

Toward a More Objective Approach to Obturator Reduction

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Subjectivity has prevailed in determining the location and the amount that each pharyngeal segment should be reduced in an obturator reduction program. In the past, reductions have been based on impressions derived from radiographic and intraoral observations, neither of which is very precise. To circumvent the overall problems of observing and adjusting pharyngeal segments in obturator patients, several different techniques have been used. Mathewson (4) incorporated barium powder when fabricating the pharyngeal segment of an obturator so that it would be more readily visible on radiograms. Mazaheri (5) wrapped tinfoil around the tailpiece of the obturator making it more observable on radiograms. Gullikson (2) experimented with a strain gauge attached to the pharyngeal segment of the obturator to record points of lateral and posterior pharyngeal wall contact. Mazaheri and Millard (6) altered the vertical positions of the pharyngeal segments and compared the different positions with differences in nasal resonance. Harkins *et al.* (3) suggested painting obturators for display and educational purposes. Olin (7) discussed radiographic techniques to study obturator placement.

Most of these methods do not and cannot incorporate the total three-dimensional concept of palatopharyngeal physiology; furthermore, they are generally quite arbitrary. Therefore, the need to devise a method for determining the specific points of contact between the lateral and posterior walls of the pharyngeal segment of the obturator is great. This paper suggests a comparatively simple method that has proven to be helpful.

Method

The initial phase of our obturator program includes fitting the patient with a speech prosthesis; that is, fabricating the appliance so that the patient speaks with normal or slightly hyponasal vocal resonance. After the first phase has been completed, the patient begins a regimen of obturator reductions. The rationale and success of this program have been described earlier. (1, 8) The second phase of our program is systematic pharyngeal segment reduction among those obturator patients whose speech and vocal resonance can tolerate reductions. Because of the desire to alleviate arbitrariness and subjectivity in this second phase, the following method was devised.

During the past four months, pressure indicator paste has been used in our program to provide the speech pathologist and the prosthodontist with visual information regarding location and extent of soft tissue contact with the pharyngeal segment of the obturator. This paste was initially developed to aid the dentist in locating areas of irritation in denture wearers. It is white or yellow and has the consistency of cold cream. Since it will adhere to a dry, polished surface but not to a moist surface, and since it cannot be washed off with water, pressure indicator paste is ideal for revealing pressure points, contact points, and areas of no contact with palatopharyngeal tissues.

The paste is applied to all sides of the dry pharyngeal segment with a coarse brush, such as used by children for pasting. The pressure indicator paste is applied thinly and evenly so that the acrylic of the pharyngeal segment shows through the brush marks consistently over its entire surface (Figure 1). Then the obturator is carefully inserted into the patient's mouth taking care not to smear the paste. Smears will occasionally occur, but a little practice in reading the indicators will make it easy to differentiate between a smear and a pressure area. A pressure area is an area denuded of the paste leaving a crater of displaced paste surrounding it (Figure 2). An area of contact, but without pressure, shows up as a slight smearing or smoothing of the brush marks (Figure 3). An area of no contact obviously causes no change in the sharply delineated brush marks (Figure 1).

After the pressure indicator paste has been applied and the obturator has been inserted into the patient's mouth, samples of speech are obtained. The patient is asked to repeat a number of words and sentences containing pressure consonants. After having obtained a sample of approximately two minutes of the patient's speech, the obturator is carefully removed and the configuration of the paste is scrutinized. The denuded areas of the pharyngeal segment are then reduced in millimeter increments until the pressure areas become contact areas. The pressure areas are reduced rather conservatively, since it is more efficient to reduce further than to enlarge the pharyngeal segment because it was reduced too much. Generally, when the pressure area has been reduced so that it has become a contact area, slight nasal leakage of air can be perceived with a modified stethoscope (9) or a nasal listening tube while the patient is speaking non-nasal sentences; this is an indication that the pharyngeal segment has been reduced amply for that particular patient at that time. The patient is then scheduled for a future evaluation, based on his past rate of palatopharyngeal compensation, when additional reductions can hopefully be made utilizing this auditory-visual approach.

Pressure indicator paste is also used to detect areas of undue discomfort sometimes caused by obturators that were recently fabricated and to reveal pressure areas that could inhibit rather than stimulate palatopharyngeal compensation.

FIGURE 1. Pressure indicator paste applied thinly and evenly over the entire surface of the pharyngeal segment.

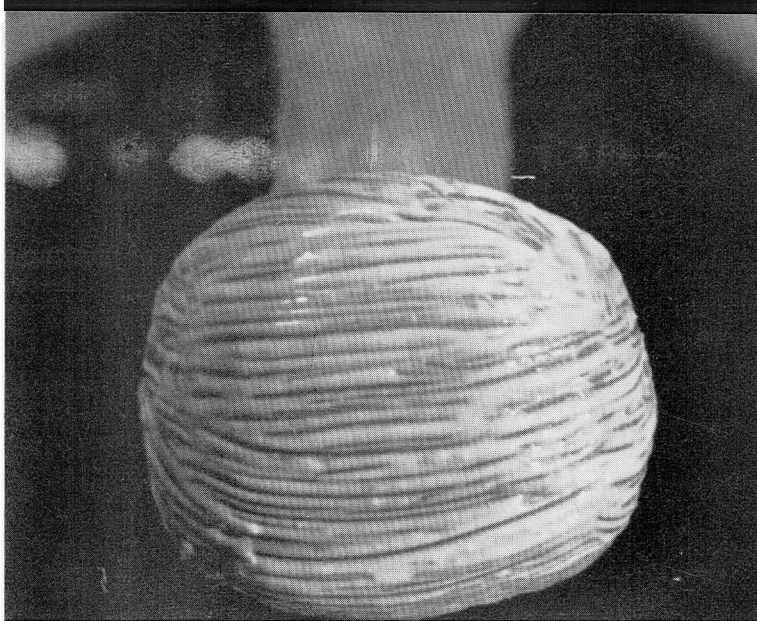


FIGURE 2. Pressure area as indicated by denuded and displaced paste.

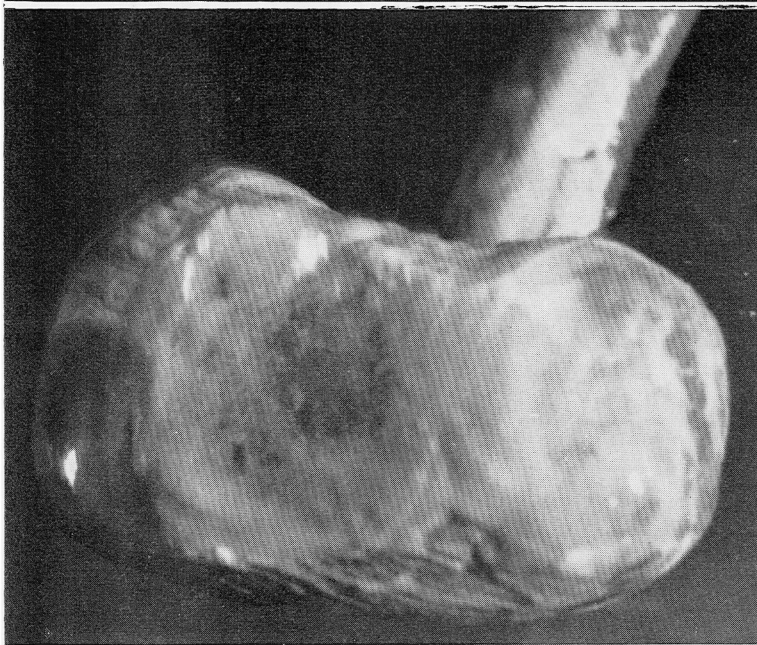
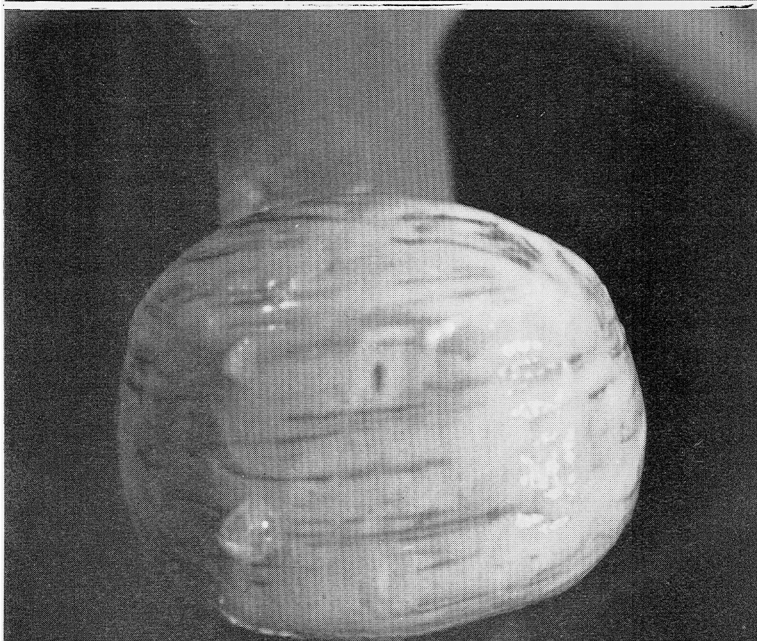


FIGURE 3. Contact area as indicated by smoothed brush marks.



ryngeal movement. The locations of pressure areas are ascertained in the same manner as previously described.

Summary

A relatively simple method of reducing subjectivity in a systematic obturator reduction program is reported. The use and application of pressure indicator paste to complement acoustically perceived hypernasality and nasal emission are described and interpreted. This combined auditory-visual approach appears to be effective in reducing the guesswork involved in knowing where and how much to reduce the pharyngeal segment of an obturator in a given patient.

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