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## CASE REPORT

### SURGICAL MANAGEMENT OF A THROUGH AND THROUGH LESION USING PLATELET RICH PLASMA: A CASE REPORT

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#### ABSTRACT

**Introduction:** Through and through bony lesions are characterized by erosion of both buccal and palatal/lingual bony plate in relations to the teeth apices. PRP has been used in various fields and proven beneficial in healing. **Case description:** Lack of both buccal and lingual cortical plates was confirmed both clinically and CBCT in the case. Endodontic Microsurgery was performed following modern techniques and the lesions were filled with PRP before closure. A follow up was done at 12 month follow up. **Discussion:** Various studies have demonstrated the role of different GTR techniques in the healing of through and through lesions. PRP being a rich source of growth factors found to enhance healing. However there is a scarce literature on the use of PRP in endodontics. We have assessed the radiographic healing with the use of PRP. **Conclusion:** Our case report has demonstrated both clinical and radiographic success using PRP in through and through defect at the end of 12 months.

#### INTRODUCTION

Apical surgery has become a standard of care for tooth maintenance if the lesion do not get resolve by orthograde approach. Whether a successful outcome of periapical surgery is achieved can be affected by many factors among which size and location of periapical bone loss are thought to be most considerable. Hirsch *et al.* showed that teeth with apical destruction of > 5 mm had a healing frequency of 39%, while teeth with destruction of ≤ 5 mm exhibited a healing frequency of 55%. Furthermore, if the apical lesion had neither buccal nor lingual walls, complete healing was significantly reduced to 25%. Various modes have been used for regeneration among which autologous products have gain importance now a days.

Platelet rich plasma (PRP) is an autologous concentrate of platelets suspended in plasma. It is well known that platelets have many functions beyond that of simple homeostasis. It contains growth factors and bioactive molecules like transforming growth factor beta, bone morphogenic proteins, insulinlike growth factors, and angiogenetic growth factors, which stimulate collagen production, angiogenesis, and cell differentiation, including all the steps involved in wound healing

#### CASE REPORT

A 24-year-old female patient, in general good health, presented to department of Conservative Dentistry and Endodontics,

PGIDS Rohtak with swelling and pain in the region of lower anterior tooth since last 4-5 months. Radiographic examination (radiovisualgraphy) revealed the presence of a large periradicular lesion of strictly endodontic origin. The right and left central incisor had no vital signs and symptoms (EPT and COLD test), and it was decided to treat it endodontically. Three months later, the non-surgical treatment was classified as failed as symptoms and intermittent swelling of the region continued. Both teeth exhibited an adequate final restoration with no clinical evidence of coronal leakage. No acute symptoms were present. Less than 4 mm of probing depth was detected circumferentially with a periodontal probe. The CT scan revealed the presence of a through-and-through lesion. As a consequence, a periradicular surgical approach of both central incisors using a new GTR technique was decided. Prior to surgery, a consent form was signed from patient. A session of professional oral hygiene instruction was provided. Under local anaesthesia incision is given with no.15 surgical blade. Full thickness mucoperiosteal flap is raised and retracted. Pathology is visualized and removed with sharpened bone currettes and angled periodontal currettes. Pathology is visualized and removed with sharpened bone currettes and angled periodontal currettes. 3mm root tip was resected with 0° - 10° bevel under microscope (10 × 16 magnification). Root end preparation was done by specially designed ultrasonic tip (satelec SC 12 no). Retrograde filling was done with MTA (mineral trioxide aggregate). PRP was prepared with double centrifugation method. Blood was collected in a 10-mL sterile glass tube coated with an anticoagulant (acid citrate dextrose).

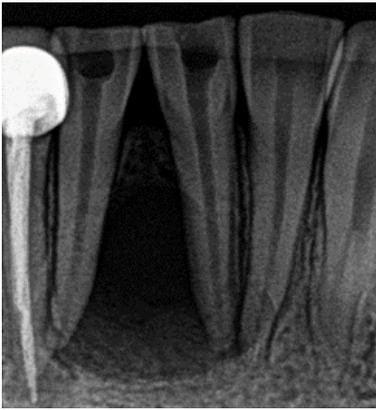


Fig. 1. Preoperative radiograph



Fig. 2. Post obturation radiograph

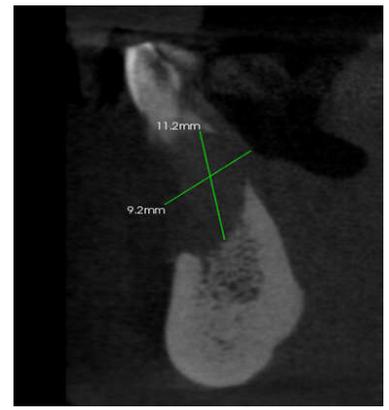


Fig. 3. Saggital view cbct

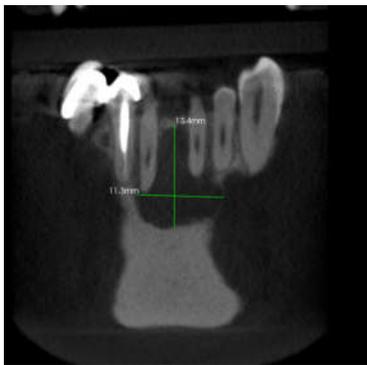


Fig. 4. Coronal view cbct



Fig 5. Intraoperative photo after raising flap



Fig. 6. Retrograde filling with MTA



Fig. 7. Platelet rich plasma (prp) in the lesion



Fig. 9. Flap sutured back with 4-0 silk

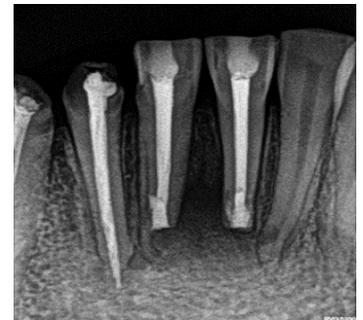


Fig. 10. 1 Month post op radiograph



Fig. 11. 12 month post op radiograph

Whole blood was initially centrifuged (2,400 rpm for 10 minutes) to separate PRP and platelet-poor plasma (PPP) portions from the red blood cell fraction. PRP and PPP portions were again centrifuged (3,600 rpm for 15 minutes) to separate the PRP from the PPP. Fifteen minutes before use of the PRP in surgical procedures, the PRP was rapidly thawed, and a coagulated preparation of 0.3 mL of PRP was obtained by its combination with 0.1 g of sodium alginate. Within a few minutes, the PRP preparation assumed a sticky gel consistency. Then, the PRP was carried and packed into the defect to the level of defect walls. Before closure activated PRP was placed in the bony lesion. Flap was repositioned with 4-0 black silk suture. Post op instructions were given to the patient. Patient was followed up till 1 year and no clinical signs or symptoms were present at the end of 1 year. Radiographically lesion was completely healed.

## DISCUSSION

It is generally thought that endodontic lesions, even with large periapical radiolucencies, can heal or regress after complete removal of the intracanal irritants by conventional endodontic treatment alone. However, additional surgery may be required if nonsurgical root canal therapy is unsuccessful in resolving the periradicular pathosis. Guided tissue regeneration has been applied through various modes-barrier membranes, bone replacement analogues or combination. Recently use of autologous products have started emerging alternative to other GTR methods. The benefits from the adjunctive use of an osseous graft in periapical surgery are controversial. Tobon et al demonstrated that the combined use of bone grafting material in GTR procedures enhanced periapical tissue regeneration, whereas Britain et al and von Arx et al showed no additional effects. An autologous material that possesses a high concentration of biologic mediators may give added benefit to its presence by improving the rate of wound healing and reducing the cost of additional materials. Autologous PRP has shown to enhance wound healing in different organ systems and to improve the osseous wound healing both quality and quantity. Our case report has demonstrated successful resolution of clinical sign and symptoms as well as improved radiographic healing using platelet rich plasma in through and through defects

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