



THE EFFECT OF TOOTH BRUSHING TECHNIQUE ON ABRATION CASE ON THE CERVICAL TEETH

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ABSTRACT

Introduction: Brushing teeth is an activity to maintain oral hygiene by caring for and cleaning teeth and mouth from food residue or plaque which is done mechanically with the aim of preventing the emergence of diseases from both hard and soft tissues in the mouth. One of the common diseases caused by the wrong way of brushing teeth is tooth erosion on the cervical part of the tooth which is commonly called tooth abrasion. Tooth abrasion is a condition where there is damage or peeling (enamel erosion) on the surface of the cervical part or neck of the tooth. Clinically, the appearance of abrasion is divided into 2 forms of damage, namely V-shaped and wedge-shaped or trench. Maintaining oral hygiene is important in the behavior of maintaining oral health. **Purpose:** to determine the effect of brushing techniques on cases of abrasion on the cervical teeth. **Method:** qualitative descriptive approach and the type of research used is study literature. Data collection method used is derived from secondary data sources such as journals, books, scientific papers, theses, text books and scientific articles. **Result:** Tooth brushing techniques have big influence on the occurrence of abrasion cases on cervical teeth because tooth brushing techniques with high pressure and incorrect movements have a high risk of triggering tooth abrasion. **Conclusion:** showed that several researchers had conducted research on the effect of brushing techniques on cases of tooth abrasion and all of these studies showed that improper brushing habits could cause abrasion of the cervical teeth.

Keyword : Toothbrushing Technique, Tooth Abrasion, Cervical Teeth.

Introduction

Oral hygiene plays an important role in the health sector, especially dental health. Poor level of oral hygiene can cause various local and systemic diseases. Preventive action that can be done is to maintain the habit of brushing teeth regularly. Maintaining oral hygiene is important in maintenance behavior (Prasetyowati *et al.*, 2018).

A health expert in the PDGI (Indonesian Dental Association) said that the data recorded by the WHO (World Health Organization) showed that around 90% of the world's population suffers from dental diseases, most of which can be prevented. According to records, 75% of children (about 537 children) have untreated dental disease (Januar, 2020). Meanwhile, based on the results of the 2018 Basic Health Research (Risikesdas) conducted by the Ministry of Health which was conducted on 300,000 household samples (1.2 million people) showed that there were 57.6% of the population declared to have problems with dental and oral health, but only 10.2% who received treatment. Of the entire population, it was recorded that 88.8% experienced dental caries and only 2.8% of the population recorded the proportion of good tooth brushing behavior (Kemenkes, 2018). Good tooth brushing behavior starts with the right way of brushing your teeth. Regular brushing of teeth will greatly help prevent various oral diseases. One of the important things to note is the technique of brushing teeth. The technique of brushing teeth must be done properly. The best way to brush your teeth is to do it systematically, by cleaning all parts of the tooth surface as much as possible without causing damage to the gum tissue, tooth surface, or tooth abrasion (Listrianah, 2017).

Tooth abrasion is one type of disease on the teeth that indicates an abnormal condition of the tooth surface, namely the tooth layer (enamel) is missing or damaged due to erosion. Sometimes the damage can reach the deeper layers of the tooth, namely the dentin. Tooth wear is caused by direct friction. (friction) against the teeth with external objects. Cases of tooth abrasion can also be caused by improper tooth brushing behavior (Sitanaya, 2017).

In the research journal Kalangie *et al* in 2016 proved that individuals who brushed their teeth with a horizontal technique on their anterior teeth experienced tooth abrasion of 66.1% while individuals who brushed their teeth with a horizontal technique on their posterior teeth experienced abrasion of 72.2%. The results of this study indicate that individuals who brush their teeth with a horizontal technique have a greater risk factor for tooth abrasion (Kalangie *et al.*, 2016). Based on the results of a 2019 study conducted by Ngatemi *et al*, it was explained that there was a close relationship between tooth brushing technique and the incidence of abrasion on the teeth as much as 95% of the study sample. Respondents who were used as research objects were 43% with poor brushing techniques and 53.1% of employees experienced cases of tooth abrasion in the high category (Ngatemi *et al.*, 2019).

Methods

The purpose of this study was to determine the effect of brushing techniques on cases of abrasion on the cervical teeth. This study uses a qualitative descriptive approach and the type of research used is literature/study literature. The data collection method used is derived from secondary data sources such as journals, books, scientific papers, theses, text books and scientific articles.

Results and Discussion

No	Title	Literature Results	Source	Databases
1.	Hubungan Karakteristik dan Kebiasaan Menyikat Gigi dengan Kejadian Abrasi Gigi pada Pegawai Yayasan Masjid Al-Ikhlas Cilandak Jakarta	The results of this study indicate that most of the respondents experienced the incidence of tooth abrasion in the high category. It was reported in this study that there was a significant relationship between the incidence of tooth abrasion and the habit of brushing teeth.	(Ngatemi <i>et al.</i> , 2019)	Google scholar
2.	Gambaran Abrasi Gigi ditinjau dari Metode Menyikat Gigi pada Masyarakat di Lingkungan II Kelurahan Maasing Kecamatan Tumiinting Kota Manado	The study showed that the incidence of tooth abrasion was related to the habit of brushing teeth. In the study, it was stated that the horizontal tooth brushing technique was the most widely used technique by respondents who experienced high category of tooth abrasion.	(Kalangie <i>et al.</i> , 2016)	Google scholar
3.	Gambaran Perilaku Menyikat Gigi dan Abrasi Gigi pada Mahasiswa Asrama Galuh Ciamis Jawa Barat di Yogyakarta	The results obtained were respondents who experienced the most abrasions were respondents with moderate tooth brushing behavior with an age range of 20-22 years.	(Dewi, 2019)	Google scholar
4.	<i>Linking of Multifactorial Causation in Abrasion of Teeth Among Adult Residents of Bhopal Central India</i>	The results proved that the use of improper brushing techniques can cause tooth abrasion. Another factor that triggers tooth abrasion is age.	(Saxena <i>et al.</i> , 2013)	ResearchGate
5.	<i>The Study of Tooth Wear Patterns and Their Associated Aetiologies in Adults in Kelantan, Malaysia</i>	Research shows that tooth wear is experienced by more than most of the respondents. It was found that the most common type of tooth wear was tooth abrasion which was influenced by bad habits of the people in the study.	(Daly <i>et al.</i> , 2010)	ResearchGate

6.	<i>A Study of Tooth Brushing Pattern and It's Effects on Dental Tissues in Obafemi Awolowo University Students</i>	The results found that the brushing habits of most of the respondents had been carried out according to the standards recommended by the ADA, while some were still applying deviant tooth brushing habits.	(Ejemal <i>et al.</i> , 2013)	Academia. edu
7.	<i>Relationship Between Handedness and Toothbrush-related Cervical Dental Abrasion in Left- and Right-handed Individuals</i>	The study proved that there was no statistically significant relationship between hand preference and tooth abrasion, but it was found that the effect of brushing habits on the incidence of tooth abrasion was statistically significant.	(Ozgoz <i>et al.</i> , 2010)	PubMed
8.	Hubungan Faktor Risiko Usia, Perilaku Menyikat Gigi, dan Penggunaan Tusuk Gigi terhadap Kasus Abrasi Gigi di Banjar Dinas Tangkupanyar, Desa Tangkup Sidemen, Karangasem	The results of this study indicate statistically that there is a relationship between tooth brushing behavior and tooth abrasion. The results of the questionnaire analysis in this study showed that most of the research samples still did not understand how to brush their teeth properly.	(Saraswathi <i>et al.</i> , 2020)	Google scholar
9.	<i>Tooth Wear and It's Related Factors</i>	The study proved that almost all respondents did not find tooth wear and tear caused by the knowledge and application of good tooth brushing habits in the research respondents.	(Toufique <i>et al.</i> , 2017)	Academia. edu
10.	<i>Analysis of Cervical Abrasion requiring RCT</i>	The results of this study indicate that there is the most incidence of tooth abrasion affecting the posterior teeth, while for severe cases of abrasion, RCT treatment is needed in its management.	(Priadarsini <i>et al.</i> , 2020)	Academia. edu

Based on the results of research conducted by Ngatemi et al in 2019 in a research journal entitled "The Relationship of Toothbrushing Characteristics and Habits with Tooth Abrasion Incidence in Al-Ikhlas Mosque Foundation Employees, Cilandak Jakarta" that there is a significant relationship between the incidence of tooth abrasion and the habit of brushing teeth. This is evidenced in the results of the research table that 95% of the incidence of tooth abrasion is caused by improper brushing habits. It was stated that the respondents who experienced the incidence of tooth abrasion were 17 people with a percentage of 53.1%, belonging to the high category of tooth abrasion, i.e. abrasion occurred on more than 7 teeth (Ngatemi *et al.*, 2019).

In addition, the results of research in the journal showed that as many as 62.5% brushed their teeth with a frequency of less than 3 times a day. The frequency of brushing teeth is quite influential in maintaining dental health so it is recommended to do it 3 times a day, every time after eating (morning and afternoon) and before going to bed. according to (Djamil, 2011) frequency of brushing teeth 2 times a day is enough if done regularly and at the right time. However, respondents in the study only did it 2 times a day at the wrong time, namely when taking a shower (morning and evening). This is influenced by the different activities of respondents, most respondents have activities from morning to evening so that brushing teeth is only done when they want to get ready for work/school and when they come home from work/school (Ngatemi *et al.*, 2019).

The results of this study are consistent with research conducted by Ejemal et al in a

study entitled "A Study of Tooth Brushing Pattern and It's Effects on Dental Tissues in Obafemi Awolowo University Students" in 2013 in Nigeria, it was stated that 72.7% of respondents brushed their teeth. as much as 1 time a day and as much as 24.2% brushed teeth 2 times a day. Most of the research subjects have a habit of brushing teeth according to the standards recommended by the American Dental Association, where brushing teeth is done twice a day, in the morning after breakfast and at night before going to bed. While some of them engage in deviant behavior in brushing their teeth. In this study, there were 23.2% of respondents who were found to have suffered injuries to their teeth due to brushing and as many as 80,9% were not aware of the defects in the teeth, and 58.8% did not know the cause of the dental defects they experienced. This is influenced by the low awareness of dental and oral health which is absorbed from various family backgrounds (Ejemal *et al.*, 2013).

In addition, the results of a study in Malaysia conducted by Daly et al in a journal entitled "The Study of Tooth Wear Patterns and Their Associated Aetiologies in Adults in Kelantan, Malaysia" in 2010 proved the same thing, that tooth wear can be influenced by low awareness. and knowledge of society in everyday life. In the study, it was stated that cases of tooth abrasion were the majority of the total respondents (35.8%) followed by other dental abnormalities such as erosion. It was explained that most of the people who were used as research subjects who experienced abrasions had bad habits in maintaining dental health (Daly *et al.*, 2010).

In the study, it was stated that people have a habit of eating freshwater clams as daily food where the shells are opened by biting the shell. However, the thing that has the most influence on tooth wear experienced by the community in the research environment is deviant tooth brushing habits. In this study, there were 11 respondents (37.9%) who brushed their teeth using a vertical technique, and 3 respondents (10.3%) brushed their teeth using a horizontal technique, while 6 others (20.7%) admitted to brushing their teeth using a different technique. not specific (Daly *et al.*, 2010).

Kalangie et al (2016) in a journal entitled "Overview of Tooth Abrasion Judging from the Method of Brushing Tooth in Communities in Neighborhood II, Maasing Village, Tuminting District, Manado City" also proved that tooth abrasion is closely related to tooth brushing techniques. The prevalence of tooth abrasion occurred in respondents (77.4%) as many as 152 people. The most tooth abrasion occurs with a score of 1 according to Smith and Knight in the theory of tooth wear index, which is a small amount of enamel structure loss (48.8%). The highest tooth abrasion was found in respondents who used the horizontal technique, which was 66.1% and the posterior teeth affected were the most affected, 72.2% experienced tooth abrasion. The horizontal technique is most widely used by respondents because this technique is the easiest (Kalangie *et al.*, 2016).

The results of the study entitled "Relationship Between Handedness and Toothbrush-related Cervical Dental Abrasion in Left- and Right-handed Individuals" conducted by Ozgoz et al in 2010 are also

consistent with previous research that horizontal brushing technique causes significant tooth wear. statistically higher than the vertical technique. This study investigated the relationship between the incidence of tooth abrasion and the technique of brushing teeth using the right or left hand. However, no statistically significant relationship was found between hand preference and tooth abrasion. It is proven that the biggest cause of tooth wear is mistakes in brushing teeth. In addition to causing tooth abrasion (Ozgoz *et al.*, 2010).

Based on research conducted by Dewi in 2019 entitled "Description of Toothbrushing Behavior and Tooth Abrasion on Students of Galuh Ciamis Dormitory, West Java in Yogyakarta" shows that those who experience the most abrasion are respondents who have moderate tooth brushing behavior with a total of 18 people, which is equal to 51.4%. The distribution of tooth abrasion based on the severity or depth was mentioned as many as 29 respondents (82.9%) with mild abrasion criteria. In cases like this, the patient is usually not aware of it because it has not caused complaints and the form of wear and tear is not clearly visible.

The study also showed that the most sufferers of tooth abrasion were respondents aged 20-22 years with a total of 24 respondents (68.8%). It was stated that there were still many respondents who had not received sufficient knowledge in an effort to clean their teeth and mouth properly, so that most of the respondents still used the wrong brushing tools. For example, a toothbrush with hard bristles and a large toothbrush head (Dewi, 2019).

The results of this study are in line with the research conducted by Saxena et al in 2013 in India in a journal entitled "Linking of Multifactorial Causation in Abrasion of Teeth among Adult Residents of Bhopal Central India" which showed that the same thing was confirmed between tooth brushing relationships that were not correct, rough, and the tools used can cause tooth abrasion. Overall, 68.8% of abrasion cases were recorded in Bhopal District. The results of this study prove that there is an increase in tooth abrasion that occurs with age, it is stated that an increase in tooth abrasion starts from the lowest in the 18-28year age group (22.9%) and the incidence of abrasion continues to increase until the >59year age group (97). ,8%). This is associated with a widespread lack of knowledge and ignorance (Saxena *et al.*, 2013).

Consistent with the results of previous studies, Priadarsini et al in 2020 in the research "Analysis of Cervical Abrasion requiring RCT" proved that most sufferers of tooth abrasion (61.27%) belonged to the age group of 40-60 years. A total of 28.32% belonged to the age group >60 years and at least (10.40%) belonged to the age group <40 years. The severity of tooth abrasion also affects the premolars the most, thus requiring RCT or Root Canal Treatment. This relates to the behavior of brushing teeth used by each individual in the long term (Priadarsini *et al.*, 2020).

The results of a study in Bali in 2020 by Saraswathi et al in a study entitled "The Relationship of Age Risk Factors, Toothbrushing Behavior, and the Use of Toothpicks on the Incidence of Tooth Abrasion in Banjar Dinas Tangkupanyar,

Tangkup Sidemen Village, Karangasem" also proved that statistically it was found that there were the effect of brushing habits and age on the incidence of tooth abrasion. It is stated that there are 94.7% of respondents experiencing abrasion with an index score of 1. The 46-55year age group as the highest age group shows 55.3% of respondents experiencing abrasion with a score of 3. It is stated that the results of the research table related to the brushing behavior of respondents in Banar Dinas Tangkupanyar, Tangkup Village showed that 58 people (50.9%) behaved poorly in brushing their teeth. The results of other cross-tables in this study show a tendency to increase the severity of abrasion with increasing age. The results of the questionnaire analysis showed that most of the general public did not understand the relationship between the brushing technique used and the incidence of tooth abrasion. Another factor was also mentioned that the lack of socialization and information on prevention obtained by the community related to tooth abrasion also reduced the enthusiasm of the community to take countermeasures experienced by the community (Saraswathi *et al.*, 2020).

Meanwhile, the results of research conducted by Toufique *et al.* (2017) in a study entitled "Tooth Wear and It's Related Factors" indicate that tooth brushing behavior is influenced by knowledge possessed. The better the behavior of brushing a person's teeth, the better his efforts in carrying out dental and oral health care actions. This is evidenced by as many as 47% using a toothbrush made of soft bristles, and 44% of respondents using a toothbrush made of medium bristles. There are 49% of

respondents who brush their teeth twice a day, and only 42% of them brush their teeth once a day. As well as 62% of respondents who claimed to brush their teeth using medium brushing pressure. Of all study subjects, no tooth wear was found in 90% of patients (Toufique *et al.*, 2017).

Based on the description of the discussion and the facts of the research that has been carried out, the authors conclude that the habit of brushing teeth is very influential on the occurrence of abrasion cases on the cervical teeth. The technique for brushing teeth that has a high risk of triggering tooth abrasion is the horizontal technique. Where the tooth brushing movement has the potential to damage the dental tissue, especially in the third part of the tooth or the cervical tooth. Erosion of tooth enamel is easier to occur if brushing teeth for a long duration is accompanied by excessive pressure, resulting in parallel friction that can damage the tooth enamel surface. Tooth abrasion also involves increasing age.

Conclusion

The results showed that several researchers had conducted research on the effect of brushing techniques on cases of tooth abrasion and all of these studies showed that improper brushing habits could cause abrasion of the cervical teeth.

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