

# Clinical Management of Patients Suffering from Exaggerated Gag Reflex : An Overview

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## Abstract

Gagging is one of the commonest problems faced by clinicians in patients who have extreme oral sensitivity by which they are unable to tolerate any foreign material in the oral cavity. Providing dental treatment for this challenging group can be a stressful experience for both patients and clinicians and can compromise all aspects of dentistry, from diagnostic procedures to active treatment. This article aims at underlining key management techniques to enable better handling of such patients.

## Introduction

Gagging is a common problem faced by dentists in patients who have extreme oral sensitivity due to which they are unable to tolerate any foreign material in the oral cavity. The gag reflex is usually a normal, healthy defense mechanism that prevents foreign bodies from entering the trachea, pharynx, or larynx. However, the reflex can become abnormally sensitive. Some people have such a bad gag reflex that it makes even brushing their teeth almost impossible. Physical manifestations may be summarized as gagging, retching, vigorous tensing of lips and circumoral muscles, defensive tongue, hyperventilation, excessive salivation, lacrimation, coughing, sweating and occasionally vomiting and in a minority of patients, a panic attack.

Gag reflex can compromise all aspects of dentistry, from diagnostic procedures to active treatment and can be distressing for all concerned. This article aims at underlining key management techniques to enable better handling of such patients.

## Causes of Gag Reflex

Gagging can be due to psychological factors, physiological factors or both. The feeling of gagging and not being able to "catch your breath" may have its roots in the past the patient may have had an experience where he actually suffocated or was close to it. Gagging can also be a physical expression of panic, related to a feeling that some threat to breathing or swallowing is about to occur.

Physiological causes which can predispose or cause a person to gag include not being able to breathe through their nose properly, catarrh, sinusitis, nasal polyps, mucus in the upper respiratory tract, a dry mouth and medications that cause nausea as a side effect. Certain medical conditions (gastrointestinal diseases) can also contribute to gagging.

## Management of Gag reflex

**Care and Compassion:** Most gagging occurs from airway problems or anxiety in the dental office. A caring and concerned attitude by the dentist can often go a long way in allaying a patient's anxiety and can significantly reduce gagging. The dentist should then find out what procedures or situations have triggered gagging in the past and see if alternative ones can be used.

## Active Engagement of the Patient:

Actively engaging the patient in the treatment where asking him to help retract his lips, allowing the patient to place and hold the X-Ray films in the mouth by themselves can also help.

**Distraction Techniques:** The 'straight left leg technique' by Kroll<sup>1</sup> where the patient is instructed to raise their non-dominant leg six inches from the dental chair and keep it raised is effective in distracting the patients mind. Another effective measure is to ask the patient to open and close his fists at a fast pace while keeping a silent count. This tiring exercise requires more conscious effort and helps in distracting the patient from fear of unknown stimuli. Other commonly cited distraction techniques involve placing salt on the tongue or staring at a spot on the wall, the ceiling, or a stick.

**Relaxation:** Talking to the patient while instructing him to concentrate on breathing, for example, inhaling through the nose and exhaling through the mouth with a silent count is found to be helpful. Asking the patient to tense and relax certain muscle groups, starting with the legs and working upwards, while continually providing reassurance in a relaxing atmosphere is also found to be helpful.

**Reassurance:** For many people, there is a sense of loss of control in a dental chair during treatment and the tendency to gag is one representation of this. The dentist must reassure the patient that he or she will stop the treatment immediately if they want them to, whether it is to rinse, or just to catch their breath.

## Pharmacological Management of Gagging

**Local Anaesthesia:** Local anaesthetics may be applied in the form of sprays, gels, lozenges, mouth rinses, or injection around the posterior palatine foramen in patients who gag when the posterior palate is touched. Webb<sup>2,3</sup> adds that distortion of tissue contour due to injection of anaesthetic solution can be minimized by adding hyaluronidase (1-3cc) to 2% Lidocaine HCL (1cc) while recording impressions. One-third of this solution is injected into the area of each greater palatine foramen to prevent gagging effectively. He also advocated the use of this injection technique for insertion of dentures thereby controlling post insertion gagging.

Medications such as sedative antihistamines, parasympathetic and topical anesthetics, nasal decongestants have been used with some success.

**Conscious sedation :** Nitrous oxide alters the perception of external stimuli and it is suggested that this altered perception depresses the gag reflex.

**Hypnosis:** Robb and Crothers<sup>4</sup> describe that hypnotic techniques can also be used as an 'adjunct to desensitization'. This can allow the patient to control the reflex and remain calm during dental treatment. There are, however, very few controlled studies

reporting on the efficacy of hypnosis in treating patients with problems with gagging. Walker<sup>5</sup> concluded that hypnosis can be a valuable adjunct in the treatment of gagging with 56% success in complete eradication and an additional 32% achieving partial success. Hypnosis may be especially beneficial when used in conjunction with other techniques such as inhalation sedation, acupuncture, topical anesthetic sprays, relaxation, distraction and breathing techniques. In fact, Barsby<sup>6,7</sup> stresses that: 'Hypnosis can provide the clinician with a set of techniques that may be used to augment or facilitate a particular course of treatment.'

**Systematic Desensitization:** The technique by Morse et al<sup>8</sup> consists of incremental exposure of the patient to the feared stimulus in conjunction with deep breathing and muscle relaxation. The principle is that the previously adverse stimulus is gradually introduced and increased, in stages, with the patient as relaxed and comfortable as possible. The intensity, duration and frequency are gradually increased. Providing treatment in short increments can also help.

Alteration of Gag Reflex has also been suggested by acupressure by Scarborough et al<sup>9</sup> via a Palm Pressure Point technique. The pressure point is located in the middle of the palm at the angle of intersection of the thumb and third digit.

**Acupuncture:** Ear acupuncture has also been found to be successful in controlling the gag reflex by Fiske and Dickinson.<sup>10</sup> They found it to be a safe, quick, inexpensive and relatively non invasive technique for management of patients with exaggerated gag reflex.

Management of gagging in a Prosthodontic Patient:

**Impression Technique:** A fast setting impression material is generally recommended in patients with exaggerated gag reflex. Borkin<sup>11</sup> recommends low-fusing wax as an impression material of choice in such patients. This material can be seated repeatedly between gagging episodes until a satisfactory impression is obtained.

Modification of edentulous maxillary custom tray: Gordon and Gallison<sup>12</sup> advocate a step by step modification of edentulous maxillary custom tray to prevent gagging.

**Palateless Dentures<sup>13-15</sup>:** Reducing the palatal coverage is helpful in reducing the gagging in patients with exaggerated gag reflex. A cast metal denture base of aluminium or chrome nickel alloy is recommended for palateless dentures. The primary advantage is the achievement of intimate contact between the denture base and the underlying tissue, which markedly increases the retention of the prosthesis.

**Singers Marble Technique<sup>16</sup>:** The marble technique is useful in assuring the so-called "hopeless" gaggers that it is possible for them to have dentures constructed and

then to wear them. The change from the mental rejection to physical acceptance of the dentures can be greatly enhanced by the use of this technique. Five round multi-colored glass marbles, approximately 1/4 inch in diameter, are first placed on a tray in front of the patient. The patient is then asked to put the marbles in his mouth, one at a time, at his leisure, until all five marbles are in his mouth and is advised to practice the same for 1 week, except when eating and sleeping. This has been found to decrease patients sensitivity to gagging.

**Training Bases:** Training bases are given to denture patients to be worn gradually increasing the length of time they are worn to achieve gradual adaptability enabling better acceptance of dentures at a later stage of treatment.

### Management of gagging for radiography

- Allowing the patient to place and hold the x-ray films in the mouth by themselves at the time of exposure helps reduce gagging.
- When placing films (bitewings), placing some topical anaesthetic on the film helps prevent gagging.
- Asking the patient to hum while the film is in their mouth has also been found to be effective in controlling gag reflex as it is presumed that the patient cannot can't gag and hum at the same time.
- Asking the patient to take a sip of very cold water prior to placing the x-ray film has also been seen as a means of desensitizing the patient and reducing the gag reflex.
- If the patient cannot tolerate intra-oral X-rays, a panoramic x-ray is advocated.

However, if it is necessary to take bitewing X-rays, pedodontic sized films are often easier to tolerate.

### Conclusion

The management of patients with exaggerated gag reflex is definitely challenging for the clinician and frustrating for the auxiliary staff and the patient. It appears that caring and concerned attitude of the clinician toward the patient and his or her problem is an important part of the treatment. Reassuring the patient and counselling him that he is not suffering from any physical disease goes a long way in efforts to reduce the patients embarrassment caused by the reflex. The clinician may choose one or more of the above techniques to manage such patients.

### References

References are available on request at editor@healtalkht.com

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## Dental Stone Casts Disinfection : Physical Property Alterations & Antimicrobial Effects

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**D**irect physical interaction between the dental clinic and dental laboratory is intrinsic in the practice of general dentistry. It is also one of the area's most difficult to deal with from a cross-infection control point of view. Transmission of infected materials from the clinic to the laboratory not only place unwary staff at risk but results in a high level of avoidable cross-contamination.

The prevention of contaminated dental impressions leaving the immediate chair side area or zone of contamination is the ideal situation. Several studies have shown that microorganisms can be recovered readily from stone casts separated from contaminated impressions (Firte II et al. 1972; Rowe and Forest, 1978; Leung and Schonfeld, 1983).

An alternative or additional approach to cast/impression disinfection is to accept that the impression may be contaminated and aim to decontaminate the cast produced from the impression by incorporating a disinfecting chemical into the gypsum at the time of mixing. Tebrock et al. (1989) reported that the addition of 5.25% sodium hypochlorite to a gypsum mix destroyed all viable forms of the spore-forming organism *Bacillus subtilis*, which is a standard screening organism in sterilization testing. Furthermore, Mansfield and White (1991) demonstrated that the addition of 5.25% sodium hypochlorite and 2% neutral glutaraldehyde yielded a biologically safe cast after 1 h. However, with the exception of Tebrock et al. (1989) who included a qualitative description of the dimensional stability and surface smoothness of the cast, the effects of the incorporation of disinfectants into the gypsum mix on the

physical properties of the casts have not been evaluated quantitatively. Nevertheless, some work has been done on the bactericidal effects and physical properties of a number of commercially available gypsum products containing Chloramine-T, which upon activation is similar to a diluted form of sodium hypochlorite.

The effectiveness of sodium hypochlorite must now be challenged. Additional studies using both Milton solution and other solutions containing sodium hypochlorite are indicated. The effects of the disinfectant, solutions on the physical properties of the stone casts were variable. The addition of glutaraldehyde to the stone casts had the least effect on the physical properties of the casts.

The addition of chlorhexidine gluconate to the stone mix decreased the compressive strength by approximately 40%, almost doubled the setting time and caused a small contraction of the cast. Although these alterations in the physical properties of the cast may not absolutely justify the rejection of this disinfectant as a useful agent, its inability to destroy many of the microorganisms on the surface of the cast renders 0.2V chlorhexidine inadequate for this method of disinfection. Higher concentrations of this agent, may warrant further investigation. The germicidal effectiveness of povidone-iodine has already been established. Of greater concern is the alteration of the physical properties of the casts which occur upon the incorporation of povidone-iodine into the stone mix. While the setting expansion and detail reproduction remain unaffected, the povidone-iodine alters the setting time and the compressive strength of the stone cast. Although the moderate increase in setting time is undesirable, the

decrease in compressive strength is of greater concern because it lowers the strength close to an unacceptable level just below the ISO limits. Some of this decrease can be attributed to the increase in setting time caused by the povidone-iodine. Because the ISO guidelines require the specimens to be tested 1 h following the mixing of the stone powder and the povidone-iodine solution, an increased setting time would decrease the amount of time that specimens have to reach the same compressive strength as the standard water mix, resulting in reduced strength values.

Hence, a stone cast disinfected by the incorporation of povidone-iodine into the stone mix can still be considered clinically acceptable as long as the yellow discoloration is not of concern. If the increased setting time is inconvenient, an accelerating agent may be incorporated during mixing. The effect on the physical properties of the stone cast caused by the incorporation of a 1% dilution of sodium hypochlorite (Milton solution) was also investigated. At this concentration, the sodium hypochlorite altered the physical properties of the set cast. While there was an increase in setting time, of greater concern was the fact that the compressive strength was lowered to a level marginally below the ISO requirement.

In summary, glutaraldehyde is the solution most suited to this method of disinfection. Unfortunately, due to concerns regarding the toxicity of glutaraldehyde, there may be difficulties in using it on a day-to-day basis in the clinic and laboratory.

A sound alternative is the povidone-iodine solution which, notwithstanding a decrease in the compressive strength of the set cast is a viable option.

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