Journal of Advanced Zoology

ISSN: 0253-7214
Volume 44 Issue 04 Year 2023 Page 1058:1062

Minimally Invasive Approach for Full Mouth Rehabilitation Using Table-Tops in A Patient with Generalized Attrition

Dr. Asha Rathod[1*], Dr. Mayuri Bachhav[2], Dr. Gaurang Mistry[3], Dr. Rasha Ansari[4], Dr. Nilay Karnik[5], Dr. Tanupriya Bhatia[6]

[1,2,3,4,5,6]*Department of Prosthodontics, D.Y. Patil Deemed to be University, School of Dentistry, Navi Mumbai.*
Email: asha.rathod@dypatil.edu[1], mayuri.bachhav@dypatil.edu[2], gaurang.mistry@dypatil.edu[3], rasha.ansari@dypatil.edu[4], nilaykarnik2@gmail.com[5], tanupriyab31@gmail.com[6]

**Corresponding author's E-mail: asha.rathod@dypatil.edu*

Article History

Received: 06 June 2023
Revised: 05 Sept 2023
Accepted: 06 Dec 2023

Abstract

Currently A table-top is a conservative treatment approach limited to the thickness of the occlusal table with margins placed supragingivally for covering all the cusps of teeth. Its indications include patients with occlusal wear due to attrition or abrasion, teeth with cracks/fracture lines and endodontically treated teeth. The present case report demonstrates its potential in the field of prosthodontics to achieve full mouth rehabilitation through a minimally invasive approach.

Keywords: *Overlay; table-tops; full mouth rehabilitation; attrition; Zirconia*

1. Introduction

Success in full mouth rehabilitation depends on the balance between the conservation of biological tissues and restoration of form, function, and esthetics. Minimally invasive partial restorations are adopted keeping in mind De Van's Dictum which states ''Preservation of what remains is more important than meticulous replacement of what is missing.'' [1]

A table-top is a type of overlay that covers all the cusps.[2] It is a conservative treatment approach since it is limited to the thickness of the occlusal table with margins placed far supragingivally.[3] Advantages of supragingival margins include easy tooth preparation, improved bond strength owing to the greater thickness of the enamel, and improved path of prosthesis insertion thereby providing long-lasting predictable results.[4]

Indications of table-top include patients with occlusal wear due to attrition or abrasion thereby necessitating rehabilitation using minimally invasive restorations, teeth with cracks/fracture lines not extending to the pulp and endodontically treated teeth with adequate surfaces remaining.[5]

The present case report elucidates the step-by-step full-mouth rehabilitation of a patient who presented with generalized attrition of his dentition. Diagnosis and treatment planning is of utmost importance in this scenario.

Case Report:

A 57-year-old male patient reported to the Department of Prosthodontics, D.Y. Patil University, School of Dentistry, Navi Mumbai with a chief complaint of broken-down teeth and an ugly smile. A history of medication for longstanding diabetes mellitus (DM) was elicited. The patient was a smoker for about 30 years and was also reported to have repeated bouts of gastric hyperacidity.

Intraoral examination revealed generalized severe attrition that led to yellowish discoloration of the teeth owing to the attrited enamel and the exposed underlying dentin **(Figure 1)**. Additionally, erosion was noted on the palatal aspect of maxillary anterior teeth while the labial surfaces of the mandibular incisors showed moderate blackish staining. The patient's oral hygiene was discerned as poor.

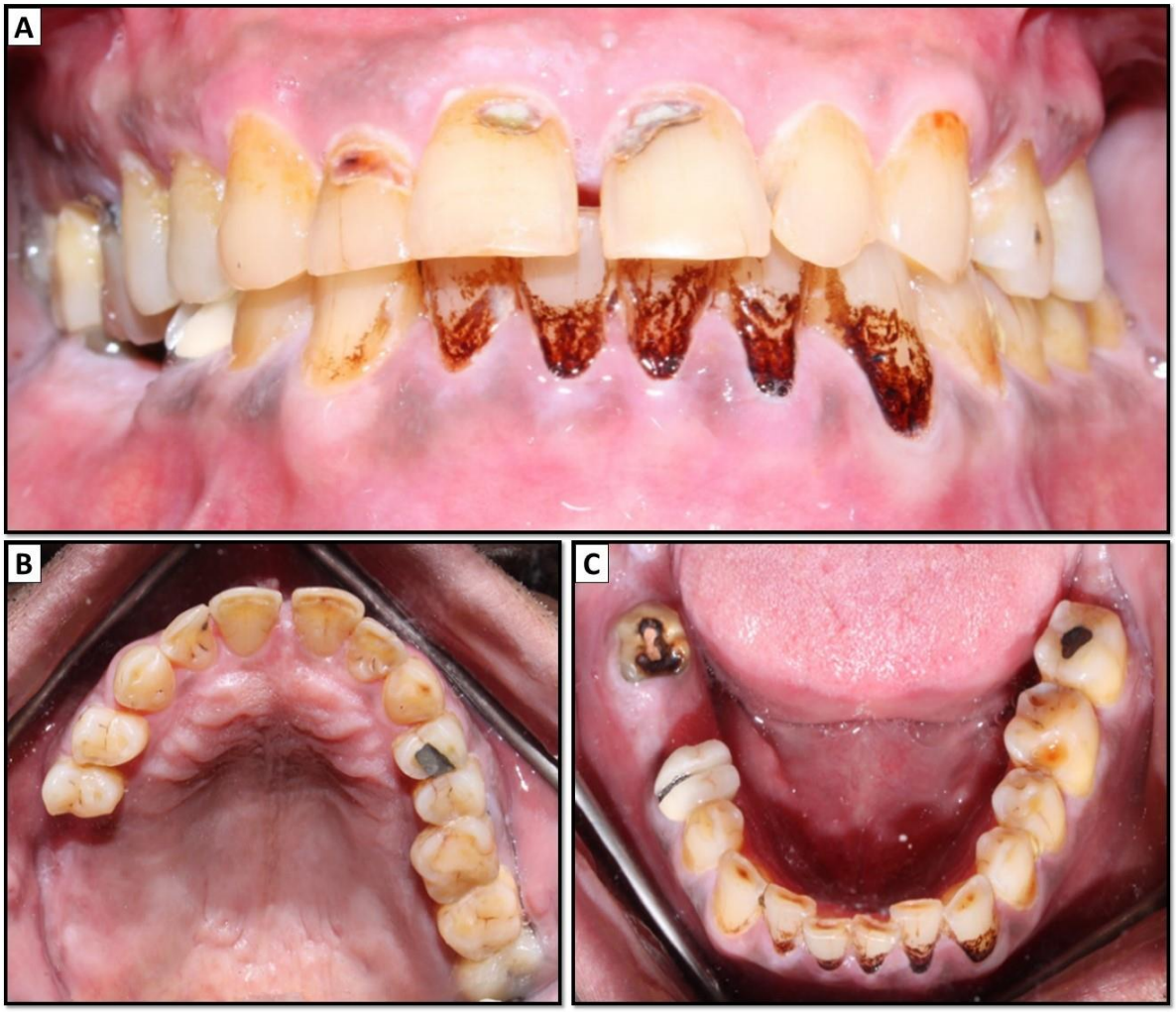

Figure 1: Pre-operative dentition **A)** Front view **B)** Occlusal view of maxilla, and **C)** Occlusal view of the mandible

The maxillary left first and second molars and the mandibular right first molar were missing. The mandibular right second molar was treated endodontically at another clinic a month ago without any coronal restoration. The patient was classified as having Kennedy's class III partial edentulism associated with the mandibular arch and Kennedy's class II partial edentulism associated with the maxillary arch.[6]

According to Turner and Missirlian's classification, this patient was classified as Category 3 (Excessive wear without loss of vertical dimension of occlusion but with limited space).[7]

Full mouth rehabilitation was needed in this patient. After thorough clinical examination it was decided to restore the VDO by 1mm. Given the patient's medical history of DM, implants were contraindicated for the upper left quadrant and a removable prosthesis with semi-precision attachment was planned instead. Since the mandibular right first molar was missing and the second molar was treated endodontically, conventional tooth preparations were planned involving the second premolar and the second molar and subsequently, a 3-unit bridge was given in this region. Table-tops were planned for remaining mandibular teeth to preserve tooth structure while full crown preparations were planned for maxillary and mandibular anterior teeth since they had palatal erosion.

After preparing all posterior teeth, gingival retraction was done and single-step impressions were made with putty and low-consistency polyvinylsiloxane impression materials (Zhermack Hydrorise Putty & Light Body). Temporary restorations were provided to the patient for a period of two weeks.

Maxillomandibular records were obtained by means of a facebow, and the master casts were mounted on a Hanau Wide-Vue semi-adjustable articulator. Subsequently, final impressions were sent to the lab and all posterior teeth were cemented with definitive monolithic zirconia restorations by resin-modified glass ionomer cement **(Figure 2)**. Ball attachment was fixed to the maxillary left second premolar in the final prosthesis after which a pickup impression was obtained to facilitate the fabrication of a removable partial denture for the maxillary left molars**.**

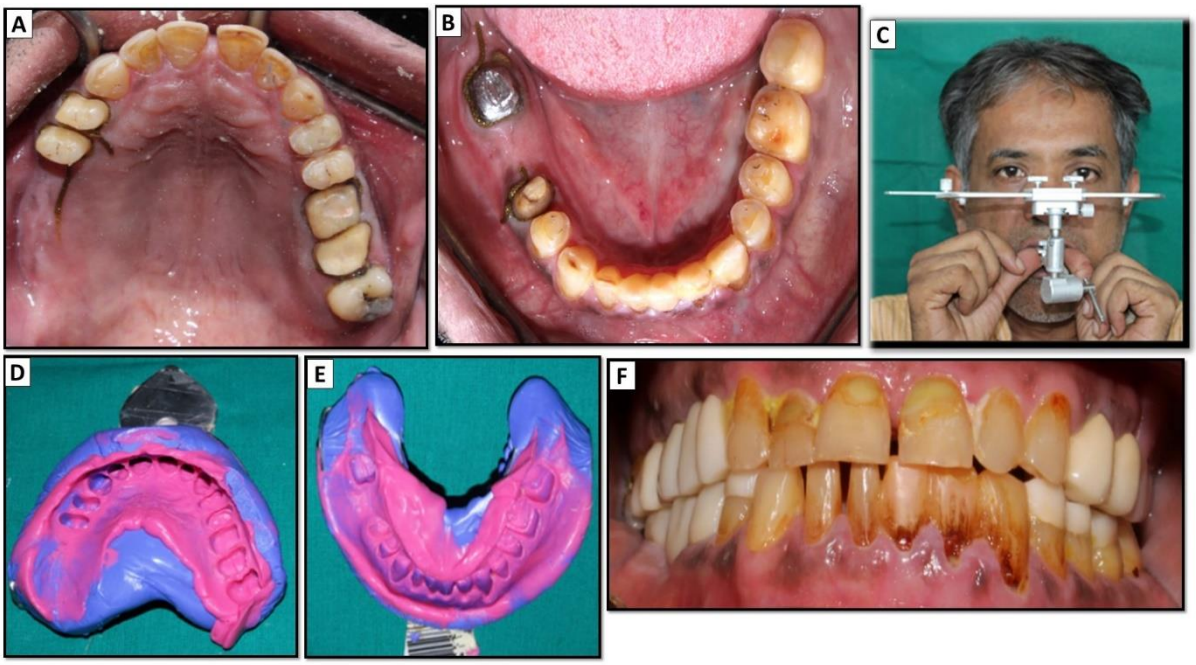

Figure 2: Posterior tooth preparation and gingival retraction in **A)** Maxilla and **B)** Mandible; **C)** Face bow record; **D)** and **E)** Final impressions; **F)** Posterior restorations in place

Following full crown preparations of maxillary and mandibular anterior teeth, tissue retraction was done and final elastomeric impressions of both arches were obtained and layered zirconia crowns were fabricated. All the zirconia prostheses were milled using CAD/CAM software according to the manufacturer's specifications. A bisque trial was done and after the patient's approval the crowns were cemented using resin-modified glass ionomer cement after final glazing (Figure 4).

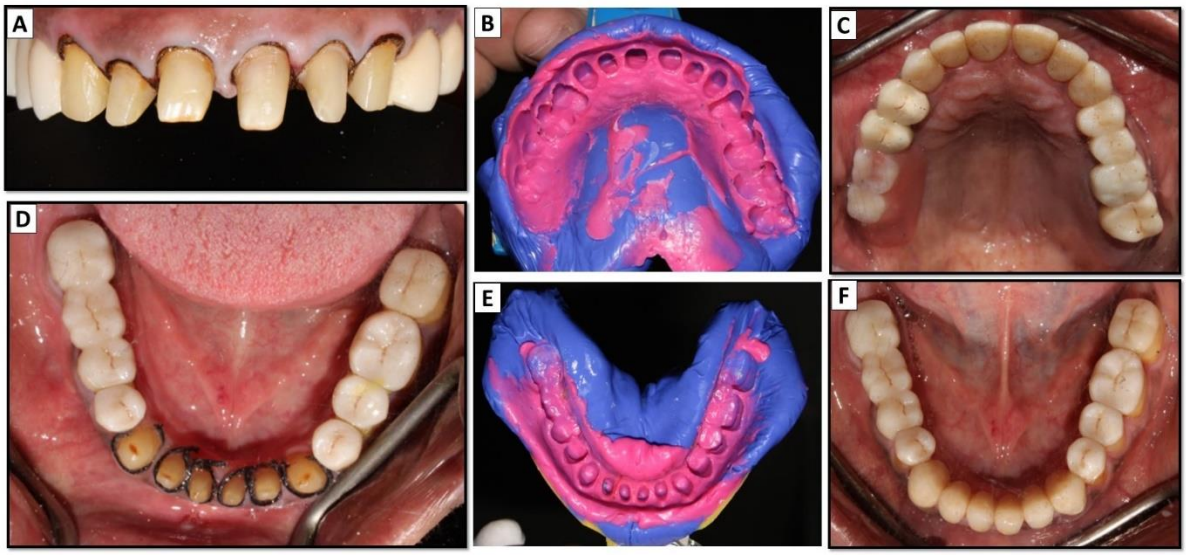

Figure 3: Anterior tooth preparation, Final impression, and final restoration in **A)-C)** Maxilla and **D)-F)** Mandible

Minor occlusal adjustments were made intraorally and polished with polishing burs. Mutually protected and canine-guided occlusion was achieved. Eccentric jaw movements with posterior disclusion were verified. Oral hygiene instructions were given to the patient. The patient was satisfied with the function and aesthetics of the final restorations **(Figure 4)**.

Figure 4: Comparative view of A) Pre-operative and B) Post-operative smile

Discussion:

A tooth functions best when intact. Most of the clinicians suggest preserving maximum tooth structure and avoiding invasive treatments as far as possible. To simplify the planning and execution of full mouth rehabilitation, an innovative 3-step technique has been developed.[8] During the first step, the occlusal plane is established. In the second step, the patient's posterior quadrants are restored. Finally, the third step re-establishes the anterior guidance.

Thermo-mechanical cyclic loading of monolithic zirconia does not have an effect on its fatigue resistance and bonding efficiency to the tooth structure.[9] This minimizes fracture events and improves mechanical properties [10]. Hence, monolithic zirconia restorations were considered a viable option in this case.

In distal extension scenarios (upper left quadrant in this case) the abutment teeth are placed under strain. The splinting of teeth increases their strength in geometric proportion and permits over-contouring for the purpose of receiving the attachment into the abutment tooth.[11] Hence, splinted crowns were fabricated for the maxillary left premolars and the patrix of extracoronal semi-precision ball attachment was incorporated in the maxillary left second molar. Literature suggests that the tooth must have adequate crown height for the corresponding attachment components to be housed within the RPD framework and to effectively offset the leverage forces exerted on the crown.[12] Easier path of insertion and removal, low cost, and good cleanability are some of the advantages of extracoronal attachments.

Partial restorations provide many advantages including tissue conservation, high esthetic outcome and low cost. [13] Good mastery on the part of the practitioner and thoughtful planning on the type of restoration to be provided are essential means to achieve long term clinical benefits.[14]

4. Conclusion

Table-tops have the potential to revolutionize the field of full-mouth rehabilitation, providing dental practitioners with a more efficient and patient-centric solution. Correct diagnosis, great patient motivation and wise use of materials and clinical protocols are essential to successfully manage a case with modern and minimally invasive approach.

References:

1. DeVan MM. The nature of the partial denture foundation: suggestions for its preservation. J Prosthet Dent. 1952 Mar;2(2):210-8.
2. Borges AL, Silva RD, de Matos JD. Table-Top Lithium Disilicate Ceramic Restoration Thickness Effect on the Stress Distribution in Upper Premolars: 3D Finite Element Analysis. Int J Odontostomat. 2021;15(4):942-7.
3. Sarfaraz H, SingH MV, Puri A, Prathap MS, Shetty SK. Rehabilitation with Table-Top Restoration Post Bicuspidisation: An Interdisicplinary Case Report. J Clin Diagn Res. 2023 Feb;17(2):ZD17-9.
4. Ruiz JL. Supra-Gingival Minimally Invasive Dentistry: A Healthier Approach to Esthetic Restorations (pp.19-32).
5. Edelhoff D, Brix O. All-ceramic restorations in different indications: a case series. J Am Dent Assoc. 2011 Apr;142:14S-9S.
6. Charyeva OO, Altynbekov KD, Nysanova BZ. Kennedy classification and treatment options: a study of partially edentulous patients being treated in a specialized prosthetic clinic. J Prosthodont Implant Esthet Reconstr Dent. 2012 Apr;21(3):177-80.
7. Turner KA, Missirlian DM. Restoration of the extremely worn dentition. J Prosthet Dent. 1984;52:467-474.
8. Vailati F, Belser UC. Full mouth adhesive rehabilitation of a severely eroded dentition: the three step technique- Part 1. Eur J Esthet Dent. 2008;3:30-44.
9. Gupta S, et al. Monolithic Zirconia Partial Coverage Restorations: An In Vitro Mastication Simulation Study. J Prosthodont. 2021 Jan;30(1):76-82.
10. Aesthetic Rehabilitation of a Patient with Bruxism Using Ceramic Veneers and Overlays Combined with Four-Point Monolithic Zirconia Crowns for Occlusal Stabilization: A 4-Year Follow-Up.
11. Leff A. Precision attachment dentures. J Prosthet Dent. 1952;2(1):84-91.
12. Preiskel HW. Precision attachment in prosthdontics. London: Quintessence Publishing Co Ltd; 1995.
13. Laghzaoui S, Chafii A, Ghattas S, El Matoui S, Bennani A. Minimally Invasive Dental Prosthesis: Overlay, Veneerlay, Table-tops. J Oral Dent Health Res. 2021;3(2).
14. Biswal S, Yadav B, Nagpal A, Shetty O, Sanan R, Singh D. Partially Bonded Restorations. Bull Environ Pharmacol Life Sci. 2022; Spl Issue [2]:572-577.