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LETTER TO THE EDITOR

The Financial Impacts of the COVID-19 Crisis on the Practices of Cosmetic/Aesthetic Plastic Surgeons

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Abstract The global pandemic of coronavirus 2019, or COVID-19, has undeniably impacted all facets of healthcare, affecting both its function and provision. Due to the cessation of all non-emergent surgical cases in the USA and worldwide, the professional lives and practices of many physicians have been negatively affected. However, among different physicians and specifically plastic surgeons, cosmetic/aesthetic plastic surgeons have been disproportionately affected by the COVID-19 pandemic as the majority of their cases are semi-elective and elective. The ability to perform semi-elective and elective cases is dependent on state and local authorities' regulations, and it is currently uncertain when the ban, if ever, will be completely lifted. Financial constraints on patients and their future inability to pay for these procedures due to the COVID-19-related economic recession are things to consider. Overall, the goal of this unprecedented time for cosmetic/aesthetic plastic surgeons is for their medical practices to survive, to conserve cash flow although income is low to none, and to maintain their personal finances. In this paper, the authors review the financial impacts of the current COVID-19 pandemic on the practices of cosmetic plastic surgeons in the USA and worldwide, along with some potential approaches to maintain their practices and financial livelihoods.

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Keywords COVID-19 · Coronavirus · Financial impact · Cosmetic plastic surgeon · Plastic surgery · Impact

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The global pandemic of coronavirus 2019, or COVID-19, has undeniably impacted all facets of healthcare, affecting both its function and provision. There has been a shift toward more emergent, critical care to save lives, curtail the spread of the virus, and preserve much needed resources and protective gear. With the cessation of all elective/semi-elective surgical cases in the USA and worldwide, the professional lives and practices of plastic surgeons have been severely affected. Furthermore, certain subgroups of plastic surgeons, such as cosmetic/aesthetic surgeons, have been disproportionately affected by the pandemic as the majority of their cases are semi-elective and elective.

In the current era of COVID-19, the changes to the healthcare system and, specifically, to cosmetic/aesthetic surgeons, may be permanent or linger for the foreseeable future (considering the second wave and repeated seasonal cycles of COVID-19 or other viruses in the future) not only due to virus protection guidelines, but financial barriers of patients as well. As many elective plastic surgery

procedures are not covered by insurance, patients must pay out of pocket for these services. COVID-19 has resulted in high rates of unemployment as many stores and businesses are no longer open or have transitioned to working from home, resulting in lost income and impacting patients' cash pay ability. The current financial crisis has created a recession, in some reviews the largest since the Second World War [1]. This is supported by a systematic review done by Fujihara et al. [2], which investigated the relationship between economic downturns and the number of surgical procedures. Fujihara et al. [2] concluded that with economic downturn, surgical volumes also decreased, indicating a positive correlation between the two. Unfortunately, the dire economic effects of COVID-19 are predicted to have an even larger impact on cosmetic/aesthetic plastic surgeons than the 2008 economic recession due to the indefinite ban on elective surgeries and current strain on hospitals [3]. Overall, the goal of this unprecedented time for cosmetic/aesthetic plastic surgeons is for their medical practices to survive, to conserve cash flow although income is low to none, and to maintain their personal finances.

Aside from financial deterrents, fear of contracting the virus through in-hospital exposure may also impact a patient's decision to undergo elective and/or cosmetic surgeries. As a result, there are undeniable financial impacts on plastic surgeons due to their severely diminished case load during this time. Furthermore, they are not only losing their own income and possibly their savings, but are also responsible for their auxiliaries (medical assistants, nurses, technicians, aestheticians, etc.) and any physicians, anesthesiologists, and surgeons they may have recruited to their practice that are salaried. For plastic surgery residents graduating during times of economic downturn, they may even defer entry into practice and undergo a subspecialty fellowship to enhance their skills and enter practice later with a more favorable economy [4]. Due to the uncertainty of the current situation, it is unclear how long the ramifications of coronavirus will last. Additionally, the ability for plastic surgeons to carry out procedures is dependent on national, state, and city guidelines and laws, but assuming some restrictions are lifted in the future, there must be suggestions and solutions in place to address the current gloomy circumstances. Although the government and local authorities attempted to implement small business subsidized loans/grants, relief options, and federal stimulus packages to alleviate the detrimental impact of the current COVID-19 related economic crisis, these options were only temporarily effective and will not be a remedy to cure this economic and humanitarian crisis.

Overall, these solutions can be organized into two categories: from a provider's (plastic surgeon's) perspective and from a patient's perspective. For providers, assuming some semi-elective/elective procedures can be conducted, employees of all clinics, surgery centers, and hospitals should have a COVID-19 nasal swab regularly, every 2 weeks or however often outlined by guidelines, to reduce transmission in case an employee is COVID-19 positive. Secondly, all providers should have proper personal protective equipment (PPE) (N95 face masks or well-sealed surgical masks and eye protection) and powered air-purifying respirators (PAPR) should be used in the operating room to eliminate risk of virus transmission if present.

Even with proper PPE, it is important to remember that cosmetic/aesthetic plastic surgeons are at an augmented risk of contracting COVID-19 due to the aerosolization of viral particles during rhinoplasty and nasal reconstruction (two very central procedures for this specialty with very high viral loads present in the oral and nasal mucosa) [5], or potentially during other head and neck surgeries. Individual physician demographics may also influence their decision to continue operating. Older plastic surgeons or those with underlying medical conditions (lung disease, asthma, heart conditions, etc.) may be worried about their own risk of contracting the virus or they may fear transmitting it to a family member with underlying medical conditions. These factors can further propagate the financial effects of COVID-19. Still, many life and disability insurance providers are continuing to pay policy benefits if a person contracts or succumbs to coronavirus and have vowed to evaluate COVID-19 the same as they would any other cause of death or medical condition [6–8]. However, many physicians may not be aware of this or may have a differing life and/or disability insurance plan that does not cover COVID-19, which leaves them a bit unsettled if they are exposed to the virus and not accounted for. Still, receiving life and disability insurance benefits should not be a concern for most physicians as most disability and life insurance policies cover COVID-19.

For providers that choose to practice during this time, preoperative and postoperative consults and follow-up appointments can also be done via telemedicine through Zoom, FaceTime, MDLive, HealthApp, WebEx, etc. to reduce in-person patient–physician contact [5]. To optimize telemedicine postoperatively, dissolvable sutures and patient-led wound care should be utilized [9]. Multi-disciplinary care can also be offered through this medium if necessary (patient, plastic surgeon, physician assistant, facial therapist, rehabilitation services etc. can all be on the telemedicine call) [10]. Still, the physician is unable to conduct in-person physical exams and inspect postsurgical wounds and recovery progress. Health Insurance Portability and Accountability Act (HIPAA) compliance must also continue to be maintained [3, 5, 10]. Other factors to consider during telemedicine appointments include scheduling coordination between patient and physician, internet access, and equipment capable of video

consultation [10]. Interestingly, Medicare, Medicaid, and most private health insurance companies have waived telemedicine co-pay fees during this time, making them more appealing to patients and profitable to the plastic surgeons [10]. Nevertheless, these telemedicine appointments can be billed at the same rate as in-person visits and allow for continuation of care with patients, strengthening the patient–physician relationship [11].

To reduce patient transmission of the virus, patients should be required to have at least one and most preferably two consecutive negative COVID-19 tests (considering the possibility of false negative results) prior to surgery or procedure. The most recent swab test should be least two days prior to the procedure, or a rapid test should be done the morning of surgery. Patients should also self-isolate for 7 days prior to the procedure [5]. Patients should be screened before their appointment (after their two negative COVID-19 tests) if after they have had any symptoms, received any sort of medical treatment in a hospital, been in high-risk environments like a cruise ship, or been around anyone presumed to have COVID-19 as well.

It should be kept in mind that no test has 100% sensitivity. The sensitivity is 63–78% for nasopharyngeal swab testing (if it is taken from the pharynx or upper nose, lower if it is swabbed from the nares) [12] and costs about $85 [13], while the sensitivity for the IgG antibody PCR ELISA test is 84–100% [14], but is more costly (up to $119 and a $10.30 service fee for an at home antibody test) [15] and less readily available. The Trump Administration, the Centers for Medicare and Medicaid Services (CMS), and the Departments of Labor and the Treasury have expanded healthcare coverage through the Families First Coronavirus Response Act (FFCRA) and Coronavirus Aid, Relief, and Economic Security (CARES) Act, ensuring that COVID-19 diagnostic testing (including antibody testing) and other coronavirus services are covered by private insurance at no cost to the patient (no copays or coinsurance) [16]. Still, coronavirus testing is not free to patients who may not have insurance or if their insurance is not covered in a specific geographical area or at certain clinics. A further limitation of nasal swab testing, aside from the low sensitivity, is obtaining an appropriate test sample from the nasopharynx, which would result in a false negative if not properly obtained. A swab of the nasopharynx is also very uncomfortable for patients. Although there are alternative tests, such as the ELISA antibody test, they may not be readily available or certain insurance policies may only cover nasal swab testing.

Some sources suggest the use of a CT scan of the chest as a diagnostic test for coronavirus. Zitek [12] even suggests that with a patient experiencing severe COVID-19 symptoms, CT chest scans with characteristics findings may be more sensitive than RT-PCR testing. Although the sensitivity of using CT scans as a diagnostic test for coronavirus is 92.7% [17], this exposes the patient to radiation, who may be more vulnerable to radiation, especially if they have underlying health conditions, so this may not be a preferred screening/diagnostic testing method.

Regardless of coronavirus diagnostic test type, if patients are required to undergo preprocedure testing, the location of the obtaining the sample and the logistic of safe and efficient specimen submission to the laboratory is also important to discuss. Either the plastic surgery practices can do swab tests for patients if they have the proper tools, or they can refer them to screening centers. Referring patients for preoperative screening tests requires coordination between the center, patient, and patient's surgical schedule. Furthermore, most cosmetic patients are likely asymptomatic for COVID-19 and many walk-in centers may not conduct routine testing for asymptomatic patients. Thus, a referral or request for asymptomatic testing may be required by the referring physician for the patient. Additionally, the waiting time for the test results can be any time from 45 min to several days, heightening patient anxiety while awaiting results even if they are asymptomatic. Another factor to consider is quarantining. Both the asymptomatic patients and plastic surgery practice employees (after required biweekly COVID-19 testing) will have to be quarantined while awaiting their results until surgery (for patients) to decrease the risk of transmission.

Lastly, when discussing COVID-19 testing, the positive predictive value (PPV), or the amount of positive test results that are correct, of each test is important to analyze. In other words, false-positive screening results of both the nasal swab and antibody test are vital. Although no current papers or research discuss the false-positive rates of these tests, it is important from a financial perspective as it can prolong the wait for a patient's surgery, cause unnecessary stress, and may even lead to the patient eventually canceling their surgery. Therefore, this is why we suggest the patient have two consecutive COVID-19 tests to reduce the possibility of a false negative or false-positive result. Similarly, if an employee receives a false-positive test result, they must quarantine for 2 weeks, which may not be necessary. They will likely not receive any pay or if they are the plastic surgeon, they will not receive any revenue from surgeries during this time, further escalating the financial implications of COVID-19 on their practice. The employee will likely have to undergo contact-tracing as well, notifying everyone they have come in contact with since their last negative test. Overall, there may be some resistance and pushback from both patients and employees to undergo these rigorous testing regulations for the aforementioned reasons.

To maintain plastic surgery practices from a business point of view, physicians in private practice can apply for the Paycheck Protection Program (PPP) through the CARES Act and U.S. Small Business Administration [18], which resumed on April 27, 2020. The PPP is a loan program that provides an incentive for small businesses to keep employees working. If all employees remain on the payroll for 8 weeks, the SBA will forgive loans if the loan money is used for business purposes, such as rent, payroll, utilities, or mortgage interest [18]. Overall, the PPP was designed to alleviate financial strains from COVID-19, such as helping plastic surgeons in private practice keep their workers employed during this time. However, keeping the practice compliant with the PPP regulations is not easy and may require significant documentation and legal assistance in some cases. Tax provisions could also provide some relief from financial stress on individual physicians, depending on provider income for this specific tax season.

Once the local or state government deems elective or semi-elective procedures safe to perform, the following suggestions can be implemented to maximize practice cash flow. First, cosmetic/aesthetic plastic surgeons can begin to offer general reconstructive, craniofacial, hand cases, and trauma-related procedures as well as their usual cosmetic surgeries (under the assumption that the number of trauma and cancer-related procedures remains the same as before regardless of COVID-19) during this time [2]. However, the amount of trauma procedures may actually be lower due to quarantining and working from home, which may reduce the chance of a trauma case occurring. By offering reconstructive surgeries, physicians can increase their case load and maintain their surgical skills. To increase the amount of elective procedures, plastic surgeons and centers can offer discounts and promotions to patients who will have surgery as soon as possible. Other discounts could be offered if patients have multiple procedures in 1 day or pay for multiple procedures at one time. This could be an important possible approach because during times of economic uncertainty, financial concern has been known to affect the patient decision-making process, resulting in cancelled procedures [2]. Furthermore, if there is a gray area between elective and semi-elective procedures, health insurance companies may be more likely to cover surgery costs if the procedure can be argued that it is necessary (i.e., that the procedure is semi-elective). Similarly, rhinoplasties can be conducted in association with septoplasties if necessary and the plastic surgeon can process the septoplasty portion through the insurance provider and only charge the patient for the extra operating room time out-of-pocket. Thus, the overall out-of-pocket price the patient must pay is now lower as the septoplasty portion of the surgery was covered by insurance.

Cosmetic/aesthetic plastic surgeons can also offer minimally invasive, low-risk in-office cosmetic procedures, such as fillers, laser treatment, chemical peels, skin cancer removal, blepharoplasties, or botulinum toxin injections, which eliminate the patient's risk of contracting the virus in a hospital, are less costly, and are not time consuming [2]. Lastly, it is important to note that in 2018, 25% of cosmetic procedures were performed in free-standing ambulatory surgical facilities, while 14% were performed in-office and 61% were performed in the hospital [19]. If plastic surgery practices have access to their own surgery facilities, they could perform more procedures there as an alternative to possibly exposing patients to viral particles in hospitals.

Currently, some plastic surgery practices are offering drive-through botulinum toxin and filler injections in practice parking lots. However, by focusing on patient convenience and maximizing cosmetic revenue, the complications of these procedures cannot be ignored. For example, a major complication of facial fillers is blindness, which requires immediate attention (1 to 2 h to reverse this blindness). With a drive-through system, patients may not stay long enough to be observed by physicians as they would in-office, complication rates can increase, and timely management of the complications, i.e., injection of hyaluronidase may not be feasible. Thus, some cosmetic/aesthetic plastic surgeons may be utilizing these drive-through procedures, but considering the potential risks and complications, it may not be a safe approach for providing these services both during coronavirus and in general.

Another factor to consider is the backlog of elective procedures that will occur worldwide as a result of COVID-19. In 2018, there were 17.7 million cosmetic procedures, a 2% rise from 2017, which highlights the recent increasing trend in cosmetic procedures [19]. Although statistics are unavailable for 2019, the amount of cosmetic procedures in 2020 has been minimal to none during the COVID-19 pandemic in the USA (mid-March to mid-June), undoubtedly impacting the income of plastic surgeons. During the period of mid-March to mid-June 2020, given that 17.7 million cosmetic procedures occurred in 2018 [19] and there was an upward trend, greater than 4.43 million (17.7 million divided by 4 periods) cosmetic procedures did not occur in the USA as a result of COVID-19. Eventually, although unclear when, there will be a period of catch-up necessary for plastic surgeons to address all the services patients may require [20].

Still, it is important to remember that government regulations may be lifted in the future on elective and semi-elective procedures although the risk for contracting COVID-19 may still be present. Thus, patient care and safety should still be prioritized by physicians and patients should be required to sign informed consent acknowledging their risk for COVID-19 exposure if they choose to

undergo these procedures. Overall, there is limited information on the financial impacts of COVID-19 on cosmetic/aesthetic plastic surgeons, which is why this topic must be further investigated. It is also important to remember these endeavors to address the financial impacts do not have a deadline; with seasonal changes in coming months, the virus may resurge and the effects of COVID-19 on the healthcare system will remain for many months and years to come. Therefore, cosmetic/aesthetic plastic surgeons will have to adapt to the current situation and find alternative approaches to maintain their practices and financial livelihoods.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflicts of interest to disclose.

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