



**PREVALANCE AND ASSESSMENT OF ENDODONTIC MISHAPS RELATED TO FILE SEPARATION AMONG DENTISTS**

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**ABSTRACT**

**Aim:** To investigate the endodontic mishaps done by undergraduate dental students attending dental colleges in South India

**Objective:** A questionnaire based study to investigate the endodontics mishaps done by undergraduate dental student attending dental colleges in South India.

**Background:** Root canal therapy consists of a cascade of scientifically-based technical procedures. Lack of knowledge, its poor application, or a compromise or a break in the chain of proper procedures can lead to a number of accidents which are collectively called 'endodontic mishap'. In these Separation of endodontic files during root canal treatment is a common multifactorial problem facing most of dental practitioners both dentists and students.

**Reason:** Endodontic mishaps is a multifactorial clinical problem that must be either removed, bypassed to allow complete cleaning, shaping, disinfection, obturation and effective coronal seal.

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**INTRODUCTION**

Root canal therapy consists of a cascade of scientifically-based technical procedures. Lack of knowledge, its poor application, or a compromise or a break in the chain of proper procedures can lead to a number of accidents which are collectively called 'endodontic mishaps'. (1) Endodontic mishaps occur during diagnosis, access preparation, instrumentation, obturation, and post-space preparation (2). Several factors like vitality of tooth, accessibility of tooth, position of fractured instrument in the canal, taper of the instrument, type of alloy with which the instrument is made, have an impact on the prognosis (3). All endodontic mishaps may not lead to a reduced prognosis, but any error that compromises, microbial control is likely to increase the risk of a failure. Separated root canal instruments is one of the most trouble some incidents in endodontic therapy, especially if the tooth is non vital and fragment cannot be removed. Separated fragment of instrument in root canal may be indirectly responsible for an endodontic failure by limiting the access to the apical part of the canal, compromising disinfection and obturation (4).

Few studies have reported a high success in removing separation of instrument using the most contemporary techniques (5). Success is less likely when fragments are located in the apical third or beyond the root canal curvature,

potential complications such as root perforation or root fracture, removal of fractured instruments is not recommended (7)

Separated instrument in root canal leads the dentist to a state of frustration and anxiety initially and later a state of confusion about treatment and its prognosis. In order to modify the treatment plan, once this kind of mishap occurred, it is imperative for the dentist to have good knowledge about the role of separated instrument in long-term prognosis of root canal treatment, various methods to manage it, and the best one suits for that condition.

**MATERIALS AND METHODS**

A survey was conducted among 300 dentists among the South Indian population. A set of 16 questions were created and the questionnaire was distributed to various dental colleges. The questionnaire consisted of questions regarding the awareness of the endodontic mishaps and most common causes of mishaps following the most common complication the individual clinicians faced during the procedure. The information was collected from the clinicians and recorded. A comparison of the answer from the collected data was made.

**RESULT**

There was found to be 77% awareness among all the dentists regarding the endodontic mishaps. 66% of the dentists have done endodontic mishaps related to file separation. 39% of the

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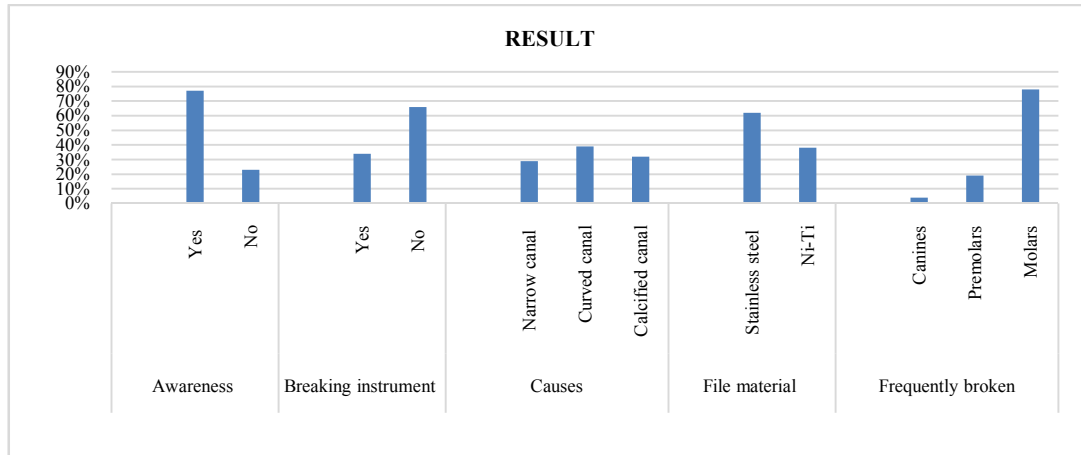
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dentists were reported that curved canal is the most common causes for the separation of file, whereas 32% of the dentists reported that calcified canal is the causes for the file separation. And 38% of the dentists believed that use of Ni-Ti will reduced the file separation. 77% of dentists were reported that molar is the most common tooth for the file separation. 47% of dentists were believed that ultrasonics techniques is used for removing the broken file.

of Ni-Ti will cause potentially fewer complications.

## CONCLUSION

Root canal treatment presents a great challenge to a dental student where mishaps commonly occurred. In this study it is clear that majority of the dentists were aware of endodontic mishaps and it is most common in the posterior teeth.



## DISCUSSION

Endodontic treatment is the best procedure for the conservation of tooth, but it might consider a stressful procedure for the undergraduate students if there is a lack of knowledge. So it usually requires competent technical skills and experience, as well as an understanding of pulp anatomy and its variations. Knowledge of root canal morphology and tooth pulp chamber will allow the student to avoid any mishaps. In this study there is no gender related difference in the endodontic treatment outcomes. Similar findings were reported by Balto *et al.* (8) Kerekes and Tronstad, (9) and Sjögren *et al.* (10).

Endodontic treatment is most frequently performed on the molar teeth. In the present survey, we found that 77% of mishaps occurred in the posterior dentition. Similar findings were reported by Balto *et al.* (8) based on radiographic examination at King Saud University. We believe this is caused by the increased canal curvature of these teeth, which can be negatively affected during root canal instrumentation. Dummer (11) compared undergraduate endodontic teaching programs in Britain to those in the United States and reported that one of the causes of poor quality endodontic treatment in general practice was lack of expertise and a poor understanding of the principles involved by the graduated students. Similarly in this study 87% were reported that lack of knowledge was the cause of poor quality of endodontic treatment.

Students of King Saud University performed the step-back instrumentation technique, which involves preparation of the apical region of the root canal followed by coronal flaring. Stainless steel files are usually used for this technique. However, instrumenting curved canals using this technique often results in iatrogenic damage to the normal shape of the canal, such as ledge formation or the blockage of canals by dentin plugs. This is due to the inherent inflexibility of the stainless steel files. In this study, we are not concerned about the technique they used but we also believe that 64% who use

Endodontic mishaps could be avoided with thorough knowledge of the complications and variations in root canal anatomy, excellent training and good technical skills. In addition, we believe that the use of flexible nickel titanium files could result in fewer procedural complications.

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