

Managing Dental Practice in Children during COVID-19

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Abstract

Coronavirus disease 2019 (COVID-19) has originated in city of Wuhan, Hubei Province, Central China, and is now a global pandemic. Health care workers are at high risk and among those dentists are more prone for cross-infection. Pediatric patients in dental settings are not miniature adult, their treatment planning differs from adult so treatment should be planned according to urgency. Hence, this review will focus on challenges and protocols in treating pediatric patients who should be only be provided adhering to local, regional, and national guidelines.

Keywords: Coronavirus, Guidelines, Pediatric patient, Treatment.

INTRODUCTION

The coronavirus disease 2019 (COVID-19) (SARS-CoV-2) is causing global pandemic. It was detected in China in 2019, and on March 11, 2020, it was declared pandemic by the WHO. It has affected more than 200 countries. Thirty lakhs people have been infected from COVID-19 worldwide and there are more than 2 lakhs deaths which have been reported. Clinical manifestation of diseases ranges from common cold to acute respiratory syndrome which may cause even death. Due to characteristics of dental setting, the risk of cross-infection is more between dentist and patient.

Dentists are more prone to bacterial and viral diseases which infect oral and respiratory tract. Transmission of COVID-19 infection occurs mainly through droplet infection from symptomatic patient but recent studies suggest that it can spread by asymptomatic patient also. Patient in their incubation period can also transmit the infection. This has made control of diseases very challenging.^[1,2] Incubation period of COVID-19 has been found 5–14 days.^[3,4] It is not clear whether patient in the recovering phase is also source of infection. Vertical transmission has not been confirmed.^[1,5]

Children are not miniature adult, their treatment planning differs from adult so treatment should be planned according to urgency (Table 1).

As the disease and its pattern are still under study guidance cannot ever cover all possible circumstances, thus professional judgment must be exercised profoundly in treatment planning (Table 2).

EVALUATION OF PATIENT

Pre-check triage to measure each patient temperature, health history, history of contact, and travel history should be taken for each patient. The patient with fever should be registered and referred to hospital. Non-emergency dental treatment should be postponed.

SYMPTOMS

Most of the reported patients are mild cases and experience fever and dry cough. Some may experience shortness of breath, fatigue, and other symptoms such as sore throat, diarrhea, vomiting, headache, and confusion.^[5,6] Patients with pneumonia showed bilateral radio opacity on chest computed tomography.^[7,8] Oral ulcer of irregular shape could be associated with COVID-19 infection.^[9]

RISK OF NOSOCOMIAL INFECTION ASSOCIATED WITH DENTAL TREATMENT

Recent research states that COVID-19 epidemic is a zoonotic infection started with single transmission from animal to human

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Table 1: Treatment planning in children

- I. Emergency treatment
 1. Trauma involving facial bones (compromising patient's airway)
 2. Uncontrolled bleeding
 3. Cellulitis with space infection (Ludwig angina)
 4. Osteomyelitis
- II. Dental urgencies
 1. Acute pulpitis
 2. Periapical abscess
 3. Tooth fracture with pain and soft-tissue trauma
 4. Dental trauma with luxation or avulsion injury
 5. Dental treatment before critical medical procedure
 6. Broken appliance causing irritation to dental mucosa
 7. Biopsy of abnormal tissue
- III. Non-urgent dental treatment (can be postponed)
 1. Routine dental check-up
 2. Routine dental cleaning or preventive therapy
 3. Orthodontic procedures
 4. Extraction of asymptomatic tooth
 5. Restorative treatment of asymptomatic teeth
 6. Aesthetic dental treatment

In all these conditions, the main objective is prevention of cross-infection. All the measures should be taken to prevent infection

Table 2: Preparation of team and clinic

- A. Dental team preparation
 1. Dentist should receive their seasonal flu vaccine
 2. Dentist experiencing influenza like illness (fever with either cough or sore throat, muscle ache) should not treat patients
 3. Dentist of older age, medically compromised condition, pregnant should take care
 4. All the objects which can be touched by others such as magazines, toys, and reading materials should be removed
 5. Print and place signage in dental office for instructing patient on respiratory hygiene and social distancing
 6. Appointments should be scheduled apart to minimize contact of patients in waiting area
 7. Patient should be accompanied by only one person
 8. Telephonic interview or video conferencing should be preferred before appointment
- B. During dental treatment
 1. Dentist should adhere to standard precaution regardless of suspected or confirm infection status of patient
 2. Pedodontist should wear mask, eye protection with side shield or face shield to protect eye, nose, and mouth
 3. Extra oral radio graph may be used instead of intra oral radiograph during COVID-19 outbreak
 4. Pedodontist should prioritize the use of hand instrumentation to reduce aerosol production
 5. Dentist should minimize use of 3-in-1 syringe as it may create droplet
 6. Dentist should use resorbable sutures
- In between patients
 1. Clean and disinfect reusable facial protective equipment
 2. Non-disposable equipment (dental chair, light, X-ray equipment, handpiece, etc.) should be disinfected, according to manufacturer's instructions. Handpiece should be heat sterilized after each patient
 3. Routine cleaning and disinfection with disinfectant on frequently touched surfaces

COVID-19: Coronavirus disease 2019

and it was followed by human to human transmission.^[10,11] The transmission of coronavirus in human occurs mainly through respiratory droplets. It may also occur through aerosol, direct and indirect contact.^[12,13]

Dentists are more prone to infection due to face-to-face communication with patient and exposure to saliva, blood, and handling of sharp instruments. These are different ways to spread from dental setting.

Air-borne transmission

Dental procedure generates large number of aerosol and droplets contaminated with patient saliva and even blood. These aerosol and droplets remain suspended into environment for long time even for hours before they settles.^[14] Beside this infected patient can cough or sneeze during procedure. In this way, COVID-19 can spread from aerosol and droplets.

Contact spread

COVID-19 can survive for couple of days on surface such as metal, plastic, and glass.^[15,16]

Infection control in dental clinic

Dentist should be familiar with all the measures which should be taken in dental clinic. Pedodontist and all health care worker should wear mask, eye protection with side shield or face shield to protect eye, nose, and mouth.

Regarding the spread of 2019-nCoV infection, three-tier protective measures are recommended.

1. Primary protection (standard protection for staff in clinical settings). Wearing disposable working cap, surgical mask, and white coat, using protective goggles or face shield, and latex gloves or nitrile gloves should be used.
2. Secondary protection (advanced protection for dental professionals). Wearing disposable cap, disposable surgical mask, protective goggles, face shield, and white coat with disposable isolation clothing or surgical clothes outside, and disposable latex gloves.
3. Tertiary protection (strengthened protection when contact patient with suspected or confirmed 2019-nCoV infection). Use of special protective outwear is needed. If protective outwear is not available, working clothes (white coat) with extra disposable protective clothing outside should be worn. In addition, disposable doctor cap, protective goggles, face shield, disposable surgical mask, disposable latex gloves, and impermeable shoe cover should be worn by the team workers.

Patient waiting area

Child patient should be accompanied by single guardian. Proper distance should be maintained in waiting area. In waiting area, every patient and their guardian should wear mask. There should be no toys or magazine or any other reading material in waiting area.

All the patient and their accompanying person should be taken as suspected case of corona infection. Each patient should

pass through sanitization chamber before entering operatory area. Body temperature of patient and attendant should be measured by contact free thermometer first of all. History of contact and previous illness should be taken. Dentist should not treat suspected case and should report to infection control department.

Hand wash protocol

Pedodontist should wash hand before patient examination, after patient treatment, and after touching any surface. A two before and three after guidelines should be followed. Dentist should avoid to touch eye, nose, and mouth.

Rubber dam isolation

The use of rubber dam can significantly reduce production of blood and saliva contaminated aerosol. It has been reported that use of rubber dam can reduce airborne particle by 70% in 3 feet diameter of operational field.^[17] High-volume suction should also be used along the normal suction.^[18]

Disinfection of clinic

Cleaning and disinfection of clinic should be done according to the protocol of Management of surface cleaning and Disinfection of Medical Environment (WS/T 512–2016) released by the National Health Commission. There should be no toys in the pediatric clinic.

Biowaste management

The medical waste including disposable protective equipment after use should be cautiously transported to the temporary storage area of the medical institute timely and appropriately. The reusable instrument and items should be preheated, properly cleaned, and sterilized, in accordance with the protocol for the disinfection and sterilization of dental instrument in clinical settings.

PREVENTIVE METHODS

Pre-operative antimicrobial mouth rinse could reduce the number of microbes in the oral cavity.^[19,20] In this scenario, only emergency treatment should be done and routine procedures should be postponed till restrictions begin to be eased. Minimal intervention dentistry will be pertinent these include use of pit and fissure sealants,^[21] ART,^[22] selective caries removal,^[23] silver diamine fluoride,^[24] and hall technique.^[25] Hand instrumentation or use of Carisolv should be preferred to prevent aerosol production. High-speed handpiece should be used with anti-retraction valve. Telephonic and video consultation should be preferred than routine clinic visit and importance of tooth brushing should be emphasized to mother during contact.

CONCLUSION

Young children, and particularly infants, remain vulnerable to infection and pose a significant transmission risk of COVID-19. Preventive dental behavior should be promoted. In this scenario, only emergency treatment should be done and

routine procedures should be postponed till restrictions begin to be eased. Remote education of parents should be considered in case of non-emergency and for the promotion of oral hygiene measures. On the other hand, in case of emergency, minimal intervention dentistry will be pertinent under strict protection protocol.

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