Case report

Managing a hyper gag reflex edentulous patient with modeling compound and training dentures

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Abstract

Gag is a normal defence mechanism that prevents the ingestion of foreign objects into the respiratory tract. The etiology of gag has been related to a number of factors such as local, systemic factors, anatomic factors, psychological, and iatrogenic factors. The presence of gag poses difficulty in fabrication of dentures and making it difficult to manage such patients. In the present case clinical management of a hyper gag reflex in completely edentulous patient in the process of teaching dental undergraduates in a dental hospital setting has been described.

Key words: Gag reflex, edentulous patients, undergraduate teaching.

Clinical management of a hyper gag reflex in a completely edentulous patient in a dental teaching hospital setting has been presented in the clinical report. A step-by-step approach of impression procedures has been enlightened, aiming at graduate students during clinical teaching.

Background

Meek et al., in his paper, described gag as a normal defence mechanism that prevents the ingestion of foreign objects into the respiratory tract.1 The stimulation of the sensory receptors at the trigger areas such as palate, uvula, posterior pharyngeal wall, palatoglossal areas, and the base of the tongue in the oral cavity, lead to an efferent response of muscle contractions operating from the vomiting centre at the medulla oblongata.2,3 The etiology of gag has been related to a number of factors such as local, systemic factors, anatomic factors, psychological, and iatrogenic factors.3 While a large number of papers have been published on the management of gag, in this clinical report, we intend to focus on the clinical management of a hyper gag reflex in completely edentulous patient in the process of teaching dental undergraduates in a dental hospital setting.

Technique

A 73 year old completely edentulous moderately built male patient reported to the teaching dental hospital with the chief complaint of missing teeth and insisted on replacement with dentures for function. He was a known diabetic patient who was on oral medication, he also gives history of bypass surgery 15 years ago. The patient had undergone uneventful extraction of the residual upper molars one month back, and he did not have any previous experience with a denture. Clinical examination disclosed a few significant features such as irregular moderately resorbed large maxillary and knife-edge mandibular edentulous ridges, undercuts at the maxillary anterolabial, maxillary tuberosity and mylohyoid regions, a medium hard palate, a Class I soft palate, and a large tongue size with a Class III retracted tongue position as shown in Figure 1. The dental undergraduates, during their
clinical hours, are generally under the supervision of prosthodontist faculty. In the event of a hyper gag patient, it is a challenge to teach management strategies and impression making for such patients to clinical undergraduates.4

**Diagnostic impression**

The patient was initially hesitant to allow the impression trays to be placed in the mouth and demonstrated extreme difficulty in tolerating the trays with visible signs of nausea and breathlessness. After the routine case history, the clinical supervisor worked as a team with graduate students in managing the patient. The prime challenge was to record the denture bearing areas including the posterior palatal seal area with the peripheral limiting structures. The patient was verbally briefed and explained the procedures to be done. Modeling compound was the impression of choice over the irreversible hydrocolloids.

Since the present clinical case was an edentulous patient, non-invasive method of using thermoplastic modeling compound was decided, despite the presence of minor undercuts.

The clinical supervisor on the chairside discussed with the students the various strategies to reduce the gagging problems during denture fabrication. Strategies such as training dentures, proper palatal extension and thickness of denture over the posterior palatal seal area, the proper vertical dimension of occlusion, management strategies such as distraction technique such as Krol’s leg, breath in breath out exercises, use of local anaesthesia, and cold water were discussed.

The impression phase was initiated with an adequate amount of modelling compound, in order to avoid excess drooping of the impression material posteriorly from the impression tray. As the impression was placed in the patient’s mouth, the large tongue size of the patient obstructed the further placement of the tray, with the patient experiencing nausea and discomfort. However, the clinical team managed to place the impression tray halfway through, pushing the tray against

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*Figure 1. Hyper gag reflex edentulous patient showing a large tongue size close to the hard palate*

*Figure 2: Primary impression made of modeling compound*
the muscular tongue, barely recording the denture bearing areas. After the impression removal, the patient exhibited tiredness and breathlessness, and therefore, he was given adequate time to rest.

As the clinical team had a fair idea of patient tolerance, other management strategies such as the use of local anaesthesia spray (Lidocaine Topical Aerosol USP, ICPA) was attempted. The local anaesthesia was sprayed on the posterior palatal area and the earlier impression of modeling compound was further modified in a hot water bath.

The patient was psychologically motivated, reassured and appreciated for his effort. However, he demonstrated nausea and discomfort while placing the modified impression for the second time. Krol’s distraction technique and breath in-out exercise was used while the impression was hardening to set. The patients discomfort had reduced and the primary impression could be recorded.

The inadequate areas of the impression at the peripheries were further modified by an admix of medium fusing and low fusing modelling compound (Y-DENTS, Impression Composition, MDM Corp, Delhi and DPI, Pinnacle Tracing sticks, Mumbai). Distraction techniques, as mentioned above, were re-emphasised to manage the patient and we were successfully able to record the peripheral limiting and the denture bearing areas, as shown in Figures 2 to 6

**Peripheral tracing and Master impression**

The patient was instructed to wear the training denture base for two weeks with increments of 5 minutes during the interval of primary and the consequent appointment.
Reduced gag sensitivity was observed during the placement of the custom tray. Low fusing sectional peripheral tracing technique was performed, followed by a medium body elastomeric master impression without much patient discomfort, as shown in Figure 6.

**Clinical significance**

Predisposing factors such as side effects of medications, nasal structural aberrations, uncontrolled diabetes, or conditioning may contribute to gag reflex in certain patients. The gradual reduction in patient sensitivity towards gag during the impression procedure could be explained as behavioural modifications. Relaxation, distraction, and suggestions have been followed in the management of the patient in this clinical case. While relaxation helps to reduce the patient anxiety, distraction techniques help to deter a patient’s attention such as breathing exercises or raising legs, and suggestions in the form of positive reinforcement have been proposed. Krol, in his paper, has classified the gag response as psychogenic or somatogenic. Psychogenic gag response can be modified through distraction techniques for short dental procedures such as impression making.

The treatment outcome in the present clinical case can be classified as Grade II according to the Gagging Severity Index, as the gag reflex could be controlled at the third attempt of impression procedures. While managing patients with hyper gag reflex, it is important to modify such reflexes. In the present case it was noticed that the patient participated enthusiastically in the distraction techniques and was able to accommodate the tray despite the discomfort. The clinical supervisory team needs to be patient and provide positive encouragement so as to boost the psychological make-up of the patient.

**Conclusion**

A step-by-step approach of managing a completely edentulous patient with hyper gag reflex has been presented during the initial appointment of the primary impression. Modeling compound can be effectively used as a primary impression material in edentulous patients. However, positive reinforcement to the patient is important for an effective impact of prosthodontics treatment of hyper gag reflex.

**References**