

Management of post-insertion complaints in complete denture patients: An overview

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Abstract

Post-insertion phase of complete denture therapy is invariably associated with a protracted complaint period and the incremental redressal. Determining the chief complaint is important not only for its redressal but also to avoid similar mistakes in future. No single factor appears to determine the patient’s satisfaction with complete dentures, rather a concerted action of psychological, biological, anatomical, and technical factor is decisive. Majority of the problems associated with denture are real and not psychosomatic or psychological, contrary to the belief of most clinicians. Most frequent complaints reported are discomfort, pain on chewing, inability to chew or speak, looseness and

dissatisfaction with denture esthetics. A thorough knowledge of factors involved in construction of complete denture is essential before attempting post-insertion checkup. Without having this knowledge, any attempt made to solve post-insertion problem will lead to haphazard reduction of prosthesis which will compromise its purpose, also leading to repeated patient visits and dissatisfaction of the patient. The present article encompasses most of the complaints of complete denture along with their possible causes, clinical recognition and management.

Keywords: Troubleshooting, Post-insertion complaints, Complete Dentures, Discomfort, Denture complaints classification, Denture follow up.

Introduction

With advancements made in medical science, the life expectancy of human beings is steadily increasing. Although a revolution has taken place in the field of implantology, removable dentures still play an important role amongst the majority of the patients and are therefore an indispensable treatment option.¹

Fabrication of complete dentures is dependent on technical, biological, and psychological interplay between the clinician and the patient. The overall success of complete denture therapy depends on patient's comfort and acceptance of the dentures. Factors of general health, resistance to disease, pain threshold, diabetes, hypertension, habits such as smoking, long term medications, anemia, wasting and old age alter tissue response and create problems associated with denture use.¹ Most frequent complaints reported are discomfort, pain on chewing, inability to chew or speak, looseness, and dissatisfaction with denture esthetics.²⁻⁶

Majority of the problems associated with denture are real, not psychosomatic or psychological, contrary to the belief of most clinicians. The problem with complete dentures is that they act as foreign bodies which sandwich the oral mucosa against the hard bone. A careful analysis based on a thorough understanding of usual and unusual tissue response as well as of the basic principles of complete denture prosthesis is crucial in eliminating the problems associated with complete denture use.¹

Post-Insertion Instructions

Patient education is the prosthodontic service that refers to giving complete information and instructions to a complete denture patient in the use, care and maintenance of the prosthesis.⁷ It should help to create a positive attitude by informing the patient about the

special problems associated with wearing complete dentures.⁸

A complete patient education program should include the following:

1. Mastication with the new dentures^{7,8}

Patient education is particularly important considering denture function. Patients must be advised that chewing is not random but an intentional and selective activity. Initially patients should limit themselves to soft or crispy foods. Tough and fibrous foods that will overtax the capacity of their residual ridges should be avoided. Although the normal tendency is to chew on one side or the other, denture wearers may function better by chewing food on both sides over the back teeth at the same time. This helps to balance the forces on the denture. Bringing the lower front teeth forward and against the upper front teeth to cut or incise foods should be avoided. This protects the delicate upper front ridge and prevents tipping of the denture.

2. Excess salivation⁷

New dentures are often interpreted as foreign objects by oral system. If the flow is excessive, the patient may complain of floating dentures and a general excess of watery saliva. The patient should be assured that this over active flow of saliva is normal reaction and will slowly decrease over the next few weeks. Deglutition will be necessary to evacuate the excess saliva and patients should be advised that compulsive rinsing or spitting should be avoided as it is unsettling to the denture bases.

3. Speaking with new dentures⁷

Owing to initial feelings of bulk and the accompanying excess of saliva, it is not unusual for patients to have distorted speech, especially evident during formation of sibilant sounds. The fluency of speech may be uncoordinated during rapid conversation.

The adaptability of tongue to compensate for change is so great that most patients master speech with new dentures within few weeks. Speaking with dentures requires practice. Patients should be advised to read aloud and repeat words or phrases that are difficult to pronounce. Speech with reading practice quickly assumes natural tone and fluency.

4. Recall schedule⁸

I. Twenty- four-hour oral examination and treatment:

An appointment for 1 to 3 day adjustment should be made routinely. This is the critical period in the denture wearing experience of the patient. The dentist must listen carefully to the patient and on the basis of the comments can learn approximately where to look for trouble. The statements may also furnish valuable information about esthetic, functional, and mental attitude problems that may be developing.

II. Periodic recall for oral examination

When patients are judged to be successfully treated and the necessary adjustments appointments after denture insertion are completed, patients are instructed to call for an appointment if they have any problems. During the first several weeks, the acrylic resin absorbs water. This can result in small changes in size and shape of the dentures. Minute changes in the occlusion can create discomfort by making the dentures shift or slide in function. Sometime soreness be seen on the lingual side of the mandibular ridge in the region of the canine and first premolar. Sometimes generalized irritation or soreness of the basal seat will develop. Patient with some more difficult problems should be scheduled for appointments periodically, perhaps at 3-4 months interval. A 12 month interval is the suggested time between recall appointments for most patients with complete dentures.

Classification of Post Insertion Complaints

According to study conducted by Yoshizumi and Sheppard^{9, 10} satisfaction and comfort rate in good quality complete dentures varied between 69% - 85%. In a study conducted by Koul et al.² it was reported that discomfort with complete dentures was the largest complaint reported (41.7%) followed by loss of retention (30.77%) and least by esthetics (13.77%) and miscellaneous complaints (13.77%).² On the contrary, Patel et al.¹¹ documented that adaptation problems with complete denture (45.15%) were higher than problems related to appearance (38.6%) followed by problems of discomfort (34.27%).

The post-insertion complaints of the patients can be classified as:

According to A.A. Grant, J.R. Heath and O.F. McCord¹²

- Looseness of dentures.
- Discomfort associated with dentures.
- Support problems.
- Miscellaneous difficulties associated with denture usage.

Looseness of Dentures

This complaint is more commonly associated with mandibular denture rather than the maxillary denture. Looseness of denture may be referred to by patients as denture rocking, shifting, falling and rising. This may imply that they do not fit the residual ridge and therefore loose, that the dentures are bulky and occupy too much space in the mouth, or that the vertical dimension of occlusion is too great.^{12,13}

Common symptoms¹²

- Looseness during speech which alters sounds and affect fluency.

- Looseness during eating affects ability to masticate anything and soft food permits debris to collect beneath the dentures.
- Looseness when opening mouth wide (e.g. laughing) is socially embarrassing.
- Moving dentures or if not properly seated on their supporting tissues can cause pain if they abrade the mucosa or if are not accurately resealed on their supporting tissues.

A. Decreased retentive forces¹²

This can result owing to lack of seal, air beneath impression surface, xerostomia, compromised neuro-muscular control and inelasticity of cheeks tissue.

1. Lack of seal:¹² It can occur because of border under-extension in depth and width of upper denture, incorrect posterior border of maxillary denture, resorption of residual ridge and inelasticity of cheek. Upper denture must possess a seal to prevent easy access of air and saliva to impression surface. Seal has two major components. Firstly, buccal and labial flanges should fill functional depth and width of sulci (figure 1, 2). Secondly, seal across posterior border of denture should be effective. In case of lower denture it can be recognized by lifting with tip of probe placed in anterior interdental area. Various factors may affect the seal of complete dentures are as follows:



Figure 1: Functional depth and width of sulci of providing seal

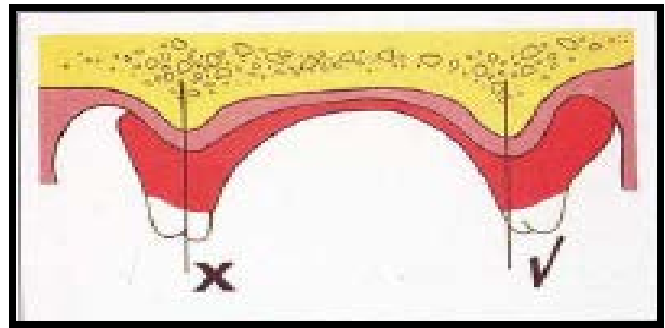


Figure 2: Diagrammatic representation figure 1

a) Border under-extension in depth: It can be recognized by direct vision in mouth on gentle retraction of lips and cheeks. Diagnostic additions of soft tracing compound will remain extended beyond border unless it is over-extended (figure 3). Rotation of the denture is liable to break the border seal.

It can be overcome by adding adequate softened tracing compound to relevant border, molding in mouth by digital manipulation of lips and cheeks and functional movements by patients. Excess should be trimmed off and denture should be sent to lab for replacement with acrylic resin.



Figure 3: Diagnostic addition of impression compound

b) Border under-extension in width: It can be recognized by direct vision of denture in situ in mouth. The available width of sulci is compared with width of denture borders. When there is under-extension in width of upper buccal flanges, premolar and molar teeth come to lie over the crest of residual ridge. As upper ridge resorbs more on buccal side, neutral zone

shifts buccal to the crest of ridge. If maxillary teeth are placed too palatally, it will cause mandibular molar teeth to be placed more lingual to the crest of residual ridge as a result of which, there will be no contact between cheeks and polished surface of denture (figure 4).

In order to correct it the patient should be asked to open the mouth and move the mandible from side to side during moulding procedure.

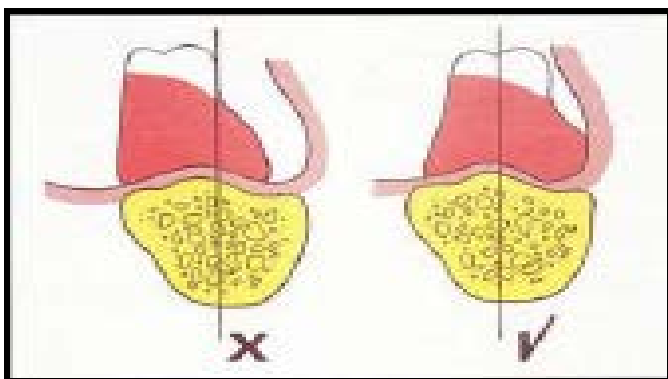


Figure 4: Optimum flange extension aids optimal tooth positioning

c) Posterior border of upper denture: It can be recognized by observing the soft palate movement while the patient says 'aah' and noting the junction line between mobile and immobile tissue. Posterior border of denture should be sited just anterior to this line. If patient has worn denture for several hours, an effective post dam may displace palatal tissues. To check for it, freshly wetted denture can be inserted and seated, egress of air bubbles indicates deficient seal.

In case of over-extension, border should be reduced until seated correctly, then post dam should be added (figure 5). In case of under-extension, border can be extended with tracing compound and fit is refined against tissues with wash impression and then a groove is cut for post dam in master cast before acrylic resin is added.

Following this, modified denture should be processed.

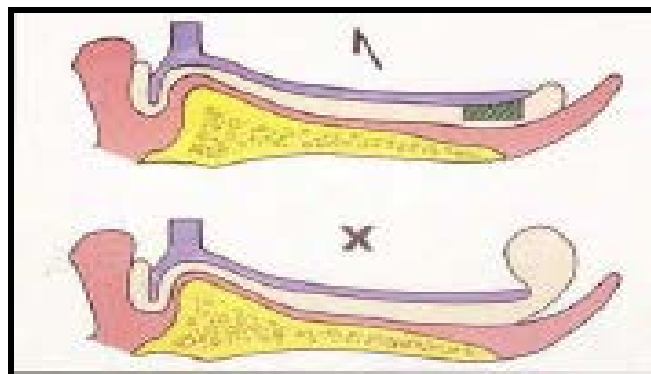


Figure 5: Control of impression material in the post dam area

2. Inelasticity of cheeks due to aging, scleroderma, sub-mucous fibrosis:¹² It can be recognized by taking patient's medical history, observation of mobility of soft tissues, palpation of displaceability of cheeks and lips.

It can be overcome by reducing or trimming the peripheries of dentures in both depth and width of the sulcus. Using softened tracing compound, a small section of periphery is border moulded by asking the patient to perform functional movements. Adjustment of compound should be continued until good retention is achieved.

3. Air beneath impression surface:¹² Trapped air expands as the denture moves away from supporting tissues until air bubble reaches border and seal is broken. It can occur because of poor fit to supporting tissues, change in fluid content of supporting tissues and excessive relief over areas of reduced tissue displaceability.

a. Poor fit to supporting tissues: It is due to deficient impression, damaged cast, warped denture, over adjustment of impression surface.

It can be recognized when denture may rock under finger pressure. It may be possible to see gap between flanges and side of the residual ridge. Occlusion against

opposing appliance can be deteriorated if denture has warped.

If shape of polished surface of the denture is correct, teeth arranged in neutral zone, freeway space not greater than 6 mm and satisfactory occlusion, it can be overcome by relining/rebasing the denture. Before taking the impression, heavy contact between denture and supporting tissues should be relieved by disclosing material.

b. Change in fluid content of the supporting tissues: This may result from lack of recovery of tissues from pressure of old denture, effect of medication (e.g. diuretics) and moreover, effect of change in posture of the patient with high volume of tissue fluid (e.g. heart failure).

It can be overcome by eliciting cooperation of the physician to stabilize the fluid content of the tissues as far as possible. Once the retention is restored with the help of prolonged seating pressure from cotton rolls, the denture should be relined and rebased.

c. Undercut residual ridge: Common areas include buccal of tuberosities (figure 6), labial of upper and lower anterior ridge, lingual to lower anterior ridge.

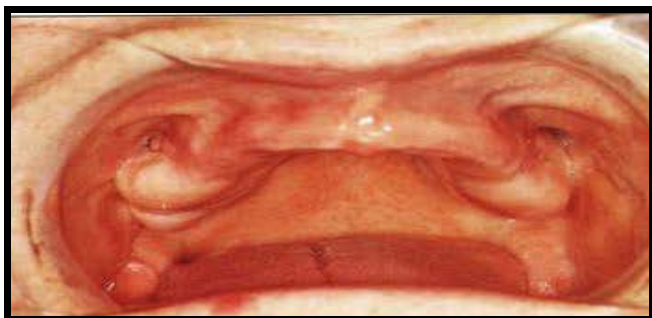


Figure 6: Undercut maxillary residual ridge

It can be overcome by determining the displaceability of tissues at maximum contour of residual ridge. In case of high displaceability, softened tracing compound is added to occupy the space between the impression surface and the ridge. Whereas in case of low

displaceability, it has to be assessed whether angled or rotational path of insertion would permit the denture to enter into the undercut area (figure 7). If this considered possible, tracing compound should be added to test. If it is successful, then compound should be replaced with acrylic resin.

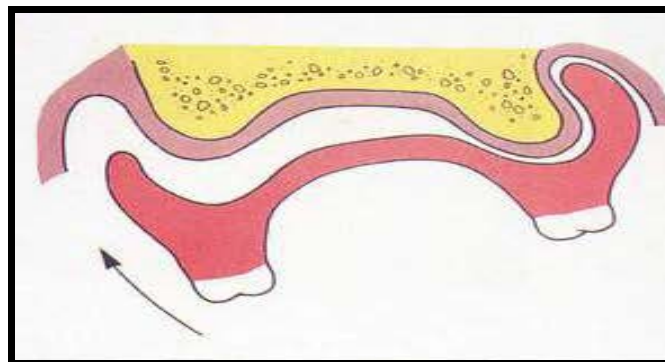


Figure 7: Planned path of insertion for a maxillary denture

4. Xerostomia:^{12, 14} It causes reduced ability to form seal along borders and polished surfaces of the denture. It can be recognized by the reduced retention of designed and constructed dentures. Patient may complain of dry mouth, sore residual ridges in areas rubbed by denture, reduced taste sensation.

It can be overcome by supplementation with artificial saliva and swabbing the tongue with lemon juice to test if any functioning glandular tissues remain. If so, then stimulation should be continued with bulky diet, chewing gum, lozenges, sugar-free acidic sweets. Dentures should be modified where necessary in order to maximize retentive forces and minimize displacing forces.

5. Neuromuscular control:¹² It is of vital importance for successful denture wearing, since forces generated during mastication are sufficient to destabilize appliances with optimum retention. These difficulties can be recognized by problems that are evident during speaking and eating. It can be overcome by correcting

any faults in dentures that hinder neuromuscular control. Temporary use of fixative may also help the patient to learn necessary skills. Following factors need to be evaluated:

a) Basic shape of the denture is incorrect: Ideally in posterior regions, dentures should have inherent triangular shape, occlusal surface being seated within confined of borders and polished surface slightly concave. However, when lower molar teeth are too lingually placed as a result of placing upper molars over crest of residual ridge (figure 8, 9), or lingual polished surface has been made convex, the tongue space is reduce leading to direct lifting force on denture by the tongue. It can be overcome by narrowing the lower posterior teeth from the lingual aspect to maximize space for tongue and aid in development of optimum cross sectional shape. Adjustment of lingual polished surface should be done until flat from occlusal surface to periphery.

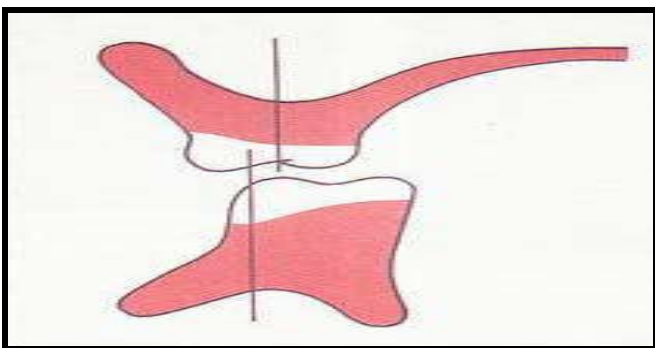


Figure 8: Lower molar teeth positioned of too lingually

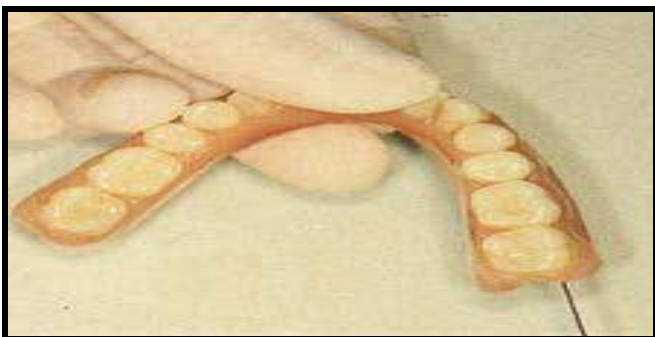


Figure 9: Knife blade indicates position crest of residual ridge

b) High occlusal plane on lower denture makes tongue unable to control appliance: High occlusal plane on lower is usually associated with excessive vertical dimension of occlusion if incisal level of upper denture is correct.

If incisal level and occlusal plane are also high in upper denture then dentures should be remade. If upper occlusal plane is correct and VDO is not more than 1.5 mm, face-bow record should be used to mount upper denture and inter-occlusal record should be used to mount lower denture. Lower teeth should be selectively grinded to reduce height of occlusal plane. If still excess in vertical dimension is greater than 1.5 mm, then teeth should be reset on lower denture and remade appliance.

c) Upper and lower motor neuron disorder (Bell's palsy, cerebrovascular accident, tardive dyskinesia): It can be recognized by observing the patient and taking medical history.

It can be overcome by optimizing retentive forces and minimizing displacing forces on existing dentures. If dentures are still unsatisfactory, then dentures should be remade with optimal design.

B. Increased displacing forces¹²

This can result owing to overextended denture borders, poor fit to supporting tissues, denture not seated in optimal space and occlusion.

1. Denture borders: Denture borders can cause increased displacing forces due to following reasons:

a) Over-extension in depth: Observation should be made if denture displaces on digital manipulation of cheeks and lips and patient should be asked to perform tongue movements during recording of borders impression. Slow elevation of lower denture when mouth is half open and cheeks and lips immobile is indicative of overextension depth of denture borders.

It can be overcome by reducing overextension of denture using disclosing material if necessary. Denture borders should be repolished.

b) Over-extension in width: Width of upper and lower buccal flanges, usually do not create any problem unless patient complains of bulk or food entrapment between flanges and depth of sulcus.

Problem areas

- Buccal to tuberosities: Coronoid process moves anteriorly on opening mouth and medially in lateral excursions, overextension in width may produce soreness in cheek or displacement of denture.
- Lingual flange: Thick border may enable mentalis muscle to lift denture (digital pressure in labiomental groove will simulate muscle action).
- Upper labial flange: Thick border increases displacing force exerted by upper lip (may also produce unaesthetic bulge in lip profile).

It can be overcome by reducing overextension using disclosing material if necessary. Denture borders should be repolished.

c) Deep post dam on upper denture (recoil of displaced tissues pushes denture downwards): It can be recognized in newly inserted denture where patient may complain of pain in the region of post dam when denture firmly seated by finger pressure.

It can be overcome by reducing the depth of post dam using pressure indicating cream if necessary. Care should be taken not to over reduce, as it may result in deficient seal and also patient should be requested to reduce the denture wearing as little as possible until inflammation subsides.

2. Poor fit to supporting tissues (recoil of displaced tissues lifts dentures): It can be recognized by displaceable tissue on residual ridge or in palate. Denture may also fall/rise when teeth not in contact.

It can be overcome by relining or rebasing the denture using minimal pressure technique. Care should be taken before taking impression, heavy contact should be relieved between denture and supporting tissues which is revealed by disclosing material. The patient must ensure that old dentures should not worn for 90 minutes prior to taking impressions.

3. Denture not sited in optimal space and occlusion: It can occur in posterior region and in anterior region.

a) Posterior regions: It can be due to molars on lower denture placed lingual to residual ridge, large posterior occlusal table and thick lingual flanges.

i. Molars on lower denture lingual to residual ridge: It can be overcome by removing lingual cusps and lingual surface from relevant teeth and reshaping polished surface until flat from occlusal surface to periphery. If this does not restore optimum triangular shape, teeth should be reset or denture remade.

ii. Large posterior occlusal table: It reduces the space available for tongue, thus exerts large laterally directed displacing forces on denture. It can be overcome by placing narrow posterior teeth, reshaping the lingual flanges and removal of the most distal teeth from dentures.

iii. Thick lingual flanges: It reduces space available for tongue. It can be overcome by reshaping the lingual polished surface until border becomes thin (approximately 1.5 mm) and flat from occlusal surface to periphery. If optimum triangular shape of denture is lost then it cannot be restored by narrowing the posterior teeth, appliance has to be remade.

b) Anterior region: It is due to following factors:

i. Excess pressure from lower lip on to lower denture: It can be recognized by lifting of the lower denture vertically in anterior region and denture displacement posteriorly when muscles of lip contract.

It can be overcome by thinning of lower labial flange and grinding the labial surfaces of lower anterior teeth. Optimum posterior extension to retromolar pads should be ensured to resist displacement.

ii. Excess pressure from upper lip onto upper denture: It can be recognized by holding the upper lip gently out of the contact with labial surface of the appliance. This will reduce the denture displacement. Labial positioning of upper anterior teeth and acute naso-labial angle will also exert excess pressure on upper dentures. It can be overcome by correcting or remaking the dentures.

Problems Associated With Support

Support related problems with dentures can occur due following factors:

i. Resorbed ridge:^{12, 15} It can be recognized in cases where the residual ridge may be associated with shallow palate (figure 10).

It can be overcome in two ways:

Retentive forces should be maximized and displacing forces minimized.

Border extension should be optimal in depth and width which is particularly important.



Figure 10: Atrophic maxillary ridge

ii. Fibrous displaceable ridge:^{12, 16} It can be recognized by palpating the residual ridge to determine displaceability. Also when finger pressure is applied on occlusal surfaces or incisal edges, denture might sink into displaceable supporting tissue.

It can be overcome in various ways:

Dentures should be relined or rebased and following additional precaution should be considered.

- Acrylic should be removed from impression surface until there is no contact of tissue surface with displaceable tissue (It should be confirmed with disclosing material).
- Additional vent holes should be made in labial/buccal/lingual flanges of denture.
- Low viscosity impression material should be used.
- Best possible posterior border seal should be provided on completed denture.

iii. Bony prominence covered by thin mucosa: Tori, prominent maxillary midline suture, anterior nasal spine (figure 11) causes denture which to rock about fulcrum provided by area of reduced tissue displaceability thus disrupting retentive seal.

In order to overcome this acrylic should be trimmed from impression surface where disclosing material shows excessive loading of supporting tissues. Ideally even pressure should be exerted over entire support area when teeth are firmly occluded. Care should be taken for:

- Avoiding excessive space created between denture and tissues due to increased relief.
- Denture base should not be over-thinned, which increases the possibility of fracture.



Figure 11: Thin mucosal coverage of bony prominences
iv. Non-resilient soft tissue:

It can be recognized by palpating the displaceability of supporting tissues, it may be associated with:

- Endocrine deficiencies, e.g. oestrogen deficiency (post menopause), diabetes.
- Nutritional deficiencies, e.g. iron, folate.

It can be overcome by relining or rebasing the dentures. Care should be taken that:

- Border extensions are optimal in depth and width.
- Low-viscosity impression material is used.
- Occlusal contacts are optimum in intercuspal position and lateral and protrusive mandibular excursions to minimize displacing forces.

Discomfort Associated With Dentures

Discomfort is common complaint associated with denture soon after the dentures are fitted or after a period of successful wear. It is more commonly associated with mandibular denture-supporting area, although it may also related to the maxillary denture.¹²

I. Causes of discomfort associated with denture may be related to impression surface, polished surface, occlusal surface and miscellaneous factors are as follows:

A. Discomfort related to the impression surface of dentures¹²

This can result owing to following factors.

i. Pearls of acrylic or sharp ridges on fitting surface of denture: It can be recognized by close scrutiny of impression surface for surface irregularities which may be felt with finger or recognized by snagging of cotton wool fibres on the acrylic surfaces (figure 13).

In order to overcome this disclosing material should be used on localized area of denture and denture should be trimmed in region of “wipe-off” (figure 14). Alternatively, disclosing material should be placed over ulcerated or erythematous area and “pick-up” material on offending area of denture which may then be relieved.



Figure 12: Testing for acrylic spicules



Figure 13: Region of over-extension

ii. Denture base not relieved in region of undercuts: It can be recognized by looking for undercuts or ulcerated areas on sides of ridges. In order to overcome this disclosing material should be used on ulcerated area of denture to relieve the pain. Care should be taken to evaluate displaceability of the tissues at maximum contour of the ridge/tuberosity as an excessive amount of denture base may be removed with subsequent reduction in retention.

iii. Pressure areas: It can be recognized by checking impression surface of the denture to ensure if it accords with ridge form and contour.

In order to overcome this, disclosing material should be used to locate pressure area and denture should be relieved. If severe, then denture should be remade.

iv. Over-extension of periphery and lingual flange: It may cause discomfort due to lack of relief for frenal or

muscle attachments and pinching of soft tissue between denture base and retromolar pad or tuberosity.

In order to overcome this disclosing material should be used to identify the position and extent of over-contour and relieve appropriately. Repolishing of trimmed acrylic should be ensured.

v. Deep post damming: Patient complains of sore throat/difficulty in swallowing. It can be overcome by relieving appropriately. It may require removal of present post dam and addition of a replacement in greenstick. Denture should be returned to laboratory for permanent addition of new post dam.

B. Discomfort related to polished surfaces of dentures^{12, 17}

Discomfort may be due to too thick flange constraining coronoid process.

In order to overcome this, offending area on denture periphery should be disclosed, relieved and repolished.

C. Discomfort related to occlusal surfaces of dentures^{16, 18}

This can result owing to following factors:

i. Pain on eating in the presence of occlusal imbalance: This is because of anterior or posterior prematurity, incisal locking or lack of balanced articulation.

It can be overcome by adjusting occlusion by selective grinding (using acrylic burs or carborundum paste) at chair side, or in laboratory after re-registration. If severe error, then it should be reset, using facebow and new interocclusal records.

ii. Pain/ ulceration lingual to lower anterior ridge: It can be recognized by stabilizing lower denture with forefingers and patient should be asked to close together gently. When patient is viewed in profile, a forward slide into intercuspal position (ICP) may be seen.

It can be overcome by marking deflecting inclines of posterior teeth with articulating paper. If slide is greater than half a cusp width, then it should be re-registered and re-tried.

iii. Excessive vertical dimension: It can be recognized by observing or taking history of 'tramlines' or ulcers on buccal shelves with repeated adjustments.

If vertical excess is less than 1.5 mm, it can be overcome by grinding to provide freeway space, if it is greater than 1.5 mm then it should be re-registered and reset at new vertical dimension of occlusion.

iv. Cheek biting:^{12, 19} It can result owing to following causes:

a. Insufficient horizontal overlap of posterior teeth: It is recognized by observing relationship of posterior teeth. Approximately 2 mm of horizontal overlap should be present. Insufficient horizontal overlap is a common cause of cheek biting with complete dentures. If the posterior teeth are in a normal relationship, the mandibular buccal cusps should be rounded in with an abrasive stone. If the teeth are in a cross-bite relationship, the maxillary buccal cusps should be rounded in.

b. Insufficient clearance between denture bases distal to last tooth: It is recognized by checking for clearance of 3-4 mm. It is overcome by thinning the denture base to allow space for tissues of cheek.

c. Sharp buccal cusps: It is recognized by running finger over buccal surface of posterior teeth. It is overcome by rounding the sharp cusps and polishing it.

vi. Tongue biting: It is due to mainly teeth placed lingual to lower ridge. It can be recognized by placing the wax knife on impression surface of denture in imprint of ridge. Central fossae of lower posteriors should lie over the blade of the knife.

It can be overcome by removing the lower lingual cusps, if it is severe, then reset should be done.

D. Discomfort related to miscellaneous causes

Various factors that may lead to denture discomfort are as follows:

1. Burning mouth syndrome (BMS):^{12, 20, 21} It is a condition in which patients complain of burning sensation while wearing complete denture. Areas involved are upper denture supporting tissue, and sometimes may involve intra-oral tissue, e.g. tongue. Majority of patients affected from burning mouth syndrome are between 40 and 60 years of age, mostly females in the postmenopausal stage, which is because of psychologic symptoms in conjunction with the menopause. Also allergy to denture-base materials as an etiologic factor or even a contributing factor in the burning mouth syndrome has been vastly overrated. However, some women in the menopausal stage develop an extreme hypersensitivity of the oral mucosa to contact with or pressure by artificial restorations.

From a diagnostic standpoint, it must be determined whether the condition was present prior to the insertion of the dentures, whether the dentures served merely as the precipitating cause, or whether the dentures were entirely responsible for the burning mouth syndrome.

It can be recognized by doing diagnosis by exclusion with accurate history.

It can be overcome by -

- Examination of denture should be done. If faults are present then it must be excluded.
- Centric relation should be double checked. A new centric occlusion that is in harmony with centric relation should be remounted on an adjustable articulator to correct occlusal disharmonies.
- Border extension and stability of the dentures should be explored with utmost care.

- Hormones and antidepressant therapy should be administered, whenever it is indicated.
- A balanced diet rich in vitamins and essential minerals should be prescribed.
- Patient is asked to maintain good oral hygiene.
- Patient should be referred to consultant oral medicine.

2. Herpetic ulcers:¹² It is caused by herpes simplex or herpes zoster virus.

It can be recognized by taking proper history or by analyzing the distribution of lesion.

It can be treated by prescribing appropriate medication (e.g. acyclovir) and instructions are given to maintain the oral hygiene.

3. Xerostomia:^{12, 14} It is a condition of reduced ability to form a suitable seal in which patient complains of dry mouth. It is commonly side effects of prescribed drugs, irradiation of head and neck region, diabetes mellitus, diabetes insipidus, and chronic infection of some or all of the salivary glands. Also, diarrhea, fevers, vitamin A and other vitamin deficiencies, and drugs, such as opiates and derivatives of Atropos belladonna, may cause the condition.

It can be overcome by

- By prescribing artificial saliva which would enhance the retention and stability in case of complete dentures patients.
- Stimulating saliva with bulky diet, chewing gum, sugar-free citrus lozenges can also be useful.
- By designing the dentures to maximizing retention and minimizing the displacing forces.

4. Hyper-salivation:²⁰ It may become the main complaint of the patient with new dentures, and it may temporarily constitute a major problem. The sialorrhoea during the first week may be so persistent and stubborn that the patient may refuse to wear the dentures. When

sialorrhoea occurs, it usually lasts only several days and gradually tapers off to what may be considered normal. The chief cause for complete denture patients is emotional stress, painful afflictions of the oral cavity, reflex action from stimulation by dentures as foreign bodies, or any combination of the three anxiety, pain, and even mild discomfort in the oral cavity stimulate the salivary glands to increased activity. Other important causes of excess salivation arising from the dentures are as follows: (1) incorrect centric jaw relation registrations, (2) excessive vertical dimension, (3) overextension of denture borders, (4) pain and excessive pressure upon the oral mucosa, (5) pressure upon nerves and their terminal ramifications, (6) excessive stimulation of the salivary glands by the dentures acting as a foreign body, (7) excessive thickness of the dentures restricting the tongue in its static state, as well as in function and (8) the patient's anxiety about possible failure of the dentures.

It can be treated by small doses of opiates or atropine sulphate which may be desirable for the first day or two in instances of severely excessive salivation. Appropriate reassuring and counselling of patient are also essential in some instances, they alone may affect the cure.

5. Vitamin B₁₂ deficiency/folate deficiency:¹²

The oral mucosa may simulate symptoms of traumatic occlusion when, in reality, the patient is suffering from a severe case of avitaminosis. In addition, the denture patient may require a greater than normal vitamin intake because of advanced age, with its frequent impairment of gastrointestinal function. It can be recognized by beefy red tongue, possibly glossodynia including neurological symptoms and patient may also have haematological symptoms. It can be managed by referring to physician for appropriate therapy.

6. Gagging:^{12, 22, 23} It is a condition where patient complains of loose denture with thick distal border of upper denture or lingual placement of upper posterior teeth or low occlusal plane causing contact with dorsal aspect of tongue. It can occur on separate occasions as follows:

A. Gagging at the time of insertion:²²

This can result owing to following causes:

- i. Nervousness at receiving first denture: It is recognised by ruling out other possible causes. It is overcome by prescribing a piece of hard or soft candy during first day or two only to occupy tongue when symptoms appear.
- ii. Posterior border too long:^{22, 24, 25} It is recognised by applying transfer ink to posterior border of denture and insertion after drying tissues. Ink lines are related to vibrating lines. It is overcome by adjusting denture if it extends beyond vibrating line and re-establishing posterior palatal seal.
- iii. Posterior border too thick: It is recognized by inspecting posterior border for thickness over 1.5 mm. It is overcome by relieving by thinning the posterior border of the denture to 1.5 mm.
- iv. Distolingual flange of mandibular denture too long or too thick: It can be recognized by checking the thickness of distolingual borders which should not be over 1.5 mm. Thereafter, overextension should be checked by using disclosing wax or pressure indicating paste. It is managed by shortening the borders if it overextended and thinning of distolingual borders to 1.5 mm.
- v. Maxillary occlusal plane too low, triggering tongue gagging: It can be recognized by checking for gagging response that can be done by simulating contact on tongue with mouth mirror. It can be overcome by repositioning teeth on denture base.

B. Delayed gagging-begins subsequent to day of insertion

This can result owing to following causes:

- i. Heavy mucinous saliva from palatal salivary glands escaping from posterior border:^{20, 22, 26, 27} It can be recognized by removal of denture and observation of thick ropy saliva. It can be overcome by reassurance of patient that secretion will eventually decrease. Removing and cleaning denture frequently along with an astringent mouthwash should be recommended.
- ii. Mandibular teeth set too far lingual triggering tongue gagging: It is recognized by verifying correct buccal and lingual aspects of retromolar pad and the incisal contact of the canine. It is overcome by grinding lingual surface of mandibular posterior teeth or reposition teeth on denture.
- iii. Vertical dimension of occlusal increased beyond physiologic limits: It is recognized by using rest position and phonetics to verify adequate interocclusal distance. It is overcome by repositioning and equilibrating teeth to increase the interocclusal distance.

Apart from all this, management is also done by psychological assessment if indicated, acupuncture therapy, distraction technique or use of conditioning appliance e.g. extended base for home use.

7. Temporomandibular (TMJ) disorders:¹² It is a condition associated with pain with clicking sound on opening and closing the mouth.

It can be recognized by palpating the muscles of mastication or doing direct/indirect assessment of function.

It can be overcome by doing adjustments of occlusion, or giving occlusal pivots. If denture faults are present, careful correction is required with special care to registration and vertical dimension.

8. Patient allergic to denture material:^{12, 28, 29} Many of the diseases formerly classified as allergies are of psychosomatic origin. In the treatment of asthma, hay fever and eczema, it has become very difficult to separate the psychosomatic component from the allergic manifestations. In prosthodontics, few lesions can be labelled as typical allergies. It is only after eliminating all other etiological factors that allergic factors may be suspected. It is usually related to higher residual monomer content of acrylic. This problem can be overcome by rebasing denture using controlled heat cure cycle or by using flexible denture base which are fabricated by polycarbonate, nylon (polyamides), polyester (polyethylene terephthalate), polypropylene or other non-polymethyl methacrylate resin.

9. Denture stomatitis (Denture-sore mouth, inflammatory papillary hyperplasia, chronic atrophic candidiasis):^{12, 30} Patient complaints of burning or itching sensation of palatal mucosa. Usually, it has frictional element (ill-fitting denture) plus opportunistic candidal infection. It can be treated by advising tissue conditioner and cleaning of denture by scrubbing and soaking in hypochlorite solution. Antifungal therapy may also be required.

Other Difficulties

There are a number of other difficulties which are reported from time to time by complete denture patients. They are nevertheless important as they are not infrequently encountered in dental practice.^{23, 12}

A. Noise on eating/speaking^{12, 23}

It can be recognized by checking the following factors such as excessive occlusal vertical dimension, occlusal interference (e.g. unbalanced occlusion, too great incisor overlap), loose dentures and unfamiliarity with new appliance.

It can be corrected by addressing specific faults or by remaking and where unfamiliarity is present, reassurance and persistence with new appliance is recommended.

B. Speech problems^{12, 23, 31}

It is usually uncommon but presence is of great concern to the patient. It may be because of unfamiliarity with new dentures, new tongue position, new occlusal relationships or may be because of new teeth orientation.

As a result, following sounds may be affected

1. Sibilants (s): It can be recognized by asking the patient to count from 60 to 70. It can be overcome by removing of acrylic/addition of wax until problem is resolved. Once the problem resolved wax should be replaced with acrylic, abraded acrylic should be repolished.

2. Bilabial (p, b): Defects in bilabial sound can be recognized by checking the approximation of lips. It can be overcome by correcting occlusal vertical dimension. Removing suspect incisors, replacing in wax and adjusting position at chairside until problem is resolved. Later, wax should be replaced with acrylic resin.

3. Labiodental (f, v): Defects in labiodental sound can be recognized by checking the position of lower lip against incisal edges of upper teeth. It can be overcome by rectifying occlusal vertical dimension. Removing suspect incisors, replacing in wax and adjusting position at chairside until problem is resolved. Later, wax should be replaced with acrylic resin.

C. Eating difficulties^{12, 23}

It may result from following factors:

1. Unstable dentures: Unstability of dentures can be recognized by examining the dentures, where it should be checked for maximized retentive forces, minimized

displacing forces and all available support utilized to best advantage.

It can be overcome by constructing dentures to maximize retention and minimize displacing forces.

2. Blunt teeth: It can be overcome by reshaping the occlusal surfaces. If it would cause loss of occlusal vertical dimension, teeth should be reset and dentures should be remade.

In cases where non-anatomical teeth used, careful explanation of rationale is required, may be possible to reshape occlusal surfaces. Narrow lower posterior teeth should be used.

3. Insufficient occlusal vertical dimension (mandibular elevator muscles not working efficiently): It can be recognized by assessing occlusal vertical dimension.

It can be overcome by increasing up to 1.5 mm in occlusal vertical dimension. This can be achieved by relining dentures.

4. Excessive occlusal vertical dimension (as a result of which mouth 'cannot be open wide enough to get food in'; 'no space in mouth for food'): It can be recognized by assessing occlusal vertical dimension, speech difficulties or pain.

It can be overcome by removing the occlusal plane of each denture up to 1.5 mm by careful occlusal adjustment. Care should be taken to avoid production of flat occlusal surfaces or unaesthetic appliances. Further decreasing in occlusal height may require teeth to be reset/dentures to be remade.

D. Appearance^{12, 23, 32}

Complaints may arise from family/relatives. Common complaints may include shade of teeth too light or dark, mold too big or small and arrangement too even or irregular or lacking diastema.

It can be overcome by correcting the cause of patient's complaint, giving ample time to the patient to comment

at the trial stage or using any available evidence photographs /previous dentures.

The others problems associated with appearance of dentures include:

1. Insufficient or too much visibility of teeth: It can be recognized by checking the orientation of occlusal plane/incisal plane or labiolingual and labiopatal positions of teeth.

It can be managed by resetting the teeth at appropriate position or remaking the dentures.

2. Creases at corners of mouth: It can be recognized by checking the labial fullness and anterior tooth position, it can be achieved by adding wax to labial/buccal surfaces of teeth to visualize effect of moving teeth. It can also be recognized by checking the occlusal vertical dimension.

It can be overcome by moving the teeth to appropriate position.

3. Colour of denture base material i.e. “unnatural”: It can be recognized by physical appearance of the patient. Although patient’s skin colour not taken into account in determining colour of base material but it is documented that pale acrylic is used in plethoric patient whereas pigmented or tinted (characterized) acrylic resin is used for black patients.

It can be managed by remaking the dentures utilizing suitable base material.

4. Form of denture base material: It can be recognized by looking for over or under-contouring of ‘gingival’ regions.

It can be overcome by rebasing the denture or refacing gingival region.

E. Altered taste sensation^{12, 23, 33}

Dentures does not cover many taste buds, thus there is no physiological basis for this complaint. Thickness and low thermal conductivity of acrylic base material

could be the cause. This can be managed by decreasing palatal cover so long as retentive forces deemed adequate. Alternatively, denture can be remade with metal base as it increases thermal conductivity which might enhance food appreciation.

Conclusion

The newly inserted dentures act like a foreign body in the oral cavity and represent a great hindrance in mastication, deglutition, and speech production. These problems are more complicated than they seem at first. To adapt to a new set of dentures, the tongue and the adjacent oral structures must develop a multiplicity of reflex actions. A careful scrutiny based on a thorough knowledge of normal and abnormal tissue response as well as of factors involved in construction of complete dentures is essential before attempting post-insertion checkup or in treating the problems connected with complete denture use. The dentist should be able to assess the quality of a denture in terms of retention, stability, support, occlusion, vertical dimension, aesthetics, phonetics and hygiene. Accordingly, correction should be made to rectify complaints in relation to looseness of dentures, discomfort associated with dentures, support problems or miscellaneous difficulties associated with denture usage.

A concept of complete dentures service should be suggested to be used when providing new complete denture or when trouble shooting existing dentures. Doctors should not have the casual attitude of “Here they are. I hope you like them”, but rather should adopt the more serious and considered approach of “Here we are. Let us both do what we can do to make you look good, be comfortable, and enjoy what we have created.” This would facilitate a more successful treatment outcome and existing result in better acceptance of the prostheses by the patients.

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