CASE REPORT

Speech aid prosthesis

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sulabh.kumar@gmail.com**SUMMARY**

Velopharyngeal defects are common problem encountered in dentistry, different prosthetic designs can be used; however, the prosthesis should be comfortable and function properly. Surgical treatment is the treatment of choice, but there are few patients who are not able to receive the surgical intervention; in such cases prosthetic management is considered using speech bulb prosthesis to overcome nasal twang and nasal regurgitation.

BACKGROUND

The palatopharyngeal defects can be classified according to the degree and type of palatopharyngeal closure. When some or all of the anatomic structure of the soft palate is absent, it is called as palatopharyngeal insufficiency. When the soft palate is of adequate dimensions but lacks movement because of disease or trauma affecting muscular and neurological capacity, the term palatopharyngeal incompetence applies.¹ The term palatopharyngeal inadequacy includes incompetence and insufficiency, but may also suggest a reduction or absence of pharyngeal wall function.^{1 2} In normal palatopharyngeal function, at rest, the soft palate drapes from the posterior border of the hard palate, leaving an opening from the back of the oral cavity. During normal nasal breathing and humming with the mouth closed, the respiratory airflow and vocalised sound are directed through this passage way.

However, complete closure of the palatopharyngeal port is required for mouth breathing, for the production of normal oral (non-nasal) speech sounds or for other oral activities such as

Figure 2 Primary impression.

swallowing, blowing, sucking and whistling.^{1 3} When impairment is present, speech is typically characterised by excessive nasal resonance (hypernasality), inappropriate audible nasal air emission and a decrease in intraoral air pressure during the production of oral speech sounds.⁴ In many patients, palatopharyngeal defects can be restored by surgical reconstruction; but residual palatal deficiency may remain which necessitates placement of obturator.⁵ So, in this situation gross palatal deficiencies are treated prosthodontically without surgical intervention. Basically, these prosthetic 'aids to speech' serve to obdurate any opening or cleft of the palate and frequently carry an extension into the pharynx designed to improve or supplement velopharyngeal valving.⁶

The purpose of this article is to present a case report of a patient with palatal insufficiency rehabilitated prosthodontically with closed hollow bulb obturator and description of simple technique to fabricate it.

Figure 1 Preoperative. **Figure 3** Special tray.

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Figure 4 Final impression.

CASE PRESENTATION

A 28-year-old female patient came to the Department of Prosthodontics and Maxillofacial Prosthetics, Babu Banarasi Das College of Dental Sciences, Lucknow with nasal twang in her voice, lacking and nasal regurgitation (figure 1). Detailed case history revealed an oronasal communication since birth, and this defect was not surgically treated. The cleft of soft palate (Veau's classification—group I) led to velopharyngeal incompetence. Surgical treatment option was eliminated considering systemic health and economic status of the patient. Prosthodontic treatment was decided with closed hollow pharyngeal bulb prosthesis.

TREATMENT

The maxillary preliminary impression was made with irreversible hydrocolloid in perforated stock tray to record the defect considering proper precautions to prevent material flow in undesirable region (figure 2). Impressions were poured with dental stone to make diagnostic casts. Special tray was fabricated with autopolymerising acrylic resin having pharyngeal extension for making the final impression of defect with light body polyvinyl siloxane (figure 3). While fabricating the special tray, a 5 mm gap was planned between the bulb and posterior pharyngeal wall and angle of the bulb was kept approximately 20°, relative to the palatal plane. Final impression was accomplished by recording all the functional movements of the soft palate, that is, by asking the patient to tilt her head side-to-side and front-back when sitting upright (figure 4). Impression was poured with die stone to fabricate master casts (figure 5). Autopolymerising acrylic resin record bases were made. In case of upper record base, pharyngeal extension was not included.

Figure 5 Pouring final cast.

Figure 6 Final prosthesis.

After try, all the undercuts of the defect area were blocked with wax it will lead to wax elimination while dewaxing and then lid will also come with appliance. The prosthesis was then processed with heat cure acrylic resin. Lid for the bulb was processed separately with heat curing acrylic resin and was secured to the completed denture with autopolymerizing acrylic resin. The prosthesis was finished, polished and delivered to patient (figure 6). The patient found drastic improvement in speech and nasal regurgitation was absent.

OUTCOME AND FOLLOW-UP

The patient's chief problem was solved and she was satisfied with the outcome, however, she was called for follow-up after 6 months.

DISCUSSION

The prosthetic correction of the cleft palate defects involves mixed responsibilities towards speech, psychological, anatomic and physiological management to add to feeling of being acceptable in society. As an adjunct to various other modes of rehabilitation, like surgical and prosthetic therapy, follow-up care is needed to avoid future specific problem in prosthodontic rehabilitation. Preventive care is imperative if long-term preservation of the supporting structures is desired.

Learning points

- ▶ Any palate defect should be treated surgically at a younger age.
- ▶ Using silicon impression material is easy to handle and manipulate.
- ▶ The extension of the special tray should not be extended into the defect but a space of 1.5–2 mm should be provided for the impression material so that no compression is there in the defect.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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