

DIAGNOSIS AND
TREATMENT
PHILOSOPIES
IN FULL MOUTH
REHABILITATION

CONTENTS

- Introduction
- Definition
- Indications
- Contraindications
- Diagnosis and Treatment Plan
- Philosophies for full mouth rehabilitation
- Conclusion

Introduction

- The aim is to provide an orderly pattern of occlusal contact and articulation that will optimize oral function, occlusal stability and esthetics.

DEFINITION

ACCORDING TO GPT

Full mouth rehabilitation is defined as the restoration of the form and function of the masticatory apparatus to as nearly a normal condition as possible

Restoration of functional and structural integrity of dental arches with inlays, onlays, crowns, bridges, implant supported prostheses and partial dentures

FULL MOUTH REHABILITATION

INDICATIONS

FULL MOUTH REHABILITATION

- RESTORATION OF MULTIPLE TEETH – MISSING,WORN ,BROKEN DOWN,DECAYED.



BEFORE



AFTER

- TO REPLACE IMPROPERLY DESIGNED AND EXECUTED CROWN AND BRIDGE WORK.



BEFORE



AFTER

DEVELOPMENTAL DEFECTS



BEFORE



AFTER

DISCOLOR DENTITION



BEFORE



AFTER

Full mouth rehabilitation with whiter teeth.

Need for reorganizing occlusion

- Conditions where Inter Cuspal position is considered unsatisfactory
 - Repeated fractures or failures of teeth or restoration
- Bruxism
- Lack of interocclusal space for restoration
- Trauma from occlusion due to excessive or abruptly directed occlusal forces.
- Unacceptable function – poor tooth to tooth contacts with tilting and over-eruption of teeth create problems with masticatory function.
- Unacceptable esthetics- alteration of clinical crown heights necessary to improve esthetics.
- TMD

Which Patients Should Not Be Treated by Full Mouth Rehabilitation?

Prescribing a full mouth rehabilitation should not be taken as a preventive measure unless there is a definite evidence of tissue breakdown

In short, it can be concluded that :

No pathology- No treatment.

Classification of patients requiring Occlusal rehabilitation

Classification by Turner and Missirlain (1984)

- The patients were classified into three categories –
- Category 1 - Excessive wear with loss of vertical dimension.
- Category 2 - Excessive wear without loss of vertical dimension of occlusion but with space available.
- Category 3 - Excessive wear without loss of vertical dimension of occlusion but with limited space available

Category 1 - Excessive wear with loss of vertical dimension.

- A typical patient in this category has few posterior teeth and unstable posterior occlusion. There is excessive wear of anterior teeth.
- Closest speaking space of 3mm and interocclusal distance of 6mm.
- there is some loss of facial contour that results in drooping of the corners of mouth.



Category 2- Excessive wear without loss of vertical dimension of occlusion but with space available

- Patient has adequate posterior support and history of gradual wear.
- Closest speaking space of 1mm and interocclusal distance of 2-3mm.
- Continuous eruption has maintained occlusal vertical dimension leaving insufficient interocclusal space for restorative material.



Category 3 -- Excessive wear without loss of vertical dimension of occlusion but with limited crown space available for restoration.

- Posterior teeth exhibit minimal wear but anterior teeth show excessive gradual wear
- Centric relation and centric occlusion are coincidental with closest speaking space 1mm and interocclusal distance 2-3mm.
- It is most difficult to treat because vertical space must be obtained for restorative material.



Diagnosis

- **Patient's medical and dental history**
- **Clinical dental examination**
- **Full mouth series of Radiographs**
- **Diagnostic casts fixed to an articulator**

- Photographs
- Evaluation of vertical dimension of occlusion
- Diagnostic wax-up
- Eliminate of pain, infection, carious lesions
- Patient intolerance to any radical change in mouth
- Patient time and economic factor
- Bone factors

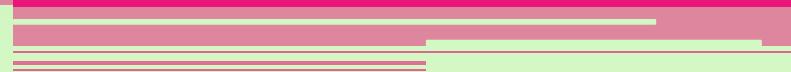
Clinical examination

- Periodontal consideration
- Proximal contact relationship
- Crown form and contour
- Embrasures
- Gingival margins
- Occlusal relationships
- Finishing and polishing of existing restorations

Treatment plan

- Comprehensive treatment plan must be established prior to start of the treatment . Communication and patient education are essential in order to match the dentist's and patient's definition of success.

Philosophies: occlusal schemes



Gnathological philosophy

- CRCO (centric relation centric occlusion)-MIP (Maximum Intercupal Position) coincident (Appropriate)
- Canine guided lateral excursions
- Posterior disclusion in all excursion
- 1) movement of condyle in fossae determine occlusal form

- 2) Simutaneous contact of all posterior teeth in RCP (Retruded contact Position – centric occlusion) with forces directed along long axis
- 3) in any excusive movement , canine should disoclude the posterior teeth

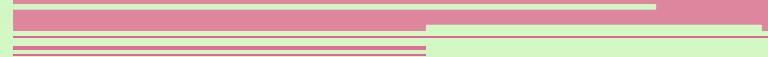
- 4) If anterior guidance can not be provided, keep it as far forward as possible.
- 5) Lingual concavity of anterior teeth is determined by condylar guidance.
- 6) Wax up done on fully adjustable articulator.
- 7) Cusp fossa- tripod contact provided.

Area of Freedom in Centric:

As Ramfjord in 1982 wrote: ‘This advocates a small flat area of a horizontal plane between the CRCP (Centric relation centric position) and IP (long centric) and with occlusal functional guidance leading to the intercuspal position, rather than the retruded position’. The distance between CRCP (Centric relation Contact Position) and the IP (intercuspal position) in this scheme is not critical, but usually approximately $0.5\text{mm}\pm0.3\text{mm}$. Dawson, in 1974, advocated that contact anterior to CRCP occurs only on the anterior teeth, without provision of the horizontal table on the posterior teeth which become disclused.

- **Comments:**
- This scheme is applicable to reorganized large horizontal: vertical ratio cases.
- Since lateral excursions can begin from both CRCP and the IP, disclusion needs to be provided from both positions, complicating the restoration.
- Cusp tip of fossa occlusion must be provided.
- Cusp tip to fossa is easier to provide than tripod contact.
- Cusp tip to fossa relationship can result in wear. Areas of wear can occur between cusps and fossae, leading to a loss of support cusp contacts and possibly instability.
- Although advocated as a simple technique, careful determination of mandibular movements is necessary for accuracy.

Pankey-Mann-Schuyler Concept



One of the most practical philosophies is the rationale of treatment that was originally organized into workable concept by Dr.Pankey utilising the principles of occlusion as dictated by Dr. Clyde Schuyler.

Schuylar's principles were

1. A static co-ordinated occlusal contact of the maximum number of teeth when the mandible is in centric relation.
2. An anterior guidance that is in harmony with function in lateral eccentric position on the working side.
3. Disclusion by the anterior guidance of all posterior teeth in protrusion.
4. Disclusion of all non-working inclines in lateral excursions.
5. Group function of the working side inclines in lateral excursions.

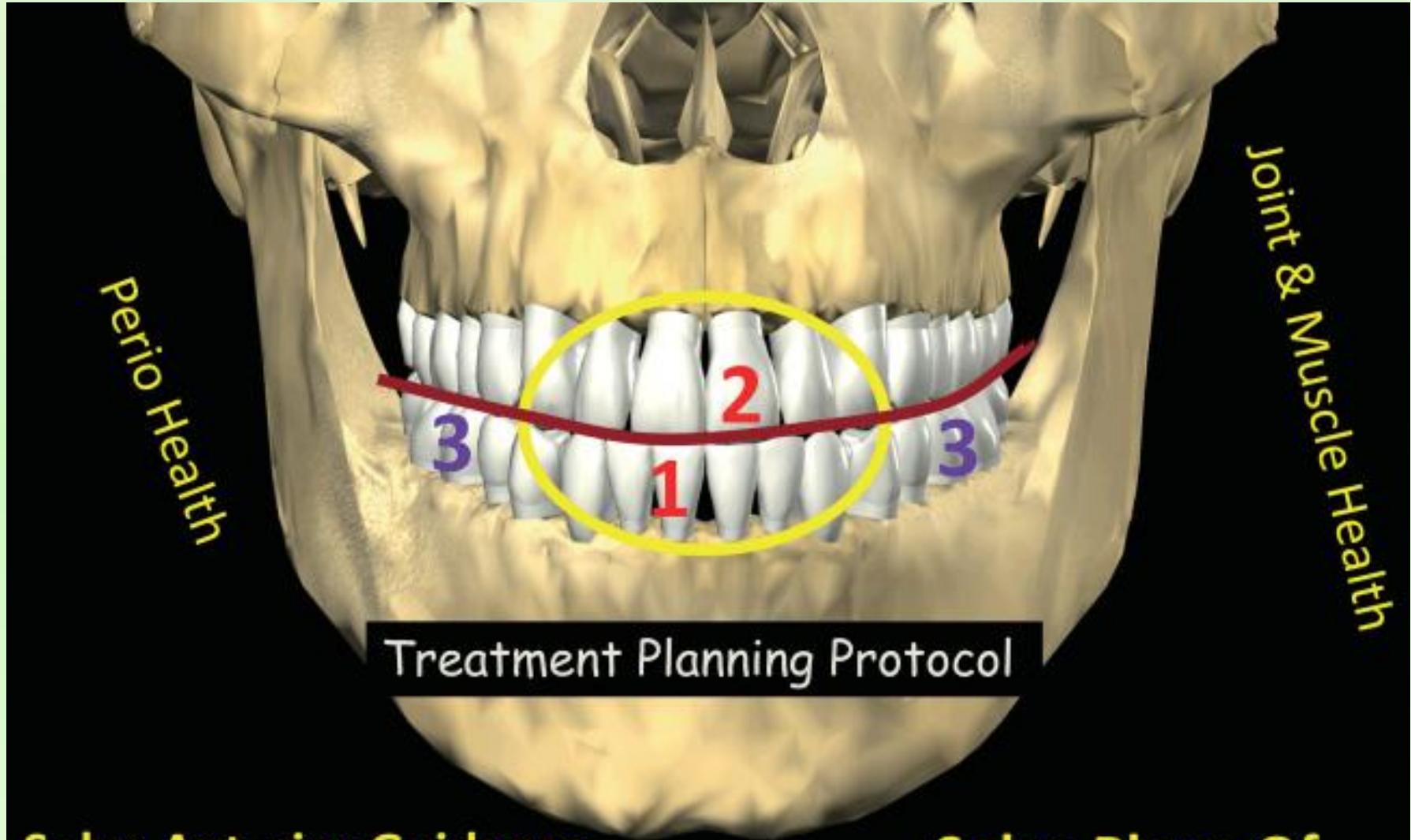
In order to accomplish these goals, the following sequence is advocated by the P.M.S. philosophy:

PART 1. Examination, diagnosis, treatment planning, prognosis

PART 2. Harmonization of the anterior guidance for best possible esthetics, function, and comfort

PART 3. Selection of an acceptable occlusal plane and restoration of the lower posterior occlusion in harmony with the anterior guidance in a manner that will not interfere with condylar guidance.

PART 4. Restoration of the upper posterior occlusion in harmony with the anterior guidance and condylar guidance. The functionally generated path technique is so closely allied with this part of the reconstruction that it may almost be considered part of the concept.



Solve Anterior Guidance
Puzzle: 1 & 2

Solve Plane Of
Occlusion: 3

PROCEDURAL STEPS IN RESTORING OCCLUSION

- Restoring posterior teeth before the anterior guidance is finalized is an example of a common error of sequence.
- Never begin any restorative procedure unless the end result is perfectly visualized and understood.

Preliminary mouth preparation:

- Mouth hygiene instructions should be given
- Caries control should be achieved
- Periodontal therapy should be completed.
- Minor tooth movement should be complete. Stabilization of the occlusion following any orthodontic procedures should have occurred. When teeth have been moved ample time should be given for reorganization of the periodontal fibers and bony support before final impressions are made for restorations.
- Necessary extractions should be done and tissues healed before permanent placement of fixed prostheses.
- Equilibration should be completed prior to preparation of the teeth.
- The temporomandibular joints should be comfortable prior to finalizing any restorative treatment.

ANTERIOR GUIDANCE

- The anterior teeth, when their position allows it, should be made to form a very stable stop for the front of the mandible and thereby limit its closing motion.
- If the closing motion of the mandible is stopped by the incisal edges of all six lower anterior teeth against stable holding contacts of the six upper anteriors, we have not only taken advantage of the position of the front teeth, we have also strengthened that position by distributing the stresses.

Steps in harmonizing the anterior guidance

- **Preliminary Steps:**
- When indicated, lower anterior teeth should be reshaped or restored first.
- All posterior occlusal contact should be eliminated {if posterior occlusal reconstruction is indicated). When the occlusal surfaces of the posterior teeth are to be restored, it is advantageous to prepare them before harmonizing the anterior guidance. Taking the posterior teeth out of contact eliminates their proprioceptive influence and makes it simpler to record centric relation slopes on the anterior teeth. Functional border movements are more easily and more accurately harmonized since there are no restricting influences from posterior proprioception.

The four steps to harmony:

- **Step 1: Establish coordinated centric relation stops on all anterior teeth.**
- **Step 2: Extend centric stops forward at the same vertical to include light closure from the postural rest position -:freedom in centric is given**
- **Step 3: Establish group function in straight protrusion**
- **Step 4: Establish ideal anterior stress distribution in lateral excursions:**

RESTORING LOWER ANTERIOR TEETH

- The first consideration in restoring lower anterior teeth should be to determine the correct location of the incisal edges. While this would ideally be decided on the basis of providing the most stable centric contact with the upper anterior teeth.

RESTORING UPPER ANTERIOR TEETH

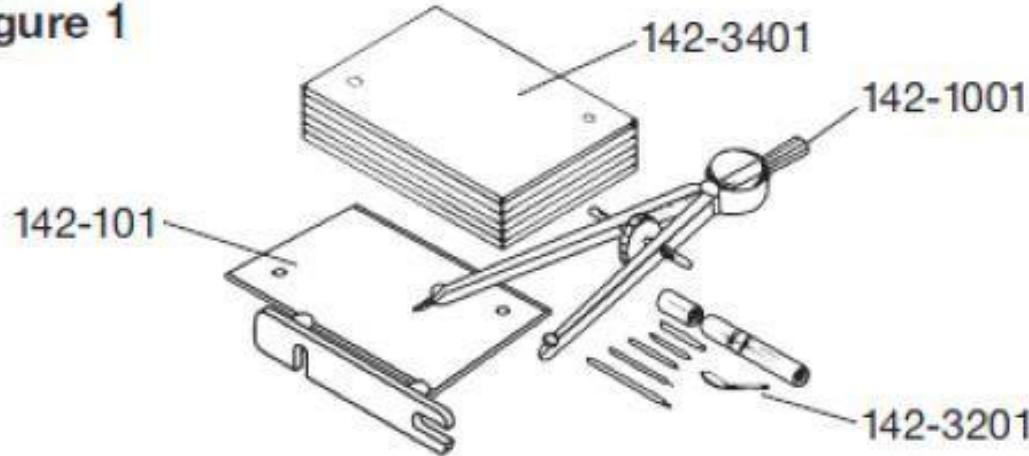
- **Correct lip support:**
- **Precise incisal edge position**
- **Esthetic consideration:**
- **Phonetic considerations**
- **Labial contours**
- **Lingual Contours**

Restoring lower posterior teeth

- **THE PLANE OF OCCLUSION**
- The plane of occlusion refers to an imaginary surface that theoretically touches the incisal edges of the incisors and the tips of the occluding surfaces of the posterior teeth. Instead of flat surface, the plane of occlusion actually represents the average curvature of the occlusal surface.
- There are two basic requirements of a proper plane of occlusion:
- It must permit the anterior guidance to do its job of disclusing the posterior teeth when the mandible is protruded.
- It must permit the disclusion of all teeth on the balancing side when the mandible is moved laterally.

THE BROADRICK OCCLUSAL PLANE ANALYZER

Figure 1



A Broadrick Occlusal Plane Analyzer, Figure 1, consists of (1) Card Index 142-101, (1) Bow Compass 142-1001 with graphite leads, an extra center point and a needle point, (1) Scribing Knife 142-3201 and (12) Plastic Record Cards 142-3401.

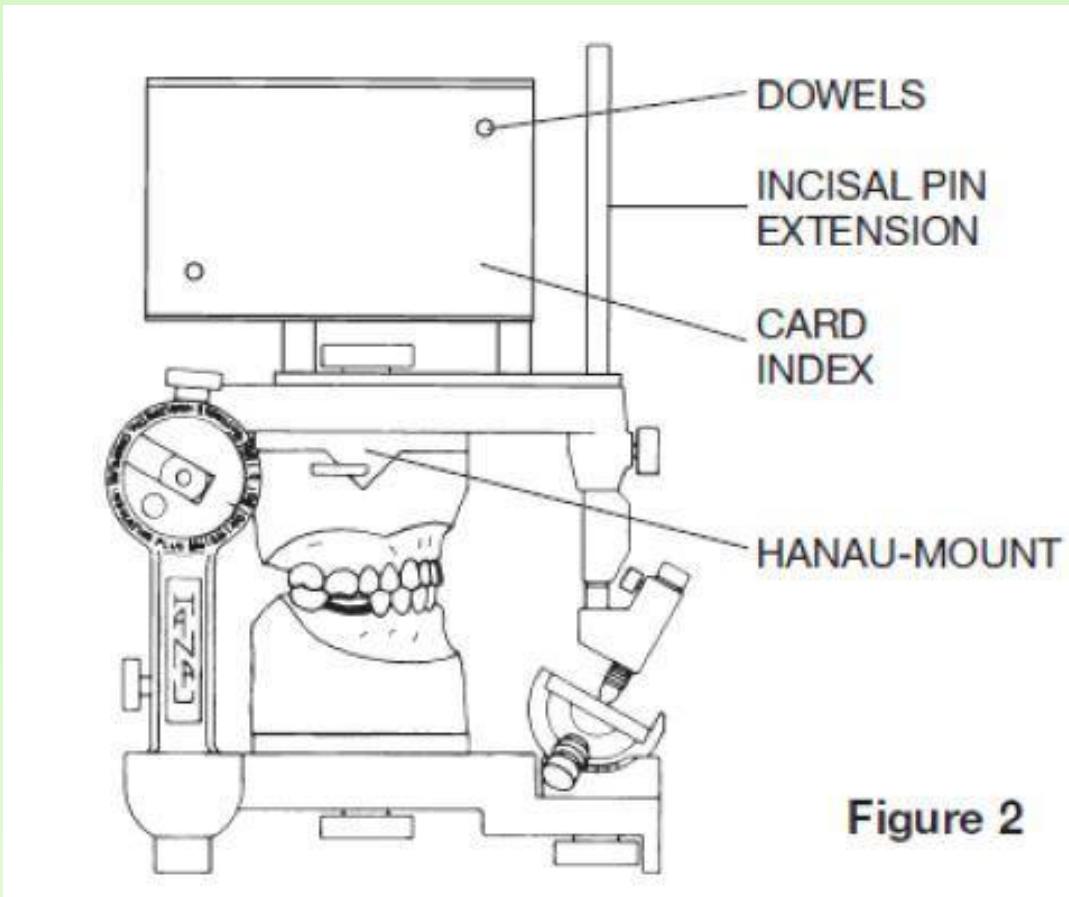


Figure 2

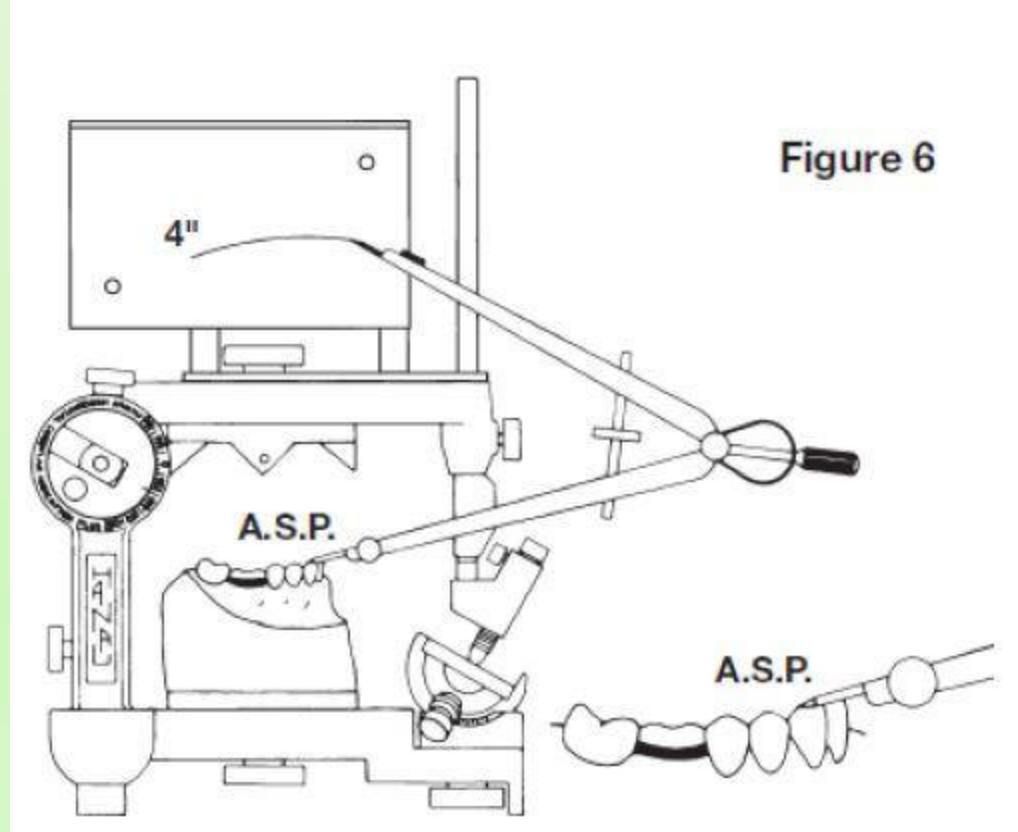
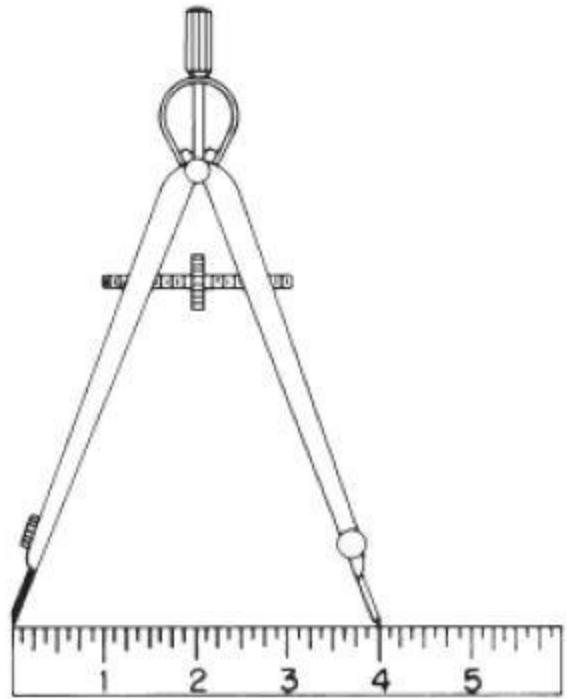


Figure 6

ASP (Anterior survey point): it starts from the distal incisal edge of the lower canine to a radius of 4 inch periphery globe which would be drawn over the card index sheet .

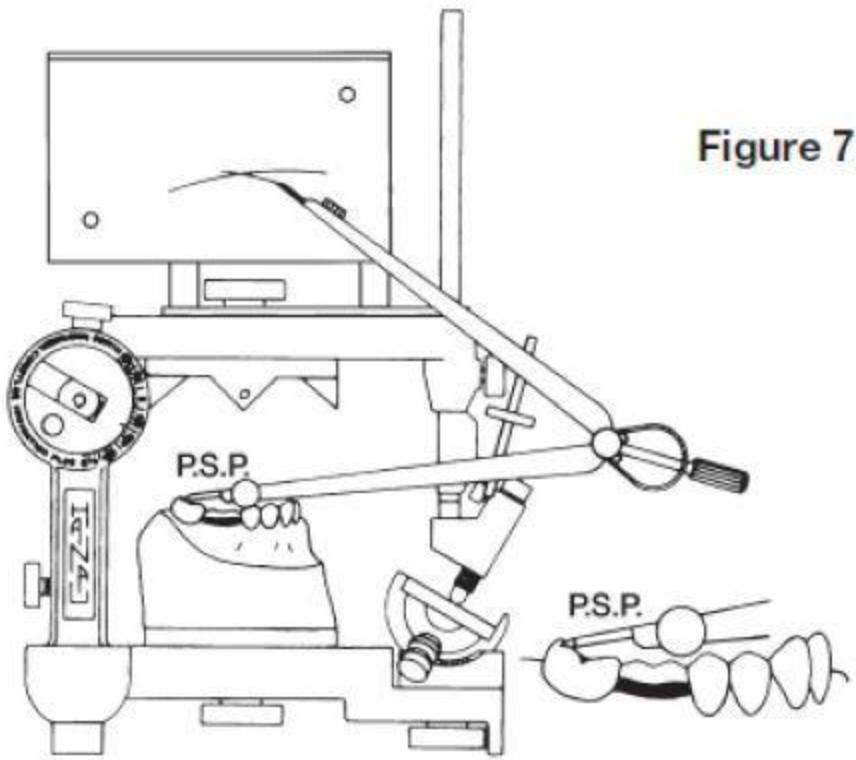


Figure 7

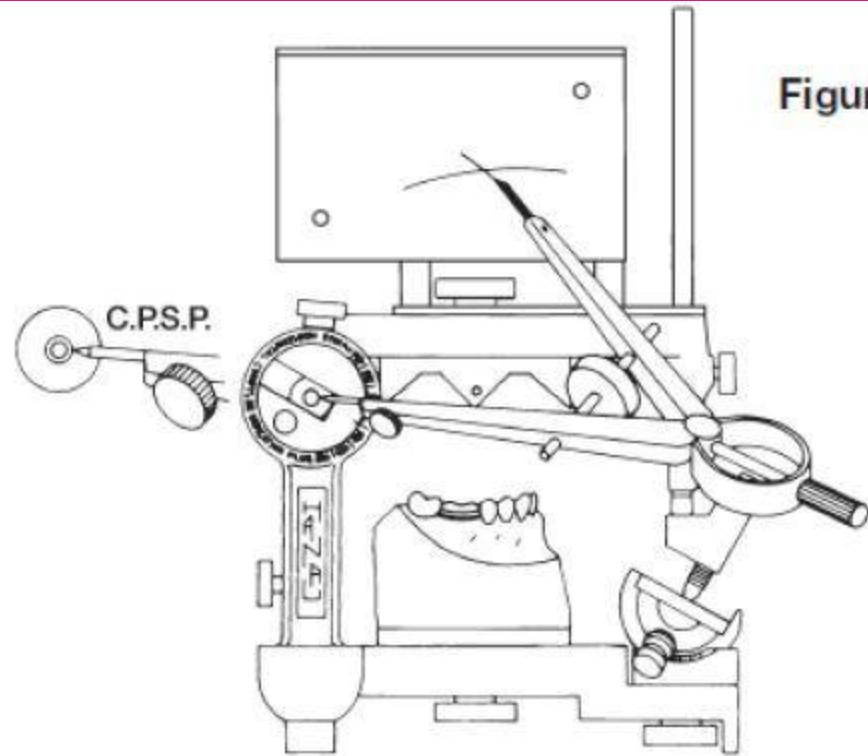
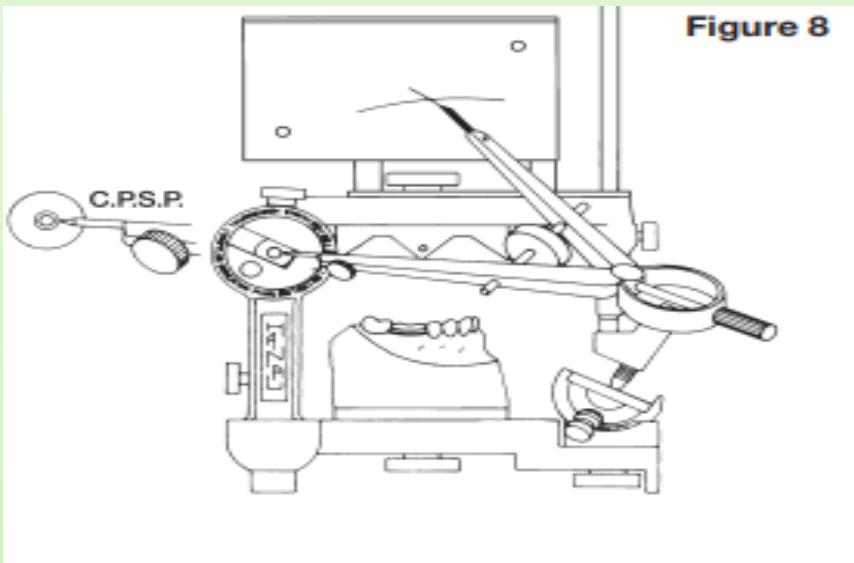


Figure 8

PSP (Posterior survey point): it start from the distal cuspal edge of the lower 2nd molar to a radius of 4 inch periphery globe which would be drawn over the card index sheet .

Alternate to the molar P.S.P. is a position on the Condylar Element of the Articulator, at its anterior intersection with the Condylar Shaft, Figure 8. Position the center point of the Compass on this condylar posterior survey point (C.P.S.P.) and apply an arc to inter - sect the arc formed from the A.S.P

Figure 8



- Alternate to the molar P.S.P. is a position on the Condylar Element of the Articulator, at its anterior intersection with the Condylar Shaft, Figure 8. Position the center point of the Compass on this condylar posterior survey point (C.P.S.P.) and apply an 4 inch arc to inter - sect the arc formed from the A.S.P

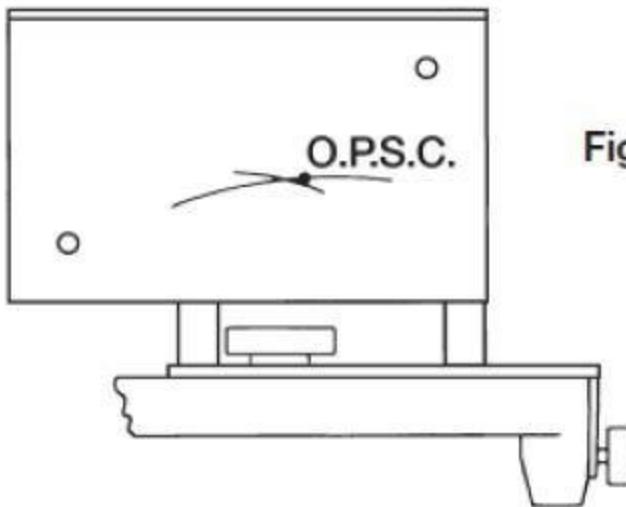


Figure 9



occlusal plane survey center (O.P.S.C.) : Shift this compass point on the long arc on Plastic Record Card of a radius of 4 inch sphere on the buccal surface of mandibular molar.

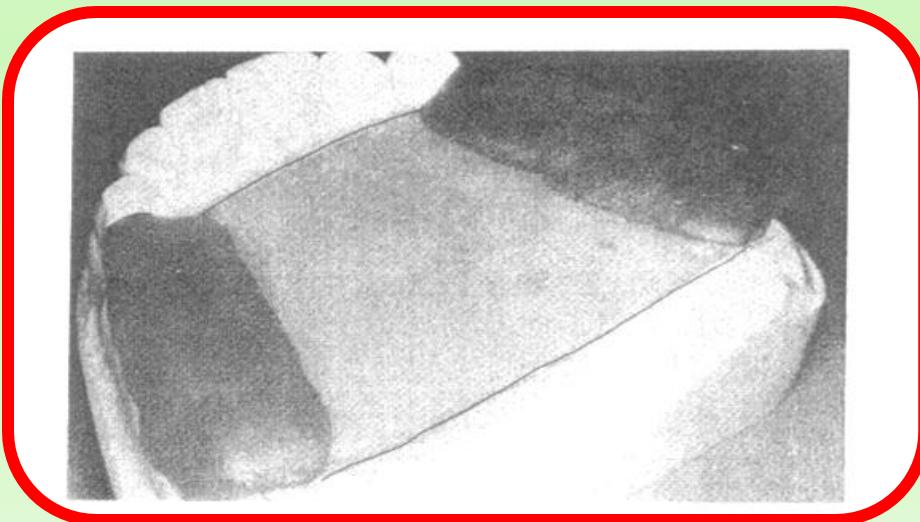
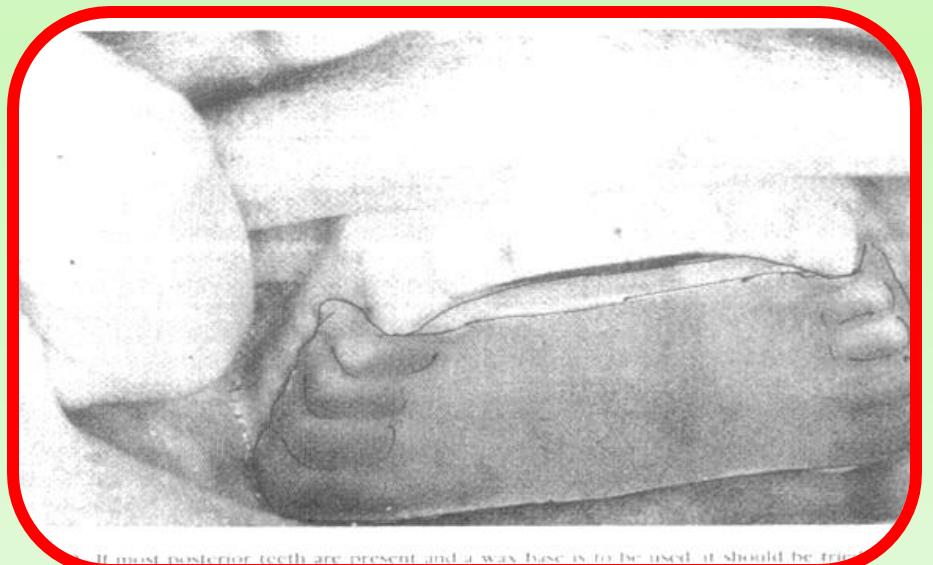
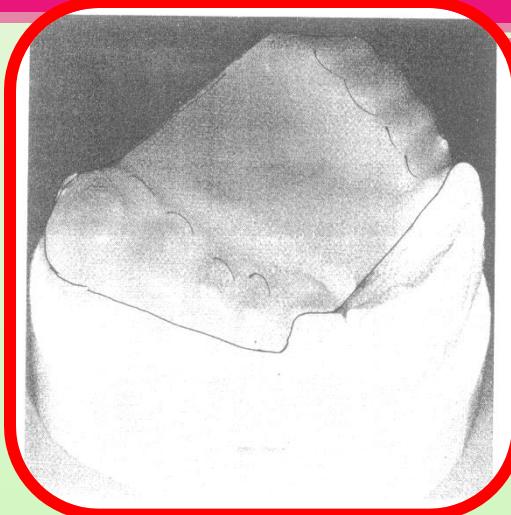
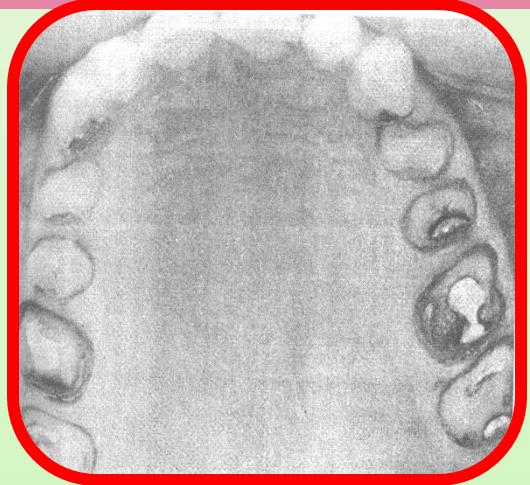
- The radius of sphere in the Curve of Spee is suggested to be at 3.75 inches in skeletal Class II relationship, whereby a 5 inch radius is more appropriate in a skeletal Class III relationship [3] . A 4 inch radius is considered normal and most often used in majority of cases especially in Class I relationships.

Restoring upper posterior teeth

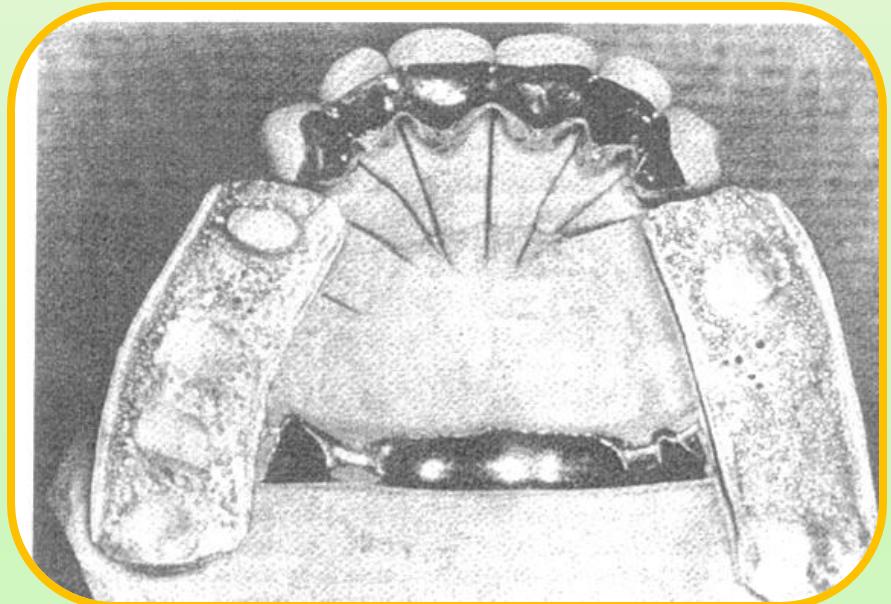
- In spite of its simplicity, the functionally generated path technique (FGP) can be an extremely sophisticated method of capturing in a usable way the precise border pathways that the lower posterior teeth follow. The technique has the distinct advantage of being able to record all dimensions of such border movements at the correct vertical as they are directly influenced by both condylar guidances and anterior guidance.

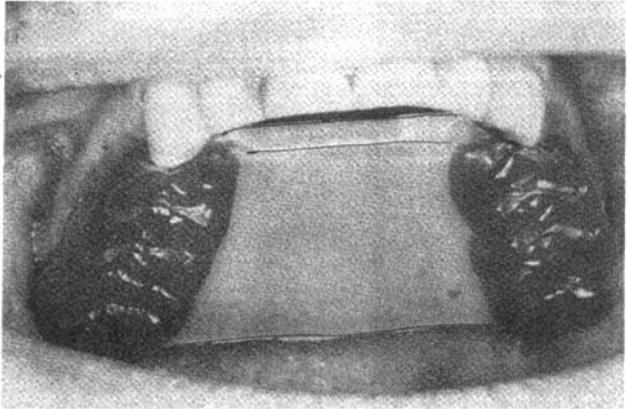
Functionally generated path technique : after Restoring dentition, one could fine the occlusion with FGP or FGP could be used as adjuvant to develop upper wax up or ceramics.

- Described by Meyer 1933
 - It is a method of capturing in a usable way the precise border pathway that the lower posterior teeth follow.
-
- Advantages
 - 1) Simple, inexpensive instrument.
 - 2) Minimum chair side time
 - 3) Relatively easy tech. to learn

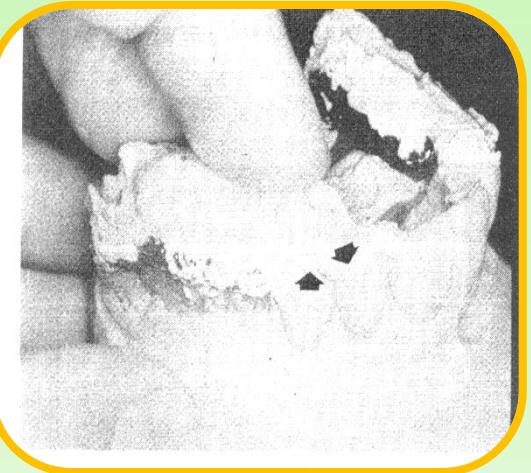
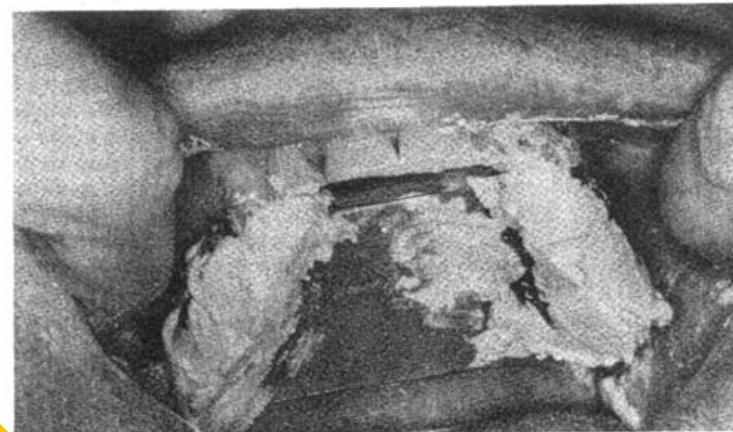


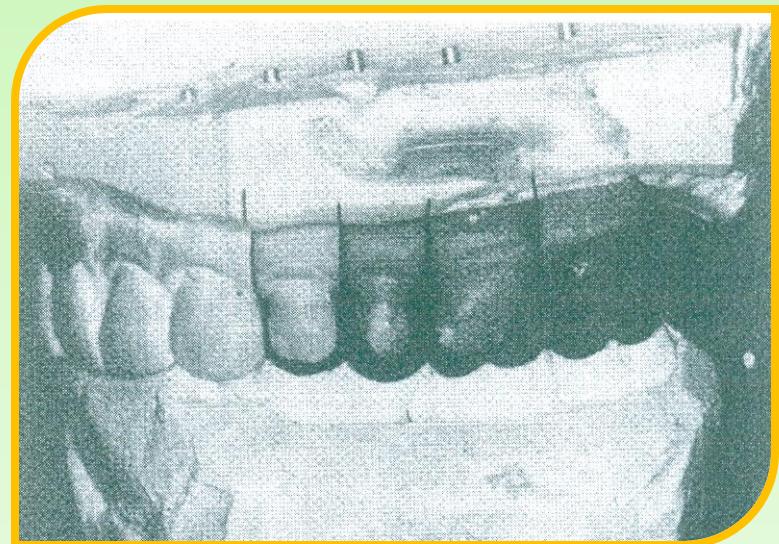
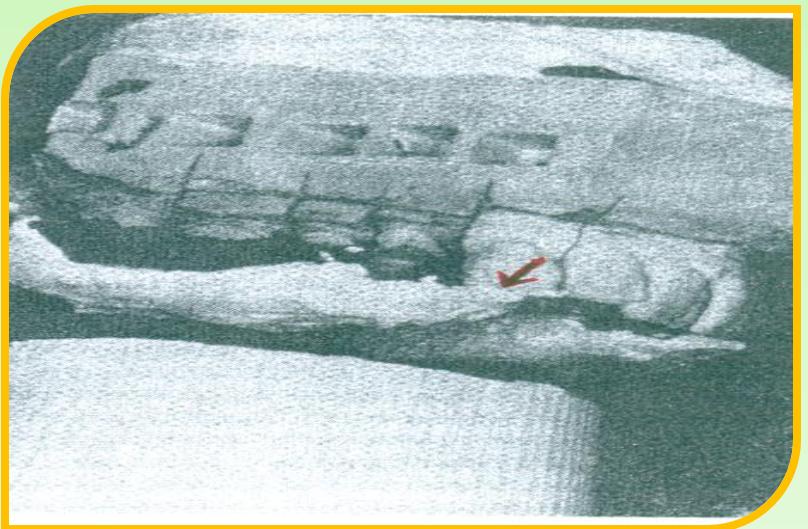
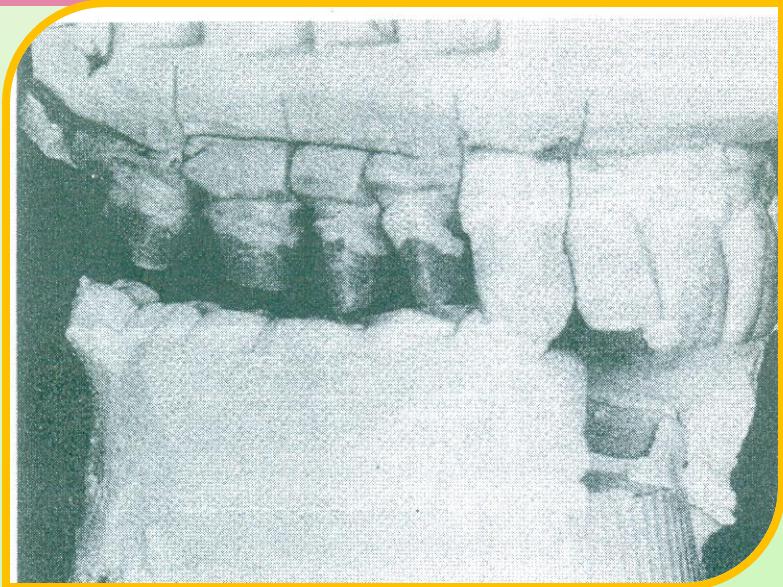
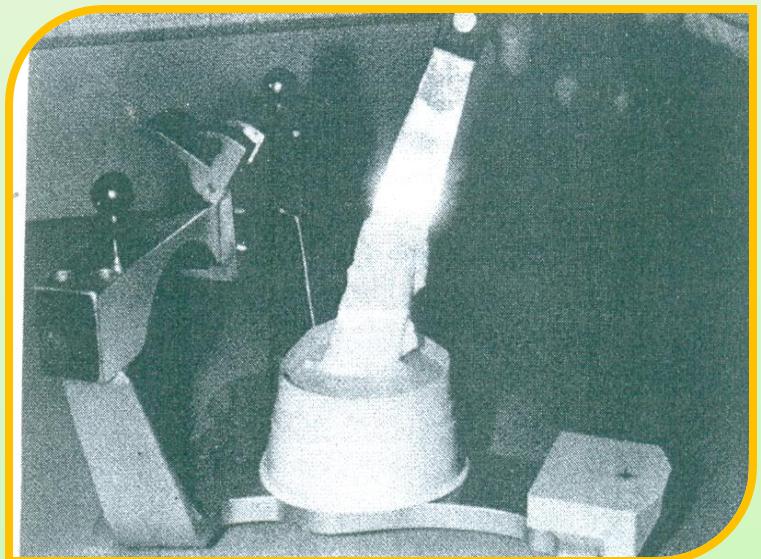
If most posterior teeth are present and a wax base is to be used, it should be trim





23-6. A completed functional path recording. Notice how the pathways of each lower posterior tooth have been recorded three-dimensionally while the lower anterior teeth slide against the correct





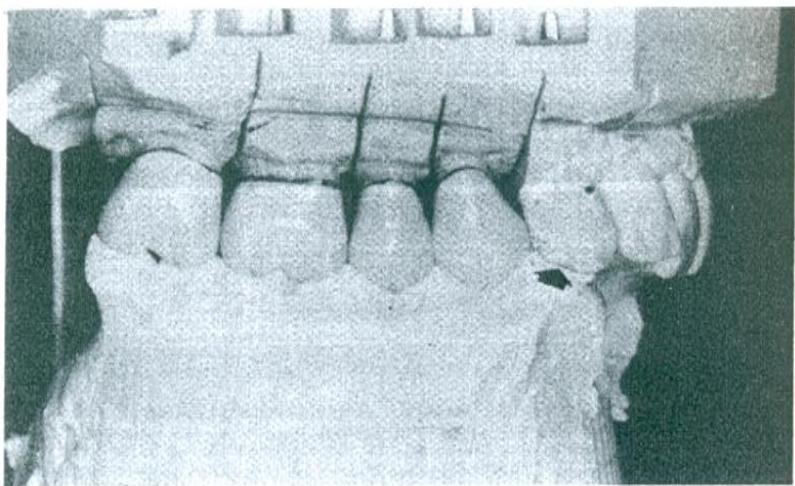
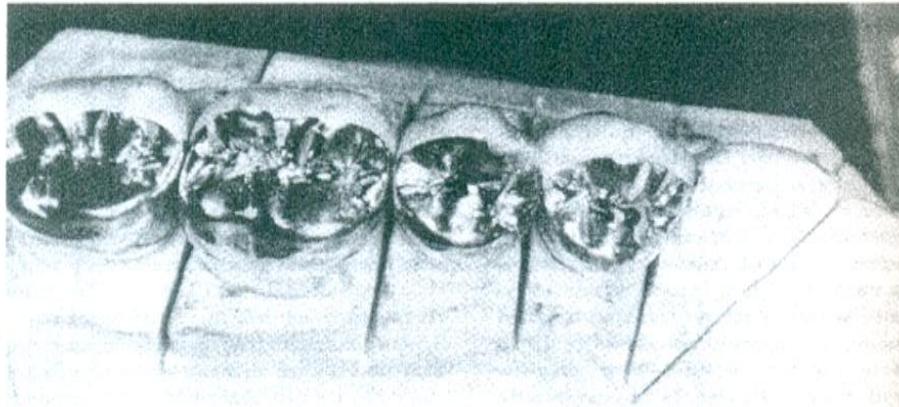


Fig. 23-13. Checking the finished restorations against the functional core. The slight separation between the core and the key index tooth indicates that an interference is present. The interference may be to any functional excursion. A marking ribbon may be used to find the interfering incline. It can then be adjusted by spot grinding.



The advantages of the only & one FGP technique are many. Some of the major ones are as follows:

- diagnose and plan treatment for the entire rehabilitation
- well-organized, logical procedure that progresses smoothly.
- There is never a need for preparing or rebuilding more than eight teeth at a time.
- divides the rehabilitation into separate series of appointments
- There is no danger of "getting at sea" and losing the patient's present vertical dimension

- The functionally generated path and centric relation are taken on the occlusal surface of the teeth is be rebuilt at the exact vertical dimension to which the case will be constructed.
- All posterior occlusal contours are programmed by and are in harmony with both condylar border movements and a perfected anterior guidance.

- There is no need for time-consuming techniques and complicated equipment.
- Laboratory procedures are simple and controlled to an extremely fine- degree by the dentist.

Technique for obtaining RCP(Retruded contact position)

- It depends on dentist experience and degree of difficulty in occlusion registration
- It needs sometime re conditioning of musculature
- Bimanual palpation plus wax record method for patients has no difficulty in RCP.
- In patients with moderate difficulty in RCP –
- Use of anterior stop technique as tongue spatula, leaf gauge and acrylic Jig. In this one can use **occlusal splint for recording CR**

Hobo's twin table technique

- Anterior guidance is crucial in human occlusion because it influences molar disclusion that controls horizontal forces. Molar disclusion is determined by a cusp shape factor and an angle of hinge rotation.
- In this technique anterior guidance to create a predetermined, harmonious disclusion with the condylar path. **One incisal table is used to incorporate a cusp-shape factor and the other is used for the angle of hinge rotation (Anterior guidance).** This method does not require special equipment and is an

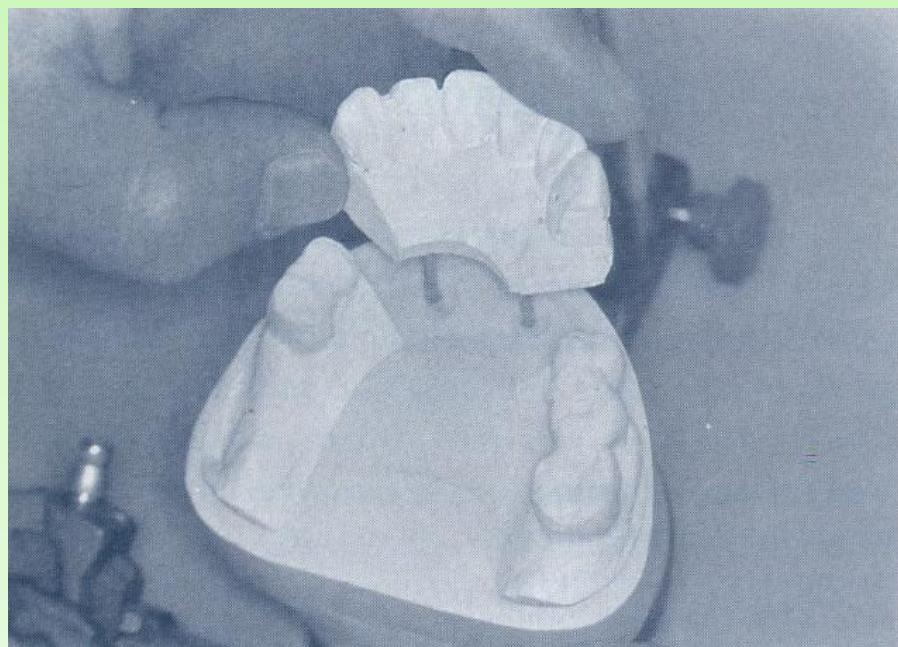
procedure

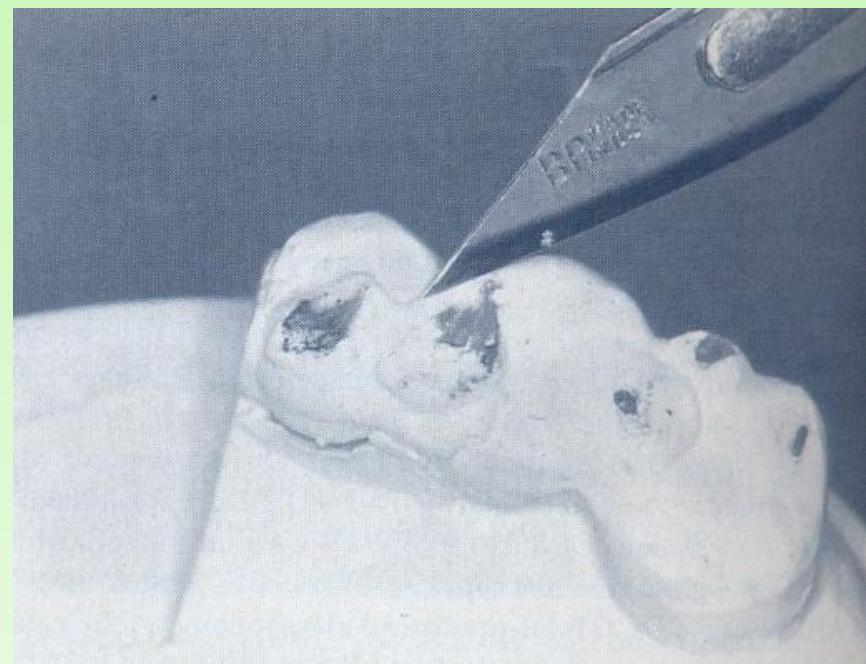
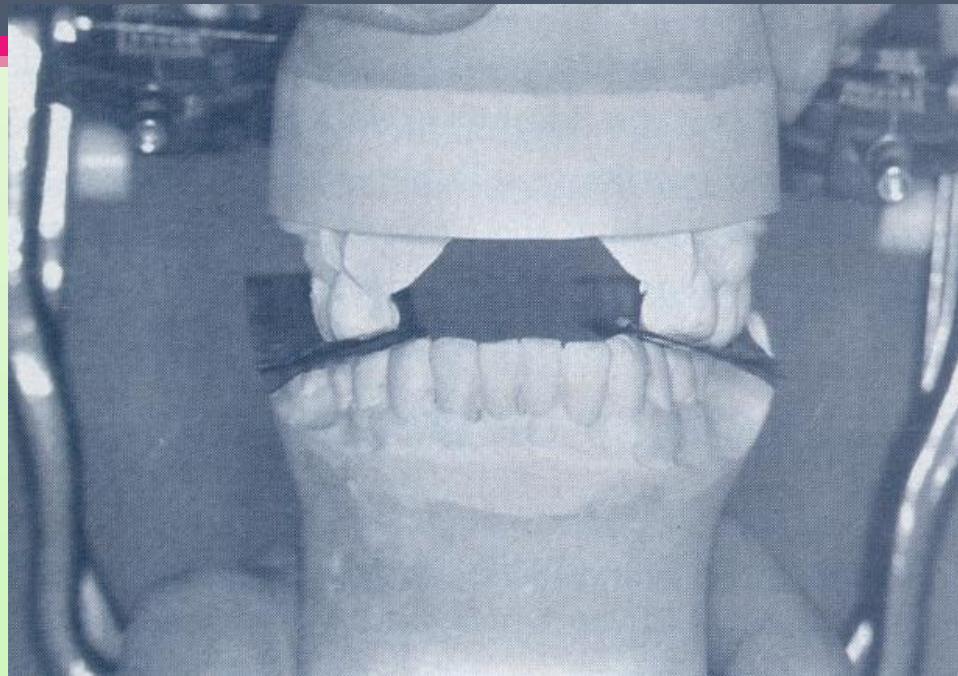
1. Diagnostic casts mounted on semiadjustable articulator.
2. Anterior portion of maxillary cast is easily made removable by using dowel pins.
3. After anterior segment is removed, carbon occlusal paper is placed between maxillary and mandibular posterior teeth. Then articulator is moved to simulate forward, right, and left movement directions. To make molars glide smoothly through maximum intercuspsation, any interference that prevents even posterior contacts is removed.
4. Areas are marked with indelible pen. Wax is added to any surface on tooth that does not contact with opposing occlusal surfaces, until it has even contact.

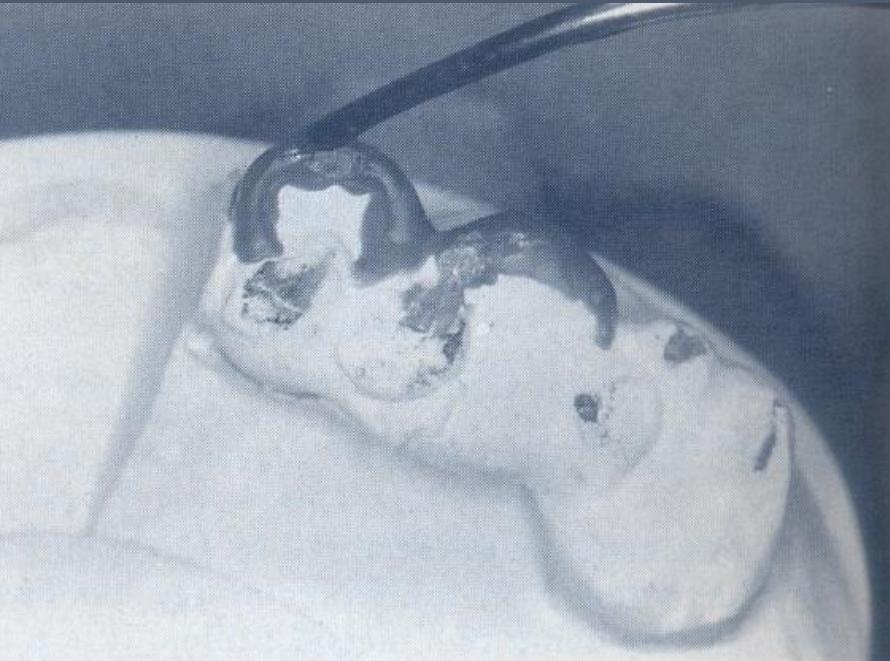
5. If maxillary and mandibular casts interdigitate evenly, it indicates that cusp shape of molars has been established.
6. Chemical-cure acrylic resin is placed on incisal table and resin is molded by moving articulator in all eccentric movements
7. Same procedures are repeated to complete **two incisal tables**. These tables are called incisal tables without disclusion.

8.Three-millimeter thick plastic space is placed in nonworking-side fossa box to approximate lateral movement. Vinyl sheet 1 mm thick is placed on tip of mesiobuccal cusp of mandibular first molar on working side. When articulator is closed, incisal pin is directed laterally and upward.

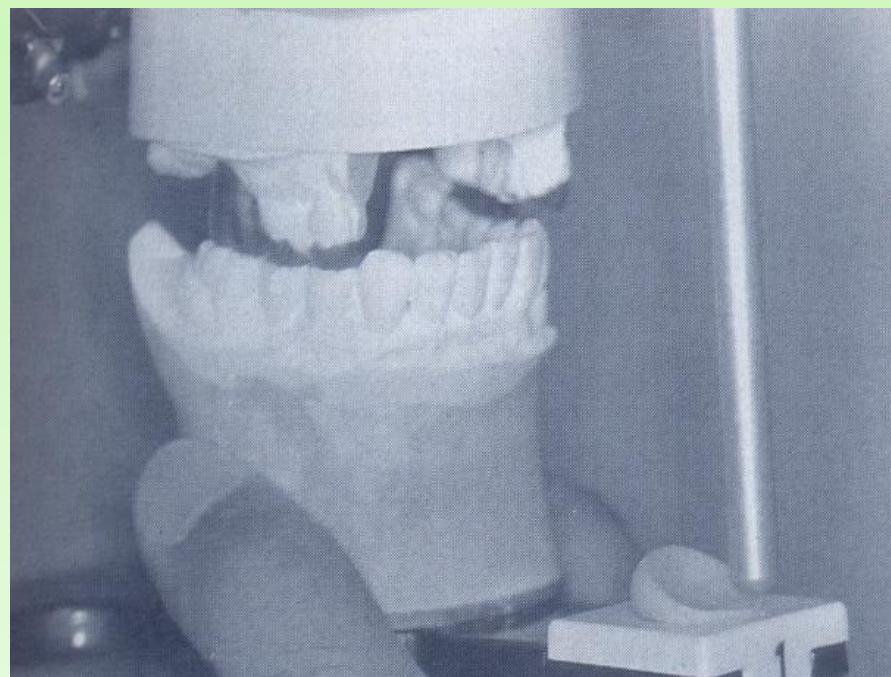
9. Resin cone is formed to record this position. Three cones made at protrusive, right, and left lateral movements create angle of hinge rotation and **make another second table**.

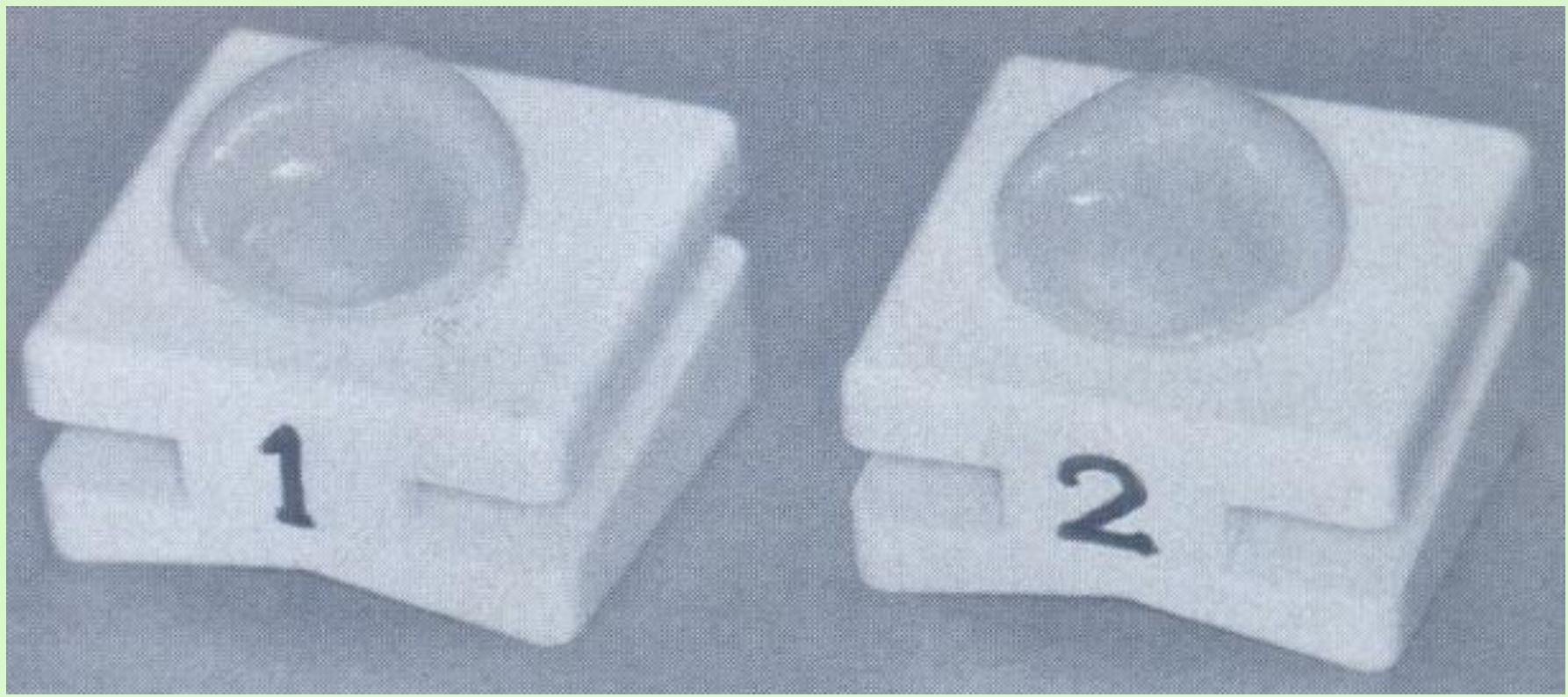


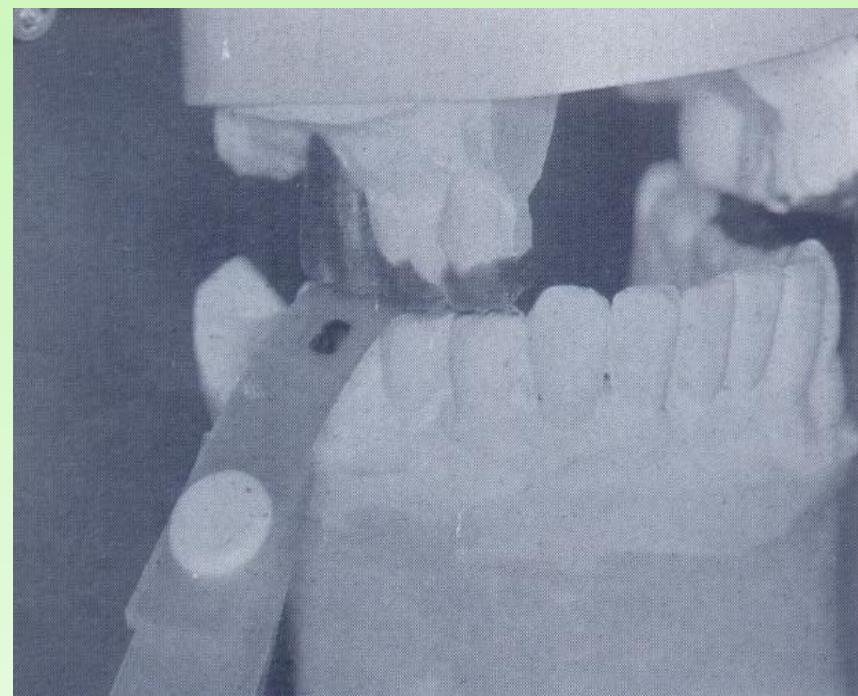
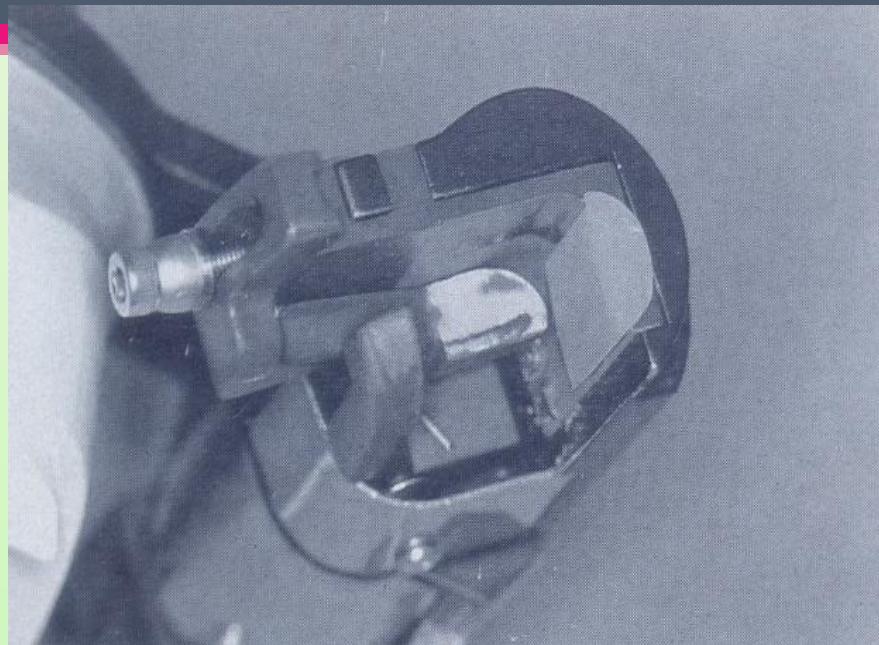


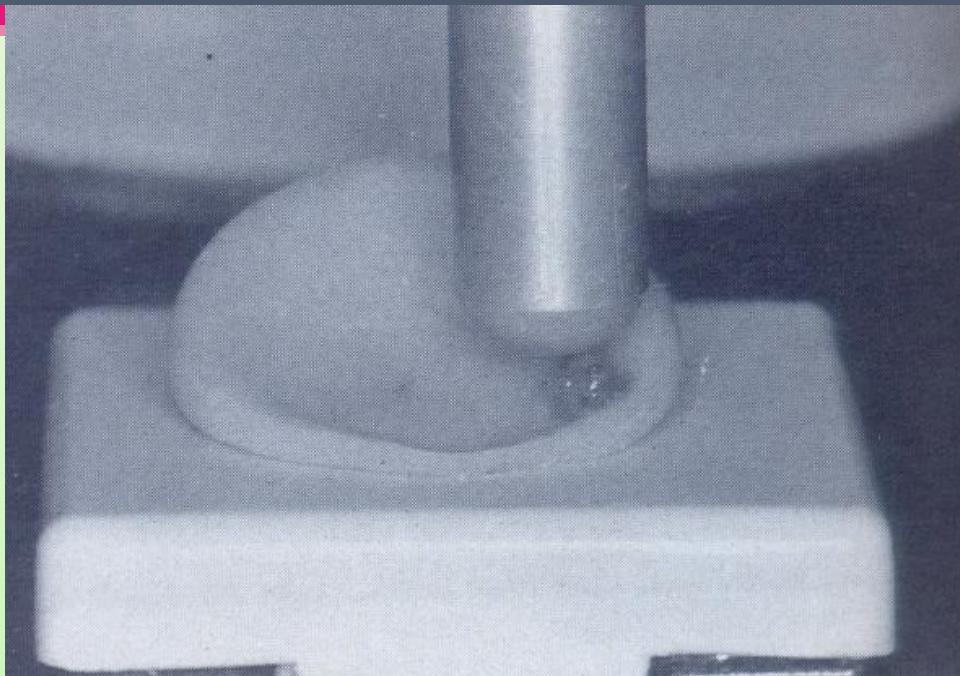


Maxillary and mandibular cast
interdigitate evenly –cusp
shape have been established

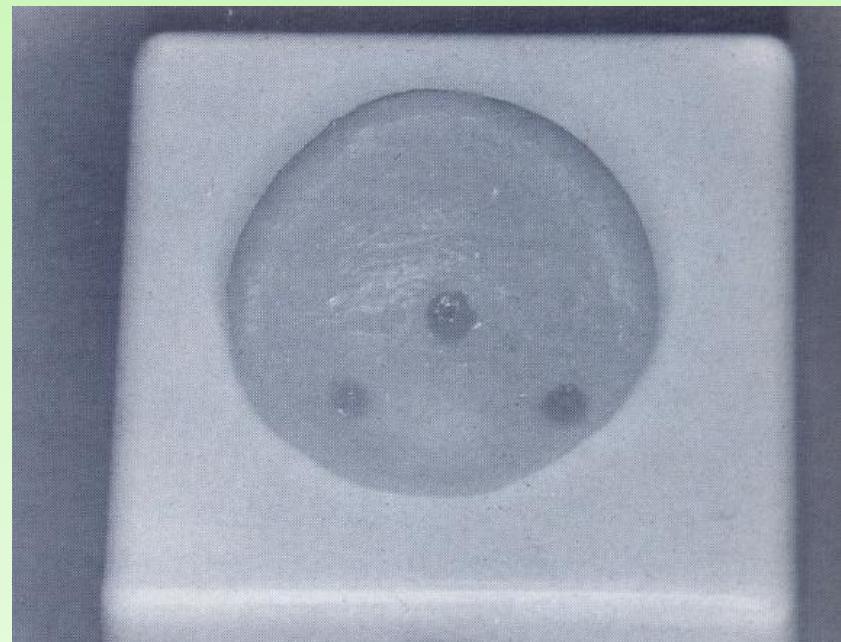


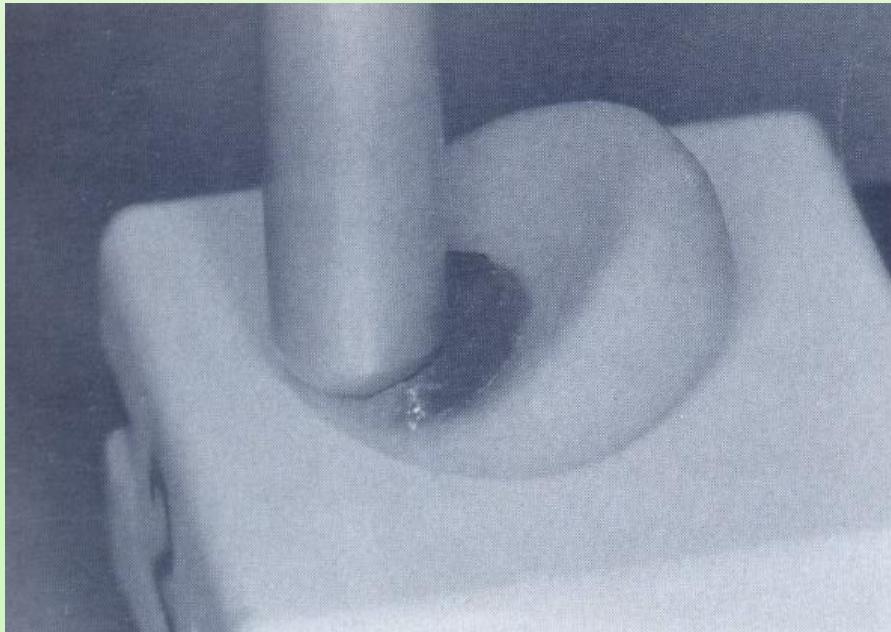




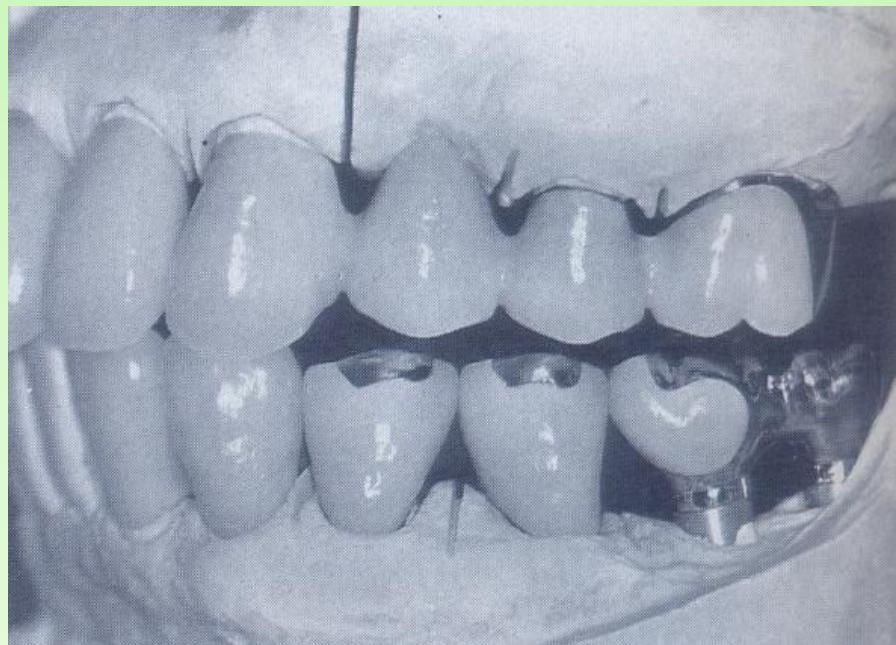


Resin cone is made to
record this position





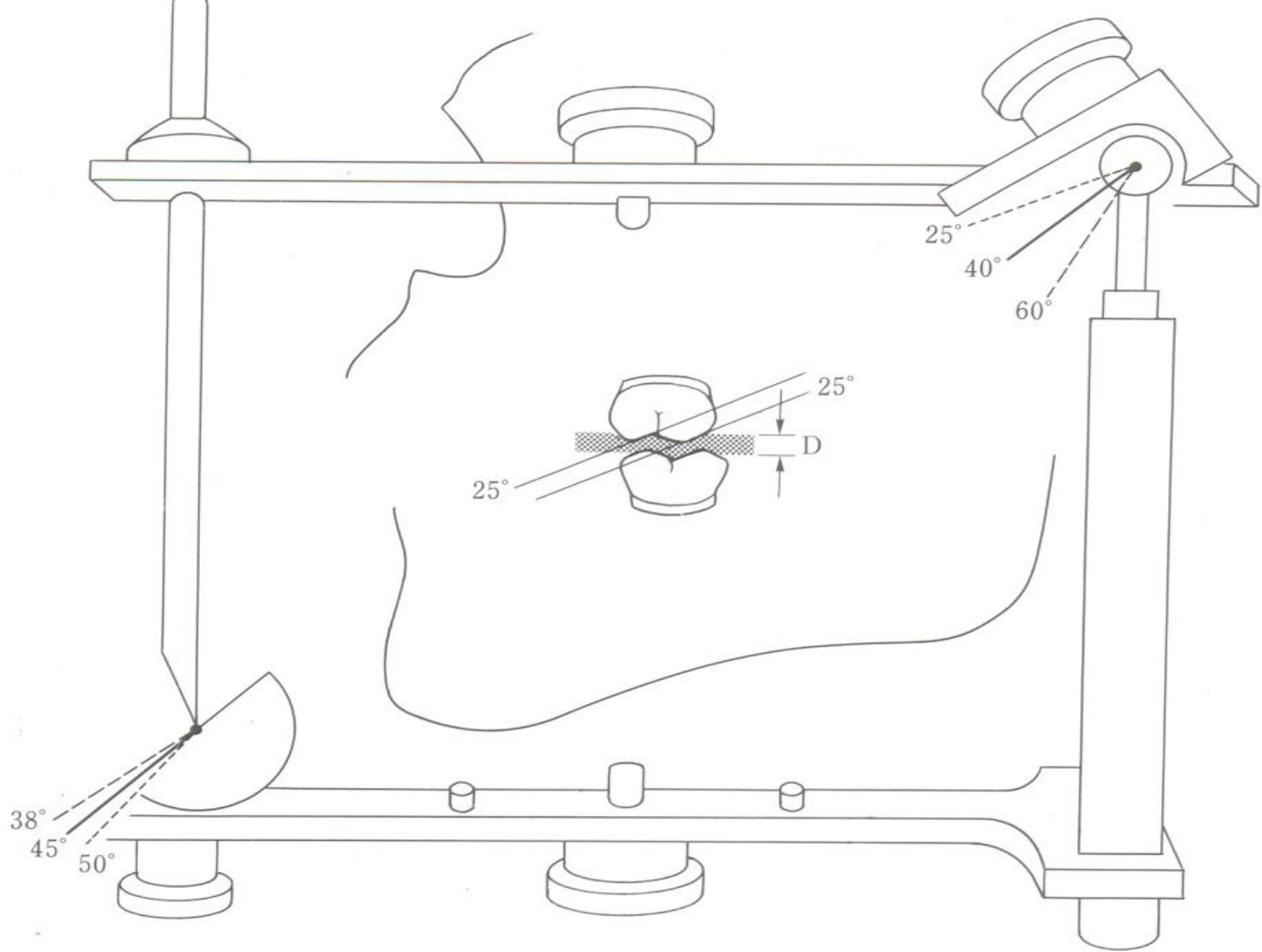
3 cones are connected to form walls and traingular space



Hobo's twin stage technique

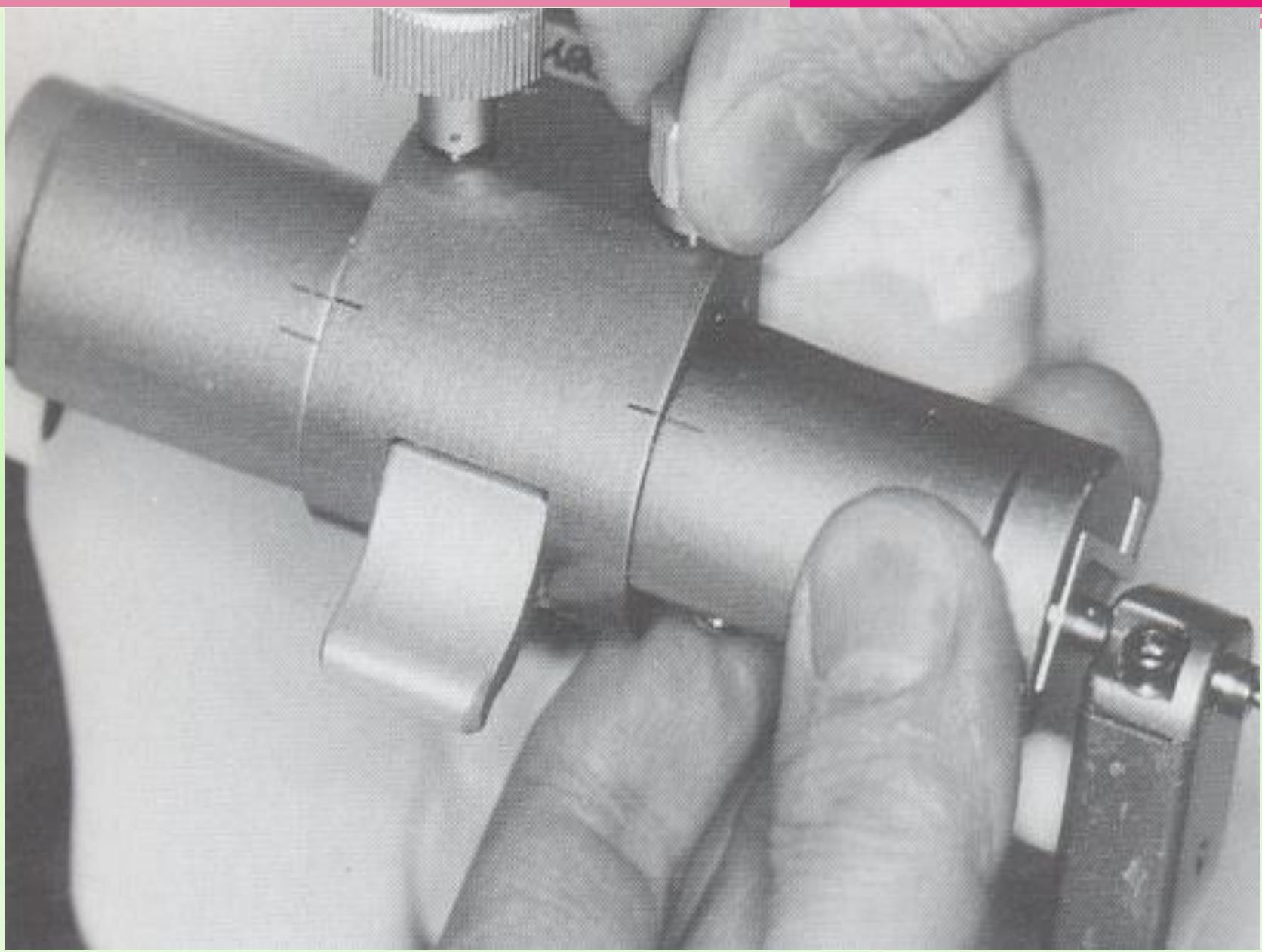
- The basic concept involved in this procedure require a methodical approach. The cast with a removable anterior segment is fabricated. First, reproduce the occlusal morphology of posterior teeth without the anterior segment and produce a cusp angle coincident with the standard values of effective cusp angle [referred to as “condition 1”].
- Secondly, reproduce anterior morphology with the anterior segment and provide anterior guidance which produces a standard amount of disculsion [Referred to as “condition 2”].

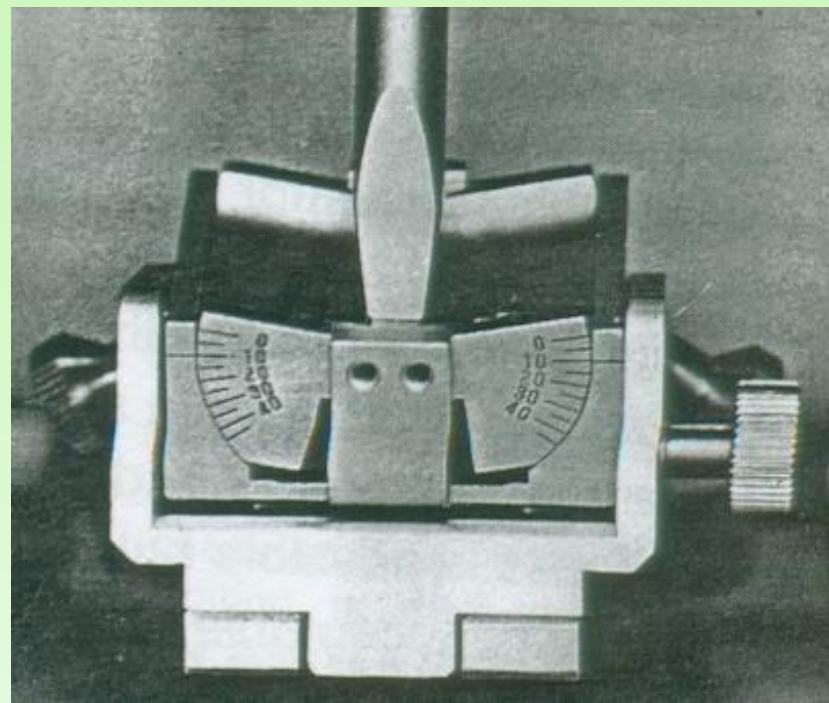
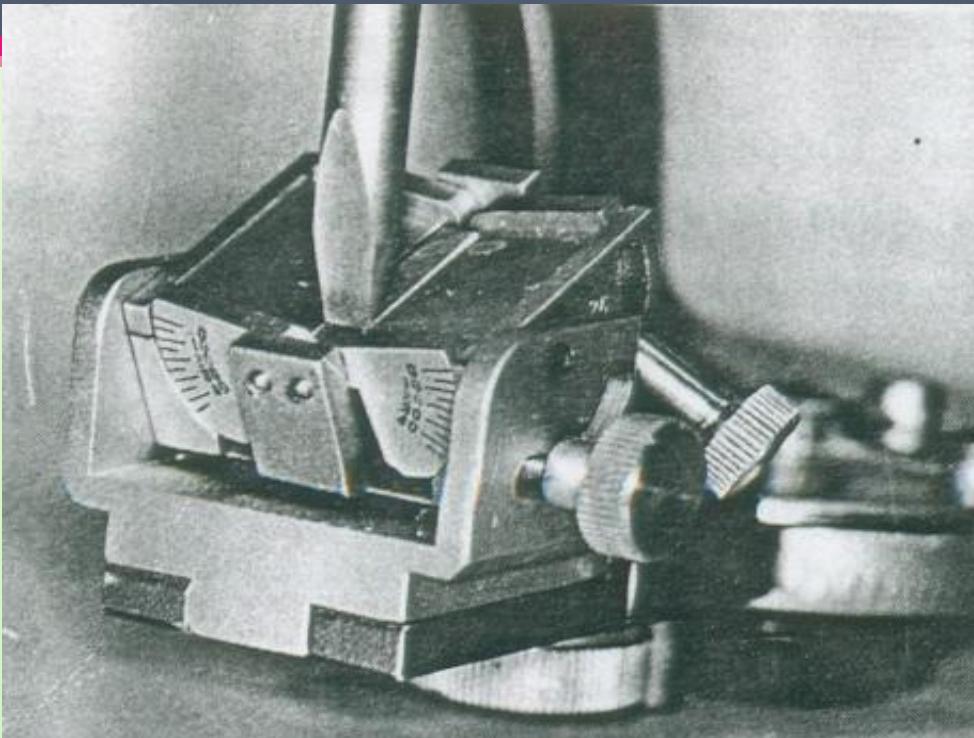
STANDARD VALUE OF THE CUSP ANGLE



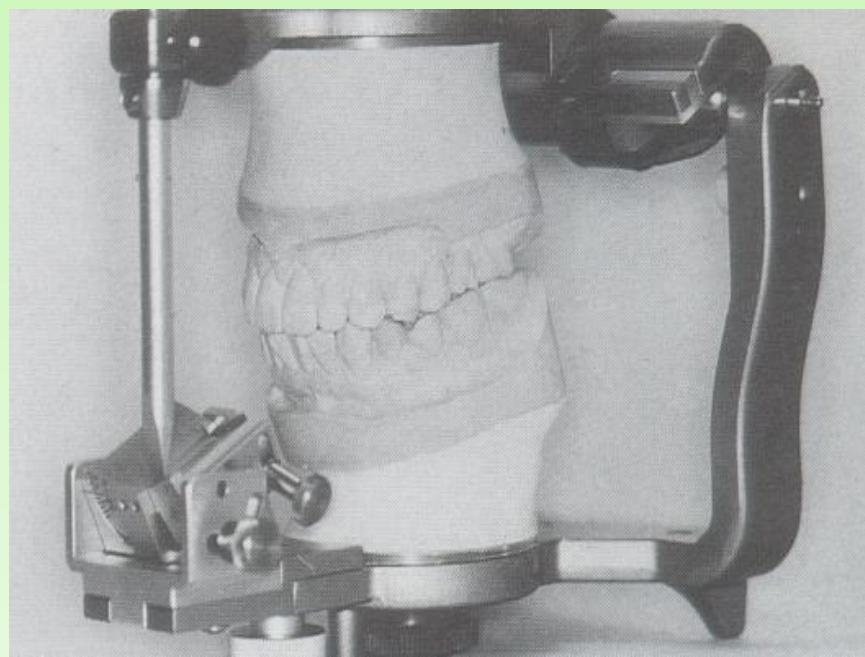
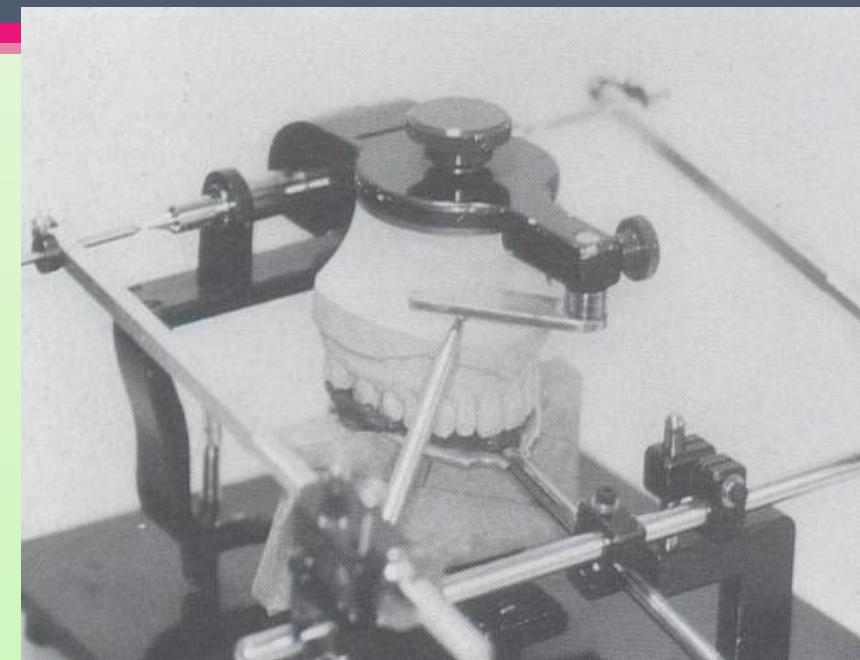
Articulator adjustments for twin stage

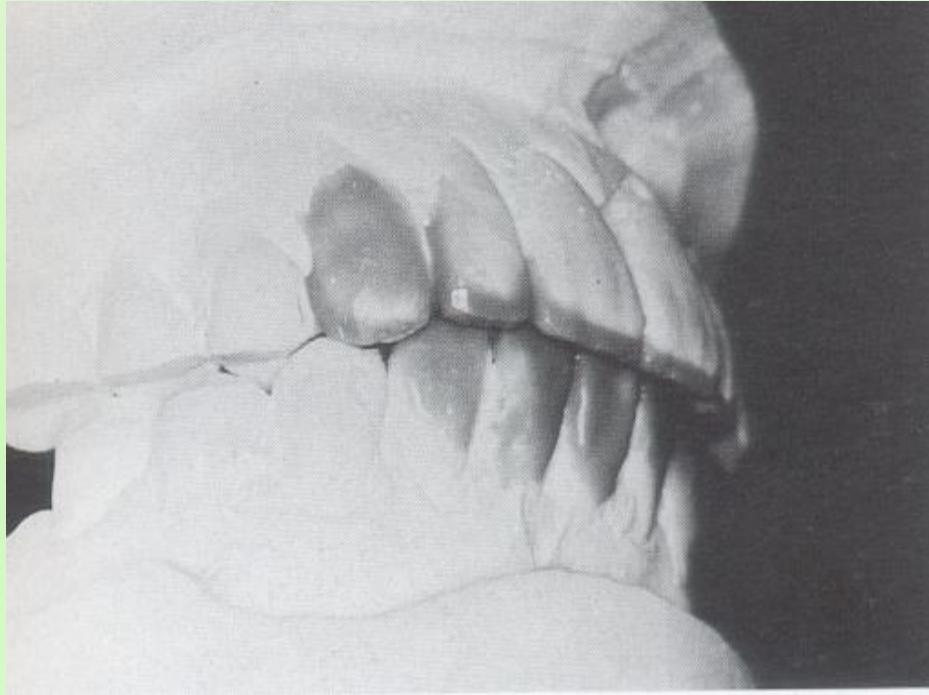
condition	Condylar path		Anterior guide table	
	Sagittal path inclination	Bennett angle	Sagittal inclination	Lateral wing angle
condition I: without anterior teeth	25	15	25	10
Condition II: with anterior teeth	40	15	45	20



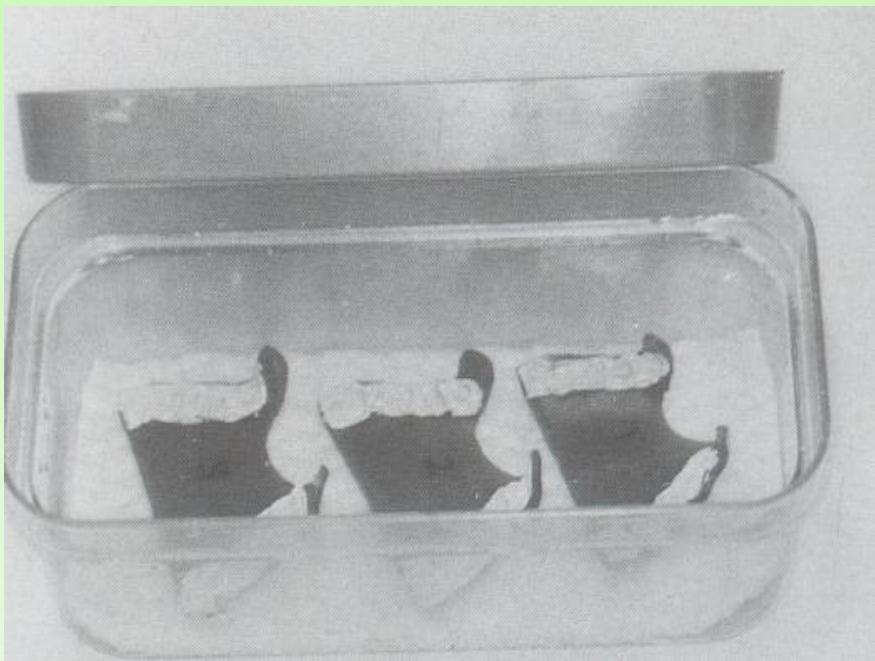
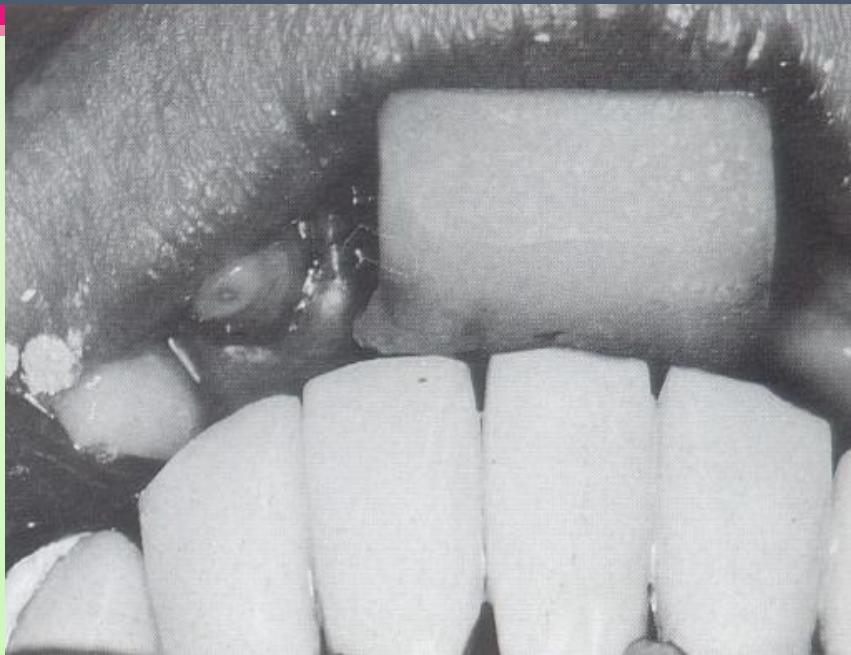


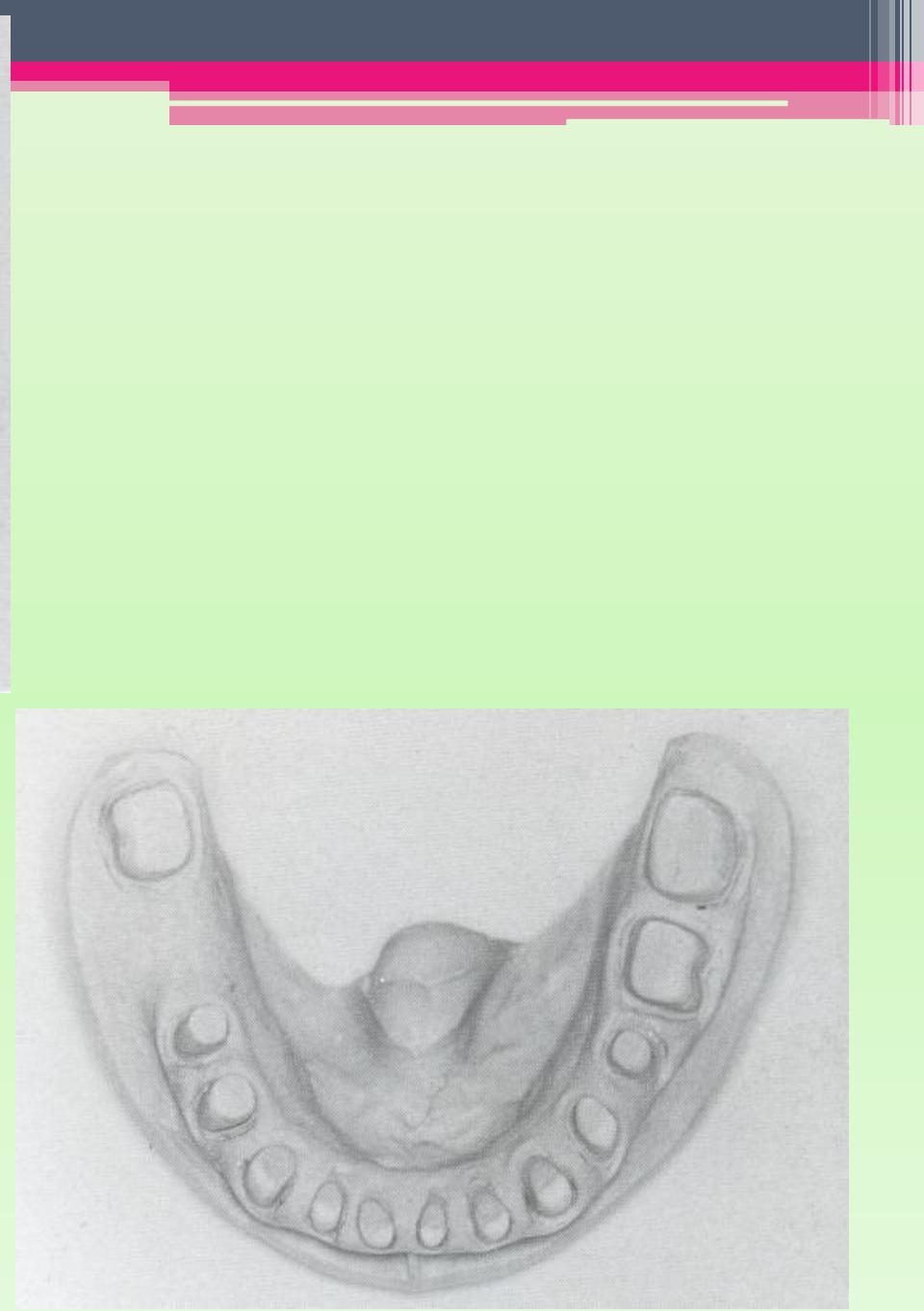
Stage I: Fabrication of the cusp angle

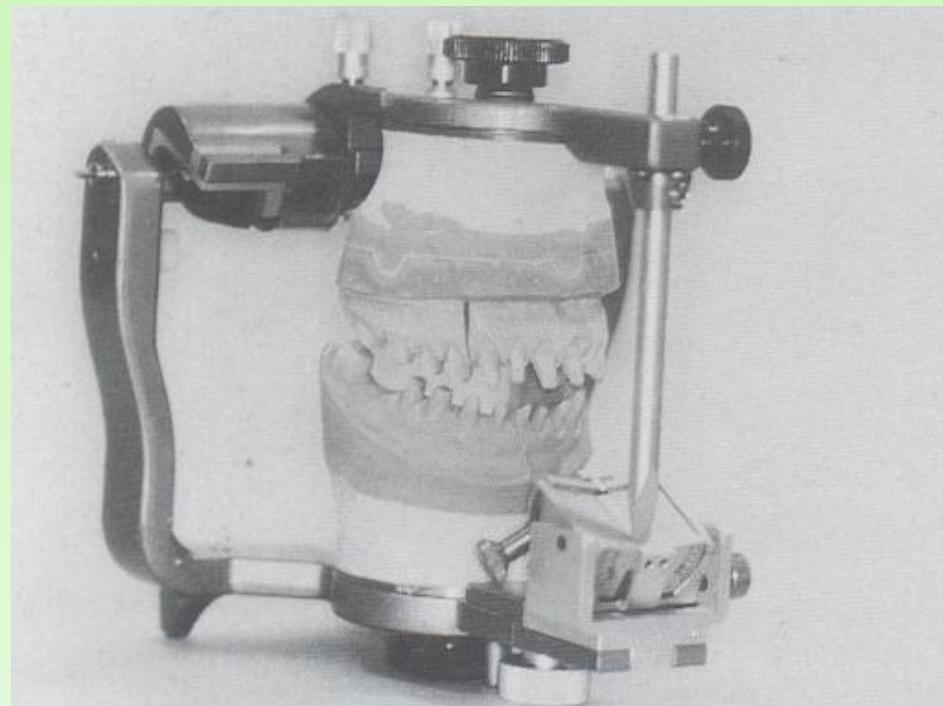
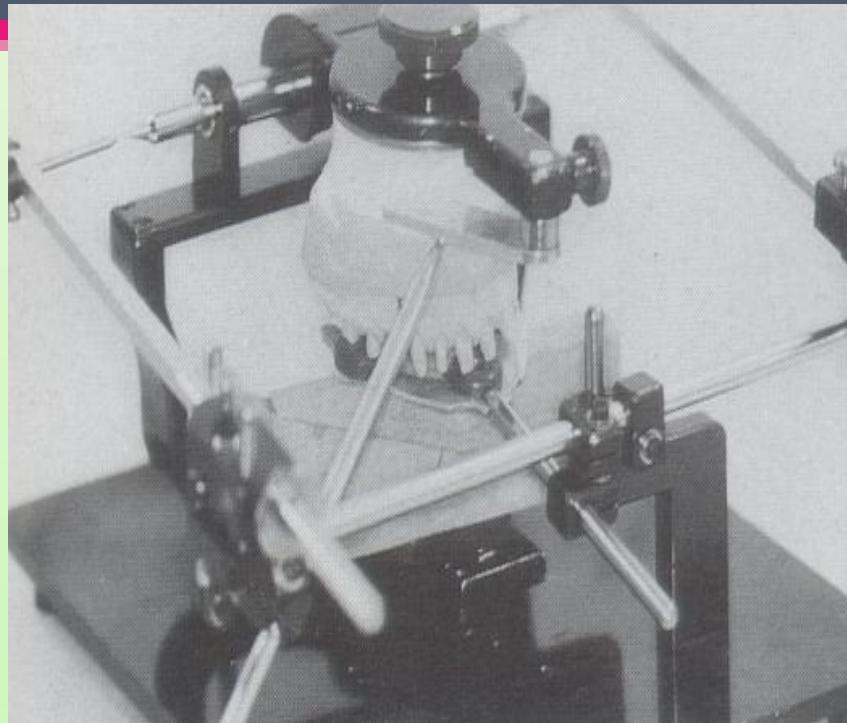


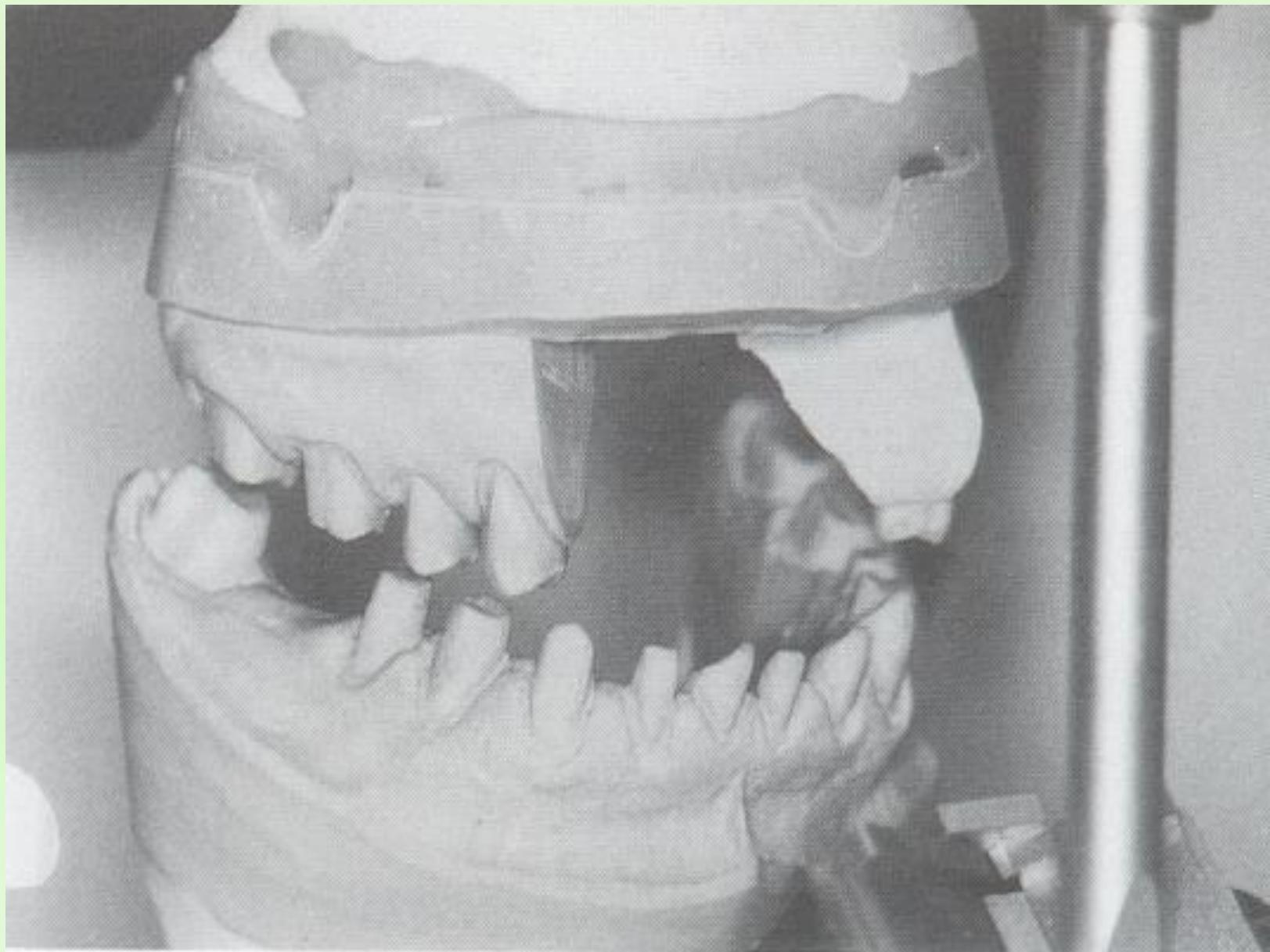


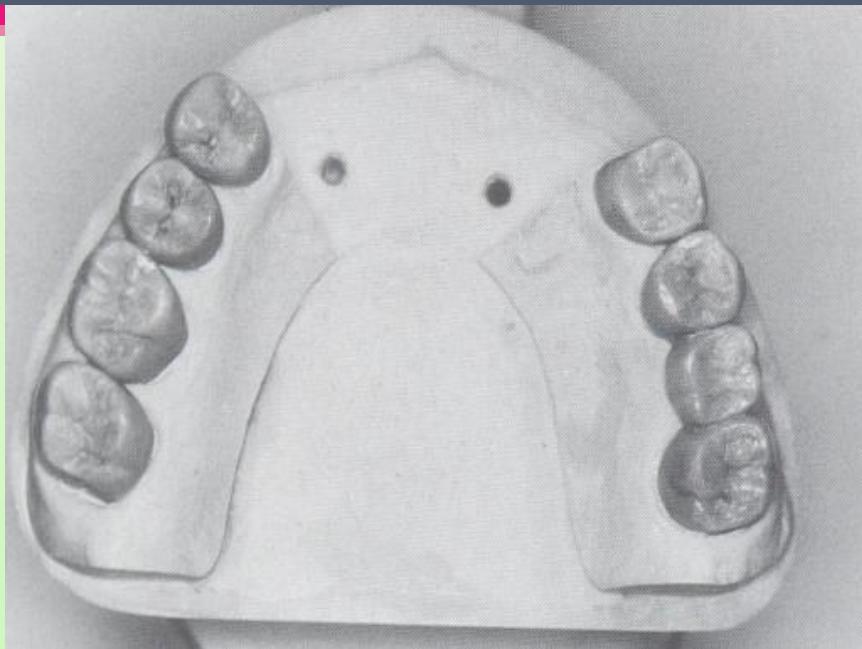










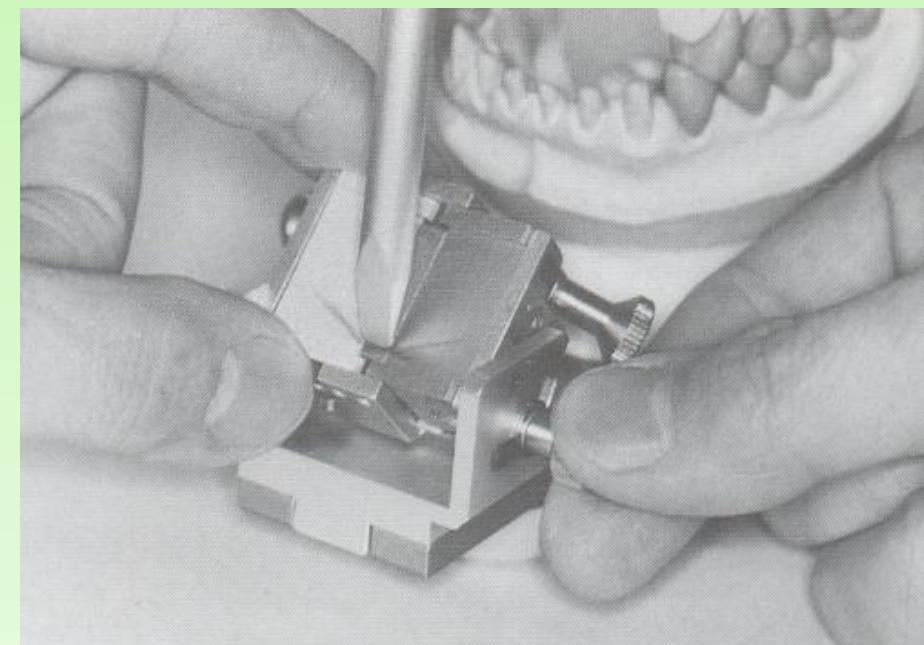
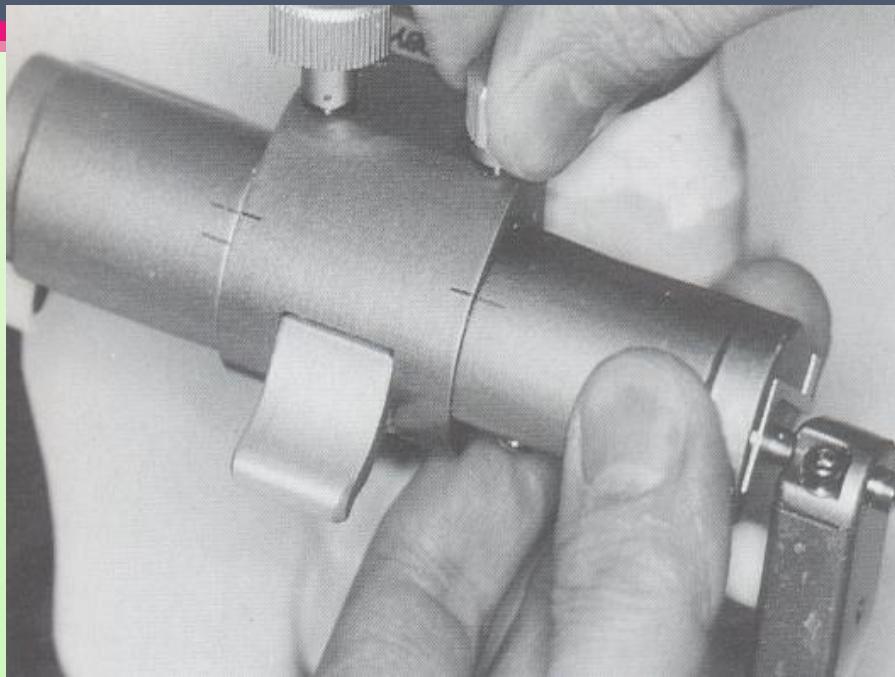


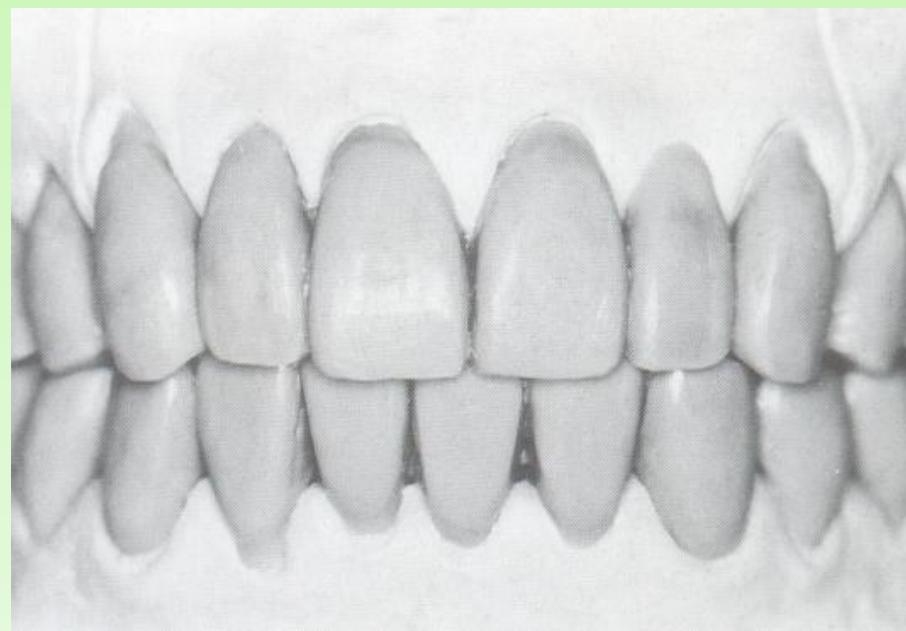


Maxillary and mandibular molars slide in contact evenly which indicates standard cusp angle has been created

Stage II: Fabrication of anterior teeth

- Adjust an articulator to the following values:
- Sagittal condylar path inclination=40 degrees
- Bennett angle=15 degrees
- Sagittal inclination of the anterior guide table=45 degrees
- Lateral wing angle=20 degrees







Youdelis concept

- For advanced periodontal cases.
- Centric relation and intercuspal position coincident (tripod contact)
- Simultaneous contact of posterior teeth in centric relation with forces through long axis of teeth.
- Anterior disclusion for protrusive and canine disclusion for lateral excursions.
- Lateral contacts are arranged such that if canine disclusion is lost through wear or tooth movement - posterior teeth drop into group function.

- Foundation of a healthy periodontium is stressed -emphasis placed on margin placement and crown contour.
- Both fully and semi-adjustable articulators may be used.

Nyman and Lindhe concept

- For extremely advanced periodontitis (but controlled).
- Mainly for use in cross arch bridges for extremely advanced periodontal cases.
- **Balancing contact** give stability to otherwise mobile bridge.

- Restorations fabricated on semi-adjustable articulator with average settings and emphasis on supragingival margin placement.
- Monthly recall appointments for hygiene maintenance.

Choice of occlusal scheme:

- CR-IP Coincident
- Free from centric (PMS method)
- Unilateral and balanced occlusion or group function
- Multiple Contact between the maxillary & mandibular teeth on working side and disclusion of teeth on non-working side.

- Concept of canine guided occlusion _ mean disclusion of posterior teeth in mandibular excursion.
- Canine guided contraindicated in tooth loss, malocclusion and marked jaw discrepancy.

Provisional restorations:

- Protection of prepared tooth
- Comfort of patient in terms of esthetics and function
- As healing matrix for surrounding gingival tissue
- Enhance patients confidence for final restoration
- Intraoral patient tissue accommodation to arch form, occlusal plane and esthetics.
- It can be fabricated through direct and indirect method
- Cementation of temporizes by IRM

Conclusion

- Various factors, general and specific recommendation and procedural steps of occlusal rehabilitation have been discussed.
- The clinician must be aware of the requirements that a physiologic restoration be made that is not only aesthetic and functional but that also remains in harmony with the entire gnathostomatic system.
- In conclusion, the following is the steps:
 1. Diagnosis & treatment planning

2. Face bow record and mounting of casts.
3. Centric relation record
4. Diagnostic wax-up at increased Vertical dimensions.
5. Preparation of teeth
6. Temorization
7. Final impression
8. Face bow & centric relation through Inter occlusal record.
9. Mounting of U/L cast with dies
10. Metal coping fabrication & trial
11. Porcelain application and adjustment on articulator and trail in mouth.
12. Glazing, polishing & cementation
13. Post-operative instruction and recall visit reschedule

Important clinical tips

- RPD planned then rest seat & clasp over the crown should be properly accommodated.
- Use of high strength provisional material
- Apply petroleum jelly over prepared teeth before provisionalization.
- Provide supra gingival margin and use of metal margin in non esthetic area.

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