INTRODUCTION

Marx et al. (1998) have proposed the use of PRP as a viable technique to obtain a high concentration of growth factors (GFs). Autologous Platelet Rich Plasma is a novel method for obtaining autologous platelet growth factors (PGFs), especially for platelet derived growth factor (PDGF) and transforming growth factor β (TGF β). PRP use is a way to accelerate and enhance body’s natural wound-healing mechanisms. The added benefit of PRP is its ability to form a biologic gel that may provide containment, clot stability and function as an adhesive. An important decrease in healing time of bone grafts was shown when they are used in combination with PRP.

PRP is well known for its advanced healing properties and when mixed with bone graft enhances the bony regeneration compared to the use of bone grafts alone. Numerous reports have shown that the use of PRP facilitates clinical handling of graft material.

Dentigerous cyst is common developmental odontogenic cyst of jaws and accounts for approximately 20-24% of all epithelial lined jaw cyst. The predilection site of dentigerous cyst is the mandibular third molar. Other frequent sites include maxillary canines, maxillary third molars and mandibular second premolar. It is always associated with any unerupted teeth, usually attached to the tooth at the cemento-enamel junction.

Radiographically, the dentigerous cyst typically shows a unilocular radiolucent shadow with a well-defined sclerotic border associated with the crown of an unerupted tooth, but an infected cyst will show ill-defined borders.

Here, we describe a case of dentigerous cyst in anterior maxilla (in relation to impacted right maxillary canine) treated with its enucleation followed by filling the defect with autologous bone graft and platelet rich plasma.

CASE REPORT

A 21 yrs old female patient reported to the Department Of Oral And Maxillofacial Surgery, Ahmedabad Dental College with chief complain of
swelling in upper right front tooth region since last 2 months. The patient was relatively asymptomatic some 2 months back when she noticed a non-tender swelling present at upper right vestibule region. Patient gives history of pus discharge from upper right deciduous canine region since last 1 month. No relevant dental, medical, & family history was found. Vitals were within normal limit.

On extra oral examination, there was a single, diffuse swelling with smooth overlying skin, extending antero-posteriorly from right ala of nose to the lateral canthus of eye and superior-inferiorly from right ala of nose to right commisure of lip. Obliteration of right Nasolabial fold was evident. There was no anaesthesia/paresthesia of associated region. On palpation swelling was firm, non fluctuant, non pulsatile, non tender, non translucent. Both right and left submandibular lymphnodes were enlarged, tender on palpation, and not fixed to underlying structures.

On intraoral inspection, there was obliteration of vestibule from 11 to 15 region with single, well defined, oval swelling of size 2×1cm, with normal overlying mucosa. Mouth opening was recorded as 38 mm. 13 was clinically missing. On palpation buccal plate was found to be expanded. The swelling was firm, non pulsatile and non fluctuant.

OPG shows well defined radiolucency with sclerotic borders, of size approximately 2×1cm in relation to 11,12,53,14,15. Impacted right maxillary canine and resorption of root of 53 was also evident.

Patient was operated under general anaesthesia and enucleation of cyst with peripheral osteotomy was done. Defect was filled with the mixture of autologous bone graft and platelet rich plasma.

**METHOD OF PREPARATION OF PRP**

**Figure-1: Orthopantomograph of the patient showing cystic lesion associated with the right impacted canine**

**Figure-2: Bony defect after cyst enucleation**

**Figure-3: Cystic cavity filled with mixture of PRP and autologous bone grafts**

**Figure-4: Method of preparation of platelet rich plasma**

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10 ml patient’s blood was taken from median cephalic vein of right arm with the help of 18 gauze needle and 10 ml syringe which was then added in test tube containing anticoagulant solution (Sodium citrate). These test tubes were then centrifuged at 1200rpm for 10 mins. After the first centrifugation, plasma and RBC’s were separated. Plasma, layer of buffy coat and some amount of RBC’s were aspirated with the help of spinal needle and 10cc syringe and were emptied in plain test tube without any anti- coagulant. This test tube was again centrifuged at 2400rpm for 10 mins. After second centrifugation platelet poor plasma and platelet rich plasma got separated. Upper 2/3rd of the solution containing platelet poor plasma was aspirated out. Platelet rich plasma was made into gel form with the help of addition of 3-4 drops of Calcium chloride.

The prepared PRP gel and autologous bone graft were mixed and placed in the defect. Postoperative antibiotics were prescribed for 7 days.

Histopathological analysis was suggestive of the lesion being dentigerous cyst.

Regular follow up with IOPA x-rays were taken at immediate postoperative day, first month, and third month.

Promising result with fast and good quality bony regeneration was observed.

**DISCUSSION**

The dentigerous cyst is the second most common odontogenic cyst of jaws. It presents mostly in the second or third decade of life in the maxillary or mandibular third molar or maxillary canine regions. Most of the times it is found to be quite large in size, resulting in large bony defects following enucleation which takes long time for bony regeneration and filling of the defect. Till this happens the risk of pathologic fracture is also high.

Researchers continuously strive to improve bone-grafting techniques and to provide the means to obtain a faster and denser bony regeneration. Marx
et al. (1998) have proposed the use of platelet-rich plasma (PRP) as a viable technique to obtain a high concentration of growth factors (GFs). These authors observed that autogenous bone grafts matured faster when combined with PRP to treat mandibular defects resulting from the removal of benign and malignant tumours.

PRP is a blood derivative, generated by differential centrifugation, in which platelets are concentrated in a small plasma volume (Roussy et al. 2007). The use of PRP is based on the premise that platelets constitute a reservoir of critical GFs, such as platelet-derived growth factor (PDGF), transforming growth factor-β (TGF-β), insulin-like growth factor-I (IGF-I) and vascular endothelial growth factor (VEGF), which, once released, may positively regulate the wound-healing process (Marx 2001, 2004, Roussy et al. 2007). Bone is a dynamic tissue subject to balanced processes of bony formation and resorption; autologous platelet gel or concentrate PRP can be used alone or in association with bony graft for the treatment of bony defect, cystic lesions, periodontal pockets and extraction sockets. Rutkowski et al. conducted study on extraction sockets and found that the control sites required 16 weeks to reach the same degree of radiographic density for the total extraction socket as the PRP treatment achieved in 8 weeks. This is of clinical significance because it indicates more rapid healing at the PRP-treated sites. Present case is an excellent example of benefits of PRP on autologous bone grafts. This case also provides us alternative reconstructive option over routine treatment procedure in management of odontogenic cysts. This method is simple, reliable and can be used routinely as it does not consume much time.

REFERENCES