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Review Article

Common Post-Insertion Problems in Complete Denture Patient and their Management: A Scrutiny

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Abstract

Prosthodontics is an ever evolving branch in dentistry and with recent advances in materials and technology, an array of treatment options are available for patients presenting with the problem of missing teeth. Implants have been substantial contributors in providing fixed prosthodontics rehabilitation to the partially and completely edentulous patients. For a completely edentulous patient somehow, removable complete dentures are still the treatment of choice in majority of the cases, the reasons could be manifold. Low cost, simple technique of fabrication, access and availability to the maximum number of people in the country makes it a favourable treatment modality offered to the edentulous patients. Though the fabrication and delivery of the prosthesis appears to be simple, its successful outcome depends upon a complex interplay of factors. It is absolutely essential to not just understand the anatomy and physiology of oral foundation tissues to fabricate a retentive and stable complete denture but it's equally important to understand what factors will determine its success and how to troubleshoot the problems encountered in the post complete denture insertion phase. The problems presented by the patients are genuine and not just "cooked up stories". As a clinician, it's our responsibility to understand all causes which can bring up those "complaints" by the patients and we should do our best to resolve them. This article revisits the common post-insertion problems encountered in complete denture prosthesis and discusses the various management strategies.

Keywords: *Common Post Insertion Problems; Denture Troubleshooting; Denture Complaints*

Introduction

Complete denture is the most popular treatment modality offered to an edentulous patient especially in a country like ours where the limitations to access and availability of recent advances in implant supported prosthesis are associated with a number of socioeconomic limitations. Also fabricating complete denture is a core skill taught to all undergraduate students in the BDS programme and they are expected be skilful and proficient in fabricating a complete denture for their patients. Successful outcome of complete dentures is determined by a balanced outcome between the clinical procedure, laboratory process and patient acceptance. A dentist further deeply needs to understand the anatomy, physiology, pathology of the oral foundational tissues and the psychology and expectations of the edentulous patient and have a good collaboration and support from the technician in order to deliver a successful complete denture with minimal post insertion issues. How so ever, patient reporting back with some common post insertion complaints is inevitable. The patient comes to a dentist with a huge expectation of how a complete denture would replace the functionality and aesthetics of the missing teeth and his self assessment of the prosthesis happens immediately after the post insertion. This somehow becomes a crucial period of patient's perceptions for determining the success or failure of a denture [1]. This is the time where if small problems which can be easily managed by the dentist, are not taken care of can shake his trust in the dentist and the prosthesis delivered to him and he can easily reject it. Therefore, the post insertion adjustment visits should be well planned after the insertion of the complete denture and "what to expect" should be discussed in detail with the patients at the beginning of the treatment. A skilled dental professional must have a thorough knowledge of the common post insertion problems and should be

able to identify the reasons and offer the right solution to make the denture adjustment and acceptability a comfortable and satisfactory experience for the patient. This article discusses the common post-insertion problems encountered in complete denture prosthesis, revisits the understanding of the reasons behind these complaints and talks about their comprehensive management and the various treatment options.

Post insertion problems in complete dentures

Complete denture prosthesis offers solution for missing teeth to the completely edentulous patients and the attempts to meet the need for satisfactory mastication, speech and aesthetics. The fabrication of complete dentures starts with a comprehensive history taking to final denture delivery with post delivery instructions. Compromise at any stage from the clinician's or the laboratory's end can have detrimental effects on the success of a complete denture insertion and resultant post denture complaints [2]. A number of authors have classified post insertion problems in different ways and suggested troubleshooting mechanism after identifying the symptoms and causes [3]. Attempts have been made by various research studies to find out the prevalence of most commonly occurring post insertion denture problems and to see which particular problem is faced most by the patients. The most common problems reported are discomfort, looseness of dentures and issues in adaptation [4]. Areej S. Ahmad (2010) in their study reported percentage of patient's complaint related to adaptation (62.1%) was higher than looseness problems (61.3%) and discomfort problems (39.3%) [5]. Jimmy Patel., *et al.* (2017) reported adaptation problems with complete denture (45.15%) were higher than problems related to appearance (38.6%) followed by problems of discomfort (34.27%) [6]. Shazia Mir., *et al.* (2019) stated in their results that highest number of patients presented chief complaint of pain/discomfort (37.5%), followed by that of retention (27.9%), and then aesthetics (17.6%) and phonetics (16.9%) respectively [7]. The problems reported by patients can be just a minor irritation which can be easily adjusted or a major defect which may require the remaking of the dentures. In general, the patients who visits a dental hospital for a complete denture are very old and their main concern is, that they should be able to "chew well" with the dentures. The patients also wants a well fitting denture that does not "fall" during any function or hurt his oral tissues leading to pain, irritation and ulceration. Some of the most common problems reported by the patients after post insertion are mucosal irritation, insufficient retention and stability,food accumulation under the dentures, difficulty in speech, masticatory inefficiency, unattractive appearance, fracture and debonding of teeth. Whereas whistling, swallowing difficulty, loss of taste sensation, altered taste, dislodgement of dentures on having fluids, drooling at the corners of the mouth, cheek biting, xerostomia, nausea and gagging, tingling of the lower lip are some uncommon problems that are reported by the patients sometimes [8].

The appointment for post insertion is therefore of utmost importance. This is the opportunity to listen carefully to the patient's problem, be observant, have a through scrutiny of the affected area in the oral cavity as well as the prosthesis and then amalgamate your knowledge, skills and experience to offer a solution to the patient and gain his confidence. Let us discuss some very common problems reported by the patients when they visit for their post insertion appointment and discuss their identification and management in detail.

Most common problems reported by a patient after the denture insertion and their management are discussed below [2,4,9]

Mucosal irritation and Pain [4]: Oral mucosa is a sensitive tissue and irritation, redness and sore spots on the mucosa immediately following the denture insertion is very common. It could be either due to excessive compression of the mucosa beyond the biologically permissive limits or it could be because of some friction created by the movement of the denture over the mucosa. Irritation of the mucosa can happen anywhere in the oral cavity and cause discomfort and pain to the patient. It can occur due to defect in the impression surface of the denture or it might be related to the occlusal surface or the polished surface of the denture [2,9].

Clinical appearance/ complaint	Possible cause	Management
• Redness • Erythema in the vestibular border • Ulcers • Area which otherwise appears to be fine but is painful on palpation • Sore spots • Inflammation	• Overextended borders • Nodules or sharp areas on the tissue surface of the denture • Denture not relieved over the undercuts • No relief over the freni and muscle attachments • Too thick flanges • Occlusal prematurity • Increased or decreased vertical dimension	• Over extended borders to be corrected after using the disclosing paste • Any nodules or sharp areas on any part of the dentures surface on the intaglio surface to be removed. Use a disclosing paste to identify the problem area. • Re-check the vertical dimension and if found more, provide the adequate freeway space.

Besides the above mentioned possible causes of mucosal irritation, pain and discomfort which are usually reported within few days of a post insertion, there are some chronic mucosal irritations presented by the patient which could be because of an associated systemic condition. Some of the conditions like burning sensation, red beefy tongue, allergic reactions etc may appear several months after the insertion of dentures. Vitamin deficiencies, xerostomia, denture related stomatitis allergy must be explored as a reason and appropriate solution should be offered to the patient.

Insufficient retention and stability: As we talked earlier, a good retentive and stable denture is something we and the patients are aiming for. The most important requirement of most of the patients is to have the dentures with which they can chew and speak effectively without the "dentures falling off". Lack of retention could be because of increased forces which tend to displace the denture or decreased retentive forces. It is pertinent to note that a good retention is a work play of balance between the retentive and displacing forces [10].

Clinical appearance [9]	Possible cause	Management
• Maxillary denture falls down during mouth opening • Mandibular Denture gets lifted on movement of the tongue • Maxillary and mandibular denture rocks/shifts in the mouth • Maxillary Dentures falls while speaking • Dentures fall when laughing	• Under extended borders in depth or width • Under extended or overextended posterior border • Lack of peripheral seal • Over extended denture borders • Poor fit of the denture surface • Improper shape of dentures • Too high occlusal plane • Too low occlusal plane • Inelasticity of cheek tissues • Xerostomia • Poor neuromuscular control • Error in the laboratory processing at any stage	• Over extended borders to be corrected after using the disclosing paste • Identify the under extended borders and build them up with green stick modelling compound and replace by acrylic resin. • In case of discrepancy in the fit of the tissue surface of the denture, reline if all other design factors are favourable ,else remake the dentures • Salivary substitutes for xerostomia

A well fabricated and well adapted complete denture over a favourable bony foundation with a positive peripheral seal and optimum occlusion is absolutely essential for providing the desirable retention and stability to the denture. The key to trouble shooting for "loose dentures" is to observe and identify the source and provide a satisfactory solution. If required, a new set of dentures should be made as the loose dentures arising on account of any clinical, technical and laboratory error defeat the very purpose of prosthetic rehabilitation for edentulous patients. It is equally important to keep systemic issues, xerostomia and poor neuromuscular control in consideration which might offer challenge to the retention and stability of the denture inspite of the design parameters being taken care of.

Food accumulation under the dentures [11]: Food getting accumulated under the maxillary and mandibular denture can be very distressing for the patient. It may happen because of improper adaptation of the denture base to the mucosal tissues and lack of retention. This can lead to difficulty in mastication and also lead to mucosal irritation and pain. The entrapped food particles between the mucosa and denture base can be a constant source of irritation. This can further lead to the problem of bad breath [12].

Clinical appearance	Possible cause	Management
• Food gets under the maxillary denture and causes irritation • Food gets under the mandibular denture, causes its lifting and irritation	• Improper adaptation of the maxillary denture and mandibular denture • Improper positioning of the tongue around the mandibular denture leading to instability • Unilateral chewing	• Relining may be required to improve the fit • Train and educate the patient for bilateral chewing

Difficulty in speech [9,13]: Speech is a complex interplay of the tongue, its contact with the maxillary and mandibular teeth and the palate while moving in order to create various sounds. The air flows in a particular way through the given passage to create various speech sounds. After the loss of teeth and their subsequent replacement by artificial dentures, some alteration of the original natural positioning of teeth and the contours of palate takes place. This might lead to some problems related to speech and understanding the causes and adjustments related to that need to be done [14].

Clinical appearance	Possible cause	Management
• Improper pronunciation of certain words like the sibilant (s sound), bilabial (p,b sounds, labiodentals (f,v sounds) • Whistling sound during speaking • Clicking of teeth during speaking	• Excessive vertical dimension • Too narrow air space on the anterior part of the palate • Too broad air space on the anterior part of the palate • Improper antero-posterior positioning of the maxillary anterior teeth • Improper vertical positioning of the anterior teeth	• Recheck the vertical dimension and the level of occlusal plane. • Check that the vertical incisor overlap is not excessive • The palatal contour and contact of the tongue should be evaluated to ensure there is no excessive tongue contact or air leakage [3].

Masticatory inefficiency: It is the reduction in the chewing ability of a patient. With complete dentures, it ranges from 16% to 50%, when compared to dentate subjects [15]. It roughly takes about 6 - 8 weeks of time for the masticatory muscles to set up new memory patterns [16]. Patients should be educated from the beginning of the appointment that the chewing efficiency with the artificial complete dentures is just one sixth of the natural dentition [17] and they should not have any "unrealistic expectations" with the dentures. This efficiency further reduces with the compromised and resorbed ridges. They have to be educated about the differences in support offered by natural and artificial teeth and should be guided to do bilateral chewing and gradually move on from soft to harder food choices in their diet [18].

Clinical appearance	Possible cause [19,20]	Management
• Corners of the mouth will be drooping • Collapsed appearance of the mouth. • Tenderness of the muscles of mastication	• Poor occlusal anatomy of the artificial teeth • Reduction in the size of occlusal surfaces of the teeth • Reduced chewing force • Premature contacts between the opposing teeth • Unequal placement of the food bolus between the teeth during mastication • Compromised residual ridge. • Reduced vertical dimensions of a complete denture • Poor neuromuscular control	• Removal of any premature contacts • Patient should initially start with soft food cut into small pieces and gradually proceed to normal, sticky and hard food. • Increasing the vertical dimensions of the complete denture so that the freeway space is not more than 2 - 4 mm • Using anatomical teeth in case of good ridges and good neuromuscular control.

Unappealing/Unalluring appearance: As the age advances, shade of the teeth becomes darker. The reason behind this is the increase in the thickness of secondary dentin, decrease in the thickness of enamel, wear of occlusal surfaces, and deposition of stains from food, medicines etc. on the tooth surface [21,22]. But in general the patients who need complete dentures often expect there dentures with lighter shade of the teeth. Hence, they should be educated about the natural changes which occur in the dentition with age so that they do not feel disappointed later.

Clinical appearance [4]	Possible cause	Management
• Teeth shade is too dark/ light • Too much visibility of teeth • Creases at corners of mouth • Colour of denture base material is 'unnatural' • Labial fullness too much • Unsupported upper lip.	• Patient's skin, eye and hair colour not taken into account while determining colour of base material and shade of the teeth • At the trial stage patient approved the waxed denture and did not comment and later on is swayed by his family members and friends. • Lingual placement of maxillary anterior teeth or thin labial flange • Too much labial placement of the teeth or thick anterior flanges.	• Sufficient time should be given at the trial stage and preferably patient's relative or friends comment must be noted at this stage very carefully. After the trial denture is approved by the patient, it should be duly signed by the patient as well as the person accompanying him. • Patient's previous photographs, dentures, X- rays, casts or any other dental records should be used that could be of help in more natural arrangement of the teeth and shade selection. • Proper contouring of the labial flange without compromising retention. • Remake a new denture in case of gross mistake that cannot be corrected at chair side.

The dentist should very calmly listen to the patient's comments and expectations, especially at the time of the trial of the denture. The patient should be educated about the limitations of the denture. They should be given sufficient time to assess the denture and if possible a consent should be taken from his relative or friend as well, to avoid any sort of disagreements arising at the time of delivery or afterwards.

Fractured denture: It is one of the most frequent complications of a complete denture. It may involve the fracture of the denture or the denture teeth. Midline fracture is the most common site of fracture in complete dentures. The mandibular denture has smaller surface area hence the possibility of its fracture is three times more than the maxillary one [23].

Clinical appearance [4]	Possible cause [24,25]	Management
• Fractured denture base • Fractured teeth • Debonding/ fracture of teeth	• Accidental dropping of the denture • Porosities or any other curing defects • Wax not eliminated properly at the dewaxing stage. • Very thin denture base • Poor fit, low retention and stability of a denture • Lack of balanced occlusion • Acrylic resin of inferior quality. • Extremely high masticatory forces • Large notches to give relief to tori and frenum. • Teeth placed too buccally • Previously repaired denture. • Single complete dentures	• Balanced occlusion • Using high strength acrylics or rubber reinforced acrylic resins • Using ceramic teeth • Following proper curing cycles to avoid any curing defects. • Using metallic denture base • Educating the patient to prevent accidental dropping of dentures.

Many factors can lead to the fracture of a complete denture. The clinician must carefully select the material and arrange the teeth in balanced occlusion to lessen the chances of fracture. Laboratory procedures must also be carried out with utmost care. Further the patient should be educated to take care of the denture while insertion and removal of denture to prevent it from accidental breakage.

Conclusion

Complete dentures appear to be a simple and easy prosthetic solution for completely edentulous patients but can be extremely challenging when it comes to a favourable adaptation to the tissues and acceptability by patient. The role of a dentist is not limited to his skill to fabricate retentive and stable dentures for patient utilising the maximum support offered. He needs to have thorough understanding of the associated, local, systemic factors and psychological factors which govern the ultimate success of the complete denture. Knowledge and experience is gained after every case. This will enable him to fully understand the common post insertion problems the patient might encounter, identify the reasons leading to it and eventually offer a comfortable solution so as to have a favourable outcome. Thus, the patient must be recalled periodically after the delivery of the denture so as to eliminate any post insertion problems, for the success of a denture.

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