Novas tecnologias e propriedades clínicas em ODONTOLOGIA

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Emanuela Carla dos Santos
(Organizadora)

Atena Editora
Ano 2022

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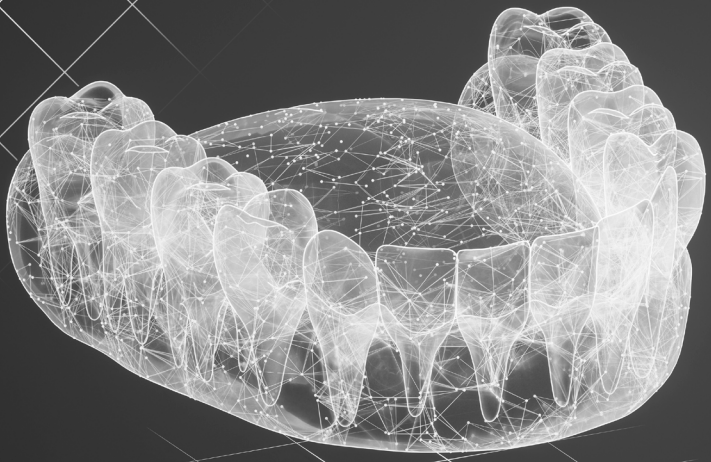

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Novas tecnologias e propriedades clínicas em odontologia 2

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Seguindo na linha da aplicação das novas tecnologias em Odontologia, que promove melhora significativa nos fluxos de trabalho e propriedades clínicas, a Atena Editora dá sequência às publicações com este compilado de novos artigos.

Espero que a leitura deste material o ajude a aumentar seu conhecimento.

Ótima leitura!

Emanuela C. dos Santos

SUMÁRIO

SUMÁRIO

FACTORS ASSOCIATED WITH CHILDHOOD BRUXISM – LITERATURE REVIEW

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ABSTRACT: The parafunctional habit of grinding and/or grinding teeth, known as bruxism, is common in early childhood; its etiology, for being multifactorial, often interferes or confuses the types of therapeutic approaches. It is a habit that has become worrisome over the years, as it has a negative impact on the quality of life of the witchdoctor. One of the factors with the greatest impact on bruxism is the psychological one, since the habit is central to the brain, which leads to anxiety and stress; but, there are other conditions that can strongly trigger the habit, sleep disturbance is one of them. This literature review aims to highlight the importance of the dentist and his knowledge of this parafunction, the various factors associated with its etiology and its appropriate therapeutic approach.
KEYWORDS: Bruxism; Pediatric Dentistry; Dental occlusion.

FATORES ASSOCIADOS AO BRUXISMO INFANTIL – REVISÃO DE LITERATURA

RESUMO: O hábito parafuncional de ranger e/ou ranger os dentes, conhecido como bruxismo, é comum na primeira infância; sua etiologia, por ser multifatorial, muitas vezes interfere ou confunde os tipos de condutas terapêuticas. É um hábito que se tornou preocupante ao longo dos anos, pois impacta negativamente na qualidade de vida do feiticeiro. Um dos fatores de maior impacto no bruxismo é o psicológico, pois o hábito é central no cérebro, o que leva à ansiedade e ao estresse; mas, existem

outras condições que podem desencadear fortemente o hábito, o distúrbio do sono é uma delas. Esta revisão de literatura tem como objetivo destacar a importância do cirurgião-dentista e seu conhecimento sobre esta parafunção, os diversos fatores associados à sua etiologia e sua adequada abordagem terapêutica.
PALAVRAS-CHAVE: Bruxismo; Odontopediatria; Oclusão dental.

INTRODUÇÃO

Currently, sleep bruxism is considered a prevalent parafunctional habit within society, especially among children. The act of involuntarily grinding and/or squeezing teeth, whether day or night, are the main signs of this parafunction, causing disorders in the masticatory muscles and temporomandibular problems, causing craniofacial complications during growth, affecting the child's quality of life (DONATONI; OLIVEIRA; CARROS, 2017).

Its etiology is multifactorial, and its main causes are local, genetic, psychological and systemic (PAIVA et al., 2020), which makes its diagnosis quite imprecise for dentists. Even more because it depends, almost predominantly, on the reports of parents, who may not fully observe the signs and symptoms that affect their children (REGINATO et al., 2017).

Regarding the psychological etiology, the main factors are anxiety and hyperactivity, whose main origin is due to the fact that there are excessive demands on household and school tasks (CABRAL et al., 2018). Systemic factors also influence the etiology of bruxism, such as gastroesophageal reflux, respiratory allergies such as asthma and rhinitis, in addition to the ingestion of chemical substances from tobacco, due to the fact that the child has smoking parents. Additionally, children with special needs are more likely to have recurrent episodes of bruxism than others (REGINATO et al.,2017)

The prevalence of bruxism is more common in children and adolescents than in adults, which have a percentage of 17% and 8%, respectively. There is no major involvement in any of the genders (CABRAL et al., 2018).

Bruxism has no cure, but there are treatments, which depend on a multitude of professionals from different areas, aiming at a better quality of life for both the patient and the family (PAIVA et al., 2020). The use of occlusal splints, use of drugs, psychological and behavioral control are ways to alleviate the occurrence of this condition and provide comfort for the patient (CABRAL et al., 2018).

Medical, dental and psychological treatments are fundamentally chosen by parents to control child bruxism (DONATONI; OLIVEIRA; CARROS, 2017).

However, there is no better treatment for bruxism. However, the knowledge of the dental surgeon about the parafunction will be the key to the diagnosis and therapeutic approach. Thus, the best treatment is chosen by the professional who has extensive knowledge about the subject (SANTOS et al., 2020).

Given the factors concerning childhood bruxism, this article aims to demonstrate, through a literature review, the origin, diagnosis, possible consequences and types of appropriate treatment.

LITERATURE REVIEW

Bruxism is characterized as a harmful parafunctional habit, being described as the most harmful activity for the stomatognathic system. The worst quality of sleep, added to genetic and emotional factors, cause this condition to affect the individual, which can cause several problems (SANTOS et al., 2020).

"Brychein" or Bruxism, word of Greek origin, which means teeth grinding. However, in the literature, there are several other terms to refer to bruxism itself (RIBEIRO; FREITAS, 2019).

During the involuntary act of grinding and clenching the teeth psychiatric and neurological disorders,, the masticatory muscles are constantly functioning, in particular, the masseter muscle. Furthermore, at the subconscious level, the neuromuscular protection mechanisms are not active, causing headaches, wear and/or fractures of the incisal and occlusal edges, damage to the stomatognathic system and TMD's (RIOS et al., 2018).

Within the diversity of characteristics that it is possible to classify the parafunction. Daytime bruxism is described as a semi-voluntary act of the jaw, where there is only clenching, without sound emission, also characterized by everyday habits that go unnoticed, both by the child and by the people around, namely: biting pencil, biting and sucking the lip, finger and cheek. This type of behavior can also be called centric bruxism (RIBEIRO; FREITAS, 2019).

Night bruxism, on the other hand, is caused by involuntary friction of the occlusal surfaces while the individual is sleeping, generating a greater force than usual, in addition to making sounds (VIEIRA et al., 2017).

However, the classification also extends into primary and secondary. The primary has no apparent cause, no medical, psychiatric or systemic evidence. Secondary bruxism is associated with arising from iatrogenic factors or sleep disorders. (SCOCATE et al., 2012)

Prevalence is very age-dependent, with rates ranging from 14% to 20% in children under 11 years of age. The most common is that bruxism begins in early childhood, during the period that the first deciduous erupt, or at the beginning of puberty (RIBEIRO; FREITAS, 2019), gradually decreasing as age advances, in addition to not there is a distinction between genders (SANTOS et al., 2020).

It is almost impossible to know the exact prevalence of bruxism, since the diagnosis is made up of questionnaires. And most individuals are not aware of their condition, as they are children and often sleep in rooms separate from those responsible. As a result, parents/ guardians only seek professional assistance when they witness the noise at night. With this, the wear of the teeth occlusals and the parents/guardians' report necessarily end up composing the clinical diagnosis made by the dental professional (RIBEIRO; FREITAS, 2019).

Treatment is still uncertain. In addition to occlusal damage, such as incisal wear, pain, other symptoms must be analyzed, therefore, a multidisciplinary follow-up is necessary, with a pediatric dentist, pediatrician, psychologist, speech therapist. And even with a whole approach, closing the diagnosis is not always possible (RIBEIRO; FREITAS, 2019).

FACTORS ASSOCIATED WITH BRUXISM

- **SLEEP PATHOPHYSIOLOGY IN BRUSSELS PATIENTS**

Sleep in bruxism patients is the greatest impact found in this condition, being it a primary or even secondary factor. (RIBEIRO; FREITAS, 2019).

Sleep architecture comprises two phases: the NREM (rapid eye movements) of stages 1, 2, 3, 4; and REM that characterizes stage 5. Stage 1 comprises the stage where the individual is still awake, but with eyes closed; in the transition to stage 2, the longer sleep period, brain activity slows down and muscle relaxation begins; stages 3 and 4, on the other hand, comprise the fastest phases of NREM and are extremely important for the beginning of the REM phase. However, before the completion of phase II, there is a need to go back to stage 2, as it will always be present in the REM phase; 90 minutes after the beginning of the stages, the first sleep cycle is completed. During this entire phase, sleep alternates between NREM and REM; in short periods and the last, being it the longest. It is in the last REM phase that dreams occur (KLATCHOIAN D, 2002).

Sleep bruxism occurs in the REM phase due to microalarm clocks, that is, it is characterized by sleep disorders such as enuresis, sleepwalking, sleepwalking, insomnia, obstructive sleep apnea syndrome (OSAS); characterizing it in secondary bruxism (SANTOS et al., 2020).

- **ANXIETY AND STRESS- PSYCHOSOCIAL FACTORS**

The development of bruxism may be associated with a multifactorial nature. The most cited etiological factor in bruxism is the psychological one, related to anxiety and stress (BONIFÁCIO et al., 2020). Children with great responsibilities such as daily activities, excessive demands related to school grades, or even those who practice some competitive sport, tend to have an emotional responsibility that is disproportionate to normal (DINIZ et al., 2009). Some studies also show that children who only fall asleep with their parents in the bedroom tend to trigger fear and frustration, leading to the manifestation of the habit (RÉDUA et al., 2019). Some authors have also observed the development of bruxism in children who are bullied (SANTOS et al., 2020).

- **SYSTEMIC FACTORS**

Associated with systemic factors, bruxism develops in sleep disorders, such as enuresis, somnambulism, sleepwalking and also in cases of obstructive sleep apnea syndrome - OSAS, causing micro- awakenings in the REM sleep phase (RÉDUA et al., 2019). Among the systemic factors, without concomitant with the stomatognathic system, some authors cite adenoid and tonsil hypertrophy as the main cause of air obstruction during sleep; considering that OSAS is a systemic disorder, its origin is local, in turn, its disappearance will only be possible through a surgical process to remove the tonsils and adenoids; this fact is proven by a study (REGINATO et al., 2017).

Studies also show a strong correlation between bruxism and children with special needs, such as Down syndrome and cerebral palsy (REGINATO et al., 2017). Related to gastroesophageal reflux, bruxism is considered a physiological habit, since the objective of

this parafunction is to increase salivary production, neutralizing the substances produced during reflux (SANTOS et al., 2020). Nutritional and vitamin B complex deficiencies (calcium and pantothenic acid) are associated with bruxism due to a deficiency that alters the alveolar tissue, as well as magnesium, which has its neural and muscular function impaired due to insufficient intake (PIZZOL et al., 2006). Regarding intestinal parasitosis, which was previously the target of studies, no correlation was found with this parafunctional habit (SANTOS et al., 2020). Patients with allergic respiratory disorders have altered tympanic activity, causing edema in the inner ear mucosa; among the allergies, are rhinitis, asthma and respiratory tract infections (REGINATO et al., 2017).

- **HEREDITARY FACTORS**

The genetic factor is contextualized in this habit related to parents who had this habit even in childhood and that, hereditary, their children will be more susceptible to clenching and grinding their teeth (DINIZ et al., 2009); homozygous twins also suffer genetic influence (CARVALHO, 2020).

- **DRUG FACTORS**

Drug-induced bruxism is referenced by the use of methylphenidate, a drug used to treat children with ADHD; there are also studies that claim that children who were born underweight are susceptible to developing the parafunction, as well as children with the autistic spectrum (SANTOS et al., 2020).

- **FACTORS ASSOCIATED WITH SMOKING**

Smoking is a contributing factor to the development of the parafunctional habit, a study carried out in Italy showed that 76% of children with bruxism had their guardians or parents who smoked (SANTOS et al., 2020); thus intensifying an allergic respiratory disorder in children (REGINATO et al., 2017).

- **DTM-RELATED FACTORS**

Although there are several justifications in the literature relating bruxism and TMD, the study is still inconclusive, that is, even if there are relationships mentioned, the evidence is still questionable (SANTOS et al., 2020); thus, it is stated that malocclusions are not related to bruxism (RÉDUA et al., 2019).

- **RISK FACTORS**

Acts such as biting nails, biting pen caps or lips and even types of bites are risk factors for the development of bruxism (CABRAL et al., 2018). Regarding deleterious oral habits, the use of a pacifier is strong evidence of bruxism, as the child who uses the device, upon reaching deep sleep, disconnects from the pacifier and starts to have an open mouth, increasing the chances of developing the parafunction, the same happens with children who tend to bite their lips (BONIFACIO et al., 2020).

- **FACTORS ASSOCIATED WITH BREASTFEEDING**

Breastfeeding is of paramount nutritional importance for the baby's development in the first 6 months of life, but its function is not just to play this role; Physiological breastfeeding aims to mature the structures of the stomatognathic system, making it healthy to exercise its physiological functions and favoring excellent deciduous occlusion. Comparing babies who are breastfed, results show a physiological pattern of breathing and swallowing, in addition to maturing the breastfeeding muscles and, in the future, the chewing muscles; different from the baby who is fed by artificial teats, since the flow of liquid is of greater intensity without the need to exert any movement. In this case, a negative impact is caused, leading to muscle weakness of the muscles of the face, possible bone deformities, such as different types of bites, or even respiratory disorders. Despite the positive impacts related to nutritive sucking, which is the affective bond created between mother and baby, the social and economic reality of many mothers does not allow this bond to last for a long time, especially in mothers with no education and low socioeconomic income. However, the negative consequences that arise during non-nutritional sucking give the child a feeling of well-being, protection and safety, favoring that act to become a deleterious oral habit, since the age limit for complete removal is up to 3 years of life. That is, after removing this habit, the deformities caused on the face are reversible (GOMES, 2021).

Physiological bruxism is seen in babies right after the eruption of the deciduous central incisors and its functions are to maintain muscle balance, the stress suffered by the musculature and also the maintenance of alveolar development. The brain structure involved in the muscle activities of the face collapses with the hormones (catecholamine and cortisol) needed to control muscle contraction. This causes muscle hyperactivity in the stomatognathic system, which consequently leads to episodes of bruxism or deleterious non- nutritive oral habits (CARVALHO, 2020).

Occlusion in physiological bruxism depends on the maturation of the stomatognathic system, as it is responsible for strengthening the masticatory muscles in early childhood, as well as the bone remodeling of the alveolar tissue. Some authors justify this assertion by claiming that the foods consumed today are much softer and that, as a result, the necessary dental contacts are less present, favoring a diet with as little muscle activity as possible. In physiological bruxism, the occlusion is released, making the mandible perform the necessary movements for bone growth remodeling and development of the stomatognathic system (CARVALHO, 2020).

Physiological bruxism does not have pathological criteria, as there is no damage to the stomatognathic system (REGINATO et al., 2017).

DIAGNOSIS

The diagnosis of bruxism presents a great challenge to the dental surgeon. First, because it has a multifactorial origin, and also because of its clinical and etiological criteria. The most used way to diagnose bruxism is through clinical questionnaires answered by the

parents/guardians to the professional associated with the clinical findings in the patient's oral cavity. This method is commonly used because of its low cost, however, some information is not accurate, which ends up making it difficult to complete the diagnosis, with this, the professional ends up adopting the use of the prospective diary, where the parents start to observe the sleep of the children for 5 nights, taking into account the grinding of teeth and also the frequency of this habit (SANTOS et al., 2020).

According to the American Academy of Sleep Medicine, the diagnosis of bruxism should be based on comparing teeth clenching and/or grinding and clinical findings such as excessive occlusal wear, noise and pain. Furthermore, after completing this criterion, it is possible to classify bruxism as possible, probable and definitive (CARVALHO, 2020). The possible is based on the report of the parents/guardians during the completion of the anamnesis (FAKRELDIN, 2020); what is likely is accompanied by anamnesis associated with clinical findings through intra- and extra-oral examination. In the case of definitive tests, in addition to anamnesis and extra and intraoral exams, there is the presence of polysomnography, which is considered the gold standard for diagnosis. However, there are some limitations, such as the high cost, the time to perform and also the help of the child, since the environment is totally different from the environment in which the child is used to falling asleep, which can lead to sleep disorders (SANTOS et al., 2020).

CONSEQUENSES

Bruxism can cause wear of the incisal edges of the anterior ones, headache, periodontal disease, sensitivity and temporomandibular disorders (VIEIRA et al., 2017). In addition, there is impairment of other oral functions, such as diction and ingestion of food, liquids and others. However, patients who have frequent events of Bruxomania at night tend to complain less than patients who do not suffer from this condition (GUAITA; HÖGL, 2016).

DISCUSSION

According to SANTOS et al., (2020), bruxism is an extremely harmful parafunctional habit for the stomatognathic system, which can cause several craniofacial problems. The masticatory muscles are fully functioning during dental clenching and grinding, and the consequences of this involuntary act are diverse: headaches, wear and/or fractures of the incisal and occlusal edges, damage to the stomatognathic system and TMD's (Rios et al.. 2018).

With regard to classification, RIBEIRO; FREITAS, (2019), reports that daytime bruxism is characterized by tooth clenching, semi-voluntary, non-sound, which also includes actions considered "normal" by people, such as biting pencils and sucking the lip. Night bruxism is described as an involuntary slippage of tooth surfaces during sleep, thus causing noise (VIEIRA et al., 2017).

According to SCOCATE et al., (2012), bruxism is still divided into primary, whose cause is not observable, with absent medical and systemic factors; and secondary,

associated with psychiatric and neurological disorders, related to sleep quality or iatrogenic factors.

SANTOS et al., (2020) states that the prevalence of bruxism is quite variable, with no distinction between genders, in addition to being a regressive condition, that is, its symptoms decrease as the child matures. Even so, bruxism is prevalent in around 5 to 49.6% among children and adolescents.

With regard to treatment, it is essential that the child is monitored by a pediatrician, so that there is control over the evolution of the bruxism condition (RIBEIRO; FREITAS, 2019). According to CABRAL et al. (2018), there is a need for intervention by a multidisciplinary team, composed of psychologists, pediatricians, speech therapists, among others, in order to significantly reduce bruxism episodes. Not to mention drug treatment, and the use of occlusal splints.

In the view of KLATCHOIAN (2002), sleep is summarized in 2 phases that make up its architecture: NREM and REM. The NREM phase has stage 1, when the individual is still awake, but keeping his eyes closed; stage 2, which comprises muscle relaxation together with rested brain activity; and stages 3 and 4, which are important for the transition from stage 5, which already belongs to the REM phase, where the dream process begins. However, it is in the REM phase that the characteristic disorders of bruxism occur, such as enuresis and sleepwalking (SANTOS et al., 2020).

Anyway, as RIBEIRO reports; FREITAS (2019), sleep is of immense importance for a good quality of life. If there is any conflict, this quality-of-life declines, and the negative impacts are noticeable.

Related to etiological factors, BONIFÁCIO et al., (2020); DINIZ et al., (2009); RÉDUA et al., (2019) and SANTOS et al., (2020), emphasize that children who have an agitated routine and filled with excessive demands, have great emotional instability, ending up triggering the habit.

For REGINATO et al., (2017) and SANTOS et al., (2017), bruxism has its manifestation in children with systemic diseases, such as Down syndrome and cerebral palsy. The condition can also manifest itself in children who have gastroesophageal reflux, due to the occurrence of intense saliva production to neutralize substances produced during reflux activities. Nutritional deficiencies are correlated with bruxism by altering the alveolar tissue (PIZZOL et al., 2006). Still for REGINATO et al., (2017), allergenic patients of respiratory origin are also affected with the development of the condition.

DINIZ et al., (2009) and CARVALHO (2020), claim that the genes for squeezing and grinding teeth can be inherited from parents to children. Regarding drug factors, in the view of SANTOS et al., (2020), the drug used by children with ADHD, methylphenidate, is an important contributor to the development of this habit.

According to SANTOS et al., (2020) and REGINATO et al., (2017), secondhand smoke by children with smoking parents causes the emergence of allergic respiratory problems. For a long time, the literature associated TMD with the parafunction. However, studies do not show any relationship (SANTOS et al., 2020). In the view of RÉDUA et al.,

(2019), bruxism cannot be related to malocclusions.

For CABRAL et al, (2018), the risk factors for the development of bruxism can be limited to normal everyday actions, such as biting the pen cap and the lips themselves. Children who use pacifiers for prolonged periods tend to develop the parafunction, as as soon as they reach deep sleep, the mouth remains immobile, open (BONIFACIO et al., 2020).

For CARVALHO (2020), the physiological bruxism present in babies has some functions. Right after the eruption of the primary central incisors, physiological bruxism aims to maintain muscle balance, muscle stress, and maintenance of alveolar development. However, in the future, this could lead to episodes of bruxism and some deleterious oral habits. Despite this, in physiological bruxism, mandibular movements are essential for bone and stomatognathic system maturation. Thus, physiological bruxism should not be considered a pathology, due to the fact that there is no evidence that there is any harmful damage to the stomatognathic system (REGINATO et al., 2017).

The diagnosis, for SANTOS et al., (2020); CARVALHO (2020) and FAKRELDIN (2020), is based on questionnaires answered by parents and guardians and clinical findings between intra and extraoral exams and classified as possible, probable and definitive. When the patient's history and clinical examinations classify him as definitive, he is taken to polysomnography. However, there is a downside: polysomnography is expensive and not affordable.

FINAL CONSIDERATIONS

Based on the articles that were studied, bruxism is a recurrent parafunctional habit in children. Its etiology is multifactorial, having causes of psychological, hereditary and systemic origin. The diagnosis, in most cases, is difficult to make, as it depends almost entirely on the reports of the parents, who are not always around to observe the signs and symptoms of their children. The treatment of this condition involves a multidisciplinary approach, such as: nutritionist, dentist, pediatrician and psychologist, and the use of drugs may also be requested. The consequences are diverse and, therefore, the diagnosis must be made as soon as possible, in order to avoid problems in the stomatognathic system, which considerably reduce the child's quality of life.

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ÍNDICE REMISSIVO

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Novas tecnologias e propriedades clínicas em ODONTOLOGIA

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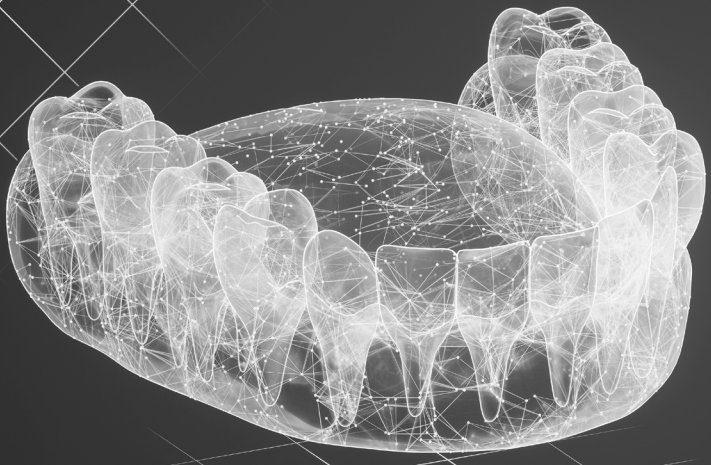

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Novas tecnologias e propriedades clínicas em ODONTOLOGIA

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