



## Tooth Hypersensitivity as A Possible Indirect Complication of COVID-19 Pandemic: A Clinical Experimental Report

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Clinical experience during COVID-19 pandemic has shown that there is an increase in the number of patients complaining of teeth hypersensitivity. Paying attention to the patients' history has revealed some similar reasons. It seems that the stress caused by this pandemic has caused an obsession with oral hygiene, especially with the belief that oral health may be associated with coronavirus prevention. Restriction of dental services caused by the novel coronavirus outbreak and fear of not having access to them make this obsession worse and make the situation even more complicated. Therefore, there is a change in the brushing pattern in terms of increasing the number of times, hand pressure, and duration of each brushing which ultimately leads to gingival recession and destruction of tooth structure, especially in the cervical area (abrasion), which results in teeth hypersensitivity. As dental professionals we should be aware of this and recommend our patients the proper measures of brushing to prevent tooth abrasions and subsequent sensitivity.

Tooth brushing is the most important way to clean the teeth and massage the gingival tissues. There are various techniques for tooth brushing including vertical, horizontal, a combination of these two techniques and also the rotational technique (1). Tezel *et al* showed that there is significant relationship between gingival recession and duration, and frequency and improper tooth brushing, with the greatest negative effects being associated with horizontal technique (2). On the other hand, proper brushing pressure has a key role in effective tooth brushing. Aggressive tooth brushing can lead to loss of tooth surface and make dental abrasion (3). Pressure that is more than 150 gr can be damaging to gingival tissues and has been known to be associated with dental hypersensitivity and root damages (3-5). When the tooth loses its protective covering, the dentin tubules allow stimulants such as cold, heat, acidic or sticky foods to stimulate the nerves and cells inside the tooth. This may cause hypersensitivity and occasional discomfort with drinking cold or hot liquids or even by breathing through the mouth (6). There are several reasons that can lead to improper tooth brushing. In addition to not knowing the correct methods of brushing, mental conditions can also affect this issue. Sometimes this happens

due to impatience and ineffective brushing, on the contrary, sometimes it happens due to obsession. This obsession can have different reasons. For example, some people brush their teeth unusually for fear of undesirable color of their teeth in order to whiten them. This can be done as increasing hand pressure and time of brushing or the use of hard toothbrushes or abrasives. In some cases, this obsession is the result of worrying about the oral environment not being clean or a kind of obsession about being too hygienic. Based on the recent experiences of authors during the novel corona virus outbreak people's sensibility to oral hygiene has increased; especially by proving that oral fluids are an important source of COVID-19 transmission (7) and the theory that toothpaste may play a role in preventing or reducing the virus transmission based on the fact that detergents in toothpastes confer significant antimicrobial properties to the product (8). So that not only the frequency of brushing has increased but also brushing duration and its pressure has also increased, consciously or unconsciously. Many patients report that due to the mental conflict caused by this disease and the fear of transmitting it and lack of focus while brushing too much, they press the toothbrush on their teeth and gums more forcefully. Furthermore dental services are being limited during the novel corona virus outbreak and this leads to more anxiety and obsession about the lack of dental hygiene and professional care. According to Xiong *et al*, there is a highly significant relationship between COVID-19 pandemic and psychological distress. For example anxiety and stress have been reported in 6.33-50.9% and 8.1-81.9% of general population, respectively (9).

These findings have been noticed after more patients referred to the dental office with complaints of dental sensitivity compared to pre-pandemic and by taking a detailed history. It seems that this point should also be considered as one of the indirect complications of COVID-19 infection, which has led to a change in the patients' pattern of brushing.

The important point is that the enamel is an irreparable part of the tooth and can't be regenerated if damaged (10). Gingival tissue damage caused by overzealous brushing can also lead to more damage to other healthy and non-decayed teeth by destroying their supporting structure (11). Therefore, according to the American Dental Association, it is recommended to use a soft-bristled toothbrush for routine brushing, and preferably change it every three months (1). Also, hand pressure should be controlled and brushing time should be acceptable and within recommendations (150 gr pressure/2 minutes). According to a study by Gallagher *et al*, proper brushing for two minutes can be associated with acceptable plaque removal without damaging the teeth (12).

Considering the irreversible damages of tooth structure following improper brushing, we as dental professionals should pay attention to the above mentioned issues. It is wise to take them into consideration during dental examination and recommend patients to be aware of proper brushing during the COVID-19 pandemic to prevent tooth abrasions and subsequent teeth sensitivity.

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