

Assessment of Level of Fear in Adult Patients Undergoing Elective Urogynecologic and Gynecologic Procedures and Surgeries During the COVID-19 Pandemic Using the Validated Surgical Fear Questionnaire

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Objective: This study aimed to assess and trend fears surrounding elective surgery and office procedures in benign gynecologic and urogynecologic patients during the coronavirus disease 2019 (COVID-19) pandemic.

Methods: This was a multicenter, prospective, observational study. Recruitment occurred from June 23, 2020, to March 23, 2021. Females 18 years or older presenting for elective benign gynecologic or urogynecologic surgery or office procedures were eligible. Patients were excluded if non-English speaking or undergoing an emergent procedure or surgery. Fear was assessed by the Surgical Fear Questionnaire (SFQ), which was also modified to include 2–4 additional questions pertaining to COVID-19 (modified version of the Surgical Fear Questionnaire [mSFQ]). Total SFQ scores and short- and long-term fear scores were compared between procedures and surgery and to historic data.

Results: A total of 209 patients undergoing 107 procedures or 102 surgical procedures completed the questionnaire. Participants were separated into subgroups determined by the timing of questionnaire completion related to phases of the pandemic. The most common procedure was urodynamics (n = 59 [55%]). The most common elective surgical procedure was hysterectomy (n = 59 [57.8%]). Furthermore, 72.5% of surgical procedures were for urogynecologic indications.

Fear levels were low and not different in patients undergoing procedures versus surgery (12.38 ± 12.44 vs 12.03 ± 16.01, $P = 0.958$). There was no difference between procedures versus surgery for short- (6.21 ± 8.38 vs 6.81 ± 8.44, $P = 0.726$) or long-term fear (6.18 ± 8.89 vs 5.22 ± 8.20, $P = 0.683$). Compared with historic data, our hysterectomy patients had less surgical fear. The mSFQ demonstrated higher fear scores for both procedures and surgery (mSFQ, 20.57 ± 20.55 for procedures; 28.78 ± 28.51 for surgery). There were no significant fluctuations in SFQ score in relation to critical COVID-19 events.

Conclusions: Fear of surgery and office procedures was low and consistent throughout the COVID-19 pandemic and lower than historic data.

Key Words: surgical fear, COVID-19, pandemic

(*Female Pelvic Med Reconstr Surg* 2022;28:e88–e92)

Coronavirus disease 2019 (COVID-19) is a viral respiratory illness caused by the severe acute respiratory syndrome coronavirus 2. After declaration of a global pandemic in March 2020, New York State underwent lockdown on March 22, 2020. All

elective surgical procedures were postponed to limit the spread of the virus and decrease nonemergent hospital procedures. As New York State began to experience lower COVID-related patient volume, lockdown restrictions were lifted in phases, and in May 2020, elective surgery began to resume at the discretion of individual hospitals (Table 1).¹ This unprecedented time provided a unique framework through which to assess patient fears regarding surgery in light of recent global health conditions.

Patients undergoing surgery commonly experience anxiety.² Anxiety during the preoperative period usually concerns the patient's family, general health, postoperative pain or health, surgical complications, and fear of death.^{3,4} Preoperative anxiety has been shown to correlate with postoperative mood^{5,6} and postoperative pain.^{4,7} Previous studies also demonstrate that patients with a prior history of anxiety or higher levels of trait anxiety were more likely to experience increased levels of fear or anxiety during both the preoperative and postoperative course.⁸ Recognition of patient fears and concerns allows for the health care provider to better care for patients during the anticipatory and recovery phases of surgery. However, surveys of physicians have shown a variable ability in predicting the anxiety and fear of surgical patients.^{9,10} The Surgical Fear Questionnaire (SFQ) is a validated and reliable 8-item instrument divided into 2 subscales: fear of the short-term consequences of surgery and fear of the long-term consequences.¹¹ The use of the SFQ was established in benign surgeries with mixed population.¹¹ Studies in women undergoing hysterectomy for benign indications have shown a short-term fear level ranging from 9 to 16 of 40 points and a long-term fear level ranging from 3 to 9 of 40 points.^{4,11,12}

The primary objective of our study was to assess fears surrounding elective surgery and office procedures in a benign gynecological population in context of the COVID-19 pandemic. Those emotions were quantified by using a modified version of the Surgical Fear Questionnaire (mSFQ). Our secondary objective was to trend the average level of fear over a 12-month period as the COVID pandemic continued but the lockdown was lifted. We hypothesized that the overall fear levels are greater than historic data, and the COVID-19–related fear is greater in surgery compared with procedures and corresponds to the course of the pandemic.

MATERIALS AND METHODS

This was a multicenter, prospective, observational study conducted at Lenox Hill Hospital, North Shore University Hospital, Long Island Jewish Medical Center, and Westchester Medical Center, all hospitals in the metro region of New York City. Institutional review board approval was obtained at each site (Northwell IRB number 20-0505, NYMC IRB number 14324).

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DOI: 10.1097/SPV.0000000000001162

TABLE 1. Phases of the COVID-19 Pandemic

Phase 1	February 22, 2020 to June 8, 2020	Some manufacturing, wholesale, and select retail businesses allowed to resume
Phase 2	June 9, 2020 to June 22, 2020	More retail businesses allowed to resume activity at 25% capacity
Phase 3	June 23, 2020 to July 6, 2020	Some hospitality operations allowed to resume at 50% capacity
Phase 4	July 7, 2020 to July 20, 2020	Schools, entertainment, and low-risk recreation activities allowed to reopen with social distancing guidelines

Recruitment occurred from June 23, 2020 to March 23, 2021. All female patients at least 18 years old presenting to the gynecologic or urogynecologic clinics for a benign elective surgery or office procedure were eligible. Patients were excluded if they were non-English speaking, undergoing a procedure or surgery for known malignant pathology, undergoing a nonelective (emergent) procedure or surgery, or if they could not provide consent. Eligible patients were identified based on the aforementioned inclusion and exclusion criteria and were approached in the clinic. After informed consent was obtained, each patient completed the questionnaire either in person by written survey or by electronic survey that was emailed to the patient. Demographic characteristics that were collected included age, body mass index, race/ethnicity, marital status, insurance status, highest education level, current employment, history of chronic pain/depression/anxiety, history of previous surgery, and whether the surgery or procedure was delayed due to COVID-19.

This study used a standardized questionnaire for preoperative or preprocedural patients undergoing benign gynecologic or urogynecologic surgery or an office procedure. In this study, we added additional instructions to the SFQ to place the questions in context of the COVID-19 pandemic.¹¹ For questions in which a directionality had to be made for the question to make grammatical sense, we chose to assume that COVID would exacerbate the concern. By phrasing the questions in this direction, we hoped to capture more patient-related fears. In our modified version of the SFQ (referred to hereafter as mSFQ), we added questions that were pertinent to the pandemic, including the removed questions from the original 10-item SFQ described in Theunissen et al¹¹ (“I am afraid of staying in the hospital” and “I worry about my family”) plus an additional four questions for the surgical mSFQ. Each question is scored on a scale of 0 to 10 with 0 corresponding to “not at all afraid” and 10 corresponding to “very afraid” for a maximum of 100 points for the procedural mSFQ and a maximum of 140 for the surgical mSFQ. All patients received either the 10-item procedural mSFQ or the 14-item surgical mSFQ. Patients were also allowed to complete the survey up to 30 days in advance of their procedure or surgery and did not have a time limit for completion. Those who underwent an office procedure and elective surgery were allowed to complete both surveys.

Study data were collected and managed using Research Electronic Data Capture electronic data capture tools hosted at Northwell Health.¹³ Research Electronic Data Capture is a secure, web-based software platform designed to support data capture for research studies, providing (1) an intuitive interface for validated data capture, (2) audit trails for tracking data manipulation and export procedures, (3) automated export procedures for seamless data downloads to common statistical packages, and (4) procedures for data integration and interoperability with external sources.

The mean and median scores of the SFQ and mSFQ were calculated. For patient demographics, mean and SD are reported for continuous clinical variables and frequency for categorical variables. When clinical variables are compared between groups of

patients, the *t* test was used to compare continuous variables contingent on the normality of the variable distribution. The χ^2 and Fisher exact tests were used to compare the distribution of categorical variables between groups. A 1-way analysis of variance with the Tukey's honestly significant difference (HSD) test was

TABLE 2. Patient Characteristics

	n = 209
Age, y	54.7 ± 14.5
Weight, lb	159.5 ± 35.1
Height, in	63.7 ± 3.4
BMI	27.8 ± 6.1
Race	
American Indian	1 (0.5)
Asian	19 (9.1)
Black or African American	41 (19.7)
Native Hawaiian	0
White	110 (52.9)
Other	37 (17.8)
Marital status	
Married or cohabitating	115 (55.3)
Single	50 (24)
Widowed	14 (6.7)
Divorced	29 (13.9)
Insurance status	
Self-pay	10 (5)
Charity	0
Private	99 (49.3)
Medicare	55 (27.4)
Medicaid	37 (18.4)
Highest level of education	
High school or GED equivalent	34 (16.6)
Some college	46 (22.4)
Associate's or Bachelor's degree	72 (35.1)
Advanced degree	52 (25.4)
Other	1 (0.5)
Current employment	120 (58.8)
Past medical history	
Chronic pain	49 (25.5)
Depression	39 (20.5)
Anxiety	56 (28.7)
Prior surgery	167 (80.7)
Was the procedure/surgery delayed because of COVID?	35 (17.2)

*Data are reported as mean (SD) or n (%).

BMI, body mass index (calculated as weight in kilograms divided by height in meters squared); COVID, coronavirus disease; GED, General Education Development Test.

TABLE 3. Types of Procedures and Surgery

Types of procedures (n = 107)	Urodynamics	59 (55.1)
	Cystoscopy	30 (28)
	Botox	3 (2.8)
	Biopsy	1 (0.9)
	Urethral bulking agents	1 (0.9)
Types of surgery (n = 102)	Surgical route	
	Laparoscopic	14 (13.7)
	Abdominal	12 (11.8)
	Robotic	38 (37.3)
	Vaginal	27 (26.5)
	Hysterectomy	59 (57.8)
	Apical suspension	
	Sacropopexy	23 (22.5)
	Uterosacral ligament suspension	12 (11.8)
	Sacrosinous ligament fixation	1 (1.8)
	Colpocleisis	3 (2.9)
	Anterior and/or posterior repair	26 (25.5)
	Midurethral sling	32 (31.4)
	Rectopexy (with or without resection)	4 (3.9)
	Mesh revision	3 (2.9)
	Botox	3 (2.9)
	Urethral surgery	2 (2)
	Other benign gynecologic surgery	
	Myomectomy	10 (9.8)
	Endometriosis	7 (6.9)
	Revision (other)	3 (2.9)
	Polypectomy	3 (2.9)
Hysteroscopy, dilation, and curettage	2 (2)	
Other	3 (2.9)	

Data are reported as n (%).

performed to compare means. Critical value (*P* value) is set at 0.05 for all statistical tests.

RESULTS

A total of 209 surveys were completed from 107 patients undergoing office-based procedures and 102 patients undergoing elective surgery. Patient demographics are listed in Table 2. The average age of patients was 54.68 ± 14.45 . Most respondents were White (52.9%), followed by Black or African American at 19.7%. Almost half of patients (49.3%) had private insurance. Thirty-five percent of patients had completed an undergraduate degree, and 25% had an advanced degree. More than half of the patients

(58.8%) were currently employed. The prevalence of chronic pain, depression, or anxiety levels was similar to national statistics at 25.5%, 20.5%, and 28.7%, respectively. Most patients (80.1%) had a prior surgical history. Overall, only 17.2% of patients experienced a delay in care.

The different types of office procedures and surgery are listed in Table 3. The most common office procedures were urodynamics (n = 59) and cystoscopies (n = 30). The most common elective surgery was hysterectomy (n = 59).

The total SFQ scores for benign elective hysterectomies are reported to be 13 to 22.9,^{4,11} which is higher than our average level of fear among women undergoing office procedures or elective surgery. The overall total SFQ scores, short-term fear scores, and long-term fear scores were not different for procedures and surgery (Table 4).

For the 59 patients undergoing hysterectomy, the mean \pm SD SFQ score was 12.49 ± 15.05 with a mean \pm SD short-term fear score of 7.37 ± 8.62 and a mean \pm SD long-term fear score of 5.12 ± 7.14 . A 1-way analysis of variance was performed to compare the mean SFQ scores for short- and long-term fear between hysterectomy patients in our study and Pinto et al⁴ and Theunissen et al¹² (Table 5). There was a statistically significant difference in mean short-term SFQ scores between 2 groups ($F_{2, 572} = 35.33$; $P < 0.001$). However, the Tukey HSD test for multiple comparisons showed that the mean short-term SFQ scores were not significantly different between Pinto et al⁴ and our data ($P = 0.56$; 95% confidence interval, -5.44 to 2.14). There was also a statistically significant difference in mean long-term SFQ scores between 2 groups ($F_{2, 572} = 16.40$, $P < 0.001$). Similarly, the Tukey HSD test for multiple comparisons showed that the mean long-term SFQ scores were not statistically different between Pinto et al⁴ and our data ($P = 0.93$; 95% confidence interval, -2.73 to 3.75).

When the additional questions specific to COVID-19 were added, the mSFQ scores were 20.57 ± 20.55 of 100 for procedures and 28.78 ± 28.36 of 140 for surgery. The average mSFQ score for the subgroup of patients undergoing hysterectomy was 28.61 ± 26.74 of 140. The mean scores per question did not differ significantly between groups (Table 6). The highest scoring questions were about fears related to hospital admission (3.26 for procedures, 3.24 for surgery) and family (5.19 for procedures, 4.54 for surgery). These 2 additional questions in the mSFQ likely drove the average fear scores higher. There were no significant fluctuations in average SFQ score over time or in relation to COVID-19 events (Fig. 1). Scores were higher for the surgical patients during phases 1 and 2 of reopening; however, less than 5 patients were surveyed during this time, as many elective surgical procedures had not yet been rescheduled.

DISCUSSION

The primary aim of the study was to assess the fears surrounding elective surgery and office procedures in a benign

TABLE 4. Surgical Fear of Patients Undergoing Elective Surgery or Office Procedures

	Procedures (n = 107)	Surgery (n = 102)	<i>P</i>
mSFQ (range, 0–100 for procedures and 0–140 for surgery)	20.6 ± 20.6	28.8 ± 28.4	N/A
SFQ (range, 0–80)	12.4 ± 16.5	12.0 ± 16.0	0.96
SFQ short-term (range, 0–40)	6.2 ± 8.4	6.8 ± 8.4	0.73
SFQ long-term (range, 0–40)	6.2 ± 8.9	5.2 ± 8.2	0.68
Nonvalidated questions	8.2 ± 6.0	16.8 ± 14.3	N/A

Data are reported as mean (SD).

mSFQ, modified version of the Surgical Fear Questionnaire; N/A, not applicable; SFQ, Surgical Fear Questionnaire.

TABLE 5. Short- and Long-term Surgical Fear Scores

	SFQ Short-Term, Mean (SD)	SFQ Long-Term, Mean (SD)	No. Patients
Pinto et al ⁴ (benign hysterectomy)	9.0 (8.6)	4.6 (6.8)	88
Theunissen et al ¹² (benign hysterectomy)	16.0 (9.9)	9.3 (8.6)	428
Our data (both procedures and surgery)	6.5 (8.4)	5.7 (8.6)	209
Our data (hysterectomy only)	7.4 (8.6)	5.1 (7.1)	59

SFQ, Surgical Fear Questionnaire.

gynecological population during the COVID-19 pandemic. Because of the extraordinary circumstances of being in a pandemic, we hypothesized that there would be a significant amount of fear in women undergoing office procedures and surgery. The present study found no significant level of fear reported in our patient population. The average total SFQ score for benign elective hysterectomy has been reported to be 13 to 22.9.^{4,11} Other studies assessing fear in a benign gynecological patient population undergoing elective hysterectomy found mean SFQ scores that ranged from 9.02 to 16.0 for the short-term and 4.61 to 9.3 for the long-term.^{4,12} Our study found the mean ± SD SFQ scores for elective hysterectomies to be 12.49 ± 15.05, with a mean ± SD score of 7.37 ± 8.62 for short-term fear and 5.12 ± 7.14 for long-term fear. Unexpectedly, the average level of fear in patients undergoing hysterectomy during the pandemic was lower than in previously published data. The greatest levels of fear were about admission to the hospital after the surgery or procedure and about concern for family during the pandemic. There were also no

significant correlations seen between the fear scores and major COVID-19 events for surgery or office procedures. The initial peak in SFQ scores around phases 1 and 2 is limited by a small number of respondents because surgical cases at this time were still limited.

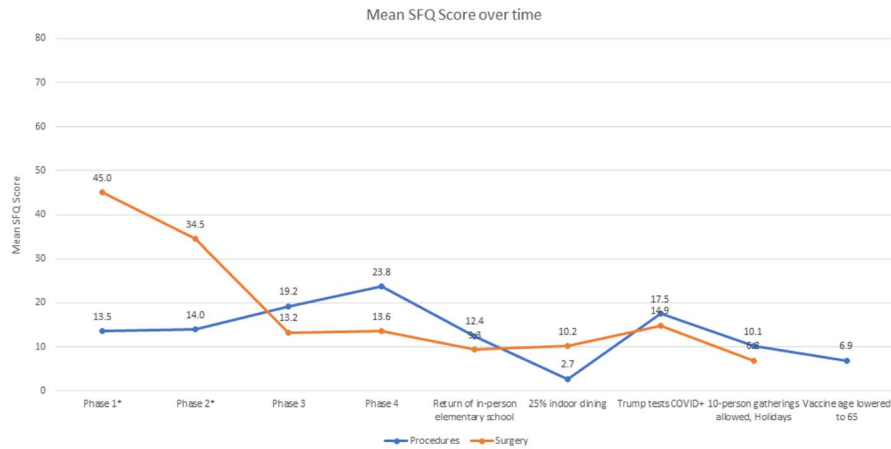
The main strength of this study is its design as a prospective multicenter study of a large diverse population around New York City. The New York metropolis area was the epicenter at the onset of the coronavirus spread in the United States. Guidance on social conduct was left up to local authorities, and with the paucity of information on COVID-19, there was a great deal of fear and uncertainty. At that time, the general population was reluctant to seek medical care. We present the first prospective study investigating fear specifically related to COVID-19 and nonemergent gynecologic care.

As with any survey study, there are inherent limitations. Our cohort comprised of women who already decided to seek medical care, and so results may underestimate population COVID-related fears. In addition, by excluding non-English speaking populations,

TABLE 6. Mean Scores per Question

	Questions	Procedures	Surgery	P
Short-term fears	I am afraid of the procedure/surgery because of the coronavirus pandemic.	2.3	2.4	0.91
	I am afraid the pain after the procedure/surgery will be worse because of the coronavirus pandemic.	1.5	1.5	0.65
	I am afraid that the unpleasant adverse effects (like nausea) after the procedure/surgery will be worse because of the coronavirus pandemic.	1.4	1.5	0.46
	I am afraid of the anesthesia because of coronavirus pandemic.	1.3	1.5	0.31
Long-term fears	I am afraid that my health will deteriorate because of the procedure/surgery especially because of the coronavirus pandemic.	1.8	1.5	0.38
	I am afraid the procedure/surgery will more likely fail because of the coronavirus pandemic.	1.3	1.0	0.58
	I am afraid that I won't recover completely from the procedure/surgery because of the coronavirus pandemic.	1.7	1.2	0.37
	I am afraid of the long duration of the rehabilitation after the procedure/surgery because of the coronavirus pandemic.	1.7	1.5	0.11
	Additional COVID-specific fears	I am afraid of being admitted to the hospital after the procedure because of the coronavirus pandemic.	3.3	3.2
I worry about my family because of the coronavirus pandemic.		5.2	4.5	0.82
I am afraid that the doctors are overworked because of the coronavirus pandemic.		N/A	3.2	
I am afraid that the hospital is understaffed because of the coronavirus pandemic.		N/A	2.4	
I am afraid that my condition is more advanced because of a delay of care related to coronavirus pandemic.		N/A	1.3	
I am afraid that I will be infected with coronavirus from the surgery.		N/A	2.2	
Total		20.6	28.8	

COVID, coronavirus; N/A, not applicable.



*n<5

FIGURE 1. Surgical Fear Questionnaire (SFQ) scores over time.

we perhaps underrepresented groups who were disproportionately affected by the pandemic and the lockdown. Patient recruitment often occurred in the immediate preoperative period, and general surgery-associated nervousness could have confounded the results.¹⁴ In addition, this study was not implemented until 2 weeks after the start of phase 1, which may have missed a period of greater fear in the population. Our surgical procedures were diverse because the allowable elective surgical procedures were dependent upon each individual hospital. Changes in policy took into account logistics, hospital staffing, and bed availability and evolved with the course of the pandemic. Because there were many unpredictable factors that affected what surgical procedures were allowed, the authors were unable to control for any confounders because they were concerned that this could compromise enrollment. In addition, comparison of our data with historic data in a benign gynecologic population is imperfect because not all of our patients underwent hysterectomy. We chose to compare the subset of hysterectomy patients to a historic cohort to provide some context. Our subgroup was mostly minimally invasive hysterectomies, whereas the historic cohort was not specified and could potentially have had higher fear scores if there were more open surgical procedures; however, without historic comparison, it is difficult to interpret the SFQ scores. Although there is no validated COVID-specific questionnaire, a modified version of the validated SFQ was used, maximizing the internal validity.¹⁵ To place the questionnaire in the context of COVID, the authors had to choose a directionality for the questions to be readable; thus, the resulting questionnaire had significant modifications and was not validated. As a multicenter study conducted across multiple counties around New York City, our findings may be generalizable to similar demographic areas. However, given that the study included only adult female patients, it may not be generalizable to the population as a whole. In addition, the pandemic has affected other states to different degrees and on different timelines; thus, our findings may not be applicable to other geographic areas.

In conclusion, women undergoing procedures or elective surgery during the COVID-19 pandemic do not report high levels of fear.

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