

## Devitalizing agents in endodontics

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### Introduction

Different types of pulpal inflammation mostly are presented as a sequel of dental caries. Most of the general dental practitioners find management of the inflamed pulp challenging in their routine dental practice. First step in the mortal endodontic methods of treatment is positioning of devitalizing medicament. The devitalizing agents can compose of formaldehyde, cresol, paraformaldehyde or some arsenic compounds. These agents can be harmful to the patients mostly because of their highly toxic, allergic, carcinogenic and mutagenic/genotoxic properties (Lewis, 2010).

Toxic devitalizing agents such as arsenic trioxide and paraformaldehyde were commonly used in the past to devitalize inflamed pulps when effective anesthesia could not be obtained (Ozmeric, 2002). Among these two substances an important role played paraformaldehyde pastes. Paraformaldehyde agents can play role as disinfectants and can devitalize inflamed pulps when local anesthesia is ineffective. Despite the clinical benefits, paraformaldehyde can penetrate through dentine and is gradually released as formaldehyde. Formaldehyde released through dentine has a destructive effect on periodontal and bone tissues (Mehmet et al., 2018).

In contemporary dentistry, formocresol is mostly used as an intracanal medicament because of its antibacterial and tissue fixative properties (Kunisada, 2002). Liquid formaldehyde compounds, such as formocresol may be expressed through patent apical, lateral and accessory canals and cause

soft tissue and bony injury within the periodontium (Yakata et al., 1985).

Since the advantages of effective methods of local anesthesia, the use of paraformaldehyde or other toxic medicaments for pulp devitalization is minimized. However, contrary to the trends within modern endodontics, these medicaments are still using in the everyday dental practice and are sporadically associated with severe tissue breakdown in adults (Bataineh et al., 1997).

It must be noted that there is no latest reported literature available, concerning the behavior and attitude of general dental practitioners in relation to devitalizing agents.

Thus, the main aim of this study was to analyze knowledge, attitude and practice of general dental practitioners regarding the use of devitalizing agents in their respective practice.

### Material and methods

Total number of 48 general dentists from the eastern part from our country were randomly selected. Adequate questionnaire was designed to cover general information of the participating dentist and concerning different aspects of devitalizing agents. General information was in place to record location/address, experience - years of practice and whether the practitioner is a part of teaching faculty in a dental school.

After the questions about the general information, questions regarding devitalizing agents were handed over to the professionals comprising 12 questions. The questions inquired as use of

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devitalizing agents, type of agent used, purpose of use, frequency of use, usage in deciduous or permanent dentition, post-operative problems experienced (if any), frequency of the complications experienced, duration of use of devitalizing agent within the tooth, clinically observed changes in the tooth, reasons for usage and awareness regarding side effects/complications after use of devitalizing agents.

To all participants of this study were given adequate prior instructions necessary to fill the questionnaire. The questions were major in multiple choice questions, and the respondents were given the freedom to choose one or more suitable answers that meet their knowledge and attitude.

The collected data was statistic analyzed using SPSS (Statistical Package for Social Sciences) version 17.0. Descriptive statistics was drawn with respective percentages to have a comparative overview.

## Results and discussion

More than half from the dentist (54.1%) were using devitalization agents. Of the respondents using devitalizing agents, 46.15% (or 25% from all respondents) were using agents containing arsenic, and 53.85% (or 29.17% from all respondents) were using agents containing aldehyde. 46% of the females and 46% of the males were using devitalizing agents, and the data showed that gender did not affect the usage of devitalizing agents ( $P>0.05$ ). Also, it must be noted that there was a statistically significant difference in the usage of agents as related to the years of professional experience ( $P<0.05$ ).

Nearly seventy percentage of general practitioners (precisely 68.75%) did not observe any post-operative complication following the use of devitalizing agent. Post-operative pain was noted in 14.58% as the most frequently observed complication. Others noted complications were swelling in 8.33% and gingival necrosis 4.17%. 31.25% (15) of the respondents were not aware about the complications of devitalizing agents.

The use of aldehyde containing agents was more in the present study than other studies where they have used the recently available devitalizing agents like arsenic based compounds. The reasons reported by the practitioners for use of devitalizing agents is due to the fact that these agents are perceived to be quick and painless in action, eliminating the necessity of administration of local anesthesia thus

saving time and maximizing patient cooperation (Unal et al., 2012).

Majority of dental practitioners did not observe post-operative complications, but few did. However, the existence of literature and the intensity of harm the patients experienced to date cannot be ignored. In addition, few respondents in the present study also observed post-operative complications in variety (Chen & Sung, 2014).

## Conclusion

According to the results, it can be concluded that general dental practitioners do use pulp devitalizing agents in spite of possessing knowledge related to the complications.

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