



## **Etiology and Management of Gagging: A Case Report and Review**

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### **ABSTRACT**

*Gagging can be defined as the involuntary contraction of muscles of soft palate or pharynx that results in retching. It is the body's protective reflex to protect the airway and remove any irritant, usually a foreign particle from the posterior oropharynx and upper GI tract. Increased gag reflex can interfere with the patient's treatment. The case reports presents a technique of fabrication of matte finish cast metal denture in a patient who was unable to wear denture due to severe gag reflex.*

*Keywords: Cast metal, Gagging, Denture and Matte Finish*

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### **INTRODUCTION**

Gagging is a physiologic reaction that protects the airways from foreign body aspiration. Gagging reaction differs in people and may vary from mild choking in some to violent, uncontrolled retching and vomiting in others. The field of dentistry is greatly affected by the gag reflex as a pronounced gag reflex hinders all the procedures beginning right from the diagnostics to any active treatment and makes the patient apprehensive to dental treatment. Gagging can be due to iatrogenic factors, some organic disturbances and anatomic or psychological factors. To manage this, relieving the patient of just the symptoms is not enough. A dentist should take a thorough history of the patient and after due examination should determine a definitive cause for the gagging and manage it accordingly [1-2].

### **FACTORS CAUSING GAGGING**

**Local and systemic disorders:** Any obstruction in the oral or nasal cavities, sinusitis, nasal polyps and some chronic diseases of the GI tract like gastritis, peptic ulcers and carcinoma of the stomach may cause gagging. Apart from this parasympathetic impulses from severe pain sites other than GIT and uncontrolled diabetes are also considered as causes of gag reflex [3]. Gagging is also stimulated by dentures since they are themselves in contact with the soft tissues and also cause the tongue to be displaced into the pharynx [4].

#### **Anatomical factor**

Certain anatomical abnormalities and oro-pharyngeal sensitivities make a patient susceptible to pronounced gagging. Enlarged sensory innervation areas have not been deterministic to understand the relation between gag reflex and auditory, olfactory, or visual stimuli [5-7].

### **PSYCHOLOGICAL FACTORS**

On investigating the personality of gaggers and non-gaggers, no significant variation was found for neuroticism, extroversion or psychoticism in patients having pronounced gag reflex. [8-10] Marked gag reflex may be present in some individuals regardless of any underlying condition. To understand this, two theories have been described [11] Classical conditioning When an individual is subjected to a neutral stimulus, it triggers a certain behavioral response, this is termed as classical conditioning [12,13] For eg., sound of an air rotor, or the sight of the impression material may automatically illicit an unpleasant feeling in the patient's head stimulating a conditioned gag reflex [14] Operant conditioning This is a gradual process wherein the patient's response depends upon the past consequences of the same

experience.[15]These consequences may be negative or positive and get associated with voluntary behaviour.

**Latrogenic factors:** A successful dental treatment is one which is a pleasant experience for the patient wherein good clinical skills come into play. An overloaded impression tray, overextended or unstable prosthesis, and increased vertical dimension may stimulate gagging and make the patient apprehensive of further dental treatment.[16,17] Some patients may be so sensitive that a highly polished surface filmed with saliva triggers gagging for them. A matte finish denture should be fabricated for such patients, hence making clinical expertise an important factor to manage gagging. [18]

### CASE REPORT

Patient named Pradeep Kumar, age 55 years, reported to the department with the chief complaint of inability to wear his denture as he had a severe gag reflex with the denture. He was having an edentulous maxilla and a Fixed Partial Denture in the mandibular arch.

#### Treatment

Patient has been given an acrylic palatal plate for desensitization. Prior to the initiation of the treatment, the patient was advised to keep four to five marbles in his mouth for about a week. After which, he was provided with toothless acrylic training baseplates and was asked to wear them while keeping 2-3 marbles in his mouth. A cast metal Maxillary denture with matte finish was planned for the patient. Topical anesthetic spray is sprayed to reduce the soft palate irritation Primary impression was made with Impression compound. It was ensured that the posterior border is not impinging on the soft palate and is comfortable for the patient .Border molding was done with greenstick material and Secondary impression was made with light body Polyether. Jaw relations were recorded. Denture was fabricated with a cast metal denture base with matte finish. Post insertion instructions were given to the patients and he was advised to wear the denture for a short time initially, and slowly increase the time. The patient was asked to come for follow up after 24 hours .The patient was recalled regularly for a month with an interval of a week. The patient was comfortable and had no gag reflex.

#### Management of Gag Reflex

The objective is to provide the treatment with least possible stress and anxiety to the patient and give a prosthesis which is functionally acceptable. The following measures can be taken to avoid gag reflex-

1. Behavioural techniques
2. Psychological measures
3. Pharmacological methods
4. Surgical correction
- 5 Acupressure and Acupuncture

#### Behavioral Techniques [19]

Behavioural change can be the most effective solution to the gag reflex.

The patient should be made aware of the sensation that they might experience during gagging. He/she should be assured that it is completely normal and will reside. This will not only help the dentist in carrying out future procedures but also give a positive attitude to the patient

#### Psychological Measures

Over the years, psychotherapy has been used extensively for patient management. It comprises various techniques like relaxation, distraction, suggestion and desensitization which may be used singly or in combination [20,21].

- a) **Relaxation:** Stress and anxiety have proven to be trigger factors for gagging, thus it is important to provide a calm and relaxed environment to the patient. Patient should be in a comfortable position with relaxed muscles while constant reassurance is given.
- b) **Distraction:** Patient can be engaged in conversation or asked to focus on his breathing to divert his mind and allow short procedures to be carried out. Another way of distraction could be asking the patient to indulge in any exercise which fatigues the muscle. While this technique works in some cases, it is not a sure shot way of managing gag reflex.

#### Pharmacological Methods

##### Local Anesthesia

Local anesthesia for managing gag reflex has not been accepted widely [22, 23]. However, it is found that gag reflex is suppressed significantly if the mucosal soft tissue is anesthetized [24]

##### Topical anaesthesia

Topical anaesthesia is readily available in the form of sprays, gels and mouth rinses. Its efficacy in managing gag reflex has been controversial as there have been cases where usage of topical anaesthesia caused nausea and vomiting without any effect on gagging.

### **Conscious Sedation**

This method consists of using inhalational, oral or intravenous sedatives which suppress gagging while maintaining the patient's airway. Agents like nitrous oxide are used popularly. These sedatives are commonly used as an adjunct therapy with distraction techniques.[25]

### **General anesthesia**

Use of general anaesthesia has been justified in a very small number of patients where behavioral therapy, psychological therapy and local anaesthesia have rendered useless.

### **Surgical Correction**

The soft palate can be shortened and tightened by corrective surgical therapy in case of an atonic palate. This is done in extremely rare cases of persistent and pronounced gagging.

### **Role of Acupuncture**

In the human ear, there has been described a specific "anti-gagging" point. Acupuncture involves insertion of very fine needles on such certain points to achieve a desired response.

### **Acupressure Technique:**

Acupressure refers to the application of pressure on certain points on the body in order to unblock the meridians. Anti-gagging points for acupressure are located in the forehead, medial aspect of the forearm and in between the thumb and index finger namely Ying Tang, Neiguan and Hegu.

## **CASE STUDY DISCUSSION**

### **Prosthetic Management**

#### **A. Assessment**

Obtaining a detailed medical history and having a reassuring conversation with the patient cannot be emphasised enough as this is the initiation of gaining patient's confidence and behaviour modification.

#### **B. Points to be considered while impression making:**

a) Tray selection: An oversized tray may extend upto the soft palate resulting in gagging, hence a tray of the correct size should be used. b) Material selection: A fast setting, thick mixed impression material should be used in the correct amount. A watery mix or overloaded tray stimulates gag reflex. c) The position of the posterior palatal seal should be accurately recorded as it is responsible in maintaining the appropriate seal of the prosthesis d) Modified maxillary custom tray along with saliva ejectors are also used to manage gag reflex as they do not allow the impression material to flow to the soft palate.

**C. Recording Vertical jaw relation:** A shorter vertical dimension results in lesser space for the tongue thus making it fall backwards leading to gagging, thus it is advised to record vertical jaw relation accurately.

**D. Lee-Singer's Marble Technique:** Lee Singer developed a technique in which, before the treatment patients were asked to keep 4-5 marbles in their mouth for about a week. Following this, they were given toothless acrylic training baseplates and asked to keep 2-3 marbles along with the baseplates. The dentures were fabricated with a small acrylic bead on the lingual aspect which kept the tongue anteriorly positioned [26].

#### **E. Systematic desensitization**

This is a gradual process where the patient is given an object to keep in his mouth for a certain time period. The size of the object and time period is enhanced gradually which ultimately builds a better tolerance to dental procedures by the patient. Easily available objects like buttons, marbles, toothbrushes or specific training base plates can be used for systematic desensitization.

**F. U-shaped Maxillary denture:** The posterior border of the maxillary denture can be reduced to a U shape to reduce gag reflex. It also helps to improve taste sensation as well.[27]

**G Matte Finish Denture-** Some patients might feel gagging with a highly polished smooth surface when film of saliva gets accumulated on it. They may describe it as a slimy feeling. In such patients a denture with matte finishing should be considered.

**H. Conditioning prosthesis** -A conditioning denture consists of alveolar palatal prosthesis can be used to train the patient to adapt to the reduced taste and gagging.

## **CONCLUSION**

Pronounced gag reflex is certainly a challenge for both patient and clinician alike. By far, no definitive treatment for gagging has come to light globally. Management of Hyperactive Gag reflex tends to be based on experience, clinical judgments and prosthetic management. In our case report Patient has been given an acrylic palatal plate for desensitization and thereafter a cast metal Maxillary denture with matte finish was given to the patient to reduce gag reflex.

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