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ORIGINAL RESEARCH

Efficacy of PRP in Endo- Perio lesions- A clinical study

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ABSTRACT:
Background: The present study was conducted to assess the efficacy of PRP in Endo- Perio lesions.
Materials & Methods: 58 patients with nonvital, immature premolars were treated with PRP. PRP fragments were placed into the canal space up to the CEJ. Root development was monitored by periapical radiograph.
Results: Peri- apical healing was seen in 56 (96.5%) cases, apical closure in 44 (75.8%), root lengthening in 50 (86.2%) and dentinal wall lengthening in 48 (82.7%) cases.
Conclusion: PRP is an effective way of treating Endo- Perio lesions.
Key words: Apical closure, Endo- Perio lesions, Platelet rich plasma.

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INTRODUCTION

The treatment of endo-periodontal lesion depends on the diagnosis and differentiating between endodontic and periodontal disease. Once the correct diagnosis is established and the lesion is classified correctly, treatment is indicated, and it may consist in pure endodontic therapy, pure periodontal therapy, or both.[1] On the other hand, the prognosis of these lesions depends on the structures involved. When there is an extensively loss of attachment the prognosis of the tooth is generally poor, but it can be improved with bone grafting and guided tissue regeneration. Recently, the use of blood derivate products, such as leukocyte platelet- rich fibrin have been use to accelerate and improve the healing process of the periodontal tissue involved in endo-periodontal lesions.[2]

Regenerative endodontic treatment (RET) is based on the concept of tissue engineering, which requires the eradication of pathogens, the preservation of stem cells, and the presence of scaffolds and signal molecules.[3] To create a favourable microenvironment for stem cells to migrate, proliferate and differentiate, an ideal scaffold should facilitate spatial orientation and signal molecule release by cells.[4] In most cases of tooth revascularization/revitalization, an endodontic explorer or file is introduced into the root canal and passes through the apical foramen to provoke bleeding from the periapical tissue into the canal to form a blood clot (BC) below the cemental enamel junction

(CEJ). Platelet-rich substitute enriched with platelets and growth factors can regulate the proliferation, chemotaxis, and differentiation of the locally derived progenitor cells in the defect site.[5] The present study was conducted to assess the efficacy of PRP in Endo-Perio lesions.

MATERIALS & METHODS

The present study was conducted in the department of Endodontics. It comprised of 58 patients with nonvital, immature premolars with radiographic evidence of periapical lesions were included. The study was approved from institutional ethical committee. All were informed regarding the study and their consent was obtained.

Data such as name, age, gender etc. was recorded. An access cavity was prepared and pulp chamber and root canal were gently irrigated with 20 mL of 1% NaOCl. An inter-appointment medication of triple antibiotic paste was placed into the apical portion of the canal and filled to just below the CEJ. The access cavity was temporarily restored. Revascularization was performed 4 weeks as follows: After final irrigation of the root canal with EDTA and drying using paper points, the PRP fragments were placed into the canal space up to the CEJ. Patients were recalled at 3, 6, 9, and 12 months. Root development was monitored by periapical radiograph. Results were tabulated and statistically analyzed. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 58		
Gender	**Males**	**Females**
Number	32	26

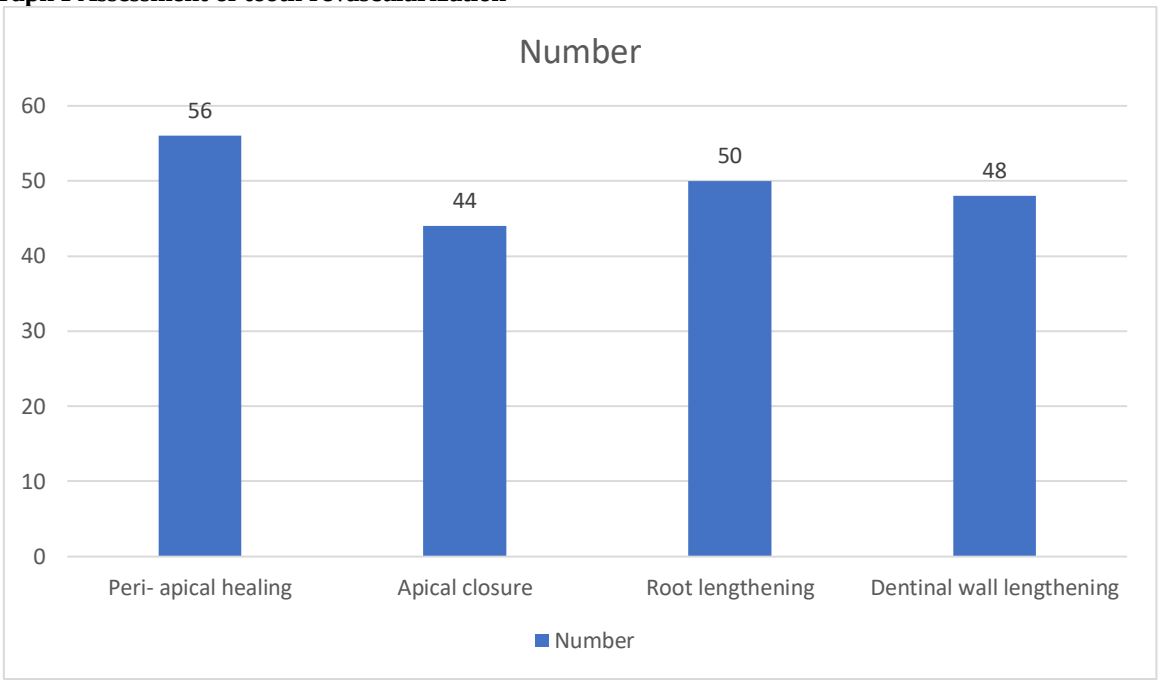
Table I shows that out of 58 patients, there were 32 males and 26 females.

Table II Assessment of tooth revascularization

Event	Number	Percentage
Peri- apical healing	56	96.5%
Apical closure	44	75.8%
Root lengthening	50	86.2%
Dentinal wall lengthening	48	82.7%

Table II, graph I shows that peri- apical healing was seen in 56 (96.5%) cases, apical closure in 44 (75.8%), root lengthening in 50 (86.2%) and dentinal wall lengthening in 48 (82.7%) cases.

Graph I Assessment of tooth revascularization



DISCUSSION

Endodontic treatments can save millions of caries-diseased and fractured permanent mature teeth, which are restorable.[6] The average success rates for endodontic treatment after 22 months was 99.3%, the success rate remains above 83.34% after 8 years and can be above 86.02% successful.[7] However, caries-diseased and traumatized permanent incompletely developed teeth, can have a poor prognosis when treated by conventional root canal therapy.[8] A common problem with incompletely developed teeth is that the dentinal walls are thin and weak, making them prone to a stress-overload fracture.[9] The present study was conducted to assess the efficacy of PRP in Endo- Perio lesions.

In present study, out of 58 patients, males were 32 and females were 26. Mishra et al[10] reported the clinical effectiveness of leukocyte- platelet- rich fibrin (L-PRF) in the treatment of a combined endo-periodontal lesion of an upper first premolar. The tooth had a profound abfraction on the vestibular aspect and presented no mobility but revealed a deep pocket measuring of 11 mm on the mesial vestibular aspect and 14 mm on the mesial palatine aspect. The three-dimensional image analysis showed total bone loss in the mesial aspect and an extensively bone loss of the vestibular aspect of the vestibular root. Endodontic treatment was performed and periodontal access surgery (surgical periodontal therapy) was done with the application of autologous L-PRF. Three month and 6 months after surgery, the cone beam computed tomography (CBCT) exams showed no bone regeneration in any aspect of the tooth. However, periodontal examination showed a significative improvement in the deepness of surcus. The mesial vestibular aspect had a deep pocket of 3 mm and 5 mm on the mesial palatine aspect showing a reduction in deepness of 8 mm and 9 mm, respectively.

We found that peri- apical healing was seen in 56 (96.5%) cases, apical closure in 44 (75.8%), root lengthening in 50 (86.2%) and dentinal wall lengthening in 48 (82.7%) cases. Sachdeva et al presented three cases requiring both endo and perio treatment. The first two cases involve mandibular first molar and maxillary first molar, respectively. The third case involves maxillary central incisor. In all the cases, first, endodontic treatment was initiated, then open flap curettage along with alloplastic bone substitutes was done. Platelet-rich fibrin and platelet-rich plasma were used along with. Three of the treated cases showed significant improvement radiographically and clinically. There was gain in clinical attachment, reduction in probing depth, and radiographic bone fill. Autologous platelet-rich derivative can be used in combination with alloplastic bone substitute for the management of endo-perio cases. Further long-term studies are needed to explore the clinical effectiveness of platelet-rich derivatives and predicting the probability of success of periodontal therapy.

Shivashankar et al[12] compared and assessed the ability of PRP, PRF, and BCR to accomplish apical closure, a periapical lesion healing response, root lengthening, and dentinal wall thickening. The mean success rate for apical closure or reduction after 1 year was: PRP (85.1%) PRF (85.2%), and BCR (58.8%). The mean success rate for root lengthening after 1 year was: BCR (64.1%), PRP (64.2%), and PRF (74.1%). The periapical lesion healing response was 88.9% for BCR, 100% for PRP, and 100% for PRF. Dentinal wall thickening was 100% for BCR, 100% for PRP, and 100% for PRF. Apical closure occurred more frequently following PRP and PRF than with BCR for all the other effects the PRP, PRF, and BCR treatments were similarly effective.

The limitation of the study was small sample size.

CONCLUSION

Authors found that PRP is an effective way of treating Endo- Perio lesions.

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