

## Original Research Article

# Guidelines for otology surgery in coronavirus-19 pandemic

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### ABSTRACT

Measures to be taken by the clinicians involved in Otolaryngology surgery in light of the recent COVID-19 pandemic. Current finding about COVID-19 infection and its relation with SARS-CoV 2 virus is evaluated and possible safety measure guidelines to be taken while doing Otolaryngological procedures is reviewed. Wearing PPE kit (N95 mask, double gloves, respirator, eye protection, face shield, gown, shoe cover), limited attendance to essential personnel, using negative pressure room, using double drape system and proper removal of patient drape after rhinology operation reduces the risk of SARS-CoV 2 virus spread via aerosol into the environment. Emergent and Urgent otology surgery need prompt treatment, thus proper COVID-19 protocols should be maintained while doing otology surgery like wearing PPE (N95 mask, double gloves, respirator, eye protection, face shield, gown, shoe cover), limit attendance to essential personnel and use negative pressure room are undertaken. Double draping of the operating site is essential while drilling and suctioning and it's too carried out under the plastic tent to reduce aerosol spread in the environment. Proper removing of the tent setup, including rolling of patient drape is needed to reduce aerosol spread. Otolaryngology surgeries should adhere to general guidelines set for high-risk procedures.

**Keywords:** SARS-CoV 2, Covid-19, Pandemic, Otolaryngology surgery

### INTRODUCTION

Severe Acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the causative agent for coronavirus disease 2019 (COVID-19).<sup>1</sup> Coronavirus causes respiratory tract infections the severity can be mild, like common cold, and can be even lethal, like SARS (Severe acute respiratory syndrome), MERS (Middle East respiratory syndrome), and COVID-19 (Corona virus disease 2019). COVID-19 disease was first identified in December 2019 in Wuhan, the capital of China's Hubei province and it caused a pandemic.<sup>2,3</sup> The virus mainly spread by close contact via small droplets produced while coughing, sneezing and talking.<sup>4,5</sup> Bioaerosol transmission occurs while doing

intubation and cardiopulmonary resuscitation. Fomite transmission is also possible.<sup>4</sup> The virus is most contagious when people are symptomatic; although spread is possible even before symptoms appear.<sup>4</sup> The incubation period is five to six days but may range from two to 14 days. The virus survives for hours to days on surfaces. The patient may be asymptomatic or present with flu like symptoms like fever, cough, sneezing, fatigue, shortness of breath. The disease may progress to pneumonia, multi-organ failure, and even death. Otolaryngologists and health care staffs are at high risk of COVID-19 infection, hence appropriate protective and hygiene measures are utmost importance.<sup>6-10</sup>



**Figure 1: Plastic drape used to make tent and drape the patient while doing otology surgery.**



**Figure 2: Second plastic drape is used to drape from the lens of microscope to the head end of patient bed.**

## METHODS

### Data sources

Otological pathologies are usually detected earlier and with treatment most cases get well soon. But in this COVID-19 era there is more chance that patients with mild ear symptoms stay at home and the disease can progress to a life threatening condition. As a general dictum most otology procedures should be deferred in this COVID-19 pandemic. Only urgent cases need to be assessed. Protocols relating to otolaryngology practice were identified from webpages of otolaryngology societies such as American Academy of Otolaryngology-Head and Neck Surgery and American Head and Neck Society.<sup>12</sup> Kozin et al proposed building a tent to create a contained environment to reduce aerosol spread.<sup>13</sup> Carron et al and Chen et al proposed that plastic drapes were efficacious at containing droplets generated from mastoidectomy performed on cadaveric temporal bones.<sup>14,15</sup>

### Protocol

When a patient comes for otology surgery, firstly the surgery is graded as: elective, urgent or emergent surgery.

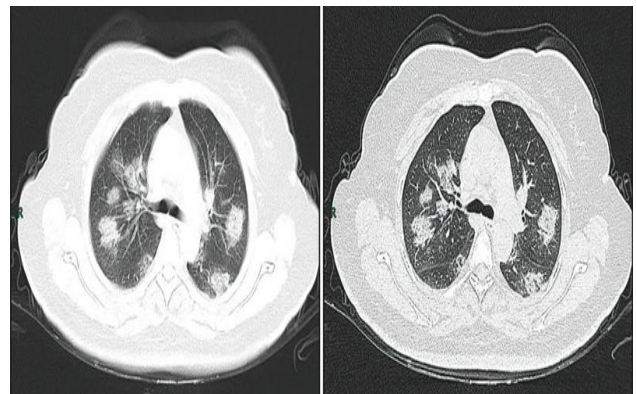
Elective routine surgeries are preferably deferred till the COVID-19 pandemic gets over. Urgent surgery means delay of treatment for one month may harm the patient and Emergent surgery means one that need immediate surgical intervention.

All emergent cases need to follow standard COVID-19 protocol. In this protocol the patient COVID status can be unknown or even positive, so proper protective measures like wearing PPE (N95 mask, double gloves, respirator, eye protection, face shield, gown, shoe cover), limit attendance to essential personnel and use negative pressure room are undertaken.<sup>16-20</sup> Anesthetist intubates the patient while surgical team waits outside the operation theater post-intubation for 21 minutes.<sup>21</sup>

After proper dressing and draping, soft tissue work if any like fascia harvest is completed. In procedure needing microscope, the microscope is draped normally, then a second drape is attached to the lens and extended over the head of the bed to create a plastic tent.

Finally, smoke evacuation system is set up inside the tent. If mastoidectomy or drilling needed, then it's done within the tent to reduce aerosol reaching the environment and suction is done through the caudal aspect of the plastic tent. After closure of surgical wound, first the tent drape is removed, then the microscope drape is removed and finally the patient drape is carefully rolled and removed. Thereafter patient is cleaned and anesthetist extubates the patient while surgical team waits outside the operation theater post-extubation for 21 minutes.

In urgent cases the patient and family member are asked to self-quarantine till the surgery. Patient is contacted 5 days before the surgery and schedule a date and time given for COVID-19 testing. 48 to 72 hours prior to surgery, nasopharyngeal swab is taken and send for real-time reverse transcription polymerase chain reaction (rRT-PCR) for COVID-19.



**Figure 3: HRCT of chest shows bilateral ground-glass opacity of lungs.**

If the initial test is negative, then the test is repeated within 24 hours prior to surgery and HRCT of chest done to

exclude any false negative test result. HRCT chest positive findings included ground-glass opacity, local patchy shadowing, bilateral patchy shadowing, or interstitial abnormalities.<sup>25</sup> If the tests are negative then standard COVID-19 protocol is followed. If the initial test is positive or the repeat test is positive, then it's better to defer the case and try alternative treatment. If the case cannot be deferred, then standard COVID-19 protocol is maintained while doing the operation.

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## DISCUSSION

COVID-19 disease is a pandemic and health care staff and ENT doctors are at high risk of getting infected. Although many surgical cases are deferred, still crucial life-threatening cases need to get operated. It is yet uncertain about the resolution of COVID-19 disease and when COVID and serology testing will become more extensive, or when therapeutics and a vaccine will be available. Thus, aim is to encounter patient problem and treat them following the guidelines, thus reducing the risk and safeguarding the doctors and health care staffs.

There are studies which demonstrated that respiratory virus exist in middle ear of patient suffering from otitis media.<sup>22</sup> Significant aerosolization of mastoid bone and other tissues occurs during mastoid drilling, thus mastoidectomy is considered a high risk procedure.<sup>23</sup> Proper precautions taken while performing otology surgeries in emergent cases. COVID test is done in urgent otology cases and patient and family is asked to self-quarantine until surgery. If the COVID test is negative, then its again repeated 24 hours before surgery to exclude false negative. If the COVID test is positive the cases are deferred, and alternative treatments are tried. Double drape is beneficial with drilling and suctioning to carried out under the plastic tent to reduce aerosol spread in the environment.<sup>24</sup> Proper removing of the tent setup, including rolling of patient drape is needed to reduce aerosol spread.

## CONCLUSION

Emergent and urgent otology patients need prompt treatment, thus proper COVID-19 protocols should be maintained while doing otology surgery like wearing PPE (N95 mask, double gloves, respirator, eye protection, face shield, gown, shoe cover), limit attendance to essential personnel and use negative pressure room is mandatory.<sup>16-20</sup> Double draping of the operating site is essential with drilling and suctioning to carried out under the plastic tent to reduce aerosol spread in the environment.<sup>24</sup> Proper removing of the tent setup, including rolling of patient drape is needed to reduce aerosol spread. Otology surgeries should adhere to general guidelines set for high-risk procedures.

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