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REVIEW ARTICLE

Post Insertion Denture Instructions, Problems and Its Management In Complete Denture Patients -A Review

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ABSTRACT:

Complete-denture therapy involves a complex interplay between the biologic and technical limitations. Fabrication of successful 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 interplay between the clinician and the patient. Identification of post insertion complaints in different types of prosthesis would be very supportive to developing strategies to prevent and manage these more effectively by reducing all negative factors associated with these complaints. Hence, this article reviews about post insertion instructions, problems and management in denture patients.

Key words: Denture, Management, Insertion

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INTRODUCTION

"Fitting the personality of the aged patient is often more difficult than fitting the denture to the mouth"
-Jamieson

The elderly population is remarkably increasing world-wide.¹ The fast-growing segment of population are in increased need of special care and attention to maintain a reasonable quality of life in the face of disability and growing frailty in this group. This might result in an increased demand for health and social services over the next quarter century.² Tooth loss has a direct influence on reduced masticatory function and a shift towards a poorly balanced diet. This in turn will result in an increase in oral diseases due to a deficiency in various micronutrients, leading to a uncompromised immune status. Ill-fitting dentures will worsen this situation and patients may avoid certain social activities like speaking, smiling, eating etc. in the presence of another person.³ Fabrication of complete dentures is dependent on technical, biological, and psychological interplay between the clinician and the patient. Paramount to the patient are factors as esthetics, comfort, and masticatory ability.

The overall success of complete denture therapy depends on patient's comfort and acceptance of the dentures.⁶

Complete denture is essential to rehabilitate the stomatognathic system by improving masticatory efficiency, phonetics and aesthetic appearance of completely edentulous patients. Hence, the follow-up care of complete denture is an important step and it helps to correct minor problems and complaints, as wearing complete dentures with problems and complaints may have adverse effects on the health of denture supporting tissues.⁴ Satisfaction with dentures is impacted by factors such as denture quality, available denture-bearing area, the quality of the dentist-patient interaction, previous denture experience, the patient personality and psychological well-being.

Hence, this article reviews about post insertion instructions, problems and management in denture patients.

Patient Education -The concept of "difficult denture birds" was described by *Koper* (1988) which is

defined as a problem denture patient with much experience as a recipient of various kind of dental therapy. They are individuals who complain, have pain, are hostile, tense, anxious, and unhappy people. They often exhibit regressive behaviour and transfer many of their fear and frustrations to their mouth and face.

➤ **Patient education at impression and jaw relation recording procedures**¹²⁻¹³

Considerable instruction may accompany impression making and brief concise explanation of the impression technique should be given with proper emphasis on the role of the patient in that procedure. Diagnostic casts, facial measurements, old and recent photographs, profile records and the patient's old dentures if available can be employed to illustrate the discussion.

➤ **Patient education at the try-in**¹²⁻¹³

At the try-in stage, the dentist should instruct the patient carefully that denture teeth should be shaded and have embrasures and diastemas to simulate natural appearance. Dentist should explain that the denture will seem to be bulky at the try-in stage. The patient should be given a mirror and instructed to speak and count. Each patient should be accompanied by a close friend or relative at the try in. It is absolutely necessary to obtain the complete consent and satisfaction of the patient before proceeding with the construction of the dentures.

➤ **Patient education at the denture insertion stage**¹²⁻¹³

The denture insertion appointment represents a marked transition in complete denture treatment. From this point forward, the here to fore *dentist-directed* care becomes *patient-directed* as the patient experiences new sensations and reports those that are unexpected or intolerable to the dentist for remedy. For this reason, at the insertion appointment, the dentist must employ both technical and interpersonal skills in order to place the patient on a trajectory toward success.

INSTRUCTIONS TO THE PATIENT REGARDING DENTURE CARE

Guidelines for the care and maintenance of complete dentures¹

In 2009, the American College of Prosthodontists (ACP) formed a task force to establish evidence based guidelines for the care and maintenance of complete dentures.

1. Careful daily removal of the bacterial biofilm present in the oral cavity and on complete dentures is of paramount importance to minimize denture stomatitis and to help contribute to good oral and general health.
2. To reduce levels of biofilm and potentially harmful bacteria and fungi, patients who wear dentures should do the following:
 - a. Dentures should be cleaned daily by soaking and brushing with an effective, nonabrasive denture cleanser.

b. Denture cleansers should only be used to clean dentures outside of the mouth.

c. Dentures should always be thoroughly rinsed after soaking and brushing with denture cleansing solutions prior to reinsertion into the oral cavity. Always follow the product usage instructions.

3. Dentures should be cleaned annually by a dentist or dental professional using ultrasonic cleansers to minimize biofilm accumulation over time.
4. Dentures should never be placed in boiling water.
5. Dentures should not be soaked in sodium hypochlorite bleach, or in products containing sodium hypochlorite for more than 10 minutes as it will damage the denture.
6. Dentures should be stored immersed in water after cleaning, when not replaced in oral cavity to avoid warping.
7. Denture adhesives can improve the retention, stability of dentures, quality of life, mastication function and help seal out the accumulation of food particles beneath the dentures, even in well-fitting dentures.
8. Extended use of denture adhesives should not be considered without periodic assessment of denture quality and health of the supporting tissues by a dentist, prosthodontist, or dental professional.
9. Improper use of zinc-containing denture adhesives may have adverse systemic effects. Therefore, zinc-containing denture adhesives should be avoided.
10. Denture adhesives should be completely removed from the prosthesis and the oral cavity on a daily basis.
11. If increasing amounts of adhesives are required, patient should see a dentist or dental professional to evaluate the fit and stability of the dentures.
12. It is recommended that dentures should not be worn continuously (24 hours per day) in an effort to reduce or minimize denture stomatitis.
13. Patients who wear dentures should be checked annually by the dentist for maintenance of optimum denture fit and function, for evaluation for oral lesions and bone loss and for assessment of oral health status.
14. Patient should not wear the old dentures during the 12–24 h before insertion to allow the insertion of the new dentures on supporting tissues without compression.

PERIODIC RECALL APPOINTMENTS /FOLLOW-UP FOR ORAL EXAMINATION⁷

Patients must be educated that annual recall appointments are important to ensure the sustained optimal fit and function of their new prosthesis as well as for the maintenance of mucosal health. In many cases, the period of postinsertion adjustment is crucial for denture success rather than failure, and the professional is responsible for providing patient care during this period as adaptation is specific for each

patient, and may require several months to be achieved.⁸

Boucher has advised recall appointments immediately 24 hour post insertion and periodic checkup phase. **Sharry** has advised four recall appointments after 10 days, 3 weeks, 6 weeks and 3months consequently from denture placement. **Allen and McCarthy** advised appointment within 1 to 2 days of delivery of the denture with annual recall is recommended.

POST INSERTION PROBLEMS IN COMPLETE DENTURE

Loss of natural teeth and subsequent alveolar resorption has a significant impact on appearance & function. Problems and their causes with respect to the post insertion recall visits at an interval of a stipulated period of time of 24 hours , 72 hours , one week and three weeks are:-⁵

Table 1: Problems after 24 hours of denture insertion:

Problem	Cause	Treatment
Trauma at the peripheral area	Sharp edge of acrylic or an acrylic pearl	Use disclosing agent , an area of wipe off would be seen, remove the sharp edge and smoothen out the denture periphery
Gagging	i)Overextended maxillary denture. ii)Decreased stability of the maxillary denture. iii) Overextended mandibular denture iv)Over polished maxillary denture	i)Check for proper extension in the posterior palatal seal area.ii)Check for Occlusal prematurities iii)Check for the over extension in the retromylohyoid area and correct accordingly.
Difficulty in swallowing	i)Overextended mandibular denture in the retromylohyoid area ii)Increased vertical dimension of occlusion	Check for over extension and correct accordingly
Pain or ulceration in the area of the labial or buccal freni in either the maxillary and mandibular denture	Freni not relieved properly	Use disclosing media and correct accordingly
Difficulty in speech.	This problem could range from lisping or whistling sound while speaking due to the incorrect contour of the palate of the maxillary denture, to a difficulty in getting adapted to the new dentures	Check for the sounds while patients speak words containing a lot of the “s” alphabet and correct the palatal contour. If the problem is difficulty in getting used to new dentures, educate the patient

Table 2: Problems which the patient presents with 72 hours after denture insertion

Problem	Cause	Treatment
Pain or area of ulceration present at the crest of the ridge	• Usually a result of occlusal prematurity.	<ul style="list-style-type: none"> • Locate the prematurity using articulating papers and correct accordingly. • No alterations to be done to the intaglio surface if it is found to be smooth.

Soreness or ulceration present at lingual part of the slope of the anterior part of the mandibular ridge	This is usually due to incorrect recording of the centric relation which results in shifting of the mandibular denture base resulting in trauma.	i)If the shift from the centric is very minimal, it can be corrected using selective grinding. ii)However if gross amount of movement of the mandibular denture base is seen, at least one of the dentures have to be remade
Soreness at the area of the buccal frenum of the maxillary denture	This results when the retentive qualities of the denture holds it in place, while enough relief is not provided at the area of the buccal frenum.	Use disclosing agent and provide relief to the buccal frenum as required.
Dentures making clicking sound when the patient tries to speak	This is the result of increased vertical dimension of occlusion.	i)If the increase is slight, correct it using selective grinding. ii)If the increase is gross, remaking of the dentures may be required
Ulcerations on the lateral borders of the tongue	This is usually due to a sharp edge of a tooth or too much lingual tilting of the occlusal surface of the lower teeth leading to cramping of the tongue	i)Check for the cramping of the tongue by asking the patient to protrude the tongue slightly, if the mandibular denture lifts dentures have to be remade. ii)However, if the cause is a sharp cusp of a tooth, round it off.
Pain at posterior aspect of upper denture on opening	Flange at the buccal aspect of the tuberosity too thick	Use disclosing agents to locate the area of excess, relieve and repolish.

Table 3: Complaints presented by the patient after about a week of denture insertion

Problem	Cause	Treatment
Pain about periphery of dentures	Excessive vertical dimension of occlusion	i)If excess is less than 1.5 mm -grind ii) If the excess is more than 1.5 mm. remake dentures at a new VDO
Appearance-Complaints may arise from patient or relatives. Common complaints include: shade of teeth too light or dark; mould too big/small; arrangement too even or irregular or lacking diastema.	i)Patient failed to comment at trial stage, or has subsequently been swayed by family or friends. ii)Perhaps the change from the old denture to the replacement denture	i)Accurate assessment of patient's aesthetic requirements.ii)Ample time for patient comments at trial stage.iii) Use any available evidence to assist - photographs, previous dentures

Table 4: Complaints reported by the patient after 3 weeks of denture insertion

Problem	Cause	Treatment
Cannot open mouth wide enough for food'.	Excessive VDO	Can remove up to 1.5 mm from occlusal plane by grinding, but if more is required, remake dentures
Eating difficulties.	Dentures move over supporting tissues	Construct dentures to maximise retention and minimize displacing forces.

<p>'Blunt teeth'</p>	<ul style="list-style-type: none"> • Broad posterior occlusal surfaces which replaced narrow teeth on previous denture. • Non-anatomical type teeth used where cusped teeth previously used. 	<p>Where non-anatomical teeth used, careful explanation of rationale is required, may be possible to reshape teeth, Routine use of narrow tooth moulds recommended.</p>
<p>Speech problems- May affect sibilant (eg s), bilabial (eg p,b), labiodental (eg f,v)</p>	<p>Cause may not be obvious. May be unfamiliarity - check that problem not present with old dentures.</p>	<p>i)Check for vertical dimension accuracy, and that vertical incisor overlap not excessive.ii) Palatal contour should not allow excessive tongue contact or air leakage iii) patient's speech is assessed at trial insertion visit,recommended</p>
<p>Gagging</p>	<p>This complaint could be the result of food getting under the maxillary denture base and causing the denture base to dislodge and irritate the dorsal surface of the tongue, leading to gagging.</p>	<p>i)Check for proper extension and seal at the posterior palatal seal area ii)Addition at the area with self-cure acrylic resin could be done to achieve a better seal.</p>

COMMON COMPLAINTS¹⁴

The most frequent complaints of patients wearing complete dentures are:-

1. Mucosal irritation
2. Loosening of Denture
3. Food accumulation under the dentures
4. Difficulty in speech
5. Difficulty in mastication
6. Unattractive appearance
7. Fractured denture

relations -decreased or increased vertical dimension, instability caused by incorrect centric relation, premature contact in centric occlusion iv) Faulty arrangement of teeth, v) Overextended borders
Management i) Use of a disclosing medium on the intaglio surface of the denture determines the area and extent of correction. ii) An inside-out approach is recommended iii)Occlusal correction and proper jaw relation. iv) Denture stomatitis being multifactorial, it may be associated with both local and systemic factors. Its management includes antifungal therapy, correction of ill-fitting dentures, and efficient plaque control.

2. Loosening of Denture

If the patient complains of looseness always, there may be an obvious retention fault, whereas if the patient complains of looseness but the dentures resist a direct pull, lack of stability may be suspected, this could be caused by-i)Faulty occlusal contacts ii)Insufficient motivation iii)Faulty tongue position iv)Thick and ropy saliva interferes with the overall adaptation of denture. **Management:-** i)Levin advocated placement of a groove in the anterior lingual flange of the mandibular denture to train the patient and instruct the patient to touch the groove

8. Fractured tooth from denture

1. Mucosal irritation

The mucosa should be free from irritation, otherwise the functions will be impaired. Mucosal irritation occur due to- i) Compression beyond physiological limits ii) Movement of denture during function- Often seen at the freni, muscular attachment regions, the hamular notch area, mandibular retromylohyoid area and buccal area. iii) Faulty jaw intermittently, 10 times a stretch. Then hold it there for two minutes. Repeat this 10 times in a session for four sessions a day. ii) *Bohnenkamp and Garcia* suggested a phonetic training technique to use the tongue and buccinator muscles to retain and stabilize the mandibular denture by pronouncing the long "e" sound. iii)Retention of prostheses can be improved by use of denture adhesives, relining and rebasing.iv) Use of endosseous dental implants.v) Patient should rinse out the ropy saliva about every two to three hours with a mouthwash.

3. Food accumulation under the dentures

The less adapted 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. Food accumulation under the mandibular dentures could be minimized by- i)Correct position of the tongue by the patient, *Wright and co-authors* suggested that the ideal resting position of the tongue ii)Unilateral chewing causes greater denture movement, so bilateral chewing is recommended.

4. Difficulty in speech

Although the majority of patients adapt to new dentures within weeks, some patients report difficulties during speech because of- i)Length, form and thickness of denture base ii)Improper position of the maxillary anterior teeth.iii)Improper tongue position. **Management-**i) Phonetics may be evaluated by palatography ii)*Kong and Hansen* 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. iii)*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. iv) Repositioning the of anterior teeth.

5. Difficulty in Mastication

A period of 6-8 weeks is necessary to establish new memory patterns for the masticatory muscles. *Koshino et al.*, concluded that the basal area of the denture foundation greatly influenced the masticatory efficiency and was limited by their own residual ridges

Instructions to patient:-i)Patients should be advised to chew simultaneously on both sides to aid in the stability of the dentures.ii)Have light, non-sticky foods and gradually shift to more resistive food substances.iii)Chew with their posterior teeth, especially those who had to chew with a few anterior natural teeth before going for the complete denture. iv) Patients should be informed about the limitation of the recovery of masticatory ability before the beginning of denture treatment.

6. Unattractive appearance¹⁵

Patients generally want teeth which are lighter in shade and smaller in size and should be educated regarding good dental aesthetics.

Complaints: -i)Dissatisfied with the degree of visibility of teeth ii)Drooping of the lips iii)Presence of folds and creases near the lips and mouth. iv) Excessive lip fullness.

Management- i) Increased visibility can be achieved by incorporating large overbite but this may present a problem in the stability of the dentures.ii)Increasing the occlusal vertical dimension to get rid of drooping of lips and facial wrinkle. **iii)**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. **iv)**For 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.

7. Fractured denture¹⁶

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 :-i) Accidental,ii)Stress induced. **Causes:-**i)Porosity in denture base. ii)Lack of adhesion of artificial teeth to denture base. iii)Presence of tori and undercuts. iv)Large frenum requires large notches,to accommodate such frenum large notches are considered a “*cleavage point*”. Therefore, are responsible for fracture of dentures. v)Buccally placed teeth vi)Resorption pattern vii)Failure to relieve palatine raphe viii)Single complete dentures are more susceptible for fractures.

Management:-

- i)Reducing the need for a deep frenal notch by a frenectomy.
- ii)Incorporation of a metal mesh and higher strength polymers, will reduce the tendency to fracture.
- iii)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.
- iv)Relieving palatine raphe, tori and undercuts.

8. Fractured tooth from denture¹⁹

Causes:-

- i)Wax remaining between the surface of the artificial tooth and the denture base acrylic resin forming an insulating layer during acrylic resin pressing.
- ii)Insufficient pressure during packing.
- iii) Excessive trimming of the teeth while arrangement to accommodate heavy ridges.

Management:-Removal of wax between artificial tooth and denture base and Sufficient application of pressure and avoid excessive trimming.

UNCOMMON COMPLAINTS

Patients register an amazing variety of complaints against complete dentures, but some of the complaints are not as common as others. These include whistling, swallowing difficulty, loss of taste sensation, altered taste, dislodgment of dentures on having fluids, drooling at the corners of the mouth, cheek biting, dryness of mouth (xerostomia), nausea and gagging and tingling of the lower lip.⁹⁻¹¹

1. Whistling¹⁷

When the patient wears the denture for the first time, the patient may complain of whistling while talking which could be because of:-

- i)Increased palatal vault depth
- ii)Compressed arch form.
- iii)Failure to duplicate the rugae could also lead to this problem.
- iv)Lowering the palatal contour and duplicating rugae should help the condition.

2. Swallowing difficulty¹⁸

Pain during swallowing is often caused by :-
i)Overextended peripheral extensions-such as an overextended posterior palatal seal area or overextended retromylohyoid flange. ii)Compression

on the superior constrictor. iii)Increased vertical dimension. iv)Reducing the overextension or the vertical dimension should solve the problem.

3. Loss of taste sensation

This is a common complaint with elderly edentulous patients probably because their taste buds begin to atrophy at about the same time that dentures are first worn.

The patient should be told that most of the taste buds are on the tongue and are not covered by the dentures and placement of a denture base that decreases the stimulation and temperature sensations to the palate may partially account for a loss of taste.

4. Altered taste

Common etiology of altered taste is poor oral hygiene. Patients should clean the dentures daily by soaking and brushing with a nonabrasive denture cleanser. One should follow the guidelines on the daily and long term care and maintenance of complete denture prostheses. Tongue brushing is important for increasing taste acuity in geriatric patients.

5. Dislodgement of dentures on having fluids¹⁸

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

6. Drooling at the corners of the mouth¹⁸

Cause:-

- i)Decrease vertical dimension.
- ii)Decrease thickness of flange.

Management:-Correct the vertical dimension. and Increase the thickness of the flange in the modiolus area.

7. Cheek biting¹⁸

Cause:-

- i)Lack of horizontal overlap in the posterior teeth.
- ii)Decrease in vertical dimension.

Management:-Reducing the buccal surface of the offending mandibular tooth to create additional horizontal overlap, thus providing an escape for the buccal mucosa and increasing the vertical dimension.

8. Dryness of Mouth (Xerostomia)

i)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 and have difficulty masticating and swallowing, particularly dry foods.

ii)Lack of lubrication at the denture-mucosa interface can produce denture sores.

Instructions:-

i)Patient should be advised to drink plenty of water (a minimum of eight glasses) and fluid daily.

ii) Use of artificial saliva and frequent mouth rinses particularly during meals.

iii)Palatal reservoir filled with artificial saliva will enhance the quality of life of xerostomic denture wearing adults.

iv)Sialagogues, can be prescribed to the patient if some glandular function still is present.

9. Nausea and gagging

Cause:-

i)Patients with an exaggerated gag reflex.

ii)Overextended posterior extent of the maxillary denture and the distolingual part of the mandibular denture.

iii)Unstable and poorly retained dentures.

iv)Unstable occlusal contacts or increased vertical dimension of occlusion because the unbalanced or frequent occlusal contacts may prevent adaptation and trigger gagging reflexes

Management:-

i)In case of overextended borders, denture should be reduced posteriorly to the posterior palatal seal area.

ii)Stable occlusal contacts.

iii)Decrease vertical dimension.

10. Tingling sensation

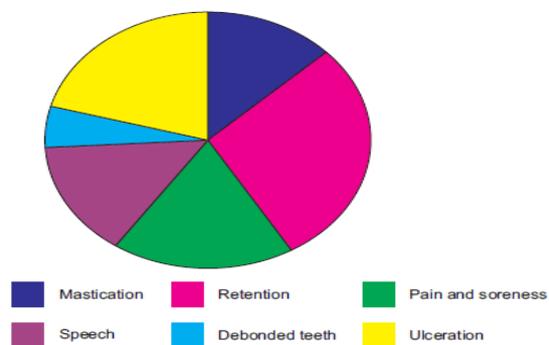
Cause:-

i)In mandible- It may be seen in ACP (American College of Prosthodontists) Class IV patients when excess resorption has led to mental foramen to be located near the crest of the mandibular residual ridge, then tingling and mild paraesthesia of the lower lip may occur.

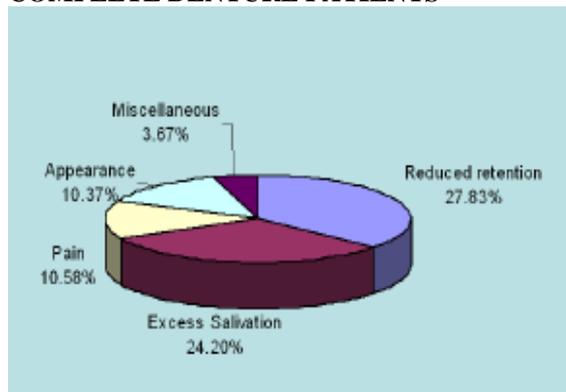
ii)In maxilla- pressure on the incisive papilla due to compression on the nasopalatine nerve, patient may complain of burning or numbness in the anterior part of the maxillae.

Management:-Providing relieve in mandibular and maxillary denture base in these regions.

PREVALENCE OF POST INSERTION COMPLAINTS IN REMOVABLE PARTIAL DENTURE PATIENTS



POST INSERTION COMPLAINTS IN COMPLETE DENTURE PATIENTS



FUTURE RESEARCH NEEDS¹

The ACP Task Force acknowledges that there are significant gaps in the literature related to complete denture care and maintenance. Additionally, on the basis of the current level of evidence, the task force recommends that future clinical and laboratory research focus on the following areas:

1. Further exploration of effective cleaning methods will improve the quality of denture use, that is, microwave cleaning. This includes the long-term clinical evaluation and improvement of specific denture-cleaning components for safety, efficacy and ease of use.
2. The impact of denture hygiene on oral and general health requires additional investigation.
3. Proper identification of the inflammatory process in denture stomatitis could enable clinicians to prescribe proper treatments for this condition.
4. The long-term effects (longer than 6 months) of denture adhesive use on oral tissue health need to be determined.
5. Additionally, methods for enhancing the removal of adhesives from the tissue-contacting surface of dentures and oral soft tissues should be developed.

CONCLUSION

Denture insertion represents the culmination of a series of carefully considered and exacting procedures on the part of the doctor. It is also the moment eagerly awaited by the patient, who has cooperated in both time and effort toward this event. Well-made dentures enable the patient to have comfort, adequate function, and an appearance that will further society relationships and participation.² Identification of post insertion complaints in different types of prosthesis would be very supportive to developing strategies to prevent and manage these more effectively by reducing all negative factors associated with these complaints.³ There is potential for problems to 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 dentures⁽¹⁾

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