

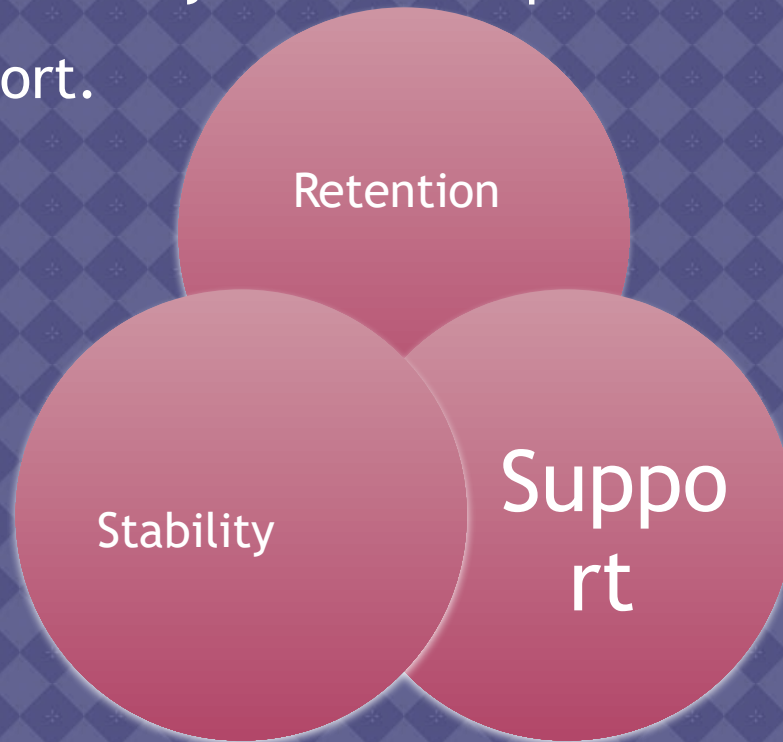
SUPPORT IN COMPLETE DENTURE

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- Snowshoe principle
- Nature of supporting tissue
- Anatomic considerations of denture-bearing area
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INTRODUCTION

❖ Incorporation of certain biological and physical factors are necessary to ensure optimal complete denture support.



COMPLETE DENTURE SUPPORT IS

- ✓ Resistance to vertical movement of the denture base towards tissue.
- ✓ Counteracts forces towards ridges.
- ✓ Maintain established - occlusal relation

DEFINITION

- ◉ Resistance to the vertical movement of the denture base toward the ridge.
- ◉ Relationship of the denture base and the underlying tissue surface under varying degrees and types of function.

GPT 8

According to Boucher

- ◉ The resistance to the vertical forces of mastication, occlusal forces and other forces applied in a direction towards the denture bearing area.

Vertical
Masticatory
forces



DENTURE
BASE

UNDERLYING
TISSUES



Support

MECHANISMS OF COMPLETE DENTURE SUPPORT

Basic problem lies in treatment of edentulous patients???



Entire support area of an arch of teeth - 45 cm^2

Maxillary - 22.96 cm^2

Mandibular - 12.25 cm^2

TYPES OF SUPPORT

- Considered in two point of view
- ✓ 1. Dentures should conform to the underlying tissues.
- ✓ 2. The denture should maintain this contacts for a period of time.

SUPPORT IS ACHIEVED

- Through impression procedures
- Directing occlusal forces towards resistant tissues

FACTORS AFFECTING SUPPORT

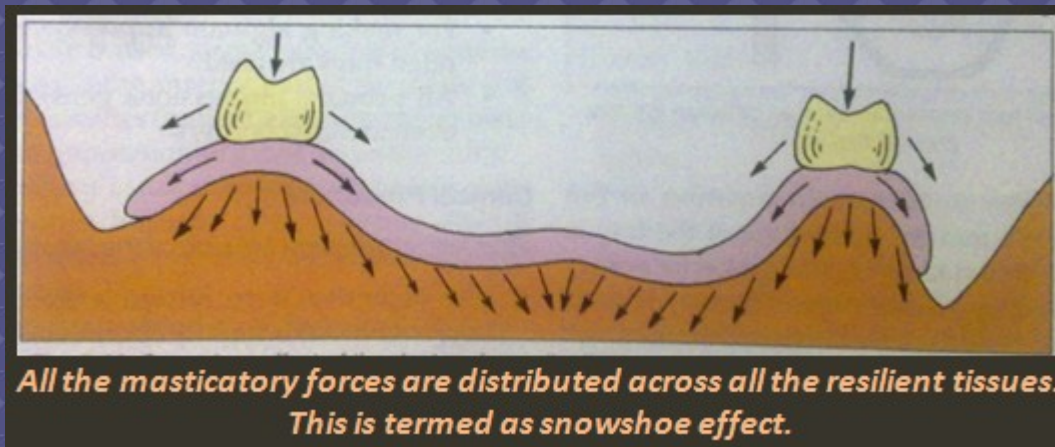
1. Contour and quality of the residual ridge .
2. Extent of residual ridge coverage by denture base.
3. Type and accuracy of the impression registration .
4. Total occlusal load applied.

EFFECTIVE SUPPORT IS REALIZED WHEN

- Selective loading of tissues resistant to resorption during function.
- Tissues capable of resisting vertical displacement, make firm contact with denture base.
- Compensate for varying tissue resiliency for uniform denture base movement.

SNOWSHOE PRINCIPLE

- ❖ Broader denture bearing area decreases the stress per unit area under the denture base.
- ❖ Gives a constant occlusal force, decreases tissue displacement, reduces denture base movement



NATURE OF SUPPORTING TISSUES

- Soft tissues
 - Firmly bound to cortex
 - Covered by keratinized mucosa
 - Resilient submucosa

HARD TISSUES

- Cortical bone
- Regions of muscle attachments

- Minimizing the pressure in most susceptible area and directing the forces towards relatively resistant to resorption can help to maintain healthy residual ridges .

BONE FACTOR

- Intrinsic bone factor
- Related to local anatomic and physiologic variation within and between individuals.

LOCAL RESPONDS TO FORCE BY REMODELING WOLFF'S LAW

Bone models and remodels in response to the mechanical stresses it experiences so as to produce a minimal structure change that is 'adapted' to its applied stresses.

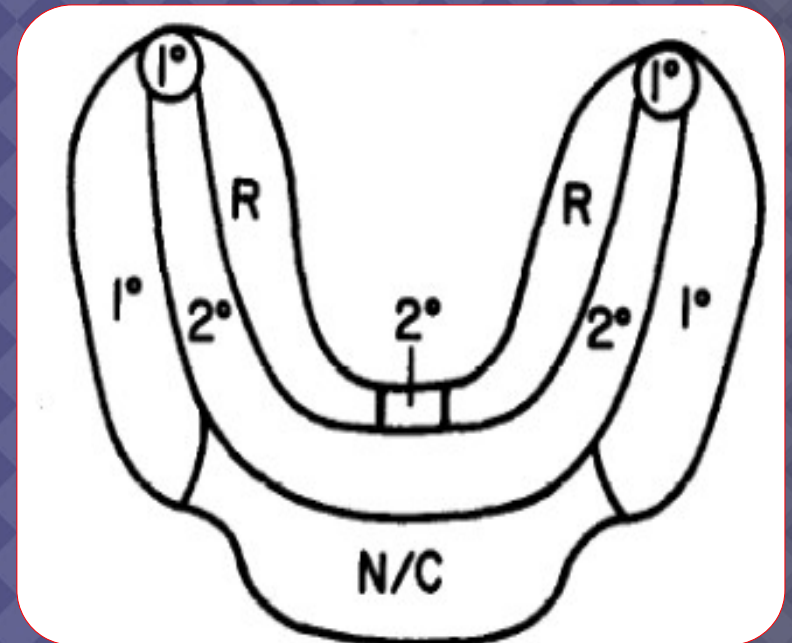
- ✓ Pressure tension concept:
pressure stimulates resorption ; tension maintains the integrity or deposition.
- ✓ Cortical bone more resistant to resorption.
- ✓ Muscle fiber attachments ensure tension on bone. This minimizes resorptive changes.

ANATOMIC CONSIDERATION OF THE DENTURE BEARING AREA

- ◉ AS EDWARDS & BOUCHER NOTED;
- ◉ “Since the success of the complete denture depends largely on the relation of the dentures to anatomic structures which support and limit them, familiarity with the location and character of these structures is essential.”

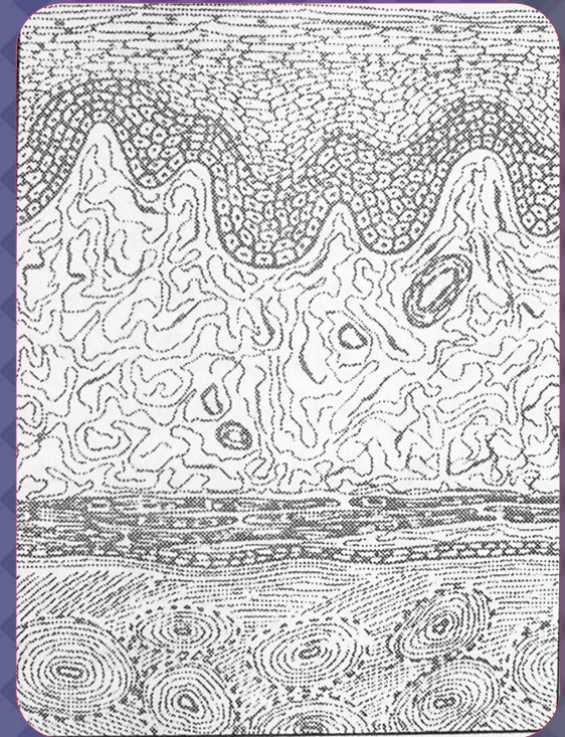
MANDIBULAR ANATOMIC CONSIDERATION

- Mandibular
 - Primary stress bearing areas
 - Buccal shelf
 - Pear shaped pad
 - Secondary
 - Ridge crest
 - Remaining region
 - Not useful for support



Buccal shelf

- ✓ Cortical bone.
- ✓ Lies at right angles to vertical occlusal forces

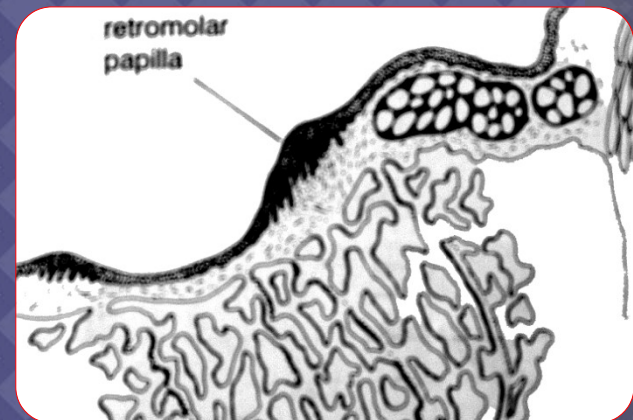
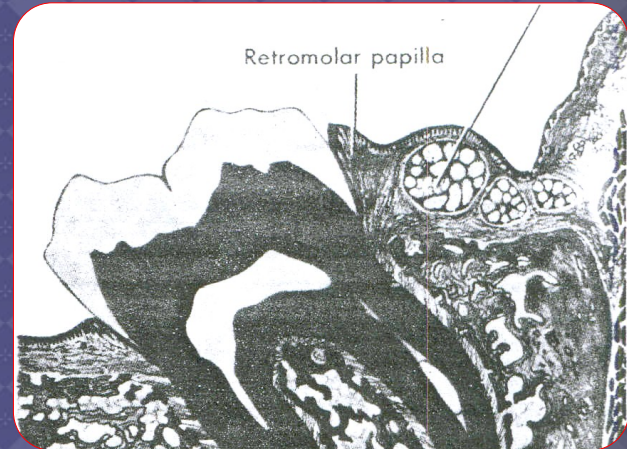


JPD 1983;49;306.
A.R.Tencate; Oral histology development structures and function.

PRIMARY STRESS BEARING AREA

Pear shaped pad

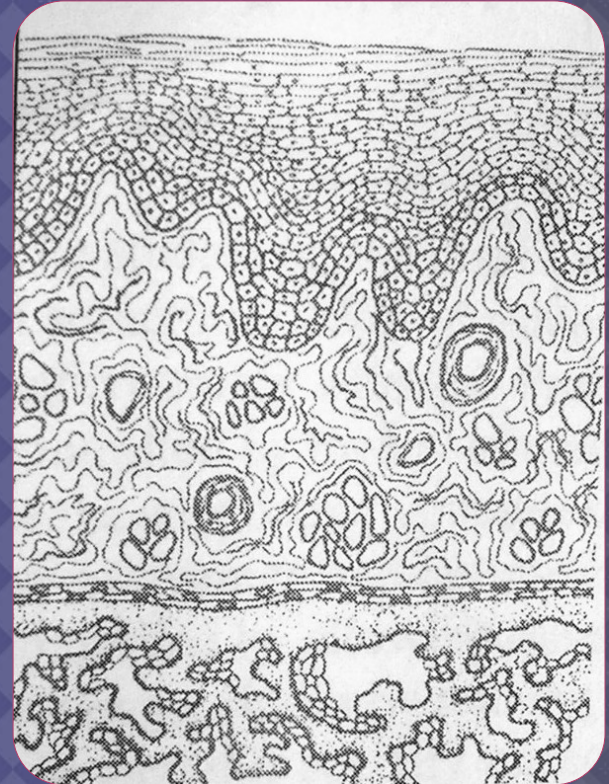
- ✓ Distal extent of keratinized masticatory mucosa
- ✓ Formed by scarring of extracted 3rd molar and its retromolar papilla.
- ✓ Denture short of this region rapid resorption - settling of denture base.



JPD 1983;49;306.

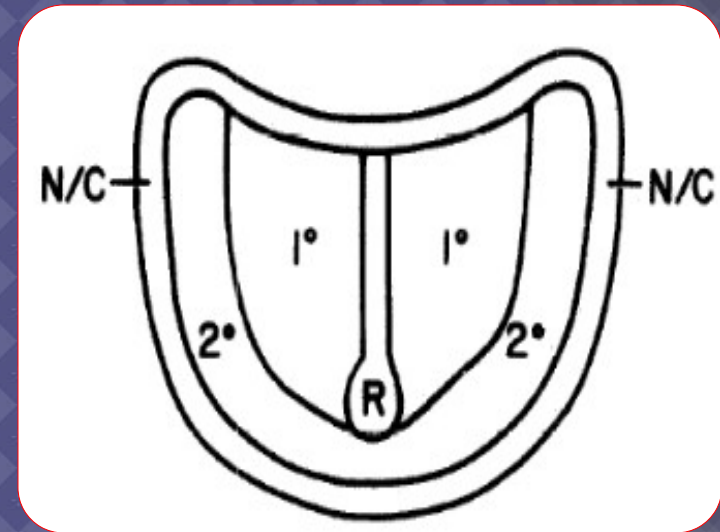
SECONDARY STRESS BEARING AREA

- Ridge crest
 - Cancellous bone
 - Less keratinized alveolar mucosa



MAXILLARY ANATOMIC CONSIDERATION

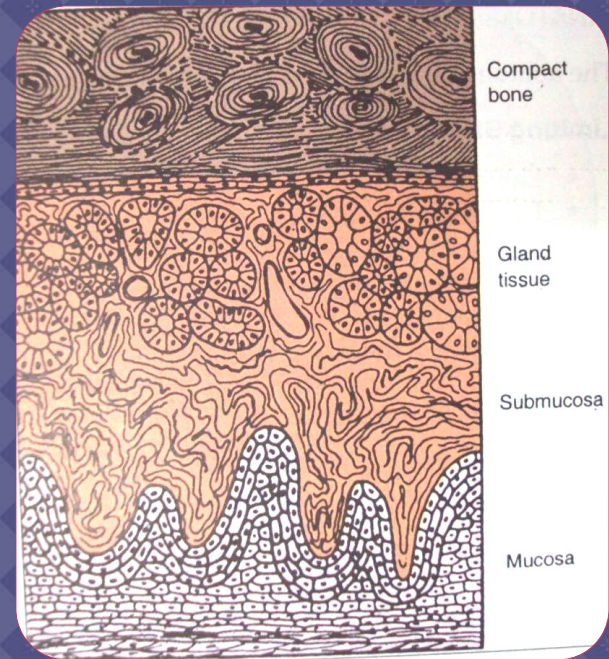
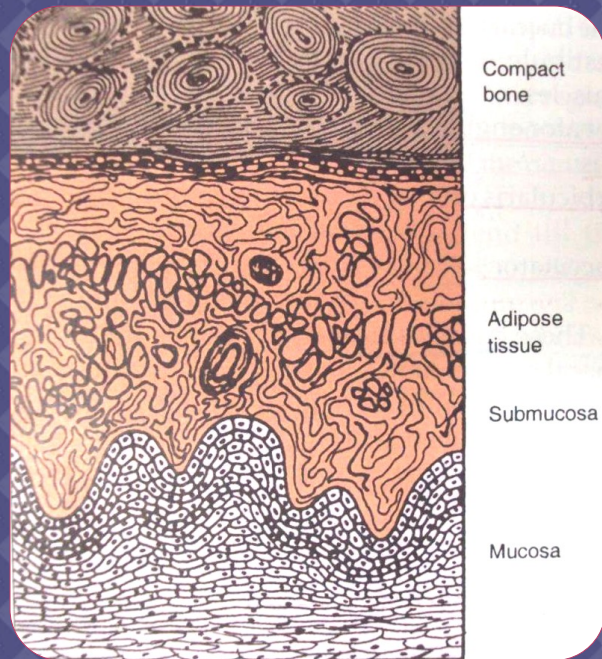
- Maxillary
 - Primary stress bearing areas
 - Horizontal portion of hard palate
 - Secondary stress bearing area
 - Crest of ridge
 - Remaining portion
 - Not contributory



PRIMARY STRESS BEARING AREA

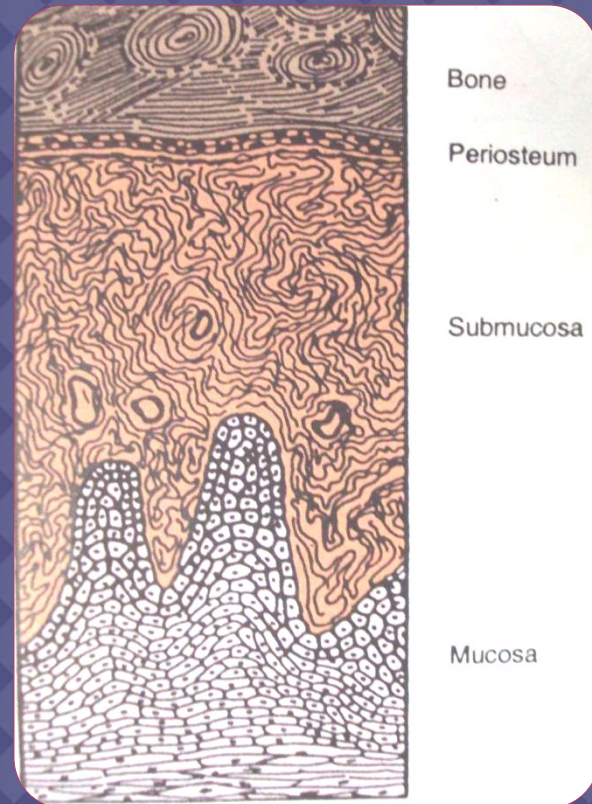
Horizontal portion of hard palate

- Epithelium keratinized
- Submucosa thick and resilient
- Bone compact in nature



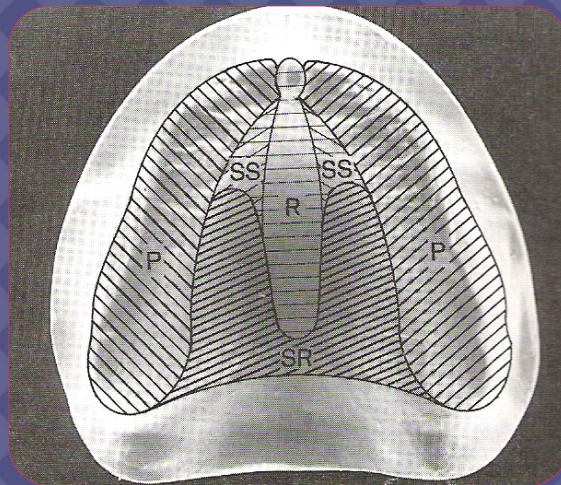
SECONDARY STRESS BEARING AREA

- Crest of ridge
- ✓ The thick submucosal layer,
 - ✓ keratinized,
 - ✓ Cancellous bone

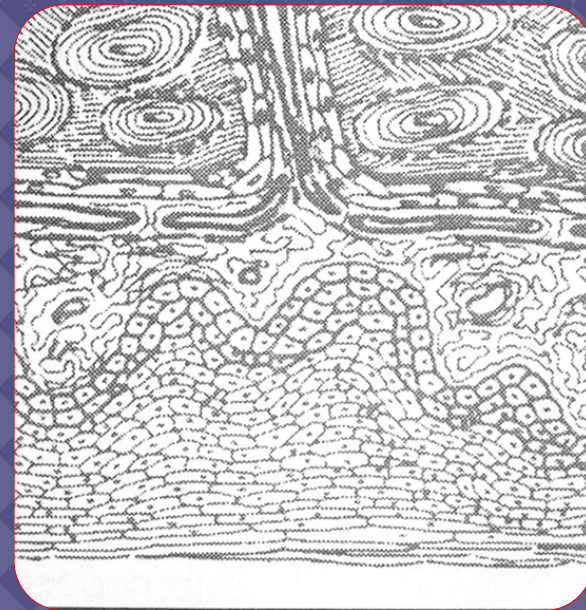
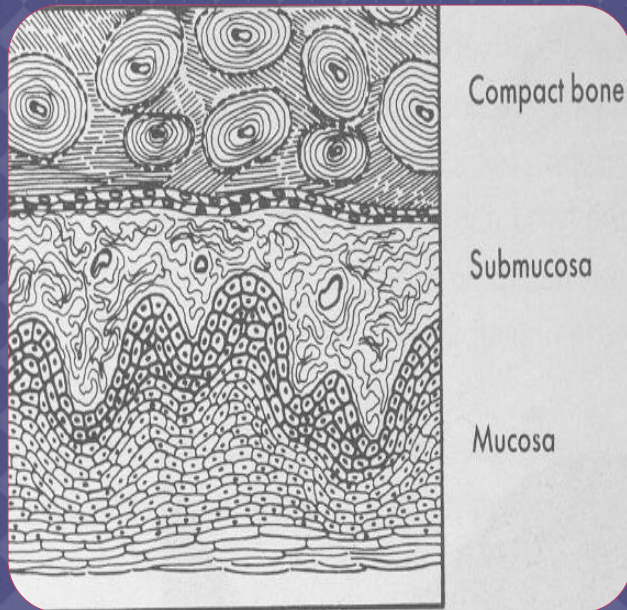


ANATOMIC CONSIDERATION

- Relief area
 - Tissues susceptible to resorption
 - Thin mucosa over hard bone
 - Mucosa overlying neurovascular bundles



- Midpalatine suture and incisive papilla
- Submucosa is extremely thin and non resilient



PRACTICAL CONSIDERATION

- ✓ Principle of impression making - maximal extension of denture bearing area
- ✓ Tissues vary in their ability to tolerate pressure and transmit it according to their anatomic location and histologic make up.

- ✓ Desirable impression technique - mild displacement of more resilient tissues
- ✓ Equalized pressure distribution minimizes localized pressure concentration which otherwise would lead to:
 - Pressure induced resorption
 - Mucosal irritation
 - Base instability

SUMMARY

- ❖ Dentist must base their technique on understanding the biologic aspects of relationship between denture base and supporting tissue.
- ❖ Anatomic regions providing primary support should make positive contact with denture base under functional loading .
- ❖ Areas unable to tolerate stress should be relieved of excessive contact with denture base.

CONCLUSION

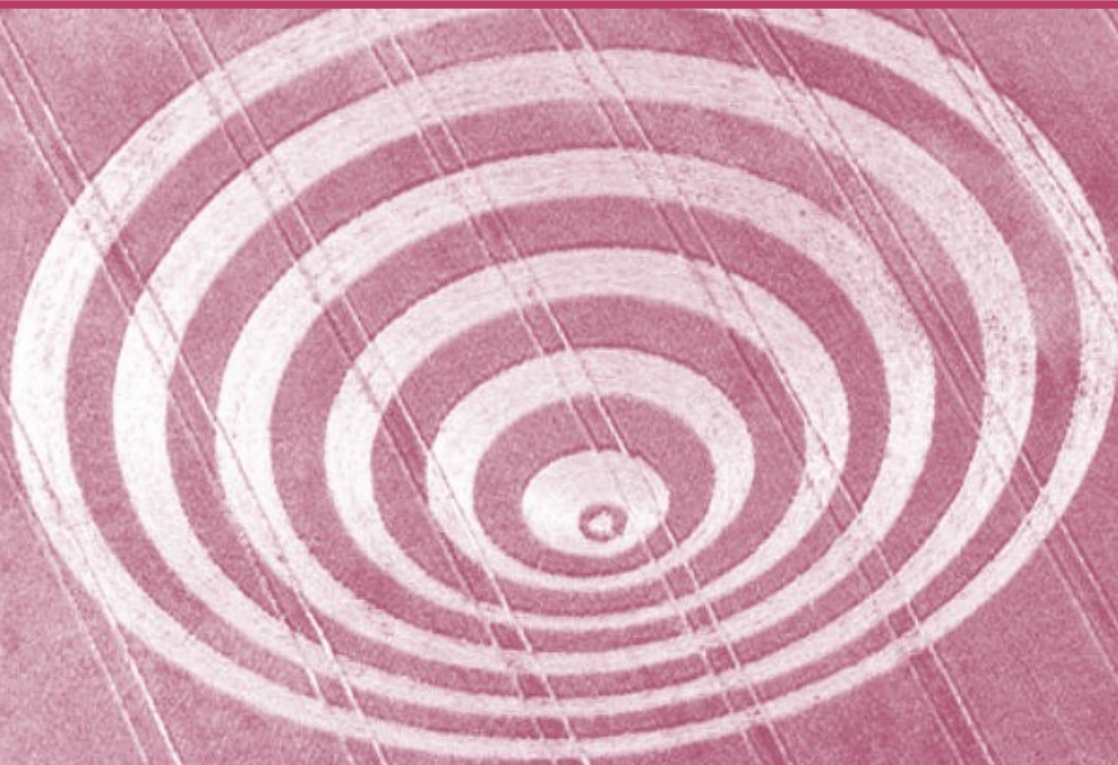
- Impression techniques , materials and associated procedures should be selected to effect the relationship of the denture base to the underlying tissue that will promote effective and physiologic support for complete dentures.

REFERENCES

- 1.A.R.Tencate;Oral histology development structures and function. 4th edition.
- 2.Bouchers ; Prosthodontic treatment for edentulous patients. 9th & 11th edition.
- 3.Claud.M.Fraleign -Improvement of tissues for the support of complete dentures.JPD 1959;9;746.
- 4.Charles M Heartwell ; syllabus of complete dentures.5th edition.

5. Donald .E.Van. Scotter,- The nature of supporting tissue for complete dentures. JPD 1965;15;285.
6. Frank.R.P-Analysis of pressure produced during maxillary impression procedures.JPD 1969 22:400
7. C. P. Oven ,Fundamental of removable partial denture.
8. M.M.Devan -Basic principles for impression making
JPD;1952;2;26.
9. T.E.JACOBSON."A contemporary review of the factors involved in complete denture part 111; support ; JPD 1983;49;306.

THANK YOU



REVIEW OF LITERATURE

- FRANK, conducted a study to determine the effect of tray modifications & selection of impression materials on pressures exerted on the denture supporting tissues .
- ❖ Conclusion:
- More pressures were measured at the crest of the ridge than on the palate when no relief was used.
- Use of escape vents or relief was equally effective in decreasing pressures & equalizing the pressures on the ridge crest ,palatal area.

- bone changes its external shape and internal (cancellous) architecture in response to stresses acting on it.
- bone models and remodels in response to the mechanical stresses it experiences so as to produce a minimal-weight structure that is 'adapted' to its applied stresses.