OCCLUSAL CONCEPTS AND SCHEMES IN COMPLETE DENTURES

LEARNING OBJECTIVE

- PRESERVATIVES OF THE REMAINING TISSUES .
- PROPER MASTICATORY EFFICIENCY.
- ENHANCEMENT OF DENTURE STABILITY ,RETENTION AND SUPPORT.
- ENHANCEMENT OF PHONETICS AND ESTHETICS.

CONTENTS

- INTRODUCTION AND DEFINITIONS
- DIFFERENCE BETWEEN NATURAL AND ARTIFICIAL OCCLUSION
- REQUIREMENTS OF COMPLETE DENTURE OCCLUSION
- THEORIES OF OCCLUSION
- OCCLUSAL CONCEPTS
- OCCLUSAL SCHEMES:
    - *Balanced occlusion*
    - *Lingualized occlusion*
    - *Monoplane occlusion*
- SUMMARY AND CONCLUSION

INTRODUCTION

DEFINITIONS:

- **OCCLUSION:** The static relationship between the incising or masticating surfaces of the maxillary or mandibular teeth or tooth analogues. (GPT-9)
- **ARTICULATION :** The static and dynamic contact relationship between the occlusal surfaces of the teeth during function. (GPT-9)

Canine guidance

Group function

Natural teeth[47]	*Artificial teeth*
• Natural teeth function independently and each individual tooth disperses the occlusal load	• Artificial teeth function as a group and the occlusal loads are not individually managed
• Malocclusion can be non-problematic for a long time	• Malocclusions pose immediate drastic problems
• Nonvertical forces are well tolerated	• Nonvertical forces damage the supporting tissues
• Incising does not affect the posterior teeth	• Incising will lift the posterior part of the denture
• The second molar is the favored area for heavy mastication for better leverage and power	• Heavy mastication over the second molar can tilt or shift the denture base
• Bilateral balance is not necessary and usually considered a hindrance	• Bilateral balance is mandatory to produce stability of the denture
• Proprioceptive impulses give feedback to avoid occlusal prematurities. This helps the patient to have a habitual occlusion away from centric relation	• There is no feedback and the denture rests in centric relation. Any prematurities in this position can shift the base

REQUIREMENTS OF COMPLETE DENTURE OCCLUSION

1. Stability of occlusion IN CR and in a position forward and lateral to CR.
2. Balanced occlusal contacts bilaterally for all eccentric mandibular movements.
3. Unlocking the cusps mesiodistally.
4. Control of horizontal force by buccolingual cusp height reduction.
5. Functional lever balance by favorable tooth-to-ridge crest position.
6. Cutting, penetrating, and shearing efficiency of occlusal surfaces.
7. Anterior incisal clearance.
8. Minimum occlusal contact areas (lingual contact occlusion).
9. Sharp ridges or cusps and generous sluice

Winkler S. Essentials of complete denture prosthodontics. 2nd ed. PSG Publishing Co., Inc., USA;2000.

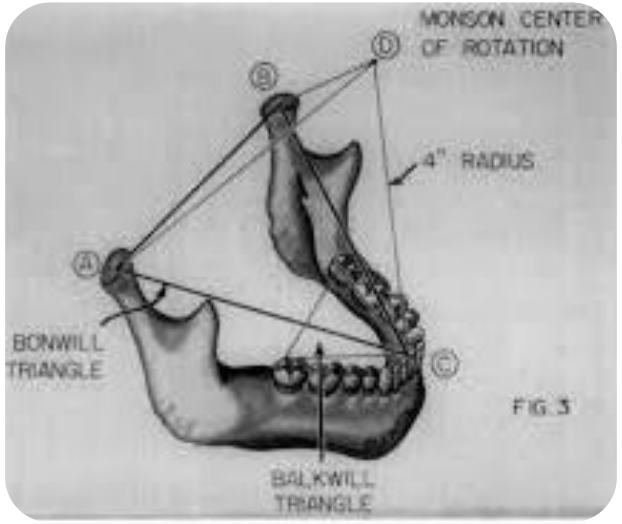
COMPLETE DENTURE OCCLUSION

THEORIES OF OCCLUSION
OCCLUSAL CONCEPTS
OCCLUSAL SCHEMES

THEORIES OF OCCLUSION

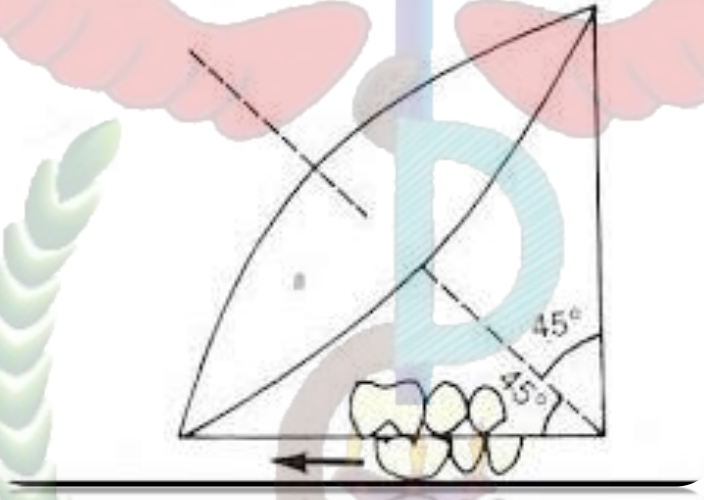
- WGA BONWILL'S EQUILATERAL THEORY

1858

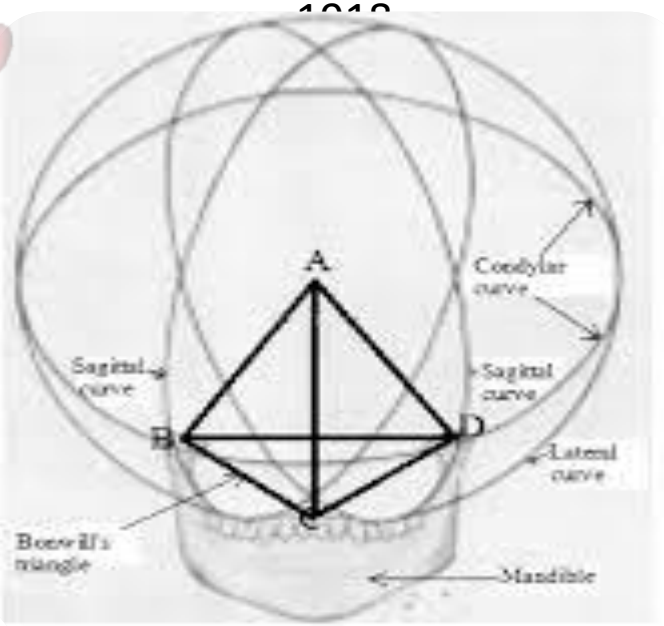


- RE HALL'S CONICAL THEORY

1915



- MONSON'S SPHERICAL THEORY



OCCLUSAL CONCEPTS

terna
KNOWLEDGE TO EMPOWER

OCCLUSAL CONCEPTS

- Balanced articulation
- Unbalanced articulation
- Linear or monoplane articulation
- Lingualized articulation.

Lang BR. Complete denture occlusion. Dent Clin North Am 2004;48:641-65,

- Balanced articulation
- Unbalanced articulation

Heartwell C, Rahn AO. Syllabus of Complete Dentures. 4th Ed.

- Balanced occlusion
- Non balanced occlusion
- Neutrocentric occlusion
- Organic occlusion
- Linear occlusion
- Lineal occlusion
- Physiologically generated occlusion

Rangarajan V, Gajapathi B, Yogesh PB, Ibrahim MM, Kumar RG, Karthik P. Concepts of occlusion in prosthodontics: A literature review, part I. J Indian Prosthodont Soc 2015;15:200-5.

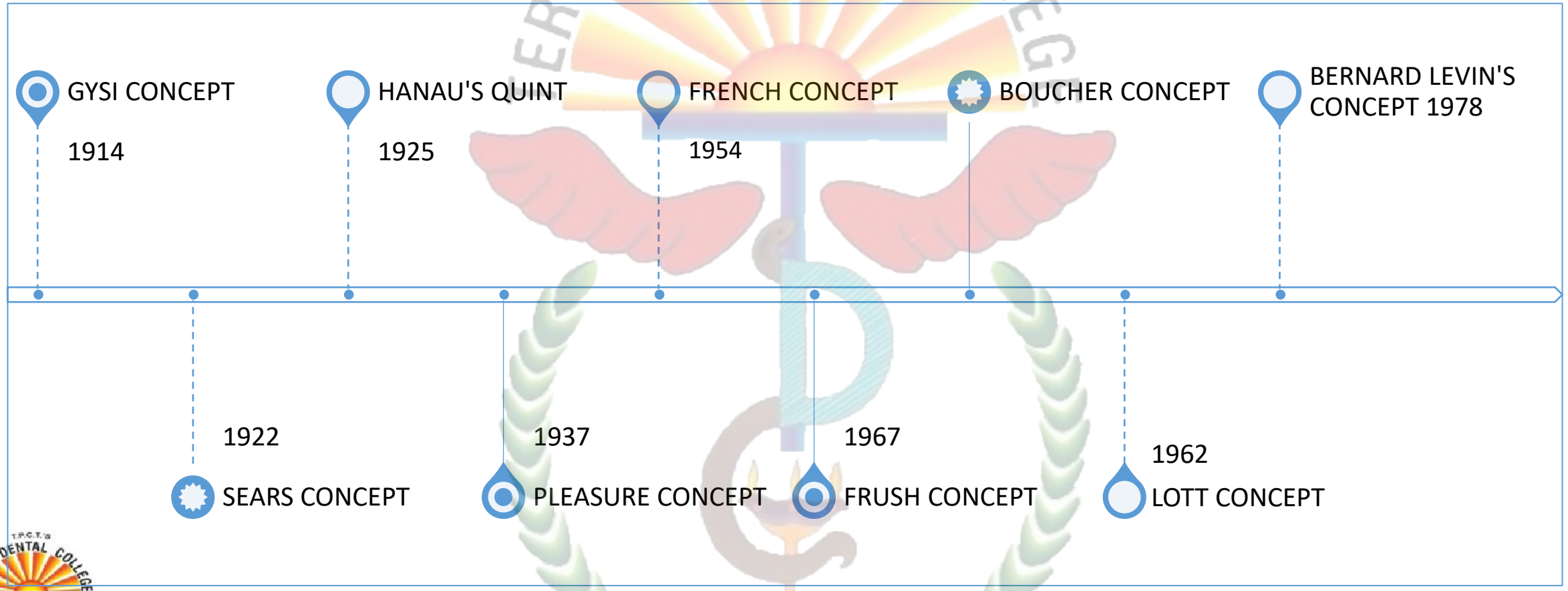
CONCEPT OF BALANCED OCCLUSION

- It is defined as "*the simultaneous contacting of the maxillary and mandibular teeth on the right and left and in the posterior and anterior occlusal areas in centric and eccentric positions, developed to lessen or limit tipping or rotating of the denture bases in relation to the supporting structures*" —GPT.

- Bilateral, simultaneous occlusal contact of the anterior and posterior teeth in excursive movements. (GPT9)

REVIEW OF LITERATURE

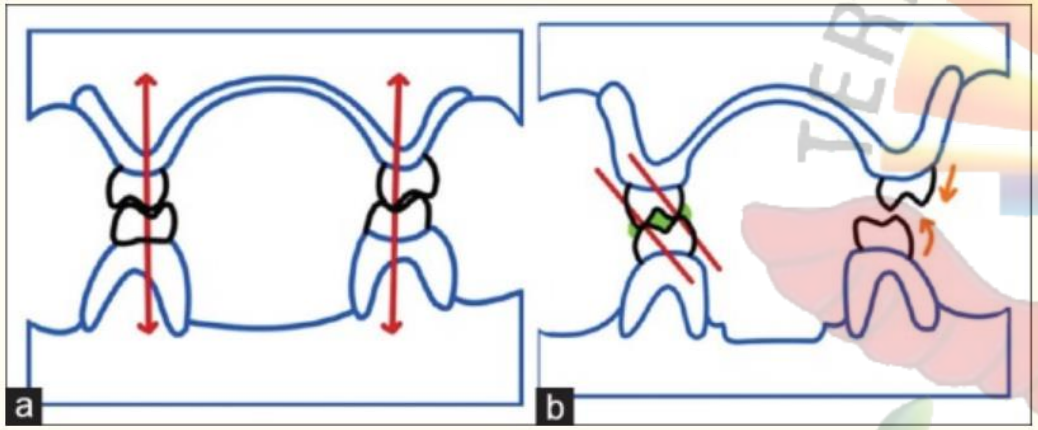
Concepts proposed to attain balance occlusion



Rangarajan V, Gajapathi B, Yogesh P B, Ibrahim M M, Kumar R G, Karthik P. Concepts of occlusion in prosthodontics: A literature review, part I. J Indian Prosthodont Soc 2015;15:200-5

PRACTICAL APPLICATION OF RESEARCH RESULTS IN DENTURE CONSTRUCTION*

By ALFRED GYSI, D.D.S., Zurich, Switzerland
(Literary Collaboration by GEORGE WOOD CLAPP ,D.D.S., New York City)

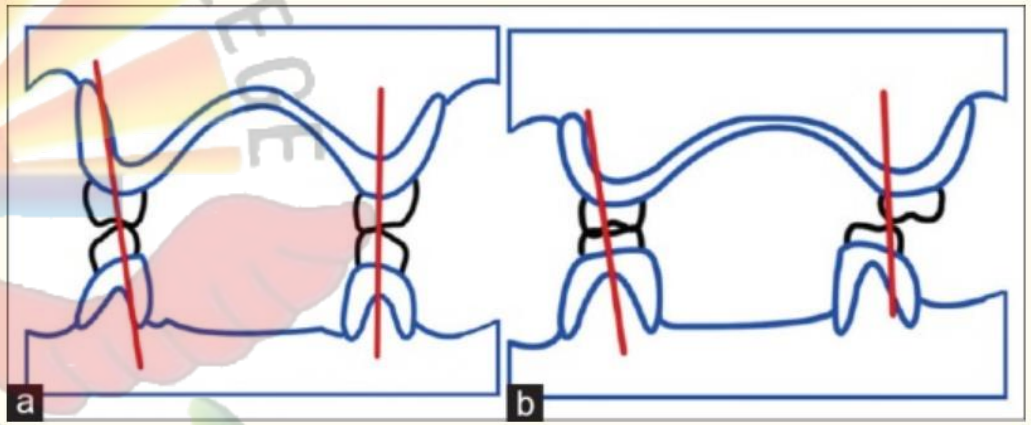


Inclination of 33° to the cuspal inclines to harmonize them with the condylar inclination of 33° to the horizontal.

Gysi A, Clapp GW. Practical application of research results in denture construction. JADA1929 Feb 1;16(2):199-223.

THE PROBLEM OF BUILDING SATISFACTORY DENTURES

FELIX A. FRENCH, D.D.S.
Ottawa, Canada



Maxillary teeth : Slight lingual occlusal inclines of 5° for first premolar, 10° for second premolar, and 15° for first and second molars

Mandibular teeth : Occlusal surface is reduced

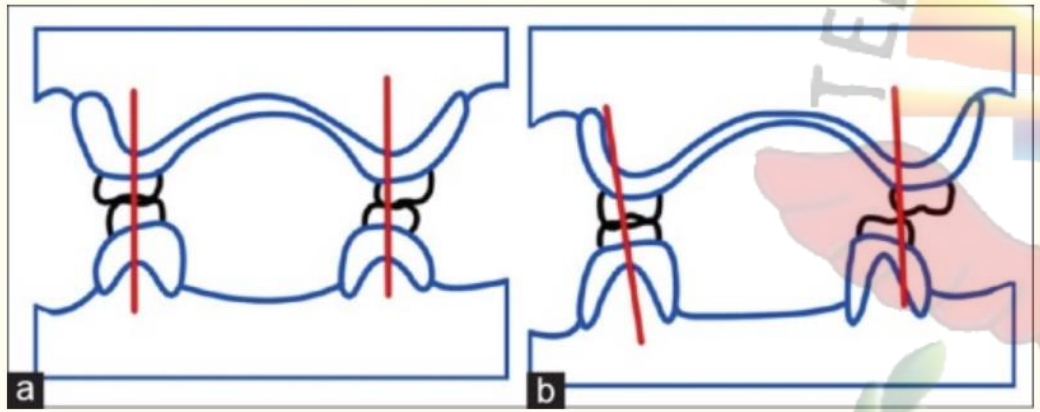
French FA. The problem of building satisfactory dentures. Jour Prosthet Dent 1954 Nov 1;4(6):769-81.

Rangarajan V, Gajapathi B, Yogesh P B, Ibrahim M M, Kumar R G, Karthik P. Concepts of occlusion in prosthodontics: A literature review, part I. J Indian Prosthodont Soc 2015;15:200-5.

OCCLUSAL PIVOTS

VICTOR H. SEARS, D.D.S.

Salt Lake City, Utah



In 1922, Developed a balanced occlusion by a curved occlusal plane anteroposteriorly and laterally or with the use of a second molar ramp.

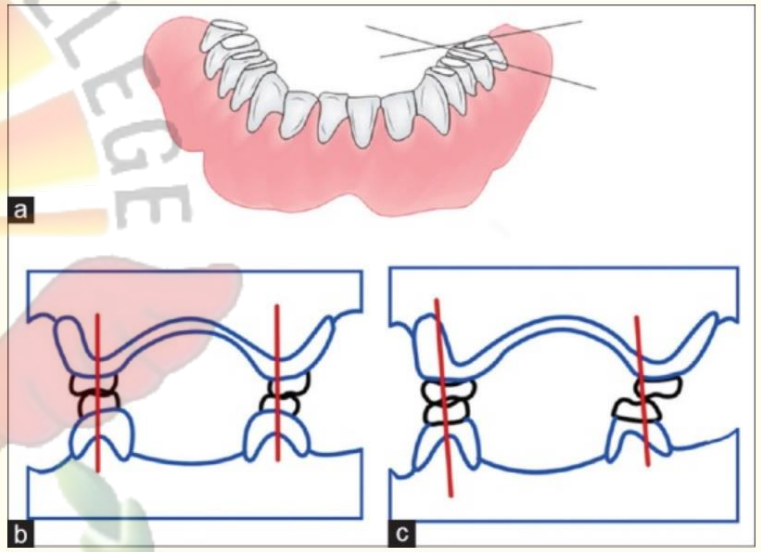
in 1922 with his chewing members and in 1927 with channel teeth (both were nonanatomic teeth)

Sears VH. Occlusal pivots. Jour Prosthet Dent 1956 May 1;6(3):332-8.

ANATOMIC VERSUS NONANATOMIC TEETH

M. A. PLEASURE, D.D.S., M.S.P.H.

New York, N. Y.



In 1937, Dr. Max Pleasure presented an occlusal scheme called the "pleasure curve," in which a reverse curve is used.

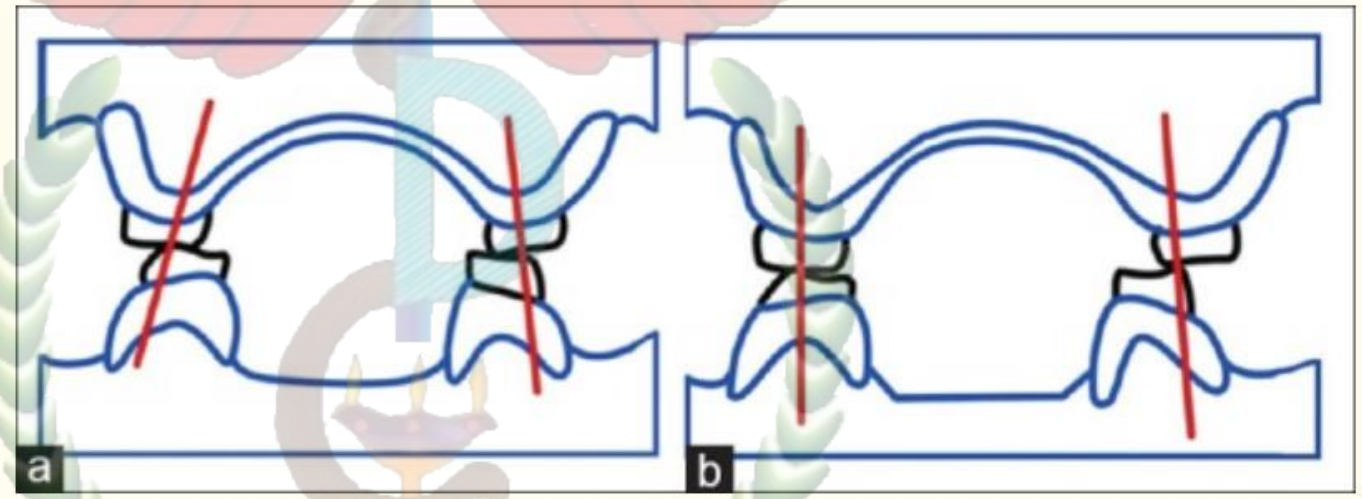
Pleasure MA. Anatomic versus nonanatomic teeth. Jour Prosthet Dent 1953 Nov 1;3(6):747-54.

Rangarajan V, Gajapathi B, Yogesh P B, Ibrahim M M, Kumar R G, Karthik P. Concepts of occlusion in prosthodontics: A literature review, part I. J Indian Prosthodont Soc 2015;15:200-5.

Linear Occlusion

By Dr. John P. Frush

- In 1967, Frush suggested an arbitrary articulator balance, followed by intraoral corrections to obtain balance.
- mandibular posterior artificial teeth have a straight, long, narrow occlusal form resembling that of a line, usually articulating with opposing monoplane teeth.
- Teeth are arranged on a flat plane, which extends from the tip of maxillary central incisors to the top of the retromolar pad.
- Blade form teeth.



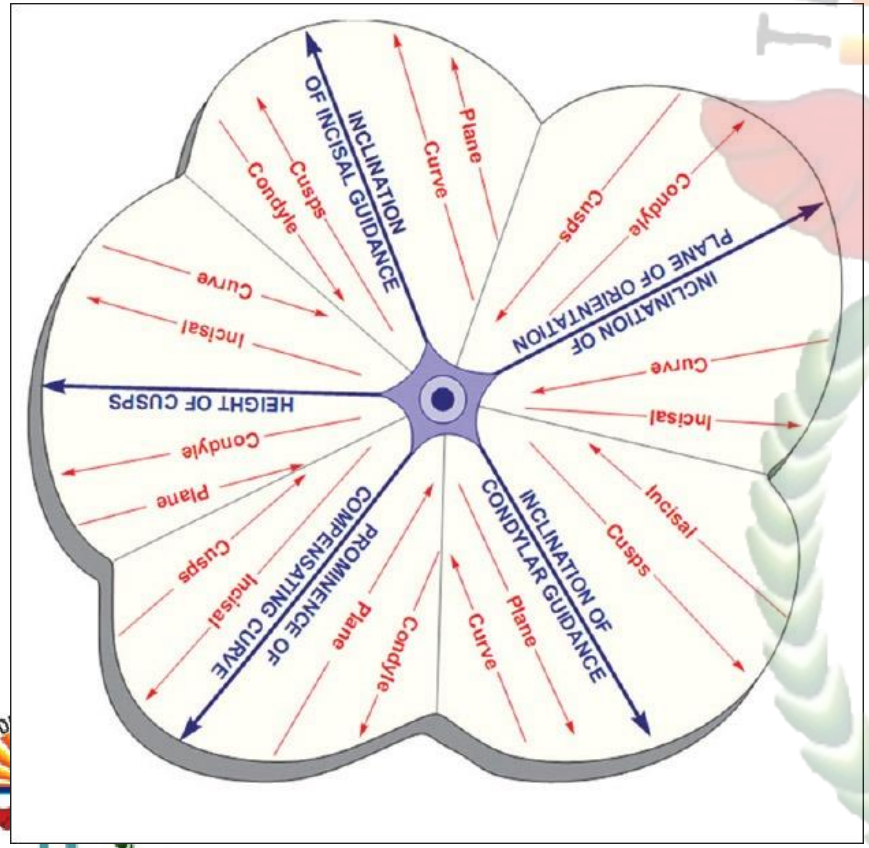
Frush JP. Linear occlusion. Illinois Dent Jour 1966 Dec;35(12):788.

Rangarajan V, Gajapathi B, Yogesh P B, Ibrahim M M, Kumar R G, Karthik P. Concepts of occlusion in prosthodontics: A literature review, part I. J Indian Prosthodont Soc 2015;15:200-5.

ARTICULATION DEFINED, ANALYZED AND FORMULATED*

By RUDOLPH L. HANAU, Buffalo, New York

Hanau's quint



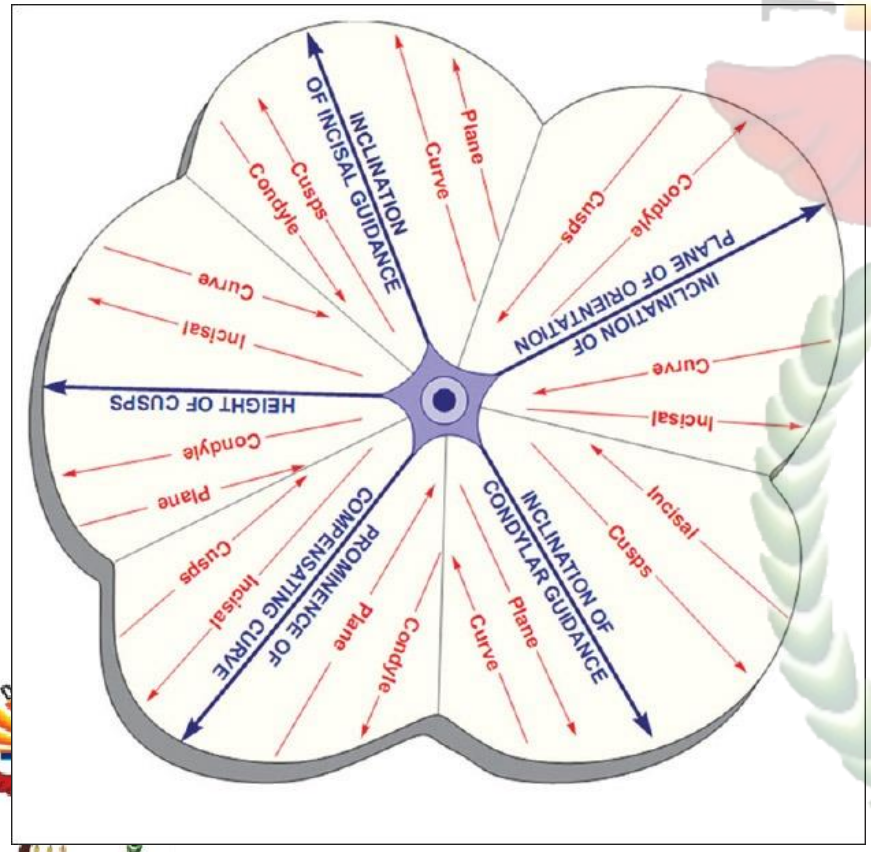
In 1925, Rudolph L. Hanau presented a discussion paper entitled, “Articulation: Defined, analyzed, and formulated”

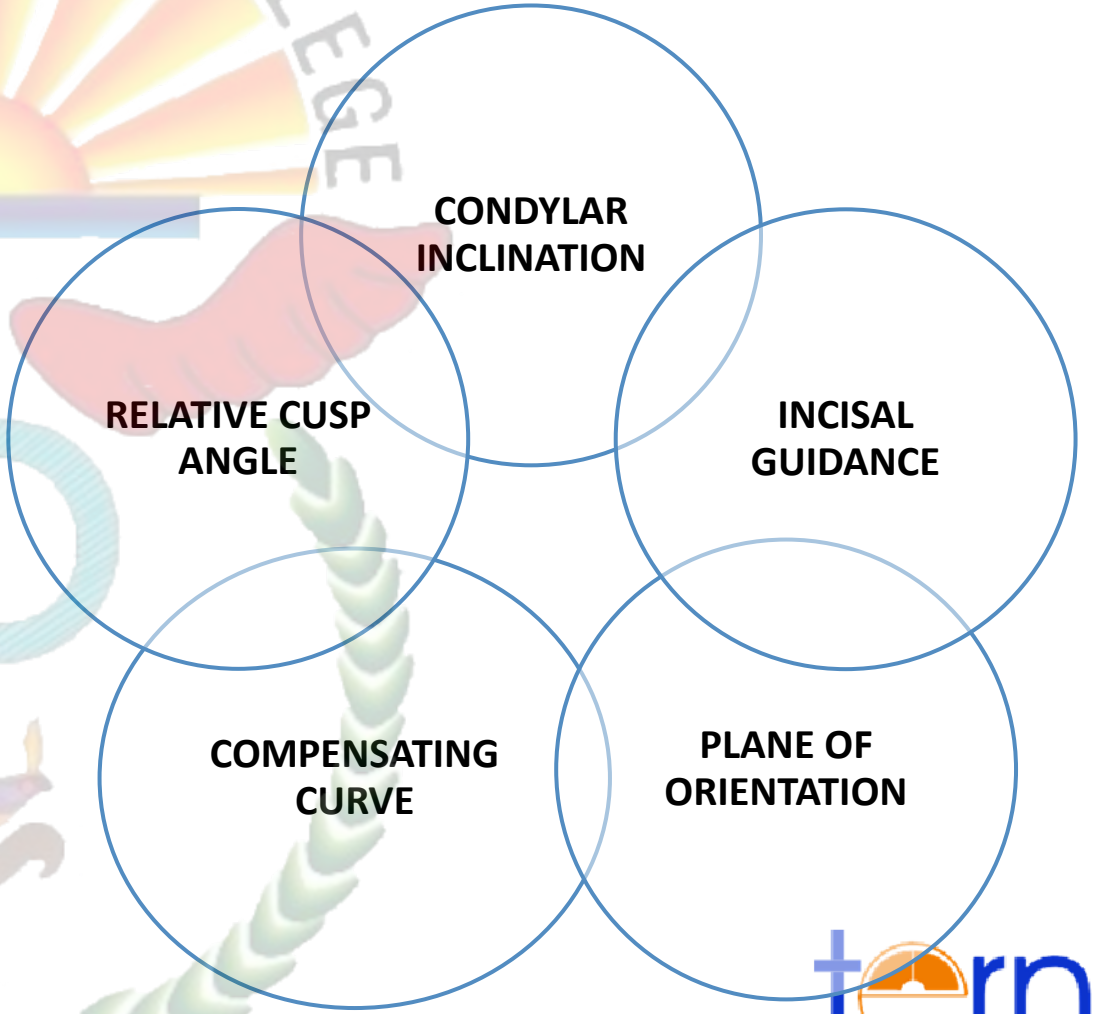
- Horizontal condylar inclination
- Sagittal condylar inclination
- Protrusive incisal guidance
- Sagittal incisal guidance
- Plane of orientation
- Compensating curve
- Buccolingual inclination of tooth axes.
- Tooth alignment
- Relative cusp height.

Hanau RL. Articulation defined, analyzed, and formulated. J Am Dent Assoc 1926 13:1694-1709

FACTORS INFLUENCING BALANCED OCCLUSION

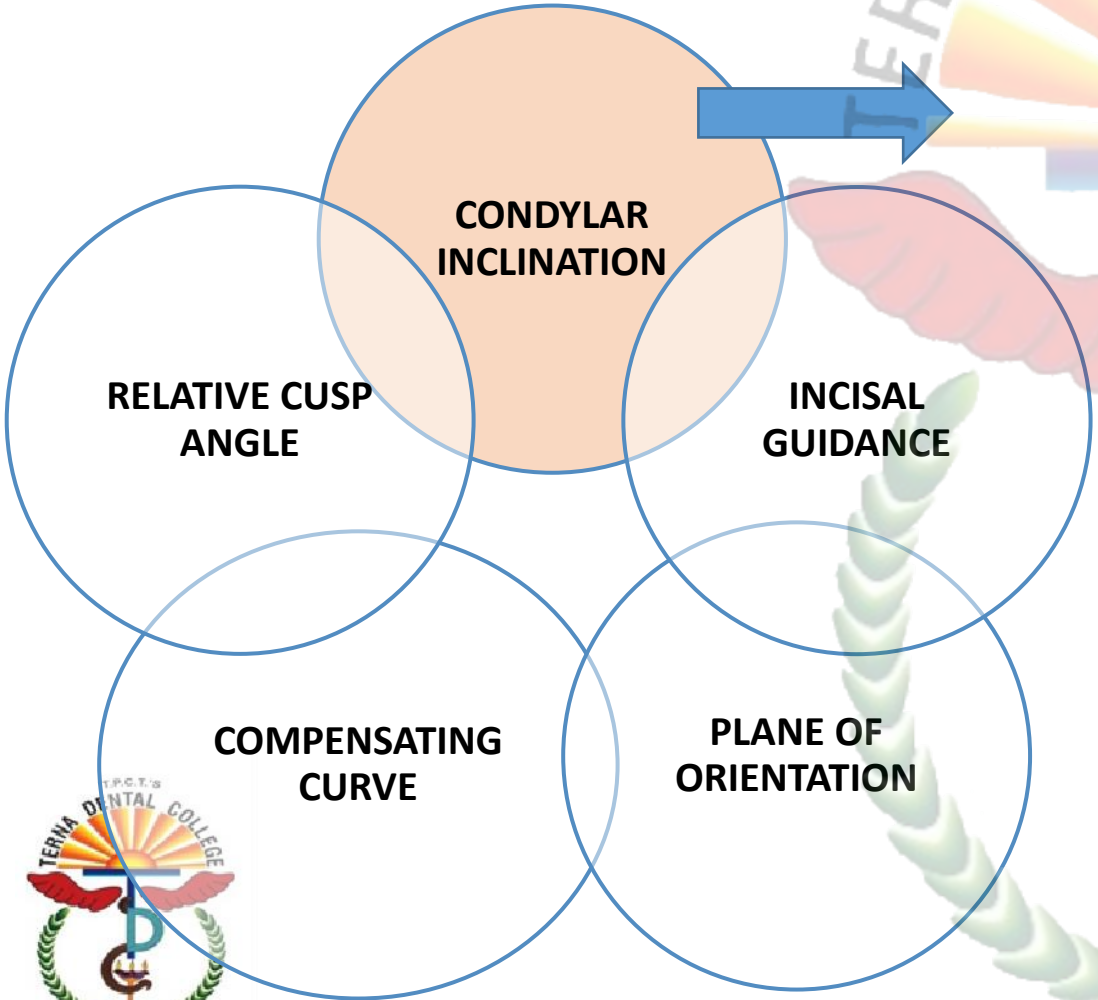
Hanau's quint



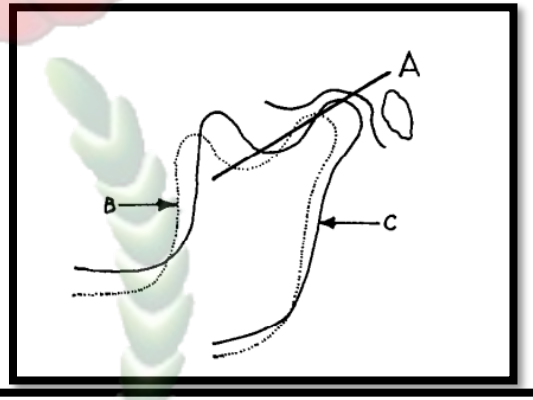


Hanau RL. Articulation defined, analyzed, and formulated. J Am Dent Assoc 1926 13:1694-1709

FACTORS INFLUENCING BALANCED OCCLUSION



- SAGITTAL CONDYLAR INCLINATION: Angle formed by the path of the moving condyles within the sagittal plane compared with the horizontal plane. (GPT9)



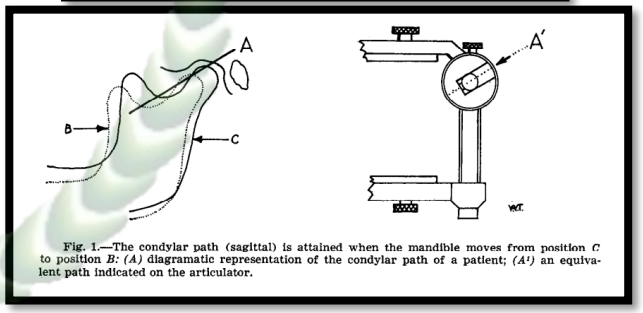
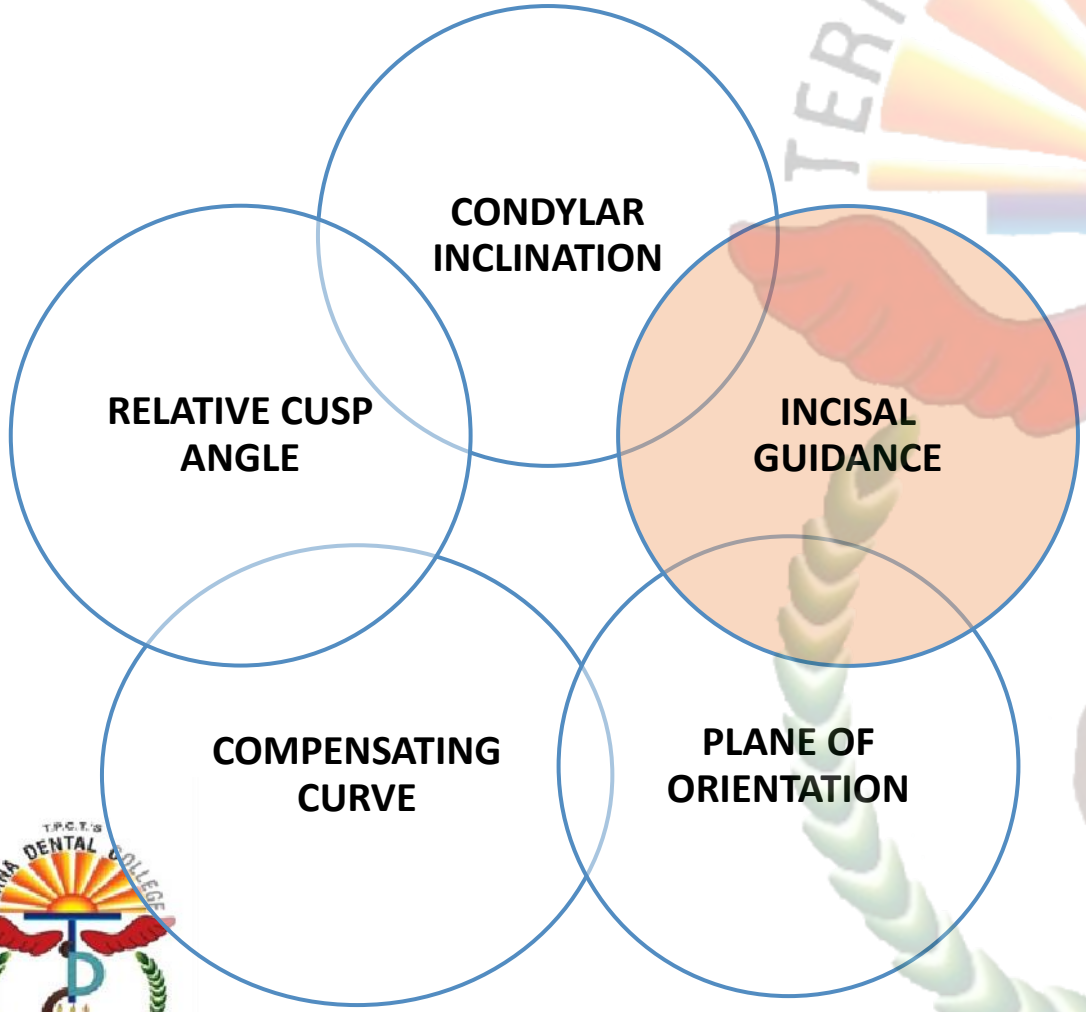
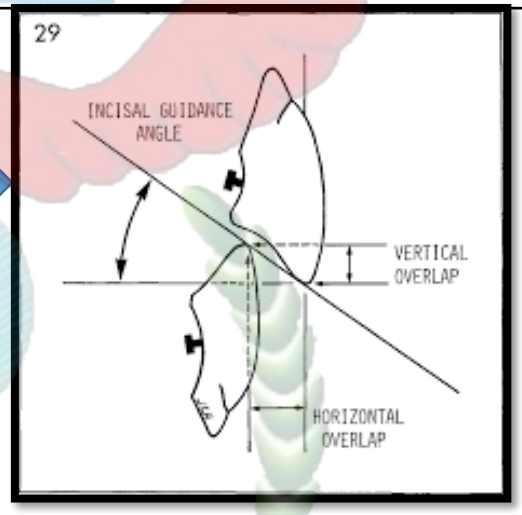


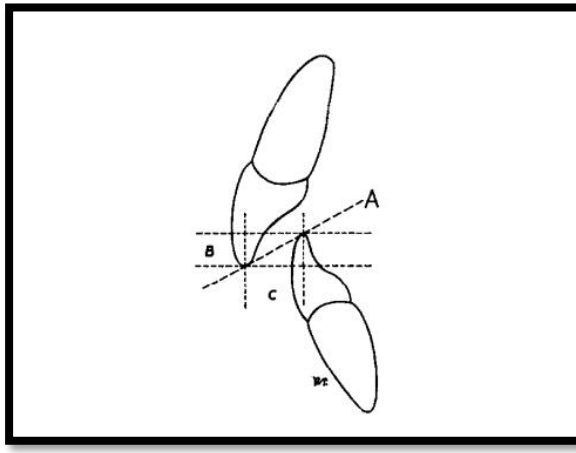
Fig. 1.—The condylar path (sagittal) is attained when the mandible moves from position *C* to position *B*: *(A)* diagramatic representation of the condylar path of a patient; *(A¹)* an equivalent path indicated on the articulator.

FACTORS INFLUENCING BALANCED OCCLUSION



- The influence of the contacting surface of the mandibular and maxillary anterior teeth on the mandibular movements. (GPT9)

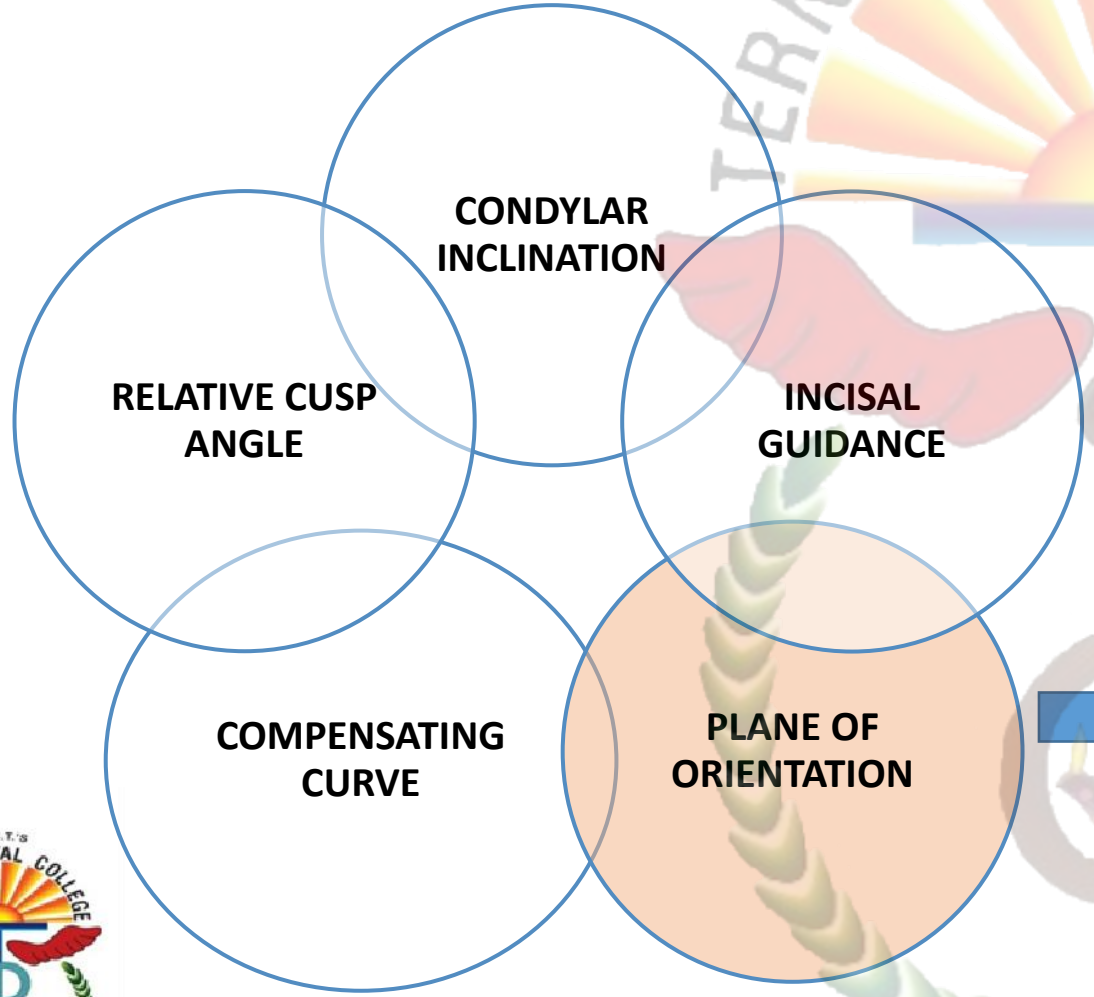


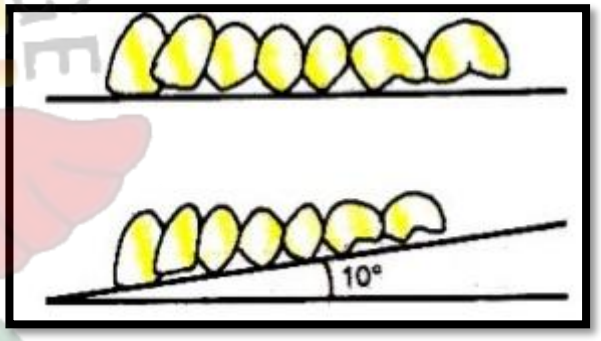


- INCISAL GUIDE ANGLE:

The angle formed by the plane of occlusion and a line within the sagittal plane determined by the incisal edges of the mandibular and maxillary central incisors when the teeth are in MIP. (GPT9)

FACTORS INFLUENCING BALANCED OCCLUSION





- The average plane established by the incisal and occlusal surfaces of the teeth, generally not a plane but represents the planar means of the curvature of these surfaces. (GPT9)

FACTORS INFLUENCING BALANCED OCCLUSION

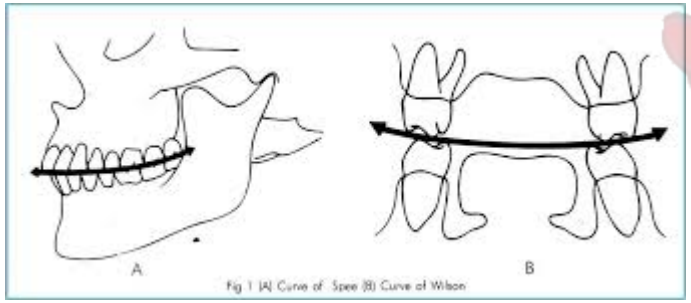
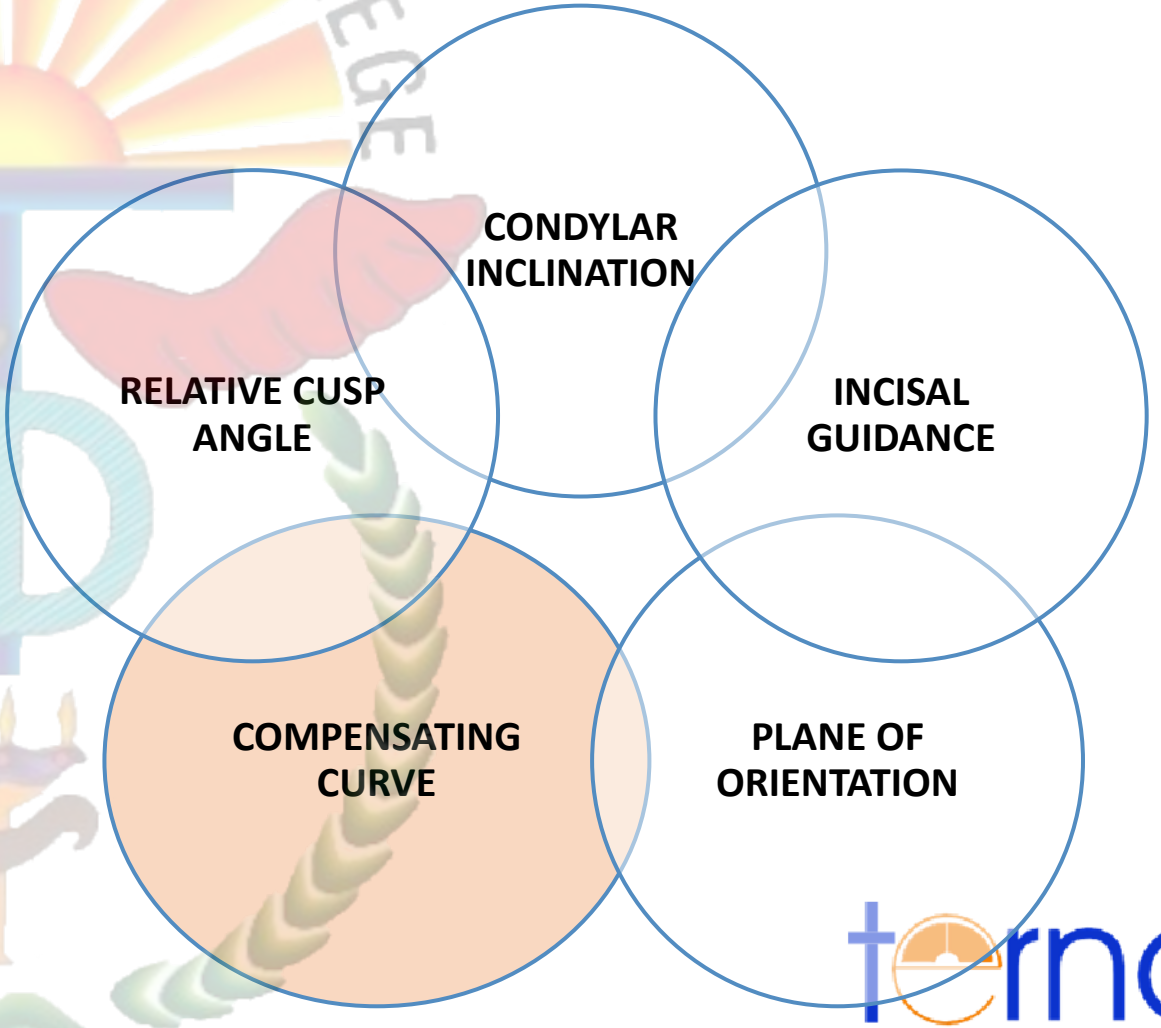


Fig 1 (A) Curve of Spee (B) Curve of Wilson

- The antero-posterior curve in the median plane and the medio-lateral curve in the frontal plane within the alignment of the occluding surfaces and incisal edges of the artificial teeth that is used to develop balanced occlusion. (GPT9)



Anteroposterior curve (curve of spee)

- First described by Ferdinand Spee, in 1890

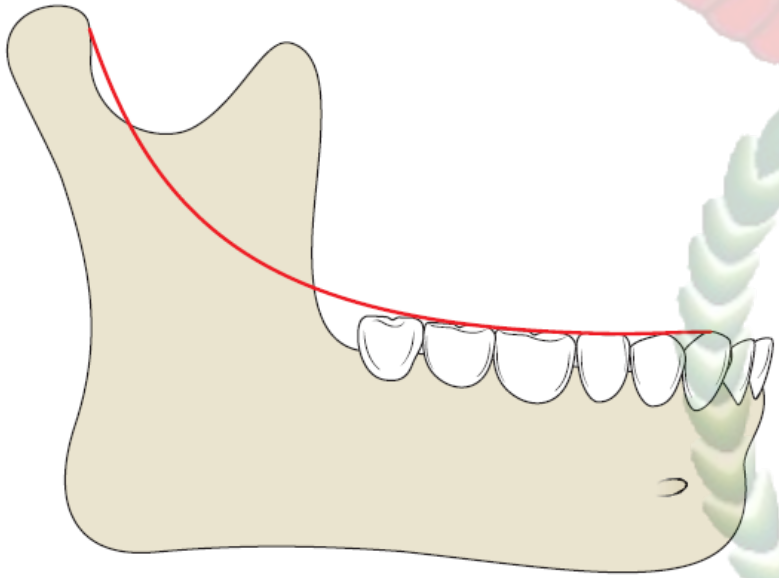


Figure 8.9 Curve of Spee.

Mediolateral curves

1. Curve of Wilson:
   - George Wilson , in 1911.
2. Reverse curve or anti-Monson curve:

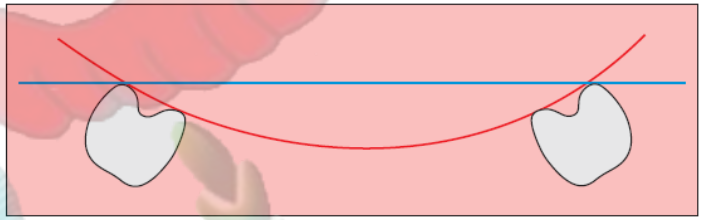


Figure 8.10 Curve of Wilson.

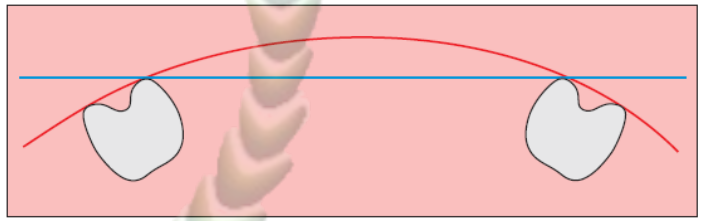


Figure 8.11 Reverse curve.

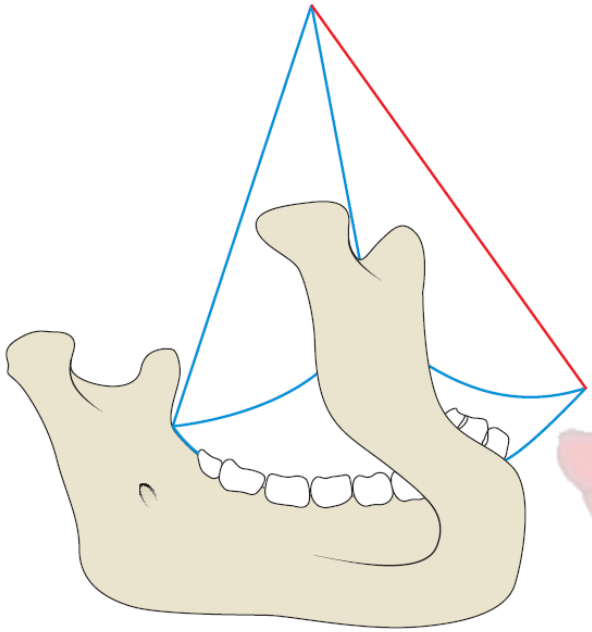


Figure 8.12 Monson's curves.

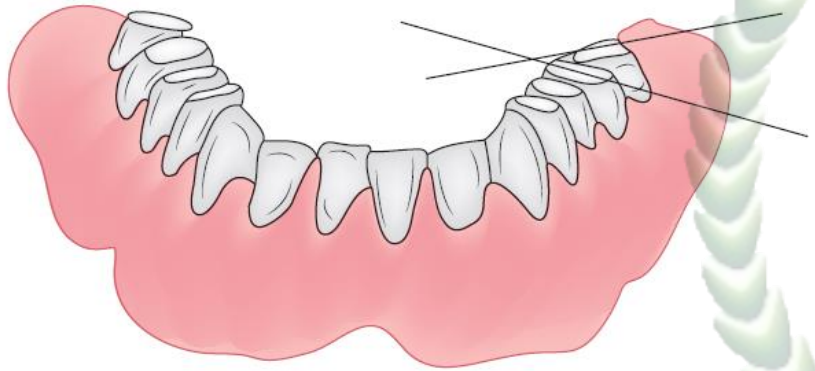


Figure 8.13 Pleasure curve. Premolars and I molar set in reverse curve, II molar set in Monson's curve.

3. Curve of monson:

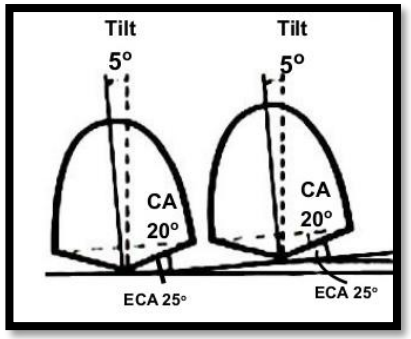
- George S. Monson
- Curve of occlusion in which each cusp and incisal edge touches or conforms to a segment of the surface of a sphere 8 inches in diameter with its centre in the region of the glabella.
- Combination of 'curve of spee and curve of wilson

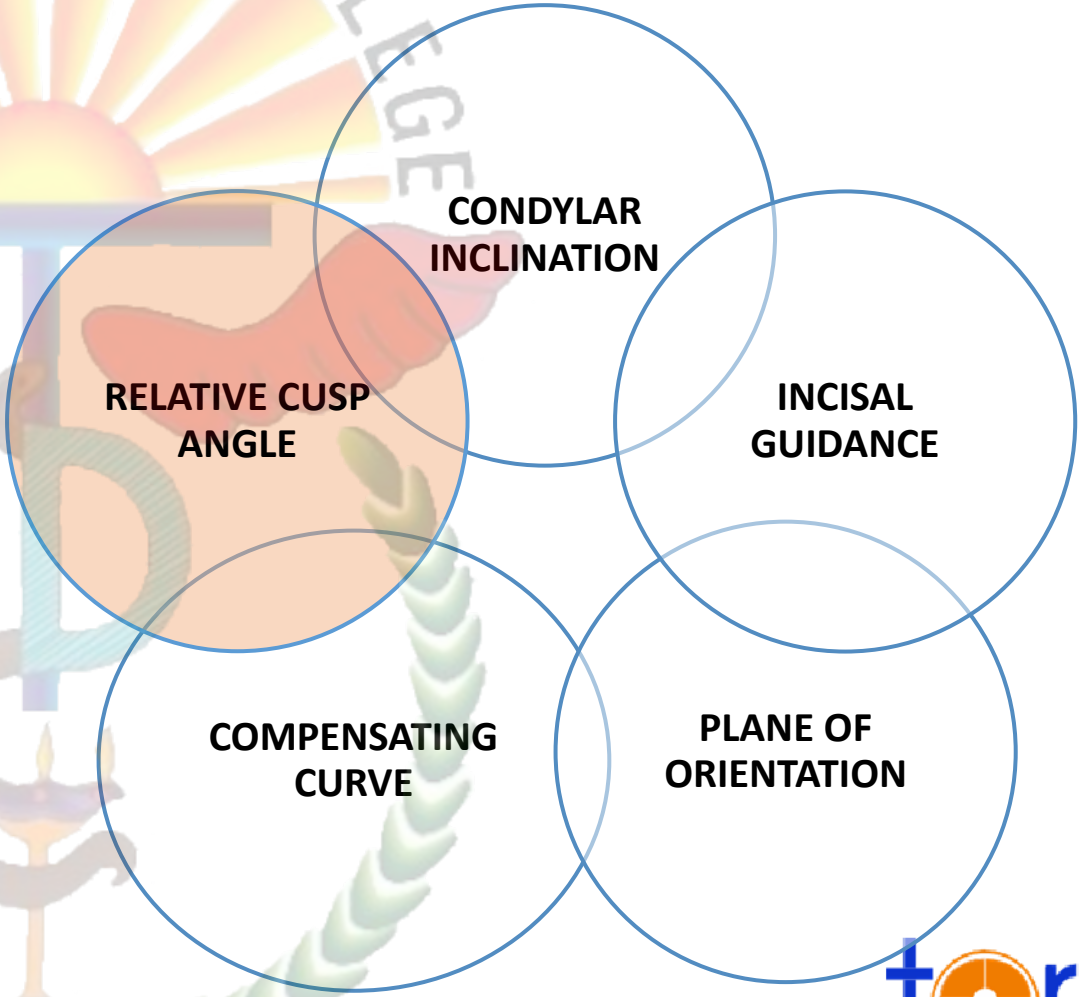
4. Pleasure curve:

- In excessive wear of the teeth, the obliteration of the cusps and formation of either flat or cupped-out occlusal surfaces, associated with the reversal of the occlusal plane of the premolar, first and second molar teeth,
- Combination of monson and anti-monson curves

FACTORS INFLUENCING BALANCED OCCLUSION

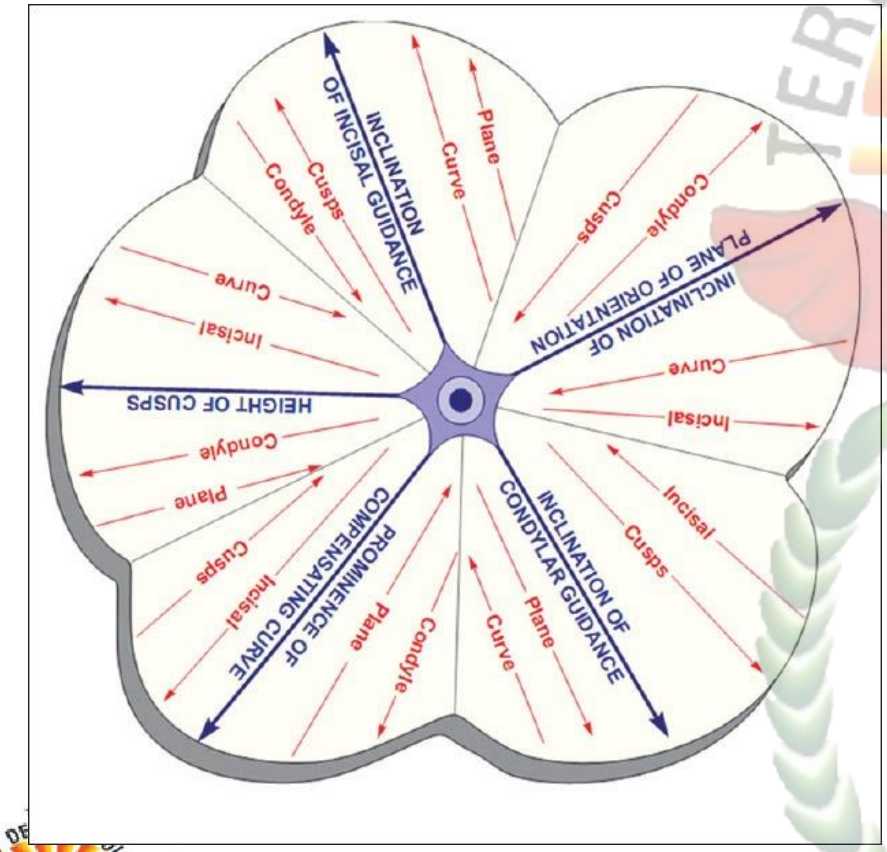
- The angle made by the average slope of the cusp with the cusp plane measured mesiodistally or buccolingually. (GPT 9)





ARTICULATION DEFINED, ANALYZED AND FORMULATED*

By RUDOLPH L. HANAU, Buffalo, New York



- Thielemann subsequently simplified Hanau's factors in a formula for balanced articulation.
- [K × I]/[OP × C × OK].
- Where, K = Condyle guidance.
- I = Incisal guidance.
- C = Cusp height inclinations.
- OP = Inclination of the occlusal plane.
- OK = Curvature of the occlusal surfaces

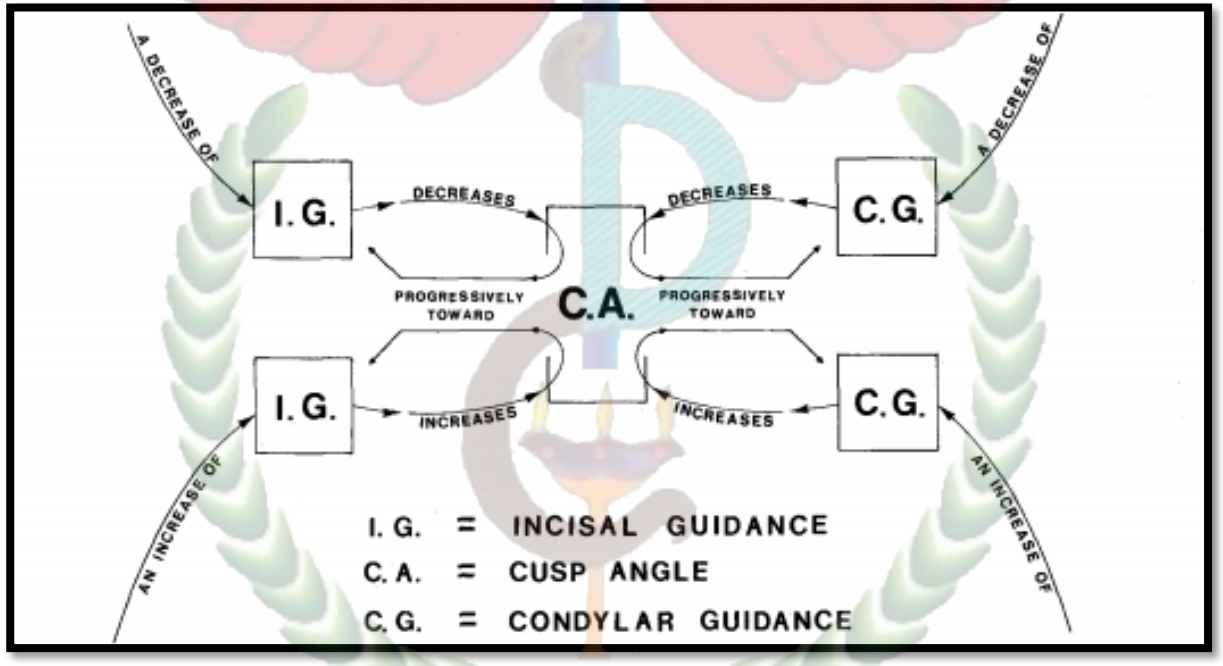
Hanau, R. L. Articulation defined, analyzed, and formulated. J Am Dent Assoc 1926 13:1694-1709.
Rangarajan V, Gajapathi B, Yogesh P B, Ibrahim M M, Kumar R G, Karthik P. Concepts of occlusion in prosthodontics: A literature review, part I. J Indian Prosthodont Soc 2015;15:200-5.

LAWS OF ARTICULATION

VINCENT R. TRAPOZZANO, D.D.S.
St. Petersburg, Fla.

THREE FACTORS OF OCCLUSION

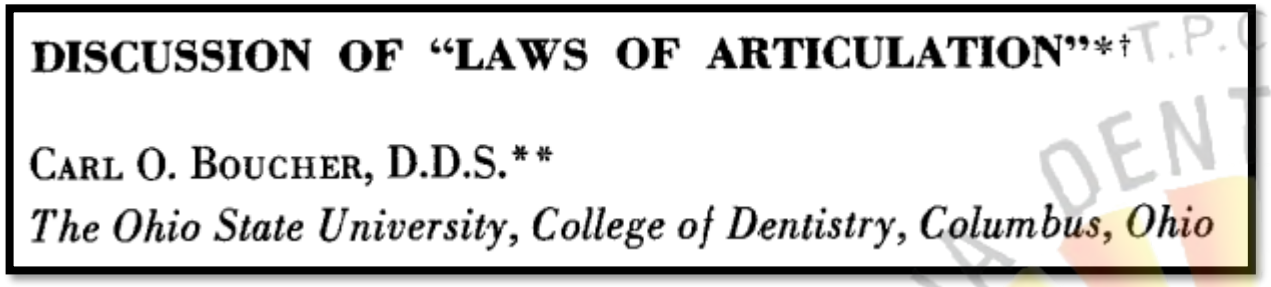
- Condylar Inclination
- Cusp Angle
- Incisal Guide Angle



- When the condylar guidance equals a constant (K)

- When the incisal guidance equals a constant (K)

Trapozzano VR. Laws of articulation. J Prosthet Dent. 1963 Jan-Feb;13(1):34-44.



DISCUSSION OF "LAWS OF ARTICULATION"*†

CARL O. BOUCHER, D.D.S.**

The Ohio State University, College of Dentistry, Columbus, Ohio

BOUCHER

Evaluated Hanau and Trapozanno's work.

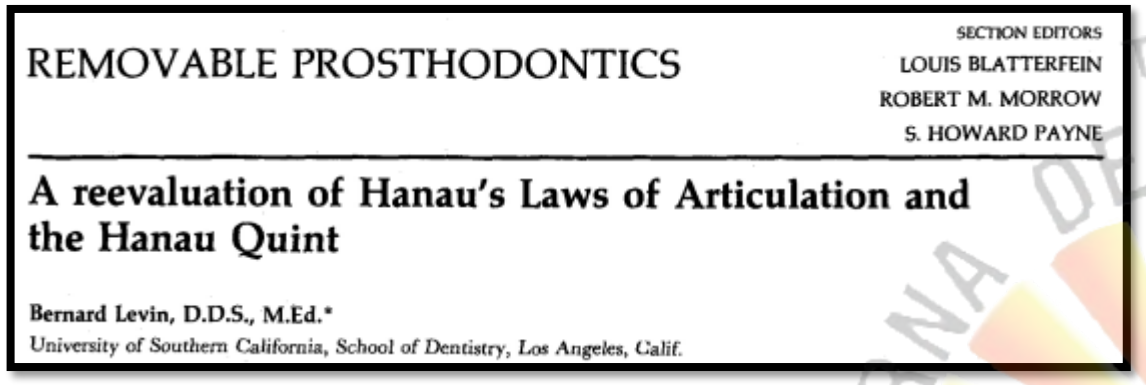
3 FIXED FACTORS

- **Inclination of the Condylar Guidance**
- **Inclination of the Incisal Guidance**
- **Orientation of Occlusal Plane**

2 FACTORS UNDER CONTROL OF THE DENTIST

- **Tooth position >Angulation of the cusp** is more important than the height of the cusp
- **Compensating Curve** enables one to increase the effective height of the cusps without changing the form of the teeth.

Boucher CO. "Discussion of laws of articulation". J Prosthet dent 1963 i3:45-48.



REMOVABLE PROSTHODONTICS

SECTION EDITORS
LOUIS BLATTERFEIN
ROBERT M. MORROW
S. HOWARD PAYNE

A reevaluation of Hanau's Laws of Articulation and the Hanau Quint

Bernard Levin, D.D.S., M.Ed.*
University of Southern California, School of Dentistry, Los Angeles, Calif.

LOTT

SIMPLIFIED HANAU'S QUINT

- Lott agrees with Hanau's Quint.
- However he does agree that Hanau has over complicated the factors and there is a need to simplify the factors.
- He tries providing a simplified diagram by relating them to the posterior separation that is the resultant of the guiding factors.

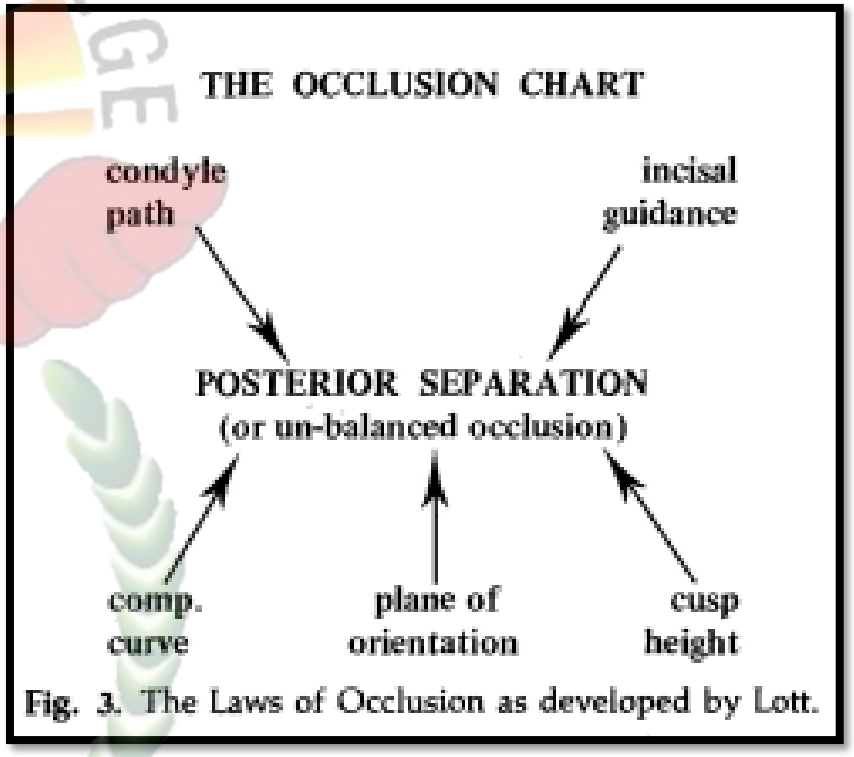


Fig. 3. The Laws of Occlusion as developed by Lott.

Personal communication: F. M. Lott, September, 1962.
Levin B. A reevaluation of Hanau's Laws of Articulation and the Hanau Quint. J Prosthet Dent 1978;39:254-8.

REMOVABLE PROSTHODONTICS

SECTION EDITORS
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A reevaluation of Hanau's Laws of Articulation and the Hanau Quint

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LEVIN

Evaluates Hanau, Trapozzano, Boucher & Lott'S WORK.

- He agrees with Hanau.
- But doesn't include plane of orientation in accordance with Boucher.
- Bernard Levin's concept of the laws of articulation is quite similar to Lott's, but he eliminated the plane of orientation
  He has named the four factors as Quad.

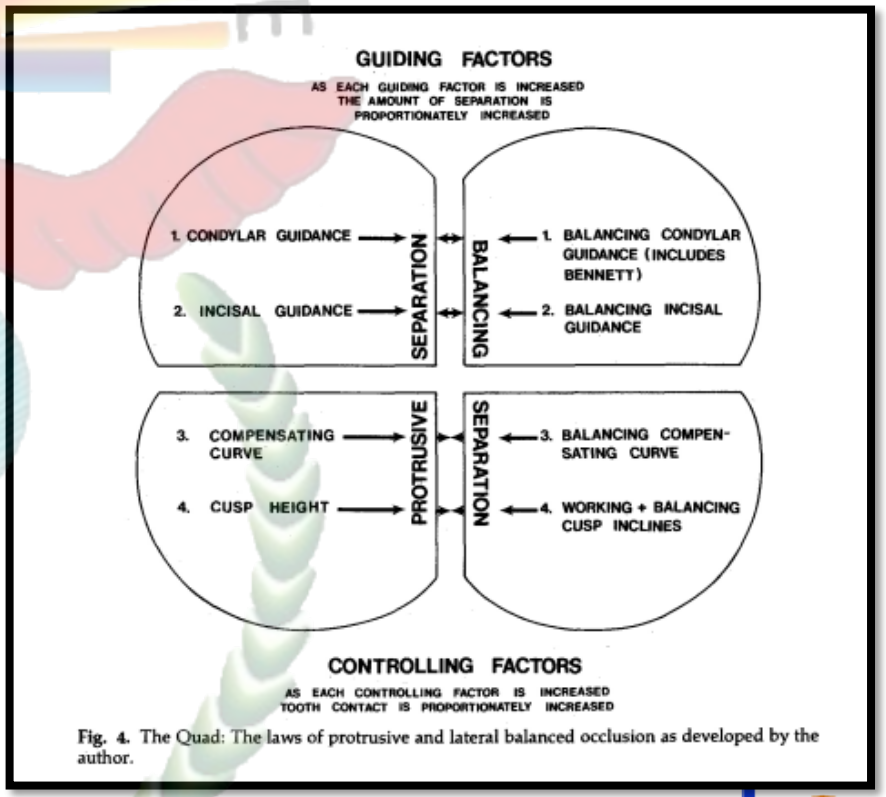


Fig. 4. The Quad: The laws of protrusive and lateral balanced occlusion as developed by the author.

Levin B. A reevaluation of Hanau's Laws of Articulation and the Hanau Quint. J Prosthet Dent 1978;39:254-8.

NON BALANCED OCCLUSION

- POUND'S CONCEPT
- AULL'S CONCEPT
- HARDYS CONCEPT
- OCCLUSAL PIVOT BY SEARS
- KURTH'S CONCEPT

Beck HO. Occlusion as related to complete removable prosthodontics. J Prosthet Dent 1972;27:246-56.

NON BALANCED OCCLUSION

* POUND'S CONCEPT

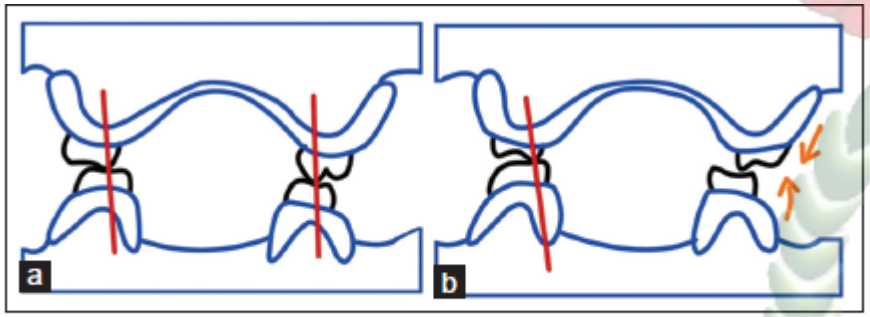


Figure 1: (a) Pound's concept: In centric occlusion. (b) Pound's concept: Right lateral position

MORE EMPHASIS ON AESTHETIC AND PHONETICS

Lingualized occlusion for posterior teeth.
Monoplane occlusion for anterior teeth.

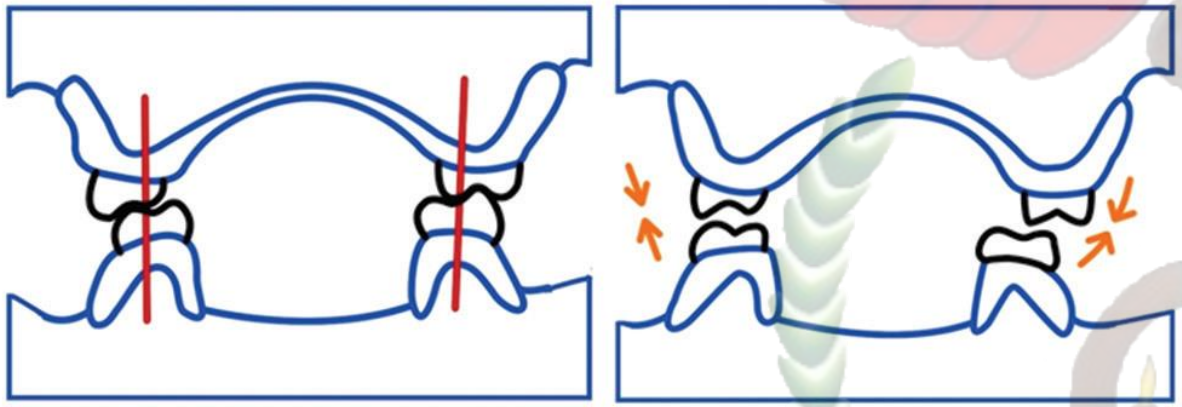
Beck HO. Occlusion as related to complete removable prosthodontics. J Prosthet Dent 1972;27:246-56.

Rangarajan V, Gajapathi B, Yogesh P B, Ibrahim M M, Kumar R G, Karthik P. Concepts of occlusion in prosthodontics: A literature review, part II. J Indian Prosthodont Soc 2016;16:8-14.

NON BALANCED OCCLUSION

AULL'S CONCEPT

- Artificial maxillary posterior should have 33° cusp form teeth with full gold occlusal surface
- Anterior teeth arranged to meet the requirements of phonetic values



Recording pantographic tracing and transferring it to articulator to eliminate deflective contacts in the posterior arrangement

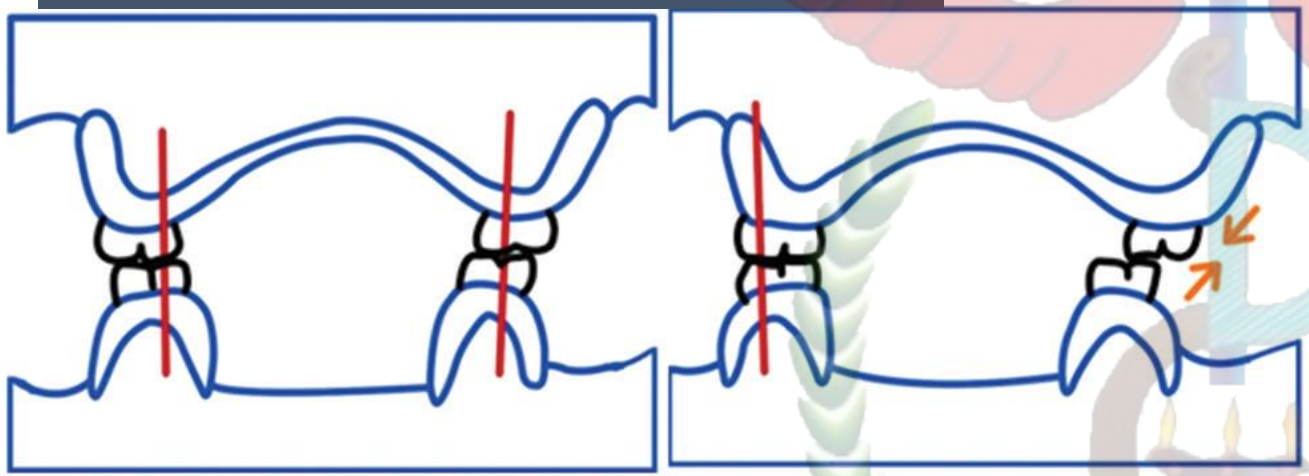
Disocclusion due to the canine during eccentric movement of the mandible.

Beck HO. Occlusion as related to complete removable prosthodontics. J Prosthet Dent 1972;27:246-56.

Rangarajan V, Gajapathi B, Yogesh P B, Ibrahim M M, Kumar R G, Karthik P. Concepts of occlusion in prosthodontics: A literature review, part II. J Indian Prosthodont Soc 2016;16:8-14.

NON BALANCED OCCLUSION

HARDYS CONCEPT



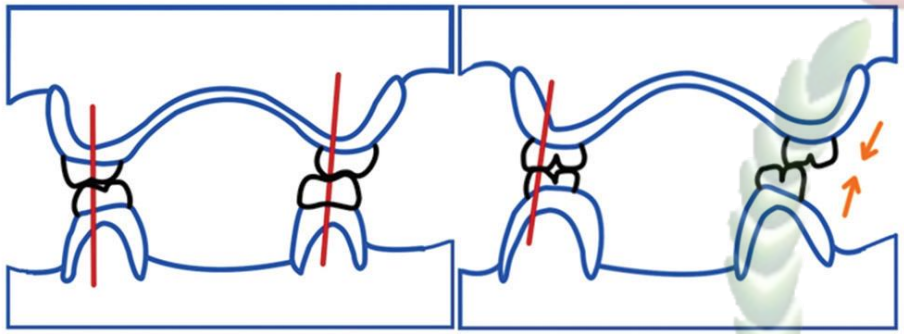
- Flat occlusal plane set with nonanatomic teeth
- Minimum overbite

Beck HO. Occlusion as related to complete removable prosthodontics. J Prosthet Dent 1972;27:246-56.

Rangarajan V, Gajapathi B, Yogesh P B, Ibrahim M M, Kumar R G, Karthik P. Concepts of occlusion in prosthodontics: A literature review, part II. J Indian Prosthodont Soc 2016;16:8-14.

NON BALANCED OCCLUSION

OCCLUSAL PIVOT BY SEARS



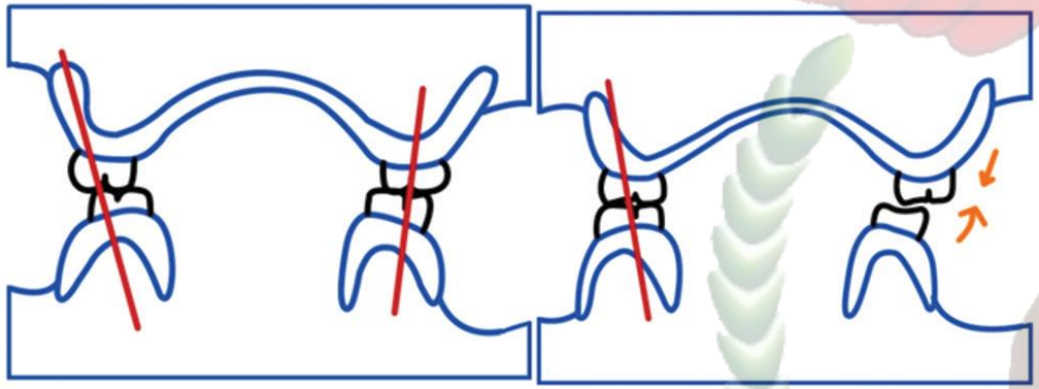
- Pivot's place the mandible in equilibrium by maintaining the occlusal load in the molar regions
- Occlusal contact forces are also reduced in the anterior region of the residual ridges.

Beck HO. Occlusion as related to complete removable prosthodontics. J Prosthet Dent 1972;27:246-56.

Rangarajan V, Gajapathi B, Yogesh P B, Ibrahim M M, Kumar R G, Karthik P. Concepts of occlusion in prosthodontics: A literature review, part II. J Indian Prosthodont Soc 2016;16:8-14.

NON BALANCED OCCLUSION

KURTH'S CONCEPT



- Posterior tooth blocks in series of four teeth which were arranged on a flat occlusal plane with a reverse lateral curve and posterior ramp.

Beck HO. Occlusion as related to complete removable prosthodontics. J Prosthet Dent 1972;27:246-56.

Rangarajan V, Gajapathi B, Yogesh P B, Ibrahim M M, Kumar R G, Karthik P. Concepts of occlusion in prosthodontics: A literature review, part II. J Indian Prosthodont Soc 2016;16:8-14.

NEUTROCENTRIC CONCEPT OF OCCLUSION

- De Van coined the term neutrocentric in 1954.
- An occlusion that eliminates the anteroposterior and buccolingual inclines in order to direct the forces to the posterior teeth.
- Flat planes in all directions with no inclination.
- Balance was considered undesirable, as the resulting inclines would create instability of the dentures.

De Van MM. Concept of Neutro-centric occlusion. JADA 1954 48:165-169.
De Van MM. Synopsis, Stability In Full Denture Construction. J Dent 1955;22:8.

NEUTROCENTRIC CONCEPT OF OCCLUSION

5 elements:

- Position
- Proportion
- Pitch
- Form
- Number

- Arrange the teeth in central position in reference to the foundation, in order to provide greater stability for the denture.
- Reduced tooth width to 40% to correct tooth proportion. This reduces the vertical stresses on the ridge.
- (inclination, tilt) placing the occlusal plane parallel to the underlying ridges and midway between them
- Tooth form was modified using flat teeth with no deflecting inclines.
- The posterior teeth were reduced in number from 8 to 6.

NEUTROCENTRIC CONCEPT OF OCCLUSION

Advantages :

- This technique is simple and requires less precise records.
- By removing inclines, the lateral forces which are destructive to the residual ridges are reduced.
- Teeth arranged with a neutrocentric occlusal scheme are easier to adjust.

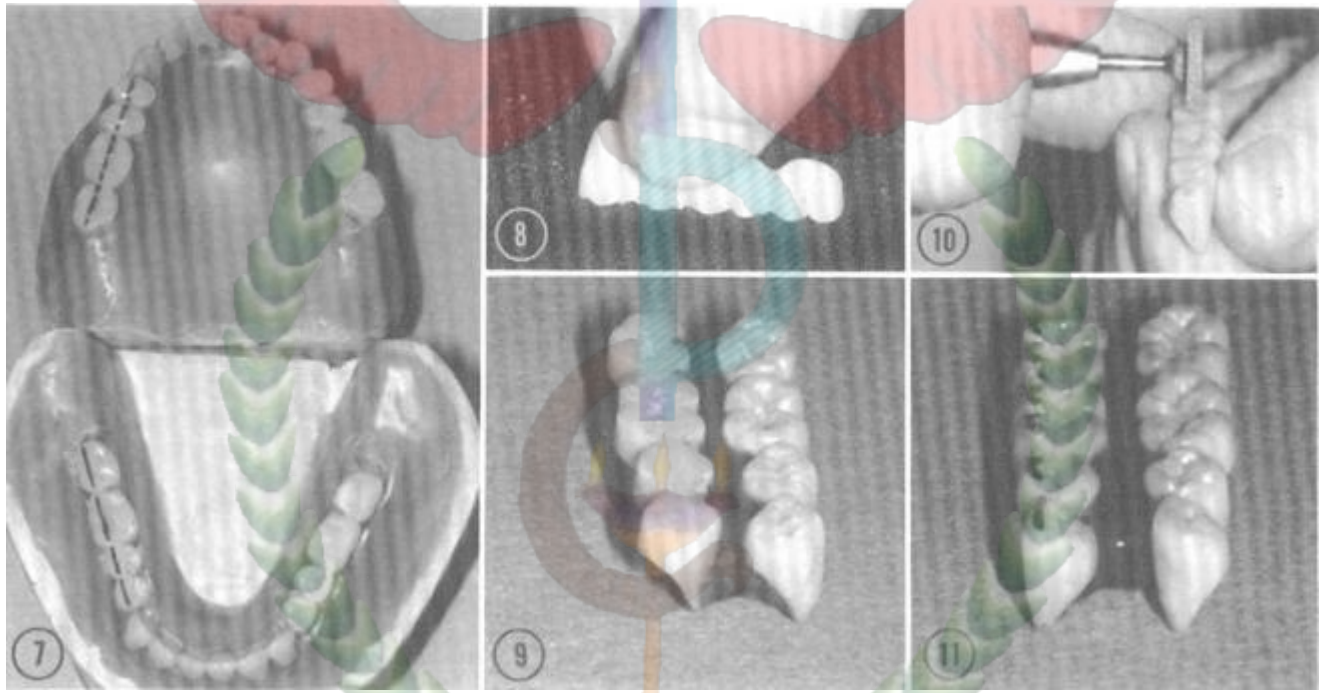
Disadvantages:

- Least esthetic as there is no incisal overlap and no posterior cusps
- The flat nature of teeth results in impaired mastication.
- “the patient will become a chopper, not a chewer or a grinder”.

De Van MM. The concept of neutrocentric occlusion as related to denture stability. J Am Dent Assoc 1954;48:165-169.

Lineal occlusion

- A line of occlusal contacts in one dental arch opposing a flat occlusal table in the other dental arch has the potential of creating the smallest lateral component of force against the denture bases.



Gronas DG. Lineal occlusion concepts for complete dentures. J Prosthet Dent 1974;32:122-129.

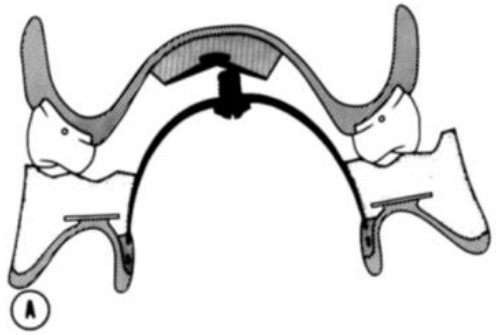
Organic Concept of Occlusion

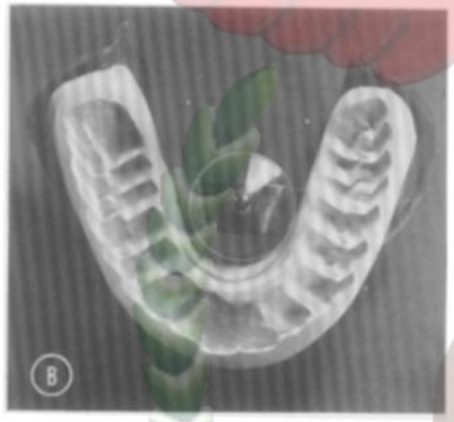
- Organic occlusion concept was put forth by STUART, STALLARD in 1961 and THOMAS in 1967.
- The posterior teeth should protect the anterior teeth in the centric occlusion position
- The maxillary incisors should have sufficient vertical overlap to provide separation of the posterior teeth when the incisors are in edge-to-edge relation
- In lateral mandibular position outside the masticatory movements, the cuspids should prevent contacts on all other teeth.

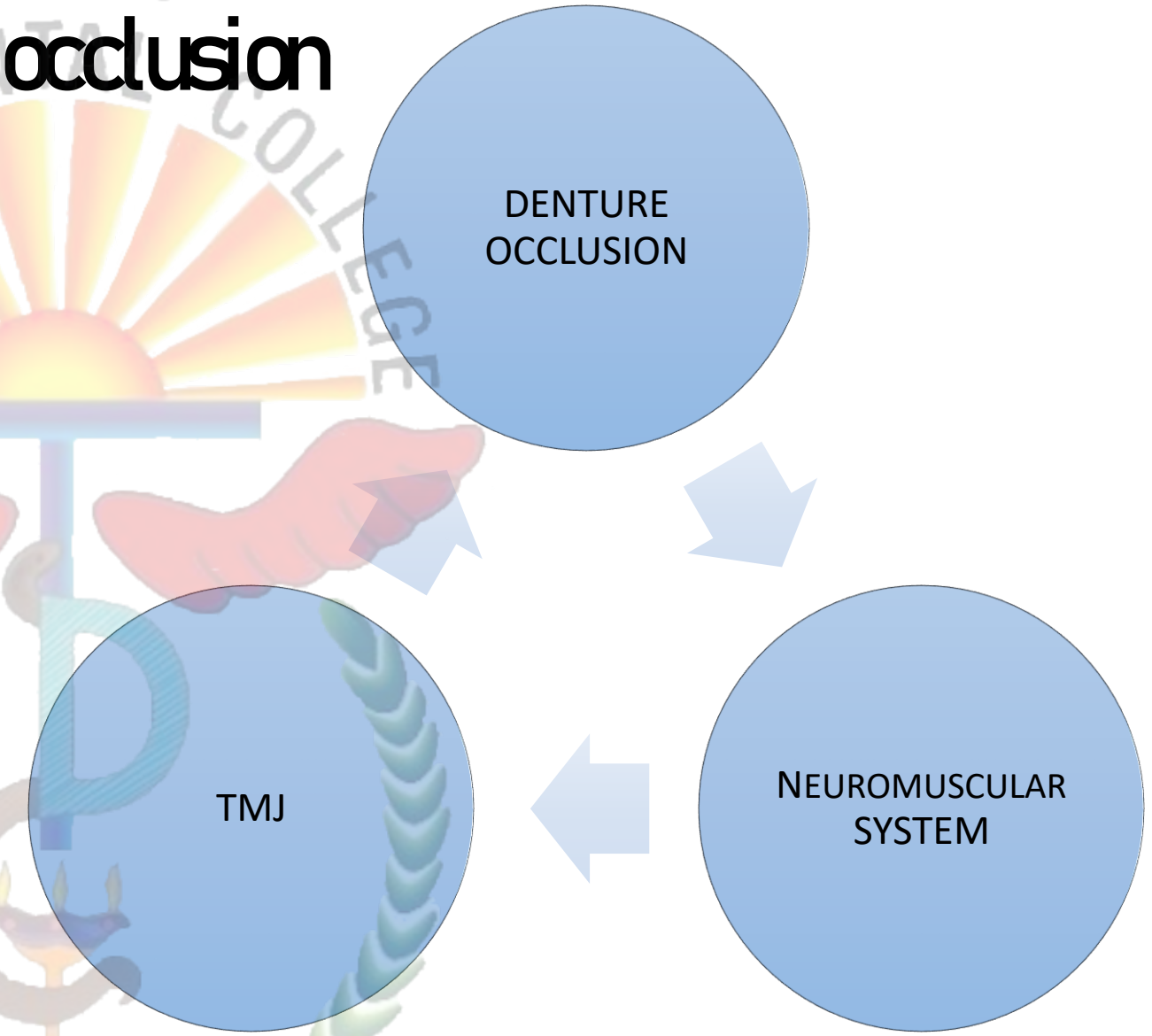
Rahn AO, Heartwell CM. Textbook of complete dentures. 5th ed. Philadelphia: Lea and Febiger; 1993.

Physiologically generated occlusion

- Mehringer developed physiologically generated occlusion.







Mehringer JE. Physiologically generated occlusion. J Prosthet Dent 1973;30:373-79.

OCCLUSAL SCHEMES

Balanced occlusion
Lingualized occlusion
Monoplane occlusion

- Occlusal scheme is defined as the form and the arrangement of the occlusal contacts in natural and artificial dentition.
- The pattern of occlusal contacts between opposing teeth during centric relation and functional movement of the mandible will be determined by the occlusal schemes.

OCCLUSAL SCHEMES

1) Balanced occlusion: - Bilateral, simultaneous, anterior and posterior occlusal contact of teeth in centric and eccentric positions.

2) Lingualized occlusion: – Form of denture occlusion articulated the maxillary lingual cusps with the mandible occlusal surfaces in centric working and nonworking mandibular positions.

3) Monoplane occlusion: - An occlusal arrangement where in the posterior teeth have masticatory surfaces that lack any cuspal height.

BALANCED OCCLUSION

Bilateral, simultaneous, anterior and posterior occlusal contact of teeth in centric and eccentric positions.

- Unilateral balanced occlusion
- Bilateral balanced occlusion
- Protrusive balanced occlusion
- Lateral balanced occlusion

- **Arrangement of anterior teeth**
- The six upper and six lower teeth are set up in the arrangement dictated by the patient's esthetic and phonetic requirements

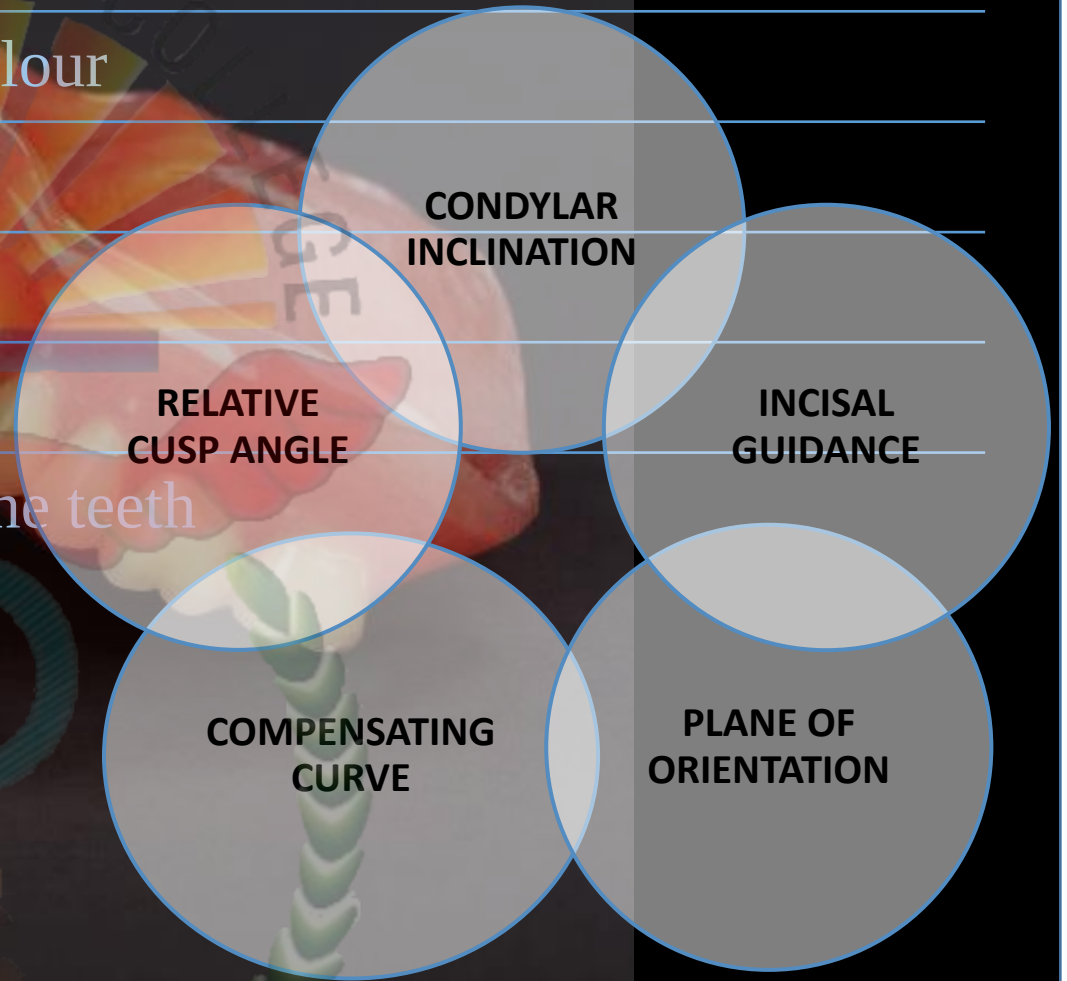
- Factors that are studied in the relation to aesthetic.

1. Selection of the teeth : size form and colour
2. Vertical position of maxillary and mandibular anterior teeth in relation to the lips
3. Anterioposterior position of maxillary and mandibular teeth in relation to the lips and face
4. Shape of the arch
5. Individual rotations and inclination of the teeth

Swesnsons complete denture 5th edition, mosby company St.Louis 1964

- **Arrangement of posterior teeth**

1. Selection of the teeth : size form and colour
2. Mesiodistal width
3. Occlusal plane
4. Shape of the arch
5. Individual rotations and inclination of the teeth



Swesnsons complete denture 5th edition, mosby company St.Louis 1964

Working side:

- The mandibular buccal cusp ridges makes contact with the maxillary buccal cusp ridges as the mandibular lingual cusp ridges are making contacts with the maxillary lingual cusp ridges.

Balancing side:

- The mandibular buccal cusps & their occlusal facing ridge, contacts maxillary lingual cusps & ridge.

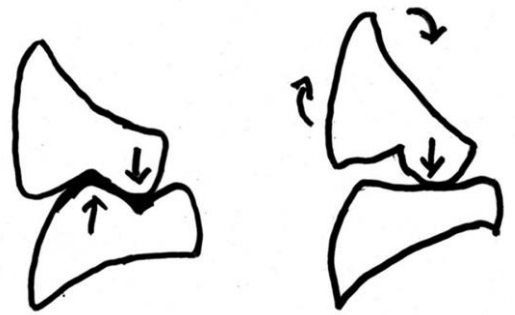
Protrusion:

- Incisal edges of the mandibular anterior teeth contact with the lingual surface of the maxillary anterior teeth.
- The mesiobuccal & lingual cusp ridges of the mandibular teeth contact the distobuccal & lingual cusp ridges of the maxillary teeth.

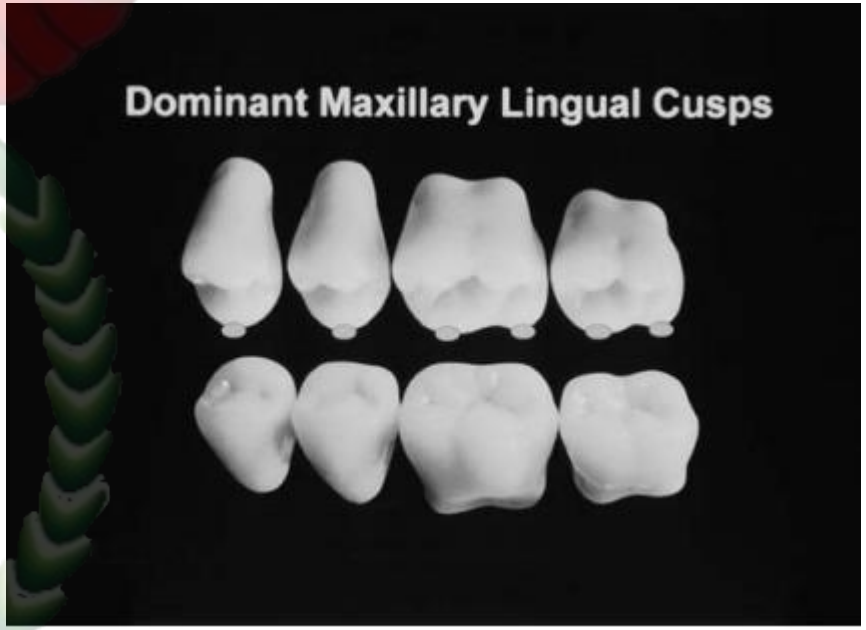
Winkler S. Essentials of Complete Denture Prosthodontics. 2 nd ed

LINGUALISED OCCLUSION

The form of denture occlusion that where the maxillary lingual cusps articulate with the mandibular occlusal surfaces in centric working and non-working mandibular positions.



- Concept was introduced by Alfred Gysi in 1927
- S.H Payne (1941): 'cusp-to-fossa occlusion'
- Pound: 'lingualized occlusion'
- This type of occlusion involves the use of a large upper palatal cusp against a wide lower central fossa



Lang BR. Complete denture occlusion. Dent Clin N Am 2004;48:641-65.
Becker CM, Swoope CC, Guckes AD. Lingualized occlusion for removable prosthodontics. J Prosthet Dent 1977;38:601-608.

Indications :

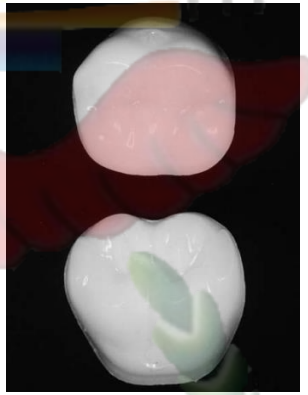
- When patient places high priority on esthetics but oral conditions indicate a non-anatomic occlusal scheme such as:

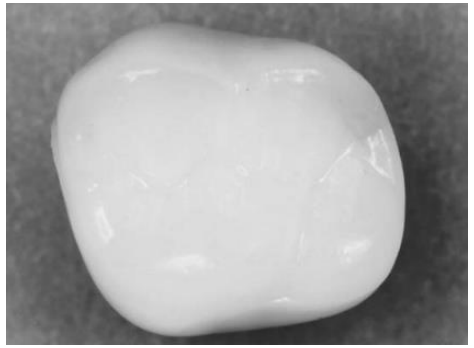
- Severe residual ridge resorption.
- Class II jaw relationship.
- Flabby supporting tissue.
- When a complete denture opposes a removable partial denture.
- When a more favorable stress distribution is desired in patients with parafunctional habits.

Lang BR. Complete denture occlusion. Dent Clin N Am 2004;48:641-65.

TOOTH FORMS FOR LINGUALISED OCCLUSION

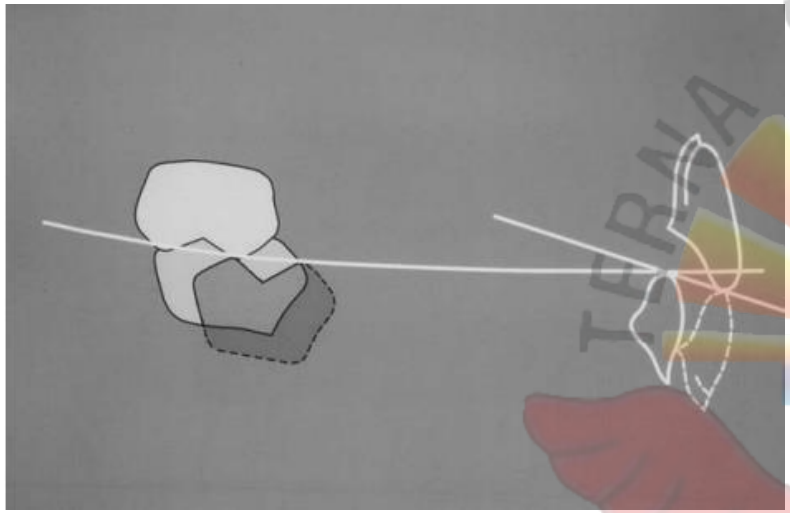
- maxillary Trubyte Anatoline mold
- Mandibular Monoline mold
- MLI tooth mold
- Ortholingual maxillary and mandibular tooth mold
- Myerson's lingualized integration (MJ)



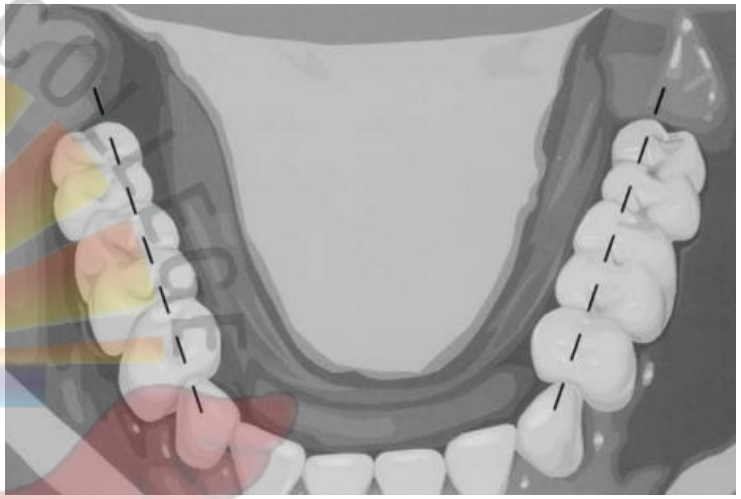


Lang BR. Complete denture occlusion. Dent Clin N Am 2004;48:641-65.

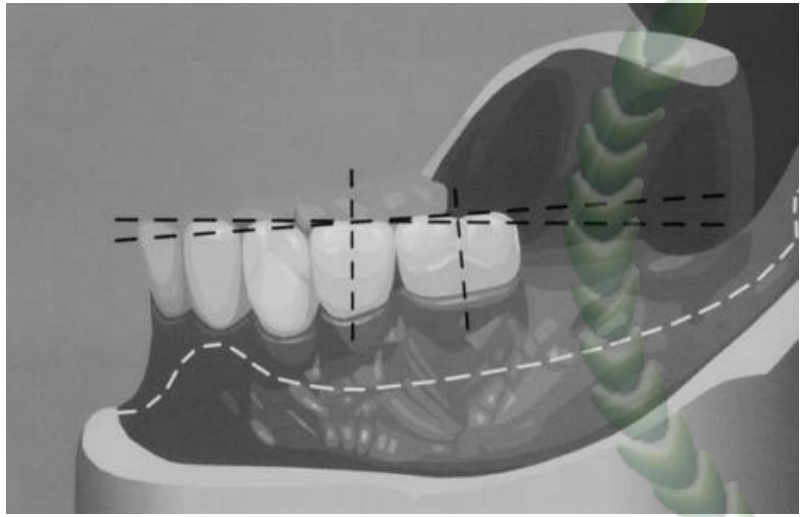
- Anterior and posterior reference points



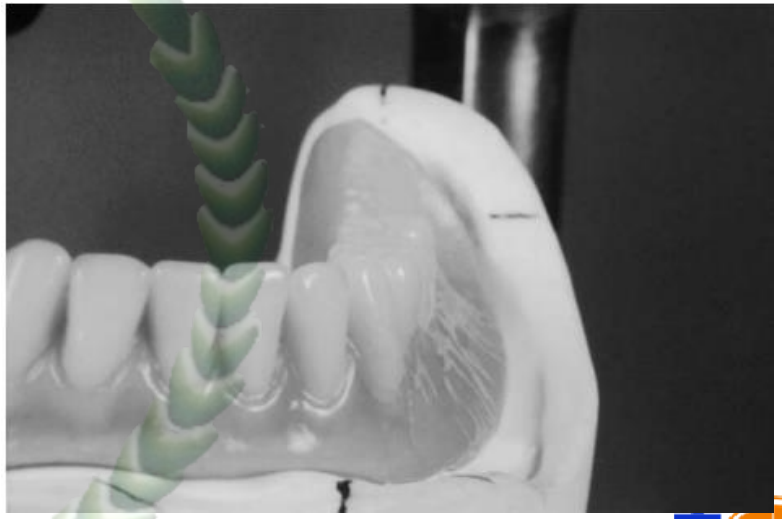
- Buccolingual positioning of the teeth



- Anteroposterior compensatory curve



- Mediolateral compensatory curve



Lang BR. Complete denture occlusion. Dent Clin N Am 2004;48:641-65.

LINGUALISED OCCLUSION

Advantages :

Both the anatomic and nonanatomic forms are retained

- Good penetration of the food bolus is possible
- better chewing ability as compared to monoplane
- Vertical forces are centralized on the mandibular teeth

Disadvantages:

- Wear of maxillary lingual cusp or mandibular fossa rapidly results in buccal and lingual contact of equal intensity results in negotiation of centralization of forces on the mandibular posterior teeth and increase the likelihood of lateral displacement.

Lang BR. Complete denture occlusion. Dent Clin N Am 2004;48:641-65.

MONOPLANE OCCLUSION

An occlusal arrangement where in the posterior teeth have masticatory surfaces that lack any cuspal height.

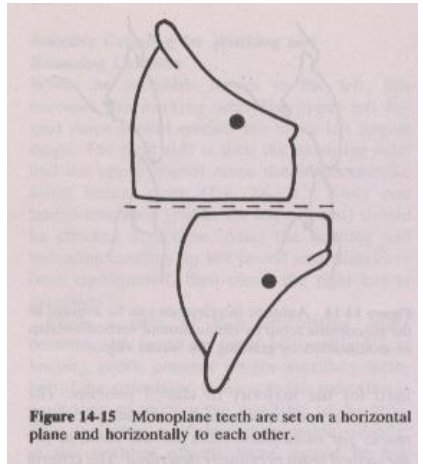


Figure 14-15 Monoplane teeth are set on a horizontal plane and horizontally to each other.

The concept of monoplane occlusion was a result of Sheppard's statement: " *Enter Bolus, Exit Balance*".

Sear introduced monoplane occlusion with balancing ramps or tooth at the distal part of the mandibular arch which comes in contact only in eccentric excursions .

- Jones advocated monoplane articulation in 1972

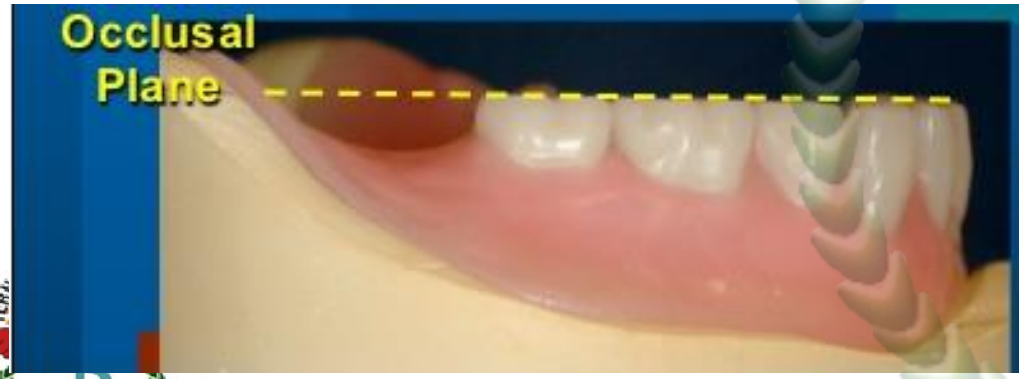
Brudvik JS, Wormley JH. A method of developing monoplane occlusions. J Prosthet Dent 1968;19:573-80.
Jones PM. The monoplane occlusion for complete dentures. J Am Dent Assoc. 1972 Jul;85(1):94-100.

Indication :

- Skeletal malocclusion
- RRR
- Abnormal closure imbalance, neuromuscular disturbances.
- Posterior displaceable mucosa.
- Ridges are flat or knife edge, rendering dentures more susceptible to horizontal force.
- Maximum of vertical force and a minimum of horizontal stress is desired .

Brudvik JS, Wormley JH. A method of developing monoplane occlusions. J Prosthet Dent 1968;19:573-80.
Jones PM. The monoplane occlusion for complete dentures. J Am Dent Assoc. 1972 Jul;85(1):94-100.

- Anterior teeth: no vertical overlap.
- The occlusal plane should evenly divide the space between the upper and lower ridges.
- The occlusal plane should be parallel to the mean denture base foundation.
- The maxillary posterior teeth are placed over the crest of the ridge with the aid of the flat plate. The lingual cusps should be approximately over the crest of the mandibular ridge.
- The horizontal overlap of the maxillary posterior teeth over the mandibular posterior teeth is one third of their buccolingual width.



Brudvik JS, Wormley JH. A method of developing monoplane occlusions. J Prosthet Dent 1968;19:573-80.

MONOPLANE OCCLUSION

Advantages :

- Easy to arrange.
- More adaptable to the unusual jaw relation such as class II and class III relations, RRR, muscle incoordination (difficult to record CR)
- They eliminate horizontal forces, more damaging than vertical forces.
- Because the monoplane teeth occlude in more than one relationship, so centric relation developed to an area instead of a point.
- They accommodate better to the negative changes in the ridge height that occur with aging .

Disadvantages:

- No vertical component to aid in shearing during mastication.
- Patients may complain of lack of positive intercuspation position.
- Esthetically limited.
- Unstable denture in patient with steep condylar guidance.
- Occlude only in two dimensions, but the mandible has a 3D movement due to its condylar behavior.

Brudvik JS, Wormley JH. A method of developing monoplane occlusions. J Prosthet Dent 1968;19:573-80.
Jones PM. The monoplane occlusion for complete dentures. J Am Dent Assoc. 1972 Jul;85(1):94-100.

CONCLUSION

- There is strong support that the average denture patient, with good residual ridges and no neuromuscular problems, will function adequately with a properly fabricated complete denture regardless the occlusal scheme.
- There is neither strong support for or against bilateral balanced occlusal schemes as it relates to patient satisfaction, preference chewing ability.
- There is some support for increased alveolar bone loss with comp dentures that have a non-balanced occlusion.

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- Lang BR. Complete denture occlusion. Dent Clin N Am 2004;48:641-65.
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- Jones PM. The monoplane occlusion for complete dentures. J Am Dent Assoc. 1972 Jul;85(1):94-100.

THANK YOU.

TAKE HOME MESSAGE

- SUPPORT ,STABILITY AND RETENTION ARE VERY IMPORTANT FEATURES IN COMPLETE DENTURE FABRICATION THAT ENSURE THE BEST POSSIBLE TREATMENT FOR THE PATIENT .

CONCLUSION

- MANY OCCLUSAL SCHEMES HAVE BEEN PROPOSED OVER THE YEARS .MOST SCHEMES WHEN COREECTLY USED GIVES SATISFACTORY RESULTS ,IF THE PATIENT GETS BETTER FUNCTION,ESTHETICS AND COMFORT WITHOUT ANY ADVERSE CHANGES IN DENTURE FOUNDATION.

PROBABLE SAQS AND LAQS

- LAQ
- 1.DEFINE BALANCED OCCLUSION .WHAT ARE THE ADVANTAGES WITH DENTURES HAVING BALANCED OCCLUSION?
- 2.WRITE IN DETAIL ABOUT THE FACTORS OF BALANCED OCCLUSION?
- SAQ
- 1.COMPENSATORY CURVE IMPORTANCE
- 2.FACTORS DETERMINING NEUTROCENTRIC OCCLUSION