Stability In Complete Denture

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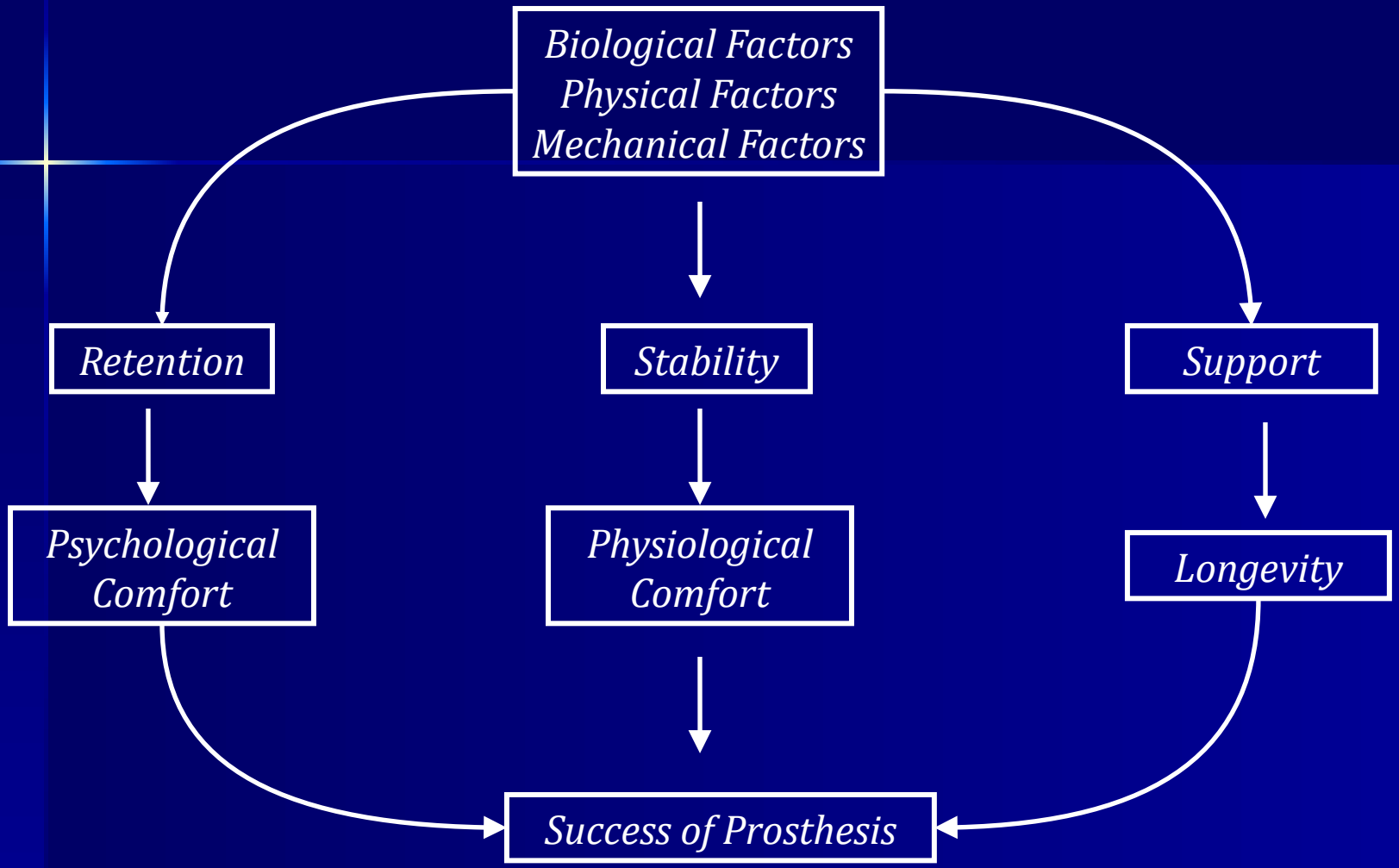
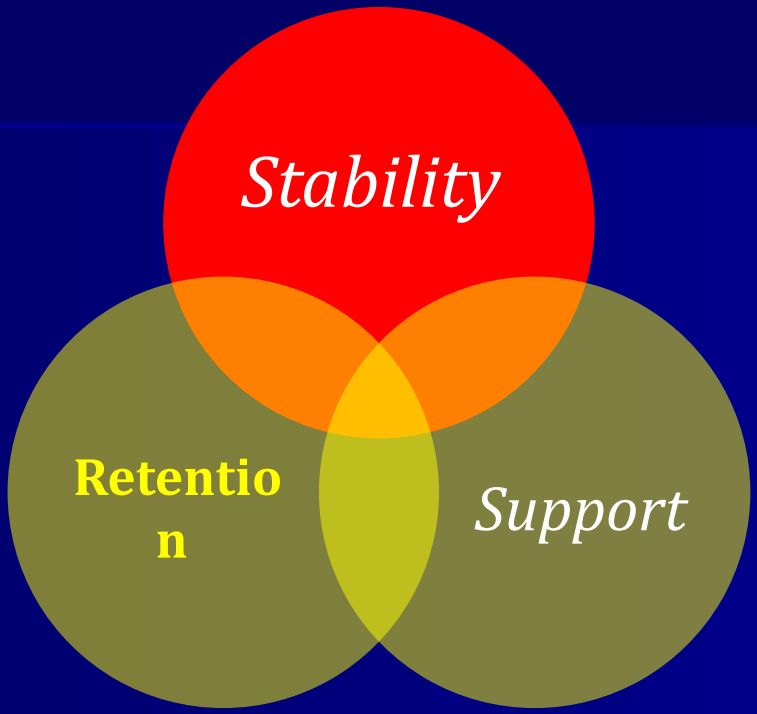
Introduction



Intertwined and interdependent phenomenon



(Jacobson , JPD 1983 , 49 ,1)

Definition:

1) That quality of maintaining a constant character or position in the presence of forces that threaten to disturb it; the quality of being stable; to stand or endure

2) The quality of a removable dental prosthesis to be firm, steady, or constant, to resist displacement by functional horizontal or rotational stresses.

3) Resistance to horizontal displacement of prosthesis.

- GPT8

Review of Literature

- **Lundquist (1959)** - *The nature of the buccinator muscle contraction was not able to adapt to changes in the contours of the denture base and hence the denture contours should be designed to harmonize with existing buccinator muscle function*

  JPD 1959,9: 44-51

- **Jooste CH, Thomas CJ.** *(1992)* - *The retromylohyoid extension has a stabilizing effect on complete mandibular dentures*.

  IJP 1992, 5: 34-38

- **Ohkubo C, Hosoi T.** *(1999) The weight of a well-fitting mandibular complete denture did not affect jaw movements and denture stability.*

JPD 1999;82:636-42

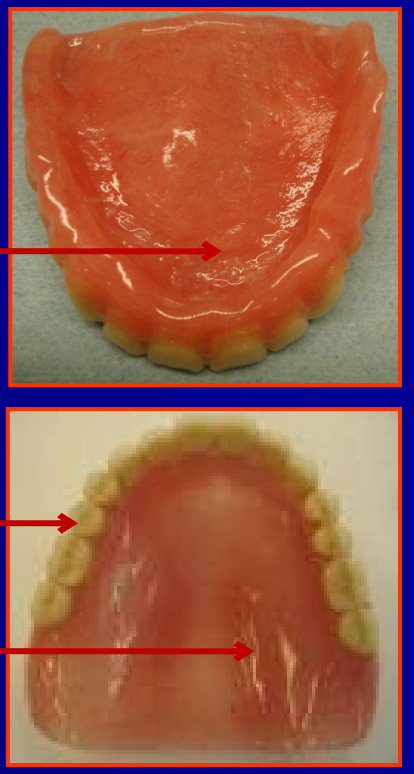
- *BRILL (1907)*

- *Factors of stability :*

1. *Maximum area of coverage*
2. *Intimacy of contact*
3. *Equalization of pressure*

FISH 1948 - *three principal factors to complete denture stability.*

- *The impression surface.*
- *The occlusal surface.*
- *The polished surface.*



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RELATIONSHIP OF THE DENTURE BASE TO THE UNDERLYING TISSUES:

- *Residual ridge anatomy.*
- *Denture base adaptation.*
- *The mandibular lingual flange.*

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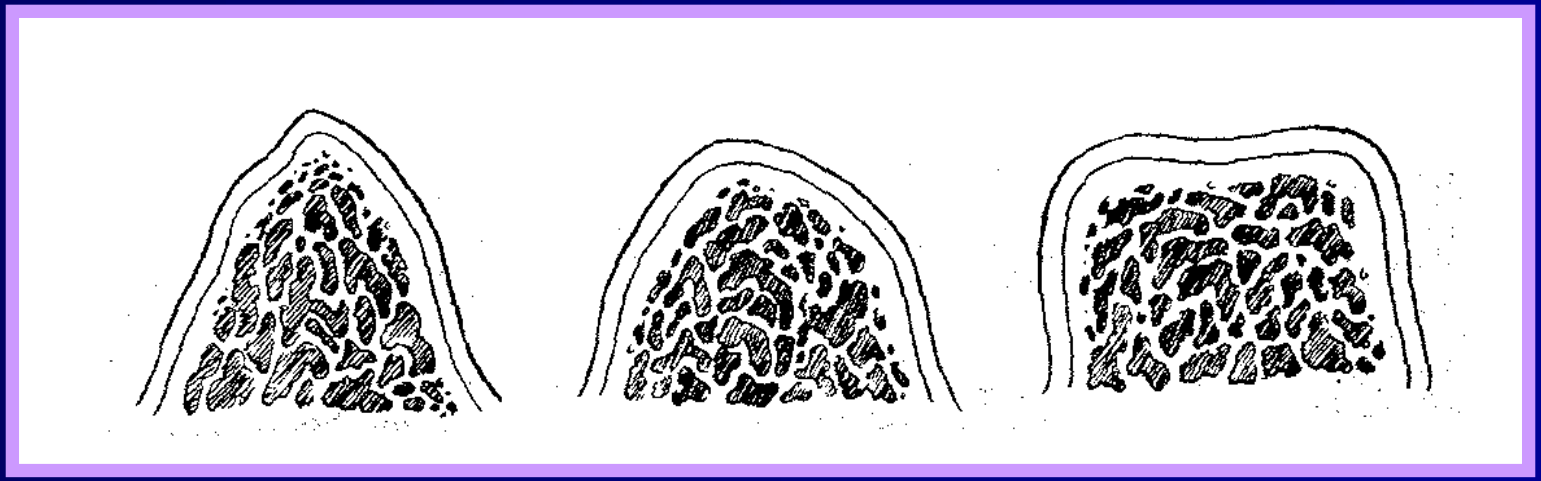
RESIDUAL RIDGE ANATOMY

- *Ridge Height*
- *Ridge Conformation*
- *The Arch Form*
- *Shape of the Palatal Vault*



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DENTURE BASE ADAPTATION:

- *Inflamed mucosa.*
- *Distorted or displaced tissues*
- *Hyperplastic tissue.*

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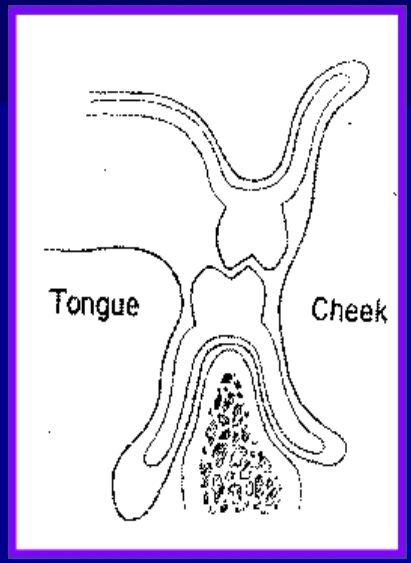
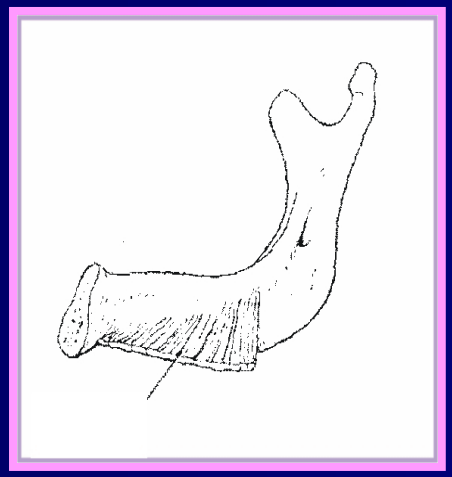
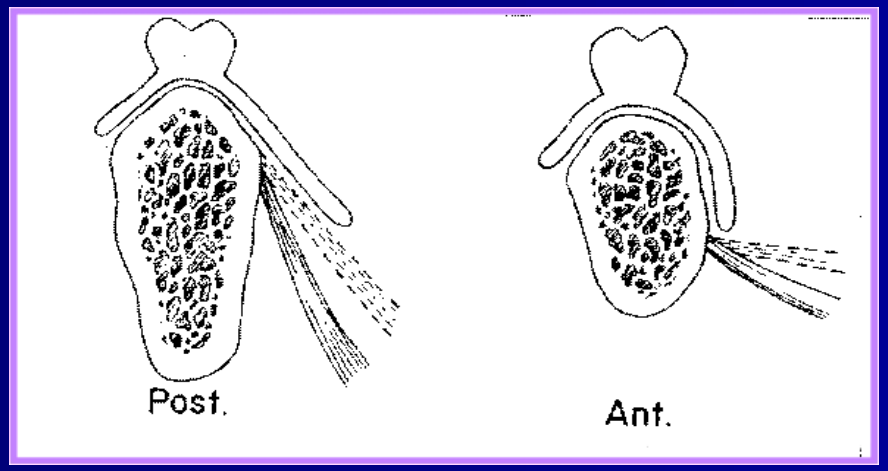
THE MANDIBULAR LINGUAL FLANGE :

- *At 90° to the occlusal plane.*
- *Effectively resists horizontal forces.*







Jacobson J. Prosthet. Dent. 1983 49: 165

RELATIONSHIP OF THE EXTERNAL SURFACE AND PERIPHERY TO THE SURROUNDING ORO–FACIAL MUSCULATURE:

It facilitate stability by

- *Permitting the action of certain groups of muscle without any interferences.*
- *Alteration in external contours lead to dynamic seating and stabilizing action*

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RELATIONSHIP OF THE EXTERNAL……

- *The external surface of the denture*
- *Influence of oro-facial musculature*
- *Modiolus and associated musculature*
- *The neutral zone*

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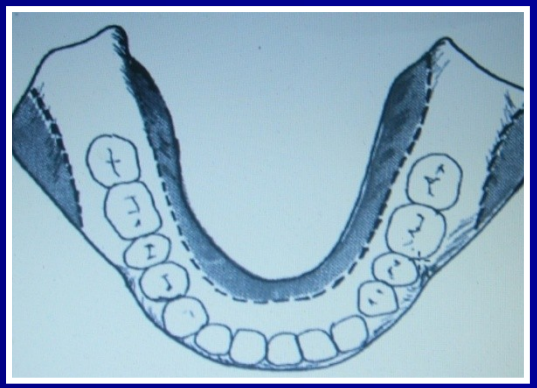
THE EXTERNAL SURFACE OF THE DENTURE :

- *The principal factor governing complete denture stability.*
- *Lingual and buccal borders of mandibular denture and the buccal borders of maxillary denture can be made concave*



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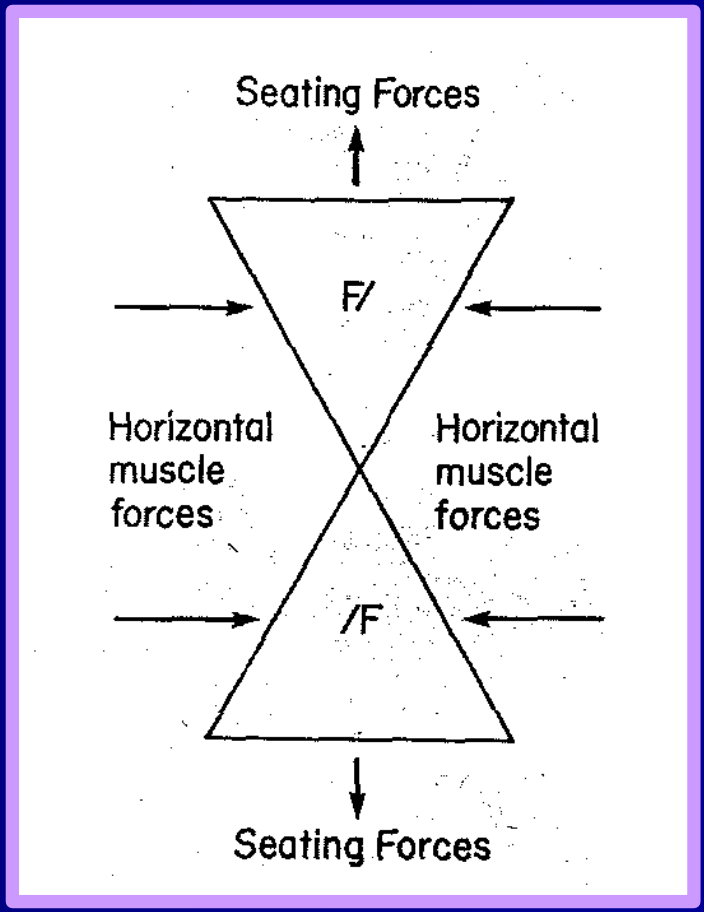
INFLUENCE OF ORO-FACIAL MUSCULATURE:

Basic geometric design

– Triangular

In frontal cross section



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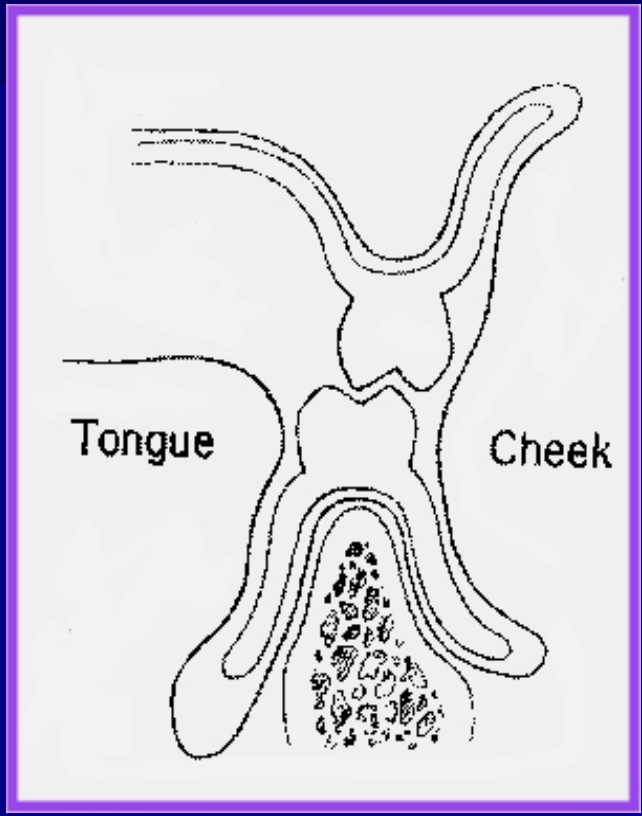
- *Seating action by Tongue - Lingual flange inclined medially*



Flanges → Concave → Positive Seating

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TONGUE

The tongue fills the floor of the mouth completely and lateral borders extend onto the occlusal surfaces of the mandibular teeth.

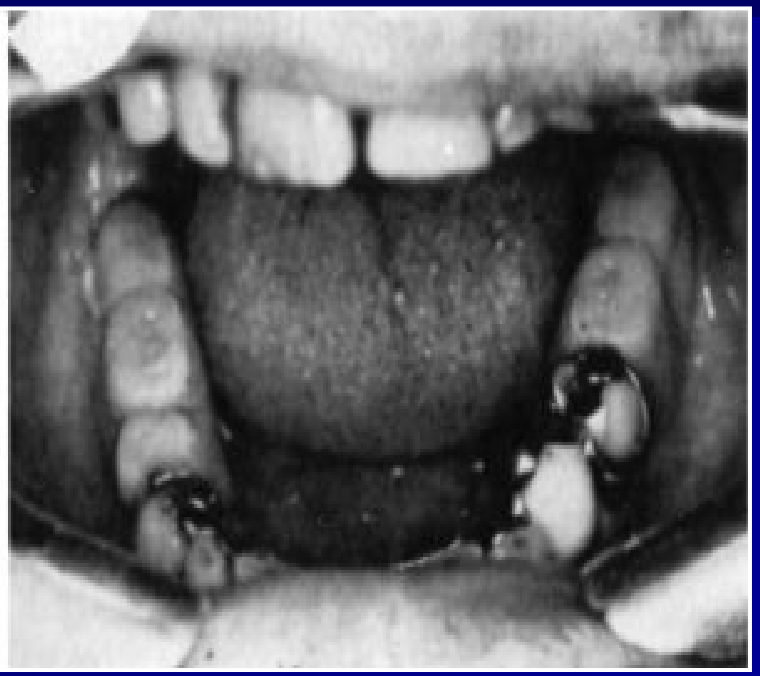
Normal Tongue position

Edentulous mouth *With natural teeth*

Wright, JPD 2004;92:509-18

Retracted tongue positions

Failure of the tongue to fill the floor of the mouth

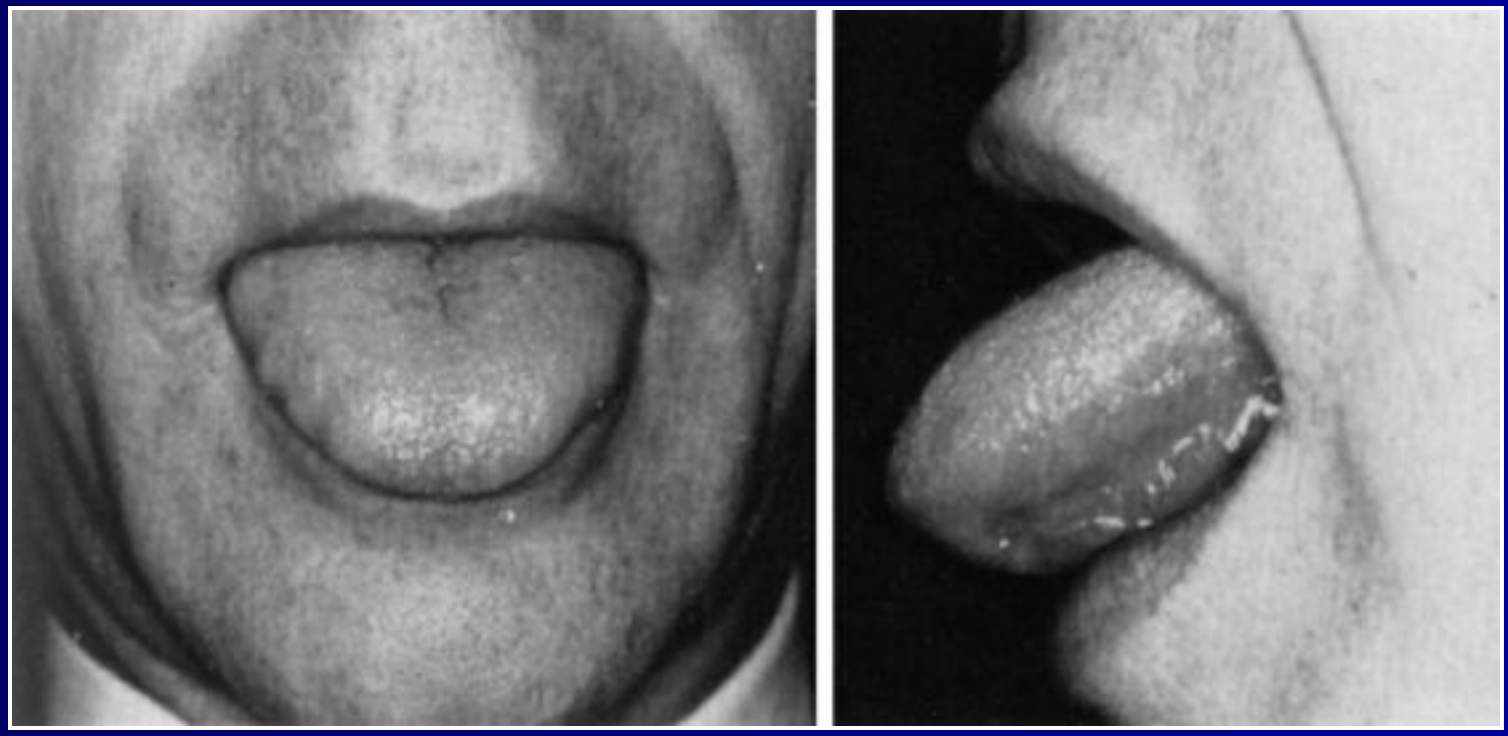


Lateral borders inside the mandibular posterior teeth

Wright, JPD 2004;92:509-18

Tongue exercise No. 1.

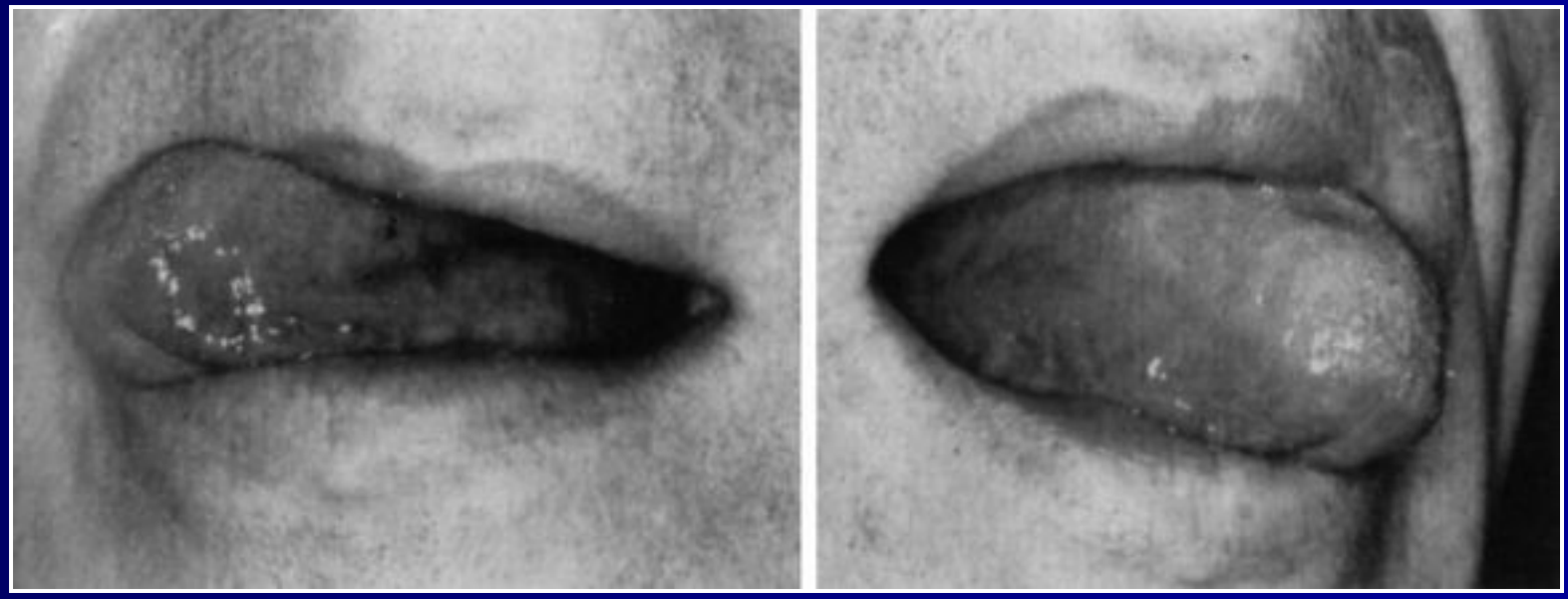
The tongue is thrust out and in rapidly.



Wright, JPD 2004;92:509-18

Tongue exercise No. 2.

The tongue is swung rapidly from side to side.

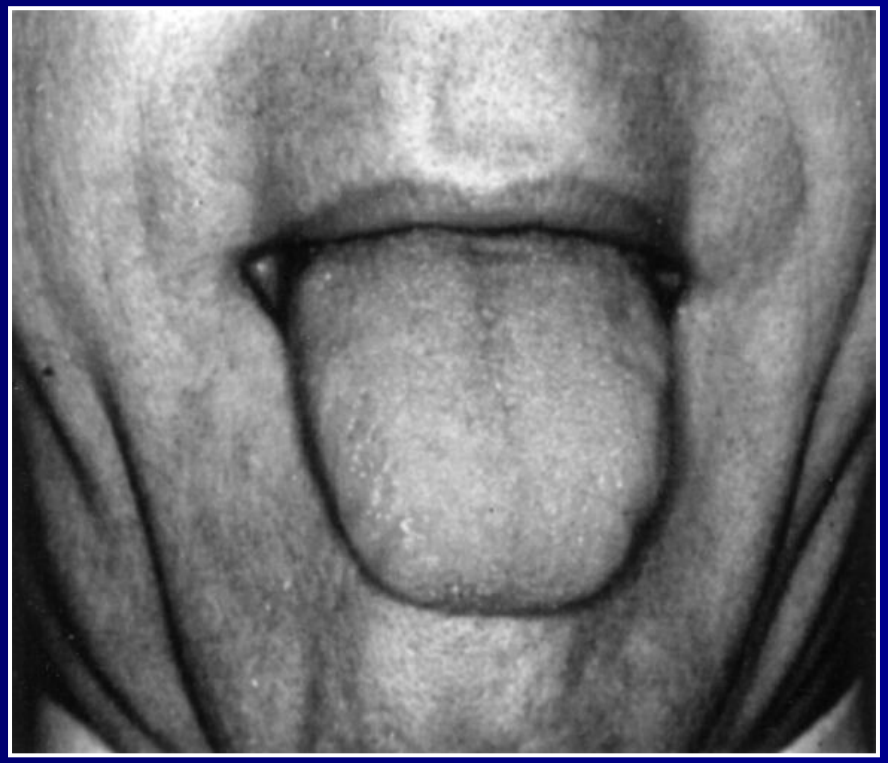


Wright, JPD 2004;92:509-18

Tongue exercise No. 3.

Trusting the tongue out to its most extended position

And pulling it back quickly



Wright, JPD 2004;92:509-18

Tongue exercise No. 4.

Raising the tongue to its highest position through articulation of 'eeyuh'

Wright, JPD 2004;92:509-18

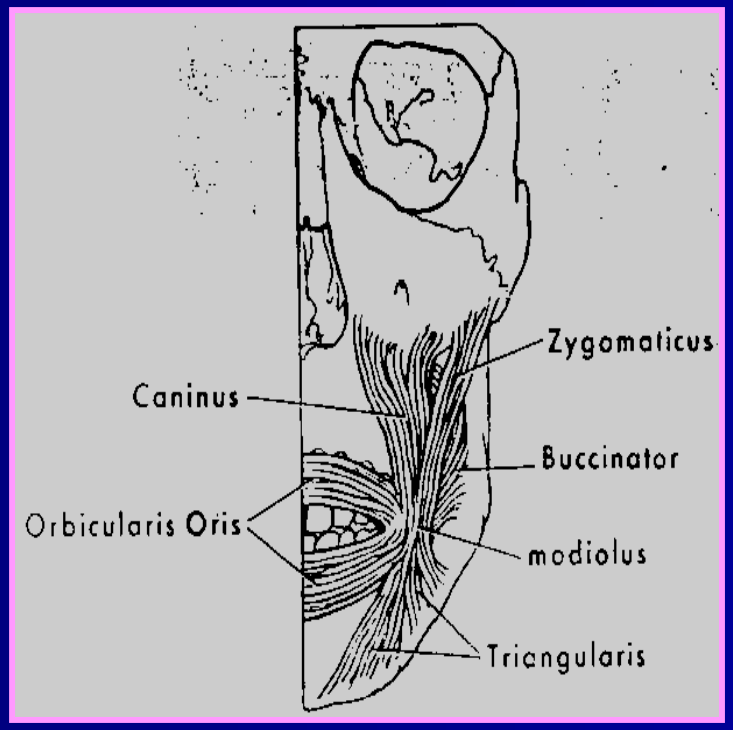
MODIOLUS AND THE ASSOCIATED MUSCULATURE:

- *A conical prominence present near the corner of the mouth*

- *Intersection of several muscles of the cheeks and lips.*

These include

- *Orbicularis oris,*
- *Triangularis,*
- *Caninus*
- *Buccinator,*
- *Risorius and*
- *Zygomaticus major.*



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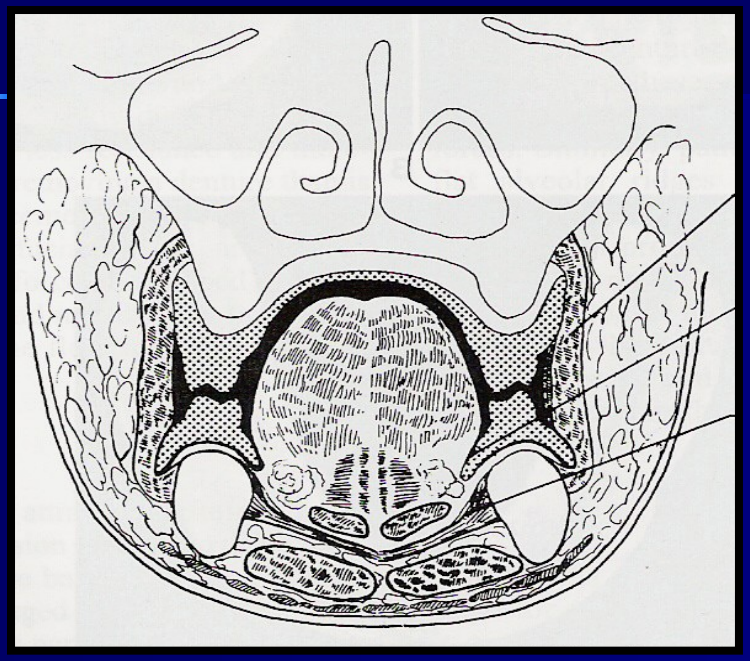
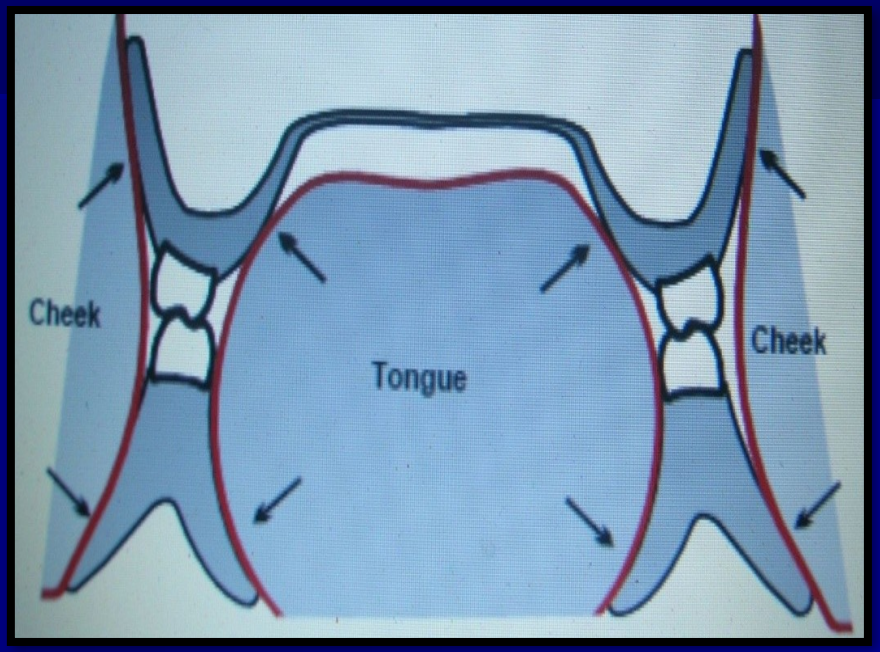
- ***THE NEUTRAL ZONE:***





"The most common cause of instability of lower denture is violation of the neutral zone by incorrect arrangement of teeth or incorrect form of labial and lingual flanges of the polished surface "

RELATIONSHIP OF OPPOSING OCCLUSAL SURFACES:

1. THEORIES OF OCCLUSION:

- *Balanced occlusion*
- *Lingualized occlusion*

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- *Balanced occlusion*

It is the bilateral, simultaneous, anterior and posterior occlusal contact of teeth in centric and eccentric position.

This provides

- *Multiple point of contact*
- *Reduces localized stress concentration*
- *Distributes functional occlusal forces thus ensuring stability of prosthesis*

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- *Lingualized occlusion*

Provide both a limited range of excursive balance and a directing of forces to lingual side of the lower ridge during working side contacts.

Minimize horizontal stress and enhance denture stability by controlling the leverage induced by eccentric tooth contacts.

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2. SELECTION OF ARTIFICIAL TEETH:

- *The chosen occlusal scheme*
- *Quality of the residual ridge i.e. Height and conformation.*

Weinberg, *JPD 1958:8:398-405*

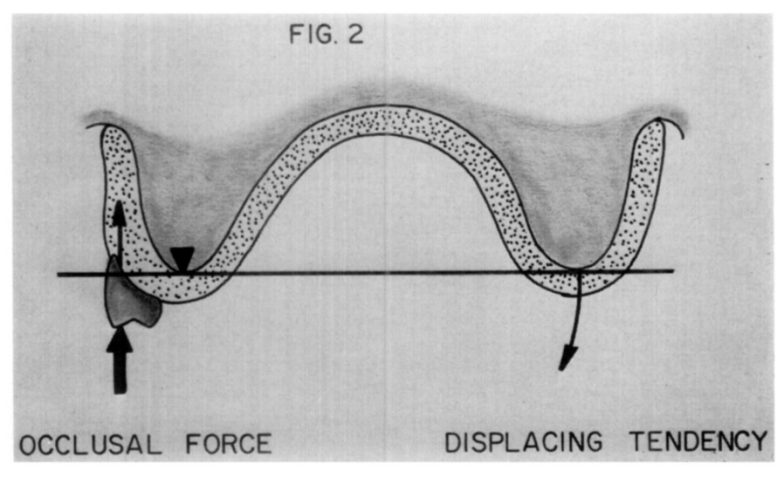
3. THE TOOTH POSITION

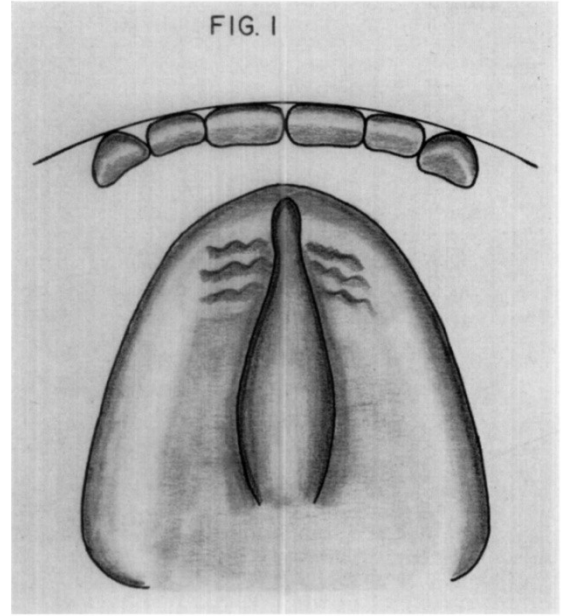
- *The wider and larger the ridge and closer the teeth to the ridge to enhance the lever balance.*
- *Wider the ridge, narrower the teeth bucco-lingually greater the balance and vice-versa.*
- *More centered the forces of occlusion antero-posteriorly greater the stability of the base.*

Weinberg, *JPD 1958:8:398-405*

Maxillary anterior tooth position

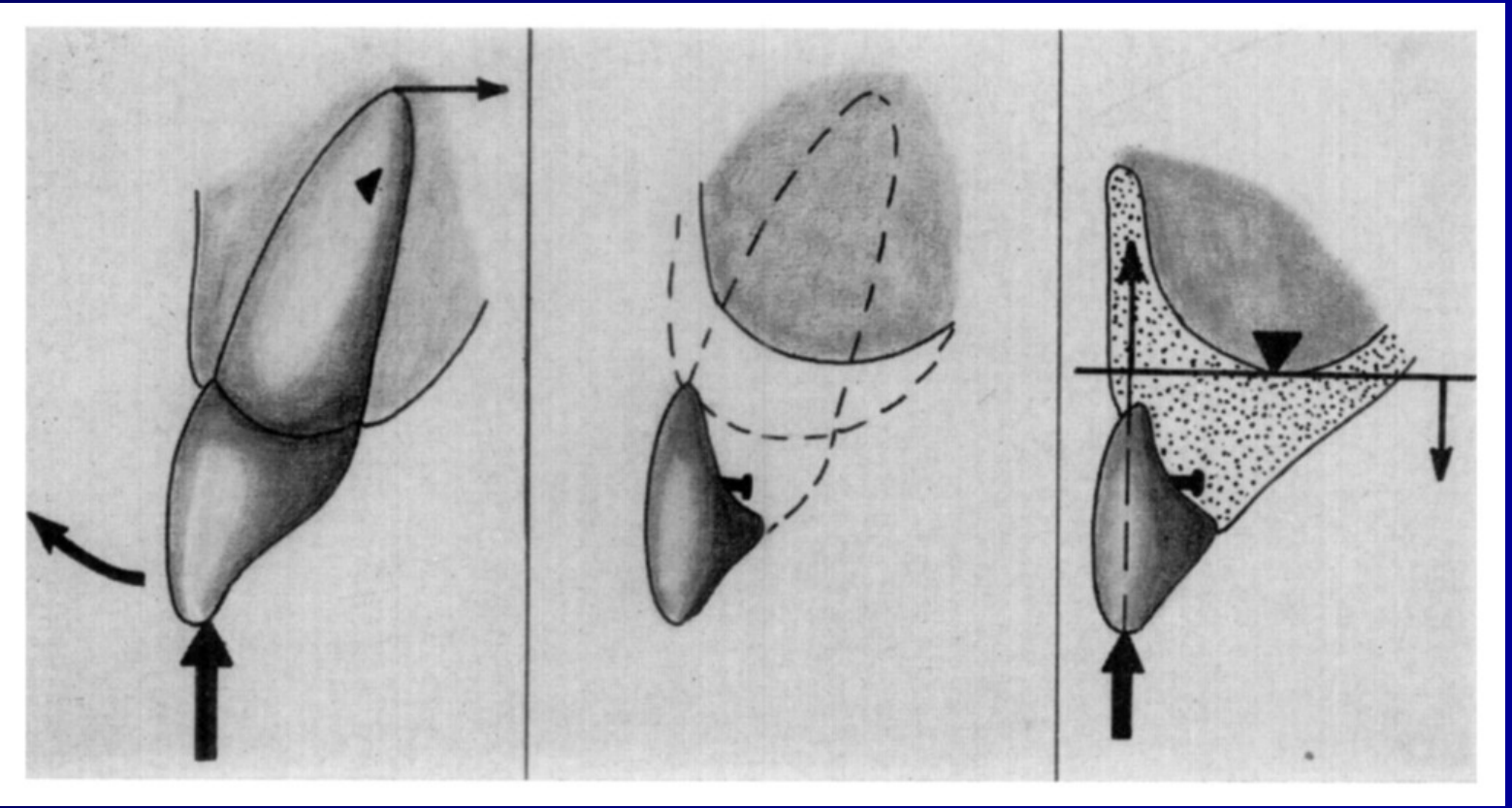
- *Arch curvature should correspond to curvature of alveolar ridge, facial contour and maxillary lip position.*
- *Square Arch Position*





Weinberg, *JPD 1958:8:398-405*

Normal Anterior Alveolar Resorption



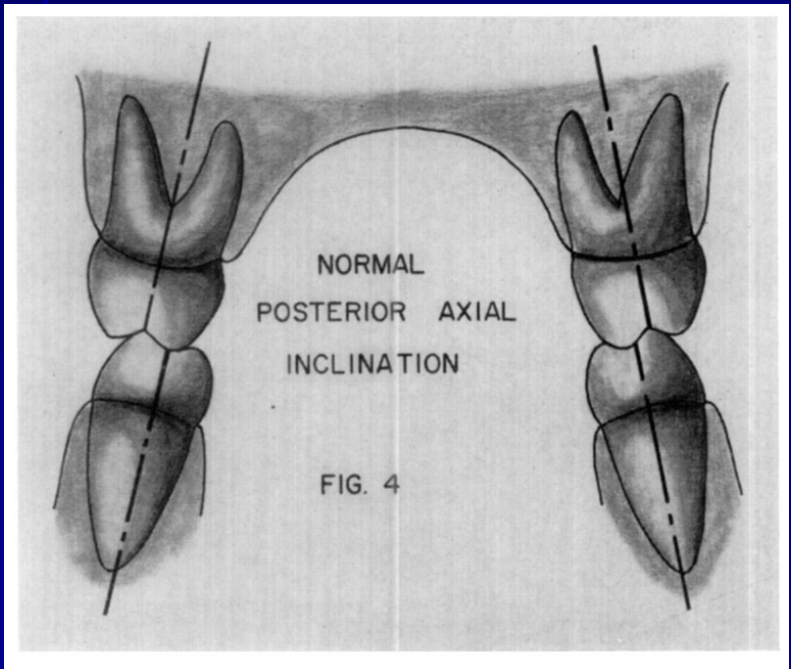
Weinberg, *JPD 1958:8:398-405*

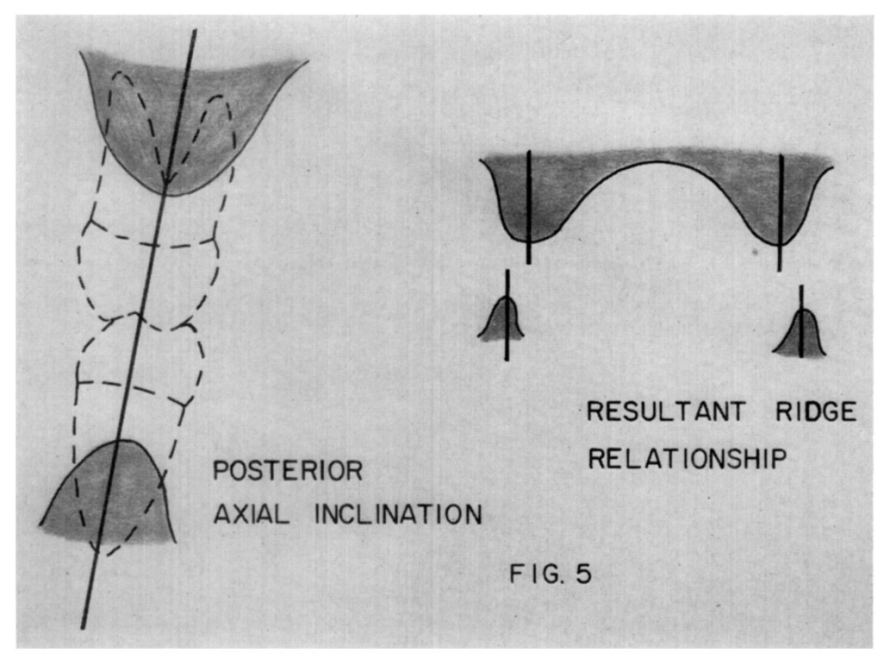
- *Mandibular Anterior Tooth Position.-*

Must Conform To The Maxillary Arch.

Weinberg, *JPD 1958:8:398-405*

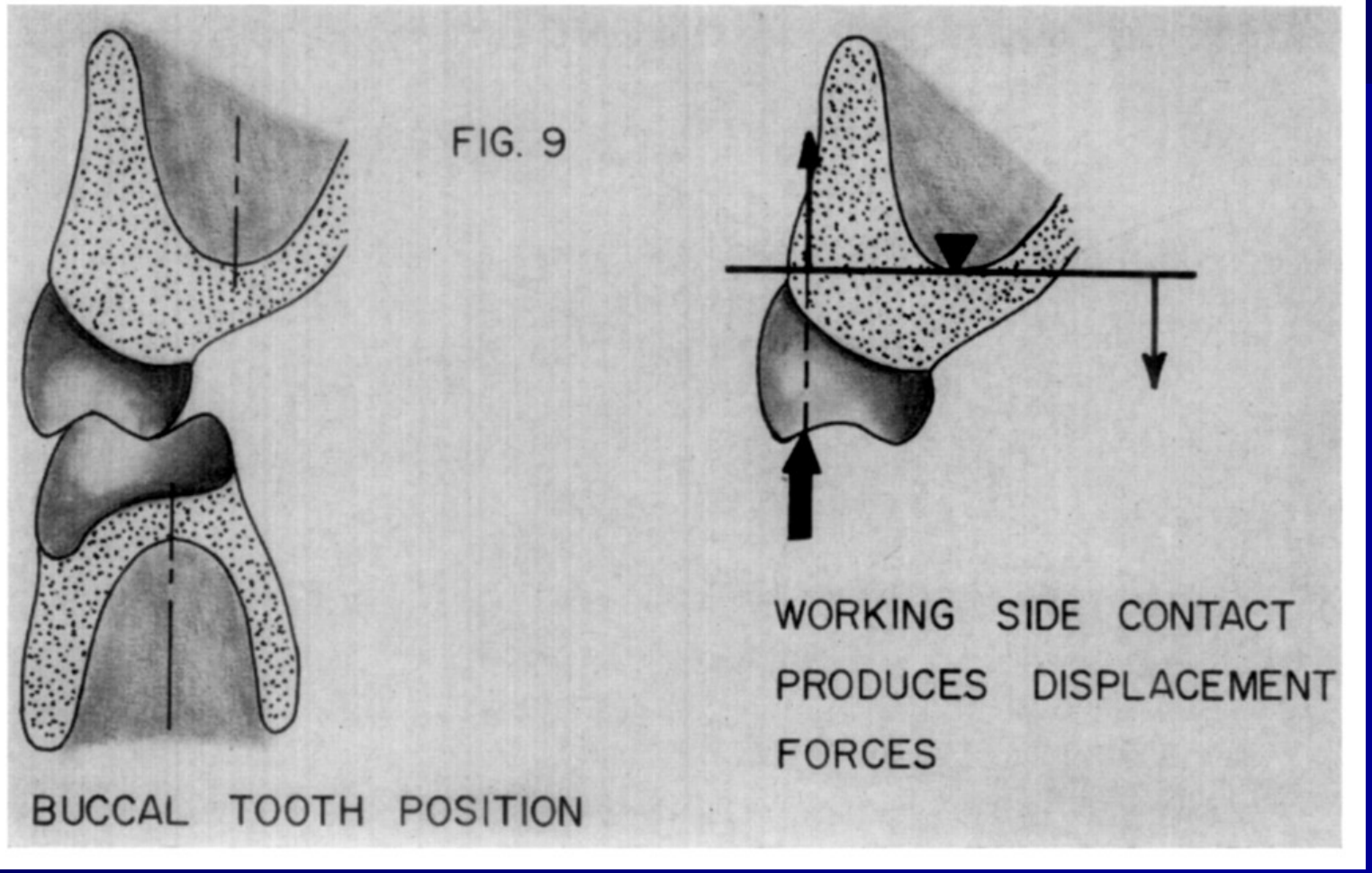
- *POSTERIOR TEETH POSITIONING*





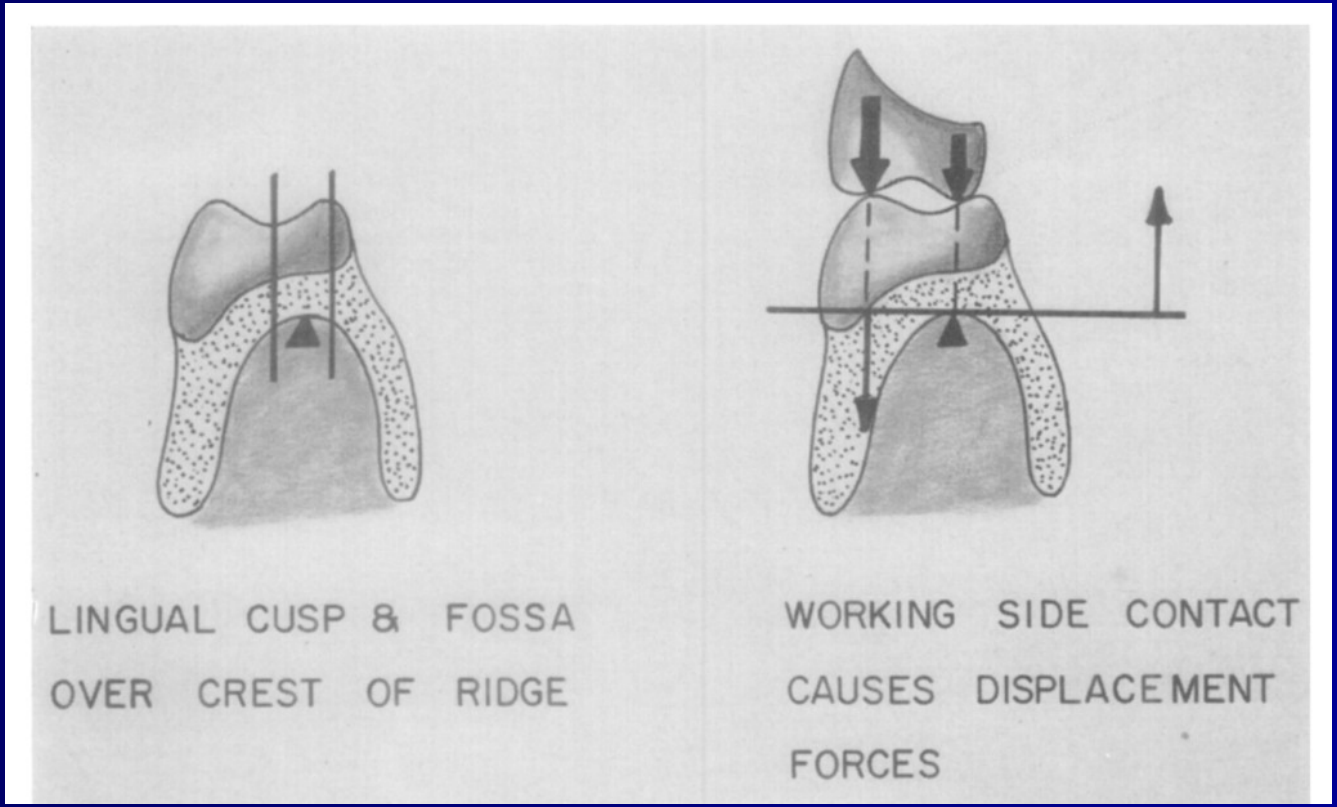
Weinberg, *JPD 1958:8:398-405*

- *Maxillary*



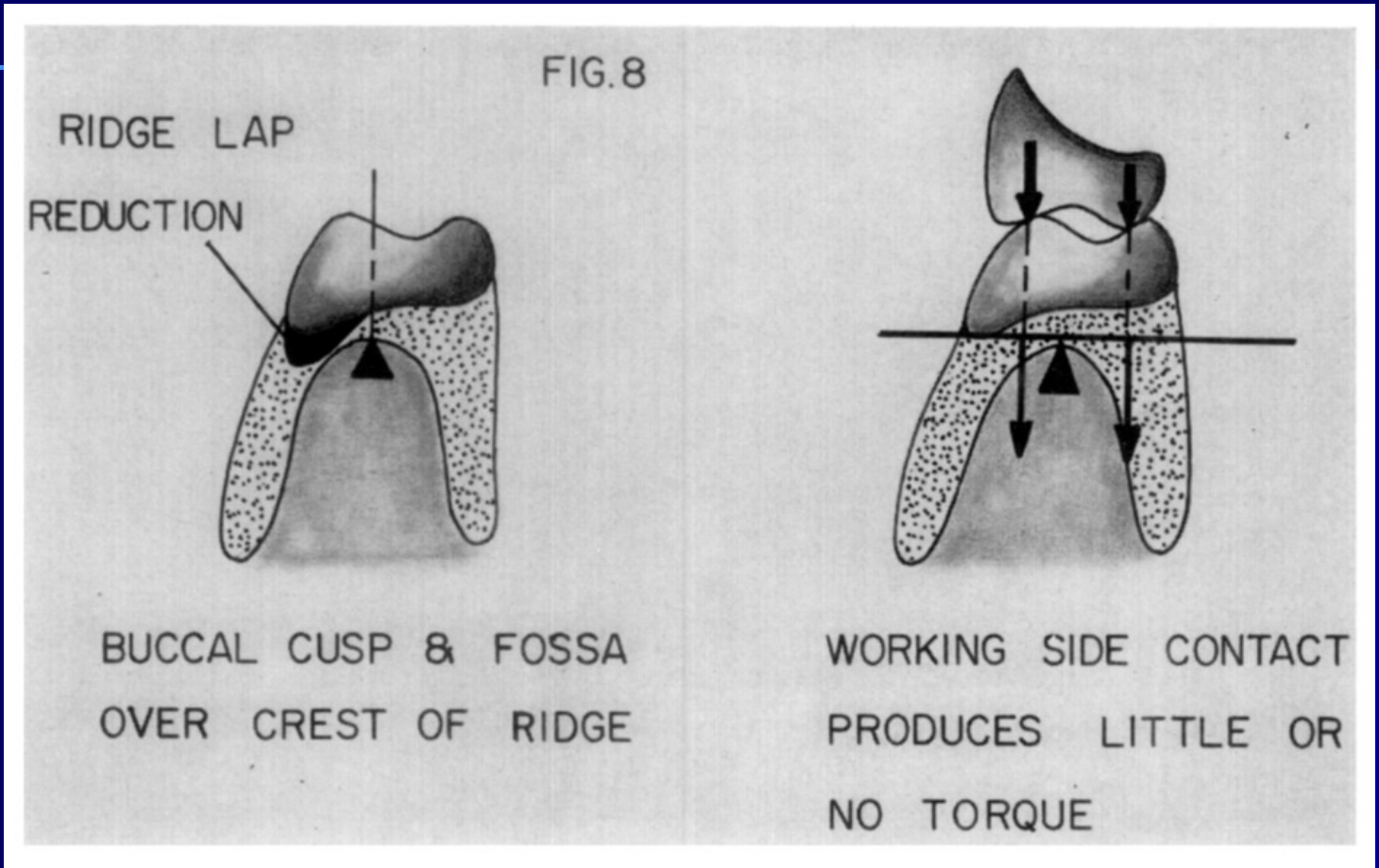
Weinberg, *JPD 1958:8:398-405*

- *Posterior mandibular tooth position*



Weinberg, *JPD 1958:8:398-405*

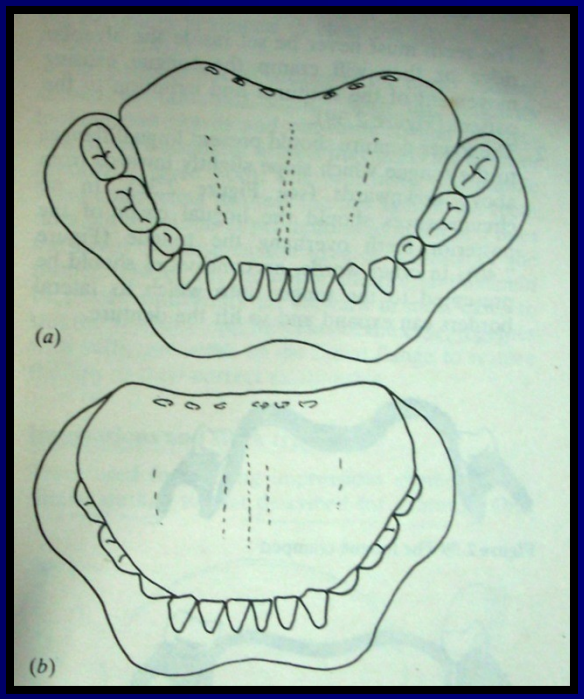
- *Correct tooth position*



Weinberg, *JPD 1958:8:398-405*

- **OCCLUSAL PLANE :**

- *Play significant role in denture stability*



Mandibular occlusal plane set too high ⟶

Can result in Reduced Stability

RIDGE RELATIONSHIPS :

- *Offset ridge relation*
- *Severe posterior cross bite*
- *Class III ridge relation*

Checking stability of the denture :

CONCLUSION

The factors of stability in complete denture involve the tissue, occlusal and polished surfaces of the denture. Care must be taken in the development of all three of these surfaces to ensure optimal stability of the final prosthesis.

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Thank You