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## Dermatology Online Journal

### Title

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### Permalink

<https://escholarship.org/uc/item/2qr3w771>

### Journal

Dermatology Online Journal, 26(8)

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### Publication Date

2020

### DOI

10.5070/D3268049796

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Peer reviewed

# Urgent safety considerations for dermatologic surgeons in the COVID-19 pandemic

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## Abstract

Dermatologic surgeons are at increased risk of contracting coronavirus disease 2019 (COVID-19). At time of writing, there is no published standard for the role of pre-operative testing or the use of smoke evacuators, and personal protective equipment (PPE) in dermatologic surgery. Risks and safety measures in otolaryngology, plastic surgery, and ophthalmology are discussed. In Mohs surgery, cases involving nasal or oral mucosa are highest risk for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission; pre-operative testing and N95 masks should be urgently prioritized for these cases. Other key safety recommendations include strict control of patient droplets and expanded pre-clinic screening. Dermatologic surgeons are encouraged to advocate for appropriate pre-operative tests, smoke evacuators, and PPE. Future directions would include national consensus guidelines with continued refinement of safety protocols.

*Keywords: SARS-CoV-2, COVID-19, dermatologic surgery*

## Introduction

Coronavirus disease 2019 (COVID-19) is a highly transmissible flu-like illness that can cause severe respiratory distress and even death [1,2]. "Aerosol-generating procedures," commonly defined to include endotracheal intubation, bronchoscopy, and laryngoscopy are known to carry a high risk of nosocomial severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission. Other risks encountered by procedural specialties have been less recognized. At time of writing, pre-operative testing and personal protective equipment (PPE) use

are limited in many locations; in hospital systems supplies are often triaged based on recognized need. We urge dermatologic surgeons to recognize specialty-specific risks during the pandemic and to further advocate for pre-operative tests, smoke evacuators, and PPE.

## Safety protocols in otolaryngology, plastic surgery, and ophthalmology

Procedural manipulation of nasal mucosa may lead to SARS-CoV-2 transmission. At Stanford University, otolaryngology-head and neck surgery and neurosurgery departments issued a statement regarding the high risks of endonasal surgery [3]. They reported cases of intra-operative SARS-CoV-2 transmission with transsphenoidal surgery, including one case in which 14 healthcare workers, including the surgery team, contracted SARS-CoV-2 from a single untested, mildly ill patient. Numerous otolaryngologists have fallen ill with COVID-19. At least one facial plastic surgeon and one otolaryngologist have died [3]. Therefore, at time of writing, Stanford head-and-neck surgeons and neurosurgeons are performing only urgent and emergent surgeries. For endonasal cases during the pandemic preoperative SARS-CoV-2 testing is done, even for asymptomatic patients. If the SARS-CoV-2 test is positive, the case is delayed until the patient's symptoms resolve and until a second test result is negative. For a SARS-CoV-2-positive emergent surgical case, powered air-purifying respirators (PAPR) are worn by the entire operating room team [3]. A transcranial approach instead of transnasal, is recommended for skull base surgery whenever possible. For outpatient nasal endoscopies N95 masks and face shields are worn. Use of spray anesthetics and decongestants is avoided [3].

Elective plastic surgery cases are deferred; urgent facial trauma cases are performed. Some plastic surgeons are mandating preoperative SARS-CoV-2 testing for any facial trauma patient that may involve manipulation or cautery of nasal or oral mucosa, or that may involve bone drilling. Surgery for SARS-CoV-2 positive patients is deferred. If pre-operative testing is not possible even for asymptomatic patients, N95 masks are worn by the surgery team.

Ophthalmologists are in close proximity to their patients during routine care. They may contract SARS-CoV-2 through patient droplets, aerosolization of conjunctival secretions, or direct contact with secretions [4]. SARS-CoV-2 was detected in conjunctival secretions and tears of patients with SARS-CoV-2-associated conjunctivitis [5]. Ophthalmologist Dr. Li Wenliang died after contracting SARS-CoV-2 from an asymptomatic glaucoma patient [4]. The American Academy of Ophthalmology (AAO) has recommend eye, nose, and mouth protection when caring for potentially infected patients [6]. It is also recognized that asymptomatic transmission can occur [6]. In Hong Kong, infection control in ophthalmology practice has further included deferral of micro-aerosol-generating procedures such as non-contact tonometry [4]. If emergent surgery under general anesthesia is needed, SARS-CoV-2 testing is required prior to proceeding if a patient has screened positive on a pre-clinic questionnaire; questions include travel to outbreak areas. Full PPE including N95 masks, isolation gowns, and eye protection, are used by all staff in the case of a positive SARS-CoV-2 test, a negative test but clinical suspicion of SARS-CoV-2, or inability to wait for a SARS-CoV-2 test result [4]. When emergency response was ordered in Hong Kong, all staff and all patients in hospitals and clinics, regardless of symptoms, were required to wear surgical masks to slow asymptomatic transmission [4].

### **Safety recommendations for dermatologic surgery**

At time of writing, the American College of Mohs Surgery has recommended prioritization of Mohs surgery for high-risk skin cancers, such as poorly differentiated and rapidly growing squamous cell

carcinomas. Deferral of surgery is recommended for basal cell carcinoma (up to three months) and melanoma in situ (2-3 months). The National Comprehensive Cancer Network (NCCN) and ACMS encourage considering deferral of treatment for T0 and T1A melanomas by three months, depending on risk factors.

As rapid community spread continues, we expect SARS-CoV-2 to remain a public health threat for many months or longer. Even after the emergent crisis, a lower number of COVID-19 cases will continue to be diagnosed for a long time and outbreaks may return in waves. We agree with minimizing exposures by triaging cases as much as possible. However, we will increasingly encounter skin cancer cases that have already been deferred for months; at some point, we will no longer be able to safely delay surgery. We must therefore recognize our highest-risk cases, continue to optimize safety protocols, and establish standards for PPE and pre-operative testing.

Mohs surgeons are at increased risk of contracting SARS-CoV-2. Asymptomatic infected Mohs surgeons may also spread SARS-CoV-2 to their patients [7], many of whom are elderly or immunosuppressed. Mohs surgeons frequently operate on the head and neck, with the surgeon's face close to a patient's mouth, nose, and eyes. Especially with more complex reconstructions, the surgeon and assistant spend extended periods of time with the patient. Depending on how draping is done, sterile towels may not always fully protect the surgeon from droplets, especially if the patient talks, sneezes, or coughs. Aerosolized SARS-CoV-2 may remain in the air for three hours [8]. Although more studies on transmission are indicated, this is an issue of concern because, in addition to surgical team exposure, the same Mohs procedure room may be used for multiple patients within the day. Although air in standard operating rooms is continuously and frequently changed or at negative pressure, Mohs clinic rooms generally do not have such features.

In addition to frequent, thorough disinfection of all surfaces and instruments dermatologic surgeons must wear eye protection and a surgical mask covering the nose and mouth. In addition to usual

sterile drapes, when possible, the patient's nose and mouth should be covered with a surgical mask or other breathable material to reduce spread of patient droplets. To avoid obstructing surgery, the covering can be cut to only cover the nose and mouth and taped in place. With a skin cancer on the nose, lip, or chin this may not be feasible, but we encourage this practice whenever possible.

Virus may be aerosolized with cutting, suturing, or cauterization of nasal or oral mucosa. For any case that may involve mucosa, such as flap or graft reconstruction of a full-thickness nasal defect, we strongly recommend SARS-CoV-2 testing within 48 hours of surgery even for asymptomatic patients. Surgery should be delayed for a positive test. For an untested patient or for any concern of a false negative result, if mucosa is disrupted we recommend an N95 mask along with goggles, face shield, gown, and vigilant use of smoke evacuator with ultra-low particulate air (ULPA) filtration. When pre-operative tests are more limited, we recommend prioritization for mucosal cases. Pre-operative testing should be performed for all patients as testing capacity increases. As multiple SARS-CoV-2 tests are in development the sensitivity and specificity of any test should be carefully considered when interpreting results.

Most dermatology practices are conducting a pre-clinic screening questionnaire. Because COVID-19 symptoms vary widely [1,2,7], SARS-CoV-2 screening must be appropriately detailed to be most effective [7]. A lack of fever, shortness of breath, or cough does not rule out COVID-19 [1,7]. In China, among hospitalized COVID-19 patients, only 18.3% had shortness of breath and 67.8% had cough [1]. Most COVID-19 patients were afebrile on admission to

the hospital and low-grade fevers were common [1]. An effective screening questionnaire would ideally include nasal congestion, sputum production, sore throat, headache, fatigue, chills, myalgias, arthralgias, nausea, vomiting, diarrhea, conjunctivitis, hemoptysis, anosmia, dysgeusia, and rash, in addition to fever, cough, and shortness of breath [1,2,7,9]. Patients with a positive screen or sick contacts should be deferred; consider referral for SARS-CoV-2 testing. Even with rigorous screening asymptomatic patients would be missed, further highlighting the necessity of deferring non-urgent patients and using a strict safety protocol. Universal masking, in which all staff and patients wear surgical masks to slow asymptomatic transmission should be strongly considered [4,7].

## Conclusion

We present several key safety considerations pertinent to dermatologic surgery, with a focus on the role of PPE (goggles, shields, gowns, N95, masks), smoke evacuators with ULPA filtration, and pre-operative tests. A comprehensive list of all recommended safety measures is beyond the scope of this manuscript. As the pandemic continues, the availability of testing and PPE will dramatically impact how well we are able to mitigate risk. As we learn more about SARS-CoV-2 and COVID-19, safety protocols may be revised. We encourage further discussion and national consensus safety guidelines. For the sake of our patients, ourselves, and the community may we all stay vigilant and win this fight together.

## Potential conflicts of interest

The authors declare no conflicts of interests.

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