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RESEARCH ARTICLE

REINFORCED SINGLE COMPLETE MAXILLARY DENTURE

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ABSTRACT

The edentulous state of the oral cavity is equivalent to the absence of any other body part with specific morphological and psychological sequelae. The dentist has a difficult mission in evaluating the biomechanical differences in the supporting tissues for the two arches and applying the appropriate procedures to produce and maintain the conditions necessary for long-term treatment success. The dental literature evidences suggest that the maxillary arch exhibits earlier tooth loss due to various factors and that the mandibular anterior teeth are preserved the longest, so this case focuses on the oral condition in which the maxillary arch is edentulous and opposed by a natural mandibular dentition². The main problem is that there are important qualitative and quantitative differences between natural tooth and complete denture support. The natural dentition is capable of specialized responses to occlusal demands that preserve its function, whereas the residual ridge is not and it will respond in a variable way depending on age, sex and racial category. Therefore, the replacement of the missing maxillary dentition must provide an optimum distribution of the occlusal forces in order to minimize the negative effects in the compromised edentulous arch. There has been so much debate regarding the Masticatory loads and forces transferring in the case of a single complete denture opposing a natural dentition. In most of the times flexural fatigue and stress concentration is found to be major cause of denture fractures³. So a single complete denture opposing natural dentition should be reinforced to that extent that it should withstand the huge occlusal forces acting on it. Metal can be added in form of wires, bars, mesh or plates. Metal strengthener has a beneficial effect on the fracture resistance of the poly-methyl-methacrylate.

INTRODUCTION

Main objective of any prosthetic treatment should be based on DE VANS statement that, "Perpetual preservation of what remains of the human masticatory apparatus is important rather than meticulous replacement of what is lost." This is especially true in terms of completely edentulous jaw opposing natural dentition. A single complete denture is a complete denture that occludes against some or all of the natural teeth, a fixed restoration, or a previously constructed Removable Partial Denture or Complete Denture. – GPT.¹

Case report: A 58 years old male patient was reported to Loni, Department of Prosthetic dentistry Rural Dental College, (Fig. 1). His chief complaint was to replace his missing upper teeth. The main reason for missing teeth was generalized periodontitis. He had beedi smoking habit and no significant medical and systemic illness.

History of using maxillary denture which had been fabricated 3 months ago and was fractured.

Intraoral and radiological examination: The intraoral findings revealed completely edentulous upper arch (Fig 2.). No teeth were missing in lower arch. Radiographic findings showed good prognosis with lower teeth.⁴ **Treatment Planning** As there were no irregularities in the occlusion of mandibular teeth no occlusal corrections were required. Along with this, patient had a history of midline fracture of maxillary denture which was fabricated 3 month ago. Then decision was made to fabricate a new upper complete maxillary denture with reinforced metal-meshwork in order to avoid further fracture of the prosthesis.⁵

Fabrication of prosthesis: After proper intraoral examination, preliminary impression of upper arch was made in impression compound (Fig 3).



Fig. 1 Pre operative photograph

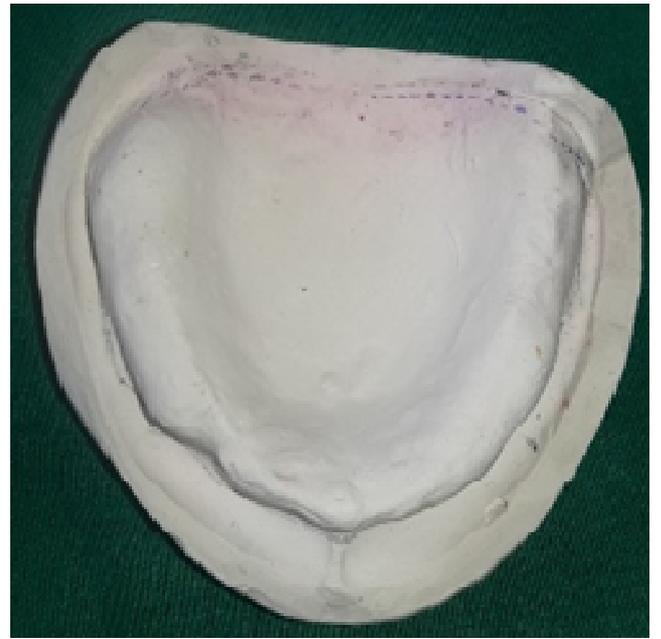


Fig. 4. Primary cast and lower arch cast



Fig. 2 Per operative intraoral maxillary and mandibular arch



Fig. 5. Final impression



Fig.3. Primary impression



Fig. 6. Try-in done



Fig.7. Adaptation of metal Mesh – work



Fig. 8. Polished Denture complete



Fig.9. Impression surface



Fig.10. Prosthesis intraorally



Fig.10. Postoperative

Diagnostic impression of lower arch was made in irreversible hydrocolloid alginate impression material and both cast were obtained (Fig 4). Upper special tray was fabricated, border molding was recorded and final impression of maxillary arch was made in Zinc oxide eugenol impression paste (Fig 5). Final cast was retrieved (Fig 6). Record base and occlusal wax rim was fabricated on the maxillary cast. Jaw relation was recorded and casts were mounted on the articulator. Maxillary teeth were arranged in relation with lower dentulous arch. No occlusal corrections were required for lower arch. Try-in was done. Dewaxing was completed followed by adaptation of maxillary metal meshwork on to the maxillary cast before denture packing (Fig 7). Further packing of the maxillary denture was completed in High Impact heat cure acrylic denture material (LUCITONE). Curing was done and maxillary denture was obtained (Fig 8). Finishing and polishing was done, followed by denture insertion. Occlusion was evaluated by clinical remount procedure using articulating paper. Patient was satisfied with his denture.

Conclusion

Due to biomechanical differences in the supporting tissues for opposing arches the patient requiring single denture opposing a natural or restored dentition faces a challenging job for the dentist. Thus the treatment planning and the prosthesis to be

given should be evaluated, fabricated and corrected to provide a stable prosthesis having stable functional relationships for controlling the resorption, discomfort and re-establishing esthetics, phonetics, masticatory functions and other lost functions of the patient (Fig 9).

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