



## Protocols during COVID-19 Outbreak- A Maxillofacial Surgeon's Perspective

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### Abstract

The lightening pace of spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) has made the whole world come to a standstill. The rising numbers of the people affected with this viral infection, despite adhering to the proper preventive measure guidelines has evoked a global sensation. The abundance of Corona virus (SARS-CoV2), the causative virus, in the nasal and salivary secretions in the infected has got serious and obvious relationship to the dental professionals. It becomes the moral responsibility of the Maxillofacial Surgeon to identify such patients who are infected, and avoidance of the spread of the infection. Thus, participating in the efforts to curb the spread of overwhelming infection and safeguarding the unaffected public who seek dental attention. This article aims to highlight the protocols to be followed in treating patients in an outbreak of COVID-19 virus from the Oral and Maxillofacial Surgeon's point of view.

**Clinical Relevance:** The 62-year-old ENT specialist Liang Wudong died on Saturday morning, 25th January 2020 as reported by the Chinese Global Times website. Liang's death highlighted the pressure faced by medical staff in the state as social media was flooded with posts showing exhausted workers struggling to cope [1].

Oral and Maxillofacial Surgeons need to be aware and prepared for tackling any impending infectious disease challenge as might be the case in the current outbreak of SARS-Cov2 transmission and its associated Coronavirus disease (COVID-19) that can be life-threatening to susceptible patients.

**Keywords:** Coronavirus; COVID-19; SARS-CoV-2; Virus; Infection; Airway Maintenance; Craniomaxillofacial Trauma; PPE; Aerosolization

### Abbreviation

SARS-CoV2: Severe Acute Respiratory Syndrome Corona Virus 2; COVID-19: Corona Virus Disease 2019; PPE: Personal Protective Equipment; ORIF: Open Reduction and Internal Fixation; PAPR: Powered Air Purifying Respirator; FFP3: Filtering Face Piece 3; FFP2: Filtering Face Piece 2; LMA: Laryngeal mask Airway; SCCA: Squamous Cell Carcinoma; ZF: Zygomatico Frontal

### Introduction

Given the widespread transmission of SARS-CoV2 and reports of its spread to Health Care Providers [2,3], dental professionals are at high risk for nosocomial infection and can become potential carriers of the disease. Such risks can be attributed to the unique nature of Oral and Maxillofacial Surgical interventions who deal with surgical procedures involving the concomitant use of drills and other rotary instruments causing aerosol generation [4] handling of sharp instruments and proximity of the provider to the patient's oropharyngeal region.

In addition, if adequate precautions are not taken, the dental office and the operation theatre can potentially expose patients to cross-contamination. Surgical procedures involving the nasal-oral-endotracheal mucosal region is high risk due to aerosolization of the virus which is known to be in high concentration in these areas when compared to swabs from the lower respiratory tract [4]. Further it appears that if viral particles become aerosolized, they stay in the air for at least 3 hours, if not longer [5]. As the understanding of this novel disease is evolving, dental and Oral Surgical practices should be better prepared to identify a possible COVID-19 infection, and refer patients with suspected, confirmed, or a history of COVID-19 infection to appropriate treatment centres. Here, we summarize current recommendations for managing patients with confirmed or suspected with COVID-19.

The intensity of the issue of corona virus has led rise to alterations in the routine procedure in any dental office and Maxillofacial Surgery.

**Procedures to be avoided**

- All routine, elective procedures, Non-urgent visits.
- Asymptomatic patients requesting removal of disease-free teeth with no risk of impairment of the patient's condition or pending treatment.
- These can be cancelled or rescheduled when the situation becomes stable.
- Telephone conversation, or videoconference with the permission of the local regulations can be offered.

**Procedures that can be done**

- Asymptomatic patients, patients under investigation, and patients tested positive for COVID-19, who have acute oral and maxillofacial infections, active oral and maxillofacial disease, should be treated in facilities where all appropriate PPE, including N-95 masks, are available.
- Emergent airway management, epistaxis, surgical management of facial fractures which require ORIF, and oncologic procedures in which a delay in management could affect ultimate outcome.
- Patients with conditions in which a delay in surgical treatment could result in impairment of their condition or impairment of pending treatment (e.g. impairment of the restoration of diseased tooth when another tooth that is indicated for removal prevents access to the diseased tooth) should be treated in a timely manner if possible.

**General protocol for treating patients**

- Emergency and urgent care should be provided in an environment appropriate to the patient's condition, and with appropriate PPE. Recall that any procedure involving the oral cavity is considered high risk.
- All patients should be assumed to be infected and treated accordingly unless they have had 2 negative COVID-19 tests separated by at least 24 hours due to the possibility of false negative results.
- Ambulatory visits should be limited to those patients requiring urgent intervention or follow-up. N-95 with eye protection or PAPR should also be considered for urgent clinic procures.
- In most regions testing of asymptomatic patients is not possible and some trauma patients will not be able to provide a history to risk stratify the patient.
- Consideration should be given to limiting patient contact in surgeons that are over 60 years of age, are immunosuppressed, have chronic pulmonary disorders, or multiple co-morbidities.
- The number of residents and ancillary staff should be limited as much as possible.

- Proper PPE and training for all members of the team is required.

**PPE recommendations (table 1)**

FPP3 /PAPR or N95 (FFP2) mask plus face shield (or mask/with attached shield over N95)
Gloves
Nonporous gown
Disposable hat
Scrubs worn during the procedure should be changed immediately afterwards

**Airway management (table 2)**

Procedure	Recommendation
Intubation	<ul style="list-style-type: none"> <li>• The most experienced member of the team should carry out intubation procedures thereby limiting the number of attempts to a minimal.</li> <li>• Limiting aerosolization by limiting the amount of mask/bag ventilation prior to intubation, and avoid jet ventilation, suctioning as much as is absolutely necessary</li> <li>• Intubation is preferred over placement of LMA.</li> <li>• The OR team can enter the theatre with the appropriate PPE after 20 minutes is passed by once the intubation is complete The reason for this is after an aerosol generating procedure, the virus could be present. Based on the OR air exchange per hour, 99% of pathogens should be clear in 14 minutes, and 99.9% by 21 min.</li> </ul>
Extubation	<ul style="list-style-type: none"> <li>• All unnecessary personnel should be outside the room for extubation and an oxygen mask should be placed over the face after the tube is removed to mitigate aerosolization with coughing.</li> </ul>
Tracheostomy	<ul style="list-style-type: none"> <li>• Tracheostomy in COVID-19 patients is performed for similar indications to non-COVID patients.</li> <li>• Mortality in patients intubated for COVID-19 associated respiratory failure is greater than 50% and duration can be 3 - 6 weeks.</li> <li>• an open approach may lead to less potential aerosolization, and therefore less risk</li> <li>• The patient should be paralyzed, preoxygenated, ventilation held before the trachea is incised to minimize aerosolization. Suctioning should be limited as much as possible, to avoid aerosolization.</li> <li>• Bipolar cautery is preferred over monopolar.</li> <li>• Advance the tube distally prior to incising the trachea, to avoid creating a hole in the ETT balloon.</li> <li>• Closed suctioning systems are preferred for tracheostomy care.</li> </ul>

**Craniomaxillofacial trauma**

- Procedures should be performed by an experienced surgeon, with a minimal number of assistants possible.
- In general, closed procedures, if internal fixation is not required for stability of the reduction are favoured. Specific recommendations follow based on the anatomical region.

**Craniomaxillofacial trauma (table 3)**

Anatomical region	Recommendations
Lower face/mandible fractures	<ol style="list-style-type: none"> <li>1. Consider closed reduction with self-drilling MMF screws</li> <li>2. Scalpel over monopolar cautery for mucosal incisions</li> <li>3. Bipolar cautery for hemostasis on lowest power setting</li> <li>4. Self-drilling screws for monocortical screw fixation</li> <li>5. When drilling is required, limit or eliminate irrigation</li> <li>6. If drilling is required, consider a battery powered low speed drill</li> <li>7. If a fracture requires ORIF, consider placement of MMF screws intra-orally, then place a bioocclusive dressing over the mouth, and use a trans cutaneous approach rather than an extended intraoral approach</li> <li>8. If osteotomy is required, consider osteotome instead of power saw</li> </ol>
Midface fractures	<ol style="list-style-type: none"> <li>1. Consider closed reduction alone if fracture is stable following reduction</li> <li>2. Consider using Carroll-Girard screw for reduction, and avoid intra-oral incision, if two-point fixation (rim and ZF) is sufficient for stabilization</li> <li>3. Scalpel over monopolar cautery for mucosal incisions</li> <li>4. Avoid repeated suctioning/irrigation</li> <li>5. Bipolar cautery for hemostasis on lowest power setting</li> <li>6. Self-drilling screws preferred</li> <li>7. If osteotomy is required, consider osteotome instead of power saw or high-speed drill</li> </ol>
Upper face fractures/ frontal sinus procedures.	<ol style="list-style-type: none"> <li>1. Consider delay of non-functional frontal bone/sinus fractures</li> <li>2. Endoscopic endonasal procedure, and the associated instrumentation (power micro debridors) carry a very high risk of aerosol generation and should be avoided if possible</li> <li>3. When performing a frontal sinus obliteration or cranialization consider performing the mucosal stripping manually, and not using a burr or power equipment</li> <li>4. Avoid repeated suctioning/irrigation</li> <li>5. Bipolar cautery for hemostasis on lowest power setting</li> <li>6. Self-drilling screws preferred</li> <li>7. If osteotomy is required, consider osteotome instead of power saw</li> </ol>

**Head and neck oncology cases (table 4)**

If non-surgical therapy is equivalent to surgery + radiation, non-surgical therapy is recommended.

**Conclusion**

Although these recommendations suit the current scenario, the changing status of the disease may lead to modifications in

Cases in which a worse outcome is expected if surgery is delayed more than 6 weeks like SCCA of the oral cavity, oropharynx, larynx, hypopharynx
Cancers with impending airway compromise
Papillary thyroid cancer with impending airway compromise, rapidly growing, bulky disease
High grade or progressive salivary cancer
T3/T4 melanoma (see new recommendations for treatment of melanoma)
Rapidly progressing cutaneous SCCA with regional disease
Salvage surgery for recurrent/persistent disease
High grade sino-nasal malignancy without equally efficacious non-surgical options

**Table 4:** Oncology cases that cannot be postponed.

the aforementioned protocols. These recommendations are aimed at bringing safety for both the patient and doctor community. However, ultimately the decision of the treatment of patients still rests with the individual practitioner.

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