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RESEARCH ARTICLE

OBTURATION MATERIALS AIDING IN FORENSIC ASSESSMENT OF AN INDIVIDUAL AFTER INCINERATION AT DIFFERENT TEMPERATURES

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ABSTRACT

The forensic odontologist utilizes the human dentition throughout each stage of dental evaluation, restorations and root canal treatment are as unique as fingerprints, and their radiographic morphology, as well as the types of filling materials, are often the main feature for identification. The detection of root canal filling materials and its properties is a valuable toolmark in the presumptive identification of the dentition of a burned victim. Thermo plasticized gutta purcha, b-fill, obtura III, MTA and MTA fillapex have a different resistance to prolonged high temperature. Therefore, the identification of burned bodies can be correlated with adequate qualities and quantities of the traces. Most of the odontogenic examination relies heavily on the existence of the obturating materials as well as the relationship of one dental structure to another. This greatly narrows the research for the final identification that is based on postmortem data. The purpose of this study is to examine the materials integrity and tooth integrity to variable temperature and duration, for identification. The crowns were fabricated (n = 10) with one of the following materials Group 1: Thermo plasticized gutta percha, Group 2: B- fill, Group 3: Obtura III, Group 4: MTA and Group 5: MTA Fillapex. Crowns were heated in the furnace to 200°C, 400°C and 600°C during different time intervals and assess for surface characteristics based on visual image analysis. The MTA fillapex used in this study proved to be more resistible to heat, and it proves to be the better material of choice as a forensic tool since it did not show much of a change in the morphology even at the higher temperature compared to other materials.

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INTRODUCTION

In forensic medicine, although there are various method, playing an important role in personal identification, the forensic odontology is one of the reliable methods for identifying an individual. Basically, antemortem (AM) data obtained from records, dental treatment are collected from private clinics and compared with postmortem(PM) data obtained during cadaveric examinations.

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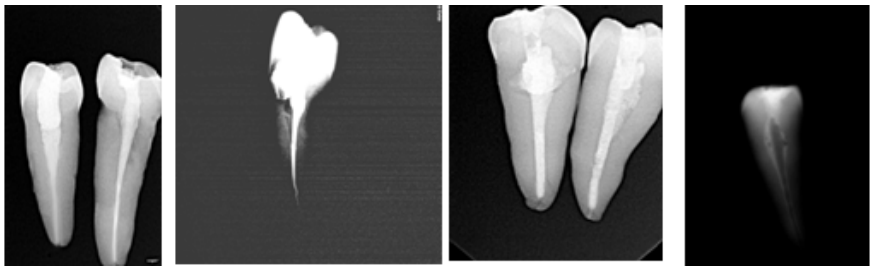
In the forensic odontology, there are several things such as restoration, root canal treatment as filling materials that can be analyze for identification of the victims. As obturating materials has been introduced in the market are Guttapercha, B- fill, obtura, MTA, MTA fillapex with a different heating temperature.

Aim of the Study: Role of obturating materials in forensic identification after incenation.

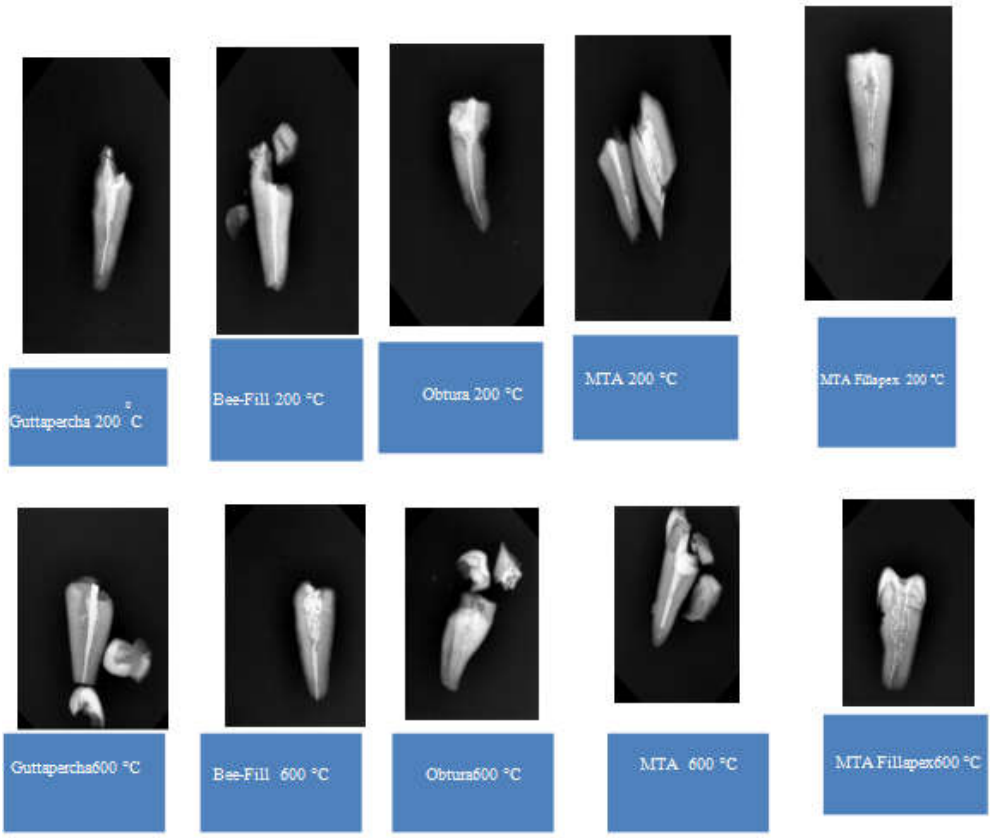
MATERIALS AND METHODS

Forty extracted single-rooted mandibular premolar teeth with straight canals, mature apices and without any cracks were selected for this study.

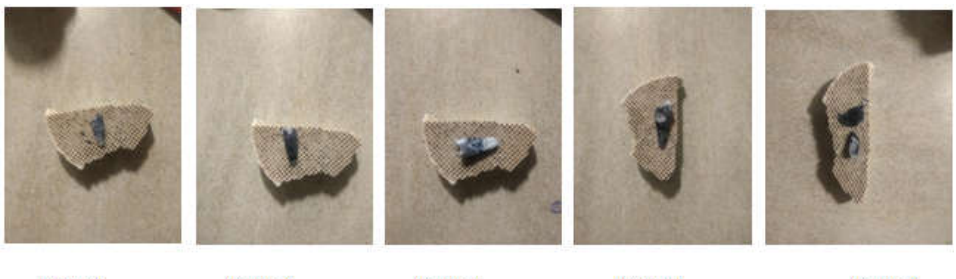
Before Heat Treatment



Material integrity of five groups – 200^{0}C and 600^{0}C heat treatment



After incineration – 200^0 C and 600^{0}C
Tooth integrity – 200^{0}C and 600^0 C (heat treatment)
After 200^0 C



After 600^0 C

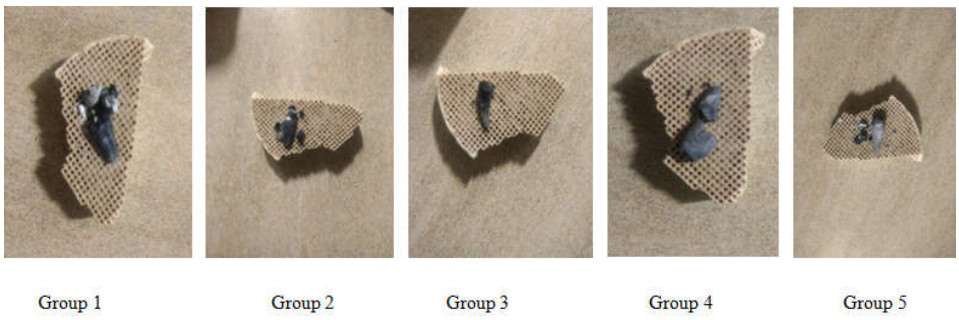


Table 1. Marginal Integrity

Group	200°C			600°C		
	Material integrity (n=2) (%)	χ^2 value	p value	Material integrity (n=2) (%)	χ^2 value	p value
Group 1	0 (0)	8.00	0.092	1 (50)	8.00	0.092
Group 2	1 (50)			2 (100)		
Group 3	2 (100)			0 (0)		
Group 4	2 (100)			2 (100)		
Group 5	0 (0)			0 (0)		

Table 2. Tooth Integrity

Group	200°C			600°C		
	Tooth integrity (n=2) (%)	χ^2 value	p value	Tooth integrity (n=2) (%)	χ^2 value	p value
Group 1	1 (50)	2.86	0.582	0 (0)	4.44	0.349
Group 2	1 (50)			0 (0)		
Group 3	2 (100)			0 (0)		
Group 4	1 (50)			0 (0)		
Group 5	2 (100)			1 (50)		

The teeth were extracted for orthodontic reasons and were free of dental caries. Teeth were washed with 5.25% sodium hypochlorite and stored in 0.9% w/v saline solution before instrumentation.

Access opening done working lengths were established visually by placing a size K-type file into each root canal until the tip of the file was visible During instrumentation all canals were irrigated between each instrument change with 2.5mL of 5.25% NaOCl. A final flush was performed with 5mL of 17% EDTA for 30 seconds followed by a rinse with 5mL of saline. cleaning and shaping done. The root canals were dried with paper points five different obturatingmaterials. fivegps make:

Group - A specimen was obturated with gutta-percha cone

- Group-B B-fill
- Group-CObtura
- Group-D MTA
- Group-E MTA fillapex

The quality and extent of obturation were confirmed radiographically. Each tooth is incinerated at different temperature at 200 ^{0}Cand 600 ^{0}C.RVG was taken of each tooth after incinerated at different temperature and go for statical analysis.

DISCUSSION

Forensic medicine works for forensic identification. In the study, it was observed the visual and radiographic changes to the root canal obturated teeth due to fire. In research, the root canal obturated teeth showed colour change as well as a change in the tooth structure.

Incineration of tooth divided into five groups:-

- Group 1- Guttapercha,
- Group 2- Bee-fill, Group
- 3- Obtura, Group
- 4- MTA Group
- 5- MTA Fillapex at 200°C and 600°C.

As can be seen in the tooth images integrity is lost in Groups as GP, Bee-fill, Obtura, MTA while it is intact in Group 5 as MTA Fillapex. This gives a clear impression that if obturating material is used routinely even after individual being incenerated at high temperatures he/she can have his/her teeth intact for the same. As seen in the RVG images the obturating material core is intact in terms of physical core and radiopa city in GP, Obtura, MTA while it was not seen in Group 2 and 5 Bee- fill amd MTA Fillapex. From these, observable damages of the teeth subjected to showed the effect of obturating materials variable temperatures can be categorized

as intact (no damage), charred (reduced to carbon by incomplete combustion), and incinerated (burned to ashes).

Conclusion

Forensic dental identification of the victims of fires is often a complex and challenging endeavor. Even though MTA has 50% result in terms of tooth integrity. This material not only is 100% biocompatible it also can be used as a good diagnostic tool in forensic odontology because it had good obturation details after inceneration. It is hoped that this study can imprint the importance of the pre-planned and systematic approach toward the preservation of charred dentition, as every practitioners should used MTA for root canal treatment so at times it could prove to be the best evidence for identification of those who are extensively burned.

REFERENCES

Effect of high temperatures on root canal obturation – *Journal of Advanced Pharmacy Education and Research*

Endodontics and forensic personal identification: An update 2017 *European Journal of General Dentistry.*

Identifying murder victims with endodonticradio graphs *Journal of Forensic Dental Sciences*

Review Article Biosmart Materials: Breaking New Ground in Dentistry The Scientific World Journal