

Laser dentistry in daily practice during the COVID-19 pandemic: Benefits, risks and recommendations for safe treatments

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Abstract

Background. The COVID-19 pandemic forced dental professionals to cope with an unexpected challenge and caused an abrupt cessation of conventional care practices. The high degree of contagiousness as well as the diffusion of the virus through the air and droplets via respiratory transmission placed dental professionals at top-level risk of contracting and spreading the disease. General recommendations were announced in different countries, including patient distancing, air ventilation, surface and instrument sanitization, and the wearing of suitable masks and shields. However, many dental treatments are performed using lasers, and some specific precautions must be added to conventional procedures to ensure the advantages of this technology to patients because of the particular tissue–matter interaction effects of laser wavelengths.

Objectives. Based on the literature, the authors evaluated all of using laser wavelengths to analyze the risk and the benefits of using lasers in daily dental practice, and to provide safety recommendations during pandemic.

Material and methods. An unrestricted search of indexed databases was performed. Laser use effects were categorized into: 1) explosive processes that produce tissue ablation and aerosol formation; 2) thermal actions that create vaporization and smoke plume; 3) photobiomodulation of the cells; and 4) enhanced chemical activity.

Results. Knowledge of the device functions and choice of adequate parameters will reduce aerosol and plume formation, and the application of suction systems with high flow volume and good filtration close to the surgical site will avoid virus dissemination during laser use. In the categories that involve low energy, the beneficial effects of lasers are available and sometimes preferable during this pandemic because only conventional precautions are required.

Conclusions. Lasers maintain the potential to add benefits to dental practice even in the COVID-19 era, but it is necessary to know how lasers work to utilize these advantages. The great potential of laser light, with undiscovered limits, may provide a different path to face the severe health challenges of this pandemic.

Key words: safety, dentistry, laser, COVID-19, SARS-CoV-2