

## REVIEW ARTICLE

# Managing Gag Reflex during dental treatment: A review

Ramesh Nagarajappa<sup>1</sup>, Ipsita Mahapatra<sup>2</sup>, Debasruti Naik<sup>3</sup>, Nidhi Sharma<sup>4</sup>, Sudipta Sahu<sup>5</sup>,  
Karishma Rathore<sup>5</sup>

<sup>1</sup>Professor and Head, <sup>2</sup>Post Graduate Trainee, <sup>3</sup>Senior Lecturer, <sup>5</sup>Tutor, Department of Public Health Dentistry, Institute of Dental Sciences, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Odisha.

Email – rameshpdc@yahoo.co.in

<sup>4</sup>Senior Lecturer, Department of Oral Medicine and Radiology, Daswani Dental College and Hospital, Kota, Rajasthan. Email: sgnnidhi@gmail.com.

ORCID ID – 0000-0003-3095-9899

Corresponding author's: rameshpdc@yahoo.co.in

### ABSTRACT

Gagging in dental patients are often troublesome to dental treatment and certainly an obstruction to patient care, restricting the availability of treatment and also the sporting of prostheses. It is a physiological process which is protective in nature. Patients having gag reflex can create potential problems during dental procedures, resulting in compromised dental care. The reason behind can be due to any local or systemic factors, social factors, anatomical factors, or inadequacies from existing prostheses. The current review article is focused upon the management of gag reflex as well as involves strategies to assist the clinicians upon the same.

**Keywords:** Gag Reflex, Dental Treatment, Management

Received 04.06.2021

Revised 11.06.2021

Accepted 01.08.2021

### How to cite this article:

R Nagarajappa, I Mahapatra, D Naik, N Sharma, S Sahu, K Rathore. Managing Gag Reflex during dental treatment: A review. Adv. Biores. Vol 12 [5B] September 2021. 373-376

## INTRODUCTION

Gag reflex is a completely annoying or frustrating situation which arises during dental procedures. This kind of reflex mechanism usually develops in retaliation to foreign body obstruction while protecting the upper respiratory tract [1]. It can be conditioned by any visual, acoustic, olfactory or non-tactile stimuli [2, 3]. The most probable reason for a patient inducing gag reflex can either be due to contact of their oral mucosa by the dentist's fingers or instruments, or due to memory of any previous dental experience.

During the process of gagging, there is contraction of pharyngeal muscles and pharyngeal sphincter is formed. The retching process is an attempt for elimination of noxious substances from stomach [4]. The patient suffers from mild choking, nausea to excessive retching leading to emesis. The primary parasympathetic division of the autonomic nervous system controls the normal gag reflex. Alterations in the shape of pharynx and ejection of foreign bodies from the mouth are part of the gagging movement. It also prevents foreign bodies from entering the trachea.

## FACTORS INFLUENCING GAGGING

Considered to have a multifactorial etiology, gagging can be caused due to any physical or psychogenic stimuli. Local and systemic disorders which tends for gagging reflex are- nasal obstruction, congestion of oral or nasal mucosa, sinusitis, post-nasal dip, chronic gastritis, stomach carcinoma, uncontrolled diabetes mellitus, etc. Patients wearing dentures have reduced tongue spaces causing displacement of tongue posteriorly into the pharynx, thereby stimulating gag reflex.

Oropharyngeal sensitivities and anatomical abnormalities are certain physical factors responsible for gagging [5, 6]. No anatomic abnormalities were found between gaggers and non-gaggers, in a study conducted on denture wearers, by comparing their radiologic abnormalities [7]. However, few adaptive

changes were observed in the gagging group like posture of tongue, hyoid bone and soft palate. There is no explanation regarding the enlarged areas of sensory innervations causing gag reflex with auditory, olfactory, or visual stimuli [7].

Social factors involved with gagging include smoking, coughing and excessive consumption of alcohol. Restricted airway can also result in gagging. Tolerating bulky dentures is also very difficult for patients with large tongue which influences gagging. An unpleasant gag response is often associated with sight of an impression tray, or by the smell from dental surgeries, or the sound from a dental handpiece. After the association of this stimuli is known by the patient as the reason of gagging, a conditioned gag response to these stimuli usually develops, which is often called as classical conditioning [3].

Iatrogenic factors caused during any dental treatment also induces gagging. Poor clinical techniques like overloaded impression tray or poorly retained prosthesis is the cause for stimulating the gag reflex in patients non-susceptible to gagging. Overextended prosthesis borders induce gagging by impinging on the “trigger zones” [9].

### MANAGEMENT

It is possible in general dental practice, to manage a patient with mild to moderate gagging problem. Patients with severe gagging problem, however require referral to a dentist with curiosity in treatment of patients with such problem. But this does not infer that there is no further role of general practitioner. Usually, the patient’s dentist is in the most favourable post for reinforcing and applying the management techniques depending on the patient exposure.

### ASSESSMENT

A calm, relaxing and reassuring environment is essential for a clinician to obtain a detailed history. The attitude of the clinician towards the patient, completely decides the outcome of treatment. Taking informed consent prior to any dental procedure is a foremost for any practitioner. Inspection should only proceed after the patient is well informed about the things involved in an intraoral examination. Being sympathetic to the patient’s difficulties, establishing a dialogue at the beginning, and generating trust, although time consuming, should be the primary role of a dental team.

### INTERVENTIONS FOR MANAGEMENT OF GAG REFLEX

As per the Fiske and Dickinson criteria [10], the treatment of gag reflex is as per the grading of gag reflex. This includes-

1. Normal / Obtunded gag reflex - dental treatment successful
2. Partially controlled gag reflex - all dental treatments possible
3. Partially controlled gag reflex but frequent gagging - simple dental treatment possible
4. Inadequately controlled gag reflex - simple dental treatment unable to be completed
5. Very severe gag reflex - no dental treatment possible

For effective treatment of patients with tendency of gag reflex, it is foremost to let the patient receive any dental procedure, with minimum anxiety and stress. It is very essential to know the causative factor and then do the necessary treatment, other than merely symptomatic treatment. It has been suggested that behavioural techniques can play a vital role in managing gag reflex. Modification of behaviour has also been claimed to be the most flourishing long-term method of treating patient with gag reflex [11]. The objectives under behaviour modification are generally to reduce anxiety and “unlearn” the behaviours which incite gagging. Under behavioural techniques also included are-relaxation, controlled breathing, hypnosis, positive self-statements or a combination of all these [12, 13]. The patient’s attention can be diverted temporarily by using distraction techniques which may permit for a short dental procedure. Patient could be instructed to inhale through nose and exhale through mouth.

Certain clinical techniques like Appleby and Bay’s finger massage of the soft palate and putting table salt in the tip of the tongue for five seconds, are methods which helps in elimination of the gag reflex, therefore permitting for prolonged exposure to the dental prosthesis or dental procedures [14]. Singer’s

marble technique could also be helpful in making the patient reduce gag reflex, where in one week prior to the treatment they are asked to suck five ordinary glass marbles in their mouth which in turn will increase their tolerance capacity and help in smooth impression taking [1, 15].

Pharmacological techniques include use of peripherally and centrally acting drugs. Local and topical anaesthetics are drugs those act peripherally by eliminating the afferent impulses which arise from sensitive regions in the oral cavity. Drugs acting centrally are antihistamines, tranquilizers, sedatives and parasympatholytic. These drugs are effective in severe or chronic gag reflex. Use of conscious sedation with inhalational, oral, or intravenous agents, maintain reflexes that defend the patient's airway and are responsible for temporary elimination of gagging during dental treatment. In patients with mild gag reflex with an elementary anxiety state, oral sedatives are proved to be supportive [16].

Hypnosis, acupuncture and hypnotherapy are included as therapies of complementary medicine. Hypnosis is "production of a state, resembling deep sleep, in which patient acts only on external instructions". Hypnotherapy is "treatment of disease using hypnosis". Although in poorly motivated, severely depressed and patients receiving treatment for psychoses, the hypnotherapy procedure is contraindicated. In acupuncture therapy, needles are used to induce stimulation by puncturing definite anatomic points, followed by application of direct pressure over those points, without puncturing the skin. At least 5 minutes prior to the start of any procedure like impression making, acupressure procedure should be commenced and continued all through the procedure. It should be ended after the completion of dental procedure. after removal of the impression from the patient's mouth. The dental assistant, patient or dentist can apply the pressure. The acupuncture sites for control of gagging are as follows-

1. Neiguan point (medial aspect of forearm),
2. Hegu point (concave region between 1st and 2nd metacarpal bones of the hand) or
3. Fiskeear point (anti-gagging point of each ear)

There are various means for prosthodontic management of gag reflex. A matte finish to the denture is preferred as more acceptable by patient in comparison to a glossy surface as suggested by Jordon (1954). It was also emphasised that for elimination of gagging problem, an increase in interocclusal distance is essential, thereby raising the importance of "Freeway space". Kerr impression wax could be used over special trays to make impression. The border moulding and seating of the tray is simplified by the pliability of the impression wax. Murphy (1979) fabricated training plate made up of clear acrylic to manage gag reflex [17]. Reducing the palatal coverage of a maxillary denture with a U-shaped border, approximately 10mm from the dental arch, is another way to combat gagging. With improvement in taste, the gagging tendency also disappears. For gagging caused due to posterior displacement of impression material, Callison [18] incorporated suction tube in a modified maxillary impression tray. After applying base plate wax, it was adapted on the postero-superior surface of custom acrylic resin tray. Thereafter, a disposable saliva ejector was embedded in wax, followed by a second layer of self-cure resin which was attached to tray. Later on, the wax spacer was removed. Once border moulding was done, final impression was made and the excess material was sucked into the formed vacuum chamber.

Other than all these steps, the dentist must be accurate in selection of the accurate size of the tray, use a fast-setting impression material, a good impression technique, maintain proper thickness of the posterior palatal seal as well as preserve a stable occlusion for prevention of gagging. If the patient has relaxed and atonic soft palate, then gagging may still persist despite all these measures. The treatment for such condition is surgical correction for tightening and shortening of the soft palate [16].

## CONCLUSIONS

Explicit gagging could be stressful for both the patient and dentist. For a successful management of a gagging patient, there seems to be no universal remedy. The current review article focused on a wide array of treatment strategies which has been portrayed as successful. Controlled trials and clinical cases on the same are suggested for a better evidence on a definitive treatment of gagging patients.

**Funding:** None

**Conflicts of Interests:** Nil

**Acknowledgements:** None

**REFERENCES**

1. Goyal G (2014). Gag Reflex: Causes and Management. *International Journal of Dental and Med Research*.1(3):163-166.
2. Means CR, FlennikenIE. (1970). Gagging a problem in prosthetic dentistry. *Journal of Prosthetic Dentistry*. 23: 614-620.
3. Kovats JJ. (1971). Clinical evaluation of the gagging denture patient.*Journal of Prosthetic Dentistry*. 25: 613-619.
4. Savage RD, MacGregor AR. (1970). Behaviour therapy in prosthodontics. *Journal of Prosthetic Dentistry*. 24:126-132.
5. Pastorello JR. (1959). Chronic gagging in the new denture wearer. *Journal of American Dental Association*. 59:748-9
6. Mack AD. (1964). Complete dentures. Part II. The type of mouth. *British Dental Journal*. 116:426-429.
7. Wright SM. (1981). The radiologic anatomy of patients who gag with dentures. *Journal of Prosthetic Dentistry*. 45:127-133.
8. Newton AV. (1984). The psychosomatic component in prosthodontics. *Journal of Prosthetic Dentistry*. 52: 871-874.
9. Landa JS. (1954). *Practical full denture prostheses*. London: Kimpton; p 363-75.
10. Fiske J, Dickinson C. (2001). The role of acupuncture in controlling the gagging reflex using a review of ten cases. *British Dental Journal*.190:611-613.
11. Altamura LS, Chitwood PR. (1974). Covert reinforcement and self-control procedures in systematic desensitization of gagging behaviour. *Psychological Reports*. 35:563-566.
12. Zach GA. (1989). Gag control. *General Dentistry*. 37:508-509.
13. Neumann JK, McCarty GA. (2001). Behavioural approaches to reduce hypersensitive gag response. *Journal of Prosthetic Dentistry*. 85:305.
14. Conny DJ, Tedesco LA. (1983). The gagging problem in prosthodontic treatment. Part II: Patient management. *Journal of Prosthetic Dentistry*.49:757-761.
15. Singer IL. (1973). The marble technique: method for treating the 'hopeless gagger' for complete dentures. *Journal of Prosthetic Dentistry*. 29:146-150.
16. Kaira LS, Dabral E, Kukreja HS. (2014). Gagging a review. *Nitte University Journal of Health Science*.4(1):149-155.
17. Hajira N, Khandelwal P, Sachdeva H, Khare S. (2020). Combating the hypersensitive gag reflex in patients undergoing dental treatment – a review. *International Journal of Contemporary Medical Research*. 7(6): F11-F14.
18. Callison GM. (1989). A modified edentulous maxillary custom tray to help prevent gagging. *Journal of Prosthetic Dentistry*. 62:48-50.

**Copyright:** © 2021 Society of Education. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.