

Gag Reflex: A Situational Challenge

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Abstract- In day to day practice, Prosthodontists and General Dentists frequently come across patients who have extreme oral sensitivity by which they are unable to tolerate any foreign material in the oral cavity. Patients with such sensitivity often complain of nausea, gagging or vomiting during the dental procedures which creates a difficult situation to manage. The objective of this paper is underline and understand the neurophysiology of gag reflex and enable an operator to manage this situational emergency.

Index Terms- Reflex, Posterior Palatal Seal, Deglutition

I. INTRODUCTION

The phenomenon of gagging is responsible for many embarrassing situations both for the patient and the clinician on account of sudden, violent uncontrolled retching. The normal gag reflex is an adaptive vital mechanism for survival controlled by primly parasympathetic division of the autonomic nervous system. Gagging movement alter the shape of the pharynx and its various structures eject foreign bodies from mouth and pharynx and prevents progress bodies from entering the trachea.

II. LITERATURE REVIEW

The literature on Gagging is been divided into two groups, firstly the attempt to analyze the case of gagging & secondly the different methods for the management of gag reflex.

Schote et al (1959)¹ related the gag reflex to the vomiting reflex and describe that the vomiting center lies in the dorsal portion of the lateral reticular formation of medulla oblongata and to some extent, includes tractus solitarius. Means (1970)² suggested that majority of patients show history of a precipitating cause. Singer et al (1973)³ tried to place glass marbles in mouth prior to the treatment of denture patients. Murphy et al (1975)⁴ surveyed gagging and analyzed medical histories. He attributed the problem to complete or partial maxillary denture. He treated gagging patients by construction clear acrylic training plate combined with relaxation therapy. Flamer and Connely (1984)⁵ suggested a technique for construction of a plateless denture (not covering palatal vault) but they noted that it is only satisfactory if maxillary ridge is well formed so that minimizes horizontal movement). Fleed and Linton (1995)⁶ treated cases of hopeless gagger in whom they rapidly eliminated the hyperactive reflex by a method they formed as behavioral intervention combined with a sedative impression.

III. CAUSES OF GAGGING

Retching is found to be induced due to following reasons:

1. **Anatomical factors:** Abnormal anatomical situations and oro-pharyngeal sensitivity predisposes patient to gag. Over extension of dentures in soft palate. A long soft palate and a sudden drop at the junction of the hard and soft palates are associated with the problem. An atonic and relaxed soft palate elicits gagging by allowing the uvula to contact the tongue and the soft palate to touch the posterior pharyngeal wall. Gagging also has been attributed to undue sensitivity of the soft palate, uvula, fauces, posterior pharyngeal wall and the tongue.
2. **Local factors causing gag reflex includes:**
 - Nasal obstruction.
 - Postnasal drip.
 - Caterrah.
 - Sinusitis.
 - Nasal polyps.
 - Congestion of the oral, nasal and pharyngeal mucosa.
3. **Medical conditions believed to contribute to gagging in dentistry includes;** Chronic diseases of gastrointestinal tract which increase its irritability so that normally sub-threshold stimuli excite the reflex. Parasympathetic impulses from severe pain in sites other than the gastrointestinal tract may also causes gagging. It has been associated with chronic gastritis, paterens dysplasia, carcinoma of stomach, partial gastectomy peptic ulceration, cholecystitis, carcinoma of the pancreas diaphragmatic hernia, and uncontrolled diabetes.
4. **Fear** some people who gag with dentures are also unable to tolerate other objects intraorally with fear acting as a common cause of gagging.
5. **Dentures stimulate gagging** of moving against the soft tissue or by reducing the tongue spaces and causing the tongue to be displaced posteriorly into pharynx.
6. Gagging can also result from a **restricted airway**. It is difficult for a patient with a very larger tongue or a small nasopharynx to tolerate bulky dentures.

IV. MANAGEMENT OF GAGGING

Several authors have suggested hypnosis relaxation, relaxation plus controlled breathing and positive self statements and performances of incompatible responses such as reading all have been used with some success. Medications such as sedative

antihistamine, parasympathetic and topical anesthetics have been used with some success. Appleby and Days finger massage technique and Singers Marble technique. Reduction of palatal coverage of maxillary dentures. Modification of edentulous maxillary custom tray to prevent gagging. Psychotherapy has been recommended for chronic or historical gagging. Analgesics. Conditioning prosthesis. Controlled breathing method. Leg lift technique. Accupressure technique.

Marble technique, Appleby and Bay's technique of finger massaging the soft palate and **Singer's marble technique** seems to be the methods by which the gag reflex can be exhausted thereby allowing for graduated exposure to the dental prosthesis or procedure.

Prosthodontic Considerations⁷:

Reduction of palatal coverage of maxillary denture: The maxillary denture can be reduced to a U-shaped border situated approximately 10 mm from the dental arch. Denture wearers with the above type of dentures reported that reduction of the palatal coverage influences their sense of taste positively, and gagging tendency disappears.

A cotton swab is used to apply a light coating of oral 'antiseptic / analgesic' to the soft palate and rear of the tongue to produce some decrease in sensation.

A tongue depressor was used to repeatedly probe the soft palate and rear of the tongue. When the gag reflex consistently failed to occur, the patient inserted the upper denture.

Conditioning prosthesis: A conditioning denture can be used in problem patients which is used to train the patient to gradually control gagging and adapt to reduced taste sensations. The helps the patient in accepting the permanent prosthesis to be inserted later. Such an appliance is worn for 1 weeks of adaptation, with 1 week of respite between prosthesis. The helps the patient in accepting the permanent prosthesis to be inserted later.

Controlled breathing method: This method advocated by the National Child Birth Trust for use by women in labour in similar to that advocated by Morphy. All patients were instructed in controlled rhythmic breathing and told to practice it for one or two weeks before prosthetic treatment commenced. The breathing was slow, deep and even, and the rhythm maintained by concentrating the mind upon a particular verse or tune with an even tempo. The concentration was particularly important so that if the patient experienced a gagging episode, the breathing would become deeper and slower.

V. DISCUSSION

We as prosthodontists usually come across patients who are extremely sensitive which cannot tolerate any foreign substance. It is postulated that gagging reaction is a continued anxiety

reaction which is induced by state of mind. It is possible that the chronic gaggers may here more extensive distribution of vagus nerve with such an abnormally physical stimulation of mucous may induce gagging. Gag reflex is of psychogenic in origin. The hyperactive gag reflex produces lots of clinical difficulties for the patient as well as dentist. All the methods which are discussed should be used to manage patients. The rhythmic breathing is found to be most effective method of controlling the reflex.

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