THE EMBOUCHURE DENTURE — “A DOUBLE REED MUSICIAN’S DELIGHT”

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ABSTRACT

Wind instrument players are the ones who put their mouth, lips, jaws, teeth, tongue and face to a use which is different from the normal functions of eating, speaking and expression. Hence there is a clear need for an understanding of the dental requirements of players of wind instruments.1 The problems that may arise for the dental surgeon who is treating a wind instrument player are due to the fact that the eligibility of the musical sound produced and how he produces it while playing a musical passage is directly related to muscles of facial expression, during blowing. Hence it is necessary to design a prosthesis that would well adapt to the functional demands of the wind instrumentalist. The purpose of this article is to create an awareness among dental practitioners, about their role in rehabilitating a completely edentulous wind instrumentalist and also describes the technique to fabricate a specially designed prosthesis for wind instrument players — “The Embouchure denture”.

Key Words: embouchure, wind instrumentalist, reed, inclined planes.

INTRODUCTION

‘Music is the medicine of a troubled mind’. Music is produced by musical instruments, which are of various types. One among them are the wind instruments. Playing a wind instrument places exacting functional demands on the lips, jaws, tongue and teeth. Any disease or loss of these vital structures can adversely affect the instrumentalist’s performance and in some instances prematurely end his career. The problems that may arise for a dental surgeon who is treating a wind instrumentalist are mainly due to the exacting functional demands on the oral and perioral structures especially the muscles of facial expression during blowing. The problems of complete denture prosthesis assume a unique character where playing of the wind instrument is concerned. The reed of the instrument, which rests on the lip is the sound generator of wind instruments. The reed must be allowed to undergo a series of regular vibrations to produce a musical tone. Therefore the objective is to construct for these patients with complete edentulousness, complete dentures which will not hinder the lower lip to vibrate; the artificial palate and teeth which would not hamper the player’s control of the air column and perhaps the most important of all, the retention of the prosthesis should be as rigid as possible to resist the dislodging forces imposed by the mouthpiece and the individual embouchure adaptation.2

CLINICAL REPORT

A 73 year old male patient reported to the Department of Prosthodontics of Sree Mookambika Institute of Dental Sciences, Kulasekaram, Kanyakumari District, Tamil Nadu, India, with the chief complaint of complete loss of all the teeth and that he was unable to play the wind instrument – ‘Nadaswaram’ without teeth. He was a wind instrumentalist, who played the wind instrument ‘Nadaswaram’. On examination the patient was completely edentulous and he had severely resorbed ridges. After taking a detailed case history, the treatment plan was formulated, according to which we decided to rehabilitate the patient with two types...
The embouchure denture

used as a professional denture; that is the denture to be used only during the playing of the wind instrument - Nadaswaram and the other a conventional complete denture to be used at the other times.

Primary impressions of both the maxillary and mandibular edentulous arches were made using impression compound (Asian acrylates, Mumbai, India).

Fig 1: Jaw relation


Fig 3: Wax trial for Embouchure denture

Fig 4: Embouchure denture (Upper and Lower) after processing

Fig 5: Embouchure denture in the patient’s mouth after finishing and processing
and primary casts were poured with dental stone (Stone Plaster, Neelkanth Minechem, Rajasthan, India). On the primary cast 2 sets of upper and lower special trays were fabricated using autopolymerising resin (DPI-RR cold cure, Dental Products of India, The Bombay Burmah trading corporation Ltd). Border moulding was done using low fusing compound (DPI Pinnacle Tracing Sticks, the Bombay Burmah Trading Corporation, Mumbai, India), to record the depth of the functional sulcus and secondary impressions were made using Zinc oxide and eugenol impression paste (DPI Impression Paste, the Bombay Burmah Trading Corporation, Mumbai) in both the trays. Master casts were poured. Thus 2 pairs of master casts were obtained, one for the conventional denture and the other for embouchure denture. Occlusion rims were fabricated (Modelling wax no. 2, The Hindustan Dental Products, Hyderabad, India) and maxillomandibular relationship was recorded separately for both the dentures.

Wax trial for conventional complete denture was done as usual. The embouchure denture is unique from the other denture after maxillomandibular relationship. The distance from the incisal edges of lower central incisors to the lower border of the mental protuberance of the mandible was recorded using calliper. In the posterior teeth region of the denture, a system of inclined planes were included between the upper and lower dentures.

This would allow for differences in vertical and horizontal relationships between the upper and lower and yet permit contact between them during playing which will prevent either of them from being dislodged.2

The posteriormost part of the lower occlusion rim was cut backward so that it presents a downward and backward inclined plane of about 5-10 mm. Another sloping more gradually was downwards and/or about a half inch, then a third cut was made which was parallel with the first incline plane, the fourth cut was parallel with the second. The upper block was then built to interdigitate with the lower inclined planes. These planes appeared from the side as two inverted V’s with short posterior arms and long, more gradual anterior arms.2

Adjustments of the inclined planes is to be done during the wax trial of the denture. Where high notes are difficult to register, the blocks, including the inclined planes are trimmed down until the notes may be satisfactorily produced. The wax blocks can be built up a little on the back or the incisal portions of the wax can be reduced slightly, when low notes are not reasonably clear.3 The upper anterior teeth (Premadent, Super Dental Products, Delhi, India) were arranged according to glass plate relation and the lower is adjusted slightly for provision of the reed. But in this case, the patient had a class II maxillomandibular relationship, so he had to bring his mandible more forward for playing high notes, which was difficult for him and the notes produced were also not efficient with the anterior teeth in place. So we removed the lower anterior teeth and wax was built again till the musical notes produced were eligible. Posterior should be narrow buccolingually. Then it was processed and finished.

**DISCUSSION**

The way in which the lips and mouth are applied in the blowing of a wind instrument is known as embouchure, (Grove 1954).1 Playing a wind instrument is a complex neuromuscular task that requires increased ventilation and increased orofacial muscle activity. Embouchure varies with the different classes of instrument and since no two mouths are alike, it varies in detail with each player.1

There are broadly, four classes of wind instruments and these may be based, for the convenience of the dental surgeon according to where the mouthpieces are applied and on the types of mouthpieces as 1:

I) Intra-oral mouthpieces:
1) Single reed instruments - Eg: clarinet, saxophone.
2) Double reed instruments - Eg: oboe, bassoon.

II) Extra- oral mouthpieces:
3) Flute and piccolo.

4) Brass instruments – they have cup-shaped mouthpieces. Eg; cornet, tuba etc.

The embouchure is also determined by the suitability of the lips. The suitability of the lips is dependant mainly on the position and form of the teeth (natural or artificial), the bony or artificial structure supporting them and the maxillomandibular relationship. The tongue must be free to articulate against the reed or plalate in single reed and double reed instruments.

There are two types of embouchures depending on the type of reed and the player. Single lip embouchure is the type of embouchure the upper or lower lip is curled over the edges of the upper or lower incisal edges respectively. Double lip embouchure is wherein the upper lip is curled inwards under upper incisors as well as lower lip curled inwards over lower incisors. Players with long upper lips often prefer double lip embouchure.

In making impressions it is advantageous to allow the patient to manipulate his lips, cheeks and tongue in playing, preferably with his mouthpiece in position. When maxillomandibular relationship is recorded, besides recording the correct centric occlusion, the wax should be trimmed to labial and buccal contour and to such relative vertical dimension between lip line and incisal line in each jaw as will permit comfort while playing. Calliper measurement of the overall vertical dimension from the base of the septal cartilage of the nose to the bottom of the mental protuberance or reference to clinical photographs will be a valuable guide in all these respects.

Anterior tooth loss usually markedly affects the embouchure and replacement should duplicate the absent teeth in form and position, retention to resist both inward infraoral and extraoral pressure is extremely difficult. Complete dentures should allow adequate provision in the incisor region for the lips to be curled backwards in the mouth to support the double reed. The incisor teeth should be set without protrusion of individual incisors. Overbite should be minimal and incisal edges of artificial teeth should be blunt and smooth in order not to irritate the lips which will be stretched over them. During playing the embouchure musculature, and particularly the buccinators and the modiolus, is contracted in an unusual way, so that the reproduction of an ‘embouchure fossa’ in dentures in which the accentuated buccal pad can lie, will help to retain the dentures in position.

Success of the embouchure denture can be achieved only with co-operation from the patient as all the procedures involved in the fabrication of this denture has to be done with great care and concentration.

CONCLUSION

The Embouchure denture is a prosthetically designed special professional denture that can be used by a wind instrumentalist during the blowing of his wind instrument. The most common wind instrument played in India, especially in South India is “Nadaswaram”. Many nadaswaram players must have lost their career due to their edentulousness, this denture would perhaps provide hope of a continued career for such musicians. This denture can also provide the wind instrumentalist, protection and maintenance of the most important asset of his profession; the all important ‘embouchure’.

REFERENCES

OBITUARY

Dr Tariq Nishtar started his career in Pakistan in 1966 when he joined Khyber Medical College as Assistant Professor of Medicine after qualifying as a member of the Royal College of Physicians of Edinburgh. He became Professor of Medicine in 1971 and was Secretary Health, Social Welfare and Population Planning from 1989 to 1991 and retired from government service in 1995 but his contribution to the medical profession and medical services go well beyond his government service.

Dr Nishtar was a pioneer of many medical services in Khyber Pakhtunkhwa province for almost five decades. He was the first physician to perform renal dialysis in the Khyber Pakhtunkhwa province and was the driving force behind the establishment of the Lady Reading Hospital Intensive Care Unit and later the Coronary Care Unit, which were the first in the province. He was the first Director of Pakistan Medical Research Council and was the founder of the Post Graduate Medical Institute in Khyber Medical College (PGMI) and Frontier Health Foundation and served as managing director of both institutions.

After retirement, Dr Nishtar served as Chairman of Frontier Red Crescent. He was awarded the status of Professor Emeritus by Khyber Medical University.

The role of Prof Tariq Nishtar (when he was Secretary Health) in upgrading Dentistry Department to Khyber College of Dentistry was commendable. He was the motivating force. He was a friendly and very decent person.

He was born on 25th May, 1935 at Peshawar and he was son of late Sardar Abdur Rab Nishtar. He died on 30th December, 2015 after protracted illness. May the Blessings of Allah be upon him (Ameen). We extend our heartfelt condolences to the bereaved family. May Allah give them the strength to bear this great loss (Ameen).