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EVALUATION OF POST INSERTION COMPLICATIONS ASSOCIATED WITH COMPLETE DENTURE AT VARIOUS TIME INTERVALS – A RETROSPECTIVE STUDY

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ABSTRACT

Objective: The objective of this study was to find out the common problems experienced by the complete denture wearer patients at different time intervals (within 24hrs, 48hrs, 72hrs, after 1 week) after placement of complete dentures. **Materials and methods**: A total of 80 patients participated in this questionnaire based study which was carried out over a period of three months at the department of prosthodontics. The inclusion criteria for the patient was he/she were a new denture wearer, patients with an age group of 45-60 and those who were able to read and write. Taking into consideration of inclusion criteria and some of the patients who did not turn for follow up only a sample of 51 patients who were completely edentulous and in which complete denture prosthesis were given participated in this study . A self-administered structured questionnaire format in which three main factors ie mastication, speech, esthetics were included through a pilot survey in this study. The data analysis was analyzed by the intragroup comparison using Mcnemer test($p<0.05^*$) and the mean values were calculated using Friedman test ($p<0.05$). **Results:** During first 24hrs difficulty in mastication(100%), restricted diet(100%), discomfort with dentures(100%), altered taste sensation (100%) were the common complaints .After 48hrs discomfort with dentures(80.4%) and discomfort while speaking (82.4%)was observed. After 72 hours presence of restricted diet(33.3%), presence of discomfort while mastication (49%)were present .After 1 week presence of ulcers(25.5%) and discomfort while mastication(23.5%) were the common complaints. There was no statistical significance for presence of uncommon complaints (xerostomia, nausea), psychological evaluation of patients and presence of debonding of teeth. **Clinical significance:** Treatment of edentulism with complete dentures is still employed widely because of its relative inexpensiveness and simplicity. However, complete dentures may be associated with various complications. This questionnaire survey states that most of the complaints were experienced by the patients after placement of complete dentures at various time intervals. Success of the complete denture not only relies on fabricating the prosthesis but also in the understanding and management of the problems associated with them. This implies the dentist or prosthodontist who are fabricating dentures should address these problems priorly and to reduce the severity of complications which will enhance the treatment outcome and satisfaction of the patients.

KEYWORDS: Complete denture, completely edentulous, problems associated with mastication, speech and esthetics.

INTRODUCTION

Edentulism, the condition characterized by the complete or partial loss of natural teeth, represents a significant public health concern, particularly among the elderly population. With an aging global demographic, the prevalence of edentulism is steadily increasing, leading to a growing need for effective dental rehabilitation. The consequences of edentulism extend beyond the obvious loss of teeth, impacting various aspects of an individual's life, including oral function, aesthetics, psychological well-being, and social interactions.[1,2]

Edentulism can lead to significant challenges, including impaired mastication, speech difficulties, and alterations in facial aesthetics, all of which can reduce an individual's quality of life leading to social withdrawal or diminished self-esteem.[3] When an edentulous condition is not rehabilitated with prosthesis(removable or implant supported) it results in nutritional issues, bone resorption, and muscle atrophy, with potential long-term changes to facial structure.[4] Furthermore, untreated edentulism can contribute to psychological concerns such as depression, anxiety and a reduced sense of well-being due to aesthetic and functional impairments.[5]. The lack of teeth may also cause changes in oral tissues, complicating the fitting of dentures and leading to discomfort or irritation. The tolerance of oral mucosa for wearing a complete denture can be affected by underlying debilitating diseases and the medications they are using. Therefore detailed evaluation of medical history is important for prosthetic outcome.[6]

Edentulism has been treated with treatment options like removable or fixed dental prosthesis that can help with the sequalae of edentulism by restoring function, speech and mastication. Complete denture must be fabricated in harmony with neuromuscular functions of oral cavity.[7] Understanding the common problems associated with edentulism and addressing them through appropriate prosthetic care is crucial for improving the overall quality of life of affected individuals . Despite the critical importance of one week follow up after denture insertion, there is limited research on assessing the post insertion problems that are experienced by the patients at different time intervals. Therefore, the purpose of this study was to evaluate the common complaints within different time intervals (24 hrs, 48hrs, 72hrs, after 1 week) experienced or faced by the patients after placement of complete dentures.

MATERIALS AND METHODS

This study was carried out at department of prosthodontics KIMS dental college and hospital .A total of 80 patients were participated and only 51 patients who received complete dentures responded and followed up were examined. Patients who did not reported back to the department for follow ups was asked through social media platform ie google forms.

Inclusion Criteria

Patients those who can read & write and patients who know the local language and cooperative patients who are willing for the prosthetic treatment are included in the study.

Exclusion Criteria

Patients who are not able to read and write and who are not willing towards prosthetic treatment and patients who don’t know the local language are not included in the study.

METHODOLOGY

Denture Fabrication

Complete dentures were fabricated for the patients who were participated in the study under appointment basis. After recording the preliminary impression, border molding and secondary impressions of edentulous arches was recorded. During jaw relation procedure midline, canine lines were marked as reference lines and facebow transfer was done as it helps in replicating the maxillomandibular relationship in unaltered state and also records the orientation of maxilla to the transverse axis using hanau facebow and the assembly was transferred to the articulator. Teeth were selected based on reference lines that are marked across the rim and teeth arrangement was done to give a balanced occlusion, by checking occlusal contacts in centric position and in eccentric movements. With trail dentures occlusal contacts were verified in the patients mouth and after dentures were processed. After finishing and polishing procedures the resultant dentures were given to the patient and the study questionnaire was evaluated at different time intervals.

Investigation

A structured questionnaire consisting of 16 questions under 4 categories were designed to know the complaints of the patients in different time intervals after placement of complete denture. Each question had two options to choose either yes or no. Scoring criteria given as 0 and 1 .The same structured format of questions were evaluated at different time intervals. The various complaints presented by patients are – presence of difficulty in masticating food, feeling of loose dentures, presence of discomfort while speaking, presence of ulcers, presence of restricted diet, presence of gag (vomiting) sensation while dentures are placed in the mouth, difficulty in speech ,increased production of saliva and presence of altered taste sensation. The results of clinical evaluation were then compared with the patient complaints. Questionnaire format used for evaluating the patients described below:

Mastication

1) Is there any difficulty in masticating and swallowing the food?
2) Any presence of food accumulation around or under the prosthesis?
3) Is there any presence of ulcers in the oral cavity?
4) Presence of any restricted diet?

Phonetics

5) Is there any feeling of loose dentures?
6) Presence of discomfort in speaking?
7) Presence of restricted space for the tongue?
8) Feeling of any gag (vomiting) sensation when dentures are kept in mouth?

Esthetics

9) Psychological feeling of patient? (Positive/negative)
10) Do you feel mandibular denture loose more often?
11) Presence of any discomfort when the denture is in the mouth?
12) Did you notice any debonding of teeth?

Comfort

13) Did you notice drooling of saliva at the corners of the mouth?

14) Do you notice any uncommon complaints? (Whistling, xerostomia, nausea)
15) Presence of altered taste sensation?
16) Have you experienced cheek biting?

Data Analysis

The data was formulated into table based on individual scores to 16 based questionnaire that was answered by the patients. Significance of p value was calculated for each question.

Mcnemer test is used for intragroup comparison and Friedman test is used for calculating the mean values of the samples. Patients who answered yes were scored 1 and who answered no were scored 0. All the answers of patients were summed up during different time intervals i.e. 24 hrs, 48 hrs, 72 hrs and 1 week.

Table 1: Intragroup comparison.

Questions	24 hours		48 hours		72 hours		1week		pvalue
	Yes/ present	No/ absent	Yes/ present	No/ absent	Yes/ present	No/ absent	Yes/ present	No/ absent	
Q1	51(100)	0(0)	38(74.5)	13(25.5)	25(49)	26(51)	12(23.5)	39(76.5)	0.000*
Q2	41(80.3)	10(19.6)	24(47.1)	27(52.9)	14(27.5)	37(72.5)	3(5.9)	48(94.1)	0.000*
Q3	3(5.88)	48(94.1)	1(1.96)	50(98.04)	10(19.6)	41(80.4)	13(25.5)	38(74.5)	0.001*
Q4	51(100)	0(0)	40(78.4)	11(21.6)	17(33.3)	34(66.7)	0(0)	51(100)	0.000*
Q5	41(80.3)	10(19.6)	36(70.6)	15(29.4)	12(23.5)	39(76.5)	7(13.7)	44(86.3)	0.000*
Q6	46(90.2)	5(9.8)	42(82.4)	9(17.6)	17(33.3)	34(66.7)	8(15.7)	43(84.3)	0.000*
Q7	27(52.9)	24(47.0)	16(31.4)	35(68.6)	0(0)	51(100)	0(0)	51(100)	0.000*
Q8	15(29.4)	36(70.6)	0(0)	51(100)	0(0)	51(100)	0(0)	51(100)	0.000*
Q9	49(96.1)	2(3.92)	51(100)	0(0)	51(100)	0(0)	51(100)	0(0)	0.112
Q10	44(86.7)	7(13.7)	23(45.1)	28(54.9)	13(25.5)	38(74.5)	6(11.8)	45(88.2)	0.000*
Q11	51(100)	0(0)	41(80.4)	10(19.6)	17(33.3)	34(66.7)	0(0)	51(100)	0.000*
Q12	0(0)	51(100)	0(0)	51(100)	0(0)	51(100)	0(0)	51(100)	1.000
Q13	3(5.9)	48(94.1)	0(0)	51(100)	0(0)	51(100)	0(0)	51(100)	0.03*
Q14	2(3.9)	49(96.1)	0(0)	51(100)	0(0)	51(100)	0(0)	51(100)	0.112
Q15	51(100)	0(0)	40(78.4)	11(21.6)	0(0)	51(100)	0(0)	51(100)	0.000*
Q16	9(17.64)	42(82.3)	0(0)	51(100)	0(0)	51(100)	0(0)	51(100)	0.000*

Mcnemer test $p<0.05$* significant

Table 2: Intragroup comparison based on the response scores based on scoring.

Questions	24	48	72	1week	p
Q1	1.00(0.00)	0.745(0.44)	0.49(0.50)	0.235(0.43)	<0.001*
Q2	0.80(0.4)	0.47(0.5)	0.275(0.45)	0.06(0.23)	<0.001*
Q3	0.06(0.238)	0.02(0.14)	0.196(0.40)	0.255(0.44)	<0.001*
Q4	1.00(0.00)	0.784(0.41)	0.33(0.476)	0.00(0.00)	<0.001*
Q5	0.804(0.40)	0.706(0.46)	0.235(0.42)	0.137(0.348)	<0.001*
Q6	0.802(0.30)	0.824(0.38)	0.33(0.47)	0.157(0.36)	<0.001*
Q7	0.529(0.50)	0.314(0.469)	0.00(0.00)	0.00(0.00)	<0.001*
Q8	0.294(0.46)	0.00(0.00)	0.00(0.00)	0.00(0.00)	<0.001*
Q9	0.961(0.196)	1.00(0.00)	1.00(0.00)	1.00(0.00)	0.112(NS)
Q10	0.86(0.35)	0.45(0.50)	0.25(0.44)	0.12(0.33)	<0.001*
Q11	1.00(0.00)	0.804(0.401)	0.33(0.476)	0.00(0.00)	<0.001*
Q12	0.00(0.00)	0.00(0.00)	0.00(0.00)	0.00(0.00)	----
Q13	0.06(0.238)	0.00(0.00)	0.00(0.00)	0.00(0.00)	0.03*
Q14	0.0392(0.19)	0.00(0.00)	0.00(0.00)	0.00(0.00)	0.112(NS)
Q15	1.00(0.00)	0.78(0.41)	0.00(0.00)	0.00(0.00)	<0.001*
Q16	0.176(0.385)	0.00(0.00)	0.00(0.00)	0.00(0.00)	<0.001*

Friedman test $p<0.05$* significant.

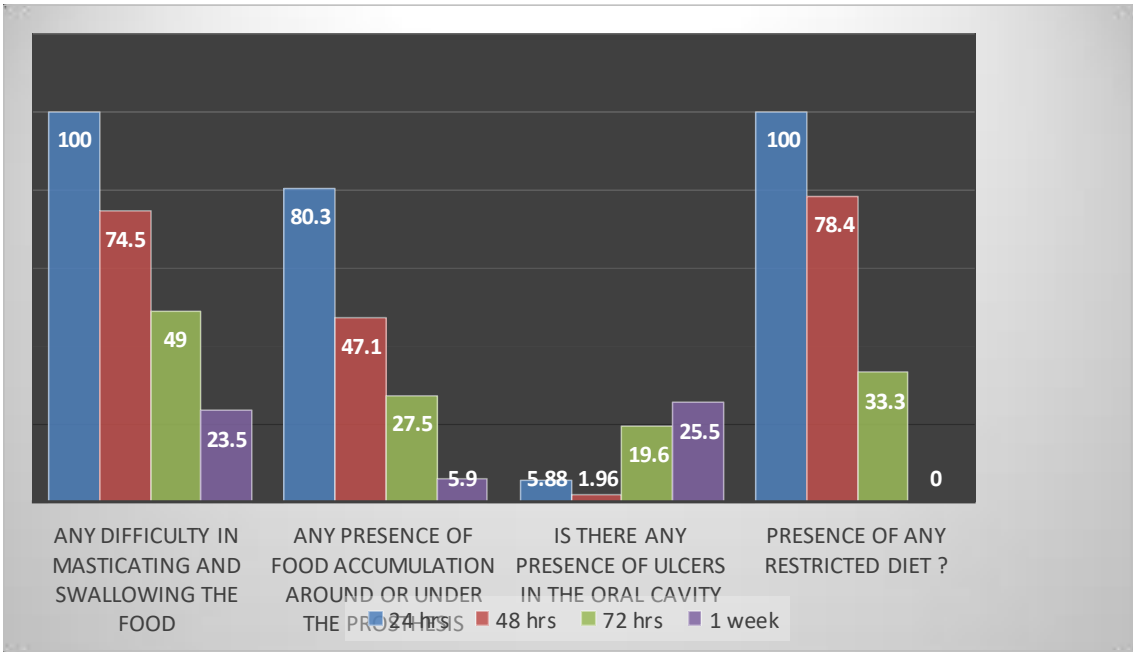

Figure 1: Masticatory questions.

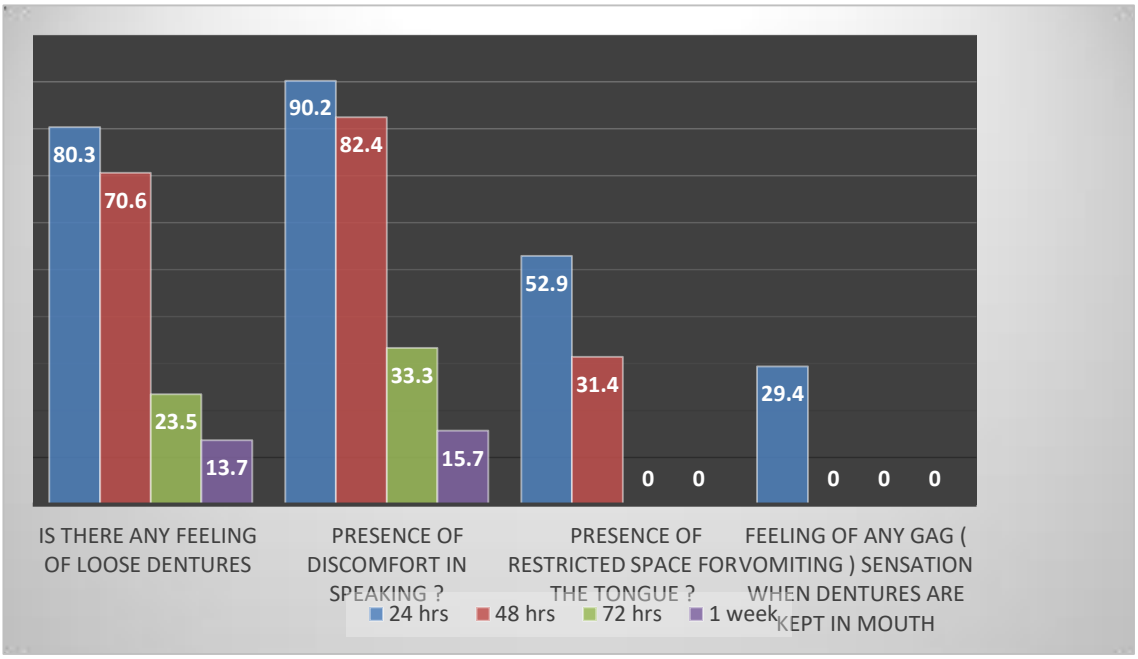

Figure 2: Phonetics.

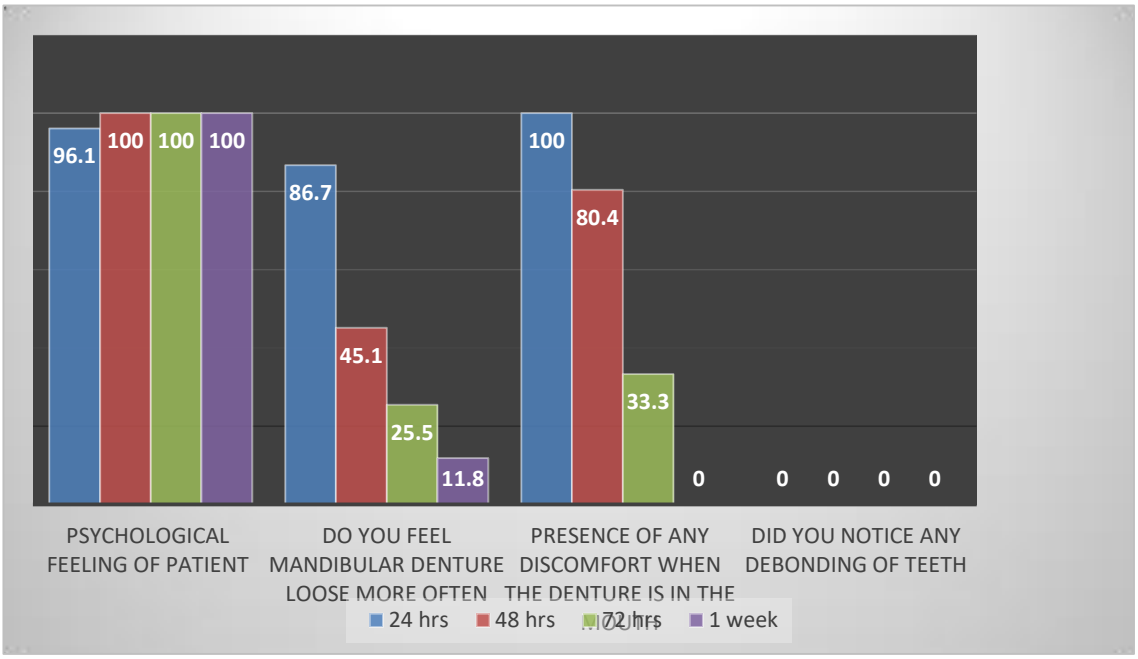

Figure 3: Esthetics.

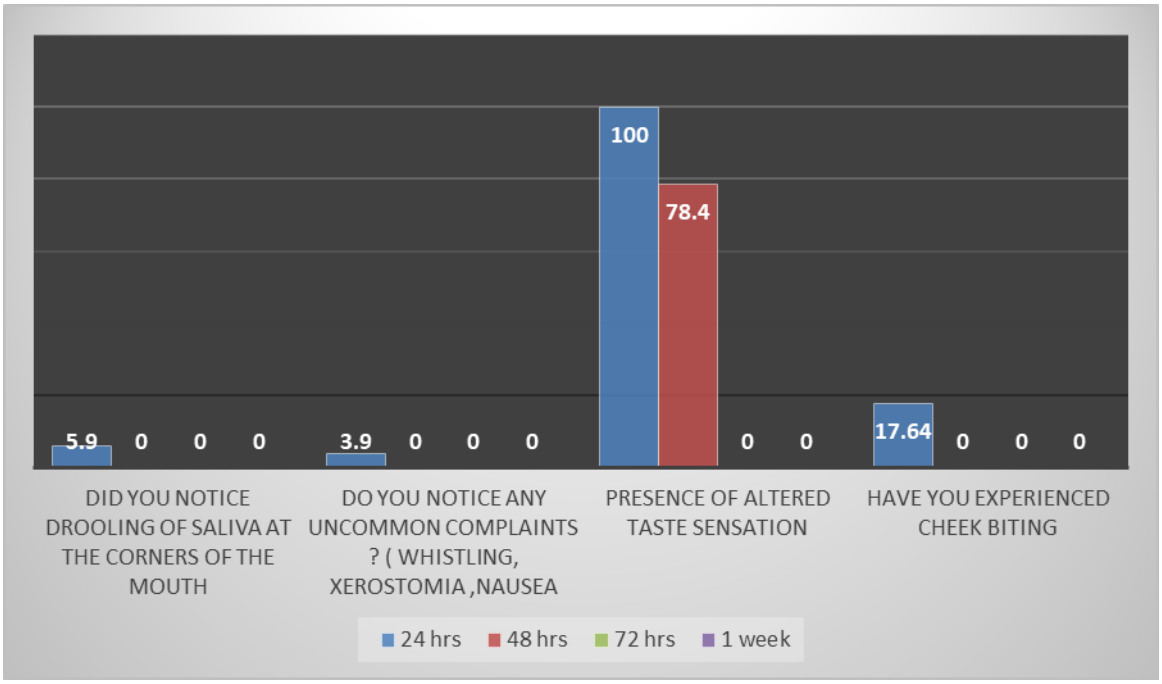

Figure 4: others.

RESULTS

The most common problems faced by the patients after their treatment of complete dentures were during first 24 hrs [fig1]– difficulty in mastication (100%), restricted diet(100%), discomfort with dentures(100%) [fig3], altered taste sensation (100%) [fig4], presence of discomfort while speaking (90.2%) [fig2], presence of food accumulation around the dentures due to improper cleaning of dentures (80.3%)[fig1], and feeling of loose mandibular denture (86.7%)[fig3]. Less complaints experienced by the patients in first 24 hours were restricted space for tongue (52.9%), feeling of gag sensation (29.4%) [fig2], Presence of cheek biting (17.64%), drooling of saliva at corners of mouth

(5.9%) [fig4], presence of ulcers in the oral cavity(5.88%)[fig1], and uncommon complaints of xerostomia (1.3%)[fig4]. Patients during this period haven't experienced complaints of presence of bad breath and debonding of teeth.

After 48 hours – Most common complaints noticed were discomfort while speaking (82.4%)[fig2], presence of discomfort when denture is in mouth (80.4%)[fig3], altered taste sensation(78.4%)[fig4], presence of restricted diet (78.4%)[fig1], difficulty in mastication (74.5%)[fig1]. Less complaints noticed during this period were feeling of loose dentures (70.6%)[fig2], presence of food accumulation due to improper cleaning (47.1%)[fig1], Presence of restricted space for the tongue (31.4%)[fig2], ulcers in the oral cavity (1.96%)[fig1]. Patients during this period haven't experienced complaints of cheek biting, drooling of saliva and presence of xerostomia and gag sensation while dentures were placed in mouth.

After 72 hours – Most common complaints noticed were difficulty in masticating the food (49%)[fig1]. Less complaints noticed during this period were discomfort while speaking (33.3%)[fig2], presence of restricted diet (33.3%)[fig1], feeling of loose dentures (23.5%)[fig2], presence of ulcers (19.6%)[fig1]. Patients during this period haven't experienced complaints of restricted space for tongue, altered taste sensation, gag sensation, cheek biting and debonding of teeth.

After 1 week – Most common complaints noticed were presence of ulcers (25.5%) and difficulty while masticating(23.5%)[fig1]. Less common complaints noticed were discomfort in speaking (15.7%)[fig2], food accumulation (5.9%)[fig1], discomfort while speaking(5.5%), and feeling of loosening of mandibular denture (11.8%)[fig3]. Patients during this period haven't experienced complaints of debonding of teeth, cheek biting, discomfort while dentures are in mouth. P-Value was found to be not significant through different time intervals for Q9 and Q14.

DISCUSSION

The success of a complete denture not only lies upon fabrication and delivery of the prosthesis but also depends on management of some complaints that are associated after the insertion of complete denture .This study evaluated the most common complaints at different time intervals ie 24 hours,48hours,72 hours and 1 week. The complaints that can be associated are presence of pain while inserting or removing dentures, altered speech, Ulceration, difficulty in mastication and food accumulation under the prosthesis.

In our study after 24hrs of denture insertion, patients complained mostly about difficulty in mastication, discomfort with dentures and discomfort while speaking[Fig1,3,2]. According to Renu Gupta et al[8], the sequelae observed within 24 hours of denture placement include ulceration resulting from inadequate relief of frenal areas, difficulty in speech due to improper contouring of the palate, and gagging caused by overextensions, decreased stability and over polished dentures. Additionally, decreased stability and over-polished dentures are common issues. In our study after 48hrs of denture insertion, most common complaints that patients experienced was discomfort while speaking, presence of discomfort when denture is in mouth, presence of restricted diet, difficulty in mastication[Fig2,3,1].

In our study after 72hrs of denture insertion, patients mostly experienced problems of difficulty in masticating the food[Fig1]. After 72 hours the most prevalent problems include pain or ulceration at the crest of the ridge due to

occlusal prematurity, as well as ulcerations on the lateral borders of the tongue caused by sharp edges of teeth or excessive lingual tilt of the lower teeth[8]. In our study after 1week of denture insertion, most common problems that are associated are presence of ulcers, difficulty in mastication[Fig1]. By one week the primary concern shifts to pain around the periphery of the dentures, often attributed to excessive vertical dimension.[8]

According to K.W.Tyson and J.F. Mc Cord.[9], listed the below causes and management of complaints that are associated with complete denture prosthesis ie symptom of gagging sensation can be due to looseness of dentures, thick distal border of upper denture, lingual placement of upper posterior teeth or low occlusal plane causing contact with dorsal aspect oftongue . Treatment can be done by constructing dentures to maximize retention and minimizedisplacing forces and psychological assessment if needed. Symptom of altered speech sensation can be treated by checking for vertical dimension accuracy, and that vertical incisoroverlap not excessive, palatal contour should not allow excessive tongue contact or air leakage.

Difficulty in mastication can be due to unstable dentures and can be managed by constructing dentures to maximize retention and minimize displacing forces. Ulceration labial to the lower ridge can be due to excessive vertical overlap of anterior teeth and if occlusal plane not orientated appropriately, overextended borders of the denture and can be managed by reducing height of lower anteriors and by reducing over extension by using disclosing material to determine what is excessive. Generalized pain over denture supportingarea due to under extended denture base – may be due to over adjustment to the periphery and check for the adequacy of freeway space. It can be managed by extending the denture to optimal available denture support area. Complaint of loosening and rise of mandibular denture when mouth is half opened is because of thickened lingual flange enable tongue to lift the denture and also thick labial flange may produce displacement during muscle activity. It can be corrected by thining the flanges that would allow space for tongue and muscles during functional movements.

Pain on insertion and removal can be due to inadequate relieving of the denture in the region of undercuts and can be treated by using disclosing material to adjust in the region of the denture. Nimra mehraj and ulfat Majeed.[10] reviewed on post insertion problems associated with people wearing complete dentures, they concluded that difficulty in mastication was higher (62.3%) followed by loss of taste (32%) and difficulty in swallowing(22.3%). According to the study done by Sandesh S Gosavi et al[6], they concluded that most common problem faced was mastication (49.4%) followed by looseness of dentures (44.4%)and retention (35.4%). According to Carlsson and Omar.[11], who noted that while denture wearers initially experience reduced masticatory efficiency, these issues generally improve with continued use. In particular, the ability to chew food efficiently was slightly reduced in the first week, but patients noted gradual improvement as they adapted. Similarly, speech difficulties, such as lisping or altered pronunciation, were commonly reported but tended to subside with practice and further denture adjustments. As reported by Fueki et al.[12], speech and mastication usually improve as the patient becomes more accustomed to the dentures,

CONCLUSION

Management of problems associated with complete denture at different time intervalsare crucial for maintenance of prosthesis for a longer period of time. Proper knowledge on the cause and management of problems helps a dentist to gain the patients acceptance towards the dentures. Managing these issues through effective communication, proper care and timely interventions can help mitigate problems and improve the overall experience for denture wearers.

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