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ORIGINAL RESEARCH

A Comparative Evaluation of Two Different Obturating Material

¹Disha Lunagariya, ²Mili Lalitkumar Patel, ³Siddharth Jagdishbhai Patel, ⁴Parikh Keval Chiragbhai, ⁵Akhilesha Puvvala, ⁶Pawandeep Kaur

¹BDS, A.J. Shetty Institute of Dental Science, Kuntikana Road, Mangalore, Karnataka, India,

²BDS, Goenka Research Institute of Dental Science, Gandhinagar District, Piplaj, Gujarat, India,

³BDS, Mansarovar Dental College, Kolar road, Bhopal, Madhya Pradesh, India,

⁴BDS, Ahmedabad Municipal Corporation Dental College, Khokhara, Ahmedabad, Gujarat, India,

⁵BDS, The Oxford Dental College and Hospital, Hosur Rd, Bommanahalli, Bengaluru, Karnataka, India,

⁶BDS, Surendera Dental College and Research Institute, Model town, Sri Ganganagar, Rajasthan, India

ABSTRACT:

Background: The present study was conducted to compare adaptability of gutta percha and soft core material as obturating material.

Materials & Methods: The present study was conducted on 40 mandibular molar teeth extracted due to periodontal pathology. Teeth were divided into 2 groups of 20 each. Group I teeth were obturated with gutta percha following lateral condensation technique and group II teeth were obturated with soft-core system with AH Plus sealer. Each root was sectioned at coronal, middle and apical third. Sectioning was done using Isomet saw under water coolant. The samples were observed under stereomicroscope at $\times 40$ magnification. **Results:** The mean percentage of area of voids at coronal third in group I was 1.18 and in group II was 2.30, at middle third in group I was 1.50 and in group II was 1.60 and at apical third in group I was 1.29 and in group II was 0.82. The difference was non-significant ($P > 0.05$).

Conclusion: Authors found both materials equally effective in adaptability as a obturating material.

Key words: Gutta percha, Obturation, Soft core.

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Corresponding author: Dr. Disha Lunagariya, BDS, A.J. Shetty Institute of Dental Science, Kuntikana Road, Mangalore, Karnataka, India,

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INTRODUCTION

The primary objectives of operative endodontics are total debridement of the pulpal space, development of a fluid-tight seal at the apical foramen and total obturation of the root canal. Three-dimensional obturation of the root canal system promotes periapical healing and prevents disease progression. The hermetic seal created at the apical dentinocemental junction will determine the success of obturation.¹

Gutta-percha" was first introduced as a restorative material and later developed into an indispensable endodontic filling material. It has become the "soul" of endodontics, in its development as a specialty. Gutta-percha, until today, has been accepted as the most common material for root canal

filling, as it is not toxic and will not irritate periapical tissues. Gutta percha has a disadvantage of lack of bonding to canal dentin. Therefore, it is usually combined with root sealer to fulfill the obturation objective.²

Soft-Core technique is a thermoplasticized obturation technique, which involved the use of a metal carrier coated with a layer of gutta-percha that was heated to permit thermoplasticized canal obturation. Soft-Core offers advantages, such as a reduction in chair side time and rapid setting of the gutta-percha.³ The present study was conducted to compare adaptability of gutta percha and soft core material as obturating material.

MATERIALS & METHODS

The present study was conducted in the department of Endodontics. It comprised of 40 mandibular molar teeth extracted due to periodontal pathology. The study protocol was approved from institutional ethical committee.

Teeth were divided into 2 groups of 20 each. In all teeth, biomechanical preparation was performed following standardized operative procedure. Following this, teeth were divided into 2 groups of 20 teeth each. Group I teeth were obturated with gutta percha following lateral condensation technique and group II teeth were obturated with soft-core system with AH Plus sealer.

IOPAR were taken at buccal and mesial aspects to assess the quality of root canal filling that should be dense without voids and extended within 1 mm from the root end.

Each root was sectioned at coronal, middle and apical third. Sectioning was done using Isomet saw under water coolant. The samples were observed under stereomicroscope at x40 magnification. Area of voids and number of sections with voids, i.e., frequency of voids and location of voids were recorded using Image analyzer software. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of teeth

Groups	Group I	Group II
Material	Gutta percha	Soft-core material
Number	20	20

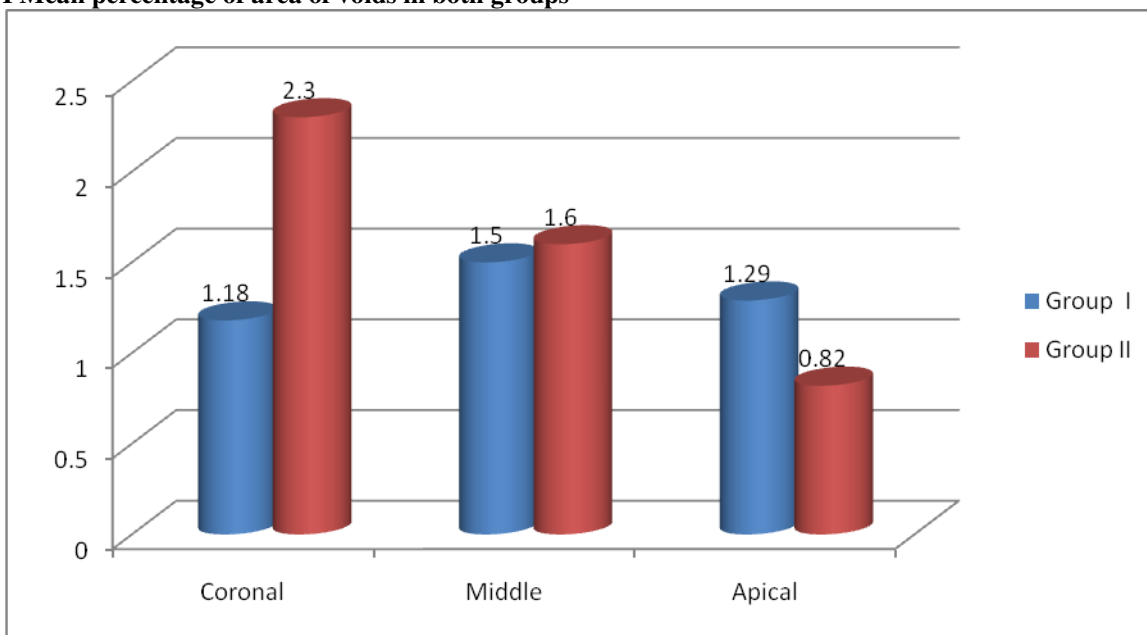
Table I shows that in group I, teeth were obturated with gutta percha following lateral condensation technique and in group II, teeth were obturated with soft-core system with AH Plus sealer.

Table II Mean percentage of area of voids in both groups

Area	Group I	Group II	P value
Coronal	1.18	2.30	0.214
Middle	1.50	1.60	0.145
Apical	1.29	0.82	0.126

Table II shows that mean percentage of area of voids at coronal third in group I was 1.18 and in group II was 2.30, at middle third in group I was 1.50 and in group II was 1.60 and at apical third in group I was 1.29 and in group II was 0.82. The difference was non-significant (P> 0.05).

Graph I Mean percentage of area of voids in both groups



DISCUSSION

Gutta-percha is a dried coagulated extract of plants of Palaquium, Blanco genus of Sapotaceae family. These trees are natural inhabitants of South East Asia, particularly Malaysian and Indonesian archipelago. The concrete juices of Isonandra gutta, Palaquium gutta and Dichopsis gutta are the main trees from where, we obtain Gutta-percha material. These Gutta-percha yielding trees are medium to tall trees, in which a series of cuts are made to obtain the juice.⁴

Soft-Core Endodontic Obturator is a core of biocompatible plastic coated with thermoplastic gutta percha. The obturator sizes 20 to 70 correspond to the ISO standards of root canal files. A single obturator is all that is needed to totally obturate a root canal, accurately with a tight apical seal. The Soft-Core plastic core is slightly oval-shaped. This secures adequate backflow of the heated gutta percha.⁵ The length of the core is 24 mm. The coronal 6 mm of the core is hollow to accommodate the metal insertion pin. A rubber endo stop is provided to indicate the working distance measurement. The plastic core and gutta percha are radiopaque.⁶ The present study was conducted to compare adaptability of gutta percha and soft core material as obturating material.

We included 40 mandibular molar teeth. In group I, teeth were obturated with gutta percha following lateral condensation technique and in group II, teeth were obturated with soft-core system with AH Plus sealer.

Raja et al⁷ in their study found that the lowest mean of AV was obtained by Gutta flow $1.25\% \pm 1.93$, followed by gutta-percha $1.33\% \pm 2.16$, and Soft- Core $1.74\% \pm 2.23$. Statistical analysis showed no significant difference among the three groups and the levels of the root.

The frequency of voids in the coronal and the middle levels was more than the apical for all groups. The highest frequency of voids was detected in Soft-Core, followed by Gutta flow and

gutta-percha respectively. The voids were located in the inter-phase between sealer and obturation material as well as sealer and root canal walls in the gutta-percha and Soft-Core groups, whereas it was almost confined to the core for Gutta flow group.

Gencoglu N et al⁸ in their study used dye penetration technique, softcore resulted in the highest mean number of voids compared with cold lateral condensation and hybrid gutta-percha condensation technique. They have also reported that the mean apical leakage for the Softcore technique was at least twice as extensive as for the two other gutta-percha obturation techniques.

CONCLUSION

Authors found both materials equally effective in adaptability as an obturating material.

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