CASE REPORT

TREATMENT OF A LATERAL PERIODONTAL CYST WITH AN UNUSUAL PRESENTATION USING BIOACTIVE GRAFT MATERIAL AND RESORBABLE TETRACYCLINE FIBERS

Anitha S¹

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INTRODUCTION: When teeth harbor accessory root canal that are oriented from the pulp chamber to the lateral aspect of root or when an infected root fracture is present, spread of inflammation can progress laterally and occur as midway up the root resulting in laterally displaced apical periodontal cyst. Pain may be a feature of such a lesion. Differential diagnosis includes lateral periodontal cyst & odontogenic cyst.¹

Microscopic features include apical periodontal cysts show a non-keratinized often hyperplastic stratified squamous epithelium lining within a fibrous cyst wall that is infiltrated by leukocytes, many also contain cholesterol clefts. Treatment would include endodontic therapy with cystectomy of the involved tooth.

Tetracyclines are broad-spectrum polypeptide antibiotic produced by the Streptomyces genus of Actinobacteria, indicated for use against many bacterial infections. They are protein synthesis inhibitors with a wide spectrum of activity against numerous periodontal pathogens. It has the ability to concentrate in GCF at levels substantially greater than serum; additionally, it demonstrates anticollagenolytic and antiproteolytic properties that aid in osseous regeneration and also help in reducing periodontal disease progression.

Perioglas (PG) (Novabone Products, LLC) is a synthetic bone graft material has been used as an adjunct to conventional periodontal surgery in the treatment of periodontal intra bony defects, furcation defects; cysts as a bone fill material. It has the advantages of being osteostimulative properties.

This report presents a combination of perioglas bioactive graft and resorbable tetracycline fibers in the treatment of a laterally displaced periodontal cyst.

CASE REPORT: A female patient aged 50yrs, presented to the clinic with a complaint of pain and swelling in lower front teeth region for 2weeks. There was no significant medical history, or deleterious habits. There was no past dental history. On examination 31 revealed intra-oral swelling with mild tenderness on percussion/palpation. Probing pocket depth was 8mm (Fig. 1). IOPAR revealed a radiolucent area adjacent to 31. It was provisionally diagnosed as laterally displaced apical periodontal cyst in 31.

Treatment Protocol: The treatment plan was explained and consent obtained from the patient. Treatment was started with Oral hygiene instructions followed by scaling & root planning. Endodontic therapy was done in relation to 31.

The surgical protocol included periodontal flap surgery where a conventional flap design was selected. Sulcular incisions were placed with a # 15 blade from distal aspect of 33 to mesial aspect of 42. A full thickness flap was raised. Enucleation of the cyst was done.

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Tetracycline fibers (Periodontal plus AB) were used in combination with graft material, Perioglas. Subsequently, the flaps were closed using direct loop sutures. Post-op instructions were given. Non-Steroidal anti-inflammatory Drugs (NSAIDs) were prescribed. The patient was asked to use chlorhexidine mouth wash twice a day. Patient reported for suture removal one week post-operatively. The patient reported at two months and six months & one year post-operatively with no significant complaints. There was resolution of pockets and adequate oral hygiene maintenance.

DISCUSSION: Tetracyclines including tetracyclines, doxycyclines & minocycline have been used as antibiotics effectively for decades. Tetracyclines and chemically modified tetracyclines inhibit the activity of several Matrix Metalloproteinases (MMPs). The natural osteotropism of tetracycline would allow them to be highly effective in the inhibition of MMPs. In periodontal therapy, they have been used in systemic administrations as adjuncts to scaling/root planning procedures and periodontal surgical treatments; in local drug delivery modes; and as root conditioners.²

Tetracyclines have been used to treat experimental bone defects as they have anticollagenolytic properties, and positive effects on the healing process. Studies have shown that a combination of chemically-modified tetracyclines together with bisphosphonates, when delivered systemically, is synergistically effective in suppressing periodontal bone loss.³ Regeneration of furcation defects in humans was documented with histologic studies when such defects were treated with an allograft-alloplast-tetracycline composite graft combined with an absorbable membrane for GTR.⁴

Periodontal plus AB is a collagen fibril based formulation containing tetracycline hydrochloride (2mg of tetracycline) in 25mg of collagen (Biocompatible Type 1 collagen) was used. Collagen has been used in periodontal therapy as vehicles for local drug delivery systems & also for guided tissue regeneration. The formulation used here is biocompatible type 1 collagen.

PG has been successfully used in the treatment of periodontal furcation defects, intrabony defects in chronic periodontitis patients & in juvenile patients with intrabony defects.⁵

In this case a synthetic bioactive graft material was combined with resorbable tetracycline fibers as a treatment procedure after enucleation of the cyst. Tetracycline was chosen for its established anti-MMP, anti-collagenolytic effects with known regenerative potential when used in combination with allograft/alloplastic bone graft material. PG has been demonstrated to have a differentiation effect on mesenchymal stem cells derived from peripheral blood⁶ and hence a combination technique was employed technique along with enucleation of the cyst in this case.

SUMMARY & CONCLUSION: This article presents a lateral periodontal cyst with a rare presentation in a lateral incisor. Endoontic therapy was done followed by surgical therapy inclusive of enucleation, was done followed by placement of graft in combination of tetracycline fibers.

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CLINICAL PHOTOGRAPHS:

**Fig.1: Pre-operative photo-31,
Post-endodontic therapy**

Fig. 2: Probing pocket depth-8mm

**Fig. 3: Flap reflection,
enucleation of cyst**

**Fig. 4: Tetracycline fibers
mixed with saline**

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Fig. 5: Graft mixed with saline

Fig. 6: Post-placement of graft/ tetracycline fibers

AUTHORS:

1. Anitha S.

PARTICULARS OF CONTRIBUTORS:

1. Reader, Department of Periodontics, JSSDCH, JSSU.

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NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Anitha S,
Reader, Department of Periodontics,
JSSDCH, JSSU.
E-mail: anithasu79@gmail.com

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