

Evolving Protocols: Managing ENT Emergencies with Surgical Precision in the Ongoing COVID-19 PandemicSanket Katkar¹, Hetal Marfatia², Anoushka Sahai³, Surbhi Dhuppad¹, Ritika Dixit¹¹ Junior Resident, Department of ENT and Head-Neck Surgery, Seth G.S. Medical College and KEM Hospital, Mumbai, India.² Professor and Head of Department, Department of ENT and Head-Neck Surgery, Seth G.S. Medical College and KEM Hospital, Mumbai, India.³ Senior Resident, Department of ENT and Head-Neck Surgery, Seth G.S. Medical College and KEM Hospital, Mumbai, India.

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Abstract:**Background:** The emergence of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) in late 2019 led to the global spread of COVID-19, prompting the World Health Organization (WHO) to declare it a pandemic in March 2020. Otolaryngologists, as healthcare specialists, faced an increased risk of exposure to the virus. The pandemic's impact on healthcare resources resulted in the prioritization of COVID-19 patients, leading to delays in surgical interventions for non-COVID-19 patients with ENT emergencies.**Aims and Objectives:** This study aimed to assess the impact of the COVID-19 pandemic on ENT emergencies necessitating surgical intervention. The objectives included analyzing patient demographics, clinical presentation, types of surgical interventions, postoperative outcomes, and any pandemic-related changes.**Materials and Methods:** We conducted an observational retrospective and prospective study at a tertiary care hospital's ENT Department. Data was collected from July 2020 to July 2022 through retrospective analysis of medical records and prospective data collection during the study duration. The study included consenting adults above 18 years, requiring emergency ENT surgical intervention. A sample size of 50 patients was selected, and data encompassed patient demographics, COVID-19 status, symptoms, and performed surgical procedures.**Results:** The study enrolled 50 patients with a median age of 48 years, comprising 72% males. The most affected age group was 49-58 years. Invasive fungal sinusitis predominantly presented with headache and facial swelling. Endoscopic debridement was the most common surgical procedure (52%), followed by emergency tracheostomy (8%), foreign body removal (12%), and incision and drainage (10%). The pandemic led to a reduction in ENT trauma cases due to decreased road traffic accidents.**Conclusions:** The COVID-19 pandemic significantly impacted ENT emergencies requiring surgical intervention. Delays in non-COVID-19 surgical care and reduced ENT referrals were evident during the pandemic. Nevertheless, timely surgical interventions remained vital for managing ENT emergencies and preserving patients' quality of life. A multidisciplinary approach and strict infection control measures were crucial for ensuring safe and effective care during the pandemic.**Keywords:** COVID-19, ENT Emergencies, surgical procedure, pandemic

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Introduction

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) led to a rapidly spreading respiratory disease in the end of 2019 in Wuhan, China. The new disease SARS-CoV-2 was termed "COVID-19" by World Health Organization (WHO) on 11 February 2020 [1]. COVID-19 was officially announced as a "Pandemic" by the World Health Organization in March 2020. Amongst all the healthcare specialists, otolaryngologists are at a higher risk of exposure to the Sars-cov2 virus [2].

The emergence of the novel coronavirus, SARS-CoV-2, had strained healthcare resources and led to the prioritisation of COVID-19 patients. As a result, non-COVID-19 patients with ENT emergencies faced delays in receiving appropriate surgical care. The need for personal protective equipment (PPE), increased infection control measures, and limited operating room capacity further complicated the provision of surgical interventions for ENT emergencies during the pandemic.

Despite these challenges, it is crucial to recognize that various otolaryngological conditions, such as epistaxis (nosebleeds), acute tonsillitis, peritonsillar abscess, acute mastoiditis, acute rhinosinusitis, and otogenic complications, required immediate surgical management to alleviate symptoms, control bleeding, prevent further complications, and preserve patients' quality of life. The objective of this study is to examine the impact of the COVID-19 pandemic on ENT emergencies that required surgical intervention.

Material and Methods

This study utilized an observational retrospective and prospective study design to examine the impact of the COVID-19 pandemic on ENT emergencies that required surgical intervention. The retrospective component involved analyzing medical records from the period of July 2020 to July 2022, while the prospective component involved the collection of new data during the study duration.

The study was conducted in the E.N.T. Department of a tertiary care hospital. This department was equipped with specialized facilities and experienced healthcare professionals to manage ENT emergencies.

The study population consisted of all consenting adults above 18 years of age who required emergency ENT surgical intervention. Patients who presented to the ENT Emergency Department of the tertiary care hospital during the study period and met the inclusion criteria were included in the study.

A sample size of 50 patients was determined for this study. This sample size was selected based on feasibility and resource availability within the study duration.

The inclusion criteria for this study were patients above 18 years of age who presented to the ENT Emergency Department, who actually required surgical intervention for their ENT emergency and who provided informed consent to participate in the study.

The following patients were excluded from the study: patients who did not provide consent for the surgical procedure and participation in the study, patients below the age of 18 years and patients who did not require any ENT surgical intervention.

For the retrospective component, relevant data was collected from electronic medical records, including patient demographics, medical history, clinical presentation, details of surgical interventions, postoperative outcomes, and any complications related to the surgical procedure. For the prospective component, new data was collected prospectively during the study duration, following the same data collection parameters as in the retrospective analysis.

Data Analysis:

Descriptive statistics was used to summarize the demographic characteristics of the study population. The impact of the COVID-19 pandemic on ENT emergencies requiring surgical intervention was assessed by comparing the frequency and characteristics of these emergencies before and during the pandemic. Any changes in patient outcomes, such as complication rates or length of hospital stay, were also analyzed.

Ethical Considerations:

Ethical approval was obtained from the relevant Institutional Review Board prior to the initiation of the study. Patient confidentiality and privacy were ensured throughout the study.



Figure 1: Image depicting the use of level II PPE in endoscopic nasal surgery



Figure 2: image depicting the use of level III PPE in high-risk surgery

Results

In our study, the median age of the participants was 48.00 (IQR=28.75) smallest being 18yrs old and oldest patient being 68yrs old. Sex distribution was 36 (72%) males and 14 (28%) females. The most common age group was 49-58 years with 26% of population in that group. (Table 1)

Table 1: Age distribution of patients in the study

Age group in years	Number of patients	Percentage
18-28	12	24
29-38	7	14
39-48	7	14
49-58	13	26
59-68	11	22

Male patients were dominant in our study, comprised 72% and female patients comprised to 28% of total patients. (Table 2)

Table 2: Sex distribution of patients in the study

Sex	Number of patients	Percentage
Male	36	72
Female	14	28

Headache was most prominent chief complaints of invasive fungal sinusitis. Which was followed by facial swelling. (Table 3)

Table 3: Symptomatology of invasive fungal sinusities

Chief complaints	Percentage
Facial Pain	10%
Facial Palsy	10%
Facial Swelling	15%
Headache	30%
Nasal Obstruction	13%
Orbit/Eye/Lid Swelling	15%
Palatal Ulcer	6%
Ptosis	2%

Endoscopic debridement was the most common procedure, accounting for 52% of the surgical interventions. Emergency tracheostomy, foreign body removal, and incision and drainage were also frequently performed, comprising 8%, 12%, and 10% of the interventions, respectively. The remaining procedures, including facial nerve decompression, modified radical mastoidectomy, optic nerve decompression, and nasal bone fracture reduction, accounted for smaller percentages of the surgical interventions. (Table 4,5)

Table 4: Distribution of current status of Covid-19 in the population

COVID-19 RTPCR report	Number of patients	Percentage
Positive	4	8
Negative	40	80
Unknown status	6	12

Table 5: Distribution of Surgical intervention in the study

Surgical intervention	Number of patients	Percentage
Endoscopic debridement	26	52
Emergency tracheostomy	4	8
Foreign body removal	6	12
Facial nerve decompression	2	4
Modified radical mastoidectomy	2	4
Incision and drainage	5	10
Optic nerve decompression	2	4
Nasal bone fracture reduction	3	6



Figure 3: 67 Year old post COVID-19 Mucormycosis male patient presenting with right facial swelling, periorbital oedema, vision loss and Palatal perforation.

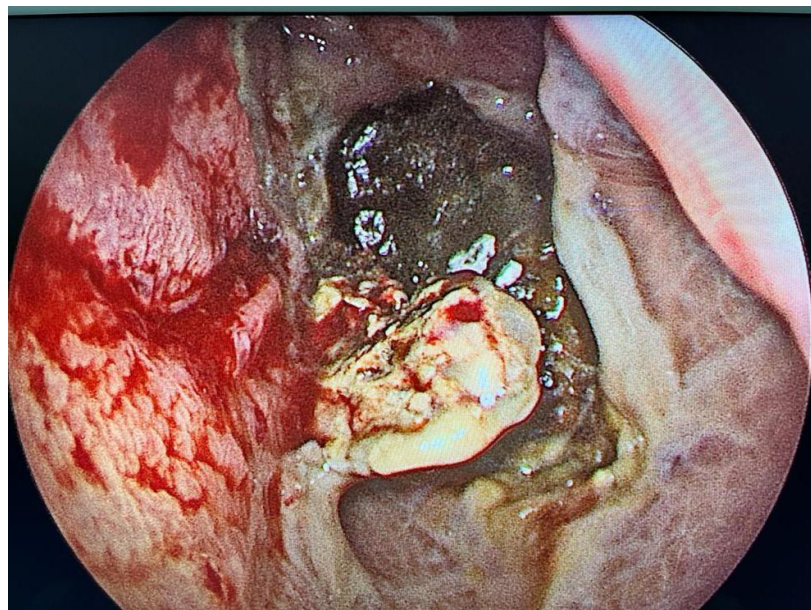


Figure 4: Intraoperative endoscopic image of left nostril showing crusting in a case of Post COVID-19 mucormycosis



Figure 5: CT PNS axial view showing fracture of right lamina papyracea and nasal bone, with impingement of Extraocular muscles and optic nerve. Endoscopic optic decompression of the impinged optic nerve was done that lead to the salvaging the vision.



Figure 6: Xray lateral view of neck showing foreign body in the cricopharynx. Patient was managed surgically by removal of the foreign body using a cricopharyngoscope.

Discussion

An observational descriptive ambispective study was done for patients who underwent emergency surgical procedure during the COVID-19 pandemic in a tertiary care centre.

A total of 50 patients above the age of 18 years were included in this study. In our study, the median age of the participants was 48.00 (IQR=28.75) smallest being 18years old and oldest patient being 68years old; With maximum affecting age group being 49-58years (26%). Sex distribution was 36 (72%) males and 14 (28%) females.

In a study conducted by Patel et al. (2021), a retrospective analysis of ENT emergencies during

the COVID-19 pandemic highlighted the impact of the pandemic on the management of these conditions. The study found that delays in surgical interventions due to the prioritization of COVID-19 patients led to an increased incidence of complications and poorer outcomes among non-COVID-19 ENT emergency patients [2].

Due to lockdown imposed by government there was a significant reduction in the road traffic accidents which lead to reduction in cases of ENT trauma. In our study, nasal bone fracture was found in 6% of the population of which 66% were in males and 33% were in females. Study by Keshav Gupta showed that there was 51.4% reduction in the cases of nasal

bone fractures of which 62% were male and 38% were females [5].

The covid-19 pandemic caused overall reduction in the referral and admission of ENT cases. According to the J Stansfield et al., in UK during the lockdown period 119 patients were referred to ENT from emergency unit out of which 15% required admission. While in 2019, 432 patients were referred of which 67% required admission [6].

In our study, all the patients were tested negative for the RAT. More reliable test like RTPCR was also performed in all the patients. 80% patients came Negative, 8% Positive and around 12% patient's status was unknown before the procedure. We performed life threatening emergency procedure without the RTPCR report with maximum level of precautions (Level III PPE) [7].

Additionally, the study by Johnson et al (2022) emphasized the importance of early surgical intervention in the context of otogenic complications during the COVID-19 pandemic. It highlighted the need for a multidisciplinary approach involving otolaryngologists, infectious disease specialists, and intensivists to effectively manage these emergencies and minimize the risk of adverse outcomes [3].

Lockdowns impacted many aspects of healthcare including the routine and emergency care of non-COVID patients. There was Cancellation of routine OPDs and follow ups, discouraging of patients with non-emergency complaints from visiting the hospital, lack of availability of transport, inadequate testing facilities for asymptomatic patients and the fear of spread of Covid-19 to healthcare workers and other patients can all contribute to this [1,4].

Conclusion

In conclusion, the study included patients across various age groups, with the most common age group being 49-58 years. Male patients dominated the study population, comprising 72% of the participants. The most common symptoms of

invasive fungal sinusitis were headache and facial swelling. The distribution of COVID-19 status revealed 8% positive cases, 80% negative cases, and 12% with unknown status. Among the surgical interventions, endoscopic debridement was the most common procedure, accounting for 52% of cases, followed by emergency tracheostomy, foreign body removal, and incision and drainage.

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