

# The Impact of COVID-19-based Suspension of Surgeries on Plastic Surgery Practices: A Survey of ACAPS Members

Benjamin A. Sarac, BS\*  
 Anna R. Schoenbrunner, MD,  
 MAS†  
 Stelios C. Wilson, MD‡  
 Ernest S. Chiu, MD‡  
 Jeffrey E. Janis, MD‡

**Background:** The coronavirus disease 2019 (COVID-19) pandemic led to a drastic decline in the number of elective surgeries performed in the United States. Many national societies and local governments provided recommendations for surgeons to initially suspend and progressively resume elective surgery. The authors used a survey to the American Council of Academic Plastic Surgeons (ACAPS) to assess the effect on plastic surgeons.

**Methods:** An electronic survey questionnaire was distributed to 532 members of ACAPS. Data on individual and plastic surgery practice demographics, COVID-19 prevention measures, and procedures or services that were being performed or delayed were collected and analyzed.

**Results:** An estimated 161 members (30.2%) completed the survey. Changes in hospital policy were cited as the most common reason (89%) for determining which procedures were currently offered. Results vary by specialty. Notably, <10% of respondents who normally offered aesthetic procedures currently offered any procedures during the survey. Subspecialty-specific results and prevention measures when seeing clinic patients are further summarized and discussed.

**Conclusions:** Plastic surgeons have seen a drastic decrease in the variety of procedures and services they are allowed to offer during the COVID-19 pandemic. To help plan a return to normalcy, surgeons should create and implement plans to protect patients and staff from coronavirus transmission, assure financial solvency, and consider the effects of delayed surgeries on both the physical and mental health of their patients. In doing so, surgeons and their patients will be better prepared in the event of a resurgence of the virus. (*Plast Reconstr Surg Glob Open* 2020;8:e3119; doi: 10.1097/GOX.0000000000003119; Published online 17 August 2020.)

## INTRODUCTION

The Coronavirus Disease 2019 (COVID-19) pandemic led to a drastic decrease in the number of elective surgeries performed in the United States. The American College of Surgeons (ACS) was the first group to recommend

postponing elective surgeries,<sup>1</sup> followed by other national organizations, as well as states and individual institutions.<sup>2</sup> Specifically, the Centers for Medicare and Medicaid Services (CMS) initially detailed,<sup>3</sup> then later updated, a tiered system on the approach to which procedures should be postponed.<sup>4</sup> To further advise plastic surgeons who are not under direct state mandate, The American Society of Plastic Surgeons (ASPS) added additional advice to provide specialty-specific guidance.<sup>5</sup>

As the authors previously reported, the guidance stemming from multiple organizations at various political levels created a challenge for plastic and reconstructive surgeons to best decide how to conduct their individual practices.<sup>2</sup> Although the number of elective surgeries being performed has decreased, colleagues in China have shown that appropriate increases will follow adequate disease control.<sup>6</sup> Anticipating this resumption, ASPS released a detailed statement on April 21, 2020, to help guide plastic surgeons through the uncertain future.<sup>7</sup> Despite the

From \*The Ohio State University College of Medicine, Columbus, Ohio; †Department of Plastic and Reconstructive Surgery, The Ohio State University Wexner Medical Center, Columbus, Ohio; and ‡New York University Medical Center, Hansjörg Wyss Department of Plastic Surgery, New York, N.Y.

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The survey and research protocols were granted IRB approval by the New York University School of Medicine. Survey participation is voluntary and consent is implied through survey completion.

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plethora of guidelines, little is known about how plastic surgeons have been affected by these changes.

To help guide surgeons toward a safe return to normalcy, it is necessary first to examine and then disseminate information on what plastic surgery colleagues around the country are doing to decrease the risk of COVID-19 transmission and PPE utilization. Further, as the numbers of COVID-19 cases rise, the need for this information becomes more relevant, as further cessations in elective surgery may result. The authors conducted a survey assessing individual provider’s practice changes as related to the procedures and services offered. Quantitative data on changes in plastic surgery practices due to the COVID-19 health crisis are presented below to guide the reader and public health officials if cessations in elective surgery are again recommended.

## METHODS

An electronic survey questionnaire with branching logic and a maximum of 63 questions was distributed to 532 members of the American Council of Academic Plastic Surgeons (ACAPS). An initial recruitment email was sent on April 8, 2020, with additional reminder emails on day 6 and 15 after the first email survey invitation was sent. The survey was closed 17 days after opening, at which point it went 48 consecutive hours without a response. Participants were asked to provide demographic information about their practices. They were then asked if they normally offered services in aesthetic, breast reconstruction, pediatric/craniofacial, gender-affirming, general reconstruction, and/or hand surgery. Based upon these answers, participants were directed to specific questions on whether or not they were currently offering specific procedures during the pandemic. The survey and research protocols were granted IRB approval by the New York University School of Medicine.

## RESULTS

### General

In total, 161 members (30.2%) completed the survey. Demographic information is shown in [Table 1](#). Each question was optional, and the number of responses to each question is shown in the table. The majority of respondents were from the South (n = 43, 29%), followed by the Northeast (n = 38, 26%), Midwest (n = 37, 25%), and West (n = 29, 20%). Most participants reported working in an academic environment (123, 79%) and urban location (115, 74%). Ninety-five percent (n = 147) reported that their institution prohibited elective surgery. An estimated 148 participants (92%) cited still seeing clinic patients, of which 125 (84%) reported both seeing patients in person and consulting them via telemedicine; the remaining 18 (12%) and 5 (4%) reported consulting patients solely via telemedicine and seeing them in person, respectively. Preventative measures taken by the respondents during in-person visits are illustrated in [Figure 1](#). The most answered reasons cited for determining which procedures are being offered during the COVID-19 outbreak were hospital governance (89%), followed by patient (84%) and clinician staff safety (80%).

**Table 1. Demographics of Participants by Region**

	Total, n (%)
Age (n = 156)	
<40	27 (17%)
41–50	50 (32%)
51–60	38 (24%)
≥61	41 (26%)
Gender (n = 156)	
Male	115 (74%)
Female	37 (24%)
Other/prefer not to say	4 (3%)
Years in practice (n = 155)	
<5	24 (15%)
5–10	25 (16%)
11–20	41 (26%)
21–30	38 (25%)
≥31	27 (17%)
Type of practice (n = 156)	
Academic	123 (79%)
Group private practice	7 (4%)
Hospital employed	12 (8%)
Individual private practice	9 (6%)
Other	5 (3%)
Location of practice (n = 155)	
Rural	2 (1%)
Suburban	38 (25%)
Urban	115 (74%)
No. surgeons in practice (n = 148)	10.3 ± 9.8
Train residents or fellows (n = 156)	145 (93%)

### Aesthetic Surgery

Responses to questions related to aesthetic surgery are shown in [Table 2](#). No procedure was offered by more than 10% of respondents.

### Breast Reconstruction Surgery

Responses related to breast reconstruction are shown in [Table 2](#). Fifty-eight (95%) respondents stated that they were adhering to ASPS breast reconstruction recommendations when not under direct state or institution policy.<sup>8</sup> Results show that breast reconstruction continued through the pandemic; however, more respondents reported offering implant-based over autologous reconstruction.

### Pediatric Craniofacial Surgery

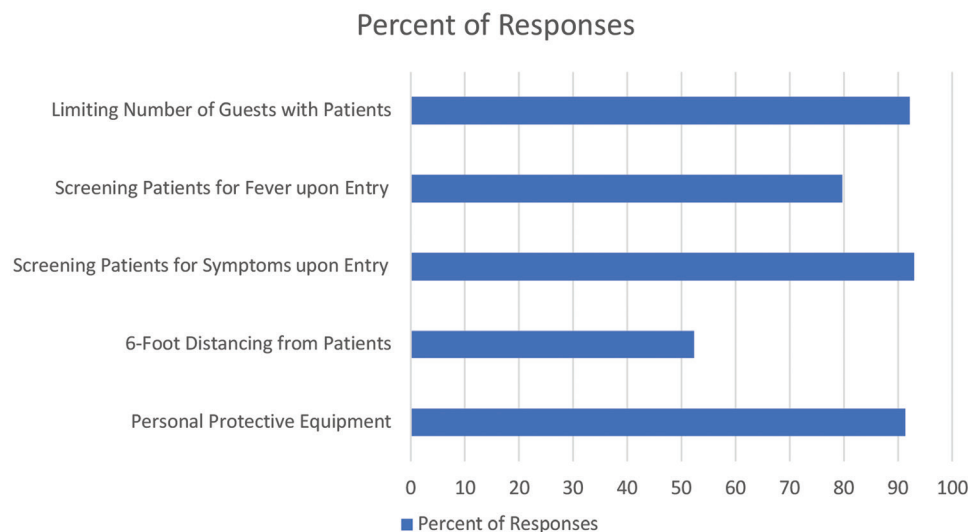
Responses related to pediatric craniofacial surgery are shown in [Table 2](#). Results varied greatly, ranging from 66 (97%) respondents indicating offering surgery either currently or in a situation-specific manner for facial fracture repair to only 4 (7%) offering orthognathic surgery.

### Gender-affirming Surgery

Forty-nine participants (32%) answered that they normally performed gender affirmation surgery. When asked about face, chest, and genital surgery, none reported that they are currently offering these procedures. Only 4 (8%) responded that revision surgery was a situation-specific scenario.

### General Reconstruction Surgery (including oncologic)

Responses related to general reconstruction surgery are shown in [Table 2](#). Fifty-five participants (51%) indicated that they are offering breast reconstructive surgery during the pandemic. Specifics of breast reconstruction are discussed above. In total, 45 (56%) and 85 (72%)



**Fig. 1.** Preventative measures taken by the respondents when seeing clinic patients in person.

respondents reported offering free flap and local flap reconstruction, respectively. Skin grafting of open wounds was offered by 91 (73%) and nonobstructive hernia repair by 13 (12%) respondents.

#### Hand Surgery

Responses related to hand surgery are shown in Table 2. Fifteen (21%) respondents reported offering carpal tunnel release, whereas less than 10% reported offering trigger finger release or carpometacarpal (CMC) arthroplasty. Repair of fractures, tendon lacerations, and replant of digits all exceeded rates of offering of 75%, with replant of the thumb was cited as the most common (97%).

## DISCUSSION

#### Aesthetic Surgery

Aesthetic and cosmetic procedures are generally considered elective and greatly outnumber the amount of reconstructive procedures performed each year.<sup>9</sup> As the authors reported previously, 4 of the 50 states in the United States specifically mention the cessation of cosmetic or aesthetic surgery in official state guidance,<sup>2</sup> as does the International Society of Aesthetic Plastic Surgery.<sup>10</sup> The drastic decrease in these procedures has likely caused a tremendous financial burden for cosmetic practices, though we are unable to quantify the exact burden at this time amid the pandemic. However, in their guidelines on resuming normal procedures, ASPS recommends creating a financial policy in the event of cancellations.<sup>7</sup> Survey results showed that of the surgeons who normally offer aesthetic services, up to 8% are continuing to perform some of these procedures, which may be a result of the pandemic-caused financial strain. Proceeding with such surgeries puts the patient and staff at risk for viral transmission, especially during endotracheal intubation and extubation.<sup>11</sup> In the event of repeated recommendations

for the cessation of elective surgery, aesthetic procedures may still be offered in outpatient centers without overnight stays.

#### Breast Reconstruction Surgery

Multiple national societies released recommendations on the approach to breast cancer and reconstructive surgery during the COVID-19 pandemic. For example, the Society of Surgical Oncologists recommended making the decision to operate based on the histopathologic analysis of breast masses.<sup>12</sup> In addition, many of the state guidelines on elective surgery allow the continuation of procedures when there is a concern for a progression of metastasis or upon relaying a need for staging. However, state guidelines lacked details on post-mastectomy reconstructive surgery, as none provide definitive details in state-issued guidance on elective surgery.<sup>2</sup> Survey results showed that oncologic breast surgery continued during the COVID-19 outbreak, which highlights a need for clear guidelines on breast reconstruction. ASPS and the Plastic Surgery Foundation released a joint statement on the approach to breast reconstruction following oncologic surgery.<sup>8</sup> Notably, the guidelines recommend delaying immediate autologous reconstruction, while considering immediate tissue expander or direct implants, and, as mentioned previously, survey results generally followed. If performed in the outpatient setting, breast reconstruction surgery may be safely continued while taking into account the specific operation and health of the patient.

#### Pediatric Craniofacial Surgery

As seen in the survey results, the wide breadth of pediatric craniofacial operations necessitates the need for case-specific decision-making. The AO Craniomaxillofacial (CMF) foundation released general and specific recommendations for maxillofacial surgeries during the COVID-19 pandemic.<sup>13</sup> Survey responses generally coincide with the AO CMF recommendations on maxillofacial procedures; however, the guidelines urge that if possible, closed

**Table 2. Survey Results by Subspecialty**

	Yes, n (%)	Situation Specific, n (%)	Combined, n (%)
<b>Aesthetic surgery:</b>			
Breast augmentation (n = 99)	3 (3%)	2 (2%)	5 (5%)
Facelift (n = 97)	2 (2%)	1 (1%)	3 (3%)
Rhinoplasty (n = 98)	2 (2%)	4 (4%)	6 (6%)
Breast and body contouring (n = 97)	5 (5%)	3 (3%)	8 (8%)
Liposuction (n = 97)	4 (4%)	1 (1%)	5 (5%)
Botulinum toxin and/or fillers (n = 96)	3 (3%)	1 (1%)	4 (4%)
<b>Breast reconstruction surgery:</b>			
Implant-based reconstruction (n = 80)	28 (35%)	24 (30%)	52 (65%)
Exchange of tissue expander for permanent implant (n = 84)	7 (8%)	11 (13%)	18 (21%)
Immediate autologous reconstruction (n = 79)	7 (9%)	10 (13%)	17 (22%)
Delayed autologous reconstruction (n = 82)	6 (7%)	8 (10%)	14 (17%)
Revision surgery (n = 84)	4 (5%)	11 (13%)	15 (18%)
<b>Pediatric craniofacial surgery:</b>			
Cleft lip surgery (n = 62)	3 (5%)	15 (24%)	18 (29%)
Cleft palate surgery (n = 61)	2 (3%)	21 (34%)	23 (38%)
Minimally invasive craniosynostosis reconstruction (n = 58)	8 (14%)	9 (16%)	17 (29%)
Open cranial vault reconstruction (n = 59)	8 (14%)	14 (24%)	22 (37%)
Orthognathic surgery (n = 59)	1 (2%)	3 (5%)	4 (7%)
Mandibular distraction osteogenesis or tongue lip adhesion (n = 59)	14 (24%)	15 (25%)	29 (49%)
Facial fracture repair (n = 68)	44 (65%)	22 (32%)	66 (97%)
Tissue expansion (n = 65)	6 (9%)	8 (12%)	14 (22%)
Velopharyngeal insufficiency surgery (n = 62)	2 (3%)	6 (10%)	8 (13%)
<b>General reconstruction (including oncologic surgery):</b>			
Breast reconstruction (n = 107)	22 (21%)	33 (31%)	55 (51%)
Hernia repair (nonobstructive) (n = 106)	3 (3%)	10 (9%)	13 (12%)
Skin grafting open wounds (n = 125)	45 (36%)	46 (37%)	91 (73%)
Head and neck reconstruction with free flap (n = 99)	27 (27%)	28 (28%)	55 (56%)
Head and neck reconstruction with local flaps (n = 118)	36 (31%)	49 (42%)	85 (72%)
<b>Hand surgery:</b>			
Carpal tunnel release (n = 72)	1 (1%)	14 (19%)	15 (21%)
Trigger finger release (n = 72)	1 (1%)	6 (8%)	7 (10%)
CMC arthroplasty (n = 66)	0 (0%)	2 (3%)	2 (3%)
Fracture fixation of wrist/hand/fingers (n = 73)	51 (70%)	17 (23%)	68 (93%)
Repair of flexor tendon (n = 75)	56 (75%)	13 (17%)	69 (92%)
Repair of extensor tendon (n = 75)	53 (71%)	13 (17%)	66 (88%)
Replant of single digit (not thumb) (n = 61)	24 (39%)	22 (36%)	46 (75%)
Replant of multiple digits (not thumb) (n = 62)	41 (66%)	17 (27%)	58 (94%)
Replant of thumb (n = 63)	48 (76%)	13 (21%)	61 (97%)

N = number of respondents.

reductions be performed over open procedures, which was not captured in the survey results. Liu et al. detail their implementation of the AO CMF best practices from initial workup through surgery on a 21-year-old COVID-19-positive male patient who sustained a gunshot wound to the neck and zygomatic region.<sup>14</sup> In their report, they show that while adhering to conservative measures, it can be safe to operate on the patient under such circumstances. Their preventative cautions include full aerosol precautions during evaluation and operation, including utilization of powered air purifying respirators, and minimal irrigation and suctioning.

As the authors have described elsewhere, the timing of pediatric craniofacial surgery can be crucial because it plays a role in both function and complication rates, and, thus, should be taken into consideration even during the COVID-19 outbreak.<sup>15</sup> One such example is the timing of intervention for craniosynostosis, where the age of the patient for minimally invasive compared with open cranial vault remodeling can affect complication rates. As such, respondents more often answered situation-specific scenario than currently offering all pediatric craniofacial surgeries, with the exception of fracture repair, suggesting that timing is already on the minds of craniofacial surgeons. As states in the United States begin to resume elective surgery, there will likely be a higher than usual volume of these surgeries, and plastic surgeons should

consult the ASPs guidelines<sup>7</sup> as well as the AO CMF foundation<sup>13</sup> recommendations to protect themselves and their staff due to the possible presence of a high number of viral particles on or near mucosal surfaces of the nose and throat.<sup>16</sup> Whether or not pediatric craniofacial surgeries may continue in the event of further restrictions should be highly individualized to the patient, evaluating all risks and benefits of the procedure, including risks to surgeons and their associated staff when operating on high-risk areas of the body.

#### Gender-affirming Surgery

Although no respondents reported offering primary gender-affirming surgery, in a comments section at the end of the survey, one respondent noted that a patient of his/hers was scheduled for a gender affirmation surgery, which was ultimately cancelled owing to the COVID-19 outbreak; the patient subsequently attempted suicide. Suicide rates and suicidal ideation are known to be high among transgender adults,<sup>17</sup> and all surgeons should be aware that the current global health crisis may exacerbate underlying mental health conditions for all patients.<sup>18</sup> When planning gender affirmation surgery, providers should discuss the possibility of future cancellations in elective surgery to best formulate a supportive care plan in such an event.

### General Reconstruction Surgery (including oncologic)

For non-breast cancer oncologic reconstruction, physicians are required to make individualized decisions, as the CMS guidelines recommend that most cancers not be postponed, while some lower risk cancers may be postponed during the pandemic.<sup>3</sup> The AO CMF foundation provides more details on the approach to cancers of the head and neck, but lacks details on reconstruction.<sup>13</sup> However, head and neck reconstruction for advanced squamous cell carcinomas requires reconstruction in more than 50% of cases, again highlighting a need for clear reconstructive guidelines during the COVID-19 pandemic.<sup>19</sup> As surgeries resume, evaluation of the immunologic status of the patient may be a priority, as many oncology patients may be immunocompromised and at a higher risk to COVID-19 infection. For this reason, as cases continue to climb in the United States, the health of the patient becomes a top priority when evaluating reconstructive options.

### Hand Surgery

The CMS guidelines listed few examples for each tier in their system, but they explicitly mentioned carpal tunnel release as Tier 1a, suggesting this procedure be postponed.<sup>3</sup> Despite this, survey results showed higher rates of offering carpal tunnel than CMC arthroplasty or trigger finger release. While overall volume for hand surgeons may be low, resumption of elective surgery should promote large increases in volume as some states, like Ohio, initially reinstated surgeries that do not require an overnight stay, before allowing full resumption.<sup>20</sup> However, many state guidelines, including Ohio, again, initially permitted surgery if there was “threat of permanent dysfunction of an extremity or organ system,” which is reflected in the survey responses for potentially debilitating hand injuries.<sup>21</sup> In the event of another round of cancellations in elective surgery, it becomes important to note that procedures that carry a high risk of permanent dysfunction or are amenable to outpatient repair may be allowed to continue.

### Limitations

This survey was sent to members of the ACAPS. The majority of participants reported working in academic environments, thus not reaching the entire spectrum of all plastic and reconstructive surgeons. Given the rapidly evolving nature of the pandemic, participants’ answers may have changed during the open window for survey completion. Answers are prone to responder bias, especially those assessing protective measures for themselves, ancillary staff, and patients.

## CONCLUSIONS

Plastic surgeons have seen a drastic decrease in the variety of procedures and services they are allowed to offer during the COVID-19 pandemic. Those performing exclusively cosmetic, gender affirmation, or other routine elective procedures are affected more than their counterparts in craniofacial, reconstructive, and hand surgery. To help plan a return to normalcy, surgeons should create and

implement plans to protect patients and staff from coronavirus transmission, assure financial solvency, and consider the effects of delayed surgeries on both the physical and mental health of their patients. In doing so, surgeons and their patients will be better prepared to weather the impact of a possible resurgence of the virus.

*Jeffrey E. Janis, MD*

915 Olentangy River Road, Suite 2100  
Columbus, OH 43212

E-mail: [Jeffrey.janis@osumc.edu](mailto:Jeffrey.janis@osumc.edu)

*Ernest S. Chiu, MD*

240 East 38th Street, 13th Floor  
New York, NY 10016

E-mail: [ernest.chiu@nyulangone.org](mailto:ernest.chiu@nyulangone.org)

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