

The Impact of Coronavirus Disease 2019 on the Disease Pattern of Oral and Maxillofacial Surgery Inpatients: A Comparative Study

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Abstract

Background: Due to the inclusion of respiratory tract and aerosol-generating procedures, oral and maxillofacial surgery (OMFS) is regarded one of the high-risk specialty. COVID19's impact on inpatient illness patterns and operations in OMFS, on the other hand, has yet to be investigated.

Aim: To look at the effect of COVID-19 on disease patterns in OMFS inpatients, as well as to identify context-relevant important services in the OMFS field for future policy and resource distribution considerations.

Methods and Materials: A total of 149 patients were included in the study after obtaining written informed consent from the relatives of patients. RT-PCR tests were carried out for all the study participants included in the study. Further there was collection of data regarding the stay in hospitals, administration of antifungal drugs like injection amphotericin, pocasonazole and tablet pocasonazole. Then there was tabulation of data regarding various surgical interventions carried out. There was comparison of these data between the COVID and non COVID patients.

Results: When there analysis of study participants in which administration of oxygen was carried out then it was found that 49.23% of study participants getting oxygen were NON COVID patients while 50.77% of such study participants were COVID patients. The difference was not significant statistically. When there analysis of study participants in which administration of steroids was carried out then it was found that 45.56% of study participants getting steroids were NON COVID patients while 54.54% of such study participants were COVID patients. The difference was significant statistically. When there analysis of study participants who got discharged from hospital then it was found that 60.42% of study participants getting normal were NON COVID patients while 39.58% of such study participants were COVID patients. The difference was significant statistically

Conclusion: In a comparative investigation, we first provided epidemiological findings on the effect of COVID19 on oral and maxillofacial surgery illness pattern. During the pandemic, the shift in illness pattern and burden will have a long-term influence on OMFS patient care, education,

and training. Our research provides data for health policymakers to think about relocating medical resources and improving medical education and services.

Keywords: COVID-19, Inpatients, Oral and Maxillofacial Surgery.

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Background

The severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) pandemic, also known as coronavirus disease 2019 (COVID-19), has had substantial health-care implications. Since the World Health Organization (WHO) declared the COVID-19 epidemic an international public health emergency, countries around the world have implemented various health-care programmes. Due to the risk of COVID infection and limited medical resources, the number of elective surgeries has decreased in general. Prioritizing medical care is critical during a pandemic to prevent medical systems from collapsing. During the Ebola virus outbreak in 2014–2015, health-care system failings contributed to an increase in the number of deaths from measles, malaria, HIV/AIDS, and tuberculosis [1,2].

As a result, maintaining basic health treatment during an epidemic is critical in order to avoid high mortality rates caused by insufficient or improper medical resource distribution. Elective surgery priorities fluctuate over time and differ from country to country, according to WHO guidelines. The severity of the outbreak, the availability of health-care resources in the area, and the projected length of the service deficit are all important elements to consider when arranging elective treatments [3].

Due to the inclusion of respiratory tract and aerosol-generating procedures, oral and maxillofacial surgery (OMFS) is regarded one of the high-risk specialty. COVID19's impact on inpatient illness patterns and

operations in OMFS, on the other hand, has yet to be investigated. OMFS services were badly impacted globally during the pandemic, although in India, we have maintained a certain degree of OMFS services, including elective cases. This is an ideal model for studying the changes in OMFS service patterns during the COVID-19 timeframe [4]. Although the WHO has advised that health disorders and acute manifestations that necessitate time-sensitive response be declared vital medical services, the OMFS area still lacks a context-relevant definition [5]. The goal of this study is to look at the effect of COVID-19 on disease patterns in OMFS inpatients, as well as to identify context-relevant important services in the OMFS field for future policy and resource distribution considerations.

Methods and Materials

It was observational comparative study carried out at Government Medical College, Srikakulam, Andhra Pradesh, India. It was carried out for aduration of one year from January 2021 to January 2022. A total of 149 patients were included in the study after obtaining written informed consent from the relatives of patients. RT-PCR tests were carried out for all the study participants included in the study. The patients who didn't give their consent for study were not included in the study.

There was recording of complete demographic details of all the study participants including age, gender, history of diabetes and other comorbidities. Then there

was collection of data regarding the parameters like administration of oxygen, administration of steroids, discharge history of patients, number of deaths. Number of patients being referred to KGH and LAMA patients. There was comparison of these data between the COVID and non COVID patients.

Further there was collection of data regarding the stay in hospitals, administration of antifungal drugs like injection amphotericin, pocasonazole and tablet pocasonazole. Then there was

tabulation of data regarding various surgical interventions carried out. There was comparison of these data between the COVID and non COVID patients.

Statistics Analysis

IBM SPSS Statistics Version 26 was used for all statistical analyses. The total number of instances was compared using the binomial test, while the chi square test was employed to compare the differences as well as for comparing the proportions of critical medical services and groups of cases like COVID and non COVID patients. For this study, the Bonferroni correction was used. comparisons between two groups All tests and p-values mentioned were carried out two-sided. Statistical significance was defined as a p value of less than 0.05.

Table 1: Demographic details

| | Percentage |
|--------------|------------|
| Non covid | 44.94 |
| Covid | 55.06 |
| Age group | |
| 20-30 | 10.20 |
| 31-40 | 14.75 |
| 41-50 | 35.57 |
| 51-60 | 28.18 |
| 61-70 | 15.43 |
| 71-80 | 2.68 |
| 81-90 | 0.60 |
| Gender | |
| Male | 67.77 |
| Female | 32.23 |
| H/o diabetes | 56.37 |

The percentage of patients in which RT-PCR test gave positive results for COVID-19 was 55.06. When the age details were analyzed of all study participants then it was found that

maximum study participants were in the age group of 41-50 years (35.57%) followed by 51-60 years age group (28.18%). Males constituted 67.77% of study participants

while females constituted 32.23% study participants. 56.37% study participants had history of diabetes. (Table 1)

Table 2 : Data regarding various parameters

| Data regarding use of oxygen (n=65) | | |
|--|------------|---------|
| | Percentage | P value |
| Non COVID | 49.23 | 0.981 |
| COVID | 50.77 | |
| Data regarding use of steroids (n=88) | | |
| | Percentage | P value |
| Non COVID | 45.46 | 0.002 |
| COVID | 54.54 | |
| Data regarding discharge of patient (n=96) | | |
| | Percentage | P value |
| Non COVID | 60.42 | 0.001 |
| COVID | 39.58 | |
| Data regarding death of patients. (n=21) | | |
| | Percentage | P value |
| Non COVID | 09.53 | 0.004 |
| COVID | 90.47 | |
| Data regarding referral of patients (n=15) | | |
| | Percentage | P value |
| Non COVID | 60 | 0.004 |
| COVID | 40 | |

When there analysis of study participants in which administration of oxygen was carried out then it was found that 49.23% of study participants getting oxygen were NON COVID patients while 50.77% of such study participants were COVID patients. The difference was not significant statistically. When there analysis of study participants in which administration of steroids was carried out then it was found that 45.56% of study participants getting steroids were NON COVID patients while 54.54% of such study participants were COVID patients. The difference was significant statistically. When there analysis of study participants who got discharged from hospital then it was found that 60.42% of study participants getting

normal were NON COVID patients while 39.58% of such study participants were COVID patients. The difference was significant statistically.

90.47% of total deaths among all study participants was observed in COVID patients while 09.53% of total deaths among all study participants was observed in non COVID patients. When there analysis of study participants who were referred to KGH, then it was found that 60% of study participants getting referred to KGH were NON COVID patients while 40% of such study participants were COVID patients. The difference was significant statistically. (Table 2).

Table 3: Duration of hospital stay in patients who got hospitalized (n=70)

| | Covid (%) | Non covid (%) |
|------------|-----------|---------------|
| 1-3 days | 51.42 | 28.57 |
| 4-7 days | 7.14 | 2.85 |
| 8-10 days | 2.85 | 1.42 |
| 11-15 days | 04.28 | 1.42 |

On carrying out the analysis of number of days of hospitalization then it was found that most of the study participants who got hospitalized were found to stay for 1-3 days. Among such study participants 51.42% study participants were COVID patients while 28.57% study participants were NON COVID. (Table 3)

Table 4: Data regarding use of antifungal medications

| | Covid (%) | Non covid (%) |
|-------------------------|-----------|---------------|
| Inj amphotericin (n=66) | 51.15 | 48.85 |
| Tab Pocasonazole (n=13) | 61.53 | 38.47 |
| Inj Pocasonazole (n=11) | 72.72 | 27.28 |

When there analysis of study participants in which administration of injection amphotericin was carried out then it was found that 48.85% of study participants getting injection amphotericin were NON COVID patients while 51.15% of such study participants were COVID patients. The difference was significant statistically. (Table 4).

When there analysis of study participants in which administration of injection pocasonazole was carried out then it was

found that 27.28% of study participants getting injection pocasonazole were NON COVID patients while 72.72% of such study participants were COVID patients. The difference was significant statistically. When there analysis of study participants in which administration of tablet pocasonazole was carried out then it was found that 38.47% of study participants getting tablet pocasonazole were NON COVID patients while 61.53% of such study participants were COVID patients. The difference was significant statistically. (Table 4).

Table 5: Surgical intervention (n=119)

| | Covid (%) | Non covid (%) |
|-----------------------------------|-----------|---------------|
| Biopsy from palate (n=23) | 60.83 | 39.17 |
| Sinus surgery (n=16) | 68.75 | 31.25 |
| Lobectomy (n=21) | 61.19 | 38.81 |
| Antral wash (n=11) | 63.63 | 36.37 |
| Endoscopic sinus debridement (09) | 66.66 | 33.34 |
| Others (39) | 38.46 | 61.54 |

60.83% of patients undergoing biopsy from palate were COVID patients while 39.17% of such study participants were NON COVID patients. It was observed that surgical

intervention like sinus surgery, lobectomy, antral wash, and endoscopic sinus debridement was greater in COVID patients in comparison with NON COVID patients. It

was also observed that percentage of surgical intervention other than these surgical interventions was greater in NON COVID patients as compared to COVID patients . (Table 5).

Discussion

It was observed in this comparative study that there was there were significant changes observed in the COVID patients as compared to Non COVID patients among inpatients of oral and maxillofacial surgery like number of patients discharged successfully, number of deaths of patients, number of patients being referred to KGH, use of antifungal agents, stay period in hospitals and various surgical interventions related to head and neck region.

Oral and maxillofacial surgery (OMFS) is classified as a high-risk speciality due to the involvement of respiratory tract and aerosol-generating operations. The influence of COVID19 on OMFS inpatient illness patterns and operations, on the other hand, has yet to be determined. OMFS services were severely impacted globally during the pandemic, while we were able to retain some OMFS services in India, including elective cases. This model is appropriate for examining changes in OMFS service patterns across the COVID-19 period [6].

The coronavirus disease 2019 (COVID-19) pandemic, commonly known as the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) pandemic, has had significant health-care repercussions. Countries all around the world have developed various health-care programmes since the World Health Organization (WHO) proclaimed the COVID-19 epidemic an international public health emergency. The number of elective procedures has reduced in general due to the danger of COVID infection and inadequate medical resources. During a pandemic, prioritising medical care is crucial to avoid medical systems collapse. During the 2014–2015 Ebola virus outbreak, health-

care system flaws contributed to a rise in measles, malaria, HIV/AIDS, and tuberculosis deaths [7,8].

The percentage of patients in our research who had a positive RT-PCR test for COVID-19 was 55.06. When the study participants who received oxygen were analysed, it was discovered that 49.23 percent of those who received oxygen were NON COVID patients, while 50.77 percent of those who received oxygen were COVID patients. The difference was statistically insignificant. When the study participants who received steroids were analysed, it was shown that 45.56 percent of those who received steroids were NON COVID patients, while 54.54 percent of those who received steroids were COVID patients. The difference was statistically significant. When the study participants who were discharged from the hospital were analysed, it was discovered that 60.42 percent of those who were discharged were NON COVID patients, whereas 39.58 percent were COVID patients. The difference was statistically significant.

COVID patients accounted for 90.47 percent of all fatalities among all study participants, while non COVID patients accounted for 09.53 percent of total deaths. When research participants who were referred to KGH were analysed, it was shown that 60% of those referred to KGH were NON COVID patients, while 40% were COVID patients.

The difference was statistically significant. When the number of days spent in the hospital was analysed, it was shown that the majority of the research participants who

were admitted stayed for 1-3 days. COVID patients made up 51.42 percent of research participants, whereas NON COVID patients made up 28.57 percent.

COVID patients made up 60.83 percent of those who had their palates biopsied, while NON COVID patients made up 39.17 percent of those who took part in the study. In

COVID patients, surgical intervention such as sinus surgery, lobectomy, antral wash, and endoscopic sinus debridement was found to be more common than in NON COVID patients. It was also discovered that in NON COVID patients, the percentage of surgical interventions other than these surgical operations was higher than in COVID patients.

Only 5.8% of OMFS physicians still perform orthognathic operations, according to Maffia *et al* global 's assessment of OMFS surgeons. This could be due to the varied pandemic levels in different parts of the planet. Non-essential medical services should be gradually reintroduced in the future, once the epidemic has been reasonably controlled [9,10]. In the healing and post-recovery phases, the cumulative load of elective procedures could be a challenge. Our experience has shown that, with sufficient measures, maintaining a certain level of elective medical services during a pandemic is both safe and practical. This might also be used as a guide for resuming OMFS service in a controlled manner once the outbreak is over [11].

Conclusion

In a comparative investigation, we first provided epidemiological findings on the effect of COVID19 on oral and maxillofacial surgery illness pattern. During the pandemic, the shift in illness pattern and burden will have a long-term influence on OMFS patient care, education, and training. Our research provides data for health policymakers to think about relocating medical resources and improving medical education and services.

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