NEU PRESS

Diş Hekimliği Dergisi

Vol: 1 No: 1 Year: 2024 | Review Article | e-ISSN: 2687-5535

https://doi.org/10.51122/neudentj.2024.94

Prescribed Treatment Options for Gag Reflex

Seher YILDIZ[1] **Burcu AŞIK**[2] **Özgün Yusuf ÖZYILMAZ**[3*]

[1] Clinician, İstanbul, Türkiye, seher_yildizz@hotmail.com
[2] Associate Professor, Bezmialem Vakıf University, School of Dentistry, Department of Prosthodontics, İstanbul, Türkiye, basik@bezmialem.edu.tr
[3] Associate Professor, Bezmialem Vakıf University, School of Dentistry, Department of Prosthodontics, İstanbul, Türkiye, oozyilmaz@bezmialem.edu.tr

Article Info

Article History

Received: 26.12.2023
Accepted: 01.04.2024
Published: 30.04.2024

Keywords:
Gagging,
Gagging Management,
Pharynx,
Review.

ABSTRACT

The gag reflex represents a crucial protective mechanism preventing the entry of foreign objects into the pharynx, larynx, or trachea. Impairment of this reflex can have adverse effects on an individual's oral health and overall well-being. An abnormal gag reflex can be detrimental and potentially impact social integration and comfort in social environments. Avoidance of treatment due to an exaggerated gag reflex in patients may lead to more severe oral and dental health issues. Complications such as intensified aesthetic concerns and halitosis, arising from aggravated oral and dental health problems, can contribute to patients withdrawing from social interactions. Consequently, individuals may find themselves trapped in a vicious cycle. The gag reflex can be triggered by a variety of physical or psychological stimuli. Its causes are multifaceted, encompassing iatrogenic effects, as well as local and systemic disorders, anatomical factors, and psychological factors such as classical and operant conditioning. Symptoms of an excessive gag reflex are not limited to specific age groups and can affect both pediatric and adult patients with varying degrees of severity. Treatment methods range from universally applicable approaches to those requiring specialized training due to the multifactorial nature of the condition. Given the multifactorial nature of the causes of an excessive gag reflex, exploring and implementing diverse therapeutic strategies may be necessary."

Öğürme Refleksinde Öngörülen Tedavi Seçenekleri Yaklaşımları

Makale Bilgisi

Makale Geçmişi

Geliş Tarihi: 26.12.2023
Kabul Tarihi: 01.04.2024
Yayın Tarihi: 30.04.2024

Anahtar Kelimeler:
Öğürme,
Öğürme Yönetimi,
Farenks,
Derleme.

ÖZET

Öğürme refleksi, yabancı nesnelerin farenks, gırtlak veya trakeaya girişini önleyen çok önemli bir koruyucu mekanizmayı temsil eder. Bu refleksin bozulması, bireyin ağız sağlığı ve genel refahı üzerinde olumsuz etkilere sahip olabilir. Anormal bir öğürme refleksi zararlı olabilir. Hastalarda abartılı öğürme refleksi nedeniyle tedaviden kaçınılması, daha ciddi ağız ve diş sağlığı sorunlarına yol açabilir, ağırlaşan ağız ve diş sağlığı sorunları nedeniyle yoğunlaşan estetik kaygılar ve ağız kokusu gibi komplikasyonlar, hastaların sosyal etkileşimden uzaklaşmasına neden olabilir ve sonuç olarak bireyler kendilerini bir kısır döngünün içinde bulabilirler. Öğürme refleksi çeşitli fiziksel veya psikolojik uyaranlarla tetiklenebilir. Bunun nedenleri çok yönlü olup, iyatrojenik etkilerin yanı sıra lokal ve sistemik bozukluklar, anatomik faktörler, klasik ve edimsel koşullanma gibi psikolojik faktörleri de kapsar. Aşırı öğürme refleksinin semptomları belirli yaş gruplarıyla sınırlı değildir ve hem pediatrik hem de yetişkin hastaları değişen şiddet derecelerinde etkileyebilir. Tedavi yöntemleri, evrensel olarak uygulanabilir yaklaşımlardan, durumun çok faktörlü doğası nedeniyle özel eğitim gerektiren yaklaşımlara kadar çeşitlilik gösterir. Aşırı öğürme refleksinin nedenlerinin çok faktörlü doğası göz önüne alındığında, çeşitli terapötik stratejilerin araştırılması ve uygulanması gerekli olabilir.

To cite this article:
Yıldız S., Aşık B., Özyılmaz ÖY. Prescribed Treatment Options for Gag Reflex, NEU Dent J. 2024;6:108-18. https://doi.org/10.51122/neudentj.2024.94

***Corresponding Author:** Özgün Yusuf ÖZYILMAZ, *oozyilmaz@bezmialem.edu.tr*

INTRODUCTION

Humans are one of the most social living things. Along with obtaining basic needs such as shelter, nutrition and health, socialization is considered to be an emotional need for humans. However, in order to socialize and become a part of society, first people need to feel comfortable enough, and the more comfortable one feels physically and psychologically, the more likely they are to engage and integrate into society. Having various physical defects such as stuttering, weight, skin problems, oral and dental health/aesthetics problems, and flaws in physical appearance can make it difficult to socialize. Among these factors, oral and dental aesthetics/health problems such as cavities, bad breath, non-white teeth, missing teeth have a significant impact. [1]

The Pharyngeal or Gag reflex is a defensive physiological response elicited by stimuli applied to the palatal region, posterior tongue, peritonsillar area, and the posterior pharyngeal wall. It functions as a protective mechanism, preventing the inadvertent ingress of foreign objects into the oral and oropharyngeal cavities. Variability in the manifestation of this reflex is observed among individuals, with some exhibiting a reduced or entirely absent response, while others display a heightened and atypical reaction. Noteworthy is the clinical significance of an exaggerated or abnormal gag reflex, constituting a substantive health concern. The implications of such reflexive responses extend across various domains of dental practice, encompassing diagnostic assessments, radiographic procedures, and therapeutic interventions. A thorough understanding of the Pharyngeal or gag reflex is crucial for dental practitioners, as any abnormalities can significantly affect the implementation and effectiveness of dental procedures. It can impact people's willingness to seek treatment for oral and dental health/aesthetic problems.[2] People with reactive/excessive gag reflex tend to stay away from necessary treatments, enters a vicious cycle of experiencing recurring dental problems and withdrawing from social environments due to these dental problems.[2] Treatment avoidance makes it difficult for people to integrate into society or be in social environments comfortably. Reduction of the psychological stimuli as much as possible in patients with a severe gag reflex is highly recommended. Since the gag reflex is managed by the parasympathetic nervous system, drugs that selectively suppress the parasympathetic nervous system have been tried and successful results have been obtained. Other techniques including acupressure and use of sedatives that have been tried.[3]

This review discusses treatment options for excessive gag reflex.

Glossopharyngeal Nerve Block

A successful glossopharyngeal nerve block can reduce excessive gag reflex. This nerve block technique is relatively safe, simple, and easy-to-master technique compared to general anesthesia and can be used for treatment of patients with exaggerated gag reflexes or for dental treatments in the back of the mouth. Care should be taken when using this procedure by avoiding inadvertent injection of a local anesthetic to intravascular. [4]

Acupuncture

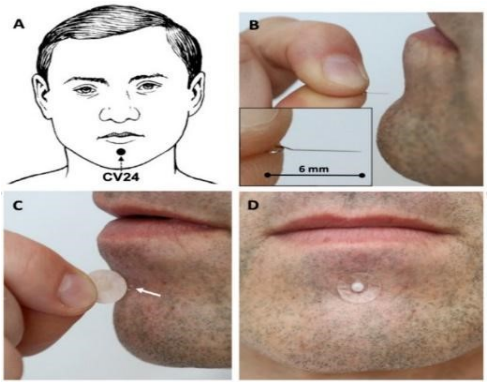
Traditional medicine is not a science based on analytical cause-and-effect logic like modern medical sciences. Within the framework of traditional therapeutic modalities, acupuncture operates on the principles of balancing the opposing forces of Yin and Yang, representative of positive and negative cosmic energies, to comprehend the nature of diseases. The fundamental mechanism underpinning acupuncture involves the meticulous application of needles that elicit a response in the nervous system, particularly activating small nerve fibers attuned to sharp pain. These activated fibers transmit signals to the central nervous system, where ensuing effects involve the interception of signals originating from identical neural regions or the modulation of pain signals emanating from interconnected

segments.[2] A secondary mechanism of acupuncture operates in a more focal manner, specifically targeting muscle trigger points. This localized approach facilitates pain alleviation by inducing vasodilation, thereby augmenting oxygen delivery to the targeted areas. The net effect involves the mitigation of muscle contractions, culminating in relief from discomfort, as elucidated in the foregoing discourse.[5]

Invitations were extended to practitioners affiliated with the British Dental Acupuncture Association to participate in an audit investigating the efficacy of acupoint conception vessel 24 (CV-24) in regulating the gag reflex. Patient inclusion criteria were strictly defined through a standardized procedural instruction sheet and a meticulously constructed registration form. In accordance with the inclusion criteria, each patient underwent a maxillary alginate impression before or after receiving acupuncture treatment at acupoint CV-24. The study assessed the gag reflex using the Gag Severity Index (GSI) before and after acupuncture needle insertion. The Gagging Inhibition Index (GPI) was then calculated. GSI and GPI metrics were recorded at three stages of the dental impression-taking process: when the empty impression tray was introduced into the oral cavity, when the filled tray was placed, and when the impression-taking procedure was completed. The study found that CV-24 point acupuncture is effective in managing severe gag reflexes during dental procedures, including impression-taking. However, it is important to note that the results of this audit require validation through a well-designed randomized controlled trial to confirm the strength and applicability of this therapeutic approach.[3] To apply this method, it is necessary to accurately identify the CV-24 point located in the horizontal mentolabial groove, which is approximately halfway between the chin and the lower lip, as shown in Figure 1.[6]

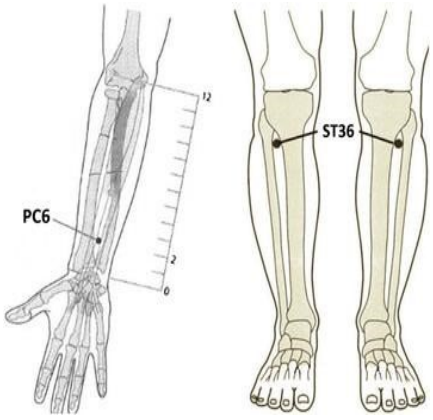
Bilello et al. [7], examined 20 patients, aged between 19 and 80, who had a gag reflex while taking dental impressions. Upper and lower alginate impressions were taken from all patients who met the inclusion criteria before and immediately after acupuncture. After each experience, participants recorded their feelings of nausea using a visual analogue scale (VAS). Upon analysis of the data, a statistically significant decrease in gag reflex scores was observed following acupuncture intervention ($p<0.05$), as outlined in the report.[7]

Figure 1: Conception vessel (CV-24) acupuncture point.[27]



Diep et al.[8] conducted an investigation to assess the efficacy of acupuncture and transcutaneous electrical acupoint stimulation (TEAS) at pericardium 6 (PC-6) and stomach 36 (ST-36) in suppressing the gag reflex when compared to a placebo control group devoid of acupuncture. The study employed a methodologically sound quantitative approach. Sixty participants were randomly selected to receive acupuncture, TEAS, or simulated TEAS (fake TEAS) at PC-6 in the forearm and ST-36 in the lower leg (Figure 2).

Figure 2: Pericardium 6 (PC-6) and stomach 36 (ST-36). [28]



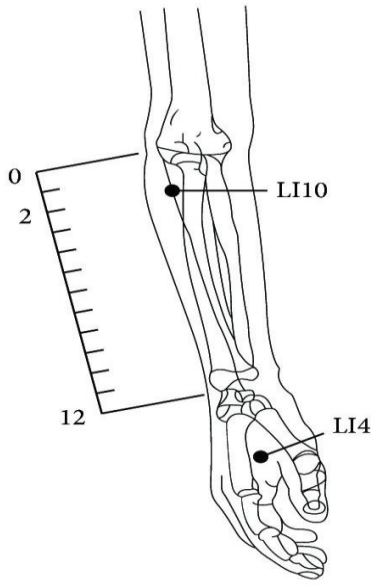
The gag reflex was evaluated by administering an air-water spray into each participant's throat to determine their maximum tolerance threshold, with insertion length serving as an index of this reflex. The study's outcomes suggest that stimulating PC-6 and ST-36 has effects similar to those observed in the placebo group, indicating comparable efficacy in mitigating the gag reflex. This finding highlights the need for further exploration and validation through robust research methodologies.[8]

In an additional investigation, the application of the PC-6 (Neiguan point) as an acupuncture locus for the modulation of the gag reflex was explored. In recognition of the challenges associated with needle acupuncture in pediatric patients, an alternative approach employing laser acupuncture was implemented to administer painless stimulation. The outcomes of this study revealed that the non-invasive laser acupuncture stimulation of the PC-6 point induced a reduction in pulse rate, an augmentation in oxygen saturation levels among patients, and a concomitant diminution of the gag reflex, all achieved without any discernible side effects. These findings align with the observations of Lu et al.,[9] who documented the efficacy of needle acupuncture at the PC-6 point in controlling the gag reflex.[3]

The anti-emetic attributes associated with acupuncture were further expounded upon, wherein the heightened levels of β-endorphins were implicated in its anti-emetic effect. Additionally, acupuncture was posited to desensitize chemoreceptor trigger zones in the brain through the mediation of neurochemical substances, thereby contributing to its anti-emetic efficacy. This multifaceted understanding underscores the intricate mechanisms through which acupuncture, whether delivered via traditional needle or laser modalities, exerts its regulatory influence on the gag reflex, providing valuable insights for clinical applications.[10]

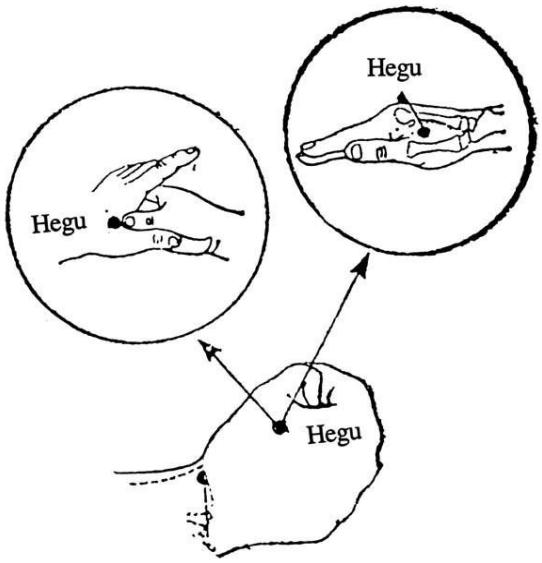
Agrawal et al.,[11] assessed the effects of electroacupuncture on gag reflex reduction. They randomly divided thirty patients into three groups: Group A, Group B, Group C. Patients in group A and B received an electroacupuncture device on the ear acupoint and Hegus point [Large intestine 4, (Li-4)], respectively whereas Group C, serving as placebo group, had Shou San Li point [Large intestine 10, (Li-10)] stimulated. Electroacupuncture (microcurrent electrical stimulation) was applied for 1 minute (Figure 3, Figure 4). GSI and GPI were used to measure gag reflex, and the evaluation was performed in two steps. Point A and point B were found to be significantly effective in reducing the severity of the gag reflex. Point C showed insignificant results. In addition, the Li-4 point is more effective than the ear acupuncture point in controlling the gag reflex in patients in the 20-70 age group.[11] Although ear acupuncture is an effective method to overcome the gag reflex and can be accepted by all patients, it requires enough experience and cannot be applied by every dentist.[9]

Figure 3: Large intestine 4 (Li 4) and large intestine 10 (Li 10) acupuncture point.[29]



Ear acupuncture points have been shown to become ineffective in the denervated ear; Therefore, it can be concluded that stimulation of ear acupoints occurs through the ear nerves, which also innervate the external auditory canal. [12]

Figure 4: Hegus (Large intestine 4) point.[30]



Use of Earplugs

The utilization of the earplug technique emerges as a practical and efficacious intervention to mitigate the gag reflex, particularly in the context of oral procedures such as maxillary teeth impression processes.[13]

Çakmak et al.[13] detailed that the severity of the gag reflex exhibited a reduction with the application of earplugs during interventions targeting the hard palate, uvula, and tongue; however, its effectiveness was less pronounced in procedures involving the posterior wall of the oropharynx.

The rationale underlying the efficacy of earplugs lies in their potential to impede the gag reflex, postulated to traverse the auriculotemporal nerve and the Arnold branch of the trigeminal nerve en route to the spinal nucleus, exerting a constraining influence on the walls of the external auditory canal. This technique not only proves effective in facilitating maxillary teeth impressions but also extends its utility to diverse dental procedures, such as periapical radiography of posterior teeth and tongue retraction. Its simplicity and noninvasiveness render it a valuable approach, potentially applicable to pediatric oral examinations. While the efficacy may exhibit variability among individual patients, the earplug technique stands as a noninvasive and pragmatic option, offering relief from the gag reflex before resorting to more invasive interventions.[13]

Eye Massage Devices

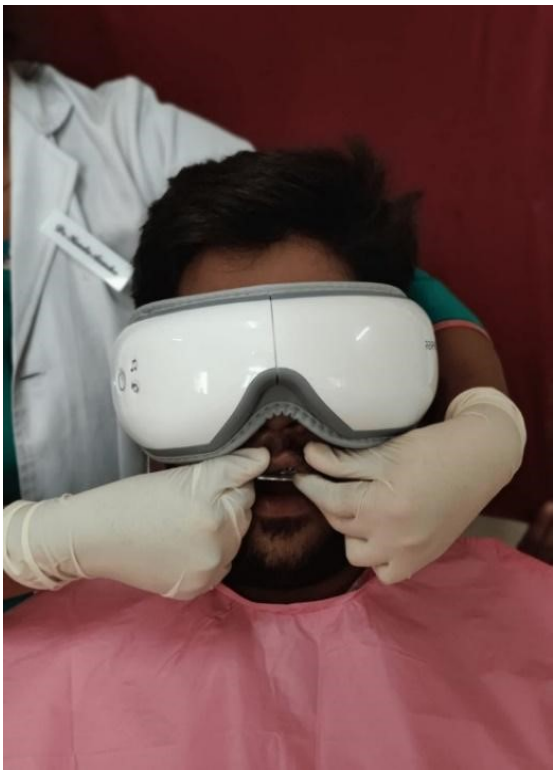
Utilizing eye massagers emerges as a potential strategy for preemptively alleviating anxiety associated with dental procedures, presenting a noteworthy departure from conventional methodologies. Serving as effective alternatives to traditional approaches, these devices leverage audio-visual aids to facilitate patient relaxation and assuage apprehensions related to the insertion of the impression tray during the dental impression process (Figure 5). The incorporation of an audio-visual component serves to temporarily divert patients from a potentially distressing environment, rendering short-term dental procedures, including impression-taking, local anesthesia administration, and intraoral radiography, more amenable and comfortable for the patient. This technique proves particularly beneficial for individuals with mild gag reflexes, aiding in the maintenance of a calm and comfortable demeanor throughout the procedure. For patients grappling with a severe gag reflex, the concurrent use of headphones featuring relaxing music, in conjunction with other established techniques, emerges as a potentially efficacious tool. To uphold patient safety standards, it is imperative that these headsets be appropriately spaced and subject to systematic disinfection protocols between appointments, ensuring the integrity of infection control measures. This multifaceted approach underscores the versatility and potential utility of employing eye massagers and auditory interventions in enhancing the overall patient experience during dental interventions.[14]

Nitrous Oxide

In 2016, a clinical investigation was conducted to assess the impact of nitrous oxide on individuals who self-reported a hypersensitive gag reflex. The investigation

followed a meticulously approved protocol sanctioned by the University Hospital Institutional Review Board. Before the study, the volunteers underwent comprehensive examinations to support their claims. Subsequently, they were subjected to a 2-dimensional digital x-ray procedure that focused on the right mandibular molar region, mimicking the positioning of a periapical radiograph. The assessment required precise placement and sustained retention of a sensor for 10 seconds.

Figure 5: Patient receiving eye massage during the measurement process. [14]



The Porter AVS 5000 unit was used to administer nitrous oxide and oxygen, along with the Rinn XCP-DS FITTM posterior periapical (PA) ring kit and a posterior PA digital sensor (Planmeca Pro Sensor) to replicate the radiographic image acquisition process. The study used a Hu-Freidy Type CW aspiration anaesthetic syringe with a 27-gauge disposable hypodermic needle and a cap to simulate an inferior alveolar (IANB) injection. The aim was to determine the effectiveness of nitrous oxide in reducing hypersensitive gag reflexes. The study employed advanced technology and procedural simulations to provide comprehensive insights. Participants were permitted to inhale room air, successively transitioning to 30%, 50%, or 70% concentrations of nitrous oxide until they could endure the placement of a sensor without eliciting retching or discomfort. Subjective responses were evaluated using a visual scale, complemented by additional statistical analyses to discern patterns in the outcomes. Remarkably, for certain individuals, a 30% nitrous oxide concentration proved adequate for tolerating the test, while others necessitated 50%; notably, for the remaining subjects, a 70% concentration was deemed sufficient. The amalgamation of 70% nitrous oxide and 30% oxygen facilitated all patients claiming an exceptionally severe gag reflex to withstand the introduction of a digital x-ray sensor adequately, enabling the acquisition of a periapical radiograph.

The precise mechanisms through which nitrous oxide attenuates the gag reflex remain unclear, as the specific pharmacodynamic pathways of nitrous oxide have not yet been fully elucidated. Plausible conjectures suggest that the anxiolytic properties inherent in nitrous oxide, known for their sedative effects, might contribute significantly to the amelioration of the gag reflex. Additionally, there exists the potential for N-methyl-D-aspartate receptor blockade by nitrous oxide, which could impede the transmission of painful sensations within the central nervous system. This intricate interplay of pharmacological actions underscores the need for further research to comprehensively delineate the pharmacodynamic intricacies of nitrous oxide in the context of gag reflex modulation.[15]

Behavioral techniques

Behavior changes are one of the most successful long-term solutions to treat patients with gag reflex issues. Behavioral techniques such as relaxation, distraction, suggestion/ hypnosis, systemic desensitization, errorless learning, and cognitive behavioral therapy are useful.[16]

Linthoingambi et al.[17] conducted a comprehensive examination into the efficacy of distraction techniques during diagnostic procedures, specifically upper and lower alginate impressions, among a group of 108 children aged 5-12 years. Employing a randomization protocol, the study incorporated various distraction methods denoted as G1 to G3 (G1: Normal gagging, G2: Mild gagging, G3: Moderate gagging), including the Mental Color Game, Audio-Visual, and Stress Ball interventions. The anxiety and gag reflex scores were recorded after impression procedure and analyzed statistically. Notably, a significantly heightened alteration in pre- and post-gag scores was observed in the Stress Ball group compared to counterparts in the Audio-Visual and Mental Color Game groups. Consequently, the study recommends the adoption of the Mental Color Game, Audio-Visual, and Stress Ball distraction methodologies as implicit tools for effectively managing both gag reflex and anxiety issues in pediatric populations.

In a separate investigation, 64% of patients (n = 30) reported the utilization of coping strategies to navigate challenges associated with their gag reflex. Predominantly, 13% of patients (n = 6) favored breathing techniques as their preferred coping mechanism. Additional strategies encompassed distraction, positive self-talk, self-hypnosis, utilization of imagery, incorporating regular breaks during treatment, adopting a forward-leaning posture in the dentist's chair, and consuming mints before treatment. A subset of participants acknowledged a lack of specific coping mechanisms for addressing gagging difficulties, while one individual articulated coping through avoidance. This multifaceted analysis sheds light on diverse coping strategies employed by patients, emphasizing the significance of tailored approaches in managing gag reflex-related challenges during dental procedures.[18]

De Veaux et al. [15] used the systematic desensitization technique to control gagging. Patients were asked to slowly put lollipops into their mouth and hold it until the gag reflex started. Patients were trained to perform this process several times a day. The amount of time they held the lollipop in their mouth increased gradually. After 4 weeks of therapy, impressions were taken from the patient without a gag reflex. In this clinical report, it was reported that the use of a intraoral scanner was a more comfortable alternative for a patient with a hypersensitive gag reflex.[15]

Sedation

Pharmacological sedation is an effective way to prevent the development of the gag reflex in patients. IV sedation eliminates exaggerated gag reflex in dental patients who experience anxiety and fear before dental treatment. The use of dexmedetomidine for sedation in patients with dental anxiety accompanied by an exaggerated gag reflex may be an alternative for the gag reflex.[19]

Hypnosis

Hypnosis is still an underutilized but effective non-pharmacological tool in dentistry. Effective sedation is provided while the patient maintains cooperation. It can help patients with dental anxiety and phobia as well as patients with severe gag reflexes.[20] A study[21], assessed this method on a 51-year-old woman who needed a full upper jaw prosthesis. The patient could not tolerate the treatment procedures due to her hypersensitive gag reflex, and it was predicted that she would not be able to wear the prosthesis even if it was completed. The patient was asked to help select the most desirable images and suggestions for use in hypnotherapy. Dental treatment and desensitization of the gag reflex were proceeded simultaneously, shortening the total treatment time.[21]

"Hypnopuncture," an integrative approach amalgamating hypnosis and acupuncture, presents a comprehensive therapeutic strategy for the enduring management of patients grappling with a pronounced gag reflex. Irrespective of the underlying causative factors, this treatment

regimen is applied consistently, offering a valuable intervention, especially in emergent dental scenarios where immediate patient compliance is pivotal. The overarching objective of such therapeutic endeavors remains the sustained control and mitigation of the gag reflex. A recent study by Eitner et al.[22] outlines a novel hypopuncture treatment protocol employed in a 50-year-old patient exhibiting a severe gag reflex. Remarkably, after just five sessions, the patient demonstrated an enhanced tolerance, allowing for subsequent dental procedures without the necessity for adjunctive tools.

This intervention employs hypnosis primarily for hypnosedation, distinct from psychotherapy, with a focal emphasis on stereognosis to facilitate desensitization. This innovative approach underscores its potential as an efficacious and expedient method for addressing and alleviating the challenges posed by a persistent gag reflex.[22]

Table Salt

Managing patients with an exaggerated gag reflex poses challenges, particularly during maxillary impressions or treatments in the posterior region, leading to discomfort. A straightforward yet effective method has been proposed to alleviate gagging in a substantial majority of patients. This intervention involves instructing patients to extend their tongue and briefly apply normal table salt to the tip for approximately 5 seconds (Figure 6). Impressions or radiography procedures can typically be conducted without undue difficulty following this intervention. Interestingly, the clinical observations do not appear to align seamlessly with established neuroanatomical principles. Conventionally, the glossopharyngeal nerve is acknowledged as the primary afferent branch governing the gag reflex, innervating the posterior third of the tongue and upper pharynx. However, the observed reduction in the gag reflex is hypothesized to result from concurrent stimulation of taste buds in the anterior two-thirds of the tongue by branches of the chorda tympani. This mechanism represents a form of simultaneous stimulation, analogous to the concept of extinction, such as experiencing pain relief during a lumbar puncture when the patient engages in deep breathing preceding the procedure. These findings challenge existing paradigms and underscore the complexity of sensory modulation in the oropharyngeal region, warranting further investigation to elucidate the underlying mechanisms.[23]

Figure 6: Patient with table salt on the tip of the tongue.

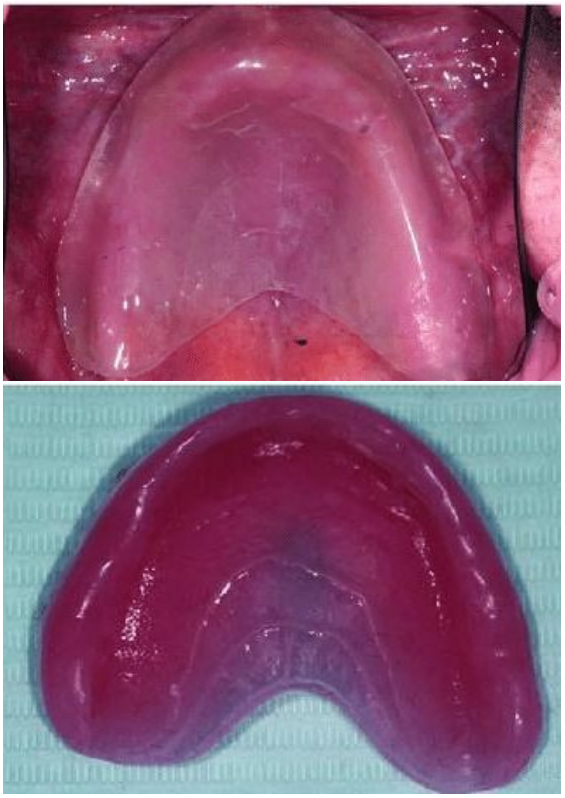
Treatment Methods for Removable Denture Patients

Some individuals may have a severe gag reflex, making it difficult for them to tolerate traditional maxillary complete dentures that cover the entire palate and extend along all borders. This challenge is even greater for patients who also have respiratory issues and an intense gag reflex, which can make it difficult to follow standard clinical procedures and significantly reduce the effectiveness of their prosthesis. To tackle this complexity, a viable approach involves preserving select natural teeth. This facilitates the implementation of a successful treatment paradigm using a horseshoe-shaped simple denture without a

palate or a bar-supported overdenture. This tailored strategy is instrumental in accommodating patients with severe gagging, allowing for effective prosthesis utilization. [24]

Furthermore, for completely edentulous patients with heightened gag reflexes, temporary interventions such as removable training plates made from acrylic material can be used as a desensitization measure before providing a permanent removable denture (Figure 7).[25] Additionally, patients who use removable prostheses are advised to practice regularly at home, with at least three sessions per day, five days a week. Gradual increases in usage time, implemented in 30-second intervals, are recommended until the patient reaches a comfortable threshold, typically defined by three consecutive periods without eliciting a gag reflex. Dietary guidance involves consuming soft foods, such as applesauce, during the acclimatization phase, progressing towards the inclusion of denser food items as the patient's tolerance develops.

Figure 7: Transparent acrylic education plaque.[31]



This approach highlights the need for individualized management of patients with severe gag reflexes, with a focus on customized interventions to improve prosthesis acceptance and patient well-being.[26]

CONCLUSION

Gag reflex is a protective mechanism. Reactive gag reflex can negatively affect people with oral and dental health/aesthetic problems resulting in treatment avoidance. It has multifactorial causes and excessive gag reflexes are observed in individuals of all ages. Thanks to developing technology and a better understanding of human nature and anatomy, patient with such issues can undergo any oral and dental health procedure available today.

Ethical approval

Ethics committee approval was not obtained in this study as resources derived from humans or animals were not used.

Financial Support

No financial support was received from any institution or organization for this study.

Conflict of Interest

The authors declare that they have no competing interests.

Author Contributions

Design: ÖYÖ, SY, Collecting and entering data: SY, BA, Analysis and comment: ÖYÖ, BA, Literature review: SY, BA, Writing: SY, BA, ÖYÖ.

REFERENCES

1. Kumar S, Satheesh P, Savadi CR. Gagging. N Y State Dent J. 2011;77:22-7.
2. Goel H, Mathur S, Sandhu M, Jhingan P, Sachdev V. Effect of low-level laser therapy on P6 acupoint to control gag reflex in children: A clinical trial. J Acupunct Meridian Stud. 2017;10:317-23.
3. Kalambettu A, Nagaraj E, Abraham A, Ganapathy DM, Kondody RT. Use of acupuncture in controlling gag reflex in completely edentulous patients. Research J. Pharm.2023;16.

4. Garg R, Singhal A, Agrawal K, Agrawal N. Managing endodontic patients with severe gag reflex by glossopharyngeal nerve block technique. J Endod. 2014;40:1498-500.
5. Kalambettu A, Nagaraj E, Abraham A, Ganapathy DM, Kondody RT. Use of acupuncture in controlling gag reflex in completely edentulous patients. Research J. Pharm. 2023;16.
6. Raghavan R, Sathish S. Acupuncture in prosthodontics. Guident. 2016;9:24-9.
7. Vachiramon A, Wang WC. Acupressure technique to control gag reflex during maxillary impression procedures. J Prosthet Dent. 2002;88:236.
8. Bilello G, Fregapane A. Gag reflex control through acupuncture: a case series. Acupunct Med. 2014;32:24-7.
9. Diep C, Karibe H, Goddard G, Phan Y, Shubov A. Acupuncture and transcutaneous electrical acupoint stimulation do not suppress gag reflex. Med Acupunct. 2021;33:353-7.
10. Lu DP, Lu GP, Reed JF. Acupuncture/acupressure to treat gagging dental patients: A clinical study of anti-gagging effects. Gen Dent. 2000;48:446-52.
11. Somri M, Vaida SJ, Sabo E, Yassain G, Gankin I, Gaitini LA. Acupuncture versus ondansetron in the prevention of postoperative vomiting. A study of children undergoing dental surgery. Anaesthesia. 2001;56:927-32.
12. Agrawal S, Kambala SS, Borle AB, Balwani T. Comparative evaluation of effect of microcurrent electrical stimulation on acupoints to control gag reflex in patients receiving prosthodontic treatment: An in vivo study. J Indian Prosthodont Soc. 2022;22:188-94.
13. Shu, J, Liu RY, Huang XF. Efficacy of ear-point stimulation on experimentally induced seizure. Acupunct Electrother Res. 2005;30:43-52.
14. Cakmak YO, Ozdogmus O, Günay Y, Gürbüzer B, Tezulaş E, Kaspar EC et al. An earplug technique to reduce the gag reflex during dental procedures. Forsch Komplementmed. 2014;21:94-8.
15. Colvenkar S, Kalmath B, Cherukuri VP, Vanapalli J, Tirukovalur SR. A simple technique to manage gag reflex. Cureus. 2023;15:e35403.
16. De Veaux CKE, Montagnese TA, Heima M, Aminoshariae A, Mickel A. The effect of various concentrations of nitrous oxide and oxygen on the hypersensitive gag reflex. Anesth Prog. 2016;63:181-4.
17. Ali S, George B, Kirmani U, Al-Saiari AKA, Almasabi FRA, Iqbai Z. Gagging and its management in prosthodontic patients - A review of literature. Biomedica. 2019;34:178-83.
18. Linthoingambi A, Harsimran K, Rishika C, Ramakrishna. Effectiveness of intellectual color game, audio-visual and stress ball distraction methods on gagging and anxiety management in children. J Clin Pediatr Dent. 2022;46:6-10
19. Hanisworth JM, Hill KB, Rice A, Fairbrother KJ. Psychosocial characteristics of adults who experience difficulties with retching. J Dent. 2008;36:494-9
20. Reshetnikov AP, Kasatkin AA, Urakov AL, Baimurzin DY. Management of exaggerated gag reflex in dental patients using intravenous sedation with dexmedetomidine. Dent Res J (Isfahan). 2017;14:356-8.
21. Facco E, Zanette G, Casiglia E. The role of hypnotherapy in dentistry. SAAD Dig. 2014;30:3-6.
22. Clarke JH, Persichetti SJ.Hypnosis and concurrent denture construction for a patient with a hypersensitive gag reflex. Am J Clin Hypn. 1988;30:285-8.
23. Eitner S, Wichmann M, Holst S. A long-term therapeutic treatment for patients with a severe gag reflex. Int J Clin Exp Hypn. 2005;53:74-86.
24. Friedman, MH, Weintraub MI. Temporary elimination of gag reflex for dental procedures. J Prosthet Dent. 1995;73:319.
25. Singh K, Gupta N. Palateless custom bar supported overdenture: a treatment modality to treat patient with severe gag reflex. Indian J Dent Res. 2012;23:145-8.
26. Ali R, Altaie A, Morrow L. Prosthetic rehabilitation of the gagging patient using acrylic training plates. Dent Update. 2015;42:52-4, 56-8.
27. Neumann JK, McCarty GA. Behavioral approaches to reduce hypersensitive gag response. J Prosthet Dent. 2001;85:305.
28. Usichenko T, Kozarez IM, Knigge S, Busch R, Busch M. Acupuncture for relief of gag reflex in patients undergoing transoesophageal echocardiography-A protocol for a randomized placebo-controlled trial. Medicines. 2020;7:17.
29. Chiu CW, Lee TC, Hsu PC, Chen CY, Chang SC, Chiang JY et al. Efficacy and safety of acupuncture for dizziness and vertigo in emergency department: A pilot cohort study. BMC Complement Altern Med. 2015;15:173.

30. Liu YT, Chiu CW, Chang CF, Lee TC, Chen CY, Chang SC et al. Efficacy and safety of acupuncture for acute low back pain in emergency department: A pilot cohort study. Evid Based Complement Alternat Med. 2015;2015:179731

31. Ren, X. Making an impression of a maxillary edentulous patient with gag reflex by pressing caves. J Prosthet Dent. 1997;78:533.

32. Jablonski RY, Patel J, Morrow LA. Complete dentures: An update on clinical assessment and management: Part 2. Br Dent J. 2018;225:933-9.