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Original Research Paper

Prosthodontics

A MANAGEMENT OF A GERIATRIC PATIENT WITH GAG REFLEX BY EARPLUG AND TEMPORAL TAP TECHNIQUE

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ABSTRACT The gag reflex is a significant challenge in dental practice, especially among geriatric patients, where heightened sensitivity can hinder treatment and cause considerable distress. This article reviews effective strategies for managing the gag reflex in older patients, focusing on practical techniques and interventions. High-viscosity impression materials and non-perforated trays are recommended to minimize the risk of gagging. Behavioral methods, including using earplug and temporal tapping techniques and desensitization with acrylic training plates, are discussed as ways to enhance patient tolerance. Pharmacological approaches, such as the application of topical anesthetics, are also considered. By combining these approaches, clinicians can provide a more comfortable and effective dental care experience for geriatric patients, ensuring successful outcomes and improved patient satisfaction

KEYWORDS : Gag reflex, Geriatric patient, Ear plug technique, Temporal Tap technique.

INTRODUCTION

Managing the gag reflex in geriatric patients presents a unique challenge in dental practice, often complicating procedures and affecting treatment outcomes. The gag reflex, a natural protective mechanism, can become particularly sensitive in older patients, making it difficult for them to tolerate dental impressions and other oral procedures. Addressing this issue requires a multifaceted approach to ensure patient comfort and procedure effectiveness. The literature mentions a variety of therapy approaches, including behavioural techniques, acupressure , hypnosis , acupuncture , systemic desensitization , and pharmaceutical management[8].

This article explores various strategies for managing the gag reflex in geriatric patients, including using high-viscosity materials, specialized impression techniques, and behavioral and pharmacological interventions. By understanding and implementing these methods, dental professionals can improve patient experiences and enhance the success of dental treatments[1].

Case Presentation

A 55-year-old female patient with a completely edentulous mandible and partially edentulous maxilla reported to the Department of Prosthodontics, Maulana Azad Institute of Dental Sciences, New Delhi for replacement of teeth with a mandibular complete and maxillary partial denture respectively **fig 1.**

During history taking and examination, the patient reported multiple previous failed attempts in the fabrication of the prosthesis due to her hyperactive gag reflex. No dental work could be done on that day since the patient gagged even on the insertion of the mouth mirror.

The gag reflex in the patient was ruled out to be somatogenic. The following procedures were carried out to reduce the gag in the patient and for an effective dental treatment

Fig 1 : Maxillary and mandibular occlusal view

1. Topical Local Anaesthesia: Gagging is caused by sensations in the base of the tongue, tonsillar pillars, or posterior pharyngeal wall. Cranial Nerve IX (CN IX) serves as the afferent component of the gag reflex, conveying sensations from the superior ganglion in the jugular foramen to the ipsilateral nucleus solitarius. This nucleus subsequently transmits signals to the ambiguous nucleus, a motor nucleus located in the rostral medulla. Efferent Fibers from the nucleus ambiguous pass-through Cranial Nerve X (CN X), causing bilateral contraction of the posterior pharyngeal muscles. The direct gag reflex is characterized by contraction of the pharyngeal muscles on the same side as the stimulus, whereas the consensual gag reflex involves contraction on the opposing side. Anaesthetic drugs such as lignocaine inhibit sodium channels, disrupting nerve signals and thereby suppressing the gag reflex. In this process, a cotton applicator tip coated with a topical anaesthetic agent was used to cover the entire soft palate[2].

2. Earplug Technique

Recent study indicates that sensations from the oropharynx and ear skin converge in the cortex and brainstem. This overlap may explain why referred pain from the oral region (otalgia) is frequently communicated via the trigeminal nerve and spinal nucleus, which connects the ear to the oropharyngeal regions. It is also thought that stimulating auricular acupuncture points could lower gag reflex (GR)

muscle activity. The anti-gagging point[4],**fig 2**positioned on the ear and corresponding to the skin around the auricle (innervated by the auriculotemporal branch of the mandibular nerve) and the external auditory canal (innervated by the auricular branch of the Vagus nerve), could be implicated. As a result, activating the external auditory canal (EAC) with an earplug may impact or inhibit sensory pathways connected to the GR in the somatosensory cortex and/or brainstem, or act as antidromic stimulation affecting the neuronal pathways of oral referred pain[3].

Fig 2 Anti-gagging Point

3. Temporal Tap Technique: Temporal tapping entails tapping along the Temporal Sphenoidal diagnostic line **Fig 3,** beginning in front of the ear and progressing forward, upward, and around the full length. When doing temporal tapping on another person, place your right fingertips (palmar surface) on their left temporal line and your left fingertips on their right temporal line. Give some sensory input before, during, or right after tapping.

Fig 3 : Impression made using temporal tap and earplug technique

This input can be visual (e.g., something to look at or read), auditory (something heard or said), or a combination of therapy localization and other therapeutic procedures. Temporal tapping is very useful for managing involuntary functions such as gagging[5]. Fig 3

4. Impression Material: When dealing with a strong gag reflex, a custom tray without perforations was used to prevent material extrusion that might cause gagging. For the initial impression, a thick mix of alginate was employed, and heavy-bodied silicone was chosen for the final impression. The patient was distracted visually and audibly during the process, similar to the approach used for the main impression. Tray extensions were modified with a thermoplastic green stick to ensure a better fit, and the tray was not overloaded with impression material. A severely gagging patient had difficulty tolerating zinc oxide eugenol due to its extended setting time. In such instances, high-viscosity alginate or heavy-bodied silicone, which sets faster, was utilized. These strategies helped minimize gagging while ensuring an accurate master impression.

5. Trial Denture Bases: After the primary impression was taken, a primary cast was prepared, and auto-polymerizing resin temporary denture bases were made. The patient was given these interim bases to wear until the definitive denture was ready. Over time, the patient gradually acclimated to wearing the temporary denture, contributing to a reduction in the gag reflex. The patient was instructed to remove the denture while eating and sleeping and to wear both training base plates for two weeks.

After two weeks of wearing the training denture base plates, the final dentures were fabricated, involving several technical adjustments to enhance the prosthesis' acceptability. These included reducing excess thickness and overextensions, correcting inadequate post-dam areas, and carefully checking for overextended areas to avoid triggering sensitive spots. Finally, a single complete denture and RPD with a matt finish, rather than a smooth glossy surface, was given to further reduce gagging and improve patient comfort.

DISCUSSION :

The patient showed anxiety about the treatment, having been unable to get any dentures previously due to gagging. The patient needs to be assured and relaxed before beginning the treatment. The clinician's empathetic and considerate attitude is essential for better communication with geriatric patients.. Engaging the patient in meaningful conversations and encouraging active participation during the treatment can be helpful. Additionally, allowing the patient to take breaks as needed can assist in managing their anxiety.

Clinically advantageous, effortless and painless GR care is crucial. The "Earplug and Temporal Tap Technique" (E-TTT) is an easy and non-invasive method for controlling the gag reflex during oral procedures like maxillary impressions[7]. The earplug technique may block the gag reflex by impacting the trigeminal nerve through the auriculotemporal nerve and Arnold's branch, which affects the spinal nucleus of the trigeminal nerve by compressing the ear canal walls. Temporal tapping can help relax the patient by easing anxiety, increasing confidence through sensory feedback (such as verbal instructions and support), and disrupting old habits. It effectively aids the nervous system in managing involuntary functions.

Acrylic training plates can also help desensitize the gag reflex. Bassi et al. recommend wearing the plate for 5 minutes daily, gradually increasing to twice a day, then three times a day, and so on. Using the plate during busy activities may help decrease the perception of its presence. Additionally, choosing the right impression material is crucial for gag-prone patients; high-viscosity materials are preferred for primary impressions to minimize flow to sensitive areas that might trigger gagging[6].

CONCLUSION:

Effective gag reflex management in senior patients is critical for successful dental treatment and patient comfort. Every patient is unique and requires different strategies to reduce the gag reflex.

High-viscosity impression materials, non-perforated trays, and treatments like earplugs and temporal tapping can all help to avoid gagging during procedures. Additionally, using desensitization methods such as acrylic training plates and proper anaesthetic drugs helps to reduce the gag reflex. Sensory inputs, such as visual and auditory diversions, as well as behavioural techniques, can all help manage anxiety and

improve patient tolerance. Combining these approaches allows physicians to improve the whole experience for senior patients, resulting in more successful and less unpleasant dental operations.

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