

# Patient Perceptions of Cancer and Reconstructive Care During the COVID-19 Pandemic

## Perceptions du cancer et des soins de reconstruction par les patients au cours de la pandémie de COVID-19



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### Abstract

**Background:** The Coronavirus-2019 (COVID-19) pandemic profoundly impacted care for breast cancer patients. Oncologic and reconstructive surgeries were delayed as hospitals attempted to preserve personal protective equipment and bed capacity. Little is known about how this unprecedented time has affected breast cancer patients' mental health and perceptions regarding their care. **Methods:** A survey was sent to surgical oncology and plastic surgery patients who received breast cancer care between March and May 2020, during which our institution suspended elective surgery. The survey questions included patient demographics, as well as questions focused on worries related to COVID-19, individualized cancer and reconstructive care, and patient satisfaction with telemedicine. Descriptive statistics were used to assess patient responses. **Results:** 56 breast cancer patients completed the survey, which reflected a 25% response rate. A majority of patients expressed moderate concern about contracting COVID-19, accessing high-quality cancer care (78%), and receiving timely surgical care (68%). Only 43% of patients reported delays in their surgical cancer and reconstructive care, when in actuality 57% of patients experienced surgical delays. Overall, patients were satisfied with telemedicine and did not feel it negatively impacted their care (69%). **Conclusions:** The COVID-19 pandemic has led to disruptions of routine oncologic and reconstructive care for breast cancer patients. Patients were concerned about receiving high-quality cancer and reconstructive care, and the results of this study uncovered gaps in patient–physician communication. The implementation of telemedicine was received positively. These data can be used to improve future health system practices as the medical community faces new potential shutdowns of surgical services.

### Résumé

**Contexte :** La pandémie à coronavirus-2019 (COVID-19) a eu de grandes répercussions sur les soins des patientes atteintes de cancer du sein. Les chirurgies oncologiques et reconstructives ont été retardées pendant que les hôpitaux tentaient de préserver les équipements de protection personnels et leur capacité en lits. On sait peu de choses sur la façon dont cette période sans précédent a affecté la santé mentale des patientes ayant un cancer du sein ainsi que leurs perceptions concernant leurs soins. **Méthodes :** Une enquête a été envoyée aux patientes de chirurgie oncologique et de chirurgie plastique qui ont reçu des

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soins pour cancer du sein entre mars et mai 2020, période pendant laquelle notre établissement a suspendu les interventions chirurgicales programmées. Les questions de l'enquête incluaient les données démographiques des patientes et comportaient des questions centrées sur les préoccupations en rapport avec la COVID-19, les soins individuels contre le cancer et de reconstruction, ainsi que la satisfaction des patients envers la télémedecine. Des statistiques descriptives ont été utilisées pour évaluer les réponses des patients. **Résultats :** Au total, 56 patientes ayant un cancer du sein ont répondu à l'enquête, soit un taux de réponse de 25 %. Une majorité de patientes a exprimé une préoccupation modérée devant le risque de contracter la COVID-19, d'accéder à des soins de haute qualité contre le cancer (78 %) et de recevoir des soins chirurgicaux en temps opportun (68 %). Seulement, 43 % des patientes ont signalé des retards dans leurs soins chirurgicaux et reconstructifs liés au cancer quand, en réalité, 57 % des patients en ont subi. Globalement, les patientes ont été satisfaites de la télémedecine et n'ont pas ressenti d'impact négatif sur leurs soins (69 %). **Conclusion :** La pandémie de COVID-19 a entraîné des perturbations dans les soins oncologiques et reconstructifs réguliers des patientes atteintes de cancer du sein. Leurs préoccupations portaient sur l'obtention de soins de grande qualité sur le plan oncologique et de la chirurgie reconstructrice; les résultats de cette étude ont mis à jour des lacunes dans la communication entre patients et médecins. La mise en œuvre de la télémedecine a été reçue positivement. Ces données peuvent être utilisées pour améliorer de futures pratiques du système de santé, car la communauté médicale reste confrontée à de nouvelles fermetures potentielles des services chirurgicaux.

### Keywords

COVID-19, breast cancer, breast reconstruction, patient perception, treatment delay

### Mots-clés

sein, reconstruction du sein, COVID, perception des patients

## Introduction

In March of 2020, healthcare workers across the United States braced as an influx of patients infected with Coronavirus Disease 2019 (COVID-19) emerged across the country. In the wake of the pandemic, elective surgery was halted to preserve personal protective equipment and bed capacity. With all of these necessary changes, surgical care for cancer patients was profoundly affected. In early studies, healthcare systems have reported delays in diagnosis, treatment, and clinical trials related to cancer care.<sup>1,2</sup> The treatment of breast cancer was no exception as surgical shutdowns led to shifts in treatment pathways. Decisions regarding breast cancer reconstruction were especially challenging, as while reconstruction may not be a life-prolonging intervention, it is known to have a profound effect on the quality of life.<sup>3,4</sup> Nevertheless, many patients experienced delays in cancer and reconstructive care which likely exacerbated the psychological burden of adjusting to a new cancer diagnosis amid a global pandemic.

Much of the literature has appropriately focused on cancer-specific prioritization tiers, to help provide transparency and consistency in regard to treatment algorithms.<sup>5,6</sup> In reality, however, clinical triage and management of breast cancer patients during the COVID-19 pandemic have still been hospital, physician, or patient specific. Little is known about how this unprecedented time has affected breast cancer patients' mental health and perceptions regarding their clinical care.

To address this gap in the literature, this study aimed to determine how the pandemic truly affected breast cancer patients and their attitudes in response to widespread delays in surgical cancer and reconstructive care. Having a thorough understanding of patient fears and concerns can inform improvements in hospital policies as new, and potentially

worse, surges of the virus emerge. As providers continue to face the challenges of providing high-quality cancer and reconstructive care during an ongoing pandemic, hospital systems must give due consideration to how changes in practices are affecting patients, and how medical systems can improve patient satisfaction and psychosocial well-being.

## Methods

### Subject Identification

An Institutional Review Board–approved study was conducted to determine patients' opinions regarding the effects of the COVID-19 pandemic on oncologic and reconstructive care. Breast cancer patients were identified by surgical oncology and plastic surgery clinic schedules between March and May 2020, during which our institution suspended elective surgery, following recommendations from the American College of Surgeons.<sup>7</sup> Patients were emailed and consented to participate in the study through a link on REDCap.<sup>8</sup> The survey was sent via email. Two email reminders were sent if the survey was not completed. For included patients, standard demographics, oncologic characteristics, and treatment data were collected from the electronic medical record. Additionally, patient charts were reviewed to determine who actually had surgery delays, as described in telephone encounters, canceled surgeries, and progress notes.

### Survey Instrument

After consenting to participate, an electronic survey prompted a series of questions that focused on patient demographics, COVID-19 concerns, and breast cancer and reconstructive care. Questions were modeled after the COVID resilience

survey described in *Barzilay* (2020).<sup>9</sup> COVID-related questions gauged levels of worry, from “not at all” to “a great deal” regarding various aspects of virus transmission and virus-related complications, including contracting, spreading, and dying from COVID-19.

Subsequently, respondents were presented with a series of questions regarding their cancer and reconstructive care. Questions investigated how worried patients were regarding various aspects of their care including timely surgical intervention, timely reconstruction, the quality of their care, and potential exposures in the hospital. Similar to the questions about COVID-19, possible responses ranged from “not at all worried” to worried “a great deal.” Additionally, the survey posed questions about what type of procedures were delayed and how patients felt that impacted their care. Questions were posed about the use of telemedicine and patients’ willingness to use this platform in the future. Finally, patients were administered the Patient Health Questionnaire (PHQ) and Generalized Anxiety Assessment (GAD-7) to screen for underlying mental health disorders. A cutoff score of 3 and 10 was used for the PHQ and GAD-7, respectively.<sup>10,11</sup>

### Statistical Analysis

Standard descriptive statistics were used, with a total number of respondents and percentage of responses provided. Since the survey was administered to a heterogeneous group of patients, not all of the questions were valid for all patients. For this reason, patients were only included if the question applied to their clinical situation. For example, responses regarding reconstruction were only presented if a patient was actively pursuing reconstructive care, per their chart. All other answers were excluded. Fisher exact and  $\chi^2$  tests were used to compare incidences of screened mental health illness versus delays in surgical treatment and cancer stage, as appropriate. Significance was set at a 2-tailed *P* value of .05. Analysis was conducted on StataMP 14 (Statacorp).

### Results

A total of 56 patients being treated for breast cancer consented to participate in the study, which reflected 25% of patients who opened the initial invitation email. Median age at the time of survey completion was 54.5 years and the majority of respondents identified as Caucasian (Table 1). A majority of respondents pursued some sort of postgraduate education (*n*=33, 59%) and were currently employed at least part-time (*n*=47, 84%). Finally, only 3 patients (5.4%) reported to be low income, while 49 (87%) reported to be average or high income.

### COVID Concerns

In terms of COVID-related questions, there were no patients in this cohort with positive tests at the time of survey administration. Since the start of the pandemic 40 patients (69%) had tested negative, and over half knew someone personally who was diagnosed with COVID (*n*=29, 52%) (Table 2). Overall, a majority of respondents expressed at least a moderate

**Table 1.** Demographics of Respondents.

Variable	N = 56
<b>Age (years), median [IQR]</b>	54.5 [43, 61]
<b>English proficiency (n, %)</b>	
Basic	1 (1.7)
Advanced	14 (25)
Fluent/Native	39 (70)
Bilingual	2 (3.6)
<b>Race (n, %)</b>	
Caucasian	49 (88)
Black	6 (11)
Asian	1 (1.8)
<b>Ethnicity (n, %)</b>	
Non-Hispanic	52 (95)
Hispanic	3 (5.5)
<b>Highest education level (n, %)</b>	
High school	6 (11)
Some college	5 (8.9)
College graduate	12 (21)
Postgraduate	33 (59)
<b>Employment status (before COVID) (n, %)</b>	
Employed	47 (84)
Retired	6 (11)
Disabled	3 (5.4)
<b>Self-reported income level (n, %)</b>	
Low income	3 (5.4)
Average income	32 (57)
High income	17 (30)
Did not respond	4 (7.1)

amount of concern about contracting COVID, with 21 patients (38%) stating that COVID worried them “a lot” or “a great deal.” Despite this, 29 patients (52%) stated that dying from COVID was not at all or a minor worry.

### Oncologic and Reconstructive Surgery

Of the patients who consented, 38 respondents (68%) were being seen during the pandemic for treatment of breast cancer (Table 3). As a result of the pandemic, a majority of patients were at least a little worried about receiving high-quality cancer care (*n*=28, 74%), with most expressing concerns about the timing of surgical care (*n*=26, 68%). Interestingly, exposure to the COVID-19 virus during surgery and postoperative recovery was little to no concern for 68% of patients. 23 patients (60% of total cohort) were interested in pursuing reconstruction at the time of cancer treatment, of which 1 patient (4.4%) felt her choice in reconstruction was affected by the pandemic, while 4 patients (17%) were unsure how their reconstructive choices were affected (Table 4). Similarly, 1 patient (4.4%) felt that the quality of her reconstruction was negatively affected by COVID, with 6 patients (26%) being unsure. Ten patients stated that their surgery was postponed due to COVID (43%), with most stating that they had delays in both

**Table 2.** General COVID-19 Questions.

Question	N = 56
<b>Tested for COVID-19 (n, %)</b>	
Negative	40 (69)
Not tested	16 (28)
<b>Know someone with COVID-19 (n, %)</b>	
Yes	29 (52)
No	27 (48)
<b>Know someone who died from COVID-19 (n, %)</b>	
Yes	23 (23)
No	43 (77)
<b>Worried about contracting COVID-19 (n, %)</b>	
Not at all	1 (1)
A little	11 (20)
A moderate amount	23 (41)
A lot	15 (27)
A great deal	6 (11)
<b>Worried about dying from COVID-19 (n, %)</b>	
Not at all	14 (25)
A little	15 (27)
A moderate amount	18 (32)
A lot	5 (8.9)
A great deal	4 (7.1)
<b>Unknowingly spreading COVID-19 (n, %)</b>	
Not at all	9 (16)
A little	17 (30)
A moderate amount	14 (25)
A lot	8 (14)
A great deal	8 (14)

cancer and reconstructive surgery (n = 7, 30%). However, upon review of the patients' charts, 13 patients from this subset did actually have some sort of delay in surgery (57%). On the other hand, 31 patients (85%) were aware of their cancer stage, while 7 (15%) incorrectly chose their stage or indicated they did not know, when compared with their medical records.

The PHQ and GAD-7 were also used to screen for underlying mental health disorders. Overall, 34 patients responded to this portion of the survey, of which, 7 (21%) screened positive for either generalized anxiety disorder or a major depressive episode (Table 5). Interestingly, patients who experienced a delay in oncologic or surgery were significantly more likely to screen positive on the GAD-7 with 86% of patients with a positive screen experiencing a surgical delay ( $P = .004$ ). Similarly, 71% of patients who screened positive for a major depressive episode had experienced a surgical delay, which also was a significantly greater proportion than those who screened negative ( $P = .04$ ). Cancer staging did not have any significant associations with positive screens on either questionnaire.

### Telemedicine

54 respondents (96%) completed questions regarding their attitudes toward telemedicine (Table 6). Of this group, 46 (84%)

**Table 3.** Cancer Surgery–Specific Questions.

Question	N = 38 <sup>a</sup>
<b>Worried about lack of medical supplies</b>	
Not at all	15 (39)
A little	9 (24)
A moderate amount	11 (29)
A lot	3 (8)
<b>Worried about high-quality cancer care</b>	
Not at all	10 (26)
A little	10 (26)
A moderate amount	11 (29)
A lot	5 (13)
A great deal	2 (5.2)
<b>Worried about timely surgical cancer care</b>	
Not at all	12 (32)
A little	9 (24)
A moderate amount	5 (13)
A lot	7 (18)
A great deal	5 (13)
<b>Worried about exposure during surgery</b>	
Not at all	11 (29)
A little	15 (39)
A moderate amount	16 (16)
A lot	3 (8)
A great deal	3 (8)
<b>Worried about exposure during postoperative hospital stay</b>	
Not at all	13 (34)
A little	13 (34)
A moderate amount	8 (21)
A lot	1 (2.6)
A great deal	3 (7.9)
<b>Patient-reported postponement of surgery</b>	
Cancer surgery only	5 (13)
Reconstruction only	2 (5.3)
Both	8 (21)
Neither	23 (61)
<b>Actual postponement per medical record</b>	
Yes	21 (55)
No	17 (45)
<b>Identification of cancer stage</b>	
Correctly identified	31 (82)
Incorrect or Did not know	7 (18)

<sup>a</sup>Limited to patients undergoing primary treatment for breast cancer.

responded saying they would participate in telemedicine in the future, with only 4 (7.4%) saying that they would not participate in telemedicine visits (Table 6). A majority of the patients reported having one of their appointments switched to telemedicine (n = 37, 69%), of which the majority had at least their visit with their surgical oncologist scheduled virtually (79%). Most patients who had appointments that were switched from in person to telemedicine expressed some degree of relief (n = 21, 58%) and few were upset about the switch (n = 8,

**Table 4.** Breast Reconstruction–Specific Questions.

Question	N = 23 <sup>a</sup>
<b>Choice of reconstruction affected by COVID</b>	
Yes	1 (4.4)
No	18 (78)
Not Sure	4 (17)
<b>Worried about timely reconstructive Care</b>	
Not at all	5 (22)
A little	4 (17)
A moderate amount	6 (26)
A lot	5 (21)
A great deal	3 (13)
<b>Reconstruction quality negatively affected by COVID</b>	
Yes	1 (4.4)
No	16 (70)
Not Sure	6 (26)
<b>How did reconstructive plan change?</b>	
No change in type or timing	15 (65)
Timing changed, but type remained the same	8 (35)
Both type and timing changed	0 (0)

<sup>a</sup>Limited to patients undergoing primary reconstruction for breast cancer.

21%). Of patients that used telemedicine for their plastic surgery appointment, most felt that telemedicine did not negatively impact their reconstructive care (n = 11, 69%).

## Discussion

The COVID-19 pandemic has led to disruptions of routine oncologic and reconstructive care for breast cancer patients. Here, we present the first study looking at how these changes affected patients during the first wave of the pandemic and their attitudes toward the efforts to provide care under new hospital policies. As expected, contracting and spreading COVID-19 was a worry for a majority of the respondents, but most patients felt they would be safe from exposure during surgery and in the hospital during the postoperative recovery period. Timing of surgical care was a major concern for cancer patients, with most patients admitting to feeling worried about how the pandemic would affect the quality of their cancer care. The majority of patients expressed positive attitudes toward telemedicine, with many stating they were relieved their appointment was switched to virtual from in-person. Interestingly, there was an incongruency between patients who believed their surgery was delayed and patients who actually experienced a delay with more patients actually experiencing a delay in oncologic or reconstructive surgical care than what they perceived, suggesting a shortcoming in patient–physician communication.

Hospital systems in regions with high COVID-19 incidence rates have adopted a variety of policies to preserve capacity and reduce in-hospital exposure to the virus.<sup>12</sup> For management of

**Table 5.** Mental Health Questionnaires Versus Surgical Delay and Cancer Stage.

	Positive (n = 7)	Negative (n = 27)	P value
<b>GAD-7 screen</b>			
<b>Surgery postponed</b>			
Yes	6 (86)	7 (26)	<b>.004</b>
No	1 (14)	20 (74)	
<b>Cancer stage</b>			
I	2 (29)	6 (22)	<b>.56</b>
II	3 (43)	15 (56)	
III	2 (29)	4 (15)	
IV	0 (0)	2 (7.4)	
<b>PHQ screen</b>			
<b>Surgery postponed</b>			
Yes	5 (71)	8 (30)	<b>.04</b>
No	2 (29)	19 (70)	
<b>Cancer stage</b>			
I	2 (29)	6 (22)	<b>.50</b>
II	5 (71)	13 (48)	
III	0 (0)	6 (22)	
IV	0 (0)	2 (7.4)	

breast cancer in areas with high COVID-19 rates, a tiered approach has generally been employed with a focus on the preservation of hospital capacity and personal protective equipment, while ensuring that high-grade cancers were given treatment priority.<sup>7,12–16</sup> On the other hand, there has been a much wider variety in approaches to reconstructive care, with many debating the necessity of reconstruction and the additional risk associated with reconstructive surgery.<sup>17–20</sup> In fact, on March 24, 2020, the American College of Surgeons published an updated set of COVID-19-specific tiered guidelines for how to approach breast surgery during the first surge of the pandemic. In these guidelines, it clearly stated that autologous reconstruction should be deferred along with multiple other cancerous conditions.<sup>21</sup> Our institution, pursuant to these national and state mandates, completely suspended elective surgery, with only very specific high-risk breast cancer patients remaining as candidates for immediate surgical intervention during that critical time period. In terms of reconstructive care, only tissue expander placement was offered, and even this was surgeon-dependent during that time period. These restrictions were put in place in order to avoid extended hospital stays and readmissions associated with other types of immediate reconstruction which would potentially divert resources away from the COVID-19 crisis. As expected, this led to significant concerns from patients with regard to receiving timely surgical oncologic and reconstructive care. This is in line with other such recent reports that cancer patients have had increasingly voiced concerns about delayed diagnoses, canceled appointments, and missed treatments.<sup>22</sup>

Although it is not surprising that treatment delays related to the COVID-19 pandemic have caused additional psychosocial

**Table 6.** Impressions of Telemedicine.

Question	N = 54 <sup>a</sup>
<b>Did you have a visit changed to telemedicine?</b>	
Yes	37 (69)
No	17 (31)
<b>Which appointment switched to telemedicine?</b>	
Surgical oncology only	21 (57)
Plastic surgery only	8 (22)
Both	8 (22)
<b>Did telemedicine negatively affect your surgical oncology care?</b>	
Yes	2 (7.1)
No	23 (82)
Unsure	3 (11)
<b>Did telemedicine negatively affect your reconstructive care?</b>	
Yes	1 (6.3)
No	11 (69)
Unsure	4 (25)
<b>I was upset appointment was switched to telemedicine</b>	
Strongly disagree	14 (37)
Disagree	7 (19)
Neutral	8 (22)
Agree	5 (13)
Strongly Agree	3 (8)
<b>I was relieved my appointment was switched to telemedicine</b>	
Strongly disagree	3 (8)
Disagree	4 (10)
Neutral	9 (24)
Agree	10 (27)
Strongly Agree	11 (29)
<b>I would participate in telemedicine in the future</b>	
Strongly disagree	1 (1)
Disagree	1 (1)
Neutral	6 (11)
Agree	23 (42)
Strongly Agree	23 (42)
<b>I would NOT participate in telemedicine</b>	
Strongly disagree	26 (48)
Disagree	16 (30)
Neutral	6 (11)
Agree	4 (7.4)
Strongly Agree	0 (0)
Did not respond	2 (3.7)

<sup>a</sup>Two patients did not complete survey instrument regarding telemedicine.

distress for breast cancer patients, some innovative strategies may be able to mitigate the effect that the pandemic may have on psychosocial well-being. In terms of reconstruction, a number of centers have created new strategies to provide high-quality reconstructive care, while reducing unnecessary exposure and keeping the length of stay to a minimum. For

example, Salgarello et al have performed immediate direct-to-implant reconstruction, but only after ensuring the viability of the mastectomy flap using intraoperative indocyanine angiography to detect patients at high risk for mastectomy flap necrosis and thus reducing the risk of subsequent readmission and additional surgical intervention.<sup>19</sup> Additionally, this group has favored the use of polyurethane-covered implants in the prepectoral plane without the use of acellular dermal matrix (ADM), advocating that this technique leads to quicker procedure times, immediate adhesion to the implant, and lowered seroma incidence.<sup>19,23</sup> With similar goals in mind, Specht et al put forth a protocol for immediate reconstruction without an overnight hospital stay. As a part of their protocol, patients were risk-stratified and given preoperative education materials about drain care. Enhanced recovery after surgery (ERAS) guidelines were developed to transition patients out of the hospital on the day of surgery without increased risk of complications. This included a multimodal pain approach using both non-opioid pharmaceutical agents and paravertebral blocks to minimize pain directly after surgery.<sup>18</sup> Finally, patients were evaluated 4 h postoperatively, and then cleared for discharge. Although a small sample, this protocol resulted in zero readmissions or emergency department visits at the 1-month follow-up.<sup>18</sup> Although not universally applicable, these protocols can provide options for some patients in an effort to continue to provide high-quality reconstructive care while also preserving hospital capacity.

Even before the pandemic, telehealth was being explored as an opportunity to reduce costs and streamline appointments for breast cancer patients.<sup>24,25</sup> However, the use of telehealth has boomed as a result of the pandemic, and some believe these changes in practice will endure even after the pandemic has abated.<sup>26</sup> Our data demonstrate that patients were generally relieved they could still meet with their care teams, without having to travel to the clinic. Furthermore, an overwhelming majority stated that they would participate in telemedicine in the future suggesting that this modality might actually be preferable in some instances to in-person appointments. Importantly, only a few of the patients surveyed felt that telemedicine negatively impacted their reconstructive or oncologic care. These findings corroborate previous studies in using telemedicine for reconstructive visits, where over 95% of those surveyed stated that they would use telemedicine again.<sup>25</sup> For this reason, our institution has continued to offer telemedicine appointments for patients despite restrictions on in-person visits being lifted. Since patients travel from long distances to receive tertiary care at our institution, telemedicine offers an opportunity for patients to see their surgeon without having to travel, while also reducing the risk of exposure to the COVID-19 in the clinic. Although it is clearly impossible to perform surgery without some physical contact between patient and surgeon, it does seem that telemedicine provides a medium for physicians to meet with patients both pre- and postoperatively.

Finally, results from our study have revealed shortcomings in the way surgeons were communicating with patients

regarding the effect of the pandemic on their cancer and reconstructive care. Per comparison of patient charts with responses in the survey, there was a portion of patients who did not know their surgery was delayed as a result of the pandemic or were not clear as to which part of their care had been delayed. For example, approximately 30% of patients who experienced a delay in part of their cancer or reconstructive care responded by stating they did not believe their surgery had been postponed. It is unclear whether this figure reflects true miscommunications between provider and patient, or reflects an effort on the surgeon's part to be mindful of patient anxiety regarding delays that may not affect outcomes. However, there is likely some contribution of miscommunication as 78% of patients surveyed stated their reconstructive choice was not affected by COVID, even though this question does not delineate between initial and final reconstruction. Although some degree of miscommunication occurs even in routine practice, surgeons must be even more deliberate during the pandemic to ensure patients have a complete understanding of their disease, treatment options, and factors influencing their care. This will be particularly critical in light of the fact that prior research has already demonstrated that poor patient-provider communication, particularly in breast cancer patients, has been shown to have negative effects on treatment and quality of life outcomes.<sup>27</sup>

With regard to plastic surgery, in particular, its primary purpose is to optimize appearance and function in order to improve psychosocial outcomes for patients. An analogous discord between the aesthetic impression of the plastic surgeon and the patient is well-documented.<sup>28</sup> While traditionally, determining the aesthetic success of a particular surgical intervention has been based on surgeon opinion, with the advent of patient-reported outcome measures, such as the BREAST-Q, patients' perspectives regarding the surgical result have become increasingly important both in the plastic surgery literature as well as regulatory bodies such as the Food and Drug Administration (FDA).<sup>29</sup> These findings all underscore the need for the medical team and the patient to become a more cohesive unit with regard to the holistic approach of the care plan. This information provides insight into how the medical community as a whole, but particularly the breast cancer care team can create guidelines for best practices as the country braces for new nationwide surges in cases.

### Limitations

There are several limitations to note. The survey was administered only via email, which may introduce some bias into the data collection, as patients from lower socioeconomic groups are less likely to have broadband access, and therefore, may not be represented in this dataset.<sup>30</sup> However, this was a natural circumstance of conducting this project during the pandemic, as nonessential personal were not allowed to administer surveys in the clinic. Regardless, we believe that data, although limited, are still useful for plastic surgeons to know. Additionally, these data stem from multiple instruments, for

the various domains discussed in this manuscript. For this reason, the survey was quite lengthy and led to drops in survey responses for each sequential instrument. However, we have made attempts to include as many responses for patients as possible to represent the full spectrum of respondents. Although the sample size may be small, we did observe themes emerge in each section of the survey, which we used to draw the conclusions presented in the study. Additionally, there is heterogeneity in terms of where various patients were in their cancer care, with some undergoing primary cancer treatment and others only presenting for reconstructive revisions. To control for this, we limited questions presented for each subset to patients to which those concerns would apply, like only presenting questions about oncologic care for patients who still were undergoing cancer care, ensuring the validity of the answer responses. Finally, there are limitations inherent to the survey instrument, as it was composed of novel questions, created by the authors during the initial months of the pandemic. As this is not a validated survey, there may be discrepancies in how questions were intended and how they were interpreted by patients. The authors believe this effect has been minimized by using simple language, but this effect cannot be excluded entirely.

### Conclusion

The COVID-19 pandemic has led to substantial disruptions to normal medical practices, including the care of breast cancer patients. Although a number of tiered approaches have been suggested, no study has looked at how these changes in care affected patients. Here, we show that patients demonstrated a high level of concern about receiving high-quality cancer and reconstructive care as a result of the global COVID-19 pandemic. Although most patients generally felt positively about telemedicine, it appears that there were some gaps in communication from providers about how the pandemic was actually affecting the timing of surgical care. Overall, these data can be used to improve practices as cases of the virus surge and mandate additional changes to routine procedures as they pertain to the surgical management of breast cancer during a global pandemic.

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### Authors' Note

This study was approved by the Institutional Review Board at the University of Pennsylvania. *All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008 (5). Informed consent was obtained from all patients for being included in the study.*


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