ORIGINAL RESEARCH PAPER

Volume-7 | Issue-5 | May-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

REHABILITATION OF DEBILITATED DENTITION WITH MILLED ANTERIOR CROWNS AND CAST PARTIAL DENTURE

Dental Science

Dr. Krishna Prasad D Professor, Department of Prosthodontics, A.B. Shetty Memorial Institute of Dental Sciences, NITTE university, Mangalore.

Dr. Chethan Hegde Professor and HOD, Department of Prosthodontics, A.B. Shetty Memorial Institute of Dental Sciences, NITTE university, Mangalore.

Dr. Harsh Desai* Post Graduate student, Department of Prosthodontics, A.B. Shetty Memorial Institute of Dental Sciences, NITTE university, Mangalore. *Corresponding author

ABSTRACT

The rehabilitation of debilitated dentition is a challenge. Posterior missing teeth complicate the situation as it causes collapse of the vertical dimension. Implant supported prosthesis although being the first choice treatment in most of the cases, economical constraints might preclude the use of this option. Instead of implant supported prosthesis next best alternative could be the use of precision attachments as to provide better support, stability and retention. This case report describes a method to rehabilitate debilitated dentition with the help of anterior crowns and cast partial dentures.

KEYWORDS

Milled prosthesis, Anterior crowns , Fixed-removable prosthesis

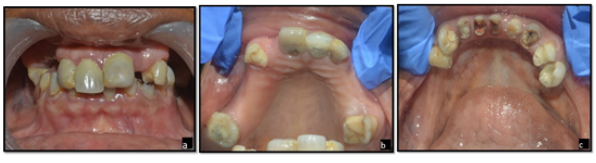
Introduction

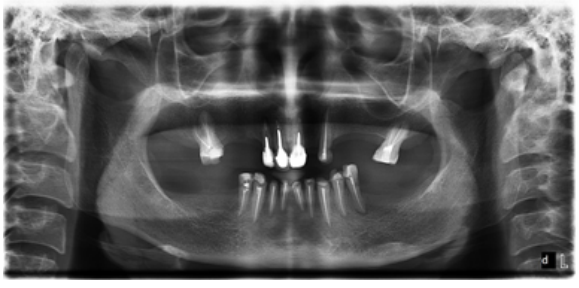
India is progressing immensely in all the fields yet the progression toward oral health is lagging behind. It is very common to find patients with debilitated dentition and neglected oral health. With implant supported prosthesis yet to become the first choice treatment for patients, combination of fixed dental prosthesis and removable partial denture with precision attachments as retentive elements can be considered as the most sophisticated form of care. [1] The combination of fixed and removable partial denture involve full veneer crowns and the creation of milled guiding planes on the lingual surfaces that can serve as precision attachments to enhance the stability and retention of the removable partial denture.[2,3,4] In such prosthesis it is common to encounter failure because of the complex nature of the treatment. The failures primarily were encountered with the fixed component of the assembly and the major reasons associated with them were periodontal disease of the abutment tooth, cementation failure of endodontic posts, root fracture. [1]

This article presents a case report of rehabilitation of partially edentulous debilitated maxillary and mandibular arch with the combination of fixed-removable prosthesis.

CASE REPORT

A forty five year old female patient reported to Department of Prosthodontics with the chief complaint of difficulty in chewing. She also complained about she being not satisfied with the smile. The pretreatment intraoral condition can be assessed from the series of intraoral photos and OPG. (Figure 1 a-d)





The dental condition revealed missing 15,14,13,22,24,25,26,36 ,37,45,46,47 and remaining teeth were root canal treated and 12,11,21 were post and core treated with custom post. 21 showed debonding of the post so post and core was done again with fiber post and resin core. 33,41 were treated with custom made metal post and core. Remaining teeth were prepared for full contoured PFM crowns.

MAXILLA

The treatment plan was to give fixed prosthesis for missing 22 with splinting all the anterior crowns together for 5 unit bridge. (from 12 to 23) Single crowns for all the RC treated teeth.

Casts were mounted on the semiadjustable arcon articulator. Full-contour waxing (GEO Milling wax; Renfert, Germany) with parallel and milled guide planes on the palatal aspect was completed for maxillary anterior teeth. These provide guidance for prosthesis and reciprocation for the abutment teeth during placement and removal of the RPD and also have the potential to create frictional resistance to dislodgement. [5] Proximal parallel guide planes were incorporated on the distal aspect of the distal abutments of the FPD and the mesial aspect of both the molars combined with occlusal rests. (Figure 2)

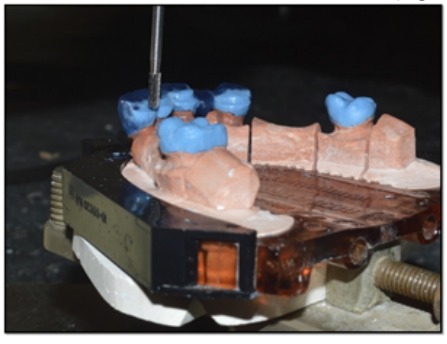


Figure 2: Milling of the crowns

All the laboratory procedures were done indigenously in the institution. Provisional cement (RelyXTM Temp NE; 3M ESPE, Germany) was placed in small amount on the margins of the restoration before the final impression was made (ExpressTM XT Putty Soft and light body; 3M ESPE, Germany) which was poured in type IV dental stone (Kalrock; Kalabhai, India). This was done in accordance to Brudvik's [5] advice to include all fixed components on the definitive cast for the RPD to obtain a solid cast for final milling, thus reduce errors in the reproduction of crown contours. After obtaining the definitive cast final metal milling was accomplished using an electrical milling machine (Paraskop; Bego, Germany) with milling bur. (Figure 3)

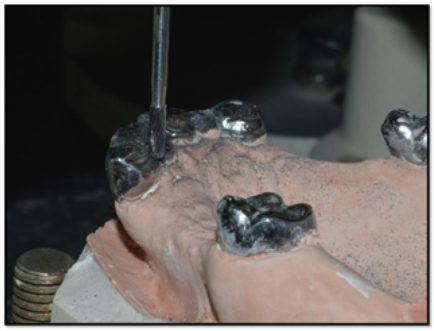


Figure 3: Milling of the cast crowns

Porcelain build-up was finished. The fabrication of the cast partial denture began with block out of the definitive cast which then was duplicated using agar (Wirogel M; Bego, Germany) and poured in phosphate bonded investment (Wirovest; Bego, Germany). The major connector used was anteroposterior palatal strap (Smooth casting wax; Bego, Germany). A cast clasp was placed into a 0.010 inch undercut on the mesiobuccal of the right and left molars. The internal surface of the casting was left in the as-cast condition in the areas of milled surfaces, while all other surfaces were finished and polished. The cast framework was checked for the initial intraoral fit. After assuring the complete seating of the framework the FPD was cemented with permanent cement (GC Gold Label Luting and Lining Cement; GC Corporation, Japan). (Figure 4)

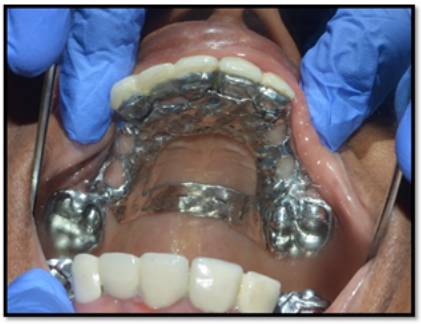


Figure 4 : Anterior crowns cemented and Framework checked

After the final setting of the cement, an impression was made of the definitive FPD and was poured in type IV dental stone. Artificial teeth (Acryrock; Ruthinium Dental Products Pvt Ltd, India) were positioned and waxing and carving was completed, following which the CPD was processed, finished and polished.

MANDIBLE

Treatment plan was to give full contoured single crowns on all the root canal treated teeth. A full-contour waxing (GEO Milling wax; Renfert, Germany) were made for all the teeth with mesial occlusal rest on 35,44. (Figure 5) Acrylic teeth were used as to establish occlusion for maxillary wax pattern.

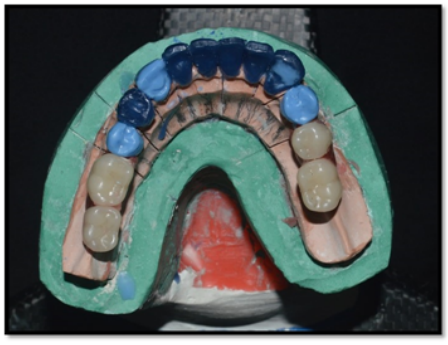


Figure 5 : Wax pattern

The crowns were casted and checked in the mouth for marginal fit and were picked up in the impression. The impression was poured and cast was duplicated in agar for the fabrication of metal framework. Lingual plate was used as a major connector. Framework was polished and tried in the mouth after the cementation of anterior crowns. (Figure 6)

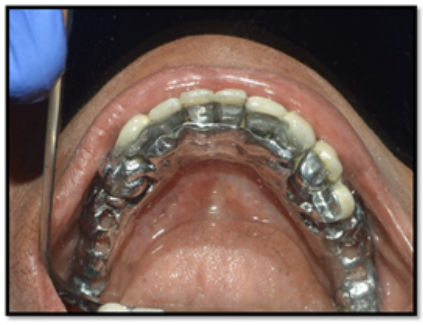


Figure 6 : Try in of metal framework

After the final setting of the cement, an impression was made of the definitive FPD and was poured in type IV dental stone. Artificial teeth (Acryrock; Ruthinium Dental Products Pvt Ltd, India) were positioned and waxing and carving was completed, following which the CPD was processed, finished and polished.

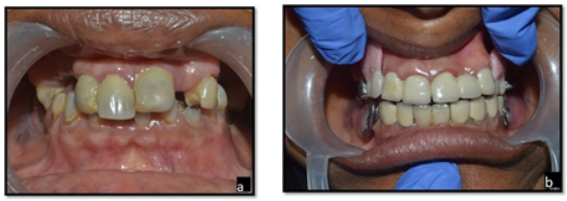
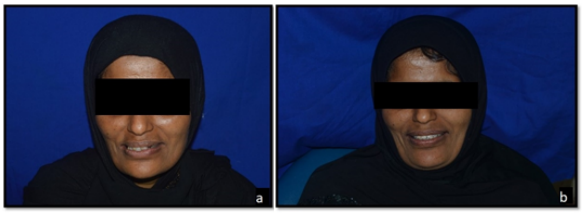


Figure 7a : Preop condition 7b Postop final restoration

The figure 7(a & b) shows the final intraoral change from preoperative to postoperative condition whereas the figure 8 (a & b) shows change in appearance and smile of the patient.



DISCUSSION

When it comes to such cases the diagnosis, treatment planning is of paramount importance. The other most important thing is to make patient understand the limitation of treatments which can be offered once the implant supported prosthesis is out of option. The major drawback with a RPD is the continued loss of teeth after the restoration. Moreover, plaque retention, fracture of the component, periodontal breakdown of the abutment teeth or unacceptable esthetics adds to the failure of these prostheses.[2] Clinical studies report that the periodontal condition of surviving abutments is related to RPD design and good oral hygiene.[3]

Amalgamation of fixed and removable partial denture prostheses with milled surfaces serves to be an acceptable option in these situations. Yada *et al*. explained the philosophy of combined prosthesis: (1) The major and minor connector should cover minimum amount of soft tissue while being in contact with the remaining teeth, (2) the milled palatal and proximal surfaces, which are left in the as-cast state, create frictional retention and enhance stability.[2,3,5,6] Axial surfaces, milled to perfection, are only half of the equation. The framework must have maximal possible contact with the milled surfaces so that they function as precision attachments.

The error can occur because of discrepancy between the milled surface and the cast partial denture due to finishing and polishing. The uncontrolled loss of metal that normally occurs in the fitting phase dramatically alters the fit of the casting to the milled surface. Every effort must be made to leave the internal surface of the casting in the as-cast condition in the areas of desired contact with the milled surfaces. The laboratories must neither electro strip these surfaces nor grossly grind them to fit the frame to the master cast. Rather, the fitting of the frame must be first done in the mouth with all restorations present.
By integrating the milled guide plane on the palatal aspect of (FPD),

improvement in the stability of RPD increased its resistance to rotational movements and most importantly eliminated the need for visible anterior clasping, thus achieving the basic principles of retention, stability, and support along with patient compliance.

Conclusion

This approach which is combination of fixed and removable with milled contacting surface should be considered when limitations with financial expenditure or the number of missing teeth exist. The creation of milled surface acts like precision attachment. This in turn helps in improving stability and support. As it is more stable compared to regular RPD the patient compliance also increases. It is paramount to educate the patient about oral hygiene measures to ensure longevity of the restoration.

References

1. Brudvik JS, Shor A. The milled surface as a precision attachment. Dent Clin North AM 2004; 48:685-708
2. Kern M, Wagner B. Periodontal findings in patients 10 years after insertion of removable partial dentures. J Oral Rehabil 2001;28:991-7
3. Chaiyabutr Y, Brudvik JS. Removable partial denture design using miled abutment surfaces and minimal soft tissue coverage for periodontally compromised teeth: A clinical report. J Prosthet Dent 2008;99:263-66.
4. NaBadalung DP, Nicholls JI, Brudvik JS. Frictional resistance of removable partial dentures with retrofilled resin composite guide planes. Int J Prosthodont 1997;10:116-22
5. Brudvik JS. Advanced removable partial dentures. Quintessence, Chicago 1999;65-73.
6. Brudvik JS, Reimers D. The tooth-removable partial denture interface. J Prosthet Dent 1992;68:924-7.