SCIENTIFIC ARCHIVES OF DENTAL SCIENCES (ISSN: 2642-1623)

Volume 5 Issue 7 July 2022

Review Article

Management of Gagging in Clinical Practice - A Review

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Received: May 11, 2022; **Published:** June 29, 2022

Abstract

Aim: Gagging is of significant concern to the dental professional as it is a serious hindrance to various clinical procedures. The etiology of gagging is multifactorial. This scoping review aims to highlight the factors associated with the etiology of the gag reflex and the methods that can prevent the same.

Scope: As this is an issue that can quite possibly precipitate in any clinical setting, it is important to assign a clinical protocol aimed towards the prevention and management of gagging during clinical procedures.

Collection of Data: The authors collected data from national and international journals and from the databases of EBSCO and PubMed-MEDLINE databases. The literature search was performed with no limitation to the time frame of publication.

Clinical Implications: A hyperactive gag reflex is extremely disturbing more so to a patient who ends up associating the gag reflex with a dental procedure. Appropriate management thus bolsters patient confidence in dentistry and dental procedures.

Conclusion: A proactive interaction with the patient including a discussion of what preventive methods or approaches might work best for the individual help make the process of management one with the patient's active involvement thus allowing for far better outcomes.

Keywords: *Gag Reflex; Gagging; Management*

Introduction

Gagging is defined as "an involuntary contraction of the muscles of the soft palate or pharynx that results in retching" [1]. Gagging is an annoying condition that can occur during dental clinical settings especially during prosthodontic procedures due to contact with trigger zones like the palate. The normal gag reflex is an adaptive vital mechanism for survival controlled by the primary parasympathetic division of the autonomic nervous system [2].

A hyperactive gag reflex poses a challenge to most dental professionals in being able to handle the patient appropriately dentally and mentally. It is important to have adequate knowledge of this problem to allow for a compassionate and effective approach to patients afflicted with this problem.

Etiology of gagging

Gagging is primarily somatogenic as in being triggered by tactile stimuli or contact with trigger zones like the palate, base of the tongue, uvula, posterior pharyngeal wall and the palatoglossal and palatopharyngeal folds. It may also be triggered or aggravated even by non-tactile stimuli that could be visual as in the sight of something unpleasant like an unclean spittoon or olfactory as related to the smells of certain pungent dental materials or disinfectants or even auditory triggers like the sounds of certain instruments as in psychogenic gagging [3-7]. It isn't uncommon for an accompanying person to be afflicted with the problem equally or more than the patient in circumstances associated with olfactory, visual or auditory stimuli. The multifactorial etiology of gagging is represented in table 1 [2-11].

Local and systemic factors	Nasal obstruction	• Catarrh, • Sinusitis, • Polyps, • Congestion of the oral, nasal and pharyngeal mucosa.
	Medication	• Nausea
	Gastrointestinal	• Hiatus hernia, • Chronic gastritis, • Peptic ulceration, • Carcinoma of the stomach, • Partial gastrectomy, • Cholecystitis, • Carcinoma of the pancreas, • Uncontrolled diabetes.
	Time of day	• Worse in the morning.
Anatomical factors	Neural pathways	• Vagus nerve distribution, • Auditory, olfactory, or visual stimuli.
	Abnormalities and oropharyngeal sensitivities	• A long soft palate, • A sudden drop at the junction of hard and soft palate, • An atonic and relaxed soft palate that allows the uvula to contact the tongue and soft palate to touch the posterior pharyngeal wall.
Psychological factors	Classical conditioning	• Sight of an impression tray, • The smell of the dental surgery, • The sound of a dental handpiece.
	Operant conditioning	• The patient uses gagging as a way of encouraging the clinician to postpone or abandon treatment.
Social factors		• Heavy smoking, • Hypersensitivity, • Chronic catarrh, • Coughing, • Chronic Alcoholism.
Iatrogenic factors	Clinical procedure induced	• An overloaded impression tray, • Overextended dentures, • Loose or unstable dentures, • Increased vertical dimension of dentures, • The smooth & highly polished surface of a denture, • Temperature extremes of instruments, • HVE suction cannula or saliva ejector placement, • Rubber dam or cotton rolls, • Local anaesthesia, • Intra oral camera/ Intra oral scanner, • Radiography - Intra oral radiographs (film/sensor based).

Table 1: *Etiology of gagging.*

Assessment of gagging

Gagging as a clinical problem for the clinician or the patient may be either absent or reduced or exaggerated depending on the circumstance. Gagging may be assessed based on the Gagging Severity Index (GSI) and the Gagging Prevention Index (GPI), using five defined grades as proposed by Dickinson and Fiske. Grade one on the scale represents a person with a normal gag reflex and grade 5 represents a situation that cannot be clinically managed [3].

Clinical management of gagging

The management of gagging is most often primarily taken care of by way of a properly planned treatment schedule in which the first sitting with patient identifies the patient as a probable gagger if history reveals prior episodes and appropriate care may then be taken during the scheduled subsequent clinical procedural steps. Of more importance is when a gag reflex takes both the clinician and the patient unawares.

The clinician must understand that the operatory must be clean, neat, well ventilated and presentable with no strong lingering smells by adopting a proper hygiene routine that includes adequate ventilation as well. The patient must be informed of the procedural steps and certain precautions can be adopted to prepare the patient better. A detailed list of the methods proposed for management of gagging in literature are listed out in table 2 [12-31].

Psychosomatic techniques	Relaxation technique	• Music • Avoiding the sight of instruments • Controlled rhythmic breathing
	Desensitisation technique	• Singer's marble technique- 7 steps • Repeated stroking or brushing of the tongue • Swallowing with mouth open • Practice placement of impression trays in increasing periods of time • Hypnosis
	Distraction technique	• Conversation • Concentrating on breathing
	Behavioral technique	• Ego enhancement • Confidence reinforcement • Mock rehearsals
	Psychotherapy	• Disengaging patients
	Acupressure (Pressure points)	• Hegu Point LI-4 • Cheng jiang CV-24 • Er men TB-21 • Nei guan
Pharmacological	Desensitizers	• Sprays- 20% Benzocaine (*HurriCaine topical spray, Beutlich pharamaceuticals, USA*) • Lozenges - 6 mg Benzocaine (*Chloraseptic Total lozenges, Prestige Consumer Healthcare USA*) • Mouth rinses-Dyclonine Hydrochloride 0.5 % *(DycloPro, Septodont USA)*
	Conscious sedation	• Inhalational-Nitrous oxide • Oral • IV
	Drugs	• Peripherally acting- • topical & local anesthetic • Centrally acting -antihistamines, tranquilizers, sedatives, parasympatholytics & CNS depressants.
Complimentary therapies	Acupuncture	• Classical acupuncture- (Conception vessel-24 Pericardium-6) • Laser • Ear acupuncture

	▪ TENS (Transcutaneous electric nerve stimulation)	• Sensory stimulation of the cranial nerves of the superior laryngeal nerve branch, (Cranial nerve IX, pharyngeal branch of Cranial nerve X, Cranial nerve V, and Cranial nerve X)
Surgical techniques		• Removal of the uvula to shorten and tighten soft palate on healing
Prosthodontic approaches		• Appleby and Days finger massage technique • Reduction of palatal coverage of maxillary denture • Conditioning prosthesis • Thick mix of impression materials • Custom trays/limit palatal extension • Training plates/conditioning appliance • Provision of a well-fitting prosthesis • Provision of appropriate post dams in finished upper dentures • Shortened dental arch concept • Horse-shoe shaped major connector • Textured palatal surface • Sectional dentures • Buccal dentures • Suck-down denture/Essix style retainer • Implant retained prosthesis • Use of fast speed film (Richard)
Miscellaneous		• Akinosi closed-mouth technique for local anaesthesia of the inferior alveolar nerve • Treat patient in an upright position • Frequent cessation of treatment

Table 2: *Management of gag reflex in clinical setting.*

Conclusion

Overt gagging can be distressing for both the patient and clinician. A wide variety of management strategies have been described and these should be tailored to suit the needs of individual patients. This can only be ascertained by taking a detailed history. In many situations a combination of treatment techniques is required.

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