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Management of Tilted Juxta-Abutment Teeth with Simplified Guiding Plane Technique – A Clinical Tip

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Abstract

The management of fixed prosthodontics often necessitates the preparation of healthy abutment teeth, which can inadvertently disrupt their natural contours and contacts. This article addresses the challenges posed by abutment teeth that exhibit defects, such as recession or pathological migration, leading to improper interproximal contacts and potential food impaction. The application of guiding plane principles traditionally used in removable partial dentures (RPD) is adopted in fixed prosthodontics to establish optimal contacts in fixed partial dentures (FPD). The discussion emphasizes the importance of preserving the integrity of adjacent teeth during preparation while highlighting alternatives such as orthodontic correction and partial crowns for more pronounced tilting. The proposed method is minimally invasive, cost-effective, and time-efficient, making it particularly suitable for cases with mild tilts.

Keywords: Guiding Plane; Black Triangle; Tilted teeth

Abbreviations

FPD: Fixed Partial Denture; RPD: Removable Partial Denture.

Introduction

Hippocrates stated "As to diseases, make a habit of two things, - to help or at least to do no harm". This applies good for fixed prosthodontics. It is conventional to prepare the healthy abutment teeth to replace a missing teeth for Fixed Partial Denture (FPD) [1]. In such case, we remove the natural contact and contours of the abutment tooth and recreate the same in the FPD. What if the natural contour is itself defective? [2]. Yes, we have an opportunity to recreate healthy contacts with the new FPD. In cases of recession, pathologic migration, relapse after orthodontic treatment, the natural contacts are lost or opened leading to food impaction [3]. It is the bounden duty of the dental operator to restore the lost contact if an FPD is planned in that site. Guide Planes are usually prepared in the abutment tooth of the Removable Partial Denture (RPD) to avoid unesthetic black triangles and to ensure positive contacts of the abutment tooth surface to the prosthesis. This same principle is applied for FPD/single crowns to enhance or maintain the natural contacts.

Background of the Problem

Most of the clinical situations will not be ideal in reality. Natural teeth tend to tip towards the edentulous space (Figure 1). The teeth next to the abutment teeth (juxta-

abutment teeth) if tipped and left unaltered, the final prosthesis placed in this region may end up in creating a black triangle between the natural and artificial teeth. Such unesthetic black triangle may lodge food particles leading to dental caries of the abutment and juxta-abutment tooth.

Adopting Guiding Plane Principle in Fixed Prosthodontics

One simple way to avoid this situation is to modify the proximal aspect of the juxta-abutment teeth. One can adopt the principles of guide plane preparation in RPD in this case to establish proper contacts of the FPD. Guiding planes are two or more vertically parallel surfaces on abutment teeth and/or fixed dental prostheses oriented so as to contribute to the direction of the path of placement [4].

A Clinical Example

To comprehend the idea better, let us consider an example of missing left (36) mandibular first molar in an otherwise intact dentition but with mesially inclined 37,38. For replacement of missing 36, 35 and 37 must be prepared as abutments and tooth number 38 is the juxta-abutment tooth in this case. Preservation of tooth preparation is one of the important principles of tooth preparation. This also implies that the adjacent tooth to the abutments must not be damaged during tooth preparation. But unaltered mesial surface of 38 in this case may result in the improper contact with increased gingival embrasure space (Figure 2).

In this special clinical situation, the mesial surface of the juxta-abutment tooth next to the abutment (38 in this case) can be prepared with an extra-fine round end taper bur. The enameloplasty must be parallel to the path of insertion of the FPD to establish ideal contact. The plane of surface created on the mesial surface of 38 is the guiding plane in this case (Figure 3). A broad and tight contact prevents food lodgement, ensures good gingival health thus prevents dental caries [5].

Discussion

Successful Prosthodontic Rehabilitation must replace the missing teeth without disturbing the natural dentition. Faulty contacts of the Fixed Prosthesis may attract plaque, debris thereby resulting in dental caries and disruption of the natural oral harmony [6].

Tilting of teeth next to the prepared teeth can also be managed by correction of tilt by orthodontic method. But it adds up the treatment time and cost. The virginity of the enamel can be preserved by orthodontic correction. Another approach to correct the clinical tilt is to prepare the tilted portion and cover it with mesial half-crown extending from the FPD [7]. This technique holds good in cases where excessive tilt is present when compared to the path of insertion of FPD. In such cases mere alteration of the contact may end up in sensitivity. Protecting the altered part of the tooth by mesial half-crown prevents it from caries and the occlusal harmony is preserved. Comparing with the above stated alternative, the method proposed in this article is minimally invasive, cost effective and time-saving. But the limitation of the guiding plane technique is that it can be applied only in cases with mild tilt, by compromising the enamel thickness.

Conclusion

Guide plane preparation is a proven method in literature to provide proper contour. Care must be taken to limit the guide plane in the enamel with extra-fine bur. Clinically ideal contacts maintains the teeth and periodontium healthy with regular oral hygiene practices. Prosthetic restorations must not distrupt the harmony of the natural dentition instead prosthesis must be planned to enhance the contacts and contours of the dentition.

Figure 1: Clinical situation with 36 missing and titled 37,38.

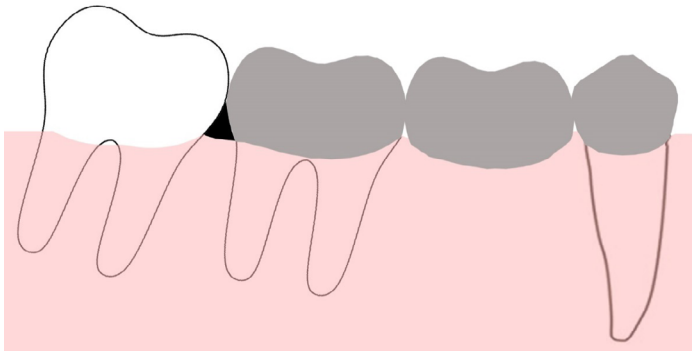

Figure 2: Point contact & Black triangle present between FPD and 38.

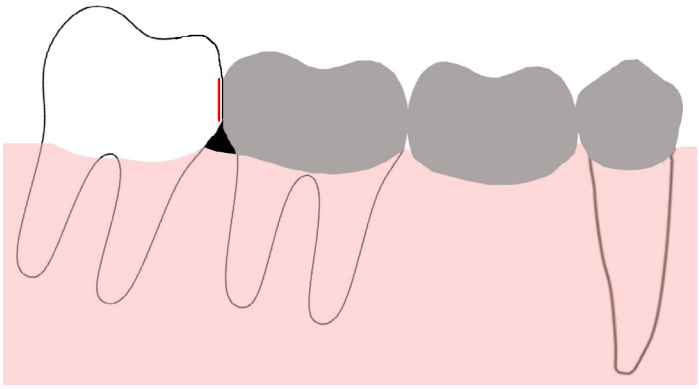

Figure 3: Broad proximal contact reduced black triangle between FPD and 38.

References

1. Kafalias MC (1969) Abutment preparation in crown and bridge. Aust Dent J 14(1): 1-7.

2. Vardimon AD, Matsaev E, Lieberman M, Brosh T (2001) Tightness of dental contact points in spaced and non-spaced permanent dentitions. Eur J Orthod 23(3): 305-314.

3. Gerritsen AE, Allen PF, Witter DJ, Bronkhorst EM, Creugers NH (2010) Tooth loss and oral health-related quality of life: a systematic review and meta-analysis. Health Qual Life Outcomes 8: 126.

4. The Glossary of Prosthodontic Terms 2023: 10th (Edn.), (2023) J Prosthet Dent 130(4 S1): e7-e126.

5. Ren S, Lin Y, Hu X, Wang Y (2016) Changes in proximal contact tightness between fixed implant prostheses and adjacent teeth: A 1-year prospective study. J Prosthet Dent 115(4): 437-440.

6. Alfallaj H (2020) Pre-prosthetic orthodontics. Saudi Dent J 32(1): 7-14.

7. Sharma A, Rahul GR, Poduval ST, Shetty K (2012) Short clinical crowns (SCC) - treatment considerations and techniques. J Clin Exp Dent 4(4): e230-e236.