Original Article

Evaluation of knowledge, attitude and practice of endodontic postgraduates towards preference of surgical vs non-surgical management of large periapical lesion - A survey

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Abstract

Introduction: Periapical lesion results from serious inflammatory response to microorganisms around the tooth root and the root canal. The most commonly involved site is maxillary anterior teeth. Patients encounter pain, discomfort or sensitivity to hot or cold beverages depending upon chronicity of the lesion. Aim of this study is to evaluate knowledge, attitude and practice of endodontic postgraduates towards preference of surgical vs non surgical management of large periapical lesions.
Materials and methods: A cross sectional study was done among endodontic post graduates. The questionnaire consisted of 10 questions which were predominantly close ended. Survey results were validated using SPSS software version (22.0) and the data was collected according to respondents.
Results: In this study 56.9% very often treat a periapical lesion, 36.7% treat sometimes and remaining 6.4% treat rarely. 69.7% of the respondents preferred non surgical treatment for periapical lesion and remaining 30.3% preferred surgical treatment. The Chi square test was performed and the p value = 0.465 - was insignificant.
Conclusion: In this study we may conclude that the endodontic postgraduates had adequate knowledge and attitude towards preference of surgical vs non surgical management of large periapical lesions.

Keywords: periapical lesion, endodontists, survey, surgical / non-surgical management.
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INTRODUCTION:

Periapical lesion results from serious inflammatory response to microorganisms around the tooth root and the root canal.(Kazemipoor, Valizadeh and Jambarsang, 2021) Periapical lesions could perforate into the oral cavity affecting hard tissue or maxillary sinus. (Saatchi, 2007)The infection around the root and tooth leads to bone resorption caused by local osteomyelitis. Furthermore, cellulitis in soft tissue causing swelling in the face is a common symptom of severe local jawbone osteomyelitis.(Maiolo, 2010) Traumatic injuries of teeth can cause granuloma or cysts associated with periapical lesions. Trauma to a tooth can damage its pulp even if the crown and root are not fractured. The pulp may survive or undergo necrosis, depending on the severity of the trauma and the type of inflammatory reaction that follows. This reaction may lead to extensive destruction of the periapical tissue and an ensuing periapical lesion.(Tariq, 2019)

Periapical lesions are generally present and apical periodontitis, periapical granuloma, periapical abscess and periapical cysts are common one. The most commonly involved site is maxillary anterior teeth. (Gunraj, 1990)Patients encounter pain, discomfort or sensitivity to hot or cold beverages depending upon the chronicity of the lesion. There is a cascade of pathologies one giving to another one. (Kehoe, 1986)Periapical lesions usually represent sequelae of pulpitis. Reversible or irreversible pulpitis results in apical periodontitis. It usually proceeds to periapical abscess or granuloma formation depending upon host response. (Silver and Simon, 2000)Periapical or radicular cyst arises from periapical granuloma. The diagnosis of the lesion is made by clinical and radiographic assessment. Histopathological findings support the diagnosis. Sometimes, due to structural and evolutionary variations of periapical lesions and

radiographic findings may reveal a different picture.Studies have shown variation in clinical, radiographics, and histopathological outcomes. Previous studies say that there are chances of disagreement between clinical and histopathological diagnosis.(Adorno *et al.*, 2021)

On the basis of histological findings, chronic periapical lesions of the pulpal origin are diagnosed as either periapical granulomas or cysts. In the past, large, chronic periapical lesions were generally managed by surgical excision of the periapical lesions. This was particularly true if the periapical lesion was suspected to be a cyst. (Sajad, Shafi and Ahmad, 2019)Now, because of improvements in conventional endodontic therapy and a better understanding of the healing potential of periapical tissues, fewer patients need periapical surgery. Periapical lesions of endodontic origin may develop asymptomatically and become large. Nonsurgical approach should be our first step. Other reports confirm that large periapical lesions can respond favorably to nonsurgical treatment. (Mattila, 1965)Our team has extensive knowledge and research experience that has translate into high quality publications (Dinesh *et al.*, 2013; Krishnan and Lakshmi, 2013; Muthukrishnan and Warnakulasuriya, 2018; Sekar *et al.*, 2019; Gomathi *et al.*, 2020) (Sathivel *et al.*, 2008; Panda *et al.*, 2014; Govindaraju, Neelakantan and Gutmann, 2017; Johnson *et al.*, 2020; Saraswathi *et al.*, 2020).Aim of this study is to evaluate knowledge, attitude and practice of endodontic postgraduates towards preference of surgical vs non surgical management of large periapical lesion

MATERIALS AND METHODS:

A cross sectional study was done among endodontic post graduates. Returning the filled questionnaire was considered as implicit consent as a part of the survey. Ethical approval for the study was obtained from the Institutional Review Board (IRB), Saveetha Dental College. The sample size of the survey was 100 and obtained from endodontic post graduates. The questionnaire was distributed randomly online by google forms. The questionnaire consisted of 10 questions which were predominantly close ended. Survey results were validated and the data was collected according to respondents. Results were analysed using descriptive statistics and association between variables were analysed using chi-square test and the use of statistical software named SPSS version (22.0) which was used for collection and interpretation of data collected. The results were represented in pie chart form.

RESULTS:

A total of 100 participated in the survey where 45% were females and remaining 55% were males (figure 1). In this study 56.9% very often treat a periapical lesion, 36.7% treat sometimes and the remaining 6.4% treat rarely (figure 2). 69.7% of the respondents preferred non surgical treatment for periapical lesions and the remaining 30.3% preferred surgical treatment (figure 3). 45% prefer root canal treatment in non surgical management, 28.4% prefer irrigation, 14.7% prefer aspiration and remaining 11.9% prefer decompression technique (figure 4). 51.4% feel surgical procedure has a high success rate and the remaining 45.9% feel non surgical procedure has a high success rate (figure 5). 54.1% feel surgical procedure has postoperative discomfort and remaining 45.9% feel non surgical procedure has postoperative discomfort (figure 6). 44% prefer apicoectomy, 37.6% prefer periradicular surgery and 18.3% prefer retrograde therapy among surgical procedures (table 2) . 61.5% prefer root canal treatment to treat periapical lesions and 38.5% prefer endodontic surgery to treat periapical lesions (table 2) . 55% were aware about apexum, gentlewave and overinstrumentation and the remaining 45% were not aware (table 1). 59.6% think there are root canal regions that cannot be cleaned and obturated with existing equipment, materials and techniques thus the infections can persist and remaining 40.4% think it can be cleaned (table 1).

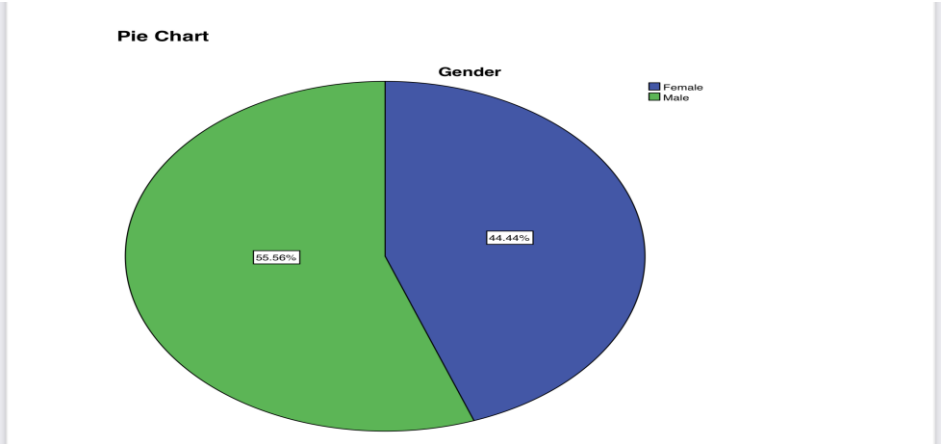

Figure 1: The pie chart represents the gender of participants where 45% (blue) females and remaining 55% (green) were males.

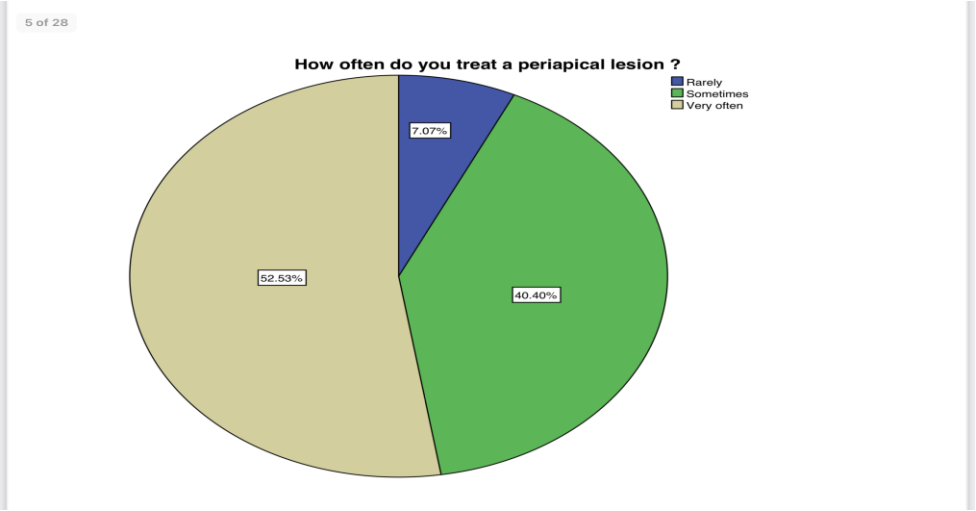

Figure 2 : The pie chart represents the frequency of treating patients with periapical lesions where 56.9% (brown) very often treat a periapical lesion, 36.7% (green) treat sometimes and the remaining 6.4% (blue) treat rarely.

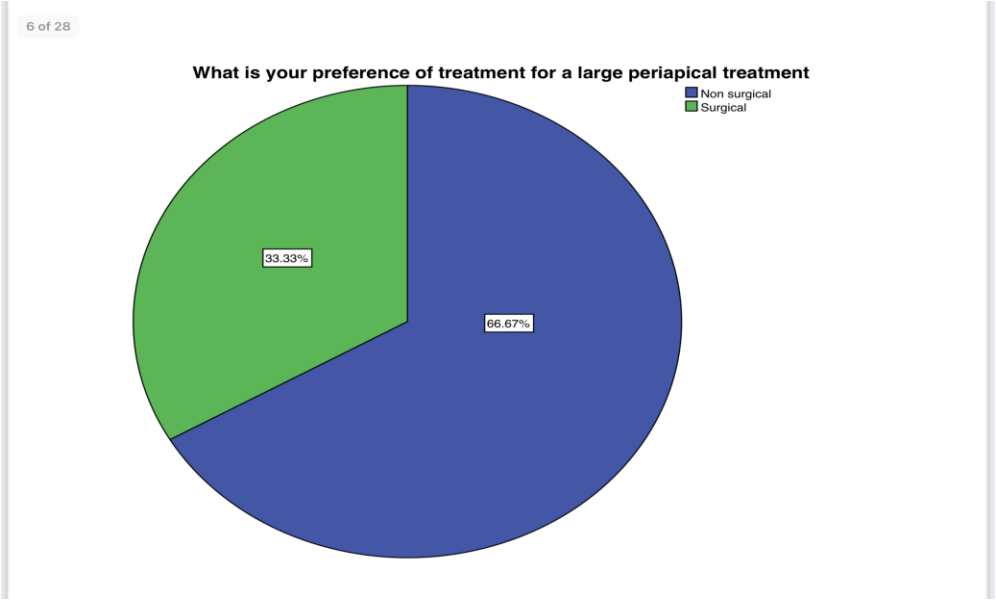

Figure 3: The pie chart represents the preference of treatment 69.7% (blue) of the respondents preferred non surgical treatment for periapical lesion and remaining 30.3% (green) preferred surgical treatment.

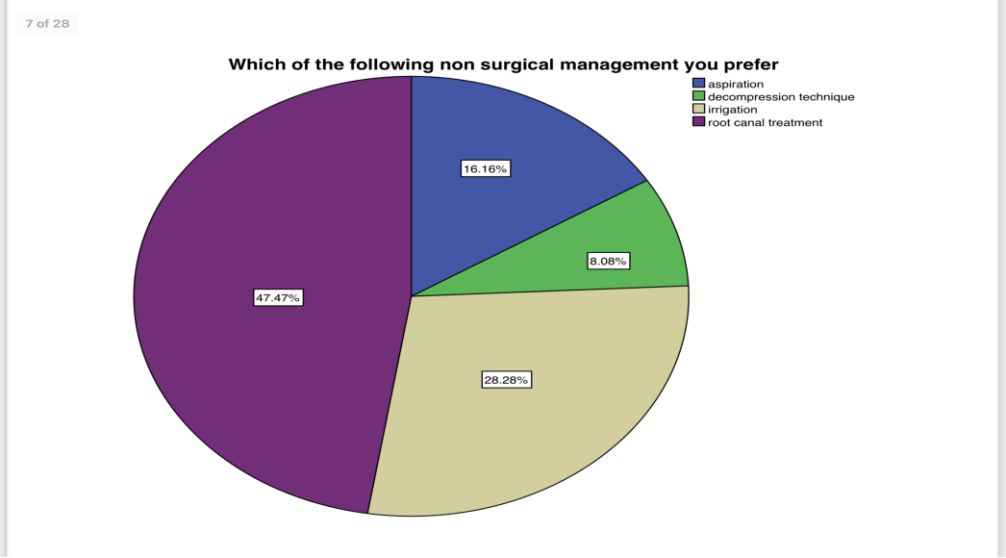

Figure 4 : The pie chart represents the preference of non surgical management where 45% (violet) prefer root canal treatment in non surgical management, 28.4% (brown) prefer irrigation, 14.7% (blue) prefer aspiration and remaining 11.9% (green) prefer decompression technique.

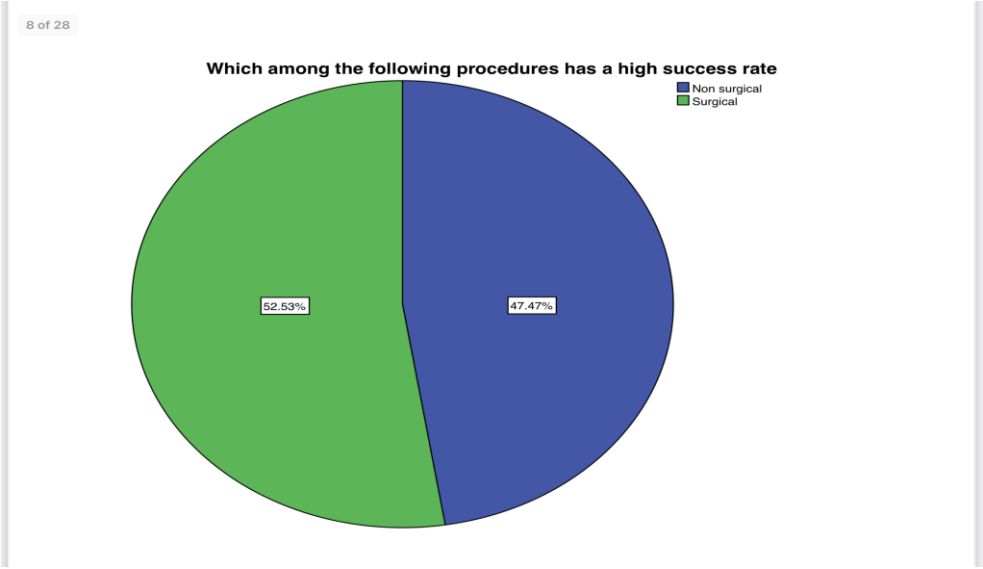

Figure 5: The pie chart represents the preference based on success rate where 51.4% (green) feel surgical procedure has high success rate and remaining 45.9% (blue) feel non surgical procedure has high success rate.

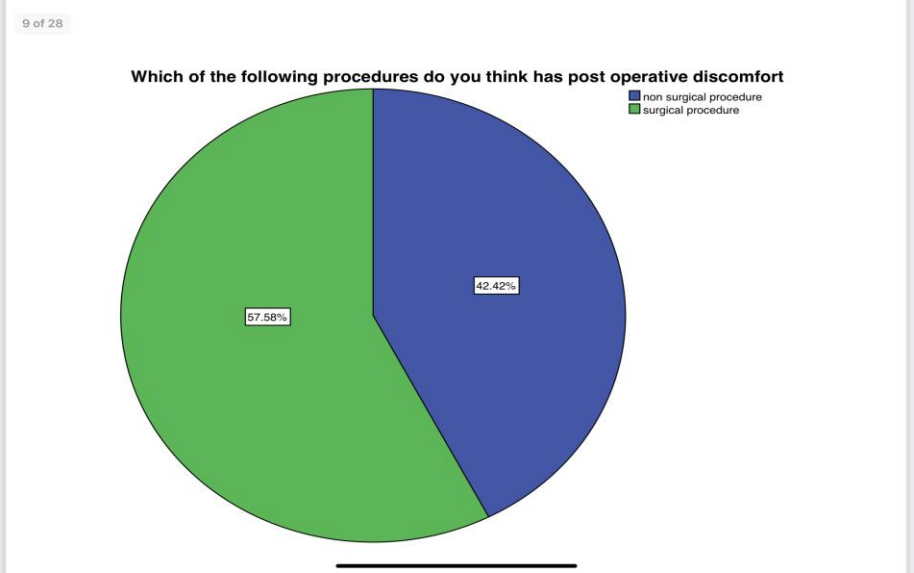

Figure 6: The pie chart represents the preference based on post operative discomfort 54.1% (green)feel surgical procedure has postoperative discomfort and remaining 45.9% (blue) feel non surgical procedure has postoperative discomfort.

Table 1 :

Questions	Yes	No
Awareness about apexum, gentlewave and overinstrumentation	(55%)	(45%)
There are root canal regions that cannot be cleaned and obturated with existing equipment, materials and techniques thus the infections can persist	(59.6%)	(40.4%)

Table 2:

Question	Options	Received data
Preference of surgical procedures	Apicectomy Periradicular surgery Retrograde therapy	(44%) (37.6%) (18.3%)
Procedures performed most while treating periapical lesions	Endodontic surgery Root canal treatment	(38.5%) (61.5%)

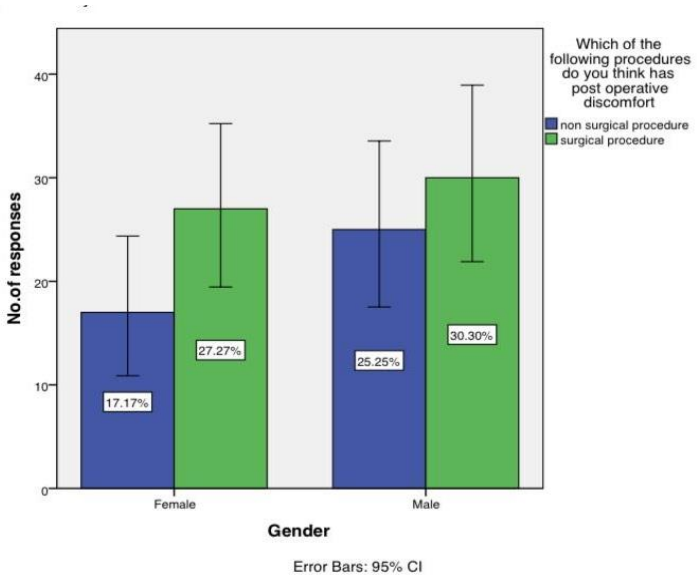

Figure 7: Bar graph depicts the association between the gender of the endodontic postgraduates and the postoperative discomfort in procedures. The X axis represents the genders of post graduates and the Y axis represents the number of people. Green colour represents surgical procedure and blue colour represents non surgical procedure. Surgical procedure was commonly preferred in both genders. There was no difference therefore its insignificant (chi square test; p- value = 0.456 - insignificant).

DISCUSSION:

Bacterial infection of the dental pulp may lead to periapical pathosis. When endodontic treatment fails, nonsurgical endodontic retreatment is often preferred to surgery or extraction(Walter *et al.*, 2012). Surgical endodontic therapy is an important part of endodontic practice. Periapical surgery may be undertaken after unsuccessful orthograde retreatment or when orthograde retreatment is impossible or unfavorable. When an initial surgical intervention or a surgical retreatment fails, the best treatment strategy to correct the problem should be determined after a thorough and meticulous examination of possible causes for the failure. (Sabeti, 2017)A periapical lesion tends to develop more or less concentrically around the root apex with the apical foramen acting as the “source” of irritation that is situated in the center of the lesion. Some authors refer to the apical foramen as the “portal of exit” for irritants to escape into the apical periodontium. (Halse and Molven, 1986)

No significant difference was found between lesions of size greater or smaller than 5 mm in diameter. As healing is a function of time, an outcome similar to smaller-sized lesions should be applicable to larger-sized lesions, if sufficient time was allowed for healing to take place(Marble, 1947). The presence of cuspal coverage restorations was associated with an increased chance of periapical healing and of tooth survival, a finding supported by numerous other studies as well as systematic reviews. (Sabeti and Slots, 2004)Endodontic treatment decision-making must include an appraisal of the costs of the different strategies proposed. In addition to direct costs, postoperative discomfort may have other consequences in terms of time off work, unscheduled visits and suffering. Significantly more patients reported discomfort after surgical retreatment than after nonsurgical procedures (Kamman, 1951). The limitations were that the study population was only endodontic postgraduates and not dentists in common. The future scope is that a large population should be considered to understand more about large periapical lesions than a small specific population.

CONCLUSION:

In this study we may conclude that the endodontic postgraduates had knowledge and attitude towards preference of surgical vs non surgical management of large periapical lesions. While treating the periapical lesions most of the endodontists preferred non surgical management initially. However, further studies should be done for better understanding.

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