

CLINICAL REPORT

Cu-Sil Denture – Replacement through Preservation

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ABSTRACT

Esthetics along with function is the two most common concerns of patients. The need for patient's esthetical concern should also be given prime concern when restoring the function. In most instances there is a need for irreversible alteration in the remaining hard tissue during a prosthodontics treatment. Preservation of natural teeth is gaining importance in dentistry in the present time. Diagnostic wax up and proper treatment planning is an important tool to establish the desired esthetic changes, to know how the final prosthesis looks like and for better understanding of the patient. This is a case report on a simplified approach in preservation of teeth and alveolar ridge along with esthetical correction of smile made with a newer type of transitional denture. It helps in promoting positive mental attitude among the patients by avoiding extractions.

Keywords: Esthetic; Transitional denture; Crown lengthening; Partially edentulous.

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INTRODUCTION

Generally, many patients suffer from dental related problems such as missing or deficient teeth, disorganized dental arches, or unacceptable tooth contour. Therefore, dental clinicians commonly come across situations where modification in tooth contour is indicated for esthetic and function.¹ For such cases a well-designed treatment plan and predictable outcome is the key for success. For dental abnormalities, the conventional prosthodontic protocol involves obtaining diagnostic models that represent the patient's dental arches upon which the diagnostic work-up can be performed.² The planned treatment can involve altering the tooth morphology, altering the vertical dimension of occlusion, reorganizing the occlusion and restoring all the teeth (at least one dental arch).^{3,4} The ideal diagnostic work up should be applicable, transferable, conservative and aesthetic. The treatment option for patients having few remaining teeth includes overdentures or transitional dentures or immediate dentures following complete extractions or implants. Because of contraindications, need for prerequisite treatment, poor positioning of remaining teeth, requirement of more patient visits and economic

reasons overdentures cannot always be a treatment option in most cases. Extracting all teeth can cause mutilating effect on the patient psychology thus most patient avoid immediate denture. Hence for such patients Cu-Sil dentures which is relatively a new type of transitional denture serves as a better treatment option.^{5,6,7,8,9} This case report describes a new approach to save the few remaining teeth via the CuSil denture with predictable esthetic changes.

CASE REPORT

A 55 years old female patient came to our department with chief complaint of missing teeth in her maxilla and mandible and wants replacement. (Fig.1) On intra-oral examination patient had missing 13,15,16,17,22,23,24,25,26,27,36 root canal treated- 21, grade 2 mobility- 21, over hanging restoration- 46, intrusion- 44, deep bite and proclined maxillary anteriors. An orthopantomographic investigation revealed bone loss up to apical one-third of the root in relation to 21 and radio-opaque filling material in the root canal region of 21.(Fig.2) Localized periodontitis in 21 with hopeless prognosis, occlusal plane discrepancy, uneven gingival margin and patients esthetical

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Figure 1: Pre Operative photograph



Figure 2: Orthopantomographic investigation



Figure 3: Diagnostic wax up



Figure 4: Crown lengthening



Figure 5: Wax try-in showed similar outcome as diagnostic wax-up

expectation remained a challenge for treatment planning. The factors which were considered during treatment planning include number of teeth present, their distribution across the arch, periodontal and endodontic status and undercuts. Various treatment options like over denture, immediate complete denture and implants were discussed with the patient. On weighing the merits and demerits of different treatment options and also based on the affordability, number of appointments and patients' expectation CuSil denture and esthetic restoration after intentional root canal treatment was planned. Diagnostic impression was mounted on Hanau Wide Vue articulator with Face-bow transfer of maxilla for establishing good smile and increased vertical dimension of mandible. Diagnostic teeth setting and wax up was made for proper occlusion and esthetics. (Fig. 3) Midline was unaltered and proper lip support was planned in the diagnostic wax up. Anterior guidance was planned to minimize heavy force to the maxillary anterior region. Patient was advised for extraction of hopeless prognosis of 21 and intentional root canal treatment of 11,12. Crown lengthening of 2mm for 11,12 was proceeded with the help of diagnostic teeth set as a guide.(Fig. 4) Tooth preparation was done for 11,12,14,44,35,36,37 using elastomeric putty index of the diagnostic wax up and permanent crowns were cemented with type- I GIC. Master casts were obtained after border molding and secondary impression. Bite was registered and articulation was done. Wax try-in showed similar outcome as diagnostic wax-up.(Fig.5) Cu-sil denture was processed using heat cured acrylic resin and soft reliner was placed at the opening of the remaining natural teeth.(Fig.6) The denture was delivered to the patient.(Fig.7) Post-insertion instructions for



Figure 6: Cu-sil denture processed using heat cured acrylic resin

insertion, removal and maintenance were given as same as for any removable prosthesis. Recall visit of the patient showed that patient was comfortable during mastication and was pleased with her new smile. The success of treatment was evaluated using OHIP-EDEN questionnaire of score 0-76, which resulted in a pre-op score of 54 and post op score of 10 that showed improvement from poor to good oral health. Regular follow up once in 6 months was advised to the patient.

DISCUSSION

Generally, patients are present with compromised occlusion including multiple missing teeth accompanied by tilted, abraded, periodontally weak, extruded or intruded tooth. In such situation mostly extractions of these teeth are carried out and minimal effort is placed in preservation of these important structures. The need for patients esthetical concern should also be given prime concern when restoring the function. In most instances there is a need for irreversible alteration in the remaining hard tissue during a prosthodontics treatment. In order to validate such alterations, considerable benefits of the treatment should be apparent. Therefore, to reach an agreeable outcome, wide-range of diagnostic planning and work-up should be conducted before embarking on the definitive prosthodontic rehabilitation. Further, the diagnostic work-up allows visualizing the outcome and helps in deciding on the most appropriate treatment plan for a specific case.^{10,11} The diagnostic wax-up employs proponents of the various gnathological techniques in the diagnosis and treatment planning phase of their complete oral rehabilitation treatment. The diagnostic, or preliminary, wax-up has been indicated by many as a compulsory prerequisite to any extensive restoration of the oral cavity.¹² Supplementing esthetic treatment planning with digital imaging, model wax-ups, and surgical template permits a clinician to carry information into the oral cavity and incorporate it into surgical procedure, crown preparation, temps and ultimately the final prosthesis.¹³ The diagnostic work-up procedure are neglected sometimes because the



Figure 7: Post-operative photograph

conventional diagnostic work-up is a time consuming process and requires special training and artistic abilities.¹⁰

As De Van stated, "Perpetual preservation of what remains rather than meticulous replacement" is the main goal of our case. Several studies have shown that full mouth extraction and rehabilitation with complete dentures generally results in loss of alveolar bone and can lead to psychological trauma due to compromised stability, and retention.¹⁴ In order to preserve the remaining natural teeth and the alveolar bone, cu-sil dentures were designed.^{15,16} They have effect on retention, stability and patient's psychologic satisfaction of retaining the natural teeth. The retained natural teeth help in maintaining the proprioception.^{17,18} The advantages of Cu-sil denture is that they are easy to fabricate, improved denture stability even when few remaining teeth are present, maintenance of proprioception and potential psychological impact can be avoided.⁶ Disadvantages of these dentures is that the functional duration of soft liner used is short for 3 years and more prone for fungal growth thus frequent corrections and proper maintenance of hygiene is required.¹⁷

A literature search was done using the mesh keyword – Cusil denture to search for in the Medline database which showed only 3 case reports.^{19, 20, 21} Though there are only limited studies, cusil denture can be a viable treatment option to preserve the remaining natural teeth. Furthermore, randomized clinical trials are recommended to examine the long-term efficiency of cusil denture. Berg states that technical, biological and physiological interactions between the patient and dentist are important for the construction of a good denture. Most of the patients are satisfied with their complete dentures; however, even if the construction of the denture is good, some patients are still not satisfied with their new dentures. The success of the denture reconstruction depends on both the dentist and the patient. To have a positive impact on the success of the denture, patient's motivation and cooperation during the treatment procedure, use, maintenance, and post-insertion procedure plays a very important role.⁷

CONCLUSION

Patients are often present with compromised intra-oral condition. A proper diagnostic wax up, suitable treatment planning based on the patient's condition and expectation can aid in good outcome of the prosthesis and patient satisfaction. The success of any procedure requires the willingness of general dentists and specialists to, "Spend more time planning than doing".

CONFLICT OF INTEREST

There is no conflict of interest

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