Combating Risks in Dentistry During Covid-19 Pandemic

Sukanya Mishra[1], Manoj Kumar[2]

[1]Post Graduate Trainee, [2]Associate Professor, Department of Periodontics & Oral Implantology, Institute of Dental Sciences, Siksha "O" Anusandhan Deemed to be University, Bhubaneswar, India

Abstract

The year 2019- 2020 has given rise to a menace in the form of Corona Virus Disease, which within no time has turned into a pandemic, affecting every corner of the world. It has disarranged the day-to-day lifestyle of the society, economy, employment, trade, hunger, etc. Dentistry is also one of these, affected by the pandemic, and has caused heavy financial loss for the dental personnel, along with delay/halt in the dental treatment to a massive population in need. When eradicating the disease has become a question, it is better to live with the disease and restrain the risks of transmission in the dental operatory by following few crucial and mandatory steps like proper hand hygiene, maintaining social distancing, creating awareness, fumigating the operating rooms and surfaces etc. This review article thus elaborates the expedients a dental surgeon should follow to combat the risks of transmission of this fierce disease during dental interventions.

Keywords: *COVID-19, Dentistry, Infection, Transmission, Risk.*

Introduction

Coronavirus disease is caused by a new type of virus SARS-CoV-2 i.e. severe acute respiratory syndrome coronavirus 2 which, as the doctors evince, can trigger infection of the upper respiratory tract (sinuses, nose, and throat) and lower respiratory tract (trachea and lungs) as well.[1] It is also namedas COVID-19 owning the full form–Corona Virus Disease, 2019. It is declared a worldwide emergency/the global pandemic by the World Health Organization (WHO). Alike SARS-COV, SARS -COV-2 also uses the same host receptor, namely human angiotensin-converting enzyme 2 (ACE2).[2]

Signs and Symptoms[3]: On an average, the patient becomes symptomatic after 5-6 days of infection from the virus, to manifest it might require up to 14 days too. These are, fever, dry cough, tiredness, which are the most common symptoms of all. Less common symptoms are aches and pains, sore throat, diarrhoea,headache, a rash on skin, conjunctivitis, loss of taste or smell. And the serious symptoms being, "difficulty in breathing or shortness of breath, pain in the chest, loss of speech or movement."

Coronavirus and Dentistry: The COVID-19 virus spreads via droplet transmission, especially from person's cough or sneeze. Transmission can be through:

Direct Contact: When an individual is in close contact, i.e. within around 1 metre with COVID-19 patient, and the patient has not covered their face when coughing or sneezing.

Indirect Contact- surfaces and clothes act as reservoir for the infected droplets. Therefore, touching the infected surfaces and applying those hands on the eyes, mouth and nose, can transmit the disease.

For human-to-human transmission, saliva plays a crucial role. Aerosols can, hence, be a source of transmission for dentists, and they may unknowingly get exposed, especially when patients are in incubation period of Covid-19 or choose to not reveal that he/she is

Corresponding Author:
Manoj Kumar
Associate Professor, Department of Periodontics & Oral Implantology, Institute of Dental Sciences, Siksha "O" Anusandhan Deemed to be University, Bhubaneswar, India
e-mail: manojkumar@soa.ac.in

positive.[4] Of all the procedures, scaling and handpiece-based procedures are the ones generates highest droplets or aerosols, putting the operator at maximum risk.[5]Moreover, the characteristics of the dental clinical setup and basic measures followed to prevent cross contamination with infection are not adequate to stop the transmission of Covid-19.

Prevention of Transmission:

Hand Hygiene[6]: It is considered as the most compelling procedure, one should inculcate in its habits, to decrease the transmission risk of the microorganism. This reinforcement is due to, as stated earlier, SARS-CoV-2 persists for few hours lasting till several days on the surfaces. The persistence although depends on the humidity as well as temperature of the environment and the texture of the surface.[7] Hand hygiene is taken care of by using hand washing and hand sanitizing measures.

Procedure of hand washing: This should be done for around 20-30 seconds.

Wet hands using water

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Scrub the hand properly with soap

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Rub the hands palm-to-palm.

↓

Interlace fingers by keeping right palm over left hand's dorsum and vice versa.

↓

Following this, rub by interlacing fingers palm-to-palm.

↓

Rub the backs of fingers to the opposing palms with fingers interlocked.

↓

Rub the left thumb in rotational motion with the right palm and vice-versa.

↓

Following this, continue rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice-versa.

↓

Rinse hands in running water.

↓

Close the tap using the elbow.

Hand sanitization–Effective, Rub-in hand disinfectant with composition of propanol and ethyl-hexadecyl-dimethyl ammonium ethyl sulphate, commercially available as **Sterillium** can be used. Hygienic Hand Disinfection: Rub Sterillium well over clean, dry hands and nail grooves for 30 seconds.Surgical Hand Disinfection: Rub Sterillium well over clean, dry hands, grooves and up to elbows for 3 minutes.[8]

Personal Protective Equipment (PPE)[9]: This includes gloves, masks,protective gowns and goggles as well as face shields. This provides a protective canopy to the skin and mucosa from infected blood and droplet secretions. The respiratory route is the primary mode of transmission and hence and N-95 mask or other masks with particulate respirators are recommended for daily practice in dental operatory.[10] The maximum limit to which the PPE can be worn is 6 hours and apart from the operating instruments and surfaces, nothing else should be touched.[11] The equipment should be changed after every patient/procedure.

Social Distancing: The front office staffs in the waiting room area should maintain as much distance possible, with the patients. The payment procedures, consent form fill-up, feedbacks etc should be done digitally. Apart from this, the seating arrangement in the waiting area be such that at least 3 feet/1 metre distance should be maintained between everyone. Masks should be made mandatory. Care should be taken to not keep more people waiting and provide them appointments for the next day, to avoid the room from getting congested.[12] Avoid touching other persons, like handshaking, shoulder tapping etc., as much as possible.

Operatory Asepsis: operatory surfaces that are repeatedly soiled are best protected with disposable covers (barriers), that can be discarded after each treatment.

For"dental unit trays, paper, plastic film or surgical pack wraps (paper or towels) should cover the entire tray."[13]It is better to minimize or avoid the procedures that produces aerosols and if not, use of high-speed ejector should be done. Anti- reflux equipped handpieces can also decrease the cross-contamination.

Waiting Room Sanitization: Each surface that comes in touch of the infected person/operator, say for example magazine, chairs, doorknobs, tables etc., is a potentially infection risk surface. It is therefore crucial to use alcoholic disinfectants frequently, to sanitize the surfaces along with the air conditioning system.

Unit Dose Concept: Unit dose concept was introduced with purpose to minimize cross contamination. It basically refers to dispensing of amount of materials sufficient to accomplish a procedure, prior to patient contact.[14]

Patient Awareness: No measures taken can be fruitful, if the patients themselves are not aware of the seriousness of the disease. Hence, initiatives can be taken by the dentists to clue-up the patients about the disease, its harm, steps to prevent it from spreading to others and themselves. Advertisements, leaflets, projecting videos, coaching them with hand washing techniques and hand sanitizing techniques etc. are the few ways to develop awareness. It is also important to provide patients oral hygiene instructions and educate them the importance of proper and regular brushing as well as flossing, and balanced diet, so as to avoid the oral diseases from developing and the need to run to a dentist.

Patient Management During Covid-19 Crisis: During the outbreak of COVID-19, emergency procedures should be considered for treatment, ensuring limit of contact between the individuals. However, this cannot go on for long and there is a need to restore the normalcy and keep the work in progress. Therefore, in response to ethical decision-making process for treatments, the interventions in dentistry can be divided into categories:

Emergency Interventions: Fatal conditions that needs immediate treatment can be ruled out by managing with minimally invasive procedures and along with least/ no aerosol production.Uncontrolled bleeding, facial bone trauma, compromising the patient's airway, cellulitis or a diffuse soft-tissue bacterial infection with intra-oral or extra-oral swelling that potentially compromises the patient's airway comes under emergency category.

Urgent interventions: "Severe dental pain from pulpal inflammation, biopsy, pericoronitis or pain in the third molar, tooth fracture resulting in pain or causing soft tissue trauma, avulsion/luxation surgical post-operative osteitis, dry socket dressing, abscess, or localized bacterial infection resulting in localized pain and swelling, dental treatment required prior to critical medical procedures, gingival irritation, comes under this category." Here too, attempt should be made to complete the procedure in one or least number of appointments with least generation of aerosols.

Non-urgent interventions- These are the elective procedures and can be postponed according to the need of the hour or treatment can be provided to minimum number of patients to decrease the exposure risk. This includes, general oral examinations, recall appointments, routine scaling and root planing, preventive restorations, orthodontic procedures, treatment of asymptomatic teeth, or any aesthetic dental procedure.

To curb the risk of cross- contamination, disposable devices and instrumentation can be made use of. The load of virus in the saliva of the patient can be reduced by providing prophylactic mouth rinse of 0.23% povidone-iodine, for 15 seconds before any procedure.[15]

Rubber dam isolation can also be used to check the spread of microorganisms.[16]

Although not feasible, extraoral radiographs in place of intraoral, can be taken to reduce salivation and transmission risk.

It is advised not to prescribe Ibuprofen for pain management in suspected/confirmed cases of COVID-19, though strong reason is not yet specified.[17]

Also, it is important to follow procedures like temperature scrutiny of the patients along with strict protocols should be followed, making it mandatory to use masks and sanitizer by every visiting patient.

Conclusion

The fundamental of treatment of COVID-19 is to follow containment measures. This is how in the countries like China and South Korea, there is an exponential decrease in the development ofnew cases. Till the pandemic is under control, it is merely possible to avoid providing dental treatments, specifically keeping in mind the ethical and financial issues. Therefore, dental personnel can act according to the above-mentioned steps and decrease the risks of COVID-19 transmission. Also, for vulnerable age groups like older adults and paediatric patients, new guidelines should be imposed as soon as possible, for their management.

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