

# Maxillofacial Trauma Management During COVID-19: Multidisciplinary Recommendations

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## Background

The global pandemic COVID-19 is present in all 50 states of the United States, and resources, including human capacity, personal protective equipment (PPE), operating room availability, and supplies, are highly constrained. We are having difficult conversations about resource utilization and management to a degree that we in the United States have not had to have in the past,<sup>1,2</sup> and we are becoming ever more mindful about increasing inpatient capacity for very ill COVID-19 patients.<sup>3,4</sup> Further, we have become aware of the high risk of aerosolization of respiratory droplets during procedures in the upper aerodigestive tract.<sup>5-9</sup> Our institution, with our maxillofacial trauma team, serves as a local and regional referral center for patients with facial injuries, and facial trauma continues to present to us during this time of reduced resources. At our institution currently, as with many across the country, surgical procedures in the operating room that involve the upper aerodigestive tract have been cancelled unless they pose an immediate threat to life or to vital function. For all of these reasons, a multidisciplinary team at Michigan Medicine convened to gain consensus on management of maxillofacial trauma during the pandemic.

Acknowledging that the vast majority of facial injuries can be managed on an elective basis, our guiding principles were to: (1) ensure the safety of patients and health-care providers, (2) preserve vital resources, (3) provide essential care with high quality, and (4) emphasize efficient outpatient management when at all possible.

The resultant guidelines may be used by all providers encountering maxillofacial trauma during the pandemic, supporting decision-making that likely is different from current practice. We recognize that patient volume and resources vary significantly for colleagues across the country, and we appreciate the significant stress and con-

straints in emergency departments and inpatient settings at this time. Responsive and respectful communication is critical to efficient management with an eye toward stewardship.

## Request for Transfer to Tertiary Center for Facial Injuries

Many requests for patient transfers do not need to occur because of their facial injuries alone. At our institution, we now rely upon a Unified Transfer Center (UTC) and the Super Attending-of-the-day (S-AOD) in this process. A conversation with the maxillofacial trauma attending surgeon should occur before patients are accepted for transfer in order to help triage the management of the facial injuries.

Maxillofacial trauma attending physicians should be readily available as needed to discuss the patient's facial injuries via phone or video with the inquiring transferring physician or emergency medicine physician to determine the most appropriate time and setting for management of the patient's facial injuries.

## Emergency Department Consultations

Every effort should be made to limit the number of exposures for health-care workers, preserving PPE and preserving the health of those who may be called soon to help in the emergency department or inpatient settings when others become sick or quarantined. Most facial injuries can be evaluated and, where indicated, imaging obtained by the emergency medicine provider. Photos may be documented in the patient's electronic medical record as needed. Once the appropriate work-up has been completed, most patients can then be triaged without an in-person evaluation by a member of the maxillofacial trauma team.

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### Specific Injury Considerations

Guidelines for commonly encountered facial injuries are presented here. This list is not exhaustive nor is it possible to predict or describe the breadth of injuries that will present. In all instances, it is appropriate for the attending surgeon to weigh the risks and benefits of a delayed conservative approach to the injury. When intervention is chosen over observation, every effort should be made to: (1) be as expeditious as possible, even if these are not the clinical decisions that would be chosen under more typical circumstances; (2) limit the number of providers involved in the patient care; and (3) provide care in the emergency department on an outpatient basis wherever possible. This will reduce the consumption of PPE, reduce the overall patient time in the hospital, reduce the number of providers exposed to the patient, and reduce the utilization of critical operating room resources.

When treating patients with injuries that may involve the mucosal surfaces of the head/face, nose, and pharynx, these procedures must be considered to be aerosol-generating, and all appropriate institutional PPE guidelines should be followed. For us currently, procedural management would require N95 masks or PAPR hoods, eye protection, gown, and gloves.

Where ambiguity exists in regards to the need for the maxillofacial trauma team to evaluate and treat a patient in the emergency department, a conversation should occur between the emergency medicine attending physician and the maxillofacial trauma attending physician. Video consultation and/or examination of the patient may be used to assist decision making.

### Soft-Tissue Injuries

Most soft-tissue injuries may be managed by emergency department providers without involvement of the maxillofacial trauma team with the aforementioned goals in mind. Specific guidance includes:

- (1) Injuries to critical structures such as the facial nerve (or other cranial nerves), eyelids, lacrimal system, and the nose require consultation with the maxillofacial trauma team. Large complex injuries including avulsions would meet these criteria as well.
- (2) Eyelid and lacrimal injuries will require the globe to be investigated for injury.
- (3) Most intraoral lacerations do not need to be closed. Local wound care with saline or chlorhexidine rinses twice daily for a week will suffice for the vast majority of these injuries. Potential injuries to the salivary duct system may need to be investigated by the maxillofacial trauma team. Complex wounds of the tongue are more likely to require consideration for closure.

### Hard-Tissue (Bony) Injuries

- (1) *Zygomaticomaxillary complex fractures*. The vast majority of these fractures do not need to be treated in the acute setting. Strong consideration should be given to delayed management of these fractures, even when an esthetic compromise will result.
2. *Orbital fractures*. Almost all orbit fractures can be managed in a delayed fashion. Most orbit fractures will not need operative intervention. Exceptions to delayed management would be: (a) trap-door fractures with entrapment of orbital contents; and (b) hematomas/edema leading to vision loss from superior orbital fissure syndrome or orbital apex syndrome. Bedside canthotomy with cantholysis may be urgently necessary.
3. *Nasal fractures*. Manipulation of the nose is considered high risk for exposure to and aerosolization of nasal secretions. Strong consideration should be given to delayed management of all nasal fractures. An exception would be drainage of a septal hematoma. If a consultant elects to treat a nasal fracture or drain a hematoma, strong consideration should be given to avoiding the use of aerosolized medications for intranasal vasoconstriction and anesthesia. Topical local anesthetic with vasoconstrictor (e.g., 4% cocaine, oxymetazoline-tetracaine solution, or other) on pledgets placed intranasally would be preferred.
4. *Fractures of the maxilla and mandible, including dentoalveolar fractures*. Consideration should be given to treating these fractures as conservatively as possible. The risk of exposure of the health-care team should be weighed against the risk of an easily corrected malocclusion. Since most of these fractures if treated in the operating room would require a nasal intubation, they are considered at very high risk of exposure of health-care workers to aerosols. Expeditious treatment of most fractures can be accomplished with intermaxillary fixation using either intermaxillary fixation screws or interdental wiring techniques. These should be accomplished in the emergency department whenever possible under local anesthesia using drill-free screws.

### Process Review

At our institution, representatives from the Maxillofacial Trauma services will continue to meet weekly to review our guidelines and cases treated over the preceding week to modify our approach as needed.

### Author Disclosure Statement

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