

Case Report

Use of Palatal Lift Prosthesis on Patient Submitted to Maxillectomy: A Case Report

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Introduction

Palatopharyngeal sphincter is a muscular functional unit, delimited above by soft palate, laterally by pharynx walls and below by the channel immediately after the pharynx. This name is after its sphincter function, or a valve, during swallowing, breathing, speaking, vomiting, among others.

Its function, however, can be compromised due to palatopharyngeal insufficiency or incompetence. Such incompetence can be caused by neurological disturbances attributable to cerebral vascular accidents or neurodegenerative diseases, such as, lateral amyotrophic sclerosis, generating hypernasality, nasal emissions, articulatory imprecision, nasal reflux and alimentary stasis in the pharyngeal recesses.¹⁻² In these cases, palatopharyngeal incompetence treatment is performed through isolate phonotherapy or in association with palatal lift prosthesis (PLP), with superior functional results.²⁻³

Gibbons and Bloomer⁴ have first described the use of PLP in patient with soft palate paralysis secondary to bulbar poliomyelitis. They have obtained improvement in the elevation of the soft

palate, reduction in the palatopharyngeal gap and improved speech intelligibility. Afterwards, its use has been commended by numerous authors, with small individual modifications aiming to adapt to each case, being brim atrophy, absence of teeth, patient tolerance, and the degree of soft palate mobility prosthesis modificatory factors.²⁻³

González and Aronson³ have stated that PLP could temporarily or permanently be used aiming to correct or improve palatopharyngeal sphincter incompetence, since it has functioned as a stimulator of the involved musculature and was even a support for those muscles with enough resistance and activity to achieve palatopharyngeal closure.

There is a consensus regarding the indication of PLPs in neurological patients. In contrast, there are no case reports of indication or use of PLPs in patients with palatopharyngeal incompetence resultant of surgery for mouth tumors resection at present, in the literature.

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Case Report

A 40-year old female patient was submitted to resection on the transition between soft and hard palates in June 2001, due to a low-grade malignancy polymorphic adenocarcinoma. No radiotherapy or chemotherapy was done. She was referred to the São Paulo Oncocenter Foundation (Fundação Oncocentro de São Paulo - FOSP) for maxilla obturator prosthesis adaptation because of the presence of an approximately 1 cm oronasal communication, located in the central area between soft and hard palates.

In phonoaudiological evaluation in July, 2001, without a prosthesis, the following phonoarticulatory aspects were observed: moderate speech intelligibility, moderate hypernasality, reduced loudness, increased speech velocity, pneumophonoarticulatory incoordination, articulatory exchange of plosive oral sounds for nasal sounds. As for swallowing, the patient presented clinical signs of liquid, liquid-viscous and viscous penetration and/or aspiration, manifested by systematic coughing during swallowing.

Sensory-motor-oral system evaluation revealed: good mobility and good lip, tongue and cheek features, 42-mm mouth opening, absence of upper and lower teeth, oronasal fistula in maxilla and altered mobility in soft palate, which performed vertical instead of horizontal, upper and posterior movement.

Thus, concomitant with prosthetic treatment, the patient was submitted to weekly phonotherapy. Maxilla obturator prosthesis adaptation took place in August, 2001 (Fig. 1). Swallowing improvement was observed by reduction of nasal reflux, although the patient continued to show clinical signs of oropharyngeal dysphagia and moderate hypernasality. After 6-month clinical follow up, no improvement was observed in swallowing and phonoarticulatory functions with the use of obturator prosthesis. The palatal lift adaptation as alternative was considered.

In March, 2002, this appliance was adapted to fit the patient's entire upper prosthesis (Figs. 2 to 4) and monthly follow up was initiated. After only one month using the new prosthesis, the patient reported

less effort when speaking and reduced asystematic nasal reflux. Three months later, the patient presented no further complaints regarding swallowing and reduced hypernasality was observed, becoming much slighter. After one year, the patient presented normal intelligible speech and absence of articulatory alterations and hypernasality.

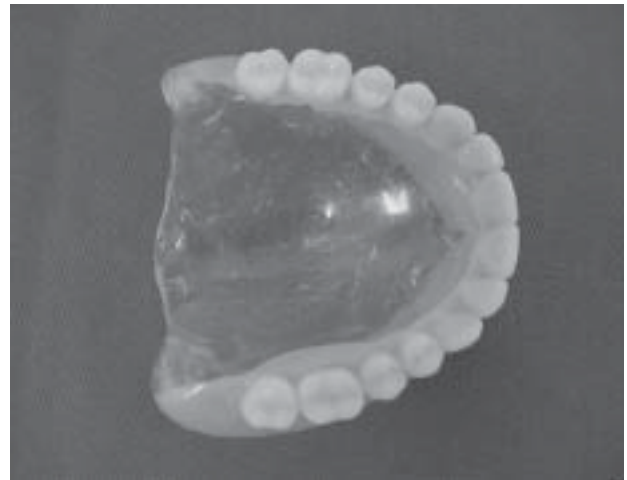


Figure 1 - Conventional maxilla obturator prosthesis

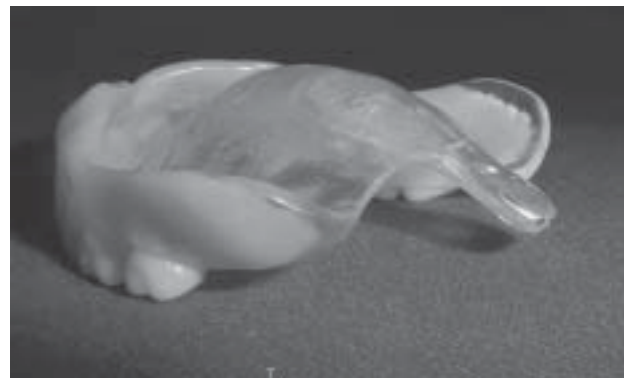


Figure 2 - Finalized palatal lift prosthesis, after acrylization of the previously molded region

Discussion

Maxilla tumors are normally surgically-treated and complemented by radiotherapy when indicated. In maxilla resections, nonphysiological communication can occur between oral and nasal cavities, leading to impairment in oral communication and swallowing.

Impairments created by maxillectomy can be repaired by obturator prostheses or even by

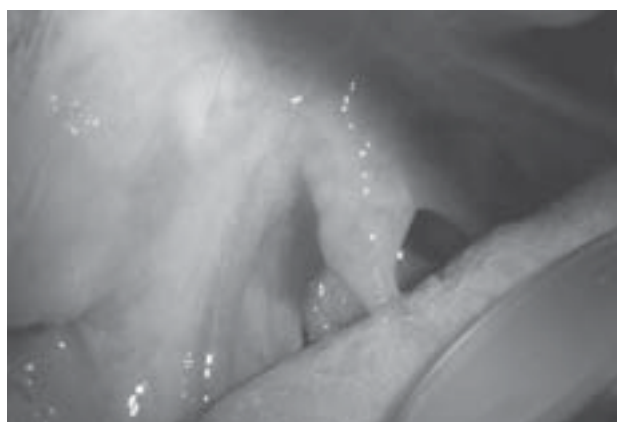


Figure 3 - Oroscopy, prior to the installation of the prosthetic appliance

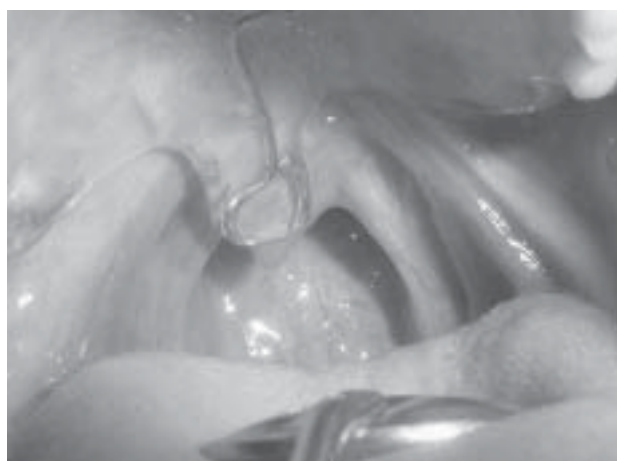


Figure 4 - Palatal lift prosthesis in position

reconstruction with free transplants, microsurgical transplants, bone grafts and regional or distant flaps.⁵

Traditionally, palatal obturator prostheses are indicated for maxilla resections, whose purpose is to prevent communication between the oral and nasal cavities.⁶ However, some types of maxillectomy, mainly in the transition between soft and hard palates, can promote physiological changes in palatopharyngeal sphincter. This can be seen as alterations when soft palate muscles are found in this transition. Resection in this region can lead to changes in muscle insertion, or even present scar fibrosis, reducing soft palate mobility. In such cases, the simple adaptation of a maxilla obturator prosthesis is not sufficient to restore stomatognathic functions, since this prosthesis does not act on the palatopharyngeal sphincter musculature. Thus, it is

necessary to couple this obturator prosthesis with another accessory, the palatal lift.²⁻³

In the clinical case presented, we have observed that the patient has presented signs of improvement within the first month of palatal lift prosthesis (PLP) use, obtaining a complete restoration of speech and swallowing within a year.

These findings are in agreement with previous studies, which state that PLPs and pharynx obturator prostheses act as proprioceptive stimulation to promote palatopharyngeal sphincter movements.⁷⁻⁸

González and Aronson³ have evaluated the stomatognathic functions of 35 patients aged between 4 and 72, who have presented palatopharyngeal incompetence due to neurological changes. Main phonoartulatory and swallowing impairment observed were: severe hypernasality, nasal emission, reduced speech intelligibility, reduction of intraoral pressure during sound production, nasal reflux and accentuated gag reflex. Each patient received PLP adaptation and was reevaluated after three months, one and two years. The authors have observed a reduction in hypernasality and nasal emission, which have changed from severe to moderate, and have improved speech intelligibility. Patients with severe paralysis of phonoartulatory organs and respiratory muscles have continued with artulatory alterations. All patients have reported effortless speech with the use of prostheses. Of the 35 patients, after one year using the prostheses, 4 have obtained a significant improvement in the closure of palatopharyngeal sphincter, so that they no longer required the use of their prostheses. La Velle and Hardy⁸ have studied 44 patients with neurological compromise who were treated with PLPs, and have observed that this type of prosthesis was shown to be effective in reducing palatopharyngeal incompetence. Wolfaardt et al.⁹ have presented a series of 32 patients treated with PLPs, indicating that 21 patients have been benefited by its use. They have also demonstrated that 14 of the 32 patients no longer required the use of the prosthesis as a result of improved palatopharyngeal function. These authors have not clearly defined the population studied.

In the present clinical case, the patient still requires the use of palatal lift. Without the prosthesis,

she reports exhaustion during speech and, in clinical evaluation; pneumophonoarticulatory no coordination and slight hypernasality can still be observed. After one year, videofluoroscopic analysis of both speech and swallowing was carried out with and without the prosthesis. It was verified that without prosthesis, soft palate rose in an asystematic manner during speech, slight stasis for liquid-viscous consistency occurred during swallowing, and episode of nasal reflux. With the prosthesis, systematic elevation of the soft palate is observed allowing adequate palatopharyngeal closure, which has ensured functional swallowing and speech without resonant and articulatory alterations.

Conclusion

As we could observe in this clinical case, palatal lift prosthesis was efficient in the functional improvement of soft palate of a patient with palatopharyngeal incompetence after maxillectomy. Thus, the indication of this type of prosthesis could be more frequently used in head and neck oncology patients with soft palate mobility changes, either by scar fibrosis or post-operative inadequate muscular insertion, or even due to muscle stiffness in this region as a consequence of radiotherapy by itself or in association with chemotherapy or surgery.

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