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COMPARATIVE EVALUATION OF TWO DIFFERENT OBTURATING SYSTEM USING CBCT AND IOPA" – AN INVIVO STUDY

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ABSTRACT

AIM- The aim of this study was to compare & evaluate the quality of two different Obturation technique using Cone Beam Computed Tomography & Intraoral Periapical Radiograph.

METHODOLOGY- This is an original in-vivo research that will be conducted in department of Conservative Dentistry and Endodontics, Jaipur at NIMS DENTAL COLLEGE. The consent from the patients and ethical board will be obtained for the procedure. Forty patients were selected. Access cavity preparation done and the patients was split into two groups (20 patients) for obturation, with Obtura II System and Thermafil system after cleaning and Shaping of the canal. Voids and Pain-perception is being checked for the quality of the obturation. To evaluate, voids present in Thermafil & Obtura II, CBCT and IOPA are used.

RESULTS- After evaluating both the obturation techniques, results showed less number of voids after obturation with Thermafil technique compared to Obtura II, also patients reported higher rate of discomfort with Obtura II technique compared to Thermafil.

CONCLUSION- Provided the limitations of the study, it concluded that CBCT evaluation showed Thermafil a better obturation technique compared to Obtura II and how three-dimensional imaging overcomes the limitations of conventional radiography.

KEY WORDS- Cold lateral compaction, ThermaPrep Plus Oven, AH Plus sealer, Pluggers, Visual Analogue Pain Scale.

INTRODUCTION

Endodontic treatment aims to completely clean the root canal system and eliminate any possibility of reinfection in the future.(1) The obturation procedure is the third important stage in endodontic treatment, which comes after the root canal system has been cleansed and shaped.(1) To achieve the

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correct obturation of the root canal system, a number of approaches have been devised, including vertical compaction, lateral compaction, and carrier-based obturation.(2) Cold lateral compaction was the standard method used for endodontic obturation in numerous studies.(3) However, it is also commonly recognised that cold lateral compaction is difficult and susceptible to errors.(3) It has been demonstrated that warm gutta-percha techniques more accurately replicate the internal root canal architecture than conventional lateral condensation.(4)

METHODOLOGY

This unique in-vivo study was carried out at the NIMS Dental College's Conservative Dentistry and Endodontics Department in Jaipur. The procedure was carried out with approval from the ethics board and the patients. Following access cavity preparation, the patient was split into two groups for obturation, namely Obtura II and Thermafil, once the canal had been cleaned and shaped.

GROUP-I =THERMAFILL TECHNIQUE- The fit of a size #25 verifier in the canal at the working length was examined. The ThermaPrep Plus Oven was used to choose and heat an obturator of the same size. After the canal had dried, the coronal section of the canal was sealed with AH Plus sealer. Next, the obturator was gradually positioned at the working length in one motion. Once the gutta-percha cooled down, the obturator was cut off at the canal opening.

GROUP- II =OBTURA II- The canal is initially allowed to dry before being sealed. After preheating the gutta-percha, the needle is inserted three to five millimetres after the apical preparation. It is administered & compacted with pluggers soaked in alcohol slowly and passively.

RESULT

There are four categories for the voids rating: 0, 1, 2, and 3. The count and percentage within the group for each voids grading level are given for each obturation procedure. The P value denotes statistical significance, and $P < 0.05$ is the significance level.

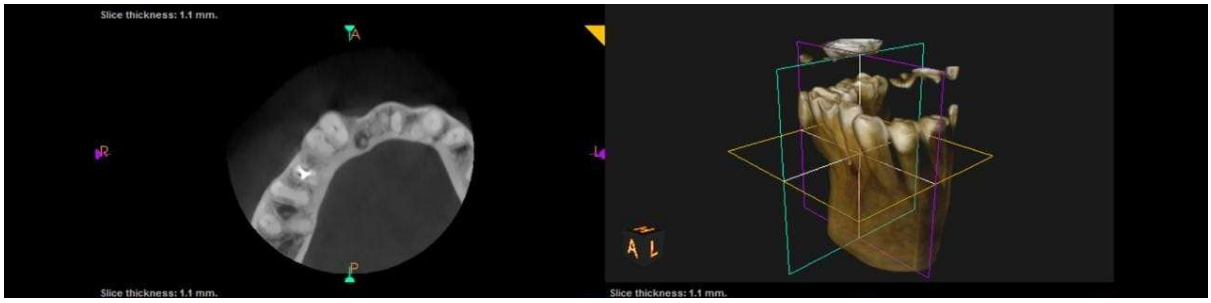

Fig 1. CBCT Image showing obturation done using obtura ii system.

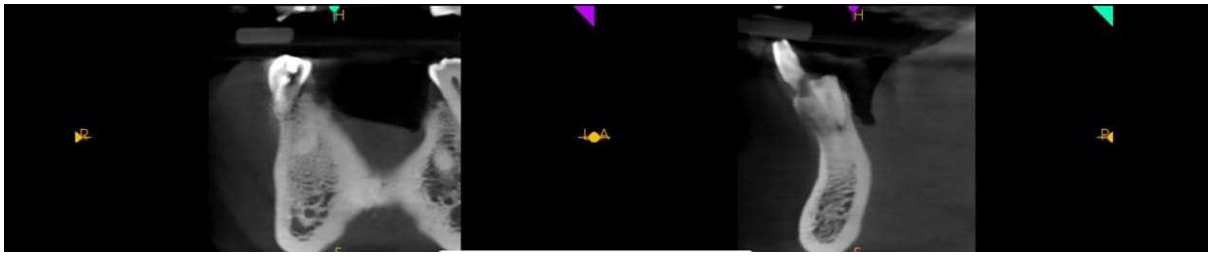

Fig 2. CBCT Image showing obturation done using thermafil system

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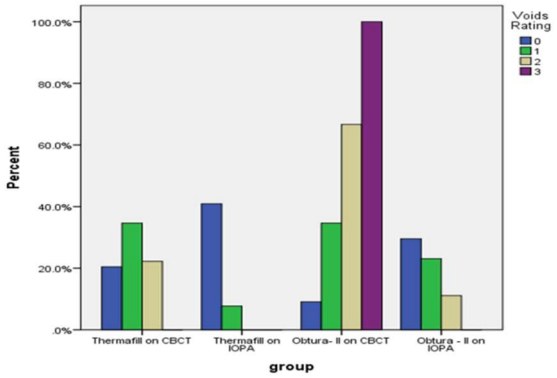

GRAPH 1: THIS TABLE SHOWCASES THE VOIDS RATING FOR TWO DIFFERENT OBTURATION TECHNIQUES SEEN USING BOTH IOPA AND CBCT IMAGING METHODS.

DISCUSSION

The success of endodontic therapy is critical to the longevity of teeth. In the last several years, major advances in materials and techniques have increased the bar for endodontic therapy.(5)

In the present investigation, we looked at the void % and post-obturation pain feelings in mandibular premolars in relation to the canal obturation technique.

A visual analogue pain scale was used to monitor the frequency of post-obturation discomfort so as to assess the two different thermoplastic obturation procedures, Obtura-II and Thermafil. However the higher rate of post-obturation pain after using Obtura-II may have been caused in part by the amount of heat at the apex. The study also discovered that while using Obtura II, voids were detected in comparison to CBCT evaluation but were not visible when using IOPA.

According to Weller and Koch's (1994) in vitro study, the Obtura II process was the most adaptable for preparing root canals. For back-filling, the Obtura II method is also widely used. Temperature increases above 185°C should be met with extreme caution to ensure patient safety.(6)

Using IOPA and CBCT examination, we found fewer voids in patients in group I (THERMAFIL) in this trial than we did with Obtura II.

Gençoglu et al. have investigated Thermafil, Quick-fill, lateral condensation, and System B. In order to assess filtration, they also used ink to split the samples horizontally at 1, 2, 3, and 4 mm from the apex. The authors of this research claim that Thermafil and Quick-fill provide lesser filtration than System B or lateral condensation.(7)

We found that there were less voids with Thermafil than with Obtura II using IOPA and CBCT examination.

Cone beam thus becomes necessary in any circumstance when there is a noticeable discrepancy in the diagnostic information that may be disputed by the clinical and intraoral radiographic examinations.

CONCLUSION

Provided the limitations of the study, it concluded that group II (Obtura-II) reported a higher rate of discomfort following obturation than group I (THERMAFIL), but this variance was not statistically significant. Our results also showed that there were less voids in Thermafil-obturated teeth compared to Obtura II, demonstrating how three-dimensional imaging overcomes the limitations of conventional radiography.

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