geographical diversity of the study sample, availability of pretreatment HRQOL scores and validated propensity weighting methods to account for differences in pretreatment participant characteristics. The HRQOL measures used are recommended by the Oxford Patient-Reported Outcome Measurement Group for symptomatic leiomyomas.[18] We confined this

comparative analysis of hysterectomy and myomectomy to participants who were potential candidates for both procedures to ensure valid outcome comparisons.

There are several limitations that deserve attention. Data on differences between planned and actual procedures were not completely available at the time of this analysis, and it is possible that differences between patient expectations and actual route may affect HRQOL. However, the planned route reflects the patient's choice given the information available at the time, and analysis based on planned (compared with actual) is somewhat analogous to "intention-to-treat." Future analyses will adjust for any intraoperative changes in surgical approach. Factors contributing to patient decisions about treatment and the nature of the preoperative, intraoperative, and postoperative care at the COMPARE-UF sites may differ compared with a broader range of practice settings, potentially limiting the generalizability of these results. Finally, although data on preoperative imaging is not available for the entire cohort for this early analysis, adjustment for uterine anatomy for the majority of the study sample (63%) did not change our results. Future analyses will include adjustment for the entire cohort.

We did not make a formal adjustment for multiple hypothesis testing for the multiple posttreatment outcomes, and therefore, interpretation of the differences in scores for symptom severity and concern between treatment groups should be interpreted as being of borderline statistical significance, particularly for P values greater than .01. Data on cogynecologic conditions were self-reported. Although validation against medical records would be ideal, prior studies show that women have high recall of self-reported gynecologic conditions that have been previously diagnosed by a clinician.

Despite these limitations, our work improves our knowledge of the association of hysterectomy and myomectomy with short-term HRQOL in a racially and economically diverse sample of participants, and underscores the importance of incorporating HRQOL measures into comparative studies. Given the growing importance on patient-reported outcomes, a strong argument can be made for incorporating validated measures into routine clinical care. Future analyses of this on-going comparative effectiveness study will address long-term HRQOL outcomes, adjusting for participant and pretreatment characteristics, to evaluate whether the similarity in outcomes across treatment groups persists over time.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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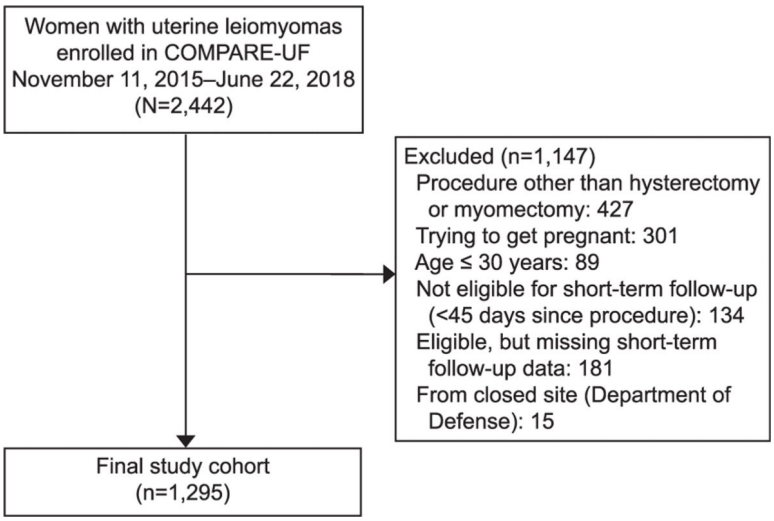

Fig. 1.

Exclusion criteria for analytic population. COMPARE-UF, Comparing Options for Management: Patient-centered Results for Uterine Fibroids.

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Table 1.

Baseline Characteristics

Demographic and Clinical	Hysterectomy (n=727)	Myomectomy (n=568)	*P*
Age (y)	45.2±4.9	40.2±6.0	<.01
Race White	50.3 (366)	41.0 (233)	<.01
African American	37.8 (275)	41.0 (233)	
Other	11.8 (86)	18.0 (102)	
BMI (kg/m^2)	31.2±8.0	28.7±7.8	<.01
Age at first leiomyoma diagnosis (y)	38.7±7.8	35.4±7.0	<.01
Age of first leiomyoma symptoms (y)	38.2±8.2	34.9±7.4	<.01
Duration of symptoms (y)	7.1±7.1	5.4±5.3	<.01
Specific symptoms	94.5 (687)	93.7 (532)	.48
Bleeding between periods	52.8 (384)	45.6 (259)	<.01
Nocturia	59.0 (429)	50.5 (287)	<.01
Abdominal or pelvic pressure	73.3 (533)	67.3 (382)	.02
Pelvic pain requiring medication	47.5 (345)	37.7 (214)	<.01
Nonmenstrual pain	30.4 (221)	23.4 (133)	<.01
Family history of leiomyomas—yes	50.8 (369)	54.8 (311)	<.01
Any prior treatment	19.9 (145)	15.1 (86)	.03
Endometrial ablation	4.3 (31)	1.1 (6)	<.01
Uterine artery embolization	3.0 (22)	0.7 (4)	<.01
Regular, predictable menses	53.9 (392)	69.7 (396)	<.01
History of anemia	55.0 (400)	48.0 (273)	<.01
Ever pregnant	77.7 (565)	56.2 (319)	<.01
2 or more pregnancies	63.3 (460)	35.9 (204)	<.01
Other medical condition	50.6 (368)	41.7 (237)	<.01
Endometriosis	9.8 (71)	6.2 (35)	.02
Adenomyosis	3.7 (27)	0.7 (4)	<.01
Ever use: marijuana	26.4 (192)	33.1 (188)	.03
HRQOL			
UFS-QOL			

Demographic and Clinical	Hysterectomy (n=727)	Myomectomy (n=568)	*P*
Subscales (lower means more severe) Concern	38.3±29.9	44.8±31.4	<.01
Activities	45.8±28.7	52.2±28.7	<.01
Energy/mood	45.2±26.8	51.4±26.8	<.01
Control	48.5±27.3	51.7±26.5	.03
Self-consciousness	41.2±31.0	48.5±32.2	<.01
Sexual function	45.4±33.5	52.1±34.2	<.01
Total (sum of subscales)	44.0±25.4	50.2±25.3	<.01
UFS-QOL symptom severity (higher means more severe)	60.7±23.6	51.7±24.6	<.01
EQ-5D without problem			
Mobility	72.6 (528)	82.4 (468)	<.01
Self-care	91.9 (668)	93.70 (532)	.13
Usual activities	60.1 (437)	65.9 (374)	.11
Pain/discomfort	16.8 (122)	26.6 (151)	<.01
Anxiety/depression	39.1 (284)	40.3 (229)	.75
VAS (lower means lower QOL)	69.3±20.4	73.4±18.9	<.01

BMI, body mass index; HRQOL, health-related quality of life; UFS-QOL, Uterine Fibroid Symptom Quality of Life; EQ-5D, EuroQoL 5-Dimension Health Questionnaire; VAS, visual analog scale; QOL, quality of life.

Data are mean±SD or % (n) unless otherwise specified.

Table shows only those demographic and clinical characteristics that were different at $P<.05$.

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Table 2.

Propensity-Adjusted Baseline and Posttreatment Uterine Fibroid Symptom Quality of Life and Visual Analog Scale Scores

UFS-QOL Component and VAS Scores	Hysterectomy (n=727)	Myomectomy (n=568)	Estimate (95% CI)	*P*
Baseline				
Concern	39.9±30.3	39.9±29.9	0.0 (−5.0 to 5.0)	.99
Activity	48.1±29.1	48.3±28.6	−0.1 (−3.2 to 2.9)	.93
Energy/mood	48.0±27.7	47.8±26.3	0.2 (−2.4 to 2.7)	.89
Control	49.8±27.7	49.7±26.8	0.1 (−2.2 to 2.4)	.92
Self-consciousness	45.1±31.9	45.4±32.6	−0.3 (−2.1 to 1.5)	.73
Sexual function	48.1±34.4	47.7±33.5	0.4 (−2.3 to 3.2)	.76
Total (sum of 6 subscale scores above)	46.4±25.8	46.6±24.9	−0.2 (−2.4 to 2.0)	.89
Symptom severity	56.4±23.9	56.6±23.9	−0.1 (−2.2 to 1.9)	.89
VAS	70.6±19.8	70.8±20.1	0.1 (−2.6 to 2.3)	.91
Posttreatment outcomes				
Concern	82.9±30.8	76.2±29.8	6.7 (4.2 to 9.2)	<.01
Activity	73.9±29.3	75.7±27.3	−1.8 (−4.8 to 1.1)	.22
Energy/mood	76.2±27.4	76.4±26.4	−0.2 (−2.2 to 1.7)	.83
Control	80.2±27.6	78.8±26.6	1.4 (−1.6 to 4.4)	.35
Self-consciousness	78.0±29.4	74.7±29.3	3.4 (0.2 to 6.6)	.04
Sexual function	69.7±35.8	69.8±33.2	−0.1 (−3.5 to 3.3)	.95
Total (sum of 6 subscale scores above)	77.1±26.5	76.1±24.8	1.0 (−1.2 to 3.2)	.37
Symptom severity	15.5±20.0	20.1±18.5	−4.6 (−7.0 to 22.3)	<.01
VAS	81.5±17.7	79.4±17.5	2.1 (−1.0 to 5.1)	.18

UFS-QOL, Uterine Fibroid Symptom Quality of Life; VAS, visual analog scale.

Data are mean±SD unless otherwise specified.

Variables included in the propensity model: age (continuous), race (African American, white, other), ethnicity (Hispanic, other), insurance (military, private, other), BMI (continuous), time since first diagnosis of leiomyomas (continuous), bleeding symptoms (yes or no), discomfort during intercourse (yes or no), pelvic pain requiring medication (yes or no), pelvic pain (during periods, not during periods, both, neither), prior procedures (yes or no), current birth control (yes or no), periods regular and predictable (yes or no), frequent urination (yes or no), prior pregnancies (0, 1 or more, categorical), medical comorbidities (yes or no), current marijuana use (yes or no), EuroQoL 5-Dimension Health Questionnaire (EQ-5D) components (except self-care owing to small numbers in some levels), EQ-5D VAS (continuous), UFS-QOL components (each subscale and symptom severity as separate continuous variables).

Table 3.

Propensity-Adjusted Baseline and Posttreatment Uterine Fibroid Symptom Quality of Life and Visual Analog Scale Scores Among Minimally Invasive Procedures

UFS-QOL Score Component and VAS Scores	Hysterectomy (n=392)	Myomectomy (n=407)	Estimate (95% CI)	*P*
Baseline				
Concern	38.2±29.1	38.5±29.7	−0.4 (−4.6 to 3.8)	.86
Activity	46.9±28.7	46.5±28.3	0.4 (−1.8 to 2.6)	.71
Energy/mood	46.6±27.2	46.1±26.5	0.5 (−2.0 to 3.0)	.67
Control	48.9±27.1	49.0±27.3	−0.1 (−2.1 to 2.0)	.96
Self-consciousness	46.1±32.0	46.5±32.3	−0.5 (−1.9 to 1.0)	.54
Sexual function	46.5±34.4	46.2±33.3	0.3 (−3.5 to 4.2)	.86
Total (sum of 6 subscale scores above)	45.3±25.6	45.4±24.8	−0.1 (−1.3 to 1.1)	.90
Symptom severity	58.8±23.2	58.0±23.6	0.8 (−1.7 to 3.3)	.54
VAS	70.3±20.0	71.3±19.7	−0.1 (−3.7 to 1.8)	.50
Posttreatment outcomes				
Concern	86.0±28.9	74.1±30.8	12.0 (10.0 to 13.9)	<.01
Activity	77.5±27.9	74.7±27.9	2.8 (−0.6 to 6.2)	.11
Energy/mood	78.7±26.5	75.3±26.6	3.5 (−.1 to 4.9)	<.01
Control	83.0±25.8	78.0±26.0	5.1 (1.3 to 9.0)	.01
Self-consciousness	80.3±28.0	73.4±30.0	7.0 (5.5 to 8.4)	<.01
Sexual function	72.6±35.3	70.4±32.6	2.2 (−2.6 to 7.0)	.38
Total (sum of 6 subscale scores above)	80.0±25.2	75.0±25.1	5.0 (−.8 to 7.1)	<.01
Symptom severity	13.7±18.0	20.6±18.8	−6.9 (−9.0 to 4.8)	<.01
VAS	81.7±17.2	78.7±18.0	3.0 (0.6 to 5.4)	.01

UFS-QOL, Uterine Fibroid Symptom Quality of Life; VAS, visual analog scale.

Data are mean±SD unless otherwise specified.

Variables included in propensity model: age (continuous), race (African American, white, other), ethnicity (Hispanic, other), time since diagnosis with leiomyoma symptoms (continuous), prior procedures (yes or no), bleeding symptoms (yes or no), prior pregnancies (0, 1 or more) UFS-QOL components, EuroQoL 5-Dimension Health Questionnaire pain and discomfort component.

Table 4.

Propensity-Adjusted Baseline and Posttreatment Uterine Fibroid Symptom Quality of Life and Visual Analog Scale Scores Among Abdominal Procedures

UFS-QOL Score Component and VAS Scores	Hysterectomy (n=125)	Myomectomy (n=161)	Estimate (95% CI)	*P*
Baseline				
Concern	40.9±34.7	39.8±30.6	1.1 (−5.7 to 7.8)	.76
Activity	46.9±30.8	48.6±29.0	−1.7 (−13.9 to 10.5)	.79
Energy/mood	46.3±26.4	45.6±26.6	0.7 (−6.1 to 7.5)	.84
Control	47.7±28.0	47.2±26.2	0.5 (−10.5 to 11.4)	.93
Self-consciousness	40.6±35.8	35.8±28.4	4.9 (−3.8 to 13.5)	.27
Sexual function	48.7±33.0	47.7±33.7	1.0 (−10.3 to 12.3)	.86
Total (sum of 6 subscale scores above)	45.1±26.2	43.7±24.2	1.4 (−6.3 to 9.2)	.72
Symptom severity	56.1±26.6	56.6±24.9	−0.5 (−12.2 to 11.2)	.93
VAS	70.2±20.9	69.0±22.9	1.2 (−3.3 to 5.6)	.82
Posttreatment outcomes				
Concern	85.0±28.6	84.6±26.0	0.4 (−9.8 to 10.5)	.94
Activity	72.3±30.8	79.4±25.1	−7.1 (−12.9 to 1.3)	.02
Energy/mood	74.4±28.9	82.0±25.1	−7.7 (−14.4 to 1.0)	.03
Control	80.5±27.7	81.4±29.4	−0.9 (−6.2 to 4.4)	.74
Self-consciousness	78.1±30.4	77.7±27.5	0.4 (−11.2 to 12.0)	.95
Sexual function	69.9±37.0	71.4±33.0	−1.6 (−17.0 to 13.8)	.84
Total (sum of 6 subscale scores above)	77.1±26.8	80.3±23.8	−3.3 (−10.3 to 3.8)	.36
Symptom severity	16.8±20.9	16.1±17.5	0.8 (−4.3 to 5.9)	.76
VAS	80.5±19.1	81.2±16.3	−0.7 (−6.1 to 4.8)	.82

UFS-QOL, Uterine Fibroid Symptom Quality of Life; VAS, visual analog scale.

Data are mean±SD unless otherwise specified.

Variables included in propensity model: age (continuous), race (African American, white, other), ethnicity (Hispanic, other), time since diagnosis with leiomyoma symptoms (continuous), prior procedures (yes or no), bleeding symptoms (yes or no), prior pregnancies (0, 1 or more) UFS-QOL components, EuroQoL 5-Dimension Health Questionnaire pain and discomfort component.