

Research Article

Presurgical Screening of Asymptomatic Patients Undergoing Maxillofacial Surgery in the Wake of COVID-19 Pandemic

Asad Aizaz Chatha¹, Umer Hussain², Saman Chaudhry³, Wajiha Abbas⁴, Aneela Amjad⁵, Naauman Zaheer⁶

¹Associate Professor, Department of Oral and Maxillofacial Surgery, CMH Lahore Medical College; Senior Registrar, Department of Oral and Maxillofacial Surgery, Bolan University of Medical and Health Sciences /Sandeman Provincial Hospital, Quetta; ³Assistant Professor, Department of Radiology, Fatima Jinnah Medical University Lahore; ⁴Department of Oral and Maxillofacial Surgery, Bolan University of Medical and Health Sciences /Sandeman Provincial Hospital Quetta; ⁵Associate Professor, Oral Medicine, Sharif Medical and Dental College Lahore; ⁶Assistant Professor, Oral Biology, Institute of Dentistry, CMH Lahore Medical College

Abstract

A novel Coronavirus (COVID-19), distinguished in Wuhan City at the end of December 2019, is producing a rapidly progressing health crisis in the world due to this number of patients are increasing and treating them is becoming a dilemma. Asymptomatic patient, COVID-19 can pose a problem and risk for both health care worker and other patients.

Objective: To Identify Asymptomatic COVID-19 Patients Coming For Maxillofacial Surgery and developing a management plan for these patients.

Methods: This cross sectional study was conducted at a Oral & Maxillofacial Surgery Clinic in a Private setting of Lahore, From 1st March 2020 to 30 June 2020, for a period of 04 months. Total of 55 Patients were considered according to age, gender, trauma and pathology ; patients were screened using PCR and chest x-ray. Patients were treated according to protocol proposed.

Results: The mean age of patients was 33.41 ± 11.34 years. There were 34 (61.81%) male patients and 21 (38.1%) female patient. Cause of admission was oral and maxillofacial trauma, oral cancer, orthognathic surgery and oroantral fistula. Among these 40(72.72 %) patient tested positive despite being asymptomatic, 15 (27.27 %) tested negative for COVID-19 PCR. Chest x-ray of 26(47.27%) patients shows mild changes while 29(52.57%) showed normal chest x-ray.

Conclusion: Asymptomatic patient of COVID-19 pose a risk to high risk maxillofacial surgery procedures. Proper screening should be performed and proposed management plan should be followed to decrease transmission.

Corresponding Author | Dr. Asad Aizaz Chatha, Associate Prof Department of Oral and Maxillofacial Surgery, CMH Lahore Medical College E-mail: asadchatha@hotmail.com

Keywords | Pandemic, Prevention measures ,Corona virus, Oral & Maxillofacial surgery

Introduction

A novel Coronavirus (COVID 19), distinguished in Wuhan City at end of year 2019, is producing rapidly progressing crisis in the world because the number of contaminated patients are increasing and treating them is becoming a dilemma.¹ Primarily the

source of infection are COVID 19 positive patients; while extremely infectious ones are those without symptoms, having high contamination potential ranging from 1 to 14 days in the incubation period. The 2019-nCoV transmission routes included direct transmission between individuals by droplet inhalation and contact transmission by touching the mucous

membranes of oral and nasal cavities. WHO announced Coronavirus as a pandemic on March 11th, 2020.² It is suggested that corona virus is on rise in Pakistan. The primary instance of Coronavirus was accounted for from Karachi on February 26, 2020, with evaluated masses of Pakistan as 204.65 million.³

An Oral & maxillofacial surgeon is part of a special category of Health care workers as they inevitably need to get in touch with oral cavity. During the diagnosis and management of oral disorders the risk of infection is also high. Suspending non-urgent oral ambulatory care and managing only the oral and maxillofacial emergencies, Trauma, malignant neoplasms, and infections.⁴ Maxillofacial surgeons are exposed to oral and nasal secretions not only during surgical period but during pre and postoperative period as well, putting them at a higher risk of contracting and becoming a cause of spread of infection.⁵

The nose has a heavy viral load and the aerosolized Virus type can persist in air for up to 3 hours and on different textures, for 48 to 72 hours.⁶

The main goal of this study was to identify Asymptomatic patient of oral and maxillofacial surgery carrying COVID 19 disease which can pose a problem and risk for both health care worker and other patients, using PCR and chest x-ray, and thus discussing the special treatment given to these patient and proposing management plan.

The rationale of this study that these management plans and recommendations for asymptomatic COVID positive patients will be a source of guidance to the patient, health care workers including surgeons, anesthetist and paramedical staff. Thus it will reduce spread of disease. As no local study is available and COVID pandemic is spreading rapidly, prompt and clear guideline need to be made.

Methods

This cross sectional study was conducted at Oral & Maxillofacial Surgery Clinic in Private settings of Lahore, from 1st March 2020 to 30 June 2020, for a period of 04 months. A total of 55 patients were included which came to the settings. Informed consent was obtained from each patient. Approval from ethical committee of hospital was granted.

Patient's age, sex, was noted. Inclusion criteria were oral and maxillo-facial surgery patients who were asymptomatic for COVID-19 i.e. fever, dyspnea, myalgia, dry cough. Patients with other typhoid, malaria, acute sore throat due to other causes, systemic disease such as diabetes, hypertension were excluded. All patients were screened using PCR and chest x-ray. Patients were treated according to protocol proposed.

Results

The mean age of patients was 33.41 ± 11.34 years. There were 34 (61.81%) male patients and 21 (38.1%) female patient. Cause of admission was oral and maxillofacial trauma (34 patients 61.81%) (Mandible was most common fracture with 15 patients, 10 patients of Lefort 2, 5 patient of Zygomatic bone, 4 patients of Naso-Orbito Ethmoid (NOE), Oral cancer (6 patients 10.90%), Orthognathic surgery (5 patients 9.09%) and Oro-antral fistula (10 patients 18.18%). (Table-1) All patients were treated under General anesthesia. Among these 40 (72.72%) patient tested positive (Fig 1) despite being asymptomatic, 15 (27.27%) tested negative (Fig 2) for Covid 19 PCR.

Table 1: *Damography of Patients*

N	55
Age	33.41 ± 11.34 Years
Gender	
Male	34 (61.81%)
Female	21 (38.1%)
Cause Of Admission	
Oral And Maxillofacial Trauma (Mandible =15 Patients, Lefort 2=10, Zygoma=5, NOE=4) %	(34 Patients 61.81 %)
Oral Cancer	(6 Patients 10.90%)
Orthognathic Surgery	(5 Patients 9.09 %)
Oro Antral Fistula	(10 Patients 18.18%)

Chest x-ray of (Table 2) of 26 (47.27%) patients shows mild changes (Fig1) while 29 (52.57%) showed normal chest x-ray (Fig 2)

If patient poses first, we inquired for the following (Table 2)

Specific monitoring is important as acute inflammatory mediators typically lead to signs / symptoms in

patients with maxillofacial emergencies, such as pyrexia and myalgia. A first assessment is also important for the correct identification of suspected or high-risk patients. The temperature of all 55 patients was $<98.6^{\circ}\text{F}$, no one had dry cough, vomiting

Table 2: Outcome of PCR and Chest Xray

Test performed (all patients were asymptomatic)	values	values
PCR	Positive for COVID 19 40(72.72 %)	Negative for COVID 19 15 (27.27 %)
Chest xray	Mild Changes 26(47.27%)	Normal X-Ray 29(52.57%)

or respiratory problems, and there was no evidence of infection in the past 2 weeks. i.e. they all were asymptomatic

The entry phase was repeated prior to entering the hospital, and preoperative test was carried out with the nasopharyngeal swab (PCR) and chest x-ray. Until these findings were visible, all patients stayed in different areas. Negative patients were transferred to negative covid areas.

Positive asymptomatic patients were reported to the authority concerned, and were transferred to COVID positive area. As the patients were asymptomatic and surgery had to be done, we proceeded with surgery. All patients had to wear masks for surgery. Constant monitoring was done for vitals and oxygen saturation. History, clinical monitoring, and any ancillary investigations were done in the patient's isolated room under PPE. Also, preoperative mouth wash of 1% H_2O_2 (hydrogen peroxide) or 0.2% iodine was used to reduce bacterial load.

The medicines and paramedics staff should apply preventive steps, as directed by the interim regulation of WHO. Personal protective equipment (PPE) including surgical gloves, eye protective gear, impermeable coats and N95 or FFP2, FFP3 masks are used by healthcare workers. During the process, the number of staff and equipment was reduced. In an operation theater with negative pressure, all surgery procedures were performed. Of those patients who have had negative results for COVID 19, they have been treated in non-negative pressures.

Table 3: Entry Phase Questions

1. Have you had fever in the last 2 weeks?
2. Recent onset of such as dry cough or breathing problems over the last 2 weeks?
3. Have been to high -risk areas with 2019-nCoV transmission proven?
4. Has the person with a confirmed 2019-nCoV infection been in near touch over the last 2 weeks?
5. Participated in any meeting/ group/ crowded area

Table 4: Levels and Suggested Standards for the Protection Against COVID-19

LEVEL of protection	Recommended protection
General protection	Use standard working/scrubs clothes , disposable operating masks or, if necessary, use latex/rubber gloves;
For patients and OPDdoctors	
First level	Use standard working/scrubs clothes, disposable work caps, disposable standard surgical masks, disposable clothing and disposable latex/rubber gloves;
Medical protection for patients with high risk	
Second level	using disposable cap, 95 percent air filter mask (N95), goggles, protective attire or shield, waterproof clothing, disposable latex/rubber gloves, and foot/shoe covers if needed;
Medical protection for patients without fever(asymptomatic)	
Third level	on the basis of second level protection using, complete face shield, complete respirator or head cover which have positive pressure
1.For patients with therisk of splashing, with out fever	
2.Medical protection for patients with fever	

In individual isolated rooms, the patients remained hospitalized. Vitals and oxygen saturation monitoring was done. With each particular patient, the instruments used to monitor clinical values were a new set of instruments. The workers, equipped with eye protection, clothes and gloves changed the surgical dressings in the isolated rooms. Early mobilization procedure was adopted in order to reduce hospital stays.



Figure 1: *Patchy infiltrates in left upper side of lungs in COVID Positive, asymptomatic Patient*



Figure 2: *Normal chest Xray of Covid Negative Patient*

Discussion

Recently COVID-19 has increased incidence in Pakistan as a result of travel from neighboring countries. Pakistan has close contact with the Iran and China in trade and travel⁷. Pakistan has already imported the virus; the country needs to take strong measures to detect potential cases. It was the need of hour to implement methods to reduce the spread of the virus and also detection of asymptomatic patients with COVID-19 infection, who can spread virus to other person and to our interest medical and paramedical staff, without knowing.⁸

A recommendation by Yang F, Lin N⁹ divides it in levels and suggests the standards for the protection against Covid 19 (Table 4) it was adopted and modified,

Dr. Li Wengliang was an ophthalmologist among infected healthcare providers who got SARS-CoV-2 infection from an asymptomatic glaucoma patient in January and demised later.¹⁰ It must also be emphasized that specialties such as maxillofacial, ENT and clinical dental specialties, in their inpatient and outpatient environments, need to provide sufficient facilities and personal protective equipment. The goal is to safeguard patients and clinicians from needless exposure when finding or offering pandemic hospital services (Chan et al., 2020b).¹¹ An initial study by Wang et al on hospital admitted patients showed that 41.3 per cent of these patients accounted for hospital-acquired transmission. Clinical scenarios with lack of defense for viral transmission can definitely become a fast means for COVID-19 to spread. All necessary steps should therefore be enforced to limit the progress of infection.

Due to unknown number of asymptomatic COVID 19 positive patients, all patients should be taken as potentially infective (Rothe et al., 2020). The accessibility of accurate SARS-CoV-2 testing would be an significant step in distinguishing between infected patients and non-infected patients. As seen in this study, there were approximately 70% positive asymptomatic patients. The procedures which generate aerosols in particular, require special attention in each patient. Focused attention is required to make guidelines for such aerosol producing procedures as they pose great threat of airborne viral transmission (WHO, 2020a).¹²

Aerosol-generating treatments include the use of high-speed handpieces for fracture fixation, Tracheostomy, airway suction, abscess drainage, wound irrigation, ultrasonic / piezoelectrical machines, etc. (Christian et al., 2004; Fowler et al., 2004; Conly, 2006; World Health Organization, 2020b).^{13,14,15,16} That patients are possible vectors of virus transmission in the recovery process (Rothe et al., 2020)¹⁷ is also debated. The number of Operating room staff members should be limited to as less as possible. The operation theaters should be properly ventilated. In addition to the eye protection and gloves, high-

security respirators (FFP3 / N99 / equivalent) and impermeable gowns should be mandatory.¹⁸

For all potential positive cases a clinical administration procedure should be adopted. This procedure was thoroughly observed in the pre and perioperative phases of patients having trauma and oral cancer at the Oral & Maxillofacial Surgery operation theater, Private Practice Lahore.

The precautionary measures introduced during the stages of pre-hospitalization and hospitalization have made the diagnostic process more than beneficial for all the patients treated, adopted and modified.¹⁹

48 hours of pre-operative monitoring, which involves two COVID-19 PCR tests, Minimum time among tests should be at least 24 hours before entering the ward.

One-bedroom hospital accommodation.

Increased pace of pre-operative preparedness.

Significant attention should be given to perioperative oral hygiene measures by using oral rinses of 1% H₂O₂ (Hydrogen peroxide) or 0.2% iodine to reduce bacterial load, due to the susceptibility of oxidation of corona virus. Nevertheless, previous studies has confirmed the effectiveness of povidone iodine mouth rinses in decreasing the bacterial and viral load during oral surgical procedures²⁰. For covid-19 positive patients negative pressure operation theaters are compulsory. Covid 19 negative patients should be treated in operating rooms with non-negative pressure.

Cancer patients have a specific chance of infection with SARS-CoV-2 relative to the population that does not have this type of disease and are symptomatic.²¹ For oncological patients, the surgical therapeutic procedure adopted should be the one stated in the literature and unique to the injury site. Patients undergoing oncological surgery should have a comprehensive treatment plan including all possible surgical needs of the patient fulfilled in single surgery to minimize the hospital exposure of patients. We recommend scalpels over monopolar electrocautery, during the procedure for intra and extra oral incisions, and for haemostasis bipolar cautery should be used on a lower power environment plus suction machine sucking all the smoke. Non surgical therapy to

monitor the cancer progression could be suggested for inoperable oncological disease. Elective surgery can be delayed for non critical oncology patients, provided this decision does not affect the long term survival.¹⁹

Considering the viral stack inside the oral and nasal cavity and the surgical handpieces that are going to produce lot of aerosol, treatment of maxillofacial fractures is especially high contagious.

The guide line were modified and adopted from AOCMF²², which recommended the surgical procedure adopted for facial fractures: scalpel should be preferred over monopolar electrocautery for intra and extra oral incision and use of bipolar cautery on minimum power setting for coagulation, low speed motors with limited spray, and high volume suction (central suction), osteotomes and chisels instead of reciprocating saw.

Due to desperate measures of lock down and strict border control the spread of pandemic has been considerably slowed down but we should remain vigilant to cope with the new outbreaks.

In addition, much of the population is also vulnerable to infection, which does not have an immune background, and as there is no vaccine, the number of infected individuals is too small to guarantee flock immunity for a population of 20 Crore in Pakistan. Based on a proposed model prediction by (Yousaf et. al) the number of confirmed cases will be increased by 2.7 times²³. The recommendations above are focused on the available research evidence currently published in conjunction with the professional experience and knowledge of frontline health care facilities involved in combating and stopping the pandemic and needs further enhancement.

Conclusion

The disease situation of COVID-19 is still severe and futuristic preventive steps are needed to avoid and/or delay the spread of the infection. Number of COVID 19 asymptomatic patients stay hidden. In order to find out such patient, prompt action should be taken and appropriate protocol should be followed to avoid spreading health care workers and other patients. To minimize operating times, the decision of surgical procedure must be made after thorough assessment

and accordance with the latest treatment principles. In order to minimize the risk of infection and spread of COVID-19, continuous communication with the hospital's administrative control bodies is also needed.

Ethical Approval: Given

Conflict of Interest: The authors declare no conflict of interest

Funding Source: None

References

- Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): the epidemic and the challenges. *Int J Antimicrob Agents* 2020;55:105924.
- Zhang T, Liu T, Yu L, et al. Instructions for management of oral and maxillofacial trauma during prevention and control stage of the novel coronavirus infection. *Chin J Oral Maxillofac Surg* 2020;2:100–4 (Article in Chinese)
- Government of Pakistan; Ministry of Planning, Development & Special Initiatives; Pakistan Bureau of Statistics. Pakistan Statistical Year Book 2018 (Provisional).
- Guo Y, Cong B, Lu J, et al. Clinical analysis of 25 oral and maxillofacial emergency patients during the period of COVID-19 epidemic. *Chin J Oral Maxillofac Surg* 2020;2:105–10 (Article in Chinese)
- Maffia F, Fontanari M, Vellone V, Cascone P et. Al impact of COVID-19 on Maxillofacial Surgery Practice: A Worldwide Survey *Int J Oral Maxillofac Surg*. 2020 Jun;49(6):827-835
- Van Doremalen N., Bushmaker T., Morris D.H., Holbrook M.G., Gamble A. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. *N. Engl. J. Med.* 2020 doi: 10.1056/NEJMc2004973.
- Waris A., Atta U.K. COVID-19 outbreak: current scenario of Pakistan. *New Microbes New Infect.* 2020 Apr 14;35:100681
- Hu Z, Song Ci, Et. al Clinical Characteristics of 24 Asymptomatic Infections With COVID-19 Screened Among Close Contacts in Nanjing, China *Sci China Life Sci.* 2020 May;63(5):706-711
- Yang F, Lin N, Wu JY, et al. Pulmonary Rehabilitation Guidelines in the Principle of 4S for Patients Infected With 2019 Novel Coronavirus(2019-nCoV). *Zhonghua Jie He He Hu Xi Za Zhi* 2020; 43(0):E004,
- Torretta S, Gain LM, Why Italian ENT physicians should be aware of SARS-CoV-2. *Acta Otorhinolaryngol Ital.* 2020 Apr; 40(2): 152–153.
- Chan, J. F., Yuan, S. F., Kok, K. H., To, K. K., Chu, H., Yang, J., et al. (2020b). A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *Lancet* 395, 514–523. doi: 10.1016/S0140-6736(20)30154-9
- World Health Organization: Infection prevention and control during health care when COVID-19 is suspected: interim guidance, 19 March 2020. Geneva: World Health Organization, 2020a
- Christian MD, Loutfy M, McDonald LC, Martinez KF, Ofner M, Wong T, et al: Possible SARS coronavirus transmission during cardiopulmonary resuscitation. *Emerg Infect Dis* 10: 287e293, 2004
- Fowler RA, Guest CB, Lapinsky SE, Sibbald WJ, Louie M, Tang P, et al: Transmission of severe acute respiratory syndrome during intubation and mechanical ventilation. *Am J Respir Crit Care Med* 169: 1198e1202, 2004
- Conly JM: Personal protective equipment for preventing respiratory infections: what have we really learned? *Can Med Assoc J* 175: 263, 2006
- World Health Organization: Rational use of personal protective equipment (PPE) for coronavirus disease (COVID-19): interim guidance, 19 March 2020. Geneva: World Health Organization, 2020b
- Rothe C, Schunk M, Sothmann P, Bretzel G, Froeschl G, Wallrauch C, et al: Transmission of 2019-nCoV infection from an asymptomatic contact in Germany. *N Engl J Med* 382: 970e971, 2020
- Zimmermann M, Nkenke E, Approaches to the management of patients in oral and maxillofacial surgery during COVID-19 pandemic. *Journal of Cranio-Maxillo-Facial Surgery* 48 (2020) 521e526
- Barca I. Cordaro R. et. Al Management in oral and maxillofacial surgery during the COVID-19 pandemic: Our experience. *British Journal of Oral and Maxillofacial Surgery* xxx (2020) xxx–xxx
- Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren B: Transmission routes of 2019-nCoV and controls in dental practice. *Int J Oral Sci* 12(9), 2020
- Yu J, Ouyang W, Chua MLK, Xie C: SARS-CoV-2 transmission in patients with cancer at a tertiary care hospital in Wuhan, China. *JAMA Oncol.*
- AO CMF International Task Force Recommendations on Best Practices for Maxillofacial Procedures during COVID-19 Pandemic, <https://www.aofoundation.org/-/media/project/aocmf/aof/documents/ao-cmf-covid19-guidelines.pdf> erich.roethlisberger@aocmf.org.
- Yousaf M, zaheer S, et al. Statistical analysis of forecasting COVID-19 for upcoming month in Pakistan *Chaos Solitons Fractals.* 2020 Sep; 138: