

## Gag reflex: A dentist's perspective

A.P Nirmal Raj, Sanajay Kumar\*, Nirmesh Vora and M Vijaya Raju

Department of Prosthodontics, College of Dental Sciences & Hospital, Amargadh. Bhavnagar, Dist, Gujarat, India.

### \*Correspondence Info:

Dr. Sanajay Kumar,  
Senior Lecturer  
Department of Prosthodontics,  
College of Dental Sciences & Hospital,  
Amargadh, Bhavnagar, Dist, Gujarat, India.  
E-mail: [sanjay.japatti@gmail.com](mailto:sanjay.japatti@gmail.com)

### Abstract

The gag reflex, which is protective in nature, occurs commonly during prosthetic or dental treatment. It is a complex physiological phenomenon and many dental practitioners are facing problems with the same. Gag reflex is a frustrating problem in many dental procedures and may result in a compromised treatment. Many management methods have been described till date for the control of gagging, but the technique or techniques used should be dictated by the cause or causes and not merely the symptoms involved. Thus it is very important that every dental practitioner should have thorough knowledge about gagging. The present article reviews the gag reflex, its etiology and management.

**Keywords:** Dental treatment, Gag reflex, Prosthetic treatment.

### 1. Introduction

Gagging is a very annoying situation that occurs during various dental procedures and mainly during prosthetic treatment. It is a physiological mechanism to protect upper respiratory tract from the aspiration of the foreign bodies.[1][2] However, in certain situations, it can be a acquired reflex, conditioned by various stimuli like visual, olfactory, psychic, acoustic, toxic or chemical transmitted via the blood flow or the cerebrospinal fluid.[1]

The gagging is an involuntary contraction of the soft palate muscles, or the muscles of the pharynx that result in retching. In retching, peristalsis becomes spasmodic, uncoordinated, and the direction is reversed, air is forced over the closed glottis producing a characteristic retching sound. Thus eject foreign bodies from mouth and pharynx and prevents foreign body aspiration.[1][2]

The gag reflex is a physiological reflex that progressively regresses during the child's first four years of life. As the oral functions of the child begins to mature i.e. changing from infantile methods of breathing and suction to more mature functions of the aspiration, swallowing and nasal breathing; the gag reflex becomes more posterior after the appearance of the first dentition which makes the child try to

stimulate the respective receptors by introducing various objects in his mouth.[3] Thus, the child enriches his sensorial references and is ready to begin lateral mastication. The reflex is located at the tonsil pillars. The persistence of the gag reflex in the adult shows an orofacial immaturity, commonly associated with multiple forms of dysphagia.[3]

Gag reflex is hyperactive reflex and usually presents a problem to the dentists, particularly prosthodontists when it is necessary to make impressions or fit the prosthesis.[4][5]

It can be as serious problem because the failure to control the gag reflex may leave the patient permanently edentulous or with esthetically and nutritionally unsatisfactory outcome. This may lead to further severe oral changes such as, bone resorption, temporomandibular joint problem, changes in vertical dimensions, etc.[6]

It is also responsible for embarrassing situations both for the patient and the clinician on account of sudden, violent uncontrolled retching.[3]

Thus it is very important to know the essential aspects of the gagging, so that the dental practitioner can be able to handle the situation.

## 2. Neural pathway of gag reflex

The normal gag reflex is an adaptive vital mechanism for survival controlled by primary parasympathetic division of the autonomic nervous system.[3][6] When stimulation occurs intraorally at various location in the posterior mouth, afferent fibers of the trigeminal, glossopharyngeal, and vagus nerves pass to the medulla oblongata. From this site, efferent impulses give rise to the spasmodic and uncoordinated muscle movement characteristic of gag reflex. The center in the medulla oblongata is close to the vomiting, salivating, and cardiac centers, and these structures may be stimulated during gag reflex. Furthermore, neural pathways from the gagging center to the cerebral cortex allow the reflex to be modified by higher centers.[7]

### 2.1 Classification

**Gagging or Gag-reflex has been classified as[8]:**

#### i. Somatogenic Gagging:

It describes gagging that is primarily induced by physical stimuli. The five intra-oral sites as 'trigger zones' for examination purpose include palatoglossal and palatopharyngeal folds, palate, base of tongue, uvula, and posterior pharyngeal wall.[8]

#### ii. Psychogenic Gagging:

It describes gagging induced primarily by psychological stimuli. The psychological contributions are represented by conditioned protective reflexes from earlier experiences or existing stresses and anxieties.[8]

**Faigenblum classification of patients with gag reflex[9]:**

#### i. Mild and

#### ii. Severe retching.

The patient with mild retching may experience nausea with minimal reaction to a stimulus and generally is able to control the response.[9]

Morstad gave a classification of gagging based on whether gagging occurs in a patient immediately after giving the prostheses or after a delayed period[9]:

#### i. Immediate

It is caused by overextension at post palatal area in maxillary denture or bulky distolingual flange in mandibular denture. It occurs when the prosthesis is given to the patient.

#### ii. Delayed

It occurs within two weeks to two months after insertion of the denture and may be due to an incomplete border seal which allows seepage of saliva under the denture.

## 3. Etiology

Various etiological aspects has been put forward to explain the gag reflex:

#### **Local factors:**

Nasal obstruction, catarrh, sinusitis, postnasal drip, dry mouth, nasal polyps, mucosal congestion of the upper respiratory tract, and medications that cause nausea as a side effect are thought to cause or predispose to gagging.[7]

#### **Systemic Disorders:**

Alcoholism, smoking, carcinoma of the stomach, chronic gastritis, peptic ulcer, and cholecystics may be related to chronic gastrointestinal irritability and gagging.[7][9]

#### **Anatomic factors:**

Factors such as anatomical abnormalities and oropharyngeal sensitivities have also been suggested as predisposing to gagging.[7]

#### **Psychological Factors:**

Patients may gag to gain attention from the dentist, to avoid treatment, and/or to avoid the outcome of treatment. Further, fear is the underlying factor influencing the psychological gag reflex. The fear may be generalized and vague or quite specific.[7][9]

#### **Physiologic Factors:**

Also there are two types of physical stimuli: tactile & non-tactile. In dental prosthesis physiological factors include smooth shiny surface, inadequate post dam, under extended dentures, overextended borders, disharmonious occlusion, and inadequate freeway space.[9][10]

#### **Iatrogenic Stimuli:**

Tactile stimulation of the oral tissues inevitably occurs when executing various dental procedures, careful examination and execution of modified techniques can minimize stimulation that causes gagging.[7][9]

## 4. Management

Effective management of gagging depends on treating the cause and not merely the symptomatic treatment. The management falls into following categories, namely:

### **4.1 Psychologic Intervention:**

In this category, the suggested approaches run from a gentle manner to psychotherapy. Psychotherapy includes hypnosis, covert reinforcement modelling fear reduction and behavior management procedure of systemic desensitizing. Many recommended clinical techniques are directed at diverting the patient's attention from the gagging stimuli.[7][9][10]

#### 4.2 Prosthodontic Management:

Prosthodontic approaches involve technical modifications to make the prosthesis more acceptable to the patient. Excess thickness, overextension or inadequate post-dam should be corrected before more radical modifications in the prosthesis are made.[1][7][9][10]

#### 4.3 Cognitive Behavioral Therapy:

This method focuses on changing irrational thought processes.[9][10]

#### 4.4 Pharmacologic Measures:

The drugs used to control gagging maybe classified as peripherally acting or centrally acting drugs. Peripherally acting drugs are topical and local anesthetics.[7][9]

#### 4.5 The Role of Acupuncture:

Acupuncture is a system of medicine in which a fine needle is inserted through the skin to a depth of a few millimetres, left in place for a time, sometimes manipulated and then withdrawn. Acupuncture is one of a range of treatment options that can be employed in an effort to control gagging.[9]

### 5. Conclusion

Gagging is distressing for both the patient and clinician. A wide variety of management strategies have been described till date and these should be used to suit the needs of individual patients. In management of patients with gag reflex it is important to take a clear history of the problem. This information will enable the clinician to gauge the severity of the problem and therefore make appropriate decisions on an ideal technique to use. Each case will need to be assessed individually as the strategy needs to be adapted to that particular patient's requirements.

### References

- [1] Goyal G. Gag reflex: Causes and management. *International Journal of Medical and Dental Research* 2014; 1(3):163-166.
- [2] Chandra Sekhar Reddy SN, Venu Gopal N. Management of gagging in complete denture wearer- A case report. *Annals and Essences of Dentistry* 2013; 5(3):46-48.
- [3] Ardelean L, Bortun C, Motoc M. Gag reflex in dental practice- Etiological aspects. *TMJ* 2003; 53(3-4):312-315.
- [4] Kramer RB, Braham RL. The management of the chronic or hysterical gagger. *J Dent Child.* 1977; 44: 111-116.
- [5] Means CR, Flenniken IE. Gagging—A problem in prosthetic dentistry. *J Prosthet Dent.* 1970; 23: 614-620.
- [6] Kassab NH, Al-Saffar MT. Gagging: A problem in prosthetic dentistry and its medical treatment. *Al-Rafidain Dent J* 2005; 5(2):168-173.
- [7] Bassi GS, Humphris GM, Psychol M, Clin PC, Longman. The etiology and management of gagging: A review of the literature. *J Prosthet Dent* 2004; 91:459-467.
- [8] Singh S, Ali FM, Nazirkar G, Dole VK, Gaikwad B. Gag- Etiology and its skillful management- A review. *Journal of Evolution of Medical and Dental Sciences* 2013; 2(10):1509-1516.
- [9] Kaira LS, Dabral E, Kukreja HS. Gagging: A review. *Nitte University Journal of Health Science* 2014; 1(1):149-515.
- [10] Malik P, Rathee M. Gagging and its management: A review. *International Journal of Scientific Research* 2014; 3(1):357-358.