



## Treatment Modalities for Periodontal Pathology

Dr. Swapnil Thakur<sup>1</sup>, Dr. Ashish Pandey<sup>2</sup>, Dr. Mohan D Pujari<sup>3</sup>, Dr. Meenakshi Chopra<sup>4</sup>, Dr. Shruti Saini<sup>5</sup>, Dr. Amit Chhillar<sup>6</sup>

<sup>1</sup>Associate Professor, Department of Periodontology, Maharana Pratap College of Dental Sciences, Gwalior, M.P., India

<sup>2</sup>Director Academics, Prof & Head, P. G, Department of Prosthodontics, Daswani Dental College, Kota, Rajasthan, India

<sup>3</sup>Associate Professor, Department of Conservative Dentistry and Endodontics, Aditya Dental College, Beed, India

<sup>4</sup>Reader, SGT Dental College and Hospital and Research Institute, Gurugram, India

<sup>5</sup>BDS, MDS, Periodontist & Oral Implantologist Private Practitioner, India

<sup>6</sup>Senior Lecturer, Department of Periodontics and Oral Implantology, Santosh Dental College and Hospital Santosh Deemed to University, Ghaziabad, India

**Corresponding Author:** Dr. Swapnil Thakur, Associate Professor, Department of Periodontology, Maharana Pratap College of Dental Sciences, Gwalior, M.P., India

*(Received: 27 October 2023)*

*Revised: 22 November*

*Accepted: 26 December)*

### KEYWORDS

root canal  
treatment, crown,  
periodontal

### ABSTRACT:

**Background:** This study was conducted to assess the treatment modalities for periodontal pathology.

**Material and methods:** This study included 100 participants. 50 of the participants were controls while the remaining 50 had periodontal pathology. There were 20 females and 30 males in the diseased group. The mean of the subjects was 45 years. Radiographic evaluation of teeth of all the subjects was carried out. Statistical analysis was carried out using SPSS software.

**Results:** Out of 50 subjects having periodontal pathology, 26 subjects underwent root canal treatment followed by amalgam filling while 24 subjects underwent crown placement after root canal treatment.

**Conclusion:** Root canal treatment is an efficient treatment modality for periodontal pathologies. Both amalgam filling and crown placement can be done after the treatment.

### INTRODUCTION

The aim of root canal treatment (RCT) is to eliminate inflamed and infected pulpal tissue, thus providing an environment that promotes healing, and arrests the progression of periapical pathology. Periapical healing encourages the long-term retention of functional, endodontically treated teeth.<sup>1-4</sup>

Outcomes of RCT are of significant interest in endodontics. Dental clinicians must possess the right skill and judgement during endodontic outcome assessment to determine whether RCT is successful. Endodontic success is determined after a root-filled tooth has been subjected to different functional

activities over time. Evaluating such success requires the adoption of specific criteria.<sup>5,6</sup>

The periodontium and the dental pulp communicate through anatomical (exposed dentin, accessory canals, and the apical foramen) or pathological (root fractures) forms. These communications allow for the appearance of lesions that concurrently affect the periodontal and pulpal tissues, called endodontic-periodontal (endo-perio) lesions (EPL).<sup>7</sup> These lesions can compromise patients with or without periodontitis according to a recent classification, which also indicates that the primary origin (endodontic or periodontal) is not crucial for treatment.<sup>8</sup>



Hence, this study was conducted to assess the treatment modalities for periodontal pathology.

## MATERIAL AND METHODS

This study included 100 participants. 50 of the participants were controls while the remaining 50 had periodontal pathology. There were 20 females and 30 males in the diseased group. The mean of the subjects was 45 years. Radiographic evaluation of teeth of all the subjects was carried out. Statistical analysis was carried out using SPSS software.

## RESULTS

**Table 1: Gender-wise distribution of subjects.**

Gender	Number of subjects
Males	30
Females	20
Total	50

Out of 50 subjects, 20 were females and 30 were males.

**Table 2: Treatment of pathology.**

Treatment modalities	Number of subjects
Root canal treatment with amalgam filling	26
Root canal treatment with crown placement	24
Total	50

Out of 50 subjects having periodontal pathology, 26 subjects underwent root canal treatment followed by amalgam filling while 24 subjects underwent crown placement after root canal treatment.

## DISCUSSION

For many years, the EPL has always been a clinical dilemma. This lesion is very complex and can have varied pathogenesis.<sup>9</sup> It describes a pathologic pathway between a tooth's pulp and periodontal tissue that several etiologies can trigger.<sup>10</sup> The EPL can be caused by caries, trauma, restorative procedures, chemical irritation, or severe thermal stimulation that affects the pulp and, secondarily, the periodontium.<sup>10</sup> In this scenario, an inflammatory lesion on the pulp causes localized edema and increases intrapulpal pressure, leading to cell death.<sup>11</sup> An increased intrapulpal

pressure may force the toxic agents through the apical foramen, lateral and accessory canals, or dentinal tubules. This results in retrograde periodontitis.

Apical periodontitis is an acute or chronic inflammatory process of polymicrobial origin which reaches the periodontium through the root canal system.<sup>12</sup> It is characterized by exhibiting high cytokine and inflammatory mediator levels, which trigger a periapical inflammatory response through the activation of the innate immune system.<sup>13</sup> Any modification in the innate immune system can alter this response.

Hence, this study was conducted to assess the treatment modalities for periodontal pathology.

In this study, out of 50 subjects having periodontal pathology, 26 subjects underwent root canal treatment followed by amalgam filling while 24 subjects underwent crown placement after root canal treatment.

The study conducted by Signor B et al<sup>14</sup> aimed to investigate patterns and risk factors related to the feasibility of achieving technical quality and periapical healing in root canal non-surgical retreatment, using regression and data mining methods. This retrospective observational study included 321 consecutive patients presenting for root canal retreatment. Patients were treated by graduate students, following standard protocols. Data on medical history, diagnosis, treatment, and follow-up visits variables were collected from physical records and periapical radiographs and transferred to an electronic chart database. Basic statistics were tabulated, and univariate and multivariate analytical methods were used to identify risk factors for technical quality and periapical healing. Decision trees were generated to predict technical quality and periapical healing patterns using the J48 algorithm in the Weka software. Technical outcome was satisfactory in 65.20%, and we observed periapical healing in 80.50% of the cases. Several factors were related to technical quality, including severity of root curvature and altered root canal morphology ( $p < 0.05$ ). Follow-up periods had a mean of 4.05 years. Periapical lesion area, tooth type, and apical resorption proved to be significantly associated with retreatment failure ( $p < 0.05$ ). Data mining analysis suggested that apical root resorption might prevent satisfactory technical outcomes even in teeth with straight root canals. Also, large periapical lesions and poor root filling quality in primary endodontic treatment might be related to healing failure. Frequent patterns and factors affecting



technical outcomes of endodontic retreatment included root canal morphological features and its alterations resulting from primary endodontic treatment. Healing outcomes were mainly associated with the extent of apical periodontitis pathological damages in dental and periapical tissues.

## CONCLUSION

Root canal treatment is an efficient treatment modality for periodontal pathologies. Both amalgam filling and crown placement can be done after the treatment.

## REFERENCES

1. Zahran S, Patel S, Koller G, Mannocci F. The impact of an enhanced infection control protocol on molar root canal treatment outcome—a randomized clinical trial. *Int Endod J*. 2021;54:1993–2005.
2. Fleming CH, Litaker MS, Alley LW, Eleazer PD. Comparison of classic endodontic techniques versus contemporary techniques on endodontic treatment success. *J Endod*. 2010;36:414–418.
3. Riis A, Taschieri S, Del Fabbro M, Kvist T. Tooth survival after surgical or nonsurgical endodontic retreatment: long-term follow-up of a randomized clinical trial. *J Endod*. 2018;44:1480–1486.
4. Kebke S, Fransson H, Brundin M, Mota de Almeida FJ. Tooth survival following root canal treatment by general dental practitioners in a Swedish county—a 10-year follow-up study of a historical cohort. *Int Endod J*. 2021;54:5–14.
5. European Society of Endodontology Quality guidelines for endodontic treatment: consensus report of the European Society of Endodontology. *Int Endod J*. 2006;39:921–930.
6. Razi M.A., Mahajan A., Qamar S., Mehra S., Roy T.R., Kumari P. A Comparative Study of Platelet-rich Fibrin (PRF) and Titanium-prepared Platelet-rich Fibrin (T-PRF) in Management of Endo-perio Lesions. *J. Contemp. Dent. Pract*. 2020;21:997–1001.
7. Herrera D., Retamal-Valdes B., Alonso B., Feres M. Acute periodontal lesions (periodontal abscesses and necrotizing periodontal diseases) and endo-periodontal lesions. *J. Periodontol*. 2018;89:S85–S102.
8. Çirakoğlu N. Y., Karayürek F. Knowledge and awareness levels of dentists' about the endo-perio lesions: the questionnaire-based research. *Journal of Health Sciences of Adiyaman University* . 2021;7(1):64–70.
9. Nainar D. A., Alamelu S., Kv A. Microbiological profile in endodontic-periodontal lesion. *Journal of Operative Dentistry & Endodontics* . 2016;1(1):25–29.
10. Papapanou P. N., Sanz M., Buduneli N., et al. Periodontitis: consensus report of workgroup 2 of the 2017 world workshop on the classification of periodontal and peri-implant diseases and conditions. *Journal of Periodontology* . 2018;89(Suppl 1):S173–S182.
11. Anand V., Govila V., Gulati M. Endo-perio lesion: part I (the pathogenesis) – a review. *Archives of Dental Sciences* . 2012;3(1):3–9.
12. Figdor D. Apical periodontitis: A very prevalent problem. *Oral Surg. Oral Med. Oral Pathol. Oral Radiol. Endodontology*. 2002;94:651–652.
13. Marending M., Peters O.A., Zehnder M. Factors affecting the outcome of orthograde root canal therapy in a general dentistry hospital practice. *Oral Surg. Oral Med. Oral Pathol. Oral Radiol. Endodontology*. 2005;99:119–124.
14. Signor B, Blomberg LC, Kopper PMP, Augustin PAN, Rauber MV, Rodrigues GS, Scarparo RK. Root canal retreatment: a retrospective investigation using regression and data mining methods for the prediction of technical quality and periapical healing. *J Appl Oral Sci*. 2021 Apr 19;29:e20200799.