Frontiers in Dentistry

Overcoming the Challenges of COVID-19 Pandemic in Orthodontic Practice

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A B S T R A C T

The coronavirus disease 2019 (COVID-19) turned into a pandemic in short-time with multi-dimensional effects on human lives. The containment of this infection has become a big challenge in all countries due to its rapid spread. In this situation, when there is no definitive cure or any vaccine available to overcome COVID-19, it is prudent for the world to live with this deadly virus for the many months to come. Hence, it is imperative for the dental professionals, particularly orthodontists, to modify their approach to learn the new normal of practicing dentistry.

Keywords: COVID-19; Pandemics; Orthodontics; Dentists

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INTRODUCTION

The coronavirus disease 2019 (COVID-19) has spread exponentially throughout the world with catastrophic effects on the healthcare, humanitarian, and financial systems worldwide. Being a new contagious disease and considering its pathogenesis, limited governments across the world have forced national emergencies and lockdowns except for essential services like the healthcare and food supply. However, due to the uncontrollable nature of the COVID-19 pandemic and uncertainty about its eradication, it will be inevitable for the governments and societies at large to ultimately allow the economic activities to begin. Therefore, dentists have to resume their practice beyond emergency services with all the necessary precautions.

Meanwhile, the human transmission of the coronavirus is mainly through the respiratory secretions or droplets via coughing or sneezing [1-3]. COVID-19 can also spread directly by the virus passing through the mucosal membrane of the oral cavity, nose, and eyes. Severe acute respiratory syndrome coronavirus 2 has also been identified in the blood, saliva, and fecal samples [3]. The main characteristic of the deadly human coronavirus is that it remains virulent on inanimate surfaces [2,3] like steel from 2 h to up to 9 days. It has also been detected in aerosols for up to 3 h in dental settings [4].

There is not enough information to determine whether patients can be contagious during convalescence. Also, it has been reported that about 70-80% of COVID

positive patients are asymptomatic [5] and can easily spread the infection in the society unknowingly. Therefore, all dental care providers including orthodontists, are at high risk of getting infected with COVID-19 via various transmission routes [6-8], which include nasal droplets from coughing and sneezing, or aerosols generated during dental and orthodontic procedures. It can also spread indirectly by touching the surfaces infected with the virus-containing droplets and aerosols. Moreover, orthodontists are exposed to infected aerosols formed during dental or orthodontic bonding or debonding procedures. Presence of severe acute respiratory syndrome coronavirus 2 in the saliva of infected individuals poses an additional risk for dental care providers and their patients [7, 9].

Challenges Encountered in Orthodontic Practice

Due to the COVID-19 pandemic, regular appointments of many orthodontic patients were cancelled due to the national lockdown announced by the authorities in many countries worldwide. As orthodontic treatment is a long and continuous process, it is imperative for orthodontists to resume their services despite the challenges of COVID-19 not just because of the financial issues, but also due to their moral obligations to provide orthodontic care to the existing patients and prevent serious complications. Therefore, the aim of this short communication is to prepare for the challenges faced by dental fraternity as a whole and orthodontists in particular and to propose elaborate changes needed in orthodontic practice to survive in the current pandemic scenario.

The constantly changing guidelines issued by the regulatory bodies [9,10] worldwide mainly focus on providing emergency care to patients and postponing the regular follow-up treatments for the time being. However, looking into the current scenario, the chances of early breakthrough in development of vaccine against the COVID-19 are limited, and there is no currently available cure to treat this disease. Under such circumstances, it is very unlikely that this pandemic will be over soon. Hence, it is pertinent to chalk out a plan where the current orthodontic patients are offered treatment as indefinite postponement of the appointments would complicate the treatment outcome.

It is mandatory for all healthcare professionals including orthodontists to adhere to the guidelines issued by the regulatory bodies [10,11]. The use of personal protective equipment (PPE), strict sterilization protocol, and minimal physical contact with patients and other people in the operatory are the key elements to prevent and control this pandemic. However, these recommendations are too general, and hence, it is required to modify and tailor these guidelines for various types of orthodontic practice.

Operational Planning

To overcome these challenges, we can classify the orthodontic appointments, according to the time required for the procedures, into the following categories: (I) short duration (10-15 min), (II) intermediate duration (15-25 min), and (III) long duration (20-35 min). Short-duration procedures include (a) changing the elastomeric modules and chains, (b) changing the orthodontic wires or activation of the loops, (c) activation or adjustment of removable appliances, and (d) management of orthodontic emergencies such as loose brackets or the excess wire protruding from the end, resulting in soft tissue ulcerations. Intermediate-duration procedures include (a) rebonding or cementation of attachments, (b) placement of fixed retainers, and (c) debonding of brackets. Long-duration procedures include bonding of orthodontic brackets and placement of bone screws or mini-implants.

At the same time, it is always preferred to find ways to minimize the time spent by patients in dental clinics. Problems that may be encountered while implementing the guidelines before restarting the orthodontic practice are numerous. Some practical solutions to these problems are listed below:

1. Pre-appointment screening:

Due to the ongoing COVID-19 pandemic, it is

imperative to perform pre-appointment screening of the existing orthodontic patients through telephonic conversations regarding the current medical history of patients and their family members. A questionnaire pertaining to COVID-19 symptoms such as fever, breathing problems, and gastrointestinal disturbances along with home quarantine history of the family members or friends should be filled out via tele-communication. Appointments for patients reporting a positive history of COVID-19 should be postponed until they are cured and acquire a certificate of health from the health authorities.

2. Patient numbers:

The time duration for treating a single orthodontic patient is going to increase as the operatory and the orthodontist need more time for preparation. This can be managed at ease in an orthodontist's private office as the number of patient visits can be scheduled as desired. However, orthodontists practicing in a clinic may have challenges in scheduling the appointments for visiting practice due to the higher number of visits to the same clinic, and it may be physically and financially unviable. The most likely way out in visiting practice is to increase the duration of each visit per clinic to treat all patients in a single visit.

3. Social distancing:

The waiting area of patients is usually fully occupied as many orthodontists in their set up or in visit have tendency to call patients at shorter intervals. This creates a problem in maintaining social distancing. The easiest solution is to advise patients to come alone or only with one companion if minor. Also, the patients should be advised to stay in their vehicle until their turn comes for treatment.

4. Limited sets of pliers:

The wiping and cleaning of used instruments by use of disinfectants (cold sterilization) between the appointments are considered relatively safe in orthodontic practice as there is minimal or no risk of blood contamination. Therefore, the most common problem that may be encountered by an orthodontist would be the limited number of sets of pliers to treat patients. The ideal solution is to buy adequate sets of pliers which will have a financial burden on an orthodontist, or to treat fewer number of patients each day, which will reduce the productivity. Hence, a practical solution would be to divide the instruments into (I) regular-use pliers which include 139 bird beak pliers, distal end wire cutter, Mathew's needle holder and pin and ligature wire cutter, (II) bonding instruments including bracket tweezers, and bracket positioner gauge, and (III) debonding instruments including debonding pliers, and tungsten carbide burs. This would help in preventing unnecessary soiling of unused instruments which can be used for other patients. Another way to tackle this problem is to always keep a minimum of three sets of pliers. The appointments should be scheduled in such a way that short-duration appointments are in sequence followed by intermediate- and long-duration appointments, which would provide sufficient time to autoclave-sterilize the used instruments for further use. The rule of (321) should be followed, which means having three sets of instruments and scheduling two short followed by one long/intermediate appointment.

5. Digital dental practice:

Tele-dentistry in the form of telephonic consultations, maintaining digital patient records, and digital fee collection should be the new normal to minimize the spread of infection.

6. Financial burden:

Most of the dental clinics are currently ill-equipped to manage this pandemic. Dental care providers have to invest heavily to run the clinics in the COVID-19 era. In this situation, the financial burden needs to be shared with the patients by increasing the fee for service.

CONCLUSION

The mankind has to learn and accept to live with the novel COVID-19 for the months to come. As the world is moving towards a 'new normal', dental professionals need to prepare themselves and revise their practice with innovative ideas to remain relevant in this

new normal situation.

CONFLICT OF INTEREST STATEMENT

None declared.

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