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Retention in complete Denture

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Bachelor of Dental Surgery

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

{وَلَمَّا بَلَغَ أَشُدَّهُ وَاسْتَوَىٰ آتَيْنَاهُ حُكْمًا وَعِلْمًا وَكَذَٰلِكَ نَجْزِي الْمُحْسِنِينَ}

صَدَقَ اللَّهُ الْعَظِيمُ

CERTIFICATION OF THE SUPERVISOR

I certify that this project entitled " **Retention in complete Denture** " was prepared by the fifth-year student (**Maryam Ahmed Moohan**) under my supervision at the College of Dentistry/University of Baghdad in partial fulfilment of the graduation requirements for the bachelor's degree in Dentistry.

Supervisor's name:

Assist. Lect. Dr. Zainab A. Azeez

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DEDICATION

*To my parents, Who gave the little they had to ensure I would have the
opportunity of an education,
who never stopped giving me hope and never failed to help me,
To everyone who believed in me and gave me their trust.*

Acknowledgment

First, I would like to thank Allah who paved my way with his blessings, for letting me through all the difficulties and only by His will everything can be achieved,

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Introduction

Human teeth play a crucial part in maintenance of an affirmative personality. Our masticatory system performs functions like chewing, smiling, yawning, laughing and talking. Sometimes, a person may have difficulties in performing these functions due to the malfunctioning of the jaw muscles, jaw joints or the neural system. The human teeth are also lost with ageing as a result of the cumulative effects of periodontal disease, trauma, dental caries and dental treatment. With increased awareness among the people, use of fluoride, better professional and home dental care the prevalence of the complete tooth loss has reduced. However, the total number of patients requiring complete dentures is increasing rapidly nowadays. Complete dentures are the most common prescription which is globally offered to the edentulous patients by the dentists. The most common reasons for seeking denture therapy by the patients are to improve aesthetics and masticulation (**Mazurat & Mazurat 2003**).

Previous studies reported that the most common problem in the complete denture wearers was an ill-fitting denture, corresponding to the professional terms of denture retention and stability. (**Srisilapanan 2001**).

Optimal outcome of complete denture treatment depends on the successful integration of the prosthesis with the patient's oral functions plus psychological acceptance of the dentures by the patient. These parameters require that patients perceive their dentures as stationary or well retained during function, and that the prostheses and their effects on the face meet the esthetic and psychodynamic requirements of the patient (**Yamaga 2013**).

1. Aims of the Review

The review aims to:

- 1-Describe retention in complete denture and identifying the various factors and forces that may affect on the retention.
- 2-Clarify the role of Retention in the success of the complete denture, and therefore every stage of denture construction should be given due importance.
- 3- Identifying the appropriate way or technique to provide the best retention.
- 4- Identify the cases that require special consideration to provide the most suitable retention .

Chapter One

Review of Literature

1.1. Complete Dentures

A removable dental prosthesis which replaces the entire dentition and associated structures of the maxilla and mandible. (Nallaswamy 2011)

1.1.1. Objective of complete denture

It seems tenable to project that objectives in complete denture treatments should be related to patient age and socioeconomic status since these are probably the major determining factors bearing on emphasis, recognition, and tolerance of denture qualities and values and which also bear on fabrication problems that the dentist must solve.

- 1) Preservation of the remaining tissues in health state.
- 2) Restoration of the function of mastication.
- 3) Restoration of the disturbed facial dimension and contour (esthetic).
- 4) Correction of speech due to the loss of natural teeth.
- 5) Satisfaction, pleasing and comfort of the patient. (Arthur *et al.*, 2009).

1.2.2. Surfaces of Complete Denture

Retentive forces offer resistance to vertical movement of a denture away from the underlying mucosa and act through the three surfaces of Dentures of a denture as in the fig (1-1).

These surfaces may be defined as follows:

(1) **Occlusal surface:** that portion of the surface of a denture which makes contact or near contact with the corresponding surface of the opposing denture or dentition fig (1-1).

(2) **Polished surface:** that portion of the surface of a denture which extends in an occlusal direction from the border of the denture and which includes the palatal surface. It is that part of the denture base which is usually polished,

includes the buccal and lingual surfaces of the teeth, and is in contact with the lips, cheeks and tongue fig (1-1).

(3) Impression surface: that portion of the surface of a denture that had its shape determined by the impression. It includes the borders of the denture and extends to the polished surface fig(1-1). (**Basker *et al.*, 2011**)

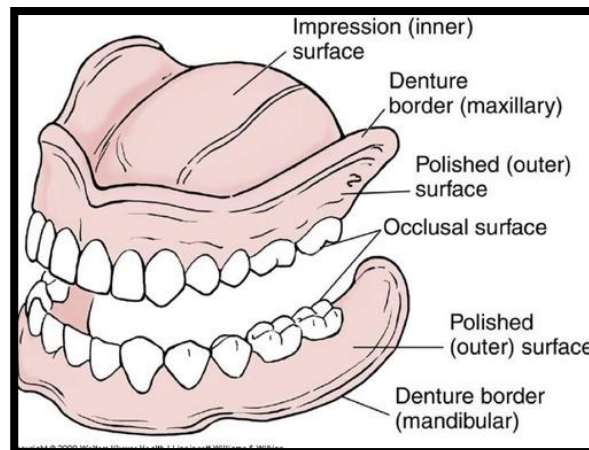


Figure (1-1): Basal surface (BS), polished surface (PS), denture border (dotted line), denture flange (F). (**Arthur *et al.*, 2009**)

1.2. Retention of Complete Denture

Retention is the quality inherent in a prosthesis acting to resist forces of dislodgement. Heartewell defined it as the resistance of a denture to removal in a direction opposite to that of insertion. It is that quality required to be incorporated in the treatment, when the complete dentures would resist dislodging forces which move the dentures away and out at right angles to the supporting tissues. (**Sarandha *et al.*, 2007**).

1.2.3. Retentive Forces

The retentive forces that act upon each of these surfaces are of two main types, muscular forces and physical forces:

1.2.3.1. Muscular forces.

These forces are exerted by the muscles of the lips, cheeks and tongue upon the polished surface of the denture and by the muscles of mastication indirectly through the occlusal surface as in fig (1-2).

The successful muscular control of dentures depends on two factors:

1. The design of the dentures.
2. The ability of the patient to acquire the necessary skill. **(Basker et al., 2011)**

1.2.3.2. Physical forces.

These rely on the presence of an intact film of saliva between the denture and mucosa as in fig (1-2). They act primarily between the impression surface of the denture and the underlying mucosa and are to a large extent dependent on the maintenance of a seal between the mucosa and the border regions of the denture and upon the accuracy of fit. **(Basker et al., 2011)**

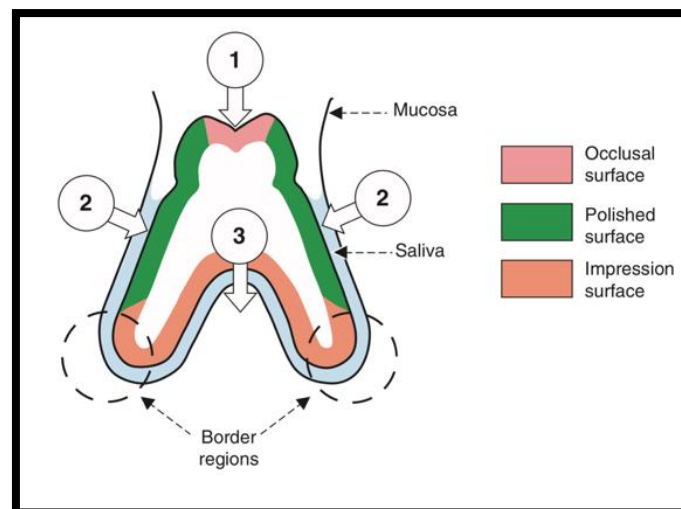


Figure (1-2): Retaining forces acting on a denture: (1) force of the muscles of mastication acting through the occlusal surface; (2) muscular forces of lips, cheeks and tongue acting through the polished surface; (3) physical forces acting through the impression surface.

(Basker et al., 2011)

1.3. Factors of Retention

The factors that involved in achieving denture retention:

1.3.1. Physical factors.

These rely on the presence of an intact film of saliva between the denture and mucosa. They act primarily between the impression surface of the denture and the underlying mucosa and are to a large extent dependent on the maintenance of a seal between the mucosa and the border regions of the denture and upon the accuracy of fit. **(Basker *et al.*, 2011)**

1.3.1.1. Adhesion

Adhesion is the force of attraction between dissimilar molecules as in fig (1-3). **(Basker *et al.*, 2011)**. In case of a denture, it is the attraction between the saliva denture base and saliva mucous membrane of the basal seat. It acts when saliva sticks to the denture base and to the mucous membrane of the basal seat. It depends on:

- Close adaptation of the denture base
- Size of denture bearing area
- Type of saliva. **(Sarandha *et al.*, 2007)**.

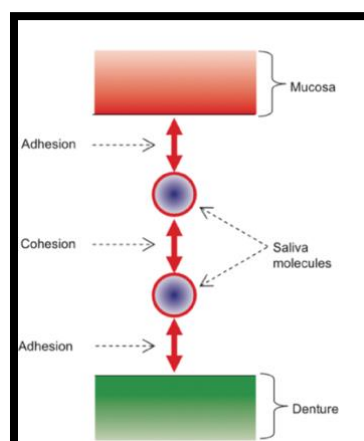


Figure (1-3): The chain of intermolecular forces between the denture and the mucosa contributing to retention. **(Basker *et al.*, 2011)**

1.3.1.2. Cohesion

Cohesion is the physical factor of electromagnetic force acting between molecules of the same material. In case of complete dentures, the force of attraction is developed between the molecules of saliva, between the molecules of denture base material and between the molecules of mucous membrane. (Sarandha *et al.*, 2007).

Cohesion is the force of attraction between like molecules, which maintains the integrity of the saliva film. These intermolecular forces of adhesion and cohesion may be thought of as forming a chain between the denture and the mucosa as in fig (1-3). (Basker *et al.*, 2011)

Cohesive failure therefore means the separation of molecules within the body against inter- or intramolecular forces. Darvell, 2000)

1.3.1.3. Surface tension

Interfacial surface tension results from a thin layer of fluid that is present between two parallel planes of rigid material. It is dependent on the ability of the fluid to “wet” the rigid surrounding material. (George *et al.*, 2004). It is the force created on the surface of fluid film or resistance to separation developed between two well- adapted surfaces by a thin film of fluid. (Sarandha *et al.*, 2007).

1.3.1.4. Viscosity

As a denture is pulled away from the tissues, saliva is drawn into the space being created beneath the denture as in fig(1-4). A retentive force is generated by a resistance to this flow of saliva, resulting from the viscous properties of the saliva and the dimensions of the channel through which it flows. (Basker *et al.*, 2011)

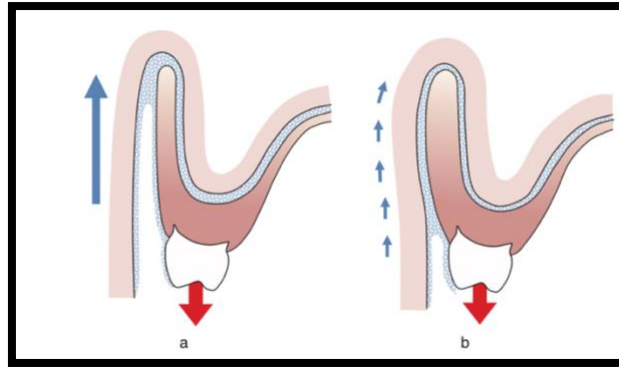


Figure (1-4): Relationship between the width of the buccal channel and resistance to flow of saliva: (a) wide channel, rapid flow, poor retention; and (b) narrow channel, slow flow, good retention. (Basker *et al.*, 2011)

1.3.2. Mechanical Factors

1.3.2.1. Undercut

It is the portion of the surface of an object that is beyond the height of contour in relationship to the path of placement.

It acts as a mechanical locking system in retention of denture and Unilateral undercut aids in retention of denture. If bony undercuts exist, retention may be enhanced by designing a denture that utilizes these undercut areas. In order to achieve this without traumatizing the mucosa" on insertion and removal of the denture, special care is required in planning the path of insertion. (Sarandha *et al.*, 2007).

1.3.2.2. Use of Springs

Ends of springs are attached to shrivel in the premolar region on both sides of upper and lower dentures. Thus, they are permanently attached to each other and are held in occlusion for insertion into the mouth.

As soon as they are released the dentures are forced apart by the action of springs, which causes the denture to seat in place.

Disadvantages

- Restricted lateral movement
- Soreness of cheek mucosa resulting in irritation
- Increased alveolar ridge resorption (Sarandha *et al.*, 2007).

1.3.2.3. Incorporation of Rubber Suction Discs/Suction Chambers

- It consists of a rubber disc buttoned on to a stud shunt into the fitting surface of the denture. Partial vacuum created within aids in retention (fig.1-5).

Disadvantage

- Constant irritation causing damage to the soft tissue by proliferation of tissue within the recess.
- Irritation leads to Epithelioma (Malignant tumor), which may lead to perforation in the palate. (Sarandha *et al.*, 2007).



Figure (1-5): Soft tissue changes induced by suction dis (Sarandha *et al.*, 2007).

1.3.2.4. Use of Magnets

Magnets are placed in premolar region of maxillary and mandibular denture with like-poles facing each other. The repulsive forces aid in retention as in fig (1-6). (Zarb *et al.*, 2001).

Constant repulsive forces and pressure may be the cause of increased rate of resorption of bone. (Sarandha *et al.*, 2007).

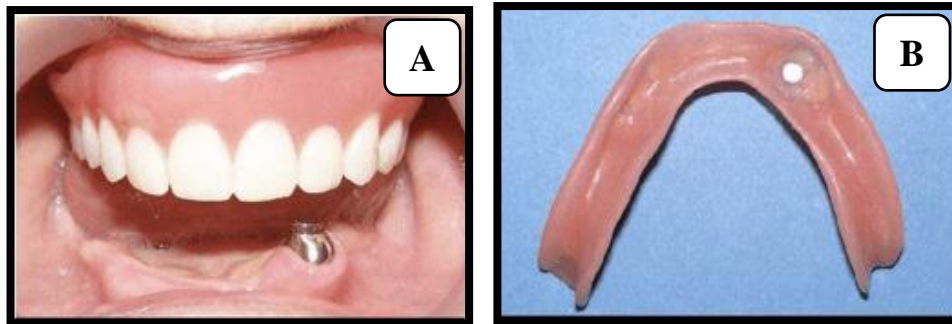


Figure (1-6): use of magnets, A. Parallelism between Occlusal plane and magnets, B. Internal aspect of lower denture. (Farcasiu *et al.*,2011.)

1.3.3. Physiologic Factors

1.3.3.1. Oral and Facial Musculature

It provides supplementary retentive forces if the teeth are placed in neutral zone. And the Polished surface of dentures are properly shaped and contoured to be braced by the buccinator, mylohyoid and tongue muscles. (Sarandha *et al.*, 2007).

1.3.3.2. Neuromuscular Control

Neuromuscular forces refer to functional forces exerted by musculature of patient that can affect the retention.

It is a learned biological phenomenon. Patient's ability to control the denture with lips, cheeks and tongue depend on neuromuscular control. (Sarandha *et al.*, 2007). Good muscular control and coordination are essential to the effective use of complete dentures. (George *et al.*, 2004).

1.3.3.3. Saliva

It affects the effectiveness of physical forces. Serous saliva provides better cohesive force than mucous saliva. (Sarandha *et al.*, 2007).

Both the flow rate and the viscosity are important to denture success. Normal resting salivary flow is about 1 ml/min. A flow of medium viscosity at this rate lubricates the mucosa and assists retention of complete dentures. (George *et al.*, 2004)

1.3.3.4. Jaw Size

Retention is directly proportional to the area of coverage. As the size increases, the area of coverage increases and hence the retention is better. (Sarandha *et al.*, 2007).

1.3.3.5. Type and Class of Soft Palate

Class I type allows wider posterior palatal seal and thus aids in better retention compared to class III type of soft palate. (Sarandha *et al.*, 2007).

The anatomy of the soft palate usually will determine the location of the distal border of the maxillary complete denture and its posterior palatal seal. A soft palate that turns down abruptly limits the distal extension of the denture fig(1-7). (George *et al.*, 2004)

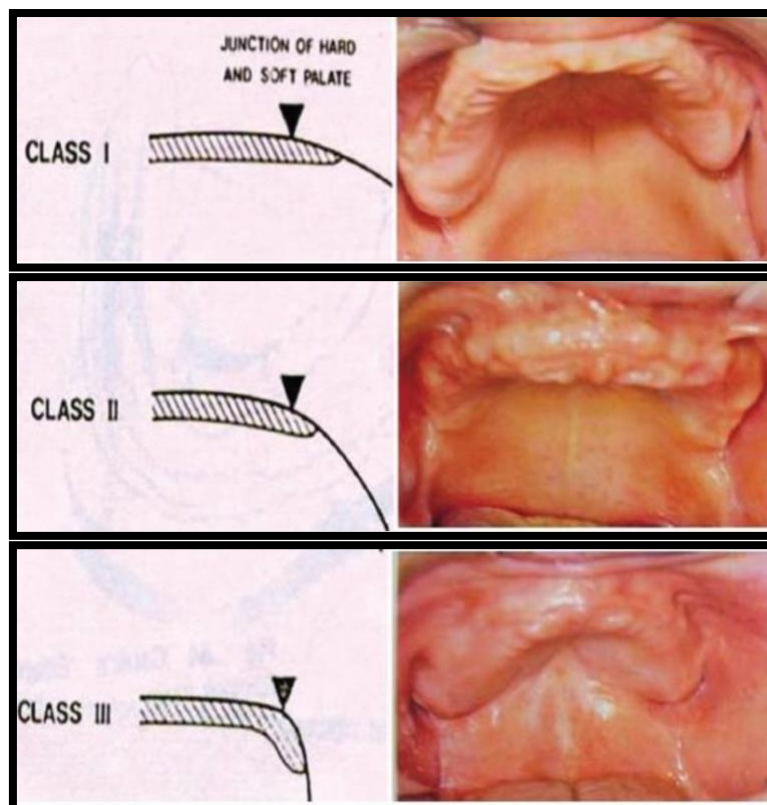


Figure (1-7): Classes of soft palate. (Goyal *et al.*, 2014)

1.3.4. Surgical Methods

1.3.4.1. Vestibuloplasty

It is a surgical procedure to restore alveolar ridge height and width by deepening the sulcus. (**Sarandha *et al.*, 2007**).

If we admit that for economic reasons the removable dentures are the most preferred above all types of dentures, the vestibuloplasty is thus an indispensable procedure in these cases of reduced vestibular depth. (**Konstantinova *et al.*, 2015**).

It is mostly indicated in pre-prosthetic surgery to correct the inadequate height of the alveolar ridge, and in periodontology to increase the keratinized gingiva. (**Rahman *et al.*, 2020**).

1.3.4.2. Ridge Augmentation Procedure

It is done to increase the width and height of residual ridge by placing bone material / alloplasty material / combination. (**Sarandha *et al.*, 2007**).

The augmentation and vestibuloplasty was aimed to provide stability and retentive denture atrophic mandibular alveolar ridge. (**Kuntjoro *et al.*, 2010**).

Considerable caution is recommended with these procedures because they are a formidable undertaking, particularly for elderly patients. Nevertheless, current surgical reports suggest promise for combining grafts with implants to rectify serious residual ridge resorption problems, particularly in the maxilla. (**George *et al.*, 2004**).

1.3.4.3. Implants

Different numbers of implants are prescribed for different prosthesis designs, such as an electively fixed prosthesis, which is entirely implant borne, as in fig (1-9). (**George *et al.*, 2004**).

There are several ways to connect the prosthesis to implants. This can be done either directly on to the bar, as in a bar and clip system, or by using direct attachments as in fig (1-8). (**Preiskel &Preiskel 2009**).



Figure (1-8): Straight gold Dolder bar on two implants. (Preiskel & Preiskel, 2009).

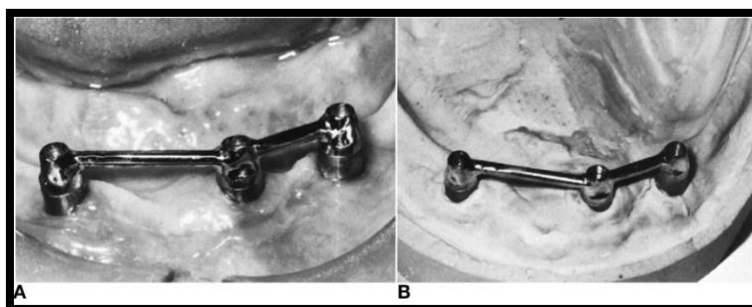


Figure (1-9): Type of Implants, A, Stabilization of a complete denture by means of three osseointegrated implants joined together with a cast gold bar (B). (George *et al.*, 2004).

1.3.5. Psychological Factors

1.3.5.1. Mental Attitude

Success of prosthodontic treatment is a shared responsibility of the operator and the patient. Philosophical patients are better predisposed to a successful treatment. (Sarandha *at el.*, 2007). Patients with severe mental illness had a 3.4-time greater risk of being completely edentulous, and had 6.2 more decayed, missing, and filled surfaces than the control group. (Kisely, 2011).

1.3.5.2. Expectations

Patients with over-expectations need motivation and education. They should not be promised anything impossible to please them. (Sarandha *et al.*, 2007). Patient satisfaction can also be influenced by other factors such as

patient expectation, patient-dentist relationship, and psychological factors and personality traits. (Menassa *et al.*, 2014).

1.4. Displacing Forces

1.4.1. Forces acting through the occlusal surface

When the dentures occlude, tooth contact on one side of the dental arch is not balanced by contact on the other side the dentures will tip, causing the border seal to break, with consequent loss of retention fig (1-10). When the mandible moves into lateral or protrusive occlusal positions, interference between opposing teeth resulting from interlocking cusps or an excessively deep overbite can cause horizontal displacement and tipping of the dentures.

It should be borne in mind that occlusal displacing forces can be dramatically increased in patients exhibiting parafunctional activity such as bruxism. (Basker *et al.*, 2011)

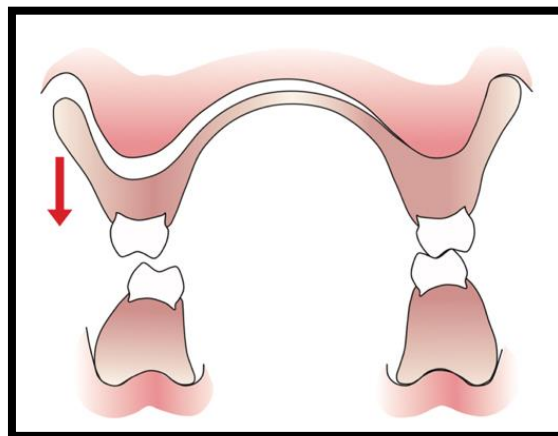


Figure (1-10): Tipping of the denture due to an unbalanced occlusal contact. (Basker *et al.*, 2011).

1.4.2. Mastication

During mastication, pressure exerted by the food on the teeth tends to displace the denture. This problem may influence the positioning of artificial posterior teeth. If that table extends to the steeply sloping part of the ridge

posteriorly, pressure from the bolus will tend to make the denture slide forward as in fig (1-11). (Thomason *et al.*, 2009)

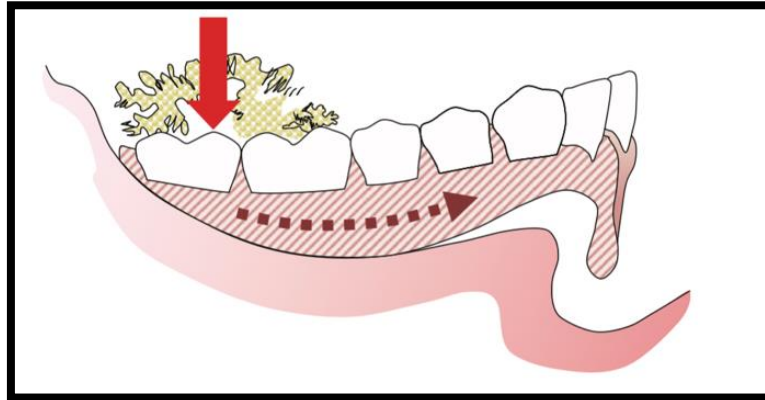


Figure (1-11): Pressure from the bolus on the posterior part of the lower occlusal table.

(Basker *et al.*, 2011).

During the opening phase of the masticatory cycle, when the teeth begin to separate after penetrating a bolus of food, the adhesive properties of the food generate a displacing force in an occlusal direction. Sticky foods therefore tend to move the dentures away from the mucosa. (Thomason *et al.*, 2009).

Therefore the occlusal table should terminate on the relatively horizontal part of the ridge where effective support is available and displacement prevented. It may be necessary to reduce the number of posterior teeth to achieve this aim.

Occasionally, the problem of occlusal displacement can create a conflict of interests between the requirements of optimum appearance and denture stability. (Basker *et al.*, 2011).

1.4.3. Forces Acting through the polished surface

The muscles of the lips, cheeks and tongue, in addition to being of fundamental importance in the retention of dentures, are also capable of causing denture instability. Displacement will occur, as mentioned earlier, if the

polished surfaces have an unfavourable slope, and also if the denture interferes with the habitual posture and functional activity of the surrounding musculature as In fig (1-12). (Carlsson, 2009).

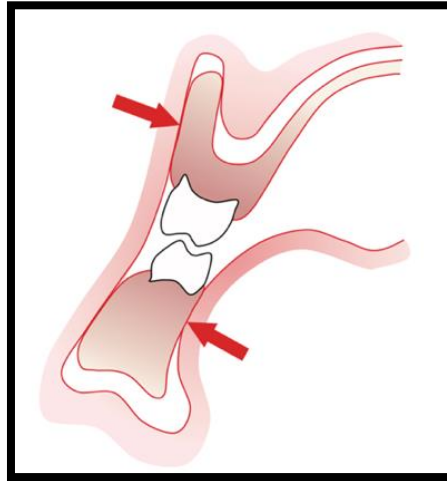


Figure (1-12): displacing the dentures when the polished surfaces are incorrectly shaped. (Basker *et al.*, 2011).

Distal movement of a lower denture may be produced by the lower lip if the anterior teeth are placed too far labially. The teeth should therefore be placed just far enough lingually to prevent this displacement but not so far as to allow excessive tongue pressure to develop as in fig (1-13).

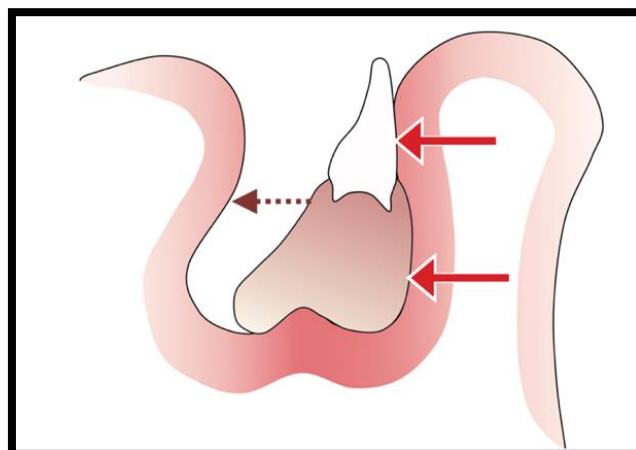


Figure (1-13): Distal displacement of the lower denture caused by placing teeth too far labially. (Basker *et al.*, 2011).

Changes in the neutral zone also occur between the lower lip and the tongue as a result of post-extraction changes affecting the mentalis muscle. Resorption of the alveolar bone leads to the superior fibres of the origin of the mentalis muscle lying on top of the residual ridge and a lingual migration of the neutral zone. Certainly, in these circumstances, it is no longer possible to position the artificial teeth where once the natural ones were situated. **(Basker *et al.*, 2011).**

1.4.4. Gravity

In most cases, the weight of the prosthesis constitutes a gravitational force that is insignificant in comparison with the other forces acting on the denture, but if a maxillary denture is fabricated wholly or partially of a material that increases its weight appreciably (e.g., a metal base or precious metal posterior occlusal surfaces), the weight of the prosthesis may work to unseat it if the other retentive forces are themselves suboptimal. **(George *et al.*, 2004).**

When a person is in an upright posture, gravity acts as a retentive force for the mandibular denture and a displacive force for the maxillary denture. **(Zissis *et al.*, 2001).** In order to minimise this effect, it is important that the upper denture is of light construction. Heavy denture base materials, such as cobalt-chromium alloy, should be avoided unless other requirements, such as strength, are of overwhelming importance. **(Basker *et al.*, 2011).**

1.4.5. Support

The basic challenge in the treatment of edentulous patients lies in the nature of the difference between the ways natural teeth and their artificial replacements are supported. **(George *et al.*, 2004).**

Instability of an upper denture follows resorption of the supporting bone. This resorption is largely confined to the region of the alveolar ridges, as there is remarkably little resorption of bone in the centre of the palate. Thus, after a

period of time, the denture will be well supported by the hard palate, but there will be limited contact between the impression surface of the denture and the alveolar ridges. (Thomason *et al.*, 2009).

1.5. The relation of impression procedure on retention

Recording an impression is a process which requires consideration of the action of the sulcus, the condition of the denture-bearing area, the quality and quantity of saliva and finally the materials used to record the impressions. It must be seen as a two-stage process, with the primary and secondary impression stages having distinct, important functions. If sufficient attention is paid to recording good quality primary and secondary impressions, then the denture should be retentive. Retentive complete dentures are reliant on the interplay between forces of retention, stability and support. The degree of physical retention is proportional to the area of the impression surface. It is important therefore to ensure maximum extension of the dentures so that the optimum retention for a particular patient may be obtained. (Basker *et al.*, 2011).

1.6. Cases with more retentive requirements

1.6.1. Patients with Flat Ridge

Residual bone is that part of alveolar ridge which remains after the teeth have been lost. The residual alveolar ridge consists of denture-bearing mucosa, submucosa, periosteum, and underlying alveolar bone, fig (1-14). (Makzoume 2004).

Success of complete lower dentures has been a challenge for dentists and patients alike. In particular, a flat lower ridge is associated with difficulties in providing successful dentures. A proper understanding of the factors involved in stabilizing a lower denture is necessary. (Devaki *et al.*, 2012).

A properly formed denture base outline develops a seal that can be maintained during most normal oral functions. Retention was improved by using lateral throat form. Stability can be improved by using different jaw relation techniques.

Techniques for Improving Stability, Resistance offered by the prosthesis in the horizontal direction:

1. Occlusal plane
2. Teeth arranged – Neutral zone
3. Using non-anatomical teeth (**Devaki *et al.*, 2012**).



Figure (1-14): Mandibular flat ridge. (**Bishop *et al.*, 2021**).

1.6.2. Patients with Big tongue

The ability of an edentulous patient to successfully wear and function with a new mandibular denture can be a frequent complaint that is most often the result of a lack of patient adeptness or unfavorable tongue habits. (**Bohnenkamp *et al.*, 2007**). Tongue activity constitutes a helpful factor in using complete dentures. (**Zmudzki 2008**)

Physically preventing the tongue from pressing against the posterior part of the denture reduced the retention significantly. (**Orstavik & Fløystrand 2009**)

Tongue is an integral part of the oral anatomy fig (1-15). Its nature as such in prosthodontics has been controversial due to its anatomy and action on the lower dentures. It is imperative that the prosthodontist have a proper knowledge of the anatomical, functional, physiologic aspects of the tongue so as to rehabilitate the patient to the optimum level possible. **(Puri *et al.*,2020)**



Figure (1-15): Patient with Big tongue. **(Bohnenkamp *et al.*, 2007).**

When patients transition from being dentate to edentulous, and then acquire complete dentures, additional functional demands are placed on the tongue. In addition to contributing to primary oral functions such as speech and mastication, the tongue is required to provide assistance with denture retention and stability (**Stavreva 2020**).

1.6.3. Patients with Flappy Ridge

Flabby ridge (i.e., mobile or extremely resilient alveolar ridge) is due to replacement of bone by fibrous tissue as in fig (1-16). It is seen most commonly in the anterior part of the maxilla, particularly when there are remaining anterior teeth in the mandible and is probably a sequela of excessive load of the residual ridge and unstable occlusal conditions.

Flabby ridges provide poor support for the denture, and it could be argued that the tissue should be removed surgically to improve the stability of the denture and to minimize alveolar ridge resorption fig (1-16). (George *et al* 2004).

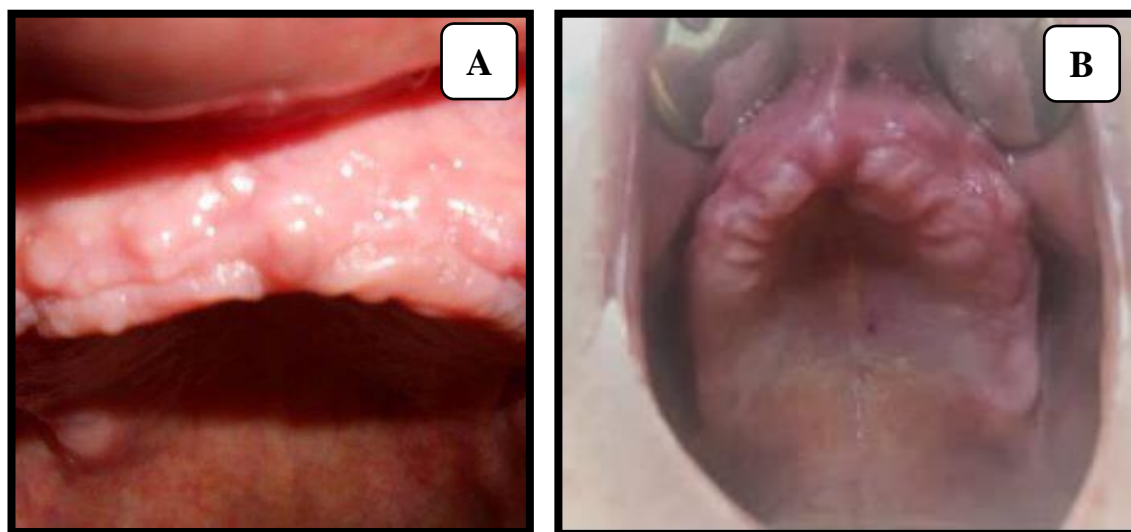


Figure (1-16): A&B Flabby tissue in maxillary arch. (Kulkarni 2018)

There are several ways in which such a situation can be resolved. The first one is the surgical removal of connective tissue, but with a greatly reduced bone ridge as a result. From a prosthetic point of view, the difference will have to be compensated by the base of dentures, implying its thickening and the simultaneous increase in weight and volume. Another therapeutic possibility is implant-prosthetic treatment that requires augmentation, implant insertion and overdentures. (Kulkarni 2018)

If the flabby ridge is preserved, a viable therapeutic solution for the success of the mobile treatment is represented by the special impression techniques of the prosthetic field. When the impression is a conventional one, there will always be a degree of compression of the tissues, the natural position of the soft tissues being altered. (Cristalli 2020).

1.7. Adjunctive retention through the use of denture adhesives

Denture adhesive is used to refer to a commercially available, nontoxic, soluble material (powder, cream, or liquid) that is applied to the tissue surface of the denture to enhance denture retention, stability, and performance.

They enhance retention through optimizing interfacial forces by

(1) increasing the adhesive and cohesive properties and viscosity of the medium lying between the denture and its basal seat.

(2) eliminating voids between the denture base and its basal seat. (**George *et al.*, 2004**).

1.7.1. Types of Denture Adhesives

There are three types of denture adhesives: creams, powders and strips. While each is different, they all serve the same purpose.

Denture cream typically comes in a tube and is applied in small amounts on wet dentures and Adhesive powder is applied by sprinkling the powder and directly on wet dentures, specifically to the part of the denture that connects with the bone tissue. Unlike the other two forms of denture adhesives, denture adhesive strips work well on dentures that fit poorly. (**Zarb *et al.*, 2001**)

1.7.2. Advantages of using denture adhesives

The use of denture adhesives relative to their effect on denture retention, stability, movement, bite force, ability to chew test foods, food occlusion or patient satisfaction. several studies yielded results indicating that denture adhesives improved retention and stability of both ill-fitting and well-fitting dentures. Regarding mastication, the use of denture adhesives has been reported to significantly improve the bite force a denture patient is able to exert compared with using no adhesives. Functional changes associated with denture adhesive application is time dependent. The duration of effectiveness of adhesive retention is variable and often product dependent. (**Wiens *et al.*, 2018**).

1.7.3. Disadvantages of using denture adhesives

Improper use of zinc-containing denture adhesives may have adverse systemic effects. (**Basker *et al.*, 2011**).

Several articles have evaluated the potential cytotoxic effects of denture adhesives. The most serious of the chronic and excessive use of denture adhesives reported to date is potential neurotoxicity related to the presence of zinc as a component of the adhesive. Two in vitro studies revealed both bacterial and fungal contaminants in denture adhesives. (**Wiens *et al.*, 2018**).

1.7.4. Indication for the use of Denture Adhesives

Denture adhesives are indicated when well-made complete dentures do not satisfy a patient's perceived retention and stability expectations.

Patients who have xerostomia due to medication side effects, a history of head and neck irradiation, systemic disease, or disease of the salivary glands have great difficulty managing complete dentures because of impaired retention and an increased tendency for ulceration of the bearing tissues. The use of denture adhesive can compensate for the retention that is lacking in the absence of healthy saliva and can mitigate the onset of oral ulcerations that result from frequent dislodgments. Several neurological diseases can complicate the use of complete dentures, but adhesive may help to overcome the impediments imposed. (**Wiens *et al.*, 2018**).

Patients who have undergone resective surgery for removal of oral neoplasia or those who have lost intraoral structures and integrity due to trauma may have significant difficulty in functioning with a tissue-borne prosthesis unless denture adhesive is used, even if rotational undercuts have been surgically created to resist displacement of the prosthesis. (**George *et al.*, 2004**).

1.7.5. Contraindication of denture adhesives

1. Patients allergic to denture adhesives or components of adhesives preclude its use.
2. Dentures are grossly inadequate in fit and function.
3. Dentures that demonstrate excessive loss of vertical dimension because of bone resorption and soft tissue shrinkage.
4. Patients with broken dentures or dentures with missing flange or with sectional fracture should not use denture adhesives to retain their denture.
5. Patients who use denture adhesive without thoroughly cleaning the previously used adhesive resulting in a lining of a layered, caked deposit of hardened adhesive should be instructed about the proper method of cleaning the adhesive from the denture or should be discouraged from further use of denture adhesive. **(Yadav 2005).**

CHAPTER TWO

CONCLUSION

1-Retention is an important factor in complete denture and it is the most important objective of the complete denture.

2-Retention is an inherited property that must be achieved before any other objectives in complete denture.

3- Complete dentures are retained in the oral cavity through a complex interaction of factors that include close adaptation of the intaglio surface of the prosthesis to the underlying tissues, appropriate peripheral extension of the denture borders, the presence of a thin film of saliva of acceptable viscosity between the prosthesis and the tissues, and atmospheric pressure.

4-The success in making a complete denture with good retention is by using the correct impression technique thus providing an intimate contact of the denture with the tissue.

5-Occlusal force considered as the most powerful force affect the retention

6-There is many conditions need special attention to care about the retention in complete denture, like patient with flat ridge, big tongue and flabby tissue.

7-Denture adhesives, when properly used, can improve the retention and stability of dentures and help seal out the accumulation of food particles beneath the dentures, even in well-fitting dentures.

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