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RESEARCH ARTICLE
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MANAGING ENDODONTIC EMERGENCY DURING AND BEFORE COVID- 19 LOCKDOWN- A RETROSPECTIVE COMPARATIVE STUDY

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INTRODUCTION

The rapid spread of coronavirus (COVID-19) has posed substantial test and trials for the entire world especially in case of dentistry and medicine globally. The swiftness and category of response to this virus have been very capricious in terms of different healthcare systems, economies and political ideologies worldwide.[1] After the outbreak of Acute Respiratory Disorder Syndrome Corona Virus 2 (SARS-Cov2), or Corona Virus Disease 2019 (COVİD-19), started in China-Wuhan in December 2019**,** the World Health Organization (WHO) officially announced it as a pandemic on March 12, 2020.[2] COVİD-19 mainly transmits through symptomatic or asymptomatic individuals and effectually through breathing. Hence, it has been stated that healthcare workers (HCWs), family members, friends and patients who are in close proximity with COVID-19 patients are at a higher risk of becoming infected or diffusion of the virus.[3,4]

The chances of cross-infection in a dental clinic set-up in increasingly high putting the dentist, the assistants and patients at a higher risk of exposure. COVID-19 pandemic has led to the complete necessity for severe and active infection control etiquettes and measures within the dental setting.[5] SARS-CoV-2 usually infects the upper respiratory tract wherein, the nasal cavities consist of maximum viral load.[6] HCWs are predominantly susceptible to contracting the infection from contact with the body fluids while dealing with head and neck area.[7,8] Saliva has been proven to unswervingly

lodge the virus. It is therefore imperative to consider the aerosol-producing dental treatments to be risky measures and the dentists, dental hygienists, assistants and technicians fall into the maximum risk exposure group of COVID-19.[9,10] The spread of the virus through asymptomatic carriers serving as a focus for rapid transmission acts as an intensifying factor that upsurges the person-to-person penetrability.[11] Hence, the HCWs finds it difficult to screen COVID-19 patients preceding any treatment. Dental practitioners like endodontists being the front-line workers are primarily concerned about averting the transmission and spread of the virus in the workplace.[12,13] All necessary precautions in order to prevent transmission including procuring sufficient personal protective equipment (PPE) and materials,[14] suitable screening protocols and training of staff to abide by the new national norms.[15] Dentists have been keeping updated with the norms and protocols that is issued to abate nosocomial spread and transmission in the dental clinic. Nevertheless, there are discrepancy of commendations by authorities globally and vivid confusing misrepresentation on the internet that adds on to the chaos and misunderstanding among patients and HCWs.[16,17]

There are approvals for non–aerosol producing involvements that has been recommended by government to the high-risk endodontists.[18] Pharmacologically managing the pain and infection and applying techniques that do not necessitate a handpiece (incision and drainage, non-surgical extractions) are included in this category. Though, the palliative treatment in endodontic emergencies has not established in the past especially in situations like a pandemic. Hence, the present study was conducted to determine the emergency for immediate endodontic intervention for final treatment outcome and to compare treatment with emergency access opening before Covid-19 lockdown with that only with medicine for pain after 3 days of follow up. The study also was done to find the endodontic success rate due to delayed treatment during COVID-19 emergency.

MATERIALS & METHOD

A retrospective study was performed from the archived data of the patients with acute dental pain. Patients were initially prescribed standard antibiotics (Amoxicillin 500 mg with clavulanic acid 125 mg) BD and analgesic (Aceclofenac 100 mg with Paracetamol 325 mg) for three days during the first two phases of lockdown period 2020. And also, those patients who had emergency access opening without the completion of endodontic treatment same number of days during the pre-covid-19 period. All the data was extracted from our departmental record.

Phase A or Lockdown 1.0 (March 24, 2020–April 14, 2020)—21 days and secondly, Phase B or Lockdown 2.0 (April 15, 2020–May 3, 2020)—19 days. Thus, the study period for group A was 40 days from 24th March 2020 to 14th April 2020 and the period of study for group B was 40 days from 13th February 2020 to 23rd March 2020.

Group A- consists of patients who either reported or consulted for acute dental pain during the COVID-19 lockdown, but **only medical treatment was given initially**. The result was considered successful when they got relieved and turned up after the end of lockdown phase II to start and complete their endodontic treatment. The patients who didn't get relief were either suggested to get the tooth extracted or get the RT-PCT test done for access opening. The patients who went elsewhere for treatment were also considered unsuccessful.

Group B– consists of patients who **underwent emergency access opening** due to acute dental pain **before the COVID-19 lockdown**. But the endodontic treatment was completed only after phase II of COVID-19 lockdown. It was considered successful if the patient underwent successful completion of endodontic treatment. On the other hand, if the patients underwent extraction of the tooth, went elsewhere for treatment, or had failed RCT was considered unsuccessful.

Data was collected in a proforma designed for the study and statistical analysis was done using Statistical Package for the Social Sciences vs 26.

RESULTS

29 patients were selected from departmental archives who were within our inclusion criteria during the study period in group A. Out of which 18 were male and 11 were female. 22 patients underwent successful RCT completion and were considered successful. 7 patients had unsuccessful outcome, out of which 3 patients preferred extraction of tooth, 2 went elsewhere and 2 had tooth fracture due to which RCT couldn't be completed (Table 1).

In group B, as many as 23 patients were fulfilled the inclusion criteria in which 16 were males and 7 females. 11 patients got relieved after taking medicines and reported after lockdown for definitive treatment. Out of the remaining 12 patients which were considered a failure, 5 went to other centres for treatment, 4 underwent extraction and 3 had RT-PCR done for initiation of emergency access opening during the lockdown period itself.

Student-t-test was performed between both groups for successful treatment. The t-value and p-value were 1.94 and 0.03 respectively depicting significant results.

Table 1: Successful and Unsuccessful cases in both the group

Group	No. of Patients	Successful	Unsuccessful			
			Extraction	Other centre	Tooth fracture	RT-PCR due to pain
Group A	29	22	3	2	2	NA
Group B	23	11	4	5	NA	3
p-value	0.03					

DISCUSSION

The world has been witnessing a massive crisis since March 2020 till date in the dreadful form of corona virus or COVID-19, as it is referred. It had created deep-rooted changes in the life of every individual and especially has shown a challenging facet for the healthcare professionals worldwide to combat the pandemic.

It has been reported that dentists like all other medical specialities have been affected drastically due to the ongoing pandemic in terms of clinical practice and day-to-day proceedings.[19] The reason for the radical impairment in dental practice has been attributed to the aerosol that is emanated by the rotary motors during dental procedures which poses a risk of spreading the virus much faster within and from a dental clinic. There are several commendations proposed by respective authorities of India and other countries [like Indian Endodontic Society (IES), the International Federation of Endodontic Associations (IFEA), and the Indian Dental Association (IDA)], during the pandemic to evade the release of droplets and aerosol in order to facilitate the dental practitioners to enforce stringent and more active infection control etiquettes during and after the lockdown period.[20] It was imperative for the endodontists to postpone certain elective procedures and keep only emergency services functioning in order to curb the spread of the pandemic.[5,21] The respective dental management authorities of various countries have proposed different guidelines on how to categorize COVID-19 based upon the risk potential (for example- positive COVID-19, suspected COVID-19, or asymptomatic cases).[22,23]

The dentist along with his team and the patients are prone to high risk of cross-infection owing to the type of dental clinic set-up. Thus, it has become mandatory for all practitioners to implement much stringent and operative infection control measures beyond the already existing ones.[5]

At times of need when there is requirement of endodontic intervention to suffice the patients' complaints and symptoms, it is imperative for the clinicians to contemplate more conclusive treatment, wherever appropriate. It is well-known that aerosol production occurs only at the initial stages of maximum endodontic procedures (while removing caries/ restoration and access cavity preparation, during occlusal adjustment procedures). Apart from these, other treatment options like instrumentation, irrigation and filling of canal and placement of restoration do not yield aerosols. Hence, certain treatment procedures like vital pulp capping or pulpotomy that can effectively reduce pain can be completed within a short period of time with a good success rate (Li *et al.* 2015,[24]

Qudeimat *et al*. 2017,[25] Taha & Khazali 2017,[26] Taha & Abdelkhader 2018[27]). In the present study, it was observed that there a substantial amount of success rate amongst the Group B patients who underwent emergency endodontic treatment before the lockdown period and was completed after Phase II lockdown got over. However, it is mandatory and essential to select suitable case so as to reduce the chances of instantaneous treatment failure, aggravation of pain and symptoms and also to alleviate second treatment appointment. It has been reported in previous studies that there is not much difference in the final outcome of root canal treatment between single and multiple-visit management procedures. The studies have showed lower post-operative complications and higher efficacy rates single visit endodontic procedures; as was shown by Moreira *et al*. (2017)[28] who stated that single-visit treatment was a safe, effective and well-endured technique even in acute apical abscess cases. This had thus, helped to perform emergency access opening and treatment of acute dental pain in the present study especially in Group B cases.

During these tough crucial times when the world is battling a deadly virus, it is our chief responsibility as dentist to carry out every possible measure to curb down the spread of the virus. Hence, controlling the pain and symptoms of patients with the help of medication should be well-thought-out as the principal treatment option for both suspected or confirmed COVID and non-COVID patients. In the present study, it was observed that initial prescription of medications to the patients with acute symptoms gave a good success outcome.[29] Dental practitioners and endodontists should follow appropriate pain medication protocols and the guidelines for antibiotics prescription in both COVID positive and negative patients. (Fouad et al. 2017,[30] Lockhart et al. 2019[31]).

CONCLUSION

It is evident from the history of mankind, that extraordinary tests and trails demand unparalleled resolutions. As dental health-care professionals, it is our prime responsibility and onus to alleviate the drastic spread of this deadly virus by careful and responsible measures and actions. It is our duty to bear in mind the safety of our patients, our staff, family and environment. However, as endodontists, our prime aim is to serve and treat our patients at times of pain and distress. With the ongoing 2nd wave and the fear and anticipation of 3rd and 4th waves it still remains a big question regarding the clinical practice in the field of endodontics. Data gathered from this study shows emergency access opening is not always necessary and in the present scenario with this deadly airborne coronavirus infection, emergency access opening could be postponed till the clinician, technician/assistant or patients assures a negative Covid test report or are fully vaccinated. If at all there is need for an endodontic invasive procedure to be done utmost care should be taken in order to protect oneself from the aerosol generation.

Though, the present scenario has imposed dentistry as a compelling network of community transmission of COVID-19. Reviewed guidelines and protocols that deliver lucidity on the range of dental services that can be imparted to the patients safely in earnestly needed during these crucial times. However, it is the clinician who should make the eventual decision on treatment and management options that would be best for the patient, keeping in mind the norms and regulations that have been published by local authorities and/or governmental authorities pertaining to the specific state or country. With the advent of several vaccines in recent times, it can be presumed and anticipated that the entire world would be back to normality soon.

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