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Original Research

Prevalence and awareness of endo-perio lesions among dentists: A questionnaire based study

Dr. Shipra Sepolia[1], Dr. Parul Verma[2], Dr. Soujanya Koyalada[3]

[1]Lecturer, Department of Periodontics and Implantology, Indira Gandhi Government Dental College, Jammu;
[2]Senior Lecturer, Department of Conservative and Endodontics, Institute of Dental Sciences, Sehora, Jammu;
[3]BDS Private Practitioner, Marathalli, Bengaluru

ABSTRACT:

Background: An inter-relationship between periodontal and pulpal diseases has resulted in immense confusion along with controversies in diagnosis of these combined lesions. Radio graphical and clinical assessment can help in clear identification of this intricate problem. There may be a reciprocal relation between pulpal and periodontal involvement. A periodontal along with endodontic disease has a shifting microbiological spectrum which makes the treatment more complex and hence, the disease is required to be diagnosed adequately. **Aim**: The aim of this study was to analyze the prevalence and awareness of endo-perio lesions among dentists. **Materials and methods**: This was a prospective questionnaire based study conducted among 300 Dentists. The questionnaire was designed to collect information regarding each participant dentist's awareness of these lesions and also, prevalence. Statistical analysis: Descriptive statistics was performed to analyze mean values, standard deviations (SD), frequencies and percentages of all the study parameters. Pearson's correlation and Chi-square tests were employed for determining significance. Probability of lesser than 0.05 was statistically significant. **Results**: Only 45% Dentists demonstrated awareness on endo-perio lesions. 22.1 %, 37.9 % and 40% prevalence were seen in less than 25 years, 25 to 50 years and more than 50 years, respectively. 62.3% and 37.7% prevalence in male and female subjects was seen. Mandibular arch showed higher prevalence than maxillary arch (57.2 % Vs 47.8 %) while molars (25.05%) were found to show maximum involvement when compared with premolars, canines and incisor groups (25.05 %, 23.06 % and 12.34 %, respectively). **Conclusion**: There appears to be an under-reporting of endo-perio lesions by dentists due to low awareness. Hence, continuing education is important for the same.

Keywords: Endo-perio, dentists, awareness, prevalence.

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Corresponding author: Dr. Shipra Sepolia, Lecturer, Department of Periodontics and Implantology, Indira Gandhi Government Dental College, Jammu

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INTRODUCTION

Dental pulp and periodontium have common embryonic, anatomical and functional inter-relationships. Turner and Drew in 1919 were the first persons to effect of periodontal disease on pulpal health.[1] However, the relationship between pulpal and periodontal disease was first described by Semring and Goldberg in 1964.[2] Lesions that can begin initially as an endodontic infection and can spread to periodontium have been classified as Simon's Class III type endo-perio lesion. Retrograde periodontal disease which is caused by pulpal death is the commonest reason for sever and localized periodontal tissue destruction.[1]

The current focus of modern Dentistry is to maintain life-long health of dental hard and soft tissues. Hence, all periodontal diseases should have early diagnosis in life beginning from an early childhood along with adolescent age-group. These incipient lesions may develop into advanced stage diseases in adult life. Thus, the individuals who are at a risk of developing such lesions should be diagnosed at an appropriate time and should be managed.[3]

The intricate microbiological balance existing between periodontal and periapical tissues may exhibit disturbances radiographically. Chronic apical periodontitis is an inflammatory process associated with loss of apical periodontal tissues. It is of pulpal origin. It presents as an apical radiolucency and produces no clinical symptoms. These lesions may remain dormant as well as symptom less for a long duration.[4, 5]

The pulpodontic-periodontic syndrome is defined as "a syndrome which involves inflammation or pulpal degeneration associated with a periodontal pocket adjacent to an affected tooth". This syndrome gets initiated by either a pulpal or periodontal disease and may manifest as pulpal and periodontal symptoms. Thus, inflammation of pulp may cause inflammation-related changes in apical as well as non-apical alveolar bone. These are "true" combined pathologies in endodontic infections which induce periapical lesion which is also, concurrently, involved with periodontal disease.[4] Both the periodontium and endodontium are closely related and a disease in any one of the tissues may cause involvement of another.[6] Similarities between pulpal and periodontopathic microflora has been linked with endodontic and periodontal infection.[7, 8, 9, 10] This may be due to bacterial cross-seeding which can occur in either of the directions i.e., from root canal to periodontium and vice versa through a variety of communication pathways like- periapical foramen, lateral and accessory root canals, dentinal tubules or developmental defects like- radicular grooves.[11, 12, 13, 14]

Classification system of endo-perio lesions:

There are four classes of these lesions are classified based upon their pathogenetic mechanisms-

a. Endodontic lesions: These may arise from inflammatory processes within periodontal tissues that may result from a variety of noxious agents existing within the root canal systems of any tooth.
b. Periodontal lesions: These are inflammatory processes within the dental pulp which results from the accumulation of dental plaque over exposed root surfaces.
c. True combined lesions: These comprise of both endodontic and periodontal lesions which may develop independently and progress concurrently while meeting and merging at any point along root surfaces.
d. Iatrogenic lesions: These are usually endodontic lesions which are produced due to improperly followed modalities of treatment.

Thus, diagnosis of the endo-perio lesions may be sometimes affecting appropriate treatment.[6] Thus, a critical evaluation of oral cavity and the existing pathologies should be performed by a dental practitioner.[14] An 'endo-perio' lesion or 'true combined'[15] endo-perio disease has been defined by Harrington and Steiner as a nonvital tooth showing periodontal destruction till the root apex or laterally present canals for the purpose of root canal treatment and/or periodontal therapeutic regimen may be required. Infections of both periodontal and endodontic origins may cause- an increase in periodontal pocket depths, localized swelling or inflammation of gingival, bleeding after probing, suppuration and formation of fistula; tenderness on percussion, an increase in mobility of teeth, pain and angular type of loss of bone.[16-21] Hence, neither periodontal nor endodontic treatments should be considered as isolated diseases. Clinically, these have close inter-relation which may therefore, influence their diagnosis followed by treatment.

Based upon above literature evidence, this questionnaire-based study was designed to assess the prevalence and awareness of endo-perio lesions among dental professionals.

MATERIALS AND METHODS

This prospective study was performed after obtaining approval from Institutional Ethical Committee (IEC). The study group participants included general dental practitioners. Inclusion criteria of the study was- practicising General Dentists had no previous clinical experience in field of Periodontology Specialization and had only graduate level knowledge. The sample size was calculated by using the StatCalc formulae in Epi Info 7.2.2.2 software tool using an alpha level of 0.05 and 7 % margin of error.

This study was a descriptive and qualitative analysis including 300 dental professionals working in both governmental set-ups and private dental clinical settings. The participating dentists were provided with a questionnaire which was designed to cover main issues that were needed for examining adequate knowledge of any dentist specially, when dealing with dental emergencies such as- periodontal abscesses and acute tooth pain. The questionnaire was widely distributed personally as well through electronic mails or by conducting interviews.

Statistical analysis was done by collecting patient data which was recorded as- mean or average, standard deviation (SD), frequency (n) and percentages (%) for assessment of qualitative data. Pearson's correlation coefficient was used for determining correlation between study parameters. Student's t-test was used for comparison between prevalence of endo-perio lesions and various parameters such as- age, gender, arch and tooth involved. Statistical analysis of collected data was performed by using the IBM® SPSS® (Statistical Package for the Social Sciences) software (Version 20.0).

RESULTS

(A) Age-wise distribution of endo-perio lesions: A prevalence of 22.1 %, 37.9 % and 40% were reported in the age ranges of < 25, 25 to 50 and > 50 years, respectively (table 1).

(B) Gender wise distribution of endo-perio lesions: These lesions were found to be prevalent in 62.3 % and 37.7 % of male and female subjects examined in the clinics, respectively (table 1).

(C) Predilection in dental arches: A higher prevalence of endo-perio lesions was observed in mandibular arch as compared to maxillary arch (57.2 % and 47.8 %, respectively) (table 2).

(D) Prevalence of tooth involvement: Molars were found to be maximally involved (38.65 %) followed by premolars, canines and incisors (25.05 %, 23.06 % and 12.34 %, respectively) (table 2).

45 % of dental practitioners had the knowledge about radiographing a periodontal abscess while 55 % prescribed antibiotics and 42 % showed the ability to identify these lesions.

Table 1: Prevalence of endo-perio lesions in various age groups and gender distribution

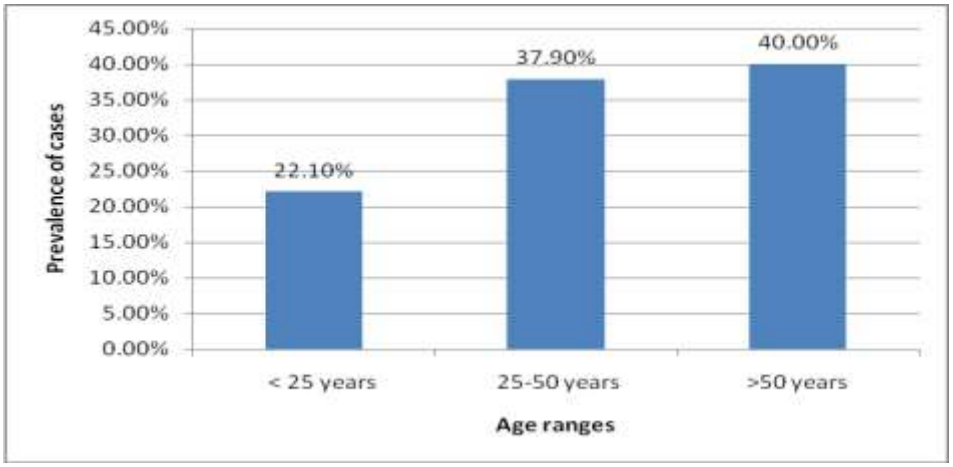
Parameters	Percentage of patients
I. Age-wise:	
a. < 25 years	22.1 %
b. 25-50 years	37.9 %
c. >50 years	40.0 %
II. Gender:	
a. Male:	62.3 %
b. Female:	37.7 %

Table 2: Patient distribution and involved tooth

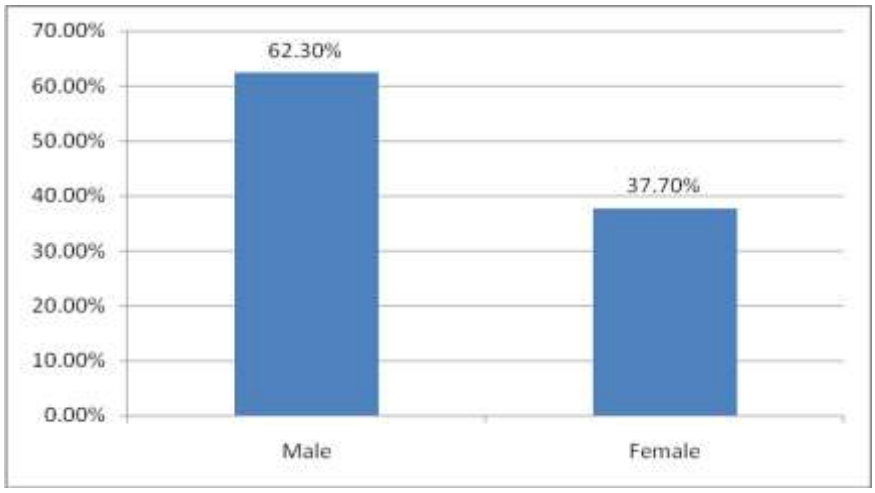
Parameters	Percentage of patients
I. Arch:	
a. Maxillary	42.8 %
b. Mandibular	57.2 %
II. Tooth:	
a. Incisor	12.34 %
b. Canine	23.06 %
c. Premolar	25.05 %
d. Molar	38.65 %

Table 3: Awareness among dental practitioners regarding endo-perio lesions in patients

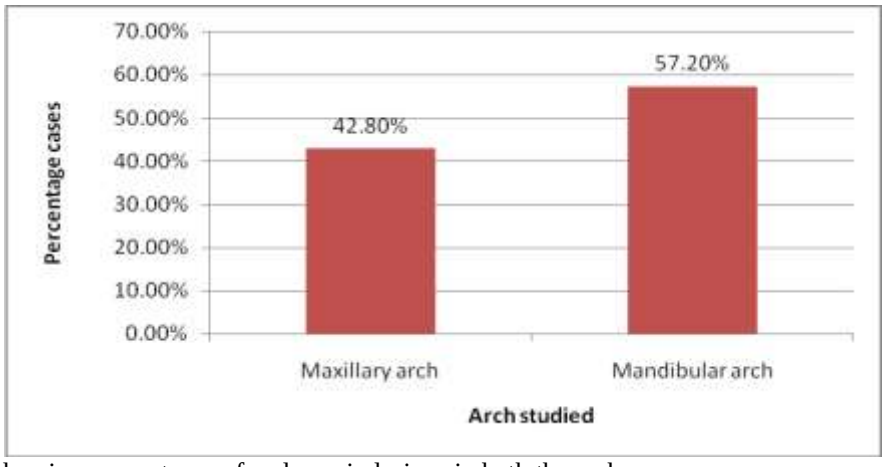
Questionnaire item	Yes	No
1. Do you radiograph tooth presenting with periodontal abscess?	45 %	55 %
2. Do you prescribe antibiotics for such cases?	55 %	45 %
3. Can you identify endo-perio lesions?	42 %	58 %



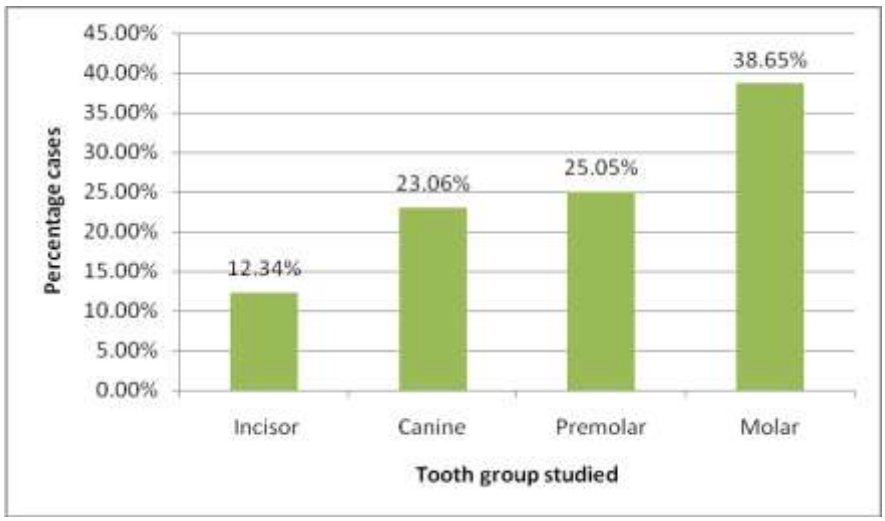
Graph 1: Graph demonstrating prevalence of cases in age groups studied



Graph 2: Graph showing Percentages of cases with endo-perio lesions gender-wise



Graph 3: Graph showing percentages of endo-perio lesions in both the arches



Graph 4: Graph demonstrating percentages of endo-perio lesions in various tooth groups studied

DISCUSSION

In this study, an awareness in general Dental practitioners regarding endo-perio lesion was found to be 45 %. These findings have been supported by Hassan et al (2018) who reported 43% awareness among dental practitioners regarding periodontal and endodontic coexisting lesions.[21]

The "True combined endo-perio" diseases has less frequency of occurrence. These result when a periodontal disease undergoing coronal progression joins with an already pre-existing infected periodontal lesion. In our study, these lesions showed age-wise prevalence of 22.1 %, 37.9 % and 40% were seen within the age ranges of less than 25 years, 25 to 50 years and more than 50 years, respectively. Whereas, among the genders, endo-perio lesions were found prevalent in 62.3 % and 37.7 % of male and female subjects who were examined in the dental clinics, respectively . A higher prevalence and occurrence of endo-perio lesions was observed in mandibular arch when compared to maxillary arch (57.2 % and 47.8 %, respectively) while molars were observed with maximum involvement of 38.65 % which was followed by- premolars, canines and incisors (25.05 %, 23.06 % and 12.34 %, in respective manner) .

In other studies, variations in prevalence of endo-perio lesions have been observed.. Altaf et al (2019) found that these endo-perio lesions were prevalent among 14.89 % patients. The prevalence of these lesions in mandible was found to be 48.04 %. Molars were the most affected teeth (41.18 %) while premolars were found to be involved in 24.51 % patients.[6]

Mukhaimer demonstrated high incidence and prevalence of apical periodontitis in root canal treated teeth.[19]

Inflammation related processes within the periodontium have been associated with necrotic dental pulpal and periodontal infectious conditions with infection causing etiologies. The important difference between the two diseased entities is their different source of infection. On rare occasion, an established endodontic lesions may involve marginal periodontal tissues except when they are found developing closely to margins of margin. Thus, potential routes for infectious sources within any root canal are laterally present canals.

Most studies in the existing scientific literature indicate that a combination of periodontal and endodontic therapies is mandatory for a successful healing in periodontal-endodontic diseases. It is of clinical knowledge that either endodontal or periodontal treatment when used singly does not yield satisfactory prognostic results. Hence, if both the disease pathologies are present then, both of these should be treated together. If there is a persistent presence of a periodontal pathology, it may get treated only following a definitive periodontal treatment which should be followed by a endodontic protocol. Most Investigators have agreed that both endodontic and periodontal forms of therapies are required for successful healing of combined endo-perio lesions. However, there is a constant dilemma arising over that which lesion came first and which caused or increased the clinical symptoms.

An Endodontic-Periodontal lesion's chronicity makes prognosis of these lesions very uncertain. Thus, resulting in complicated management of these lesions. The microbiological specially, the bacterial ecosystem existing within these chronic lesions undergoes adaptation and turns increasingly more resistant towards any endodontic and/or periodontal treatment modalities.[21]

True endo-perio combined lesions are usually treated initially for primary endodontic disease with secondary periodontal disease. Prior to any surgical intervention, palliative periodontal therapy should be performed and root canal treatment should be performed on roots of the teeth which can be saved. The overall prognosis of a true combined perio-endo lesion is mostly poor and sometimes, completely hopeless. This is the case especially when periodontal diseases show chronicity, with extensive loss of clinical attachment. In such cases, amputation of roots, hemi-section and/or bi-cuspidization may significantly change configuration of tooth roots, thus allowing for saving a portion of the root structures. The overall prognosis of any affected tooth may be improved by significantly increasing bone support which is achievable by procedures such as grafting of bone and guided tissue regeneration. These advanced treatment modalities are adjunctive to the conventional periodontal and endodontic therapies.

CONCLUSION

There appears to be an inadequate awareness regarding the combined endo-perio lesions among the practicising general Dental Practitioners. Hence, the prevalence of reported cases is also lesser from the patients visiting the Dental settings due to the same reason. Hence, a constant up gradation in diagnostic skills is mandatory to aid in managing these patients for successful therapy.

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