

Gagging: A prosthetic review

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ABSTRACT

Gagging is a frequent impediment to the performance of dental procedures. This stimulation of the gagging reflex, or more accurately, the vomiting reflex, is a special problem in prosthodontic service. A hypersensitive gagging reflex often prevents the dentist from carrying out critical procedures or causes them to be performed at a less than satisfactory level. Also, once having suffered an unpleasant gagging experience in a dentist's office, the patients develop a fear of further visits to dentists. Thus, the gagging patient seeks to delay needed treatment or to avoid it entirely until it is too late for the dental therapy to exert its maximum beneficial effects. The purpose of this article is to describe a method of managing the gagging patient that has a sound physiologic and pharmacologic rationale and which has been shown to be effective by experience.

Introduction

Gagging is a normal healthy defense mechanism or reflex, which attempts to eject unwanted irritating or toxic materials from the upper gastrointestinal tract.

Gagging is most frequently experienced during impression making but is also reported during the taking of radiographs, in the placement of restorations in posterior teeth and in some individuals, the insertion of a finger for examination purposes.

Most patients who gag can be successfully treated if the cause can be determined. Generally, gagging has either a psychogenic or somatogenic origin. [1-6]

The management of patients who gag easily can be challenging as well as a frustrating experience for dentists. Occasionally, patients feel they are beyond help and discontinue their dental treatment. [6]

Clinical Features

The history of the gagging patient is usually related to a maxillary denture which causes a tickling or gagging sensation, and which is felt to be "too long." Shortening of the palatal margin reduces the sensation of length, but usually does not relieve the gagging. This cycle of gagging, followed by shortening and more gagging, continues until the patient despairs, and abandons all efforts to wear the denture. Although the gagging appears most commonly at the time of the initial placing of the maxillary denture. [4]

Also interesting is the fact that despite the patient's extreme apprehension and gagging at even the slightest contact of the soft palate during even simple oral examination, this sensitivity

markedly decreases, or even disappears, if at the time of such examination, the patient's attention is completely diverted. Both of these features, the specificity of the stimulus, and the essential role played by the patient's attention to the stimulation, lead one to the thought that perhaps gagging in the so-called "gagger" involves more than simple contact of the soft palate by a foreign object. [4]

Etiology

The four factors that are believed to be important in the etiology of gagging include local and systemic disorders, anatomic factors, psychological factors and iatrogenic factors.

Local factors:

- Nasal obstruction
- Postnasal drip
- Catarrh (throat infection)
- Sinusitis
- Nasal polyps
- Congestion of the oral, nasal and pharyngeal mucosa

Systemic factors:

Systemic stimuli are those arising from the use of various drugs or from excessive consumption of alcohol which stimulates the gag reflex. The recognition of the type of gagging is most important before any attempt is made to treat the patient.

Anatomic factors

Physical factors such as anatomic abnormalities and oropharyngeal sensitivities have been suggested as predisposing factors to gagging.

In a study of denture wearers that compared the radiologic anatomy of gagers and nongagers, no anatomic abnormalities were observed. There were, however, fewer adaptive changes in the posture of the tongue, hyoid bone, and soft palate in the gagging group. Wright suggested that the distribution of the afferent neural pathway, particularly the vagus nerve, may be more extensive in gagging patients compared with non gagging patients.

Enlarged areas of sensory innervation cannot, however, explain why patients gag with auditory, olfactory, or visual stimuli.

Psychological factors:

Eating disorders

Fear

Stress

Neuroticism

Learned responses

Iatrogenic factors:

Water & suction tubes

Instruments

Local anaesthesia

Radiography

Inadequate posterior palatal seal

Restricted tongue space

Loss of normal palatal contour

Poor retention

Surface finish of dentures

Over extended and under extended denture

Disharmonious occlusion

Impression making procedure

Gagging Severity Index

GSI Grade

I Very mild: Controlled by patient

II Mild: Control regained by patient/dentist with simple control techniques & reassurance

III Moderate: Limits treatment options

IV Severe: Some treatments impossible

V Very severe: Effects patient's behaviour and dental attendance.
All treatment impossible *Dickinson & Fiske. 2000*

Prosthetic Measures to Prevent Gagging

Singers Marble Technique [3]

Conditioning Prosthesis [2]

Determining the Correct Vertical Dimension [5]

Controlling Local Stimuli [6]

During Impression Making [6]

Modified Custom Tray

Singers Marble Technique:

1st appointment- Five round, multicolored, glass marbles, approximately 1/4 inch in diameter, were placed on a tray in front of

the patient. The patient should be told to put the marbles in his mouth, one at a time, at his leisure, until all five marbles were in his mouth continuously for a week.

2nd appointment- motivation and assurance

3rd appointment- before making the impression topical anaesthesia are applied on the soft tissue areas and then impression is made with modeling compound and the denture base are not polished instead are sandblasted because highly polished surface creates a slimy surface which induces gagging.

4th appointment- lower base plate was inserted along with 3 marbles in mouth and training bead was placed on lingual aspect of base plate to maintain proper tongue position

5th appointment- Upper base plate was inserted and the use of marbles is discontinued.

6th appointment- Jaw relation records are made.

7th appointment- The completed lower denture was inserted and used in conjunction with the upper base plate. A training bead was placed on the lower denture. Next the upper denture is inserted.

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. Desensitization technique, whereby a patient is progressively supplied with a series of small to full-sized denture bases. It is useful for patients who are to become denture wearers.

A thin acrylic denture base, without teeth is fabricated and the patient is asked to wear it at home, gradually increasing the length of time the training base is worn. A suitable regime may be 5 minutes once each day, then twice each day.

After 1 week the patient is asked to increase this to 10 minutes 3 times each day, then 15 minutes, 30 minutes, and 1 hour. Eventually the patient is able to tolerate the training base for most of the day. Relaxation/ Distraction techniques can be used as an adjunct.

Determining the Correct Vertical Dimension

Construct acrylic resin occlusion rims which are adjusted to an arbitrary facial height and worn by the patient for a few days. Subsequent reduction of the height of the rims is made until the gagging ceases. This record is used as a guide in the construction of the definitive prosthesis

Controlling Local Stimuli

Schedule appointments when the patient is well-rested, has good muscle tone and is on an empty stomach.

Rinsing the mouth with cold water prior to manipulative procedures. Build up patients confidence by using instruments in less sensitive areas, avoiding trigger zones.

During Impression Making

Explain the nature of procedure with patience in order to win his confidence.

An upright position with the head tilted slightly forward.

Accurately fitting impression trays with as little material as possible. Build up the posterior border of the tray with wax.

- Primary impression made with impression compound.
- Low fusing was(Kerr Impression wax) is melted and then painted onto the custom tray.
- As much muscle trimming as the patient can tolerate is done. It can be reseated an unlimited number of times till the desired impression is achieved.
- Ice cold water is used to harden the wax in the mouth as well as to retard the paroxysms of gagging.

Modified Custom Tray

- Modified maxillary custom tray.
- A custom tray without a handle was fabricated.
- Place base plate wax on the superior surface of the tray at the posterior segment in the same outline as the posterior palatal seal.
- Attach a disposable saliva ejector to the base plate wax in the midline of the tray with the tip of the saliva ejector embedded in the wax.
- Place a second batch of autopolymerizing tray acrylic resin over the wax and tip of the saliva ejector.

The material should extend past the wax and attach to the original tray

- Remove the wax spacer

As the impression tray is being seated in the mouth, the assistant attaches the low volume evacuation hose to the end of the saliva ejector embedded in the tray

- Remove the tray from the mouth after the impression material extruding from the posterior border of the tray has been sucked into the vacuum chamber that was formed.
- The modified maxillary custom acrylic resin tray aids in removal of excess impression material as it extrudes from the posterior border of the maxillary custom tray before it can elicit a gag reflex in the patient

Prosthodontic Strategies for Treatment of Patients with Gag Reflex

Unable to tolerate impressions: Distraction techniques, Relaxation, Systemic desensitization ,Hypnosis, Sedation.

Unable to wear denture(s): Satisfactory dentures available -'errorless' learning No satisfactory dentures -systematic desensitization,for example, training base and 'errorless' learning. Acrylic discs may be helpful prior to provision of training base.

Gagging Prevention Index

GPI Grade

- I Fully Controlled - Treatment successful
- II Partially controlled - Treatment possible
- III Partially controlled - Some simple treatment possible with frequent gagging
- IV Inadequately controlled - Even diagnostic procedures difficult
- V No Control - No treatment possible

Dickinson & Fiske[8]

Conclusion

In managing 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.

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