

Prosthetic Rehabilitation of a Hemisected Maxillary Molar: A Rare Entity

Preeti Yadav · Mohammed Tahir ·
M. V. Sunil Kumar · Harikesh Rao

Received: 1 February 2011 / Accepted: 8 October 2012 / Published online: 18 October 2012
© Indian Prosthodontic Society 2012

Abstract Gingival recession beyond grade III and grade IV level involving furcation defects can lead to tooth loss if not intervened at appropriate time. The treatment options include scaling and root planing, Furcation-plasty, Tunnel preparation, Root separation and resection. The chief complaint of the patient was pain in the upper left first molar because of grade III furcation involvement. Since it was a four rooted molar, the treatment of choice was hemisection of the tooth and extraction of the distal half following endodontic treatment. As the second molar was mesially tilted the prosthodontic rehabilitation was done with a hybrid prosthesis involving a full coverage conventional porcelain fused to metal retainer on the hemisected molar and a resin bonded partial coverage retainer on the tilted second molar. The resultant prosthesis is termed as “Hybrid prosthesis”.

Keywords Hemisection · Hybrid prosthesis · Furcation involvement

P. Yadav (✉)
Jaipur Dental College, Jaipur, Rajasthan, India
e-mail: drpreeti_yadav@yahoo.com

P. Yadav
333-L, Model Town, Rewari, Haryana 123401, India

M. Tahir
Department of Prosthodontics, Crown and Bridge
and Implantology, NIMS University Dental College,
Jaipur, Rajasthan, India
e-mail: monunik@yahoo.com

M. V. S. Kumar · H. Rao
Department of Prosthodontics, Crown and Bridge
and Implantology, Jaipur Dental College, Jaipur,
Rajasthan, India
e-mail: drsunilmv@hotmail.com

Introduction

In the course of delivering periodontal treatment, the clinician is often faced with the problem of treating teeth that have advanced periodontal destruction and whose long-term prognosis is judged poor. Reports in the literature show that, when compared to other teeth, molars are more vulnerable to attachment loss and are more prone to extraction [1, 2]. Molar teeth with furcation involvement are the most common teeth to be lost [3]. The etiologies of furcation involvement may include anatomic factors, extension of inflammatory periodontal disease, trauma from occlusion, pulpo-periodontal disease and root fracture involving furcations [4]. Although early or incipient Class I furcation defects are generally considered maintainable by non-surgical therapy and effective plaque control, the successful maintenance of more advanced furcations (Class II and III) usually requires surgical management like root resection. Although frequently performed in mandibular molars, Hemisection is a procedure rarely performed in the maxillary molars. This paper aims at presenting a case report that involves an isolated furcation-involved tooth and its prosthetic rehabilitation.

Case Report

A 26-year old female patient reported to the Jaipur dental college OPD with a complaint of pain in the upper left region since six months. Intraoral examination showed a grade III gingival recession and grade III furcation involvement in relation to 26 (Fig. 1). There were 4 mm pockets in relation to 24 and 25 and missing 36 and 46. Occlusal caries were present in relation to 17 and 24 was slightly rotated. Radiographically (film based IOPA) the



Fig. 1 Pre-operative intra oral view

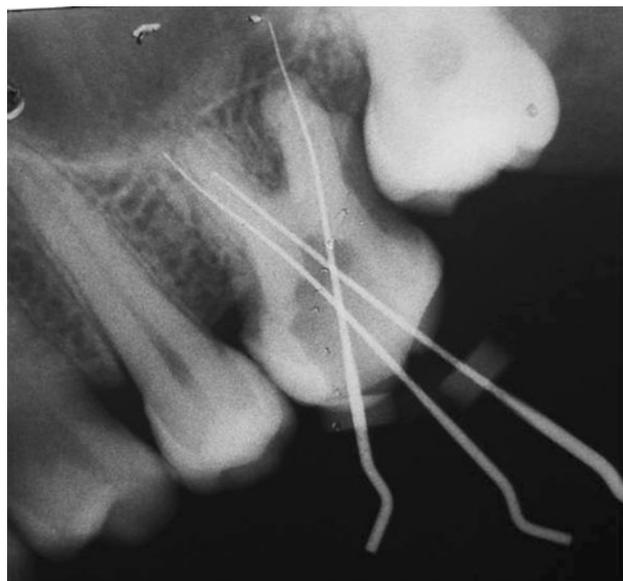


Fig. 3 IOPA of 26 during endodontic treatment



Fig. 2 Pre-operative IOPA depicting the furcation involvement

tooth in question showed extensive bone loss and periapical destruction in relation to the distal roots of left maxillary first molar (Fig. 2). This molar had an unusual number and size of roots i.e. four, short root length. It was decided to resect the distal roots and retain the mesiobuccal and the mesiopalatal roots because of the favorable anatomic form and alignment of these roots. At the initial visit, scaling and root planing was done, followed by occlusal evaluation which revealed a mesially tilted 27. Subsequently, root canal treatment was done followed by temporary restoration (Fig. 3). Hemisection [5] was then performed resecting the distobuccal and distopalatal roots and retaining the mesiobuccal and mesiopalatal roots (Figs. 4, 5). The flap was sutured (Fig. 6) and the patient was called after 2 weeks for re-evaluation and prosthetic treatment. Considering the mesially tilted second molar and a large occlusal table of the resected first molar, Hybrid [6, 7] prosthesis was considered imperative to distribute the load from the abutments. Also fabrication of three unit bridges



Fig. 4 Hemisection

for missing 36 and 46 was planned [8]. Tooth preparation was done on 26 to receive a conventional full coverage retainer [9] and 27 for a resin bonded retainer (Fig. 7). The teeth were provisionalized to evaluate the occlusion (Figs. 8, 9, 10). The provisional restorations were maintained intraorally for 8 weeks before the final impressions were made, allowing sufficient time for evaluation. Complete arch impressions were made with the addition polymerization silicone impression material. Wax patterns were completed to the contour of the final restorations, and the



Fig. 5 Resected distobuccal and distopalatal roots



Fig. 8 Provisional hybrid prosthesis



Fig. 6 Flap sutured



Fig. 9 Luted provisional prosthesis occlusal view



Fig. 7 Tooth preparation w.r.t 26 and 27 for hybrid prosthesis



Fig. 10 Luted provisional prosthesis buccal view



Fig. 11 Wax pattern fabrication



Fig. 14 Conventional 3-unit FPD w.r.t 45, 46, 47



Fig. 12 Luted hybrid prosthesis w.r.t 26 & 27



Fig. 15 Three unit FPD luted w.r.t 45, 46, 47



Fig. 13 Conventional 3-unit FPD w.r.t 35, 36, 37



Fig. 16 Restored mandibular arch—occlusal view

wax patterns for the teeth receiving porcelain-fused-to-metal restorations were cut back approximately 1 mm to allow for the porcelain addition (Fig. 11). All occlusal surfaces were planned to be fabricated in metal. The wax pattern (Kronenwachs, Cervikalwachs, Bego Dental, Germany) were modeled and invested in silica bonded investment (Bellasun, Bego Dental, Germany) and cast in Wirobond 280 (Bego Dental, Germany) non precious alloy (Figs. 12, 13, 14). The intaglio surfaces of the retainers were sandblasted for increase in surface area. Porcelain shade vita B-2 (Vita VM 13, Vita, Germany) was applied to the metal ceramic castings. All the restorations were glazed and polished and disinfected and luted with RelyX U100 (3M ESPE) resin bonded cement (Figs. 15, 16). Postoperative care instructions were given to the patient with periodic recall visits. Postoperative instructions included gentle brushing with a roll technique and rubber tipping twice daily. Flossing, Proxabrush or Sulcabrush was recommended on a daily basis. Routine periodontal maintenance was advised after 3 months that included probing, scaling, root planing, rubber cup and/or air-powder polishing.

Discussion

Few clinical reports have been presented in the literature describing the restoration of a hemisected maxillary molar. Extraction of the teeth and treatment with a conventional fixed prosthesis has been a common treatment. Here the treatment planning was complicated because of the presence of two distal roots and a mesially tilted second molar. Hybrid prosthesis was therefore planned to distribute the occlusal load evenly and at the same time avoiding the unnecessary sacrifice of tooth structure. When appropriate regard is given to the steps that make a well-fitting restoration, and consideration is given to the occlusion and retention/resistance form, these restorations should last as long as those placed in the general population.

Conclusion

The report illustrates an example of using a combination of conventional fixed prosthesis and resin bonded prosthesis in periodontally compromised teeth. The grade III gingival recession and furcation involvement in relation to 26 was treated by hemisection and root resection followed by prosthetic rehabilitation with a Hybrid prosthesis.

Acknowledgments The authors heartily acknowledge the contributions of the Department of Periodontics, Dr. Vidya (Professor and Head) and Dr. Pradeep Choudhary (Post graduate student).

References

1. Park Shin-Young, Shin Seung-Yun, Yang Seung-Min, Kye Seung-Beom (2009) Factors influencing the outcome of root-resection therapy in molars: a 10-year retrospective study. *J Periodontol* 80(1):32–40
2. Ramfjord SP, Knowles JW, Morrison EC et al (1980) Results of periodontal therapy related to tooth type. *J Periodontol* 51:270–273
3. Ramfjord SP, Caffesse RG, Morrison EC et al (1987) 4 modalities of periodontal treatment compared over 5 years. *J Clin Periodontol* 14:445–452
4. Newell DH (1998) The diagnosis and treatment of molar furcation invasions. *Dent Clin North Am* 42:301–337
5. Carnevale G, Pontoriero R, Di Febo G (1998) Long-term effects of root-resective therapy in furcation-involved molars. A 10-year longitudinal study. *J Clin Periodontol* 25:209–214
6. Anweigi LM, Ziada HM, Allen PF (2007) The clinical performance of hybrid bridges delivered by undergraduate dental students: a retrospective study. *J Oral Rehabil* 34:291–296
7. Serdar Cötört H, Oztürk B (1997) Posterior bridges retained by resin-bonded cast metal inlay retainers: a report of 60 cases followed for 6 years. *J Oral Rehabil* 24(9):697–704
8. Raustia AM, Näpänkangas R, Salonen AM (1998) Complications and primary failures related to fixed metal ceramic bridge prostheses made by dental students. *J Oral Rehabil* 25(9):677–680
9. Sharma N, Chitre V (2007) Resin-bonded prosthesis: modifications in design. *J Ind Prosthodont Soc* 7(2):66–70