

Endodontists and Potential Salivary Diagnosis in COVID-19 Pandemic: A Short Review

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ABSTRACT

Corona virus (COVID-19) is an infectious disease caused by SARS-CoV-2 virus. Health care workers are on the front lines to protect our communities. Dentists, particularly endodontists who manage medical emergencies, are engaged in high risk procedures that necessitate the modification of their treatment strategies in order to protect themselves, their staff and their patients from exposure to SARS-CoV-2. The standard approach for screening currently followed is RT-PCR. But this is an expensive technique and time-consuming. Therefore, a rapid and sensitive diagnostic tool can help the endodontist before beginning any emergency procedure. This review paper will serve as guide to clinicians to employ screening in their practice for improved outcome.

Keywords: COVID-19 , Endodontists , Diagnosis , salivary diagnosis , RT-PCR

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COVID-19 is a highly infectious enveloped RNA virus that originated in December 2019 from Wuhan, China. It is a respiratory illness that spreads through aerosol. The WHO declared it as a pandemic in March 2020. Many countries implemented lockdowns to limit the spread of disease. Routine dental procedures generate a substantial amount of aerosols, therefore dental associations all across the world issued major guidelines for restricting dental services to only emergency treatments. In dental emergencies, endodontic emergencies particularly can account for 60-82%.¹ Endodontic emergency is described as pain with or without swelling due to inflammation or infection of the pulp and or periapical tissues.² Early fundamental approach to halting the virus is early identification and isolation. Hence, rapid and precise detection can play a vital role to achieve the goal. Currently, many research projects are running in many countries to achieve the same. The currently used technique

for the collection of the specimen can irritate the nasopharyngeal tissue and might induce coughing which can enhance the risk of transmission. According to Chan et al. 2020, the specimen collection is quite uncomfortable for the patient, and in thrombocytopenic patients, it can lead to bleeding as well.³ According to Huang et al 2020 the non-invasive method for diagnosis is Sputum collection but sputum for diagnostic evaluation can be obtained only in 28% of the infected subjects.⁴ Therefore saliva appears to be a promising non-invasive specimen that can be used for early diagnosis and monitoring.

The virus can gain entry from respiratory tracts and gingival crevicular fluid to saliva⁵. A study conducted by To et al 2020, has shown the salivary specimens has the presence of virus in 91.7% of infected patients.⁶ The saliva specimens can decrease patient discomfort and the chances of cross-contamination to healthcare workers. Many studies were conducted to understand the nature of dental

emergencies during the pandemic. The authors concluded that 50.6% were endodontic emergencies among all.⁷⁻⁹ Endodontists were on the leading front to address emergency cases. Endodontists are at more risk compared to other health care workers due to the nature of their work.

The patients might be asymptomatic carriers and required to be screened before the treatment procedure. The standard approach for screening currently followed is RT-PCR. But this is an expensive technique and time-consuming. Therefore a rapid and sensitive diagnostic tool can help the endodontist before beginning any emergency procedure.

The rapid diagnostic tools reported are:

1. Loop-mediated isothermal amplification (LAMP) tests which is conducted at particular temperature. In comparison to PCR, it does not require dedicated laboratory equipment. The sample is added and positivity is recognised by change in color or fluorescence. The results can be obtained within an hour.¹⁰
2. The presence of specific IgA in saliva of experimental rats has been reported by Lu et al. 2010.
3. Microfluidic RT-PCR devices consists of micro-sized chip and channels. On this micro-chip, cellular lysis, the extraction and amplification of DNA can be integrated together. The advantages of these devices are fast detection and portability.^{11,12}
4. Lateral flow assay identifies the presence of specific viral proteins and is not reliant on the immune response. These devices provide results 10–30min.¹³

The chair-side testing is noninvasive and economical. The collection and screening of samples can be done easily and immediately. These testing methods will allow immediate intervention and can also ensure safety for endodontists.

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Conflict of Interest

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