

KAP SURVEY ON THE MANAGEMENT OF INTERNAL RESORPTION AMONG DENTAL STUDENTS

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Ashna Y- Contributed to conception, design, data acquisition and interpretation, drafted and critically revised the manuscript.

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All authors gave final approval and agreed to be accountable for all aspects of the work.

Conflict of interest:

The authors declare no conflict of interest.

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ABSTRACT:

Objective: The gradual degradation of dentine and cementum by osteoclasts causes tooth resorption, also known as root resorption. Exfoliation of the primary dentition is a natural physiological process caused by osteoclast differentiation in response to pressure exerted by the erupting permanent tooth. However, the process is pathological in the secondary dentition. Internal resorption is an uncommon resorption of the tooth, which starts from the root canal and destroys the surrounding tooth structure. It is easy to control the process of internal root resorption via severing the blood supply to the resorbing tissues with conventional root canal therapy.

Materials and methods: A self administered questionnaire was prepared and distributed online among 100 undergraduate and postgraduate dental college students in Chennai. The results were obtained and statistically analysed using SPSS and represented graphically.

Results: 80.81% of the participants agreed that internally resorption is more prevalent in the anterior but 19.19% of them disagreed and said that it is more prevalent in the posteriors. Also, 88.89% of the participants said that chronic inflammation is the main cause of internal resorption in maxillary anterior whereas 11.11% of the participants disagree with it. The p value was 0.001

(p value < 0.05) hence, it is statistically significant.

Conclusion: From our study we can conclude that the postgraduate dental students have more knowledge and awareness on the management of internal resorption of maxillary anteriors.

KEYWORDS : Internal resorption, Pathological resorption, Trauma.

INTRODUCTION

Resorption of teeth is a condition that is associated with either a physiological or a pathological process that leads to loss of dentin, bone or the cementum. This resorption is broadly classified into internal and external resorption based on the reaction and location on which it takes place. [1] The interaction of inflammatory cells, resorbing cells, and hard tissue structures during tooth resorption is complex. The main cells involved in resorption are osteoblasts and odontoclasts, which belong to the classic cell form. Root canal (internal) replacement resorption and internal inflammatory resorption are the two forms of internal resorption. [2] The clinical and histologic manifestations of external resorption can be divided into four categories: external surface resorption, external inflammatory root resorption, replacement resorption, and ankylosis. External inflammatory root resorption is divided into two types. [3], [4]

Internal root resorption occurs when clastic activities destroy intraradicular dentin and dentinal tubules along the middle and apical thirds of the canal walls. A radiolucent region around the pulpal cavity of incisors and mandibular molars is seen. [5] Traumatic injury, infection, and orthodontic treatment are some of the etiological causes for internal root resorption. [6] Internal resorption (IR) is a relatively uncommon occurrence that occurs when pulp tissue is injured, such as by physical damage or caries-related pulpitis [7]. Male subjects are more likely to develop the disorder than female subjects. While IR is a relatively uncommon disorder, it has been linked to teeth that have undergone unique treatment procedures such as autografting. [8] Tooth resorption can go untreated for years, and patients are often unaware of it due to a lack of symptoms. If the process is associated with severe pulpal inflammation, pain can be identified. Resorption lasts as long as vital tissue does, and it can lead to pulp tissue contact with periodontal ligaments. [9,10]

Visual inspection based on altered colour in the tooth crown, radiographic diagnosis, standard and cone beam computed tomography, light microscopy, and electron microscopy can all be used to detect internal resorption. [11] Clinically, the disease is normally asymptomatic.

However, a reddish area – pink spot, which reflects granulation tissue showing through the resorbed area, may be present. MTA, glass ionomer cement, Super EBA, hydrophilic plastic polymer (2-hydroxyethyl methacrylate with barium salts), zinc oxide eugenol and zinc acetate cement, amalgam alloy, composite resin, and thermoplasticized gutta-percha are some of the dental materials that is used to treat internal root resorption.^[12] They can be injected or condensed. Because of its biocompatibility, sealing capacity, and possible induction of osteogenesis and cementogenesis, MTA is the most widely used material, followed by thermoplasticized gutta-percha obturation techniques.

Our research and knowledge have resulted in high-quality publications from our team ^[13–26] The aim of this study is to evaluate the knowledge, attitude and practice on the management of internal resorption in maxillary anteriors among dental students.

MATERIALS AND METHODS

Study design:

A cross sectional study was conducted in February 2021 through an online survey among Undergraduate and postgraduate dental college students of private dental institutions. Self administered questionnaire of 12 close-ended questions was prepared and it was distributed among undergraduate and postgraduate dental college students of private dental institutions through online survey forms “GOOGLE FORMS”. The collected data were checked regularly for clarity, competence, consistency, accuracy and validity. The necessary correction was made on questionnaires that need correction accordingly and invalid questionnaires were removed before the actual data collection.

Statistical analysis:

Data was analysed with the SPSS version (22.0). Descriptive statistics as number and percent were calculated to summarise qualitative data. Chi square test was used to analyze and compare the education level of students and their knowledge and management of internal resorption among dental students.

RESULTS

The survey was conducted among undergraduate and postgraduate dental college students in Chennai. The questionnaire was prepared and circulated online on the data that was collected and graphically represented using SPSS. On studying the graphical data the following results were obtained, 50.51% of the participants were males and 49.49% of the participants were females. 52.53% of the participants were from under graduation and 47.47% of the participants were postgraduate students. Majority of the students, 88.89% are aware of internal reception that occurs in maxillary anterior and 11.11% of the participants were not aware about it. 88.89% of the participants said that chronic inflammation is the main cause of internal reception in maxillary anterior whereas 11.11% of the participants disagree with it. 80.81% of the participants agreed that internally reception is more prevalent in the anterior but 19.19% of them disagreed and said that it is more prevalent in the posteriors.

81.82% of the participants are aware that the internal resorption can be detected by discolouration where is 18.19% of the participants said no. 93.94% of the participants said that trauma, infection and orthodontic treatment are the major aetiological factors for internal resorption, 6.06% of the participants disagree to it. 76.77% of the students said that internal resorption of maxillary anterior is mostly asymptomatic whereas 23.23% of them said that it is symptomatic. 92.93% of the participants said that the presence of a reddish pink spot in internal resorption is due to granulation of the tissues whereas 7.07% of them disagree. Majority of them, 53.51% of the participants choose all of the above, 34.44% of them said glass ionomers, 13.13% of them chose MTA and 2.02% of the participants said composite resin for the materials that could be used for the treatment of internal resorption in maxillary anterior.

DISCUSSION

Internal resorption is caused by an inflamed pulp and the recruitment of clastic precursor cells into the blood vessels. Internal resorption treatment is fairly predictable since the mechanism of internal root resorption can be easily regulated by severing the blood supply to the resorbing tissues with traditional root canal therapy.^[5,27,28] Remineralization of the defect, development of a hard tissue matrix against which permanent root canal filling is compressed, or surgical approach may occur in teeth with perforating defects, and some cases may involve extraction.^[29] Perforating resorptive defects are treated by using MTA to seal the perforation and then thermoplasticized gutta-percha to fill the canal.^[30-32] The defects can be filled with warm vertical condensation technique in non-perforating internal resorption^[33].

Trauma and pulpal inflammation/infection are also significant contributory factors in the onset of IR, according to other studies in the literature. In a study of monozygotic twins, genetic factors were linked to the development of IR lesions.^[34-36] A correlation has been discovered between the interleukin (IL)-1 gene polymorphism and root resorption.^[37-40] In patients with IR, the pulp tissue in the region of destruction is vascular and shows increased cellularity and collagenisation, there are several multinucleated dentinoclasts, which are histologically and functionally similar to osteoclasts, and an inflammatory infiltrate containing leukocytes, histiocytes, and polymorphonuclear leukocytes is not uncommon^{[41][34]}

CONCLUSION

From our study we can conclude that the postgraduate dental students have more knowledge and awareness on the management of internal resorption of maxillary anteriors. The undergraduate students are moderately aware. Hence, various workshops have to be conducted focussing on increasing awareness for the undergraduate students on managing the same efficiently.

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FIGURES:

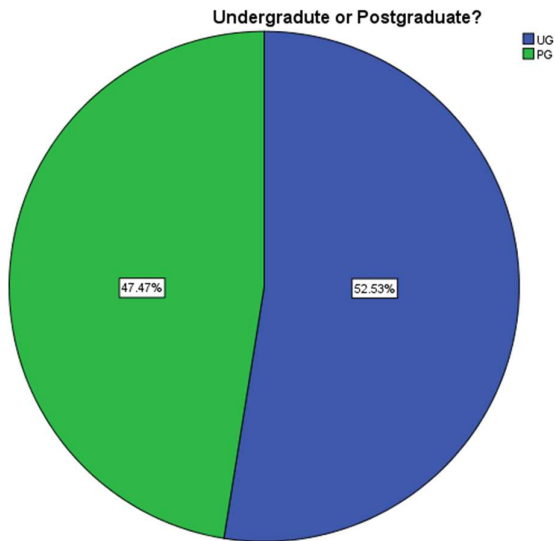


FIGURE 1: The pie chart represents the frequency distribution of the graduation of the participants. 52.53% of the participants were undergraduate students (blue) and 47.47% of the participants from post-graduation (Red).

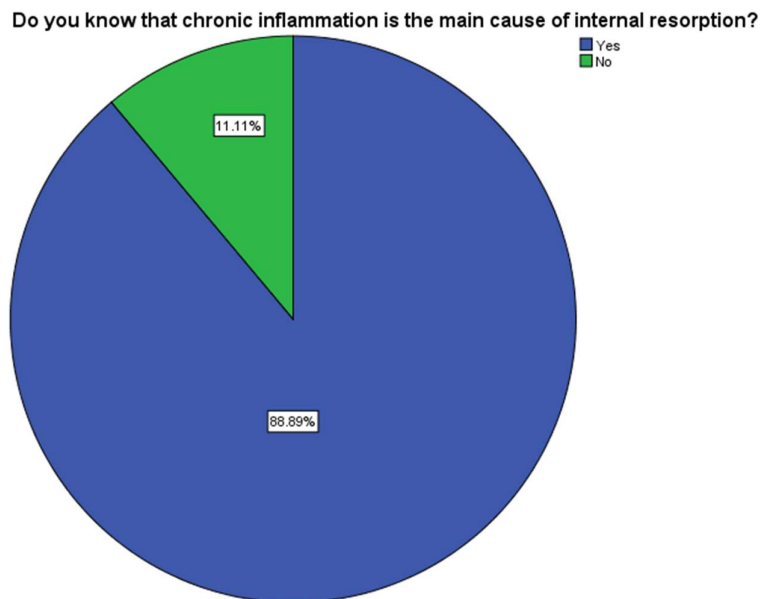


FIGURE 2: Pie chart represents the frequency distribution of the participants who were aware that inflammation was the main cause of internal resorption. 88.89% (blue) of the participants agreed to it and 11.11% (red) participants said no.

Are you aware that internal resorption can be detected by discoloration of tooth?

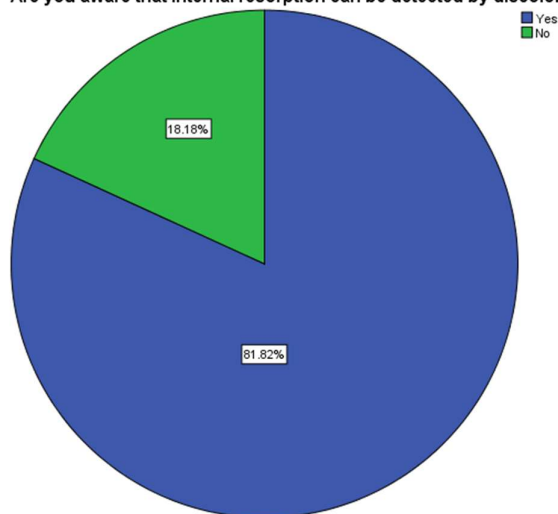


FIGURE 3: Pie chart represents the frequency distribution of the participants about the awareness of discolouration of tooth due to tooth internal resorption. 81.82% (blue) of the participants are aware that the internal this option can be detected by discolouration whereas 18.19% (green) of the participants said no.

Trauma, infection and ortodontic treatment are the major etiological factorsfor internal resorption.

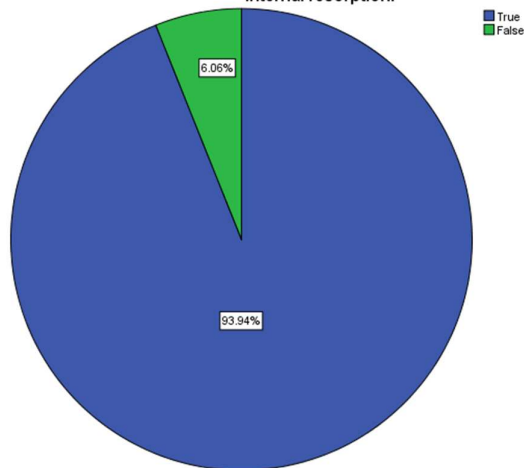


FIGURE 4: Pie chart represents the frequency distribution of the participants on the major etiological factors that are responsible for internal resorption in maxillary anteriors. 93.94% (blue) that is majority of the participants said that trauma, infection and orthodontic treatment are the major aetiological factors for internal resorption, 6.06% (green) of the participants disagree with it.

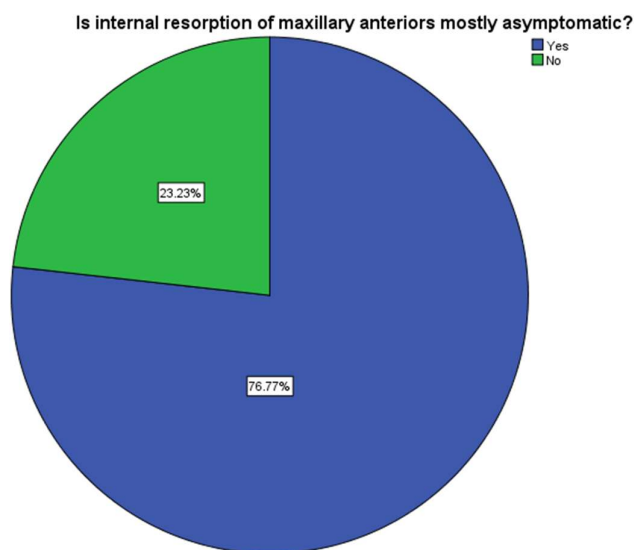


FIGURE 5: Pie chart represents the frequency distribution of the participant’s awareness on whether internal resorption is asymptomatic. 76.77% (blue) of the students said that internal reception of maxillary anterior is mostly asymptomatic whereas 23.23% (green) of them said that it is symptomatic.

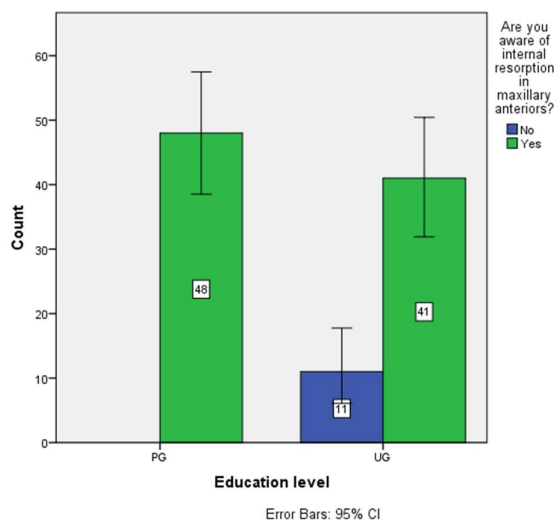


FIGURE 6: The bar graph represents the association between the educational qualification and the awareness of internal resorption in maxillary anteriors. Blue denotes yes and green denotes no. All the PG students have greater knowledge and awareness on internal resorption and most of the UG students have awareness. Pearson chi square test shows p value 0.001 (p value < 0.05) hence, it is statistically significant.

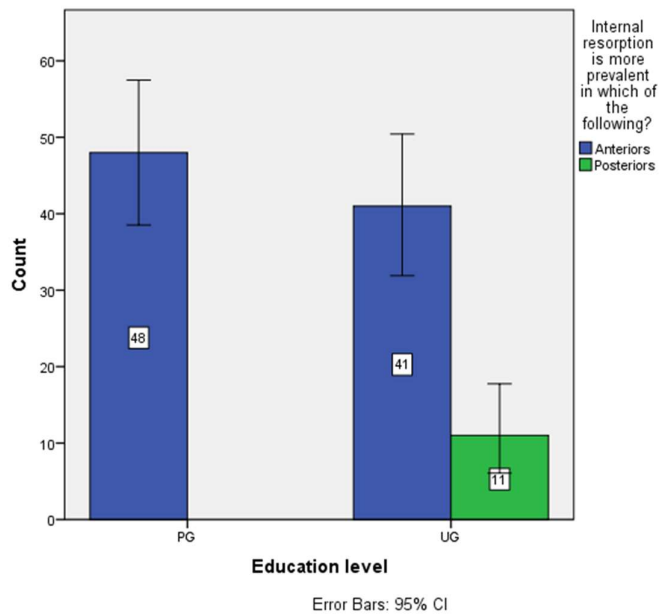


FIGURE 7: The bar graph represents the association between the educational qualification and the knowledge of prevalence of internal resorption in the teeth. Blue denotes anteriors and green denotes posteriors. Majority of the undergraduate students chose anteriors than postgraduate students. Pearson chi square test shows p value 0.001 (p value < 0.05) hence, it is statistically significant