

Review Article

How to overcome the trouble shooting problems in complete denture: an overview

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ABSTRACT:

Complete dentures are artificial replacements designed and fabricated according to the patients oral structure. A successful functioning complete denture depends on detail examination, observation and deep knowledge of anatomy and physiology of mouth with scientific preparation, artistic hand skills in clinical and laboratory aspects. Dentures have to function in a dynamic environment maintaining the synchronicity between bones, muscles and joint which is complex and difficult to fabricate. Complete denture treatment comprises of a triad that consists of the dentist, the patient and the dental technician. Various post insertion problems are noted from the patients and the solutions are solved according to the cause of problems. The problems may be transient and may be essentially disregarded by the patient or they may be serious enough to result in the patient being unable to tolerate the dentures. These problems may be from the lack of knowledge in clinical steps or incorrect laboratory procedure or lack of neuromuscular co-ordination. To overcome these problems greater experience and more training are required to accomplish both proper relief of pain or discomfort from denture.

Keywords: Complete denture, post-insertion problems, troubleshooting, solutions, tissue irritation, discomfort and ulceration.

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INTRODUCTION:

Many problems arise subsequent to the insertion of complete dentures. These problems may be transient and may be essentially disregarded by the patient or they may be serious enough to result in the patient being unable to tolerate the dentures¹. Factors causing problems may be grouped, essentially into four causes. Adverse intra-oral anatomical factors eg atrophic mucosa. Clinical factors eg. poor denture stability. Technical factors eg failure to preserve the peripheral roll on a master cast. Patient adaptional factors. The

most critical factor is the patient's adaptional factor. Many patients with positive stereotypes may overcome errors. Some patients, however, are unable to adapt physically and/or psychologically to dentures that satisfy clinical and technical prosthodontic. Once a denture-wearing problem becomes apparent, it is important that it is addressed in a logical and systematic way. An adequate history of the problem and a careful examination of the mouth is carried out, so that an accurate diagnosis can be made following an appropriate treatment plan.^{1,2} This article deals with the

reasons and possible solutions for the post insertion complete denture problems.

Shortcoming problems in complete denture are –

1. Insufficient Retention And Stability
2. Food Accumulation Under Denture
3. Dislodgement Of Denture On Taking Fluids
4. Speech Problems
5. Masticatory Insufficiency
6. Unaesthetic Appearance
7. Fracture
 - Midline Denture Fracture
 - Fracture Of Teeth
 - Fracture Of Denture Flange
8. Debonding Of Teeth
9. Whistling
10. Swallowing Difficulty
11. Loss Of Taste Sensation And Altered Taste
12. Drooling At The Corners Of Mouth
13. Cheek Biting
14. Xerostomia
15. Nausea And Gagging
16. Tingling Of Lower Lip
17. Mucousal Irritation
18. Epulis Fissuratum
19. Papillary Hyperplasia
20. Combination (Kelly) Syndrome^{2,3}

INSUFFICIENT RETENTION AND STABILITY:

Lack of knowledge and skills in making the impressions are primarily responsible for retention and stability. If the patient complains of looseness always, there may be a retention fault, whereas if the patient complains of looseness but the dentures resist a direct pull, then lack of stability may be suspected.⁴ Sometimes, faulty occlusal contacts are also responsible in movement of denture and perceived as lack of stability and retention. Mandibular denture is often the focus of frequent patient complaints such as instability, pain, and inability to chew.^{5,6,7,8} Insufficient motivation and faulty tongue position often results in inability to chew and lack of retention. Retention of prostheses can be improved by including use of denture adhesives, relining, rebasing and the use of endosseous dental implants.^{7,8}

FOOD ACCUMULATION UNDER THE DENTURES:

Food accumulation under the mandibular dentures could be minimized by correct position of the tongue by the patient. Wright and co-authors suggested that the ideal resting position of the tongue is to keep the apex of the tongue in proximity to lingual surfaces of the mandibular anterior denture teeth, with the lateral surface touching the posterior teeth of the denture.⁹ The less adept the patient is in stabilizing the prosthesis during function, greater the denture movement and

greater the quantity of food particles that would collect beneath the dentures. Unilateral chewing causes greater denture movement, so bilateral chewing is recommended.¹⁰

DISLODGE MENT OF DENTURES ON TAKING FLUIDS:

This problem may occur when the dentures are first worn by the patient. The patient should be informed that it is possible to experience loosening of dentures while taking fluids. A patient may get used to it when the lips, cheeks and tongue learn to manipulate the dentures.¹¹

SPEECH PROBLEMS:

Although the majority of patients adapt to new dentures within weeks, some patients report difficulties during speech.¹² Tongue plays a major role in converting a sound into an intelligible phoneme. Phonetics may be evaluated by palatography. This test consists of evaluating contact between the tongue and the palate through phonetics. Kong and Hansen^{12,13} demonstrated the need to personalize the palatal contour of a maxillary denture in relation to tongue as this procedure can reduce the period for adaptation to the prosthesis. The length, form and thickness of the lingual flange of the mandibular denture is also critical in speech.^{14,15} Adaki et al showed that there was relative improvement of speech with rugae incorporated dentures. Among these, customized rugae dentures showed better results than arbitrary rugae dentures. Improper position of the maxillary anterior teeth could also lead to difficulties in speech.¹⁶ Repositioning the anterior teeth could help to overcome the problem.

MASTICATORY INSUFFICIENCY:

A period of 6-8 weeks is necessary to establish new memory patterns for the masticatory muscles.¹² Patients mostly assume that any difficulty caused during mastication is due to faulty dentures. They must be taught that chewing with their artificial teeth is a complicated mechanism where the whole masticatory system is involved. Hence patients should be advised to chew simultaneously on both sides to aid in the stability of the dentures.¹⁷ They should be instructed to start having light, non-sticky foods and gradually shift to more resistive food substances.¹⁸ Patients should be educated that the chewing efficiency of the denture wearer is less than one-sixth that of the subject with a natural dentition.^{20,21} Masticatory load values using complete dentures are much lesser (50 psi) than those produced by the natural dentition, which is of the order of 250 psi.

UNAESTHETIC APPEARANCE:

A dentist must attempt to create an appropriate smile and appearance that suits the patients' physical

character and aesthetic needs.²⁰ Instead of imposing our aesthetic choices on the patient, the patient's spouse, children or any family members should be included in decision making as they are the ones who would appreciate the patient's smile.^{22,23} The dentures should never be processed until the patient has accepted the arrangement with the teeth positioned in wax during trying phase. A patient may complain that the lower teeth are not visible or may be dissatisfied with the degree of visibility of teeth. Of course, increased visibility can be achieved by incorporating large overbite, but this may present a problem in the stability of the dentures.¹¹ Another source of complaint is drooping of the lips or presence of folds and creases near the lips and mouth.⁸ A further increase of the occlusal vertical dimension to get rid of facial wrinkles mainly due to ageing should be avoided as it may render the adaptation to the new dentures more difficult.^{22, 23} Careful contouring of the labial flange and the inclination of the maxillary central incisors will preserve the contour of the philtrum and the tubercle of the upper lip by providing adequate support.¹¹ If the patient complains of lip fullness, the width of the peripheral roll and the labial flange can be modestly reduced from the facial aspect without compromising retention or esthetics.²⁴

FRACTURED DENTURE:

The cause of fracture should be determined first when a patient arrives with a complaint of fractured denture to know the condition under which fracture occurred. Fracture may be of two kinds : accidental and stress induced. Any signs of porosity or lack of adhesion of artificial teeth to denture base or presence of tori and undercuts can be a possible reason.¹⁴ Incorporation of a metal mesh and higher strength polymers, notably impact-resistant materials, will reduce the tendency to fracture. Constructing dentures with metal palates for patients with heavy occlusions has the dual advantage of providing greater strength and better thermal stimulation of the underlying mucosa.²⁵

DEBONDING OF TEETH:

Debonding of teeth may result from wax remaining between the surface of the artificial tooth and the denture base acrylic resin and forming an insulating layer during acrylic resin pressing. Insufficient pressure during packing and excessive trimming of the teeth while arrangement to accommodate heavy ridges could also be the reasons for debonding.²⁶

WHISTLING:

When the patient wears the denture for the first time, the patient may complain of whistling while talking which could be because of increased palatal vault depth and compressed arch form. Lowering the palatal

contour should help the condition.^{11,27} Failure to duplicate the rugae could also lead to this problem.

SWALLOWING DIFFICULTY:

Pain during swallowing is often caused by overextended peripheral extensions such as an overextended posterior palatal seal area or overextended retromylohyoid flange and compression on the superior constrictor. This may also be caused by an increased vertical dimension. Reducing the overextension or the vertical dimension should solve the problem.^{11,27}

LOSS AND ALTERED TASTE SENSATION:

This is a common complaint with elderly edentulous patients probably because their taste buds begin to atrophy due to old age. The patient should be told that most of the taste buds are on the tongue and are not covered by the dentures.^{11,28} Placement of a denture base that decreases the stimulation and temperature sensations to the palate may partially account for a loss of taste.²⁹ Common aetiology of altered taste is poor oral hygiene.¹¹ Patients should clean the dentures daily by soaking and brushing with a nonabrasive denture cleanser. Tongue brushing is important for increasing taste acuity in geriatric patients.²⁸

DROOLING AT THE CORNERS OF THE MOUTH:

This problem may occur due to a decreased vertical dimension and an attempt should be made to correct the vertical dimension. Also if the vertical dimension is correct, then an attempt should be made to increase the thickness of the flange in the modiolus area.¹¹

CHEEK BITING:

Commonly occurs due to a lack of horizontal overlap in the posterior teeth. Posterior teeth that occlude edge to edge will often catch the cheeks.¹¹ This problem usually can be corrected by reducing the buccal surface of the offending mandibular tooth to create additional horizontal overlap, thus providing an escape for the buccal mucosa.¹⁷ Also, a decrease in vertical dimension contributes to cheek biting since the cheeks tend to collapse into the occlusal area.¹¹

XEROSTOMIA:

Many elderly patients take multiple medications and many of these drugs can cause xerostomia which negatively affects the patient's ability to tolerate complete dentures.²⁷ Such patients have difficulty masticating and swallowing, particularly dry foods. This could be overcome by instructing the patients to drink fluids while eating.^{30,31} Xerostomic patients should also be advised to drink plenty of water (a minimum of eight glasses) daily.³² Lack of lubrication at the denture-mucosa interface can produce denture

sores, the use of artificial saliva and frequent mouth rinses may be helpful. A palatal reservoir filled with artificial saliva will enhance the quality of life of xerostomic denture wearing adults.^{31,32} Sialogogues, which are drugs that stimulate the flow of saliva without affecting its ptyalin content, can be prescribed to the patient if some glandular function still is present.³¹

NAUSEA AND GAGGING:

These complaints may be seen in patients with an exaggerated gag reflex. It may also be caused by overextended posterior extent of the maxillary denture and the distolingual part of the mandibular denture. To overcome this denture should be reduced posteriorly to the posterior palatal seal area. The condition is often due to unstable occlusal contacts or increased vertical dimension of occlusion because the unbalanced or frequent occlusal contacts may prevent adaptation and trigger gagging reflexes.^{27,19}

TINGLING OF THE LOWER LIP:

This problem may be seen in ACP (American College of Prosthodontists) Class 4 patients when excess resorption has lead the mental foramen to be located near the crest of the mandibular residual ridge.¹⁷ If no relief is provided, then tingling and mild paresthesia of the lower lip may occur. This area may be recorded and relieved to eliminate the problem.¹¹ A similar situation can occur in the maxillae from pressure on the incisive papilla due to compression on the nasopalatine nerve. The patient may complain of burning or numbness in the anterior part of the maxillae. Relief may be required in the maxillary denture base in this region.^{17,19}

SOFT TISSUE PROBLEMS:

Mucosal Irritation: Appear mainly due to two reasons , compression beyond physiological limits and movement of denture during function. This is often seen at the frenii, muscular attachment regions, the hamular notch area, mandibular retromylohyoid area and buccal area.^{5,17} Mucosal irritation may be due to faulty jaw relations or faulty arrangement of teeth, i.e., decreased or increased vertical dimension, instability caused by incorrect centric relation, premature contact in centric occlusion or by arrangement of posterior teeth buccal to the residual alveolar ridge. Mucosal irritation may also occur as a result of overextended borders and can be corrected by reduction of the borders. The use of a disclosing medium on the intaglio surface of the denture can be helpful to determine the area and extent of corrections to be done.^{18,17,27} Denture stomatitis is a common occurrence in denture wearers, resulting in an area of erythema beneath the denture. Its aetiology is multifactorial, and it may be associated with both local

and systemic factors.^{4,30} Its management includes antifungal therapy, correction of ill-fitting dentures and efficient plaque control with oral hygiene maintainance.

Epulis fissuratum: Epulis fissuratum is an irritation fibroma that develops over a long period of time due to an illfitting denture. These can be very large and firm. Successful treatment involves surgical removal of the epulis and lining the denture with tissue conditioner. Allow six weeks for the area to heal, then evaluate the site and reline the denture or make a new one.^{11,15}

Papillary hyperplasia: Papillary hyperplasia is an overgrowth of tissue caused by an ill fitting denture, wearing the denture at night and poor oral hygiene.. It usually occurs in the anterior palate and is often associated with a vacuum chamber that was placed to improve retention of the maxillary complete denture. It can occur with or without the presence of Candida albicans Overcome by surgically removing the excess tissue and relining the denture with tissue conditioner.^{11,15}

Combination (Kelly) syndrome: Generally results when a maxillary complete denture is opposed by a mandibular distal extension removable partial denture (RPD) and typically when the patient does not wear the mandibular RPD. It manifests as a flabby maxillary anterior ridge and is often associated with distended maxillary tuberosities. Overcome by augmenting the maxillary anterior ridge, surgically reducing the tuberosities and making new dentures.^{11,15}

SUMMARY:

There is a vast difference in the magnitude and number of the complaints , many of which may arise at a later stage. Some of these complaints can be minimized, a few can be eliminated and some for which the dentist and the patient must contend with. Denture insertion is not the last stage of complete denture fabrication process. Post insertion adjustments are important clinical phase following fabrication and insertion of a complete denture. Hence, a patient should always be recalled so that the remaining complaints can be eliminated. A proper counseling to the patient is beneficial in terms of g problems arriving from complete denture and solutions to rectify it. Basic oral hygiene maintenance is mandatory to follow to avoid other problems of bacterial infections.

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