

## PREVALENCE OF TOOTH INVOLVED (PERIO-ENDO) LESION AMONG DUHOK POPULATION: ACROSS SECTIONAL STUDY

HUDA JMEEL QASIM, BANGEN MOHAMMED KARAM, HASHIM DAWOOD MOUSA  
and SAEED ALI MOHAMMED

College of Dentistry, University of Duhok, Kurdistan Region-Iraq

*(Received: May 18, 2023; Accepted for Publication: October 9, 2023)*

### ABSTRACT

**Background:** The lesions brought on by inflammatory substances that are to varied degrees present in both the periodontium and the pulpal tissues have been referred to as "perio-endo" lesions.

The aim of the study was to determine the prevalence of perio-endo lesion in Duhok province from 2021 to 2022.

**Materials and methods:** Screening of a total of 821 patients was performed whom reported with periodontal diseases. Complete demographic details of all the patients were obtained. Clinical examination was carried out for all the patients. Both periodontal and pulpal examination was completed through utilizing mouth mirror, UNC-type periodontal and explorer probes with the aid of periapical and panoramic radiographs and vitality test (particularly for the non-carious teeth). A Performa was made and final diagnosis and possible etiological factor along with complete history of present illness was recorded. All the results were recorded in Microsoft excel sheet and were analyzed through using SPSS software.

**Results:** Out of the total 821 periodontally involved patients, Perio-Endo lesions were found in 15.34% of the patients. Among all diagnosed Perio-Endo lesion cases, lower teeth involvement occurred in 47.6%, molar teeth were the most commonly involved with Perio-Endo lesions and found in 46%, premolars were involved in 29.4%.

**Conclusion:** In Duhok province a significant proportion of the patients are affected by Perio-Endo lesions.

**KEYWORDS:** Perio-Endo lesions, periodontitis, periodontal diseases, pulpal diseases.

### INTRODUCTION

Due to the intimate correlation between the periodontium and endodontium, illnesses of one tissue may extend to involve the other. Although it can occasionally be challenging to differentiate between endodontic and periodontal illnesses, doing so is crucial in order to deliver the proper care. In terms of diagnosis and outlook for the affected teeth, periodontal-endodontic lesions pose difficulties for the dentists. The development and evolution of such lesions are significantly influenced by etiologic factors including bacteria, fungi, and viruses as well as a number of contributory variables like trauma, root resorptions, perforations, and dental abnormalities. A condition known as the perio-endo lesion is defined by the coexistence of periodontal and pulpal disease in the same tooth component. Perio-endo lesions come in four different varieties and are categorized according to how they develop [1];

Endodontic lesions: toxic substances found in the tooth's root canal system cause inflammation in the periodontal tissues, periodontal lesions: dental plaque buildup on the exterior root surfaces causes an inflammatory process in the pulpal tissues, true-combined lesions are when an endodontic lesion and a periodontal lesion both develop independently and advance at the same time before coming together and merging at a site on the root surface and iatrogenic lesions are endodontic lesions that are typically caused by treatment techniques.

The conclusion that periodontal pocket bacteria are the cause of endodontic infection in perio-endo lesions with periodontal origin is supported by the findings of microbiological and immunological studies [2].

The preferred method of treating post-treatment apical periodontitis is still nonsurgical endodontic retreatment (NSER), which preserves natural teeth and the alveolar ridge while avoiding tooth extraction and dental implant insertion [3, 5]. But when nonsurgical

endodontic retreatment is deemed impossible, unsuccessful, or unlikely to restore the initial state, surgical endodontic retreatment (SER) is also recommended to eliminate post-treatment apical periodontitis [4,6,7,8,9,10,11].

### MATERIALS AND METHODS

The current study was conducted at the college of dentistry / university of Duhok and private dental practice in Duhok city with the aim of assessing the prevalence of Perio-Endo lesions among the periodontally involved patients. Screening of 821 periodontally involved patients was performed whom reported with periodontitis. Complete demographic details of all the patients were obtained. Clinical (periodontal) examination through using mouth mirror and UNC15-type periodontal probe with the aid of periapical and panoramic radiographs was carried out for all patients. Pulpal examination was completed through using mouth mirror, explorer probe and vitality test particularly for non-carious teeth to confirm pulpal involvement. A questionnaire has been prepared (Appendix I) and final diagnosis and possible etiological factor along with complete history of present illness was recorded. Exclusion criteria for the present study included:

Patients with history of any systemic illness, patients with any known drug allergy and patients who have undergone any periodontal therapy or endodontic therapy in the past three years.

Inclusion criteria included all age groups diagnosed as periodontitis cases except those included in exclusion criteria.

All the data were recorded in a Microsoft excel sheet and the results were analyzed by using SPSS software.(one way ANOVA)

### RESULT

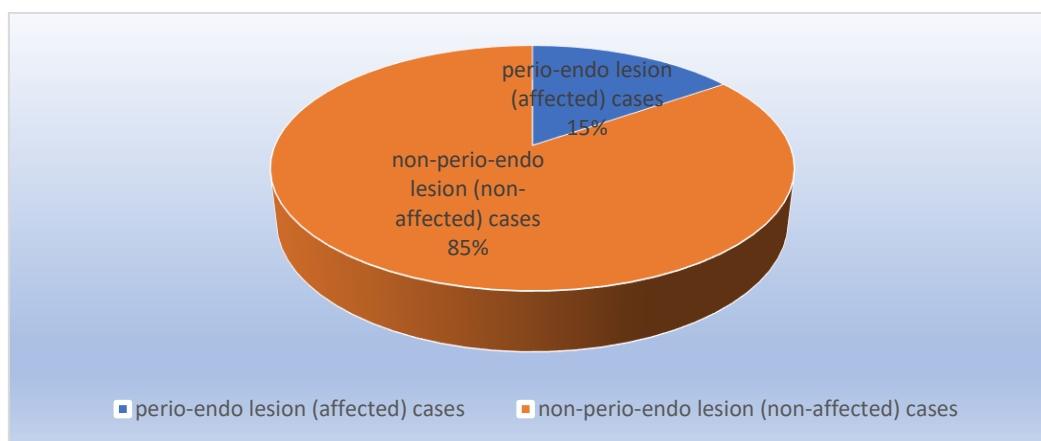
In the current study, a total of 821 periodontally involved patients were analyzed. Perio-Endo lesions were found in 126 patients (15.34%) as shown in table (1).

All of these patients had pulpal involvement with the occurrence of deep true periodontal pockets extending into the periapical area in the same teeth. The percentage of the patients belonged to the age group more than 50 years was (50%), the percentage of the patients belonged to the age group less than 25 years was (15.9%) while (34.1%) of perio-endo lesion cases found within 25 to 50 years of age. (59.5%) of patients were males while the remaining were females as shown in table (2).

In the current study, upper teeth involvement of Perio-Endo lesions occurred in (52.4%). Molars were the most commonly involved with Perio-Endo lesions and found in (46%) of the patients. Premolars involvement found in (29.4%) of the patients. (15.1%) of the teeth affected were incisors while (9.5%) of the teeth affected were canines as shown in table (3).

**Table (1):** -Illustrates the number and percentage of perio-endo lesion cases among the cases diagnosed as periodontitis.

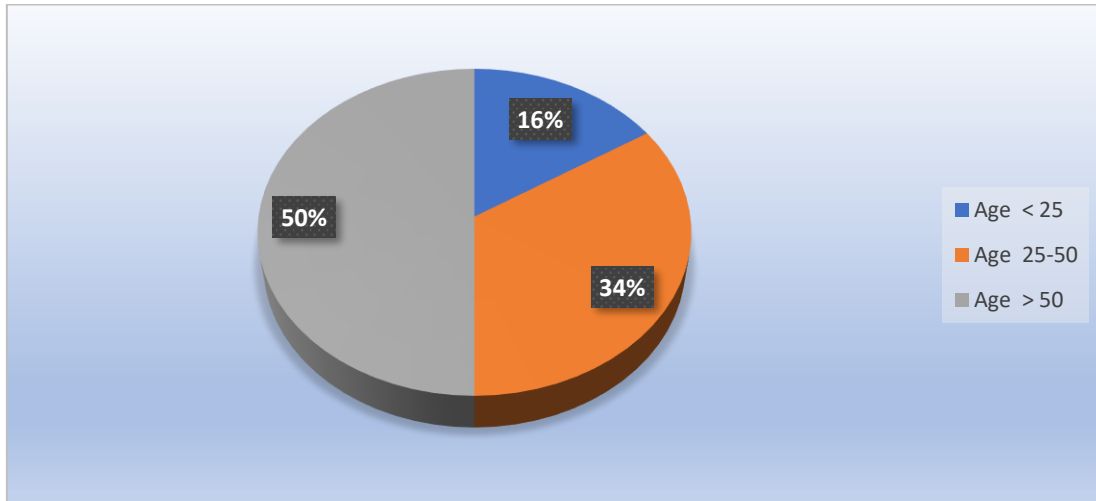
Parameters	Total number of periodontitis cases	Number and percentage of perio-endo lesion (affected) cases	Number and percentage of non-perio-endo lesion (non-affected) cases
	821(100%)	126 (15.34%)	695(84.66%)



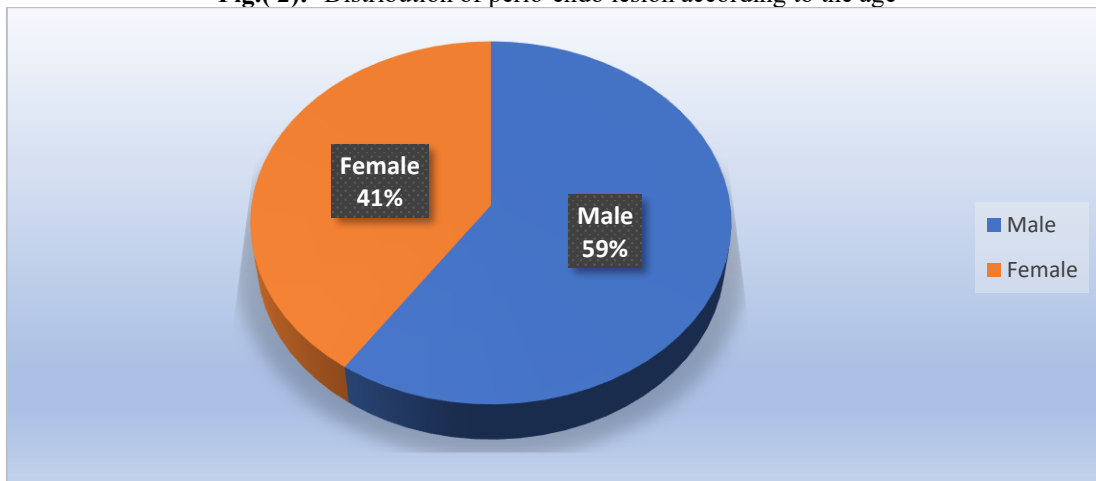
**Fig.( 1):** -Prevalence of Perio-Endo lesion among total periodontitis cases

**Table( 2):-** Illustrates the numbers and percentages of perio-endo lesion cases according to gender and age groups.

Parameters		Number of patients	Percentage
Age	< 25	20	15.9
	25-50	43	34.1
	> 50	63	50
Gender	Male	75	59.5
	Female	51	40.5



**Fig.( 2):** -Distribution of perio-endo lesion according to the age



**Fig.(3):** -Distribution of perio-endo lesion according to the gender

**Table( 3):-** Illustrates the numbers and percentages of perio-endo lesion cases according to the arches and individual teeth.

Parameters		Number of patients	Percentage
Arch	max.	66	52.4
	man.	60	47.6
teeth	Incisors	19	15.1
	Canines	12	9.5
	Premolars	37	29.4
	Molars	58	46

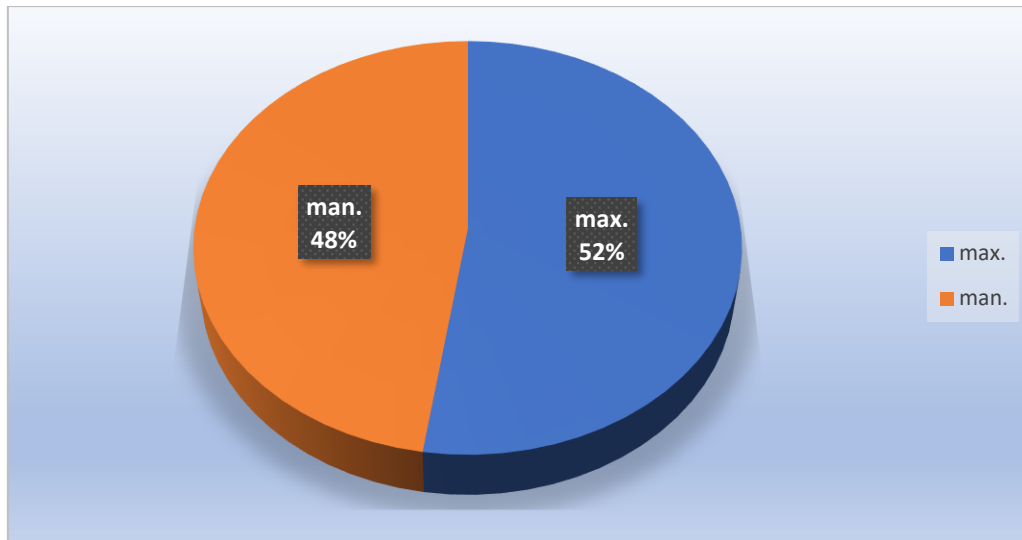


Fig.( 4): -Distribution of perio-endo lesion according to the arch affected

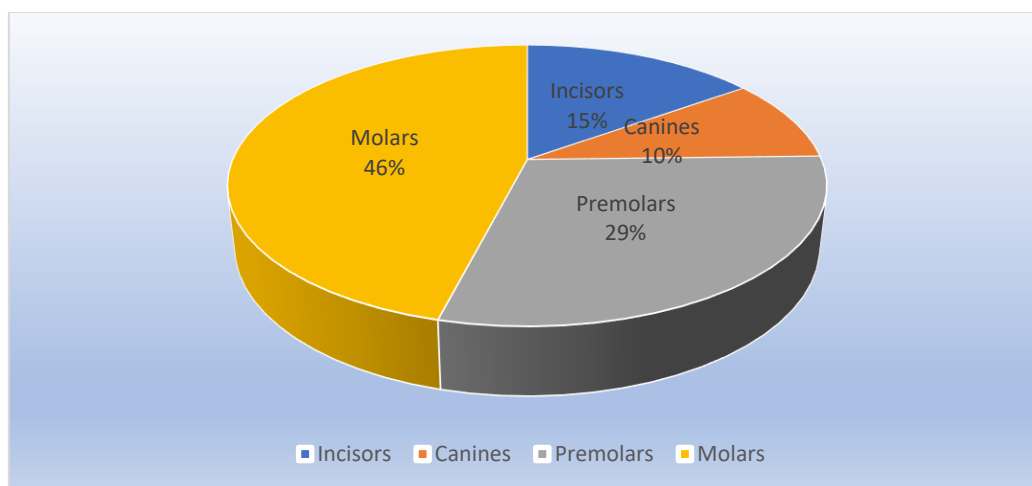


Fig.( 1): -Distribution of perio-endo lesion according to the teeth involved

## DISCUSSION

A perio-endo lesion can have a wide spectrum of etiology, from one that is extremely simple to one that is relatively complex. Having a thorough understanding of these disease processes is crucial for making the right diagnosis. It's crucial to keep in mind that choosing primary treatment options for inflammatory lesions in the marginal and apical periodontium requires an accurate evaluation of pulp viability. [12]

Some investigations suggested that the effect of periodontal disease on the pulp is degenerative in character and includes an increase in calcifications, fibrosis, and collagen resorption. Dental pulp and periodontium are connected on an embryonic, anatomical, and functional level. Their cells multiply to create dental papilla and follicle, which are the

forerunners of the pulp and periodontium, respectively. They are ectomesenchymal in origin. The genesis and growth of the tooth bud from the underlying ectoderm into enamel and dentine separates them. [13]

The involvement of the pulp and periodontal disease in the same tooth has been used to identify the periodontal-endodontic lesions. Because a single lesion may exhibit symptoms of both endodontic and periodontal involvement, this makes diagnosis challenging. [13]

There is a direct link between pulpal involvement and advanced periodontal disease. Localized apical granulomas, which are caused by pulp disease, are the most frequent periodontal lesions. It is created when bacterial products diffuse through the periodontal ligament and vascular granulation tissue forms. Alveolar bone resorption and, on rare occasions, root resorption may follow. Over 50% of tooth

deaths are brought on by pulpal and periodontal issues. Periodontal disease is a slowly developing condition that can cause the dental pulp to atrophy. Deep root planning, the use of targeted medications, and periodontal injury or wounding are all periodontal procedures that might hasten pulpal inflammation and the accompanying disease process. [14]

A study done by Altaf et al., showed a significant proportion of patient population is affected by Endo-Perio lesions [13] which disagree with our study. Other research found a substantially higher prevalence of Endo-Perio lesions according to the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Disease [15]. However; the results of this study cannot be generalized because of the limited sample size. Therefore, multicenter studies among larger populations need to be conducted to assess the prevalence of perio endo lesion and the other factors associated with perio endo lesion

### CONCLUSION

A significant proportion of patient population is influenced by Perio-Endo lesions. A perio-Endo lesion can have a varied pathogenesis, knowledge of these disease processes is essential in coming to the correct diagnosis. Male older age groups are more prone to Perio-Endo lesion.

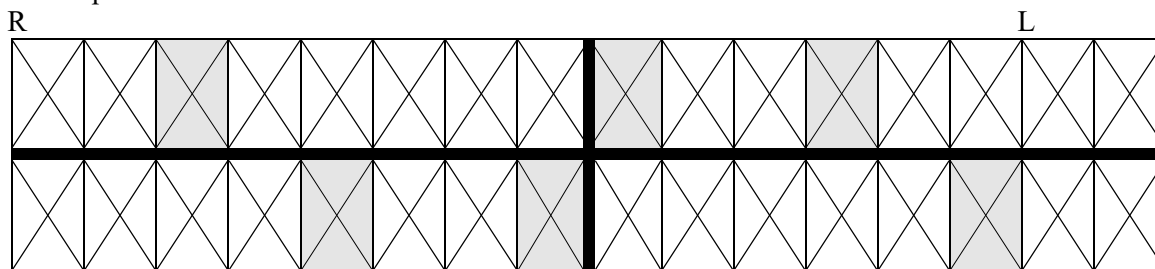
### REFERENCE

- Preetinder S., (2011). Endo-Perio Dilemma: A Brief Review. *Dent Res J (Isfahan)*; 8(1): 39–47.
- Kurihara H, Kobayashi Y, Francisco IA, Isoshima O, Nagai A, Murayama Y. (1995). A microbiological and immunological study of endodontic-periodontic lesions. *J Endod.* ;21(12):617–21.
- Barone C., Dao T.T., Basrani B.B., Wang N., Friedman S. Treatment outcome in endodontics: The Toronto study-phases 3, 4, and 5: Apical surgery. *J. Endod.* 2010;36:28–35. doi: 10.1016/j.joen.2009.09.001.
- Siqueira J.F. Aetiology of root canal treatment failure: Why well-treated teeth can fail. *Int. Endod. J.* 2001;34:1–10. doi: 10.1046/j.1365-2591.2001.00396.x.
- Chércoles-Ruiz A., Sánchez-Torres A., Gay-Escoda C. Endodontics, endodontic retreatment, and apical surgery versus tooth extraction and implant placement: A systematic review. *J Endod.* 2017;43:679–686. doi: 10.1016/j.joen.2017.01.004.
- Kim E., Kim Y. Endodontic microsurgery: Outcomes and prognostic factors. *Curr. Oral Health Rep.* 2019;6:356–366. doi: 10.1007/s40496-019-00240-7.
- Zhou W., Zheng Q., Tan X., Song D., Zhang L., Huang D. Comparison of mineral trioxide aggregate and root bp plus root repair material as root-end filling materials in endodontic microsurgery: A prospective randomized controlled study. *J. Endod.* 2017;43:1–6. doi: 10.1016/j.joen.2016.10.010.
- Song M., Chung W., Lee S.J., Kim E. Long-term outcome of the cases classified as successes based on short-term follow-up in endodontic microsurgery. *J. Endod.* 2012;38:1192–1196. doi: 10.1016/j.joen.2012.06.014.
- Lui J., Khin M., Krishnaswamy G., Chen N. Prognostic factors relating to the outcome of endodontic. *J. Endod.* 2014;40:1071–1076. doi: 10.1016/j.joen.2014.04.005.
- Song M., Kang M., Kang D.R., Jung H.I., Kim E. Comparison of the effect of endodontic-periodontal combined lesion on the outcome of endodontic microsurgery with that of isolated endodontic lesion: Survival analysis using propensity score analysis. *Clin. Oral Invest.* 2018;22:1717–1724. doi: 10.1007/s00784-017-2265-1.
- Kim S., Kratchman S. Modern endodontic surgery concepts and practice: A review. *J. Endod.* 2006;32:601–623. doi: 10.1016/j.joen.2005.12.010.
- Koyess E, Fares M.(2006). Referred pain: a confusing case of differential diagnosis between two teeth presenting with endo-perio problems. *Int Endod J.* ;39(9):724–9.
- Altaf A., Jeelani M., Basher A.,(2019). Assessment of prevalence of Endo-perio lesions among patients of known population: An observational study. *International Journal of Applied Dental Sciences* ; 5(3): 111-113
- Persoon IF, Buijs MJ, Özok AR, Crielaard W, Krom BP, Zaura E et al. (2017). The mycobiome of root canal infections is correlated to the bacteriome. *Clin Oral Investig* ; 21:1871-1881
- Ruetters M, Gehrig H, Kronsteiner D, Schuessler DL, Kim TS. Prevalence of endo-perio lesions according to the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Disease in a university hospital. *Quintessence Int.* 2022 Jan 7;53(2):134-142. doi: 10.3290/j.qi.b2091245. PMID: 34595906.

**APPENDIX I**

Name	
Gender	
Age	
Tel	
Date	
Tooth or Teeth involved	

Pocket Depth:



Clinical Attachment Loss:

