



RESTORATION OF AESTHETICS IS NOT ONLY AN OPTION BUT ALSO RESTORING FUNCTION MATTERS – A NARRATIVE REVIEW

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ABSTRACT

Gagging in patients can be a significant impediment to dental procedures, lowering the quality of care. Gag-susceptible patients are a dentist's worst nightmare. Thus, one of the challenging skills put to the test during the dental treatment procedure is the instant gag reflex and its management. A hypersensitive gag reflex frequently slows down ongoing procedures, lengthening the therapeutic process. Various circumstances, ranging from congenital to iatrogenic, appear to amplify this reaction. Gagging can also be a physical manifestation of anxiety, indicating a threat to one's ability to breathe or swallow. The etiology, scoring, and consequently effective and professional management of gag-prone individuals during clinical procedures are discussed in this article.

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INTRODUCTION

Gagging in patients can be a significant encumbrance of dental procedures, further compromising the quality of dental treatment. Such patients with gag susceptibility are a nightmare to dentists. It can also be a physical expression of panic, related to a feeling that some threat to breathing or swallowing is about to occur. These patients tend not to seek dental treatment or request treatment under general anaesthesia¹.

Definition

Gagging is a typical side effect of dental operations like taking a maxillary imprint. Non tactile stimulation, as well as the dentist's fingers or instruments contacting the oral mucosa, might produce acute gagging.

- Gagging is a natural defensive reaction that protects the airway and keeps foreign objects out of the oropharynx and upper gastrointestinal system.
- Retching is a contraction of the muscles of the gastrointestinal system and oropharynx that occurs when food is swallowed.
- It is best viewed as the initial process of attempting to eliminate toxic substances from the stomach¹.

Classification of Gagging

Morstad classification

Based on whether gagging occurs in a patient immediately after giving the prostheses or after a delayed period.

- Immediate
- Delayed²

Faigenblum's classification of patients with gag

1. Mild retching patients -experience nausea with minimal reaction to a stimulus and generally can control the response.
2. Severe retching patients – responds exaggeratedly to physical or psychological stimuli, can't tolerate impressions, operative procedures, or insertion of new or old dentures, radiographs².

Events occurring during gagging

1. Puckering of lips or attempt to close the jaws.
2. Elevation and furrowing of the tongue.
3. Elevation of soft palate and hyoidbone.
4. Fixation of the hyoidbone.
5. Closing of the nasopharynx.
6. Contraction of faucial pillars cause tonsils to rotate anteromedially.
7. Elevation, contraction and retraction of the larynx, closure of glottis.
8. Simultaneous and uncoordinated respiratory muscles spasm or retching.
9. Throwing out of foreign body³.

GAG Reflex

- The gag reflex is a standard defense mechanism that prevents foreign bodies from entering the trachea, pharynx, or larynx.
- For the patient, the gagging phenomenon is responsible for a number of unpleasant circumstances and the doctor because of rapid, aggressive, hysterical vomiting.
- Effective management of gagging depends on the

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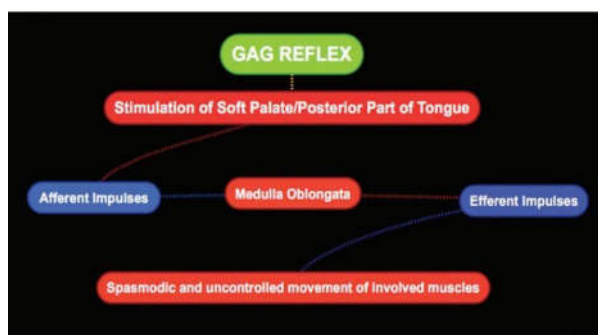
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treatment of the cause and not merely symptoms.

- By thorough examination, The dentist must establish if the patient's problem is due to iatrogenic factors, biological disturbances, anatomical problems, or psychological factors based on a thorough medical history and consultation with the patient.
- It is essential to recognize whether single or multiple factors are causing the problem.
- Unwanted, irritating, or toxic materials are ejected from the upper respiratory tract by the contraction of the oropharyngeal muscles.
- In retching, peristalsis becomes erratic, uncoordinated, and reversed. A unique retching sounds produced when air is driven across the closed glottis⁴.

Mechanism of Gagreflex (Flow chart 1)

- The medulla oblongata receives afferent fibres from the trigeminal, glossopharyngeal, and vagus nerves when they are stimulated intraorally.
- Efferent impulses cause the irregular and uncoordinated muscular action that is associated with gagging.
- The vomiting, drooling, and cardiac centres are all near to the medulla oblongata centre, and these structures may be triggered during gagging.



Flow chart 1

Triggerzones

- Clinicians suggest that not all mouth regions are equally sensitivetostimulithat produce the gag reflex.
- Gagging can be induced by touching ‘trigger’ area.
 1. Palatoglossal and palatopharyngeal folds,
 2. the base of the tongue,
 3. palate,
 4. uvula, and
 5. Posteriorpharyngealwall⁴.

Clinicalsymptoms

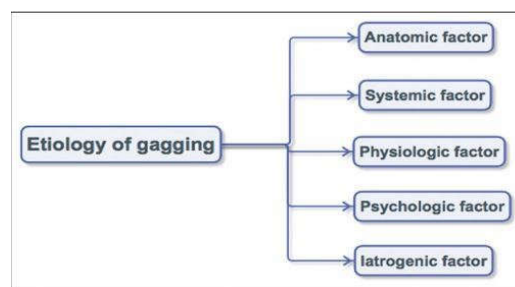
Extraoral gag behaviours

1. Excessive salivation
2. Lacrimation
3. Sweating
4. Fainting or in a minority of patients, a panic attack

Intraoral symptoms

The patient who gags may have a variety of unpleasant symptoms, ranging from simple palatal or circumoral muscle contractions to pharyngeal spasms and vomiting.

Etiology of gagging (Flow chart 2)



Flow chart 2

Anatomical factors

- The gagging problem is related with a relatively long soft palate and a larger angle between the hard and soft palates.
- Gagging also has been seen in hypersensitivity of the soft palate, uvula, fauces, posterior pharyngeal wall, and the tongue.
- Variations in soft palateana to my were postulated to explain gagging in some denture wearers.

Wright Examined Several Anatomical Features Cited As possible influences on Retching

- Posterior point of the soft palate.
- The angle of the soft palate.
- Posterior point of the tongue.
- Palatopharyngeal airway.
- Linguopharyngeal airway.
- Anterior position of the hyoid.
- Nasopharyngealsthmus.

Systemic factors

- According to Wright SM, Nasal obstruction, sinusitis, postnasal drip, chronic catarrh, and congestion have all been clinically cited in the etiology of gagging.
- Heavy smoking has been observed as a common factor in one group of gagging patients.
- According to Faigenblum gastric disorders such as peptic ulceration and, according to Machella, the diaphragmatic hernia has also been implicated⁴.

Psychological factor

- Influencing factors such as fear (Wilks) alcoholism, stress, and phobia have all been investigated.
- Kramer found that gagging could be triggered simply by the sights and sounds of clinical dentistry.
- Landa felt that visual and olfactory stimuli were potent mediators of the emotional response that actedas aprecurso or to retching.
- Faigenblum discussed the role of “apprehension” in the buildup to dental treatment and how it is mediated by negative past experiences, either real orimagined. According to Kramer and brahan, "fear is almost always the underlying factor influencing psychological gagging.”
- Visual, auditory, and olfactory stimuli, mouth mirror or impression tray.
- Land a observed a deaf patient gag while viewing the gag of another patient.
- An acousticstimuluscaninitiategagreflex.

- Odors smell of various dental substances, cigarette smoke on dentist's fingers, and even perfumes have been reported as olfactory stimuli.

Intraoral stimuli

- Tactile stimulus
- When it comes to tactile irritation, the palate is separated into two response zones: hyposensitive and hypersensitive.
- The comparatively hyposensitive anterior portion and the hypersensitive posterior portion are separated by a line drawn through the fovea palatine.
- In a similar way, the tongue can be divided into a hyposensitive anterior region and a hypersensitive posterior one-third. The most sensitive part in the oral cavity is thought to be the upper surface of the posterior 1/3 of the tongue.

Iatrogenic Factors

The poor clinical technique may elicit the gagreflexinpatients not ordinarily susceptible to gagging.

Examples

- An overloaded impression tray.
- Anunstableor poor lyretained prosthesis.
- Overextended borders of a prosthesis.
- Occlusion with a higher vertical dimension.
- A "slimy" sensation caused by saliva on a smooth, highly polished surface may cause gagging in some individuals; a matte finish has been advocatedasa better solution inthiscircumstance⁴.

Gagging severity Index

1. Verymild: patient him self controlled the gagging.
2. Mild: gagging can be controlled by the patient/dentist by applying simple measures.
3. Moderate: some treatment options are not accepted by the patients.
4. Severe: some treatments are impossible.

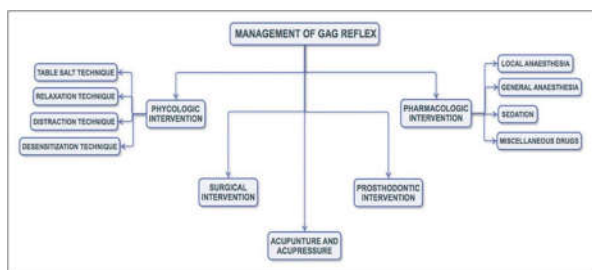
Very severe: any procedure impossible and affects patient behavior⁴.

Gagging prevention Index

Treatment management method employed:

- Obtundedgagreflex; treatment successful.
- Partially controlled gagreflex; all treatment possible.
- Gag reflex is partially regulated, although gagging is common; simple therapy is available.
- Inadequately controlled gagreflex; simple treat men tunable to be completed.
- Gag reflex severe; not treatment possible.

Management (Flow chart 3)



Flow chart 3

Psychologic Intervention

- Landa suggested that the dentist engage the patient in conversation on sometopic of particular interest.
- Kovats described a technique in which the patient breathes deeply through his nostrils while tapping his right foot rhythmically on the floor. The patient's attention may be redirected away from the gagging sensation by focusing on these tasks.
- Faigenblumstated that vomiting is impossible duringapnea⁴.

Salt technique

- It is a temporary elimination of gag reflex using ordinary salt.
- The tip of the tongue is salted for 5s with table salt.
- Gagis extinguished by super imposed simultaneous stimulation of chorda tympani branches to taste budsanteri or 2/3of the tongue.

Relaxation techniques

- Hoad-Reddick used a method of "controlled rhythmic breathing," developed by the national childbirth trust for women in labor to overcome gagging problems.
- This technique is similar to relaxation breathing exercises taught with in martial arts schools, yoga, and meditation.
- Bars by promotes the adoption of "relaxed abdominal breathing" to control the hyperventilation that he believes may be an important factor in gagging etiology.
- He does this using a simple biofeedback mechanism where the patient places their hand(s) on their abdomen to monitor their abdominal breathing movements.
- Relaxation techniques may help reduce or abolish the gagreflex⁴.

Distraction Techniques

- Faigenblum advocates are simply talking to the patient.
- Krol asked patients to raise one of their legs during impression taking and to concentrate on keeping it there for the duration of the procedure.
- In the "sick-stick" technique, the patient focuses their attention following verbal suggestion that gagging will not occur as long as they continue to stare at it.
- In the "Temporal tap" technique, the clinician gently taps the Temporoparietalsuture to trigger verbal suggestions regarding gagging prevention before dental procedures.
- Distraction techniques can be used in combination with relaxation procedures.
- It aims to reduce the gagging threshold progressively.
- Holding small buttons under the tongue and rolling them around the mouth (Wilks).
- Stimulating the hard palate with a tooth brush (Robb).
- Five marbles in their mouth (Lee-Singer)

Acrylic training base plates without teeth.

- Dentures with acrylic bead and matte surfaces.

Local anesthesia Techniques

- Infiltration local analgesia to the palatine nerves for maxillary impression taking (watt and macgregor).
- Sprays, gels, injections can beused.

- Hattab incorporated local anesthetic into alginate impression material⁴.

Sedation techniques

- Nitrous oxide inhalation sedation, intravenous sedation with midazolam or propofol should be used.
- The use of conscious sedation with inhalation, oral, or intravenous agents may temporarily eliminate gagging during dental treatment while maintaining reflexes that protect the patient’s airway.
- Intravenous sedation is more predictable than oral sedation, and it can be utilized in patients who do not respond to inhalation sedation.

General anesthesia

It is the last resort to no response to behavioral therapy and sedation.

Miscellaneous drugs

- Antiemetics
- Metoclopramide, cyclizine, and promethazine.
- Antihistamines
- Benadryl-diphenhydramine hydrochloride
- Antinauseants
- Tigan-trime thobenzamide

Surgical Corrections

- For patients who cannot tolerate entire dentures, Leslie described a surgical procedure to reduce gagging
- The basis for this technique stems from the observation that persistent gagging results from anatomic and relaxed soft palate, which is found in the nervous patient.
- Leslie recommended a procedure to shorten and tighten the soft palate to remedy the problem⁴.

Acupuncture

- The technique involves the insertion of one fine, single-use disposable needle of 7 mm length into the antigagging point of each ear to a depth of 3mm, as shown in fig 1.
- The needle is manipulated for 30s before carrying out the dental treatment.
- The needles remain in situ throughout the treatment and are removed before the patient is discharged.
- Safe, quick, inexpensive, and relatively non-invasive.



Figure 1

- Acupressure follows the same principle as acupuncture, but the points are stimulated with gentle finger pressure rather than fine needles and therefore is a less invasive technique.
- In our experience, Chengjiang (REN-24), as shown in fig 2, Hegu (LI-4), as shown in fig 3, and Neiguain (PC-6), as shown in fig 4, are effective acupressure points for controlling the gag reflex during impression procedures.

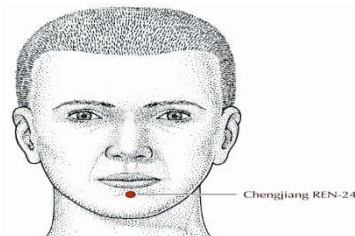


Figure 2

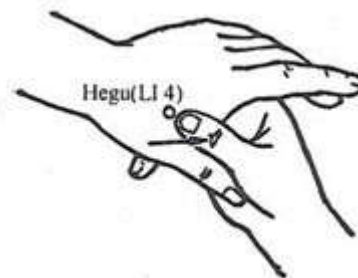


Figure 3

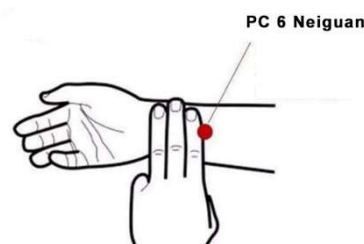


Figure 4

- To make the use of ren-24 point, it is situated in the horizontal mentolabial groove, approximately midway between the chin and the lower lip. Apply light finger pressure with the index finger.
- Should start at least 5 min before impression-making, continues and be terminated only after the impression has been removed from the patient’s mouth⁴.

Prosthetic management

- Callison described using a modified maxillary impression tray incorporating a suction tube.
- This is used to prevent gagging due to posterior displacement of impression material from the back of the tray.

Factors in influencing gagging severity

- Correct tongue space,
- Freeway space,
- Tooth positioning,
- Accurate positioning and thickness of the posterior border of maxillary complete dentures,
- Sufficient peripheral border seal,
- Correct occlusion and occlusal planes and
- The shape and extension of the denture flanges

Factors will reduce retching

- Use of flavored alginates
- Primary impression with high viscosity elastomer
- Secondary impression with silicone putty material
- Final wash impression with light body silicone
- Training base plates and acrylic discs
- The matte finish of dentures than the glossy finish
- Over dentures - tooth or implant-supported
- Intramucosal inserts.

Training bases

- A thin acrylic denture base without teeth, as shown in fig 5, is fabricated, and the patient is asked to wear it at home.



Figure 5

- A suitable regime may be 5 min once each day, then twice each day, and soon.
- After one week, the patient is asked to increase this to 10 min 3 times each day, 15min, 30 min, and one h.
- If problems are encountered, it may be necessary to reduce the extension of the posterior border of the denture.
- The placement of two posterior palatal seals during fabrication is helpful. This allows the postpalatal seal to be maintained even if the extension of the posterior aspect of the training base is subsequently reduced.
- Relaxation techniques can also be combined with the initial wearing of the training base.⁴
- Anterior teeth are added to the original or an extended training base and, when the patient can tolerate this, posterior teeth are added, as shown in fig 6.



Figure 6

CONCLUSION

Many techniques are available for controlling the exaggerated gagreflex, and no single method will solve each patient's problem. 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. It is important for the clinician to assess which technique or techniques will be most appropriate and to be used alone or in combination to adequately manage the gagging problem.

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