Is mineral trioxide aggregate, a panacea in dentistry? A questionnaire survey

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ABSTRACT

The aim of this questionnaire survey was to study the level of awareness among the dentists in Chennai, the current status of knowledge and opinion toward mineral trioxide aggregate (MTA) as a panacea in dentistry. A total of 200 dentists and specialists (endodontist) were included in this survey. The first part contained questions regarding the profile of the respondents including gender, age group, field of practice, and years of experience. The second part contained 16 questions regarding the knowledge and opinion toward the use of MTA proving to be a panacea in dentistry. The results of this questionnaire survey showed that dental practitioners agree to the fact that MTA has successfully replaced calcium hydroxide as the new panacea in dentistry. The dental residents and endodontist in Chennai were much aware of the uses and advantages of MTA. Due to its superior clinical performance, it is concluded that MTA is a panacea in dentistry.

Keywords: Panacea, survey, mineral trioxide aggregate, calcium hydroxide

Introduction

Panacea is a term used for a material that can be used as a cure for all or universal remedy. Calcium hydroxide had held its position as the panacea in dentistry for many decades owing to its multiple applications be it as an intracanal medicament or a pulp capping agent.[1] Calcium hydroxide is the material of choice for apical barrier formation and healing. But along with its many advantages, the disadvantages can be summarized as follows: 1 length of time for induction of coronal or apical hard tissue barriers. This typically ranges from 2 to 3 months in the case of pulp capping[2] and 6–18 months in the case of apexification procedures[3-5] with an average of 9 months for the latter.[6] The zones represent the contact area between calcium hydroxide and vital pulp tissue; they may become infected at a later time through microleakage under restorations, leading to pulpitis and subsequent pulp necrosis.[7] This may lead to infiltration of bacteria through vascular tunnels.[8,9] These changes are related to the loss of inorganic and organic components of the dentin.[10-18] In 1993, a new endodontic material, mineral trioxide aggregate (MTA) was developed by Torabinejad and coworkers, primarily for the purpose of making a bacteria-tight and biocompatible material to seal accidental perforations of the root canal apart from its other applications.[21] This material was proved to be ideal as root-end filling material and material for use in pulp capping and pulpotomy cases.[22-27] Later, MTA found its way into the treatment of traumatized immature teeth with pulp necrosis (apexification), as some of the shortcomings of calcium hydroxide seemed to be overcome with the use of MTA.[28]

In recent times, MTA has been successfully used as a pulp capping material, in apexification procedures, as a sealer, etc. Therefore, can we say that MTA has replaced calcium hydroxide successfully as the panacea in modern dentistry.

This questionnaire survey aims to assess the level of awareness among the dentists in Chennai, the current status of knowledge and opinion toward MTA as a panacea in dentistry.

Materials and Methods

A total of 200 dentists and specialists (endodontist) were included in this survey. The first part contained questions regarding the profile of the respondents including gender, age group, field of practice, and years of experience Figure 1. The second part contained 16 questions regarding the knowledge and opinion toward the use of MTA proving to be a panacea in dentistry. All the questionnaires were completely filled and submitted. The results were tabulated.

Questionnaire

Is MTA a remedy for all difficulties in dentistry? A questionnaire survey.
1. Gender: male () female ()
2. Age group (in years): 20 - 30 () 31 - 40 () 41 - 50 () >50 ()
3. Field of practice: post graduate (endo) ()
   general dentist ()
   endodontist ()
   interns ()
4. Years of experience: 0 - 5 () 6 - 10 () 11 - 15 () >15 ()
5. Rate the biocompatibility of dental materials listed below. Rank answers from 1 to 4.
   1 - most compatible
   4 - least compatible
   • Calcium hydroxide {1/2/3/4}
   • Mta {1/2/3/4}
   • Gic {1/2/3/4}
   • Amalgam {1/2/3/4}
6. Which material do you think could prevent infection-related root resorption?.
   strongly agree uncertain disagree strongly disagree
   a. Mta
   b. Calcium hydroxide
   c. Biodentine
7. Materials used for apexification procedures?
   strongly agree uncertain disagree strongly disagree
   a. Mta
   b. Calcium hydroxide
   c. Biodentine
   d. Calcium phosphate
   ceramics & hydroxyapatite
   e. Bone morphogenetic proteins
8. Rate the materials for superior performance as direct pulp capping agent.
   1 - most superior
   4 - least superior
   • Calcium hydroxide {1/2/3/4}
   • Mta {1/2/3/4}
   • Bioaggregate {1/2/3/4}
   • Tri-calcium phosphate {1/2/3/4}
   • Biodentine {1/2/3/4}
9. Rate the materials for superior performance as a base for indirect pulp capping.
   1 - most superior
   4 - least superior
   • Calcium hydroxide {1/2/3/4}
   • Mta {1/2/3/4}
   • Bioaggregate {1/2/3/4}
   • Tri-calcium phosphate {1/2/3/4}
   • Biodentine {1/2/3/4}
10. Which material do you think showed higher clinical and radiographic success as pulpotomy agent in immature permanent teeth?
   strongly agree uncertain disagree strongly disagree
   a. Mta
   b. Calcium hydroxide
   c. Formocresol
   d. Biodentine
11. Rate the materials for root canal sealers?
   1 - most superior
   4 - least superior
   • Zinc oxide-eugenol {1/2/3/4}
   • Mta {1/2/3/4}
   • Ah plus {1/2/3/4}
   • Endoseal {1/2/3/4}
12. Which material shows better results for leakage and biocompatibility for apicoectomy procedure?
   strongly agree uncertain disagree strongly disagree
   a. Mta
   b. Gic
   c. Amalgam
13. Do you think Mta is the material of choice for root and furcation perforation repair material?
   a. Yes
   b. No
   c. Uncertain
14. Which obturation material do you think shows higher resistance to fracture?
   a. MTA □ □ □ □  b. Gutta-percha □ □ □ □  c. Both a & b □ □ □ □

15. What do you consider to be the optimal treatment for management of open apex?
   A. calcium hydroxide apexification □ □ □ □  
   B. calcium hydroxide application followed by mta □ □ □ □  
   C. Mta apical plug and backfilling with obturation material □ □ □ □  
   D. triantibiotic paste and pulpal regeneration □ □ □ □  
   E. multiple option □ □ □ □

16. Materials used for apical transportation repair?
   strongly agree □ □ □ □  agree □ □ □ □  uncertain □ □ □ □  disagree □ □ □ □  strongly disagree □ □ □ □  
   a. MTA □ □ □ □  b. Bioceramics □ □ □ □

17. Advantages of mta
   yes □ □ □ □  no □ □ □ □  uncertain □ □ □ □  
   a. less number of visits □ □ □ □  b. good apical seal □ □ □ □  c. patient compliance □ □ □ □

18. Advantages of mta over calcium hydroxide?
   strongly agree □ □ □ □  agree □ □ □ □  uncertain □ □ □ □  disagree □ □ □ □  strongly disagree □ □ □ □  
   a. Lesser time period □ □ □ □  b. Single visit □ □ □ □  c. Safety □ □ □ □

19. Mta is an appropriate alternative to calcium hydroxide with predictable results?
   a. Yes □ □ □ □  b. No □ □ □ □  c. uncertain □ □ □ □

20. Panacea- cure-all. Is mta panacea in dentistry?
   a. Myth □ □ □ □  b. Real □ □ □ □

Please write any comments you wish to make related to the kap survey.

Results

The results of this questionnaire survey showed that dental practitioners agree to the fact that MTA has successfully replaced calcium hydroxide as the new panacea in dentistry [Figure 2].

This questionnaire survey showed that dental practitioners agree to the fact that MTA has successfully replaced calcium hydroxide as the new panacea in dentistry.
Conclusion

The dental residents and endodontist in Chennai were much aware of the uses and advantages of MTA. About 96.5% of the dentist from this survey agrees MTA is an appropriate alternative to Ca (OH)$_2$ with predictable results. Due to its superior clinical performance, it is concluded that MTA is a panacea in dentistry.

References


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