Velopharyngeal Defect: A Case Report

Dr. Suprabha Hooda P.G. Student
Dr. Niraj Rampal Principal & Head
Dr. Salil Pawah Professor
Dr. Amit Gupta Professor
Dr. Bhanu Madan Associate Professor
Dr. Prasoon Shukla Senior lecturer
Dr. Gautam Adhikari Senior Lecturer

Dept. of Prosthodontics including Crown & Bridge & Implantology, Sudha Rustagi College of Dental Sciences & Research, Faridabad, Haryana, India.

Abstract

Rehabilitation of patients with disabilities of head and neck region due to either acquired or congenital defects is a challenging task. These defects may range from minor cosmetic discrepancies to major functional limitations. The prosthodontic management of these patients aims at not only restoring the patients physical handicap but also ensures their psychological well being.

The successful rehabilitation of such a patient requires the concerted and team effort of various disciplines of dentistry as well as other health professionals.

The prosthodontist also has a major role to play in their rehabilitation of velopharyngeal defect.

Common problems encountered in treating maxillofacial patients are psychological, cosmetic, loss of function, retention of prosthesis and recurrence of tumor.

This case report describes the prosthetic management of a patient with velopharyngeal defect.

Key Words: Velopharyngeal defect, prosthetic rehabilitation, obturator.

Introduction: Hypersensitivity and decreased intelligibility of speech may result from congenital or acquired defect of the velopharyngeal mechanism. Velopharyngeal defect may result from congenital malformations, developmental aberrations, acquired neurological deficit or the surgical resection of neoplastic disease.

Kantner and west in 1941has divided speech into five components

1. Respiration, 2. Phonation
3. Resonation, 4. Articulation
5. Neurological integration

Cherici and Lawson in 1973 added audition, ability to hear sound to this list of this six component of speech, resonance and articulation are most readily influenced by maxillofacial prosthodontic rehabilitation. Obturator prosthesis fabricated for patients with velopharyngeal insufficiency vary with the location and nature of the defect. Obviously, there are differences between obturator prosthesis constructed for patients with developmental and congenital malformation of the soft palate as compared with these constructed for patients with acquired defect. Yet the objectives of obturator are identical i:e to provide the ability to control nasal emission during speech and to prevent leakage of material into the nasal passage during deglutition.

Case Report: A 22 year old female patient reported to the department of prosthodontics, Sudha Rustagi College of Dental Sciences & Research, Faridabad due to inability to speak properly and leakage of material into nose during swallowing especially liquids. Patient was more concerned about intelligibility of speech because she was applying for various jobs and for interviews. She needs accurate speech.

The careful oral examination revealed a large defect was present in midline starting from uvula a extending till entire length of soft palate (Fig.1). Mobility of soft palate was present. Nasal speech was present along with nasal regurgitation of food especially liquid. Patient is having healthy and intact maxillary dentition and also the mobility in residual soft palate was present so in the treatment plan it was decided to fabricate the prosthesis. Also the size of the defect was so large that surgical reconstruction of defect was not possible.

Treatment Plan: A diagnostic impression of the maxillary arch was made in irreversible hydrocolloid with metal stock trays (Fig. 2). The palatal portion of the impression was extended posteriorly and superiorly with modeling wax so that the defect could be recorded. The primary cast was poured and the custom tray was fabricated for making a secondary impression of the maxillary arch and the defect. The diagnostic cast was made in establishing the appropriate design for the partial denture frame work after surveying of the cast.

Special tray was fabricated on diagnostic cast extending to the teeth.

Mouth preparation was done before the secondary preparation.

Low fusing compound was used for the border molding. For the obturator section soften compound was added and the patient was made to move her head in a circular manner from side to side while bending her head forward to her chest.

The patient was asked to say “ah” and swallow as these movements activated the patient's remaining palatopharyngeal musculature and moulded the compound. The border moulding was adjusted to the point where the patient could pronounce a clear p and f and s sound without emission of air through the nose.

Finally the patient was made to swallow small portion of water and then breathe through the nostrils to test the effectiveness of the formed obturator after being adjusted with the speech, all the extensions were reduced by one mm and a impression was made with addition silicon impression material.

Try in of metal frame work was done (Fig. 3). The metal frame work has a loop extending in the posterior area for the support of obturator. The obturator section was made by adapting modelling wax on the walls of the defect and using baseplate wax over the denture base area (Fig. 4). This was invested, dewaxed and acrylized with heat cure acrylic resin (Fig. 5). The prosthesis was tried and adjusted till the earlier criteria for speech was verified (Fig. 6).

Discussion

Prosthetic rehabilitation of the patients suffering from VP deficits with obturator prosthesis varies according to the location and nature of the defect or deficiency. There are differences between obturator prosthesis constructed for the patients with developmental or congenital malformation of the soft palate, as compared with those constructed for patients with acquired defect. However the objectives of obturators are to provide the capability for the control of nasal emission and inappropriate nasal resonance during speech and to prevent the leakage of material into the nasal passage during deglutition. In the literature, several types of prosthesis have been described to improve speech ability. A pharyngeal obturator prosthesis may prevent the hypernasality and nasal emission associated with velopharyngeal inadequacies. In order to obtain adequate velopharyngeal closure during speech and swallowing a posterior extension is added to prosthesis. The extension must be positioned at the level of the hard palate during the most active movement of the pharyngeal sphincter.

The success of the soft palate defect prosthesis depends on the functional adaptation of the impression material. Retention of the pharyngeal obturator can be obtained by direct and indirect retainers for patients with complete maxillary dentition. Although removable partial denture designs for patients with velopharyngeal deficiencies are similar to removable partial denture designs for non-surgical patients, the long lever arm created by the extension for the

obturator must be considered. The weight and length of obturator portion increases the effect of gravitational forces and the potential for rotation around the fulcrum line.

Conclusion: In this case report, the patient with soft palate defect as velopharyngeal insufficiency was treated successfully by definitive pharyngeal obturator prosthesis which had different retention mechanism. It is crucial to rehabilitate such patients with suitable prosthetic management for successful results. The procedure was carried out giving utmost importance to the functional, psychological and esthetic needs of the patient.

References

1. Aramany MA.Basic principles of obturator design for partially edentulous patients.Part l:classification. J Prosthet Dent 1978;40:554-7.
2. Desjardins RP.Obturator prosthesis design for acquired maxillary defects. . J Prosthet Dent 1978;39:424-32.
3. Rahn AO,Goldman BG,Parr GR.Prosthodontic principles in the surgical planning for maxillary and mandibular resection patients. J Prosthet Dent 1979; 42:429-33.
4. Shifman A,Finkelstein Y,Nachmani A,Opheir D.Speech aid prosthesis for neurogenic velopharyngeal incompetence. J Prosthet Dent 2000; 83:99-106.
5. 1.Grerory R. Parr,Greggory E.Tharp and Arthur O. Rahn.Prosthodontic principles in the framework design of maxillary obturator prostheses.J Prosthet Dent 2005;93:405-11.
6. Maxillofacial Rehabilitation.,Prosthodontic and surgical considerations, Beumer, Curtis, Firtel.

Legends

Fig.1: Velopharyngeal Defect
Fig.2: Diagnostic impression
Fig.3: Try in of metal framework
Fig.4: Fabrication of obturator section
Fig.5: Acrylization of obturator section
Fig.6: Prosthesis in the mouth