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General Safety Guidelines for Ear, Nose and Throat (ENT) Practice in COVID-19 Era

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Authors' contributions

This work was carried out in collaboration between both authors. All authors read and approved the final manuscript.

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ABSTRACT

The Coronavirus Disease 2019 (COVID 19) originated in Wuhan, China and has increased rapidly globally, making it a global pandemic. It is proven to spread via respiratory droplets of positive patients. As we are not aware of the COVID 19 status of all patients coming to the OutPatient Department (OPD), it is advisable to consider every patient as COVID 19 positive and take the essential precautions to avoid infection. All health care workers, especially otorhinolaryngologists, respiratory medicine physicians, and general medicine physicians, are more exposed to the virus daily, as they work closely with COVID 19 positive patients while treating them. Otorhinolaryngologists deal with patients' nasal and oral cavities daily, making them one of the most exposed categories of health-care workers. Thus, it is extremely important to remain vigilant when examining patients in OPD wards and performing surgeries in the operating room. Hence, proper knowledge is required of the healthcare system's guidelines in each country to prevent the spread of the infection in the medical and paramedical workers. As the disease is spreading rapidly and changing constantly, these recommendations and guidelines may change as the scenario changes. It is of utmost importance to remain up to date with the

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upcoming guidelines for our healthcare workers' safety.
This article aims to provide an overview of guidelines for the safe practice of ENT that we follow in our tertiary care center, thus minimizing our exposure to COVID-19.

Keywords: COVID-19; Safe ENT practice; Personal protective equipment (PPE); otorhinolaryngologists; aerosolization.

1. INTRODUCTION

On 11th March 2020, the World Health Organization (WHO) announced COVID-19 as a pandemic caused by the Severe Acute Respiratory SyndromeCoronavirus-2 (SARS-CoV-2) [1]. This pandemic has imposed a great deal of burden on the economic outcome and the global wellness support structures. The virus has been proven to spread via respiratory droplets. It can be identified in the wipes obtained via the nasopharynx and the or pharynx, which brings all the wellness support staff in the high-risk category of acquiring the infection. As there are primary noses and throat, otorhinolaryngologists are at the highest risk of getting infected [2]. The high rate of infection in the otorhinolaryngologists is due to the exposure to the mucosal areas of the nose and the oral cavity during clinical examination and due to the high rate of aerosolization of the viral particles during operations or additional interferences in the head and neck area. When there is a production of spray dispensations, this virus can increase and pollute numerous surfaces, including air circulating exhaust vents.

Hence, all health-care providers must take appropriate protective and hygiene measures to protect themselves from getting infected by the virus. Sadly, several of our ENT co-workers globally have been casualties of the epidemic [3].

As there are a rapid progression and spread of the disease, the guidelines for safe ENT practice must be followed with utmost precautions and safety. With the increasing number of cases worldwide, it may be possible that these recommendations and guidelines will be modified according to the specific need of that time and the progression of the disease [4].

2. LITERATURE SURVEY RECOMM-ENDED FOR SAFE ENT PRACTICE

2.1 Advice to Patients

Primarily, the population across the globe should be aware of the hazards and consequences of the on-going pandemic and should help in reducing the burden on the society and the health-care system of each country by doing their part of practicing social distancing, wearing a mask when in public, avoiding meeting in large groups and gatherings for social or work-related causes, etc. Suppose, unfortunately, the need arises for a patient to consult an ENT doctor. In that case, he/she must do so by practicing all safety measures required to avoid acquiring or spreading the infection caused due to SARS-CoV-2.

For symptoms like cold, cough, breathlessness, anosmia, dysgeusia, acute change in voice, throat pain/irritation, sinusitis, fever, etc., the patient should be advised to consult in a fever/flu OPD as these are classic signs of the COVID-19.

For chronic, it is complaints or known cases of reduced/loss of hearing in an old age patient, seasonal allergic rhino-sinusitis, long-standing noise-induced hearing loss, etc., patients must be given the option of tele consultation.

Tele consultation and telemedicine are upcoming modes of online consultation for the convenience of healthcare workers and patients. Patient care is possible without the unnecessary burden of fear of infecting a patient or getting infected by a patient. After tele consultation, the ENT specialist may decide whether a patient needs further evaluation and physical examination. Such patients may be called into the ENT OPD for further management. This filtering reduces the risk of patients and health-care workers getting infected by COVID-19.

For emergency cases like acute trauma, nasal bleeding, sudden loss of hearing, sudden facial nerve palsy, complications of squamous type of chronic otitis media, etc., physical consultation and examination are necessary.

When called in for physical examination in an ENT OPD, patients must maintain hand hygiene, social distancing, wearing masks, and avoid unnecessary crowding by bringing only one

attendant along with them if required. Patients must be honest regarding their symptoms lest they be hidden signs of COVID-19 and must reveal their complete travel records and records of being in touch with a COVID -19 positive patient, which helps in reducing the extent of the infection in the society, in turn lowering the burden on the health-care workers and hospitals.

2.2 Advice for Doctors

As far as possible, patients should be encouraged for tele consultation unless it is an emergency demanding a direct visit to the hospital. In the OPD setting, a thorough history of symptoms, travel history, and contact records among a COVID-19 positive patient must be taken to exclude the patient's possibility of being a carrier of the COVID-19 infection. At all times, the doctor and other health-care personnel must maintain a distance from each other and the patient while wearing a pair of gloves and a facial mask.

When an ENT examination is needed, the otorhinolaryngologists must be equipped with Level I personal protective equipment (PPE) [5], including wearing an N95 mask, gown, gloves, goggles/ face shield. Gloves must be changed after examining each patient, if possible, or when they are soiled. For queries after consultation in the OPD and follow-ups, patients and their relatives should be counselled for tele consultation unless the doctor advice a physical check-up on subsequent visits.

Depending on the circumstances, all non-emergency procedures should be postponed for the safety of wellness support staff and the patients. Elective procedures such as tonsillectomies, ear surgeries, cosmetic surgeries, certain surgeries of the head and neck region, etc., should be postponed as far as possible. The patient should be given symptomatic treatment till the surgery can be scheduled.

Procedures such as airway emergencies, head& neck, mastoid abscesses, intracranial complications of squamous chronic otitis media, facial trauma, etc., are emergencies and need immediate attention. Treatment must be done with utmost precaution and safety. Severe middle ear inflammatory diseases, severe mastoiditis, unexpected hearing damage, facial insensibility, injury to head and neck/ ear/ nose/ facial region, etc., are urgent indications for immediate intervention and treatment.

Endoscopic examination of the nose and nasopharyngeal region, aural region, oral cavity, or pharynx, hypo pharynx, larynx, upper oesophagus, etc., should be avoided unless necessary. Anterior and posterior rhinos copy [6] should be done only in emergencies or if indicated. It increases the threat of acquiring the severe acute respiratory syndrome- coronavirus-2 [7] disease because these are the virus's primary sites to settle.

Aerosol generating procedures are the most high-risk category of procedures leading to a high infection index if proper precautions are not maintained. Hence, they must be avoided or, if required, done in a proper environment maintaining all safety protocols recommended for aerosol-generating procedures.

3. METHODOLOGIES

3.1 Safety Measures in the ENT OPD

Whenever coming across a patient in the OPD, one must observe the norms of social distancing. Only one patient should be allowed in the OPD at a time. Only if needed, their attendant/relative should be present along with them. There should be enough time intervals between two consecutive patients, allowing the doctor to dispose of the used material and sanitize the area.

OPD premises must be well ventilated. There must not be crowding in the waiting area. Hence, it is preferred to call patients on an appointment basis. All the patients coming to the ENT OPD must be screened with an initial assessment protocol that clarifies the history of symptoms, history of contact with a COVID-19 positive patient, and travel history in the recent past along with thermal screening, recording of SPo2 level at room air and respiratory rate. Those patients are suspicious of COVID-19 disease, whether with ENT symptoms [8] or respiratory symptoms [9] or other suspecting symptoms, must be directed to the flu/ fever/ COVID OPD. This triage is of paramount importance as ENT deals with upper respiratory tract diseases, which is the commonest site of involvement in COVID-19 disease. While examining a patient in the ENT OPD, the doctor and the nursing personnel must be donned with Level I PPE, as any and every

patient must be considered COVID-19 positive unless proved otherwise.

Endoscopies [10] should be avoided unless deemed necessary or under emergency circumstances. Suppose endoscopy is needed to be carried out. In that case, it must be done in a separate room (endoscopy room in the OPD complex or minor/major operating theatre/room), preferably with a designated donning and doffing area. Thorough cleaning and sanitizing of the OPD premises must be carried out at the end of the day. If possible, it must also be done after the visit of a suspected COVID-19 patient. The health-care workers should refrain from eating or drinking in the OPD to reduce the risk of contamination. There should be proper biomedical waste segregation and disposal to avoid the spread of infection.

3.2 Safety Measures in the E.N.T. Ward

The ENT and head & neck ward should be a COVID-19-free division as far as feasible. COVID-19 suspected ENT patients should be treated in a different COVID-19 dedicated ward and moved to the ENT division, particularly following evidence of COVID-19 negative status [5]. Assumed instances of COVID-19 should be retained separately from confirmed COVID-19 positive patients as suspected patients may turn out to be negative.

In the ENT ward, only one attendant or relative of the patient should be allowed after their primary screening is done as per protocol. The attendant/relative should be counselled regarding social distancing, hand hygiene, and constant face mask to avoid getting infected from an asymptomatic carrier patient in the ward or being an asymptomatic carrier themselves and infecting others. While examining a patient in the ENT ward, the doctor is advised to be wearing Level I PPE. The examination instruments should be sterilized according to standard sterilization protocol. For conducting ward procedures of the nasal or mouth opening, viz., testing, washing, aspirating, nose preparation, irrelevant material elimination, changing of soiled dressing, etc., the health-care worker should be in Level II PPE (N95 respirator + fluid repellent gown + head cover including neck protection +double gloves + eye protection (face shield or goggles)).

The ENT division must be preferably divided into different spaces for the sick, including great production of spray-dispensing possibilities (e.g., surgically neck-opened patients) and other ENT patients. Common aerosol-generating procedures in the ENT and head and neck surgery ward include emergency tracheotomy, tracheotomy tube cleaning and suctioning, nasogastric tube insertion, etc. For tracheotomised patients, the application of heat and moisture exchanger (HME) and T-piece should be promoted to stop the ward's infection and reduce the risk of infection for the health care workers. For all these aerosol-generating procedures in the ward, the health care workers should be in Level II PPE. Wards should be cleaned and fumigated timely as per standard sterilization protocols to avoid cross-infection. Wards and the corridors and passages of the wards should be well-ventilated.

3.3 Safety Measures in the Minor/Major Operating Theatre/Room (OT/OR)

Procedures in otorhinolaryngologists remain related with the great threat of COVID-19 spreading [6] because of the subsequent determinants:

a) Higher respiratory and digestive tract is the entrance, breeding ground, and outlet for the new coronavirus.
b) Large spray dispensations at the time of the operations at the top of the respiratory and digestive tract.
c) Continued production of spray dispensations in the interim and post-surgical processes that need the application of charged equipment, viz., and micro-debride and drills.

The following ENT operations involving the upper aero digestive tract would be considered highly aerosol-generating:

- Endoscopies of the larynx, trachea-bronchial tree, lungs, oesophagus
- Drainage of the peritonsillar abscess
- Surgeries of the nose and par nasal sinuses
- Removal of foreign bodies from the nasal cavity/oral cavity/pharyngeal/laryngeal pathway, etc.
- Tracheotomy
- Use of powered instrumentation (micro-debride, drills, etc.) in the ear, nose, oral cavity, head and neck surgeries, etc.

There should be designated separate operating theatres for COVID-19 suspected or positive and

Table 1. Patients requirement with risk definition

Risk definition	Patient requirement	OT personnel requirement
• COVID-19 positive/ suspect	Surgical mask	As per guidelines for COVID-19 patients
• Negative for RT-PCR 24hours before surgery • Asymptomatic for 14days post admission	Face cover/surgical mask	- Aerosol Generating Procedures • N95 mask and eye shield • Face shield • Airtight garment or garment with a synthetic overskirt • Double gloves • Powered Air-Purifying Respirator • (PARP) for time-consuming surgeries [9] - Non-Aerosol Generating Procedure • Operational hood • Sunglasses or faceguard • Gown • Gloves

Table 2. COVID 19 specific guidelines

Procedure	COVID 19 Specific Guidelines
Head and Neck Surgeries (Biopsies, Endoscopies, Malignancy surgeries)	▪ For a COVID-19 positive patient, the surgeon should evaluate whether postponing the surgery for 14 days or until the patient is COVID-19 negative and asymptomatic will be harmful or beneficial. ▪ If that is an unavoidable situation, then the procedure should be scheduled in a COVID designated OT [10] with all safety precautions. ▪ Direct larynges copy for biopsy of a mass should be avoided as far as possible. FNAC [11] from the neck nodes, if present, can be done to come to a diagnosis. ▪ Daycare operation for initial injuries is favored. ▪ The application of charged equipment should be limited to reduce aerosol production.
Surgeries of the Nose, Paranasal Sinuses, and Skull Base	▪ Level II PPE [12] should be used. ▪ Elective surgeries to be avoided. High-risk or emergency cases with complications are to be considered with precautions.
Otology related surgeries	▪ Level II PPE should be used. ▪ Elective surgeries to be avoided. High-risk or emergency cases with complications are to be considered with precautions.
Tracheotomy	▪ General anesthesia post-intubation to be preferred to avoid cough reflex, which is common when performing tracheotomy under local anesthesia [13]. ▪ Higher voice box nerve obstruction and lignocaine injection into the windpipe before cutting through it should be done when intubation is impossible to reduce the cough reflex. ▪ Between tracheal incision times till the time of cuff inflation of the inserted tracheotomy tube, a state of transient apnea should be maintained. ▪ Using a closed suction system is beneficial. ▪ A dual tubular structure space with a separate band-sewn tube may be used to avoid postoperative tube change. ▪ HME [14] to be used when a tracheostomized patient is shifted to the ward. ▪ The neck-opening tube insertion [15] may be protected by an N95 mask or a triple-layered mask for additional protection.

negative patients; COVID-19 positive patients should be operated on under emergency circumstances only, and all elective procedures must be postponed as far as possible. While performing a diagnostic endoscopic procedure, local anaesthesia must be avoided. General anaesthesia should be preferred to dampen the cough reflex and prevent aerosolization. Minimum total staff must be in the OR during the procedure to avoid many healthcare workers' simultaneous infection. As far as possible, only disposable consumables must be used, and they must be disposed of as per biomedical waste management protocol. Demarcated areas for donning and doffing should be present. Once the procedure is over, non-procedure-related work (paperwork, relative counselling) should be done outside the OT. After each procedure, all surfaces and electro-medical instruments should be thoroughly cleaned and disinfected.

For non-emergency procedures, the following protocol should be followed:

- Pre-screening of the patient undergoing elective procedure – symptoms, contact history, residential area.
- Examination and recording of SPo2 on room air, thermal screening, respiratory rate, chest X-ray.
- Elective surgery patients should undergo COVID 19 RT-PCR test.
- If positive, the patient should be quarantined and treated for 7-14 days and then reassessed to plan the surgery.
- If negative, the patient should be admitted and isolated for 24-48 hours before planned surgery.
- If the sick has not been examined for COVID-19, he/she should be kept in strict quarantine for 7-14 days. He/she should be operated on only if asymptomatic after the quarantine period.
- After the surgery, the patient should be discharged when physiologically and hemodynamic ally stable.
- The patient should be advised self-isolation for 5-7 days after discharge from the hospital.

4. RESULT AND DISCUSSION

Risk definition, patient's requirement, OT personnel requirement and COVID1 9 specific guidelines are explained in Table 1 and Table 2.

5. CONCLUSION

The detailed knowledge of the precautions is to be undertaken while performing a procedure or simply consulting a patient as otorhinolaryngologists is extremely important in the present scenario. Each patient, irrespective of his/her symptoms or asymptomatic status, should be considered COVID 19 positive unless proven otherwise. We have followed the above safety methods strictly in our tertiary care center. Protection of all health-care workers is important to prevent the breakdown of and lessen the strain on the medical support practice. As this pandemic is rapidly evolving and the virus strain has started showing signs of mutation, there can be revision/ modification/upgradation of these safety guidelines as the situation demands, which will be beneficial for every one of the wellness support staff, especially those working in the field of otorhinolaryngology that is easily exposed to the virus, to help protect themselves and all the people they come in contact with to prevent the series of severe acute respiratory syndrome-coronavirus-2 spread.

ETHICAL APPROVAL

Not required.

CONSENT

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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