RETENTION & STABILITY

Dr. Mostafa Elsayed
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1-RETENTION

The quality by which the denture resists the tissue away forces.
Retention

Resistance to movement of the denture away from its tissue foundation (resistance of a denture to dislodgment)
RETENTION, STABILITY, AND SUPPORT ARE IMPORTANT TO SUCCESS.
The Factors Governing Complete Denture Retention
Retention

Mechanical factors
- Tissue undercuts
- Implant and attachment
- Magnets, spring and etc.

Physical factors
- Adhesion, Cohesion,
- Interfacial surface tension,
- Capillary action
- Atmospheric pressure
Physical factors

- Adhesion
- Cohesion
- Interfacial surface tension
- Capillary action
- Atmospheric pressure
Adhesion

- There have been numerous theories to prove that adhesion of saliva to the mucous membrane and the denture base is achieved through ionic forces between charged salivary glycoprotein and surface epithelium.
- The concept of physical attraction of unlike molecules for each other.
Cohesion

- Physical attraction of like molecules for each other creates retentive force and usually occurs with saliva that is present between the denture base and the mucosa.
Retention supplied by Adhesion depend on:

- The area covered by the denture
- The close adaptation of the denture to the supporting tissues
- The fluidity of saliva
**Atmospheric pressure**

- If the dentures have **An Effective Seal** around their borders, this is called 'suction' because it is the resistance to removal in a direction opposite to that of insertion. But **there is no suction or negative pressure, except when another force is applied**.
Displacement of a sealed bellows-like device results in a vacuum in the emergent space, the displacing force being balanced by that from atmospheric pressure. There is no static retaining force otherwise. Comparable conditions are unlikely to occur in the mouth.
All valve and suction retention systems are similar: a spring of some description attempts to maintain a region of lowered pressure. These all fail to be effective in the long run for physiological reasons.
For atmospheric pressure to be effective, the denture must have a perfect seal around its entire border.
Interfacial Surface Tension

• It is attributed to the attractive forces or cohesion of the surface molecules of the liquid.
Bulging liquid surfaces imply a higher pressure within the liquid; incurving surfaces imply a lowered pressure.
• When is interfacial surface tension most effective?

• When the salivary film is very thin, there is a perfect adaptation of the denture base and the soft tissues are firmly attached to underlying bone and not distorted.
What effect does distance between the denture base and the mucous membrane have on retention and what is it called?

"Capillary attraction"
Simplified cross-section to illustrate the seal arising from compliant tissue, flow restriction in narrow spaces, and the effect of surface tension in a well-fitting denture.
1-Denture supporting structures

2-saliva

3-Fitting surface of the denture
• Arch size and form & Interarch Distance
• Severe retrognathic (Class II) or prognathous (Class III) ridge relationship can be remedied only to a limited extent through prosthetic treatment.
Residual height and conformation - large, square, broad ridges offer a greater resistance to lateral forces than do small, narrow tapered ridges.

Arch form - square or tapered arches tend to resist rotation of the prosthesis better than ovoid arches.

Palatal vault - a steep vault may enhance stability by providing greater surface area of contact, and long inclines approaching a right angle to the direction of the force.
Psychologic

- Intelligence
- Expectation
- Apprehension or fear
- Gagging
Mechanical retention
Surgical Factors

• Ridge augmentation.
• Vestibuloplasty (sulcus deepening).
• Use of implants with attachments.
Retention aid Factors

- Spring.
- Sublingual Flange extension.
- Denture adhesives.
- Magnetics.
- Suction disc.
Stability

The resistance of the denture against horizontal forces that tend to alter the relationship between the denture base and its supporting structure in a horizontal or rotatory direction.
Mechanical factors influencing the stability of complete denture:

- Retention.
- Balanced occlusion.
- Height of occlusal plane.
- Position of the posterior teeth.
- Proper relief of the hard area.
- Ridge and the form of palate.
- Shape of the polished surface.
- Shape and size of the tongue.
Balanced occlusion
Height of the occlusal plane

- **Tooth Position and Occlusal Plane:** Anterior and posterior teeth should be placed as close as possible to their original in the mouth. A mandibular occlusal plane that is too high can result in reduced stability, because the lateral tilting forces are magnified as the plane is raised. An elevated occlusal plane prevents the tongue from reaching over the food table into the buccal vestibule. Various anatomical landmarks should be used to determine an acceptable level of the occlusal plane, such as: Stensen’s duct and the retromolar pad.
Height of the occlusal plane
Ridge and palatal form
Position of the posterior
The neutral zone concept is based on the belief that the muscles should functionally mold not only the border and the artificial teeth but also the entire polished surface.

Facial and lingual forces generated by the musculature of the lips, cheeks, and tongue are balanced.
Thank you