Developing Occlusion in Removable Partial Denture Using Functionally Generated Path Technique
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ABSTRACT
Providing harmonious group function occlusion in artificial teeth either in removable partial denture or fixed partial denture is a difficult task. Developing group function needs fully adjustable articulator, which is not possible in routine clinical practice. In such cases functionally generated path technique (FGP) is ideal. It is very simple if we do it in a precise and systemic method. Only minimal occlusal adjustments are required during the clinical try-in stage, which is a major advantage over the conventional technique. In this case I used FGP technique to produce occlusion in removable partial denture.

Keywords: Stomatognathic system, Occlusion, Functionally generated path technique, Anterior guidance, Condylar guidance

INTRODUCTION
In natural articulation, the mandibular teeth move over the maxillary teeth in a harmonious manner. The cusps move in fossa and grooves between the opposing cusps and normally, there is no interference during the various mandibular movements. Interference or a premature contact can initiate a wave of disturbance that spreads throughout the stomatognathic system and can even affect the musculoskeletal system\(^1,2,3\). Any prosthesis that is prepared should not disturb the harmony of occlusion or it may jeopardise the situation\(^1,2,3\).

Mann and Pankey tried a precise technique with least equipments which was originally advocated by Meyer in 1930s, called as functionally generated path technique\(^4,5\). This method was originally developed for developing occlusion in complete dentures. Registration of occlusal pathways and the use of these pathways as an occluding template rather than a cast of the opposing arch is used in this case.

CASE REPORT
A female patient aged around 22 years visited to our department for getting replacement of her missing teeth. On examination it was revealed that patient had missing 34, 35, 36, and 44, 45, 46. (Figure 1). The edentulous site has well rounded ridge with firm mucosa. After analyzing clinical and radiological findings, cast partial denture was planned.

TREATMENT PROCEDURE
Diagnostic impressions were made. Diagnostic cast was surveyed and, designing of RPD framework was done. Occlusal rests were prepared with 37 and 47. Final impression was made with regular body PVS (Exaflex putty and Examix NDS GC America) in custom tray. Surveying and blocking of master cast was done. Duplication of master cast was done and refractory cast was prepared in phosphate bonded investment material. Wax pattern was made for metal
framework on refractory cast. Casting of the same was done. Try-in of metal framework was done (Figure 2). Autopolymerising acrylic resin (DPI-RR cold cure, DPI, India) temporary denture base was prepared on the minor connector of edentulous site. Over this base hard inlay wax was added. Patient was advised to do various possible movements (Figure 3). The framework was removed from the mouth and excess wax was removed. Framework was replaced in the mouth and patient was advised to use it for the whole day. Framework was replaced on the master cast and tongue space was blocked out with wax. Beading and boxing was done with master cast (Figure 4). Wax recording was washed with soap water and poured with dental stone. This positive replica was then used as template (Figure 5). Maxillary cast was replaced with this template and remounting was done. Teeth arrangement was done according to the occluding template (Figure 6). Patient had group function so only centric and working side contacts were maintained. Try-in was done. Denture was fabricated and delivered to the patient (Figure 7).

DISCUSSION

The word occlusion includes both closure of the dental arches and various functional movements with maxillary and mandibular teeth making contact[6]. Various
techniques and equipments have been developed to achieve this occlusal harmony. The anatomical articulators simulate the mandibular movements and assist in developing prosthesis suitable for the existing occlusal condition. However it cannot duplicate the whole stomatognathic system. Occlusion demands dynamic recording. When a static jaw relation recording is used with or without eccentric articulatory movements, then the prosthetically supplied teeth are arranged to occlude according to a specific concept of occlusion. On the other hand when functional occlusal recording is used the teeth are modified to accept every recorded eccentric jaw movements. Dawson described the FGP technique as an extremely sophisticated and practical method of capturing the precise border pathways that the lower posterior teeth follow. The technique has distinct advantage in that it is able to record all dimensions of such border movements at the correct vertical as they are directly influenced by both condylar and incisal guidance. The procedure can provide accuracy with fairly simple instrumentation and can be used either in combination with almost any laboratory method for waxing posterior restorations. It can be used either in the actual fabrication of the restorations or as a three-dimensional check bite technique. There are certain pre-requisites for the use of FGP for the restoration of missing teeth; these are as follows:

- Presence of an optimal occlusion.
- Appropriate anterior guidance.
- Elimination of posterior interferences prior to making restorations.
- Missing, broken, carious or extruded teeth in the opposing arch will not provide the occlusal pathways needed for the shaping of the occlusal surface and hence FGP should be avoided in these cases.
- The only disadvantage with this method is its technique sensitivity. It needs expert’s hands with patient cooperation.
This method is mostly used in full mouth rehabilitation cases but here I tried in removable partial denture because in this case the patient has group function occlusion. A static recording does not give accurate eccentric movements, which can lead to occlusal interferences.

**CONCLUSION**

Stability of the removable dentures partial or complete is mostly dependent on occlusion. Generally in case of group function getting harmonious occlusal contacts on working side is difficult, with this technique we can get harmonious contacts easily. Mouth is supposed to be the best articulator. In this technique I have used mouth as an articulator. This is time saving and most economical also.

**REFERENCES**


