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Original Article

A Comparison Between AH 26 and Sealapex for Post-Obturation Pain

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ABSTRACT

Objective: To find out the post-obturation pain with Sealapex and AH26 Sealers on the first, third and seventh day.
Study Design: Quasi-experimental study.
Place and Duration of Study: Armed Forces Institute of Dentistry, Rawalpindi Pakistan, from May to Nov 2019.
Methodology: Three hundred eighty-eight patients of either gender, ranging from age 20 to 45, presenting in the OPD for root canal treatment were selected. Teeth were opened, cleaned and shaped properly with rotary HyFlex EDM files. Obturation was done with Sealapex sealer in half cases, and the rest were obturated using AH26. Post-operative pain was recorded with VAS scoring on the days 1,3 and 7.
Results: Of 388 patients reporting, 131(67.5%) were males, and 63(32.5%) were females. Comparative pain recording on the days 1, 3 and 7 showed post-operative pain for the AH Sealer-Group as 80(58%), 64(72.3%), 22(84.3%) and Sealapex Sealer-Group as 58(42%), 24(27.7%) and 4(15.7%) respectively. The difference between post-obturation pain of both groups on all days was statistically significant, with an increased pain in the AH 26 Sealer-Group. There was a statistically significant relation between post-operative pain with gender distribution. Younger patients reported more pain as compared to older subjects.
Conclusion: The post-obturation pain for AH26 is more than Sealapex sealer which gradually decreases with each passing day.

Keywords: AH26, Pain, Post-obturation, Sealapex, Sealers.

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INTRODUCTION

The advent of the recent development in the field of endodontics has revolutionized the procedure of root canals. Novel materials, techniques and instruments have facilitated dentists to increase the success rate of these strenuous procedures.[1,2] Root canal obturation impedes the leakage of fluids from the lumen of the canal to the peri-radicular area and vice versa.[3] The lateral canals, canal inconsistencies and the incongruity of the obturated material and the canal's inner wall are supposed to be packed with the sealer to terminate the link between the peri-radicular and intra-oral area and create a fluid-tight seal for a successful outcome.[4,5]

AH 26 is an epoxy resin sealer commercially available in two paste forms: primary monoamine, secondary diamine and fillers. It has a working time of approximately 4 hours with easy manipulation. The adaptability of this sealer to the canal walls is also satisfactory.[6] Sealapex, a non-eugenol calcium hydroxide polymeric root canal sealer, was one of the first commercially available sealers. It has a catalyst base system with major constituents zinc oxide, zinc stearate, calcium hydroxide and fillers.[7,8] The high pH of this calcium-based sealer renders bacterial death by altering the environment in the peri-radicular region along with osteogenic and cementogenic potential.[9,10]

The purpose of the study was to determine and compare the occurrence of post-obturation pain using AH26 and Sealapex on different days and find their correlation with gender and age. This would help lower the post-operative pain for better outcomes, patient welfare, and quality of life post-procedure.

METHODOLOGY

This quasi-experimental study was carried out at the Operative Dentistry Department, Armed Forces Institute of Dentistry, Rawalpindi Pakistan, from May to November 2019, after the Ethical Committee approval (IRB number 905/ Trg–ABP1K2).

Inclusion Criteria: Patients of both genders, presenting to the OPD with clinical symptoms and radiological signs of irreversible pulpitis, pulp necrosis, peri-apical periodontitis or abscess associated with any permanent tooth of both arches with fully formed apices requiring root canal treatment (RCT) were included in the study.

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Exclusion Criteria: Patients with inadequate coronal structure teeth and root caries having guarded prognosis, age less than 20 years and more than 45 years, incomplete root formation, internal or external cervical resorption and calcified canals were excluded from the study.

A total of 388 teeth were selected with the consecutive sampling technique. The sample size was calculated using OpenEpi sample size calculator with a 5% margin of error, 50% anticipated frequency and a confidence level of 95%.[11] Written informed consent from all the participants was taken prior to the study.

All patients fulfilling the inclusion criteria were examined thoroughly clinically and radiographically. Local anaesthesia was administered, and a rubber dam was placed for all the cases. The standard endodontic procedure was followed, and access cavities were made with round diamond burs and straight burs to de-roof the access. Working length was determined with an apex locater (Root ZX II Apex Locator) and confirmed with a peri apical radiograph. Canal shaping was carried out with HyFlex EDM NiTi rotary files (coltene) using 17% EDTA as lubricant and 5.25% sodium hypochlorite as an irrigant. The final wash was done with normal saline, and the canals were dried with paper points. Patients were randomly divided into two groups, with 194 patients each depending on the obturating sealer being used. Teeth from Group-A have obturated with AH 26 sealer, whereas Group-B received Sealapex sealer. The sealers were mixed according to the manufacturer's instructions and introduced in the canals with a lentulo spiral. EDM gutta-percha was placed and sealed with a hot condenser by vertical condensing action. Teeth were restored permanently afterwards. These patients were contacted by phone post-obturation first, third and seventh days. VAS scoring was done for each days. The results were noted in the respective proformas of the patients and analysed and tabulated accordingly.

Statistical Package for Social Sciences (SPSS) version 21.0 was used for the data analysis. Qualitative data were expressed as frequencies and percentages. Chi-square statistics were used to compare qualitative data. The *p*-value of ≤0.05 was considered significant.

RESULTS

There were a total of 250(64.6%) males and 138 (35.4%) females, out of which 131(67.5%) males and 63 (32.5%) females received AH 26 sealer and 119(61.6%) males and 75(38.4%) females received Sealapex sealer respectively (Table-I).

Table-I: Demographics of the Patients Enrolled in the Study (n=388)

Variables	Group-A (n=194) n(%)	Group-B (n=194) n(%)	*p*-value
Gender			
Males	131(67.5)	119(61.6)	0.084
Females	63(32.5)	75(38.4)	
Age			
20–32 years	142(73.5)	139(71.6)	0.573
33–45 years	52(26.5)	55(28.4)	

Comparative VAS score was calculated for both groups on the days 1,3 and 7, showing post-operative pain for Group-A as 80(58%), 64(72.3%), 22(84.3%) and Group-B as 58(42%), 24(27.7%) and 4(15.7%) respectively. The difference between post-obturation pain of both groups on all recorded days was statistically significant, with an increased pain in the AH 26 Sealer Group (Table-II).

Table-II: Comparison of Post-Operative Pain between Groups A and B with regards to Post-Operative Days (n=388)

Post operative pain	Group-A (n=194) n(%)	Group-B (n=194) n(%)	*p*-value
Day-1			
No(250)	114(45.6)	136(54.4)	0.001
Yes(138)	80(58)	58(42)	
Day-3			
No(300)	130(43.4)	170(56.6)	<0.001
Yes(88)	64(72.3)	24(27.7)	
Day-7			
No(362)	172(47.6)	150(52.4)	<0.001
Yes(26)	22(84.3)	4(15.7)	

In addition, the study found a statistically significant relation between post-operative pain with gender distribution. No statistically significant difference was found in post-operative pain in the age range. However, younger patients reported more pain than older subjects (Table-III).

Table-III: Age and Gender Distribution with regards to Pain on the Post-Operative Day-7 (n=388)

Variables	No pain (n=363)	Pain (n=25)	*p*-value
Gender			
Males	230(63.4)	20(80.0)	0.014
Females	133(36.6)	5(20.0)	
Age			
20 – 32 years	260(71.7)	22(88.0)	0.051
33 – 45 years	103(28.3)	3(12.0)	

DISCUSSION

The perception of pain, being greatly subjective, can be best evaluated by the patient. Thus, the reports were based on the patients' responses. Post-operative pain in endodontics is due to local inflammatory

response elevation in the peri-radicular area.[12] Ng *et al*. reported the general post-obturation pain to be in 40.2% of subjects, of which less than 12% experienced severe pain.[13] Our study showed a greater frequency of post-operative pain on the first day (35.56%) with gradual reduction till the seventh day (6.7%). Likewise, a study conducted in Karachi in 2010 showed 58% of patients reporting post-obturation pain on the first day of follow-up, which reduced to 14% on seventh day.[14]

One study from India took 120 patients and found that the post-operative pain intensity was higher for AH 26 than Sealapex up to 12 hours after treatment completion.[15] In the same manner, our study demonstrated more pain with AH 26(58%) compared to Sealapex (42%) in a day. Comparably, a randomized controlled trial done on 160 patients demonstrated the number of pain killer tablets taken by the patients post-obturation with various kinds of sealers being used, showed that the AH Sealer-Group reported the highest intake of analgesics as compared to other groups of sealers, i.e. 2.5 times higher than the rest. However, it was not statistically significant.[16]

In the same way, our study manifested a reduction of pain from 42% to 15.7% in the Sealapex Sealer-Group. In the same way, a trial conducted on 70 individuals receiving Sealapex presented with post-operative pain in 58% of patients on the first day, which reduced to 14% on the seventh post obturation day.[17]

Golter *et al*. in a cohort study, showed a statistically significant association of post-endodontic pain occurrence in women compared to men (p=0.034). Equivalently females experienced more pain than men patients according to the trial done in Srinagar, which is in contrast with our study presenting higher men predication of pain as compared to women.[18]

LIMITATIONS OF STUDY

The limitations of the study were that the patients were not checked through follow-up visits to the hospital. Rather, they were contacted by phone for their symptoms. However, the merits of the study include a wholesome sample size and the elimination of operator-related error since a single clinician, well versed in operative techniques, performed all these procedures.

CONCLUSION

The right choice of sealer can greatly reduce the quality of life in post-obturation pain. It should be noted that post-operative pain for AH26 is more than Sealapex, but it reduces for both materials over time.

Conflict of Interest: None.

Author's Contribution

Following authors have made substantial contributions to the manuscript as under:

MJAR & MAR: Study design, drafting the manuscript, data interpretation, critical review, approval of the final version to be published.

MA & AYB: Conception, data acquisition, data analysis, drafting the manuscript, critical review, approval of the final version to be published.

FB & AM: Critical review, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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