

Evaluation and treatment planning of the head and neck surgeries during the Covid – 19 Pandemic

¹Dr. Amit Rawat, Associate Professor, Dept of Oral Surgery, GDC, Indore

²Dr. Jyotirmay Chakrawarty, PG Resident, Dept of Oral Surgery, GDC Indore

³Dr. Neha Jain, Lecturer, Dept of Oral Surgery, GDC Indore

⁴Dr. Ankit Goyal, PG Student, Dept of Oral Pathology and Microbiology, GDC Indore

Corresponding Author: Dr. Jyotirmay Chakrawarty, PG Resident, Dept of Oral Surgery, GDC Indore

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Introduction

The coronavirus disease (COVID-19) pandemic has put unprecedented challenges on the medical community. Physicians and other healthcare workers who perform and participate in examinations and procedures within the head and neck region and airway are at particularly high risk of exposure and infection from aerosol and droplet contamination. One of the earliest reports from Wuhan, China where Severe Acute Respiratory Syndrome Coronavirus (SARS – CoV 2) was first identified, found 40 healthcare workers among the first consecutive 138 patients hospitalized.¹

During the severe acute respiratory syndrome (SARS) outbreak of 2003 in Canada, 51% of the 438 cases were healthcare workers, and 3 died from SARS- related causes². While the figures sound dis- heartening, other studies have shown that the use of careful hygiene and practicing principles of hand hygiene and personal

protective equipment kits, health workers can stay safe. A case report of 41 healthcare workers in Singapore revealed that none of them, who took care of a patient with severe Pneumonia before the diagnosis of COVID – 19 became infected themselves or developed symptoms.

The preservation of the highly skilled, limited workforce should be a top priority of health care workers , policy makers and implementers. At the time of this writing, to our knowledge , no unified widely agreed on protocols exist on how to perform a routine examination of the head and neck and common operations in the dental practice. Some health authorities have developed separate guidelines³.

Here, we highlight common procedures that should be considered and provide a framework on which to base the decisions using the best evidence and the existing protocols. As this is a highly fluid situation it is likely that these recommendations will change based on upcoming

evidences, the infection burden, availability of the health care workforce, and medical faculties.

General Considerations

General care of Dental patients: Head and neck examinations are considered extremely at high risk in patients with suspected or confirmed COVID-19; therefore, the following guidelines can help. Depending on the current circumstances of the local setting, such as the rate of the community spread and case doubling time, routine, nonurgent appointments should be postponed to limit the chances of counteracting SARS-CoV-2 infections of the patients or healthcare workers during their visit to the facility. This may include postponing appointments for patients with benign diseases (eg- benign tumours of the jaws, benign tumours of salivary glands) or patients undergoing routine surveillance visits after treatment for head and neck cancer. In all instances, patients should be queried by telephone about any new or concerning signs or symptoms that may suggest disease recurrence and/or pending issues, such as severe swelling of the head and neck or airway compromise, as well as current symptoms suggestive of COVID-19. Patients thought to be at risk for significant negative outcomes without evaluation should be offered an in-person clinic visit. Those with symptoms suggesting possible COVID-19 should be directed to the appropriate self-care or triage mechanism. The use of telephone, video, or telemedicine visits should be considered to maintain relationships with patients and to support assessments that can be made without an in-person physical examination. Only patients who need a thorough head and neck examination should be seen in person.

The Head and Neck Physical Examination and Associated Procedures

General Examination: Head and neck examinations that will include the oropharynx should be performed by maintaining the ultimate form of protection discussed later in the table. The examination should start in a separate room, with minimal personnel, away from the other patients. The examination preferably performed by the most experienced person present and might be a more focused assessment, based on the judgment of the examining physician. Proper donning, doffing and disposal of the Personal Protective Equipment (PPE kit) are of the utmost importance.

Examinations of the Mucosa of the Oral cavity and Oropharynx

Examinations of the oral cavity, sinuses, oropharynx, pharynx, and larynx are among the most common head and neck diagnostic procedures and are routinely performed by a wide variety of practitioners and trainees. They are considered aerosol-generating procedures.⁴ Moreover, the nose and nasopharynx have been shown to be reservoirs for high concentrations of the SARS-CoV-2 virus,⁵ and after manipulation, viral particles have been shown to be airborne for 3 hours or more.⁶ Therefore, we recommend the same precautions be adopted for mucosal surface endoscopic examinations of the head and neck as for other aerosol-generating procedures. Examinations should be limited to patients who have a clear indication and need. Again, the examination should be performed by the most experienced personnel available in an expedient fashion. Routine or lower-priority examinations should be deferred during the pandemic. Patients should be placed in private rooms with negative pressure, if available, and the use of PPE should follow the guidance of the Table.¹²

Table. Summary of Head and Neck Examination and Procedure Recommendations^a

Risk and definition	Patient wears	Clinician/staff wear
Nonprocedure encounters in non-immune-compromised patients		
High risk to clinician: any examination in: <ul style="list-style-type: none"> • Patients with active SARS-CoV-2 infection • Patients with influenzalike symptoms • Patients under evaluation for SARS-CoV-2 infection 	Surgical mask	<ul style="list-style-type: none"> • Single-use N95 mask • Goggles or face shield • Gown • Gloves
Moderate risk to clinician: examination of ear, nose, mouth, or throat in asymptomatic patients	Nothing ^b	<ul style="list-style-type: none"> • Surgical mask with face shield to allow for reuse of mask • Gloves
Low risk to clinician: other examination in asymptomatic patients	Nothing ^b	<ul style="list-style-type: none"> • Mask optional • Gloves
Aerosol-generating interventional procedures		
Procedures including but not limited to the following: Intubation, extubation, office-based nasal and laryngeal endoscopy, bronchoscopy, gastrointestinal endoscopy, drainage of peritonsillar abscess, placement of nasal packing, foreign body management in the nose or airway, tracheostomy, tracheostomy care, powered instrumentation in mucosal head and neck surgery, possibly laparoscopic surgery		
High risk to clinician: consider delaying or discussing the following: <ul style="list-style-type: none"> • Patients with active SARS-CoV-2 infection • Patients with influenzalike symptoms • Patients under evaluation for SARS-CoV-2 infection 	Surgical mask	<ul style="list-style-type: none"> • PAPR or single-use N95 mask and goggles or face shield • Gown • Double gloves
Low risk to clinician: <ul style="list-style-type: none"> • Patients who are asymptomatic and untested or SARS-CoV-2 negative in 48 h preceding surgery • If possible, test patients within 48 h of procedure 	Nothing ^b	<ul style="list-style-type: none"> • N95 mask and eye protection (may be appropriate to reuse; must use face shield to allow reuse) • If unavailable, surgical mask with goggles or face shield • Gown • Double gloves
Non-aerosol-generating interventional procedures		
Soft tissue surgery exposes blood, which can have a viral count, but unless the blood is aerosolized by the use of energy devices, it would be expected to be lower risk. Suctioning away smoke and aerosolized tissue is recommended. To our knowledge, the infectiousness of aerosolized blood with SARS-CoV-2 is not yet known.		
High risk to clinician: consider delaying or discussing in: <ul style="list-style-type: none"> • Patients with active SARS-CoV-2 infection • Patients with influenzalike symptoms • Patients under evaluation for SARS-CoV-2 infection 	Surgical mask	<ul style="list-style-type: none"> • Single-use N95 mask • Goggles or face shield • Gown • Gloves
Low risk to clinician: patients who are asymptomatic or SARS-CoV-2 negative in last 48 h	Nothing ^b	<ul style="list-style-type: none"> • Surgical mask • Goggles or face shield • Gown • Gloves

Abbreviations: PAPR, powered air-purifying respirator; SARS, severe acute respiratory syndrome; SARS-CoV-2, SARS coronavirus 2.

^a Adapted and updated with permission from Stanford Health Care. Recommendations are subject to change as more data become available.

^b If the patient is immune compromised (receiving active chemotherapy,

radiotherapy, or immunotherapy; <1 y after solid organ transplant; receiving chronic immunosuppression therapy; pregnant), both the patient and clinician should wear a surgical mask unless the patient is high risk. Clinicians and staff should wear a face shield over a surgical mask to allow reuse of the mask.

Operative Procedures—General Considerations

A number of head and neck and oral surgery procedures are high risk owing to exposure of airway and mucosal surfaces and the possibility of generating aerosols. During the pandemic, based on the guidelines of national and state authorities, all elective procedures that can be safely postponed should be delayed. If an operative procedure involving the mucosa of the head and neck is planned, the following considerations are recommended.

COVID-19 Status

If possible, determine the COVID-19 status of the patient beforehand. If a patient tests positive, a careful assessment of risk to the patient and health care workers should be

performed by a multidisciplinary team before the operation is recommended. Operating on mucosal surfaces in a patient who is actively infected generates a great risk for the entire operating room and recovery units and may compromise the patient’s ability to recover from the infection.

Operating Room Setting

High-risk operations or operations in patients with known COVID-19 should be performed in a designated operating room with negative pressures.⁷ Unprotected health care personnel should not be allowed in a room where an aerosol-generating procedure is being or has been

conducted. If a patient is known or suspected to have COVID-19, appropriate PPE must be worn by all.

High-risk Procedures

Considering the high viral titers in nasal mucosal, oral, pharyngeal, and pulmonary secretions, any operation that involves these surfaces is high risk to the entire operating room personnel. To our knowledge, bloodborne transmission has not been documented, but aerosolization of blood through the use of energy devices used for control of bleeding and in dissection has been documented.⁸ These procedures should be considered higher risk. This includes the use of powered devices (eg, drills, microdebriders, saws) or ultrasonic shears, such as the Harmonic scalpel (Ethicon) or Thunderbeat scalpel (Olympus).¹²

If a high-risk operation is indicated during the pandemic in a SARS-CoV-2–negative patient or a patient without symptoms or contact, appropriate PPE for all operating room staff is strongly recommended. Observed levels of community disease will not reflect the full prevalence.

Intubation and Extubation

In all operations, coordination with the anesthesia team is critical. It is advisable that during intubation, all nonessential staff leave the room and only return after the airway is secured. Additionally, all nonessential staff should be out of the room during extubation. Anybody who is present should maintain appropriate PPE. In some centers, an interval equivalent to known air exchange times for that operating room is practiced before other personnel are allowed to enter. Jet ventilation procedures pose a particularly high risk and should be performed only under absolute necessity and with appropriate PPE, preferably in a negative-pressure room.¹²

Patient Transport

Adequate protection during the transfer of SARS-CoV-2–positive patients or patients of unknown infection status

after a high-risk procedure is critical. Clear protocols should be established with the nursing staff, recovery unit personnel, anesthesia department, and infection control personnel. Nonintubated patients could be transferred while wearing a surgical mask (not an N95 mask) if tolerated. If oxygen is required, it can be administered by face mask over the surgical mask. Intubated patients should be transported with an intensive care unit ventilator (dry circuit, filter in place) and not with a bag-valve mask, which breaks the closed circuit. Appropriate PPE should be maintained by all health care workers participating in the transfer.

Specific Operative Procedures

Management of Oral and Facial Trauma

Management of trauma patients should be led by the trauma management team. Physicians who are called to assess trauma patients or perform specific procedures in areas of high community spread should be equipped with adequate PPE based on the trauma center policies. After following the trauma triage protocol, if assessment and treatment of facial trauma is needed, our recommendation is to treat patients of unknown COVID-19 status as COVID-19 positive. Lacerations that involve mucosal surfaces should be treated as high risk. For injuries that require operative intervention (for example, reduction of fractures), the infection status of the patient should be confirmed first and then definitive treatment initiated if at all possible. In areas with significant shortage of medical capacity and personnel, nonoperative approaches should be considered as much as medically acceptable.¹²

Management of Space Infections

Origin of maxillofacial fascial infection could be from a periapical lesion, periodontal condition, pericoronal problem, post surgical infection or direct trauma resulting in epithelial breach. Of these odontogenic ones are most commonly encountered. In a country like India where

healthcare providers are inadequate in number and facilities are less, ignorance to a dental problem adds to the worsening condition. Complications such as retropharyngeal spread and intracranial extension or mediastinal spread and airway obstruction indicate the potentially serious nature of these infections. Sometimes, these emergency situations require Tracheostomy for the life saving measures.

Tracheostomy

Performing tracheostomy on patients with suspected or confirmed COVID-19 imposes unique challenges on not only otolaryngologists, oral surgeons –head and neck surgeons but the entire health care team.⁹ In nonemergency situations, all cases should be reviewed by a multidisciplinary team, and the risks vs benefits of the procedure for the patient and the entire health care team should be carefully assessed. Additionally, a detailed postprocedure care plan should be established to ascertain the protection of other patients and health care workers. The accompanying article by Tay et al¹⁰ outlines many of these considerations. In general, most tracheostomy procedures should be avoided or delayed (even beyond 14 days) because of the high infectious risks of the procedure and subsequent care until such time as the acute phase of infection has passed, when the likelihood of recovery is high, and when ventilator weaning has become the primary goal of care. Avoiding early tracheostomy in patients with COVID-19 is suggested because of the higher viral load that may be present at this time. In addition, early tracheostomy was not found to be associated with improved mortality or reduced length of intensive care unit stay in a randomized clinical trial of patients on mechanical ventilation.¹¹

We suggest the following additional guidelines:

1. Select the patients carefully. If the tracheostomy is assessed as difficult because of anatomy, history,

comorbidities, or other factors, consider postponing the procedure.

2. Consideration may be given to percutaneous dilatational tracheostomy if the patient's anatomy and proceduralist expertise allow it to be done safely with minimal or no bronchoscopy, endotracheal suctioning, and disruption of the ventilator circuit.

3. Provide adequate sedation including paralysis to eliminate the risk of coughing during the procedure. Ventilation should be paused (apnea) at end-expiration when the trachea is entered and any time the ventilation circuit is disconnected.

4. Choose a nonfenestrated, cuffed, tracheostomy tube on the smaller side to make the tracheostomy hole smaller overall (Shiley size 6 for both men and women is adequate). Keep the cuff inflated to limit the spread of virus through the upper airway.

5. Perform tracheostomy suctioning using a closed suction system with a viral filter.

6. Use a heat moisture exchanger device instead of tracheostomy collar during weaning to prevent virus spread or reinfection of patients.

7. Avoid changing the tracheostomy tube until viral load is as low as possible.

Conclusion

We acknowledge that these challenging times require extraordinary efforts. Maintaining the health and strength of our clinical workforce is essential and critical to avoiding collapse of our health care system. We, also propose that every healthcare team should undergo antigen testing every 14 days- 1 month and the Rapid test i.e. the viral load test which go a long way in predicting the infection and the infection like state which will help in reducing the person to person transmission, community spread and finally, the pandemic.

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