

GAGGING: WHEN TO WORRY AND HOW TO COPE

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INTRODUCTION

Gagging is protective reflex for airway protection and removal of irritant material from posterior oropharynx and GIT.[5] The normal gag reflex is a defensive mechanism for the survival that is controlled mainly by parasympathetic division of the autonomic nervous system. The gag reflex is an innate reflex intended to guard the upper respiratory tract and the digestive tract against from foreign body that might block them. However, it can be an acquired, adapted by various stimuli like visual, olfactory, acoustic, psychic, chemical or toxic transmitted through the blood flow or the cerebrospinal fluid. For effective management of gagging patients, the dentist should determine all possible factors (anatomic, organic, psychological) and causes of this active gag reflex.[4]

CLASSIFICATION

Faigenblum classified patients into mild and severe retching patients. Mild retching patients usually can tolerate the reflex but may have nausea. The patients with severe retching react usually in an exaggerated manner to the impression making, prosthesis insertion and operative procedures.[7]

Davis categorized gagging into two main types: somatogenic and psychogenic. Somatogenic gagging occurs in response to physical stimulation, commonly arising from five intraoral trigger zones - the base of the tongue, the palate, the uvula, the palatoglossal and palatopharyngeal folds, and the posterior pharyngeal wall. In contrast, psychogenic gagging is not due to local stimuli but is triggered by psychological factors such as fear, anxiety, or apprehension.[1]

The range or degree of severity is very wide and the following list describes different types of patients: Very severe: these patients seldom seek dental treatment

Severe: they tend to retch at the beginning of examination

Difficult: retching takes place in spite of the most careful clinical technique

Problem: these patients can wear dentures for only a few minutes

Occasional: they manage with dentures but certain e.g. grinding the teeth, cause retching[13]

Dickinson & Fiske gave the gagging severity index. He scores the gagging reflex based on severity of reflex observed in a patient.

Scores are normal, mild, moderate, severe, very severe.

Normal gagging- It is very mild and occasional. It can be controlled by the patient.

Mild gagging- In such cases, cooperation is required in addition to control of patient.

Moderate gagging- Treatment options are limited. Measures to prevent this reflex are required as it can't be controlled by the patient.

Severe gagging- treatment options are further limited. Gagging reflex can occur even during simple visual examination.

Very severe gagging- This form requires specific control for any dental treatment.[14]

NEUROPHYSIOLOGY OF GAGGING AND ITS CLINICAL DESCRIPTION

Afferent impulses arise due to stimulation of the palate (posterior part i.e. soft palate) or the posterior third of tongue and are transmitted to medulla oblongata. Following that efferent impulses are transmitted from the center of medulla oblongata resulting in retching/gagging.[15]

FACTORS AFFECTING GAGGING

a) Local and systemic disorders:

Certain systemic and local conditions can predispose individuals to gagging. Diaphragmatic hernia, poorly controlled diabetes, and nasal mucosal disorders such as nasal polyps or chronic nasal congestion may enhance the gag reflex due to increased mucosal irritation in the oral and pharyngeal regions.[16] In addition, chronic gastrointestinal diseases-including persistent gastritis, peptic ulcers, intestinal or gastric carcinomas, partial gastrectomy, and cholecystitis-are known to lower the excitatory threshold of the oral cavity, thereby heightening its irritability.[11]

b) Anatomical factors:

Gag reflex can be due to factors like anatomic abnormalities and/or pharyngeal sensitivities.[6] In a study of denture wearers, no anatomic anomaly was observed when radiologic

anatomy of gagging and non-gagging patients was compared.[2]

c) Social factor:

Heavy smoking and drinking can result in inflammation of pharynx and hence hypersensitive gag reflex.

d) Physiologic factors: They are extra oral/non tactile and intraoral/tactile stimuli.

- Extraoral Stimuli: Visual, auditory, or olfactory triggers-such as the smell of cigarette smoke, dental materials, or the clinical environment-can contribute to the onset of gagging. Landa reported a case in which a patient experienced gagging solely due to the sound of his spouse gagging in an adjacent operatory.[2]
- Intraoral Stimuli: Tactile stimulation within the oral cavity is frequently encountered during dental procedures.

Landa highlighted that the most sensitive intraoral regions include the posterior part of the palate and the dorsal surface of the posterior third of the tongue.[2]

Literature indicates that certain biomechanical factors-such as an inadequate post-dam, reduced retention, improper freeway space, or overextended posterior borders-may intensify the gag reflex.[17,18] Such discrepancies can cause prosthesis movement, creating a tickling sensation that triggers gagging.

Krol further emphasized that insufficient freeway space may provoke gagging: when the vertical dimension of occlusion exceeds the vertical dimension at rest, spasms of the tensor palatini muscle can occur, producing tactile stimulation that predisposes an individual to a gag reflex.[5]

e) Iatrogenic Factors: Iatrogenic factors like incorrect occlusion, insufficient retention, inadequate finish of denture can affect reflex of gagging. Landa explained that by correction of occlusion and using balanced articulation, gag reflex can be managed.[2]

MANAGEMENT

1. Clinical Techniques

A) Surgical:- Leslie reported a surgical technique to relieve gagging for the patient unable to tolerate complete dentures. The basis for this technique stems from the observation that persistent gagging results from an atonic and relaxed soft palate, which is found in nervous patients. In such cases, the uvula touches the tongue and the soft palate rests back on the pharyngeal wall. This produces a tendency to gagging and

nausea that often results in vomiting. To correct this situation, Leslie advocated a surgical intervention to shorten and tighten the soft palate on healing; the surgery also involved the removal of the uvula, which was a little longer than normal.[1]

B) Prosthodontic:- To avoid substandard impressions because of gagging, Borkin outlined an impression technique for edentulous patients. It provides greater control of setting time and discrepancies can be corrected easily. A primary impression is made by use of a stock tray and red modeling compound. The secondary impression is obtained by pouring Kerr impression wax (Kerr Mfg. Co, Romulus, Mich) in the tray. The pliable nature of the wax allows reseating of the tray and border molding until desirable results are obtained.

A technique that employs ordinary marbles was reported by Singer as an effective approach to overcome a patient's inability to tolerate complete dentures.

The first visit: Any oral examination is avoided in the first dental visit. 5 rounds, multicolored, glass marbles, approximately 1.5 cm in diameter were shown to the patient in the tray. The patient was asked to put the marbles in his mouth, one by one, at his freedom, this procedure continued for a week. Since the fear of swallowing a foreign object can induce the gag reflex, the patient was assured that if he swallowed a marble, it could not hurt him

The second visit: The patient was promised that

The second visit: The patient was promised that he would be able to wear denture, which further boosted his own motivation

The third visit: The hard palate, the soft palate, the cheeks, the lips, and the tongue were swabbed with topical anesthesia before the primary impression making in modeling compound. The baseplates were not highly polished, but a little dull finish because polished base plates give a slimy or slippery feeling that can induce gagging

Fourth visit: lower denture's base plate was inserted, and the patient was asked to continue to keep three marbles in his mouth. A training bead (cold cure acrylic resin) was placed on lingual aspect of lower base plate to keep proper tongue position. The patient should be encouraged that he is making excellent progress.

Fifth visit: Now upper base plate was also inserted. Maxillary base plate may be a little difficult for the patient to tolerate than the lower one, but he must be encouraged to

keep both of them in his mouth except when eating. The exercise of marbles was discontinued

The sixth visit: The patient will now be able to tolerate the presence of both base plates.

The sixth visit: The patient will now be able to tolerate the presence of both base plates. Occlusal rims were used to establish esthetic considerations and to validate the occlusion. The patient should carry on wearing the upper and lower base plates till the dentures are being fabricated.

The seventh visit: The processed lower denture

The seventh visit: The processed lower denture was inserted and used in conjunction with the upper base plate. A training bead was placed on the lower denture to guide the tongue in proper position. The patient was educated to keep the tip of the tongue always touching the bead, which would keep away the lower denture from lifting. Next the upper denture is inserted.

The 'marble technique' is helpful in assuming so-called "hopeless" gaggers. The transition from the mental rejection to physical acceptance of the dentures can be improved by the use of the marble technique.[9]

C) Radiographic:- to minimize problems in obtaining dental radiographs in gagging patients, Richards suggested the use of fast speed film; preset the timer, moisten the film pack, and the patient is advised to rinse the mouth with cold water.

D) Psychological:- Effective method to reduce gagging is diverting the patient's attention from the gagging stimuli. Landa recommended manipulating the oral and facial tissues during impression making for psychological reasons rather than for border molding. He also recommended talking to the patient and explaining the critical nature of accurate impressions.

When inserting new dentures, Landa suggested that the dentist

- 1) engage the patient in conversation on some topic of special interest,
- 2) have the patient count rapidly up to 50 or 100 and
- 3) have the patient read aloud.[2]

Kovats reported a technique that has the patient breathe audibly through the nose and at the same time, rhythmically tap the right foot on the floor. By concentrating on these activities the patient's attention may be diverted away from

the gagging stimuli.[12]

A similar technique was described by Krol. To divert attention, the patient is instructed to raise his / her leg and hold it in the air. As the patient's muscles become increasingly fatigued, more and more conscious effort is required to hold the leg up and the patient's concentration is diverted to carry on intraoral procedures.[5]

Faigenblum discussed that evidence exists that vomiting is impossible during apnea. To control gagging, the patient is instructed to prolong the expiratory effort at the expense of inspiration. This will produce a state of apnea and discourage gagging. Faigenblum also proposed that a well-rested and relaxed patient with an empty stomach is less likely to gag.[7]

2. Prosthodontic Management

Feintuch described a technique that after extractions, the smoothly polished base tray was given to the patient to insert at home. After 2 weeks of tolerating the toothless base tray, impressions are made. Subsequent appointments were uneventful.

Krol discussed the importance of "free way" space (interocclusal distance) to the gag reflex. He determined that the interocclusal distance was inadequate in more than 100 patients with serious gagging problems. The interocclusal distance was increased by either remounting and grinding the teeth or remaking the dentures when the discrepancy was gross. In all instances, an increase in the interocclusal distance resolved the gagging problem.

3. Pharmacologic Measures

The drugs used to control gagging may be classified as peripherally acting or centrally-acting

• Peripherally-acting Drugs

Kovats experienced success in making a maxillary impression by spraying the entire palate with a topical anesthetic.[8]

Lincoln injected 10 minims of 190 proof alcohol into the soft tissues approximately 4 mm distal to the lesser palatine foramen. This causes a slight sensation of fullness in the pharyngeal wall. The effect of the alcohol is reported to wear off after a few months.

Appleby and Day reported that common table salt can minimize the gag reflex. Salt is placed on the tongue or in liberal amounts on the palatal region of the denture; salt may help gagging patients tolerate complete dentures.[3]

• Centrally-acting Drugs

Centrally-acting drugs, which eliminate or reduce the gag reflex, may be categorized as antihistamines, sedatives and tranquilizers, parasympatholytics and central nervous system depressants.

Saunders reported the use of intravenous valium for the problem gaggers. Kramer and Braham recommended the intramuscular injection of Phenergan (Wyeth Lab's Philadelphia) and Nisentil (Roche Laboratories).[10]

The Phenergan exerts a strong antihistaminic, antisalivary and antiemetic effect. Nisentil provides a strong sedative effect.

4. Psychological Intervention

Some patient's difficulty with gagging may be the result of psychological stimuli.

Hypnosis:- Hypnosis has been used as a tool to deal with the psychologic etiology of gagging. Results are described as generally successful. One study reported that a patient (gagger) underwent nine hypnosis sessions before a prosthetic treatment. Because of the time involved, hypnosis would not be considered a practical approach by many practitioners or patients.

Behavioral Therapy:- Behavior modification techniques have been used to treat and control a variety of hysterical disorders including gagging.

SUMMARY AND CONCLUSION

Compromised quality of treatment is one of serious problems associated with the gag reflex. To manage the problem of gagging clinician requires knowledge and experience of all the management techniques. No single technique is sufficient to manage gagging problem, so a thorough examination, detailed history and diagnosis for selection of technique may help to overt this gag reflex.

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