

Treatment of Grade Iii Furcation Defect by Guided Regeneration Technique: A Case Report

¹Vivek Singh Tanwar. PG student, Bharati Vidyapeeth Dental College, Pune.

²Pramod Waghmare, Associate Professor, Bharati Vidyapeeth Dental College, Pune.

³Ketaki Kanade, Bharati Vidyapeeth Dental College, Pune.

Corresponding Author: Vivek Singh Tanwar, PG student, Bharati Vidyapeeth Dental College, Pune.

Citation of this Article: Vivek Singh Tanwar, Pramod Waghmare, Ketaki Kanade, “Treatment of Grade Iii Furcation Defect by Guided Regeneration Technique: A Case Report”, IJDSIR- April - 2021, Vol. – 4, Issue - 2, P. No. 175 – 178.

Copyright: © 2021, Vivek Singh Tanwar, et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License. Which allows others to remix, tweak, and build upon the work non commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Furcation involvement is the result of progressing periodontal breakdown due to inflammation. Furcation has limited access and complex anatomy. It is challenging to determine the extent of furcation involvement to make an appropriate diagnosis and develop treatment plan. Several techniques are used either alone or in combination to achieve periodontal regeneration. These include the bone grafts, guided tissue regeneration (GTR), root surface modification, and biological mediators. The aim of this case report was to treat mandibular grade III furcation using resorbable GTR membrane (Periocol) in combination with a bone graft (Perioglas). Surgical procedure was carried out and patient was monitored weekly post-operatively, to ensure good oral hygiene in the surgical area. After 2 months, tooth was found asymptomatic with successful healing.

Keywords: Grade III furcation, GTR, Perioglas, Periocol.

Introduction

Furcation involvement is defined as the area of bifurcation and trifurcation of a multirrooted teeth infected by

periodontal breakdown. It is an area of complex anatomy and morphology. Furcation involvement is classified into grade I, grade II, grade III and grade IV depending upon the horizontal attachment loss by Glickman in 1953. Grade I furcation involvement is an incipient lesion with suprabony pockets. Grade II furcation is a cul-de-sac with a definite horizontal component. Grade III is a furcation defect where bone is not attached to the dome of furca. Grade IV furcation is similar to grade III which includes recession of soft tissue as well[1].

The management of furcation involvement presents one of the greatest challenges in periodontal therapy mainly due to complex anatomical features and limited accessibility of furcal area. Multiple modalities of treatment have been performed clinically to resolve furcation defects and to achieve periodontal regeneration. Most commonly used technique for Grade II and III furcation involvement is Guided Tissue Regeneration (GTR).[2]

The concept of Guided Tissue Regeneration was first introduced by Nyman et al. GTR involves the use of barrier membranes that excludes gingival fibroblasts and

epithelium from the healing site thus allowing the granulation tissue derived from the periodontal ligament and osseous tissues to repopulate into the space adjacent to the denuded root surface. [3] This technique includes the use of various bone grafts and membranes like autografts, demineralized freeze-dried bone allografts, bovine-derived xenografts, barrier membranes and various combinations of these.[4]

This case report presents the use of GTR technique for a case of Grade III furcation involvement of left 1st mandibular molar.

Case Report

A 40 year old male patient reported to the outpatient department (OPD), of Periodontology Department, Bharati Vidyapeeth Dental College and Hospital, Pune with the chief complaint of food lodgement and bleeding gums in lower left back region since 3 months. Upon clinical examination, the site revealed signs of inflammation and buccal and lingual furcation involvement in #36. The probing depth measured by UNC-15 probe was 6 mm mesiobuccal, 10 mm midbuccal, 6 mm distobuccal and 5 mm midlingual. The horizontal probing depth measured by Naber's probe was 9 mm. IOPA didn't show any periapical pathology so any endodontic intervention was not required.

The patient underwent phase I therapy which included thorough scaling and root planing, followed by oral hygiene instructions. Four weeks after the phase I therapy, patient was recalled for follow up. Probing pockets depths after phase I therapy were reduced to 4 mm mesially and distally while midbuccal and midlingual depths remained unchanged. Thus, it was decided to perform a surgical intervention to treat the mandibular furcation defect.

A signed informed consent was obtained from the patient prior to surgery. Following administration of LA, a #15 blade was used to place incision and a full-thickness flap

was reflected. Following this, the granulation tissue was removed and complete debridement was done using Gracey curettes. After thorough root planing, furcation area was filled with PerioGlass (bioactive synthetic bone graft) along with PerioCol (resorbable collagen membrane) covering the root surface. The flap was sutured with 3-0 silk suture for primary closure.



Fig 1: Incision given

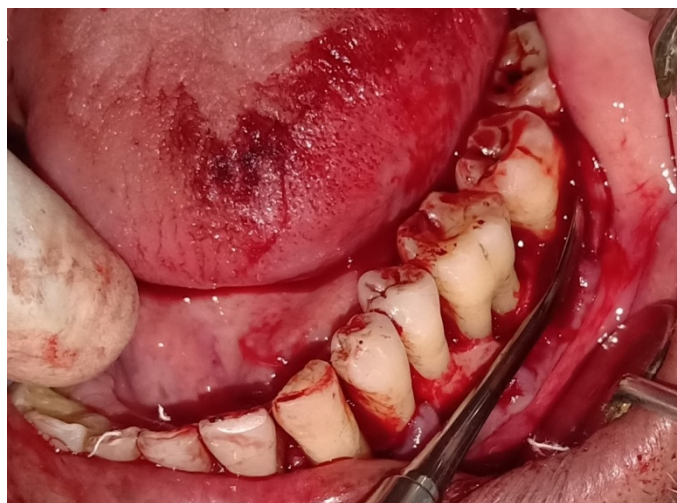


Fig 2: Full thickness flap reflected



Fig 3: Debridement done

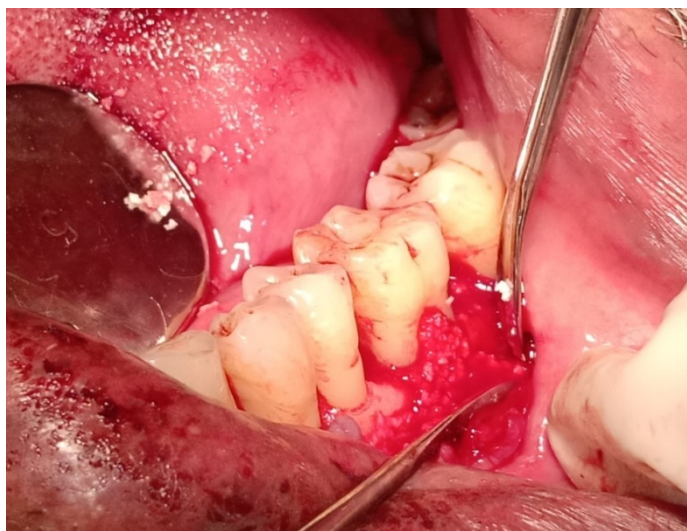


Fig 4: Bone Graft Placed

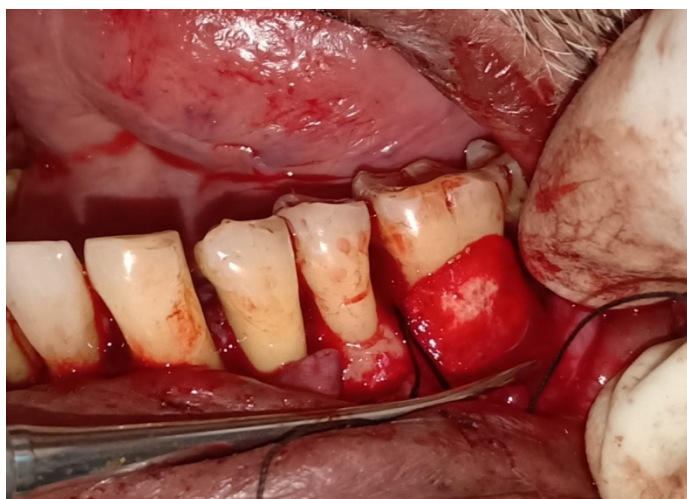


Fig 5: PerioCol placed



Fig 6: Sutures placed

Suitable antibiotic and analgesics were prescribed. The patient was advised to rinse with chlorhexidine digluconate(0.12%) twice daily for 2 weeks following surgery. Sutures were removed 7 days postoperatively. Patient was observed weekly post-operatively, to ensure good oral hygiene in the surgical area.

Discussion

Regenerative periodontal therapy aims at regeneration of periodontal hard and soft-tissues, including formation of a new attachment apparatus, which would result in the closure of the furcation[5]. Various regenerative procedures utilized in the management of class III furcation involvements are Root surface biomodification, coronally positioned flaps, use of various bone grafts and membranes and guided tissue regeneration. Periodontal regeneration in the furcation defects is not completely predictable, especially in terms of complete bone fill. GTR has offered better results than open-flap debridement or bone replacement grafts alone, in class III furcation. [6] Selecting a defect that can show predictable results to regeneration is important for achieving success.

In our present case, combined treatment approach using bone graft and GTR membrane was used for treatment of mandibular grade III furcation defect. Perioglas is

synthetic, resorbable and osteoconductive in nature with particle size ranging from 90 to 710µm. Fetscher AE in 1994 suggested that the graft retards epithelial downgrowth, which may be responsible for its enhanced cementum and bone repair.[7] A bioresorbable membrane PerioCol was used. Using a resorbable membrane avoids need of a second surgical intervention and therefore the exposure and disturbance to the newly formed tissue below the membrane is prevented. [8] Main constituent of periodontal connective tissue is Type I collagen. Collagen possesses advantages such as hemostasis and chemotaxis for periodontal ligament fibroblasts and gingival fibroblasts, reduced immunogenicity, easy manipulation, and ability to increase tissue thickness. Hence, collagen membranes are considered ideal for resorbable GTR membranes. [9]

References

1. Prathap S, Hegde S, Kashyap R, Prathap MS, ArunkumarMS. Clinical evaluation of porous hydroxyapatite bone graft (PerioboneG®) with and without collagen membrane (Periocol®) in the treatment of bilateral grade II furcation defects in mandibular first permanent molars
2. Santana RB, de Mattos CM, Van Dyke T. Efficacy of combined regenerative treatments in human mandibular class II furcation defects. *J Periodontol.* 2009;80: 1756–64.
3. Gottlow J, Nyman S, Karring T. Maintenance of new attachment gained through guided tissue regeneration. *J Clin Periodontol.* 1992;19:315–7.
4. Gottlow J, Nyman S, Lindhe J, Karring T, Wennstrom J. New attachment formation in human periodontium by guided tissue regeneration. Case reports. *J ClinPeriodontol* 1986;13:604-616
5. P.R. Cury, E.A. Sallum, F.H. Nociti Jr., A.W. Sallum, and M.K. Jeffcoat. Long-Term Results of GTR in Class II Furcation Defects: A randomized controlled trial. *J Periodontol* 2003;74:3-9.
6. Novaes AB, Jr, Palioto DB, de Andrade PF, Marchesan JT. Regeneration of class II furcation defects: Determinants of increased success. *Braz Dent J.* 2005;16:87–97
7. Zuolo ML, Ferreira MO, Gutmann JL. Prognosis in periradicular surgery: A clinical prospective study. *Int Endod J.* 2000;33:91–8.
8. Khanna D, Malhotra S, Naidu DV. Treatment of grade II furcation involvement using resorbable guided tissue regeneration membrane: A six month study. *J Indian SocPeriodontol* 2012;16 :404-10.
9. Bunyaratavej P, Wang HL. Collagen membranes: A review. *J Periodontol* 2001; 72:215-29.