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Letter to Editor

The Role of Rubber Dam in Preventing Coronavirus Diseases 2019 (Covid-19) in Dentistry

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Letter to Editor

The concept of dental dam or rubber dam was first developed by Barnum in 1864. He reported struggling with saliva contamination during treatment for a long time. On one occasion, while he was treating a mandibular molar and saliva was flowing all over the oral cavity, he came up with a new idea, making a hole in his protective napkin and putting it around the tooth. This idea resulted in developing rubber dam, the main problem of which was not being fixed around the tooth. To address this problem, rubber dam punches, a set of metal clamps, and other equipment of rubber dam were introduced in the following years [1]. Rubber dam is a thin, 15 cm square disposable rubber sheet, which is of two types: latex and non-latex (nitrile). In dentistry, rubber dam is used for the isolation of the operative site from the oral cavity in order to increase the safety and quality of dental procedures. Rubber dam prevents the patient from aspiration or swallowing dental instruments as well as cross infection and contaminated aerosols [2]. This brief letter focused on the role of rubber dam against transmission of contaminated aerosols, particularly COVID-19.

Dental aerosol or splatter is produced from dental instruments, such as ultrasonic scalers or dental handpieces. Aerosol is a particle less than 50 μm in diameter and has the potential to stay airborne for a long period before it settles on surrounding surfaces or gets into the respiratory tract. Aerosol droplets which are >0.5-10 μm have an improved ability to transmit severe acute respiratory syndrome. Particles larger than 50 μm are defined as splatter and are airborne only for a short period. With that being said, almost 99% of airborne particles can be eliminated through the use of a high-volume evacuator during treatment [3].

According to the World Health Organization (WHO), viral epidemics are a serious threat to public health. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) first appeared in the city of Wuhan, in December 2019. On February 11, 2020, WHO named the virus, coronavirus diseases 2019 (COVID-19). COVID-19 leads to severe respiratory problems and in some cases even death. It is transmitted through contaminated aerosol droplets >5-10 μm from coughing or sneezing. Thus, close contact (within 1 m) with an infected person causes the mucosa, oral or nasal cavity, and conjunctiva to be exposed to respiratory droplets containing coronavirus infection [4]. Since dental health care providers are constantly in close proximity to patients, they are at risk of microbial or viral infection that can be transmitted through atmospheric aerosols.

In a study conducted by Samaranayake et al. [5] the effectiveness of the rubber dam in preventing contaminated aerosols during therapy was examined. The result demonstrated that the rubber dam significantly reduces the contaminated aerosol particles from the operational site up to 3-foot distance (91,44 cm) by 70%. Moreover, the use of rubber dam decreases the production of saliva and blood contamination during dental treatment as well as the potential airborne particles between the clinician and patient [3]. In addition, in the case in which the gingival is exposed, the split-dam method is useful. According to the evidence provided, it is possible that the use of rubber dam contributes to the prevention of COVID-19. However, conducting more clinical or laboratory studies investigating the role of rubber dam against respiratory diseases, particularly COVID-19 is recommended in order to obtain more accurate and valid data.

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