CASE REPORT


Dr. Sattyam Wankhade¹, Dr. Jyoti Lokade ², Dr. Vilas Rajguru³
1, M.D.S, Assistant Professor, Department of Prosthodontics, Government Dental College And Hospital, Nagpur, Maharashtra- India.
2, M.D.S, Assistant Professor, Department of Conservative Dentistry and Endodontics, SKDS Dental College and Hospital, Nagpur, Maharashtra- India.
3, M.D.S, Associate Professor, Department of Prosthodontics, Dr HSRSM Dental College and Hospital, Hingoli, Nagpur, Maharashtra- India.

Abstract
When the Opposing Natural teeth do not provide a harmonious occlusal relationship necessary to achieve adequate stability, it becomes a demanding situation to construct a Single Complete Denture. This article reports a case wherein a Broderick flag was used for proper establishing of occlusal plane of natural teeth. This will decrease the risk of arbitrary grinding & creating a favorable occlusal plane. It eliminates the hardship of estimating clinical reductions on the basis of adjustments made on preliminary casts. This method will minimize guesswork through guided intraoral reduction.

Key words- Broderick flag, Anterior survey point, Posterior survey point, Plane analyzer, Selective grinding.

Introduction
The prevalence of the condition where one edentulous arch opposes a natural or restored dentition is quite common. For such a patient, the clinical challenge is one of appreciating the biomechanical difference in the supporting tissues for the two arches, and applying the appropriate management procedures to produce & maintain the conditions necessary for long-term treatment success. After considering the diagnostic entities, the dentist must evaluate the individual problems, so similar appearing conditions do not always dictate the same treatment.¹⁻⁵

Single Complete Denture (S.C.D) is a prosthesis, which replaces the lost natural teeth & its associate structure functionally & esthetically as a single unit, which opposes all or some of the natural teeth.
S.C.D. is also called as a prosthesis, which replaces the teeth & associate structures of either maxilla or mandible & is opposed by natural dentition with or without fixed or removable partial denture in the opposing arch.
An instrument called as Broderick flag has been used to assist in reproduction of tooth morphology that can commensurate with curve of spee. The so called flag instrument can be adapted to almost any type of articulator that will accept a facebow mounting to the upper model.
One of the most important problems in constructing a S.C.D. is the irregular occlusal plane & to achieve harmonious occlusion, this must be resolved.
This article describes a case of S.C.D. wherein the occlusal plane is adjusted with use of Broderick flag & Javid & Esquivel method, which allows guided intraoral reduction & eliminates arbitrary grinding.

**Broadrick Occlusal Plane Analyzer:**  
An instrument called as Broadrick flag can be adapted to any type of articulator that can accept a facebow mounting to the upper model. The lower model must be mounted with a centric check bite record. Broderick flag has been used to assist in reproduction of tooth morphology that is commensurate with curve of spee. Care should be taken to ensure that the angle of condylar guidance is not less than the curve of spee, as this would introduce posterior protrusive interferences.

George Monsoon proposed that mandibular teeth should be arranged to close around a sphere of 4-inch radius, with the mandibular incisal edges & cusp tips touching the sphere, thus permitting protrusive & lateral excursions free from posterior interferences.

**A Case Report:**
A 62 years old male patient with upper edentulous arch & missing anterior teeth in the lower arch, reported to Dept of Prosthodontics, Government Dental College to replace his teeth for the purpose of mastication. All the remaining teeth were in good condition.

The case was diagnosed for constructing Single Maxillary Complete denture replacement of lower missing teeth with removal prosthesis.
1) Preliminary impressions were made for both the arches & primary casts were prepared.
2) Final Impression of maxillary & mandibular arches was made & Orientation relation made with the help of Face-bow (Hanau Spring bow model # 182-8, Water-pick technologies & transferred to Hanau Articulator (model #190-291101, Teledyne Waterpick).
3) After the lower model was mounted, the upper model should be removed & set aside for later use. The flag was secured to the upper bow of the articulator & the plastic sheet snapped onto one side. Adjust bow compass to 4-inch radius.
4) Anterior survey point (ASP) was than selected from cusp tip to disto-incisal line angle of mandibular canine. ASP was taken as disto-incisal line angle. An arc was scribed on the flag. (fig 1 & 2)

(Fig. 1)

(Fig. 2)
5) Posterior survey point (PSP) was selected on disto buccal cusp of distal molar (Fig 3).

(Fig. 3)

6) If position of this tooth were deemed unacceptable, anterior border of condylar element (Fig 4) on articulator could be selected.

(Fig. 4)

7) PSP was taken as disto buccal cusp tip of third molar (Fig 5)

(Fig. 5)

6) An arc was drawn on the graph with ASP & PSP & point of intersection determines the occlusal plane survey center. It can be altered 1-cm forward & backward in order to establish an acceptable plane. (Fig 6)

(Fig. 6)

7) A line was scribed from the occlusal plane survey center onto the mandibular cast. Similarly line was scribed on other side of the cast (fig.7)

(Fig. 7)

8) Fabrication of Poly-Vinyl Siloxane template was done by adapting over mandibular cast. After putty sets it was trimmed with a sharp Knife up to the marked plane

9) Remove the template from the cast & place in patents mouth. After the placement
of the template, the portions of teeth that protrude through it are reduced with the use of tapered diamond points in a high – speed hand pieces (Fig 8).

(Fig. 8)

10) Again centric relation was verified & Teeth arrangement was done. Denture tried in patient’s mouth. Dentures processed & inserted in patient’s mouth.

Discussion

The Single Complete Denture patient is usually younger than Complete denture wearer & can tolerate & adapt to dentures more readily. The ridges are usually well formed & the tissues generally exhibit a desirable degree of resiliency.

A Single complete denture maybe desirable when it is to oppose any one of the following:

- Natural teeth those are sufficient in number not to necessitate a fixed or removable partial denture.
- A partially edentulous arch in which the missing teeth have been or will be replaced by a fixed partial denture.
- A partially edentulous arch in which the missing teeth have been or will be replaced by a removable partial denture.
- 4) An existing complete denture or against implant supported complete denture.

The problems associated with construction of a Single complete denture are numerous and complex.

- The edentulous ridge will have more stresses and strains placed on it than in the completely edentulous mouth.
- To construct a bilaterally balance complete denture.
- Esthetic acceptability
- Selection of teeth
- Masticating habits
- Crossbite relations
- Mandibular prognathism
- Occlusal form: In Single complete denture the occlusal form of natural teeth acts as a guide. In most situations this would be an anatomic (cusp) tooth but if natural teeth are abraded and are not restored prior to treatment the monoplane form may be of choice.
- Tilted tooth: Due to mesial drifting the remaining natural teeth with no antagonists could get tilted creating a lot more problem. These can be reshaped by a selective grinding if mild tilt is present.
- When more tilt is present a moderate amount of reduction is required which should be restored with cast gold crowns, onlays or a fixed bridge.
- If a large edentulous area exists mesial to drifted tooth, then a removable partial denture can be designed with the mesial rest to restore the mesial half of molars and lowering the distal cusps.
- Orthodontic repositioning can be considered.
- If molars are severely tilted and supraerupted and modifications are not possible then it should be extracted.
• Irregular occlusal plane: When there is early loss of maxillary teeth is not restorable, in such cases the mandibular arch will have two plane of occlusion, an anterior plane from canine to canine & a much higher posterior plane.

Problem could be resolved by:
• Reducing the steep cuspal inclination by rounding off the tips of the cusps.
• Direct occlusal forces such that the stability of denture must not be hamper while performing masticating movements.
• Narrowing the width of worn out, attrited teeth and abraded as wear results in increase of bucco-lingual natural teeth. This will centralize masticatory forces & increase denture stability.
• Lessen working side interference by disarticulation of buccal cusps of upper artificial teeth when they are opposing worn-out buccal cusps of lower natural teeth.

Summary

The patient requiring a Single Complete denture opposing a natural or restored dentition challenges the clinician even more than the completely edentulous patient does.

This article presents procedure of using a Broderick Flag & a Poly-Vinyl Siloxane template used as a prosthetic template & helps us in
• Establishing of occlusal plane
• Proper reduction of natural teeth.
• Allows guided intraoral reduction.
• It eliminates arbitrary grinding.
Thus the procedure minimizes guesswork and it provides more favorable occlusal plane.

References:

6. The booklet of Hanau series H2 articulator

Address of correspondence

Dr. Sattyam Wankhade. MDS
Assistant Professor, Room number 121,
Department of Prosthodontics,
Government Dental College and Hospital,
Nagpur, Maharashtra, India.
Mobile : +91 9423421428.
E-mail: drsvw@yahoo.co.in

No conflict of interest reported