ENDODONTICS

Postoperative pain with single- versus two-visit nonsurgical endodontic treatment

BACKGROUND

In root canal treatment (RCT), infectious tissue is removed, then the remaining tooth structure is cleaned and shaped. With the newest techniques and materials, RCT can be completed safely in a single visit rather than multiple visits. Retreatment is done when the previous treatments have failed to eliminate the patient's pain. Calcium hydroxide ($Ca[OH]_2$) has been used to control infection and has effectively reduced the incidence of inter-appointment symptoms. It's not effective against all microorganisms that are found in the root canal system, so other intracanal medicaments have also been used. Among the other medicaments is chlorhexidine (CHX). Single-visit RCT has been recommended for patients who have purulent inflammation, traumatic pulpal exposure, or necrotic pulp with a sinus tract. Having treatment delivered in a single visit saves time and cost and is appreciated by busy patients. Negative clinical consequences have also been associated with multiple-visit RCT. A study was done to compare the incidence of postoperative pain for single- versus multiple-visit primary nonsurgical endodontic retreatments. In addition, several confounding factors were assessed for their contribution to the outcome.

METHODS

One hundred fifty patients with asymptomatic teeth who had undergone root canal treatment but needed retreatment were randomly divided into 3 groups of 50 each. Group 1 was treated in a single visit, and groups 2 and 3 were treated in 2 visits with $Ca(OH)_2$ or CHX as an intracanal medicament. Postoperative pain was assessed 1, 2, 3, and 7 days as well as 1 month after treatment. The 2-visit treatments were completed 1 week after the initial visit. The confounding factors assessed included sex, age, number of visits, dental arch (upper or lower), tooth position (anterior or posterior), periapical index (PAI) score, preoperative periapical radiolucency, preoperative coronal restoration quality, preoperative root canal filling density and length, and sealer and gutta-percha extrusion.

RESULTS

Pain and Confounding Factors

The pain incidence at 30 days was greater among women younger than age 45 years than those older than age 45 years. On the first day of observation, postoperative pain was significantly greater among women than men. Postoperative pain was significantly greater on the first day in teeth with preoperative pain than in those with no preoperative pain. PAI score was not correlated with postoperative pain.

With periapical lesions larger than 2 mm, the postoperative pain was significantly greater than for smaller lesions. The incidence of pain on the first day was higher in short root filling teeth than in teeth with adequate or more root filling. The density of the root filling material and gutta-percha extrusion were not significantly related to the level of postoperative pain. On the third day, postoperative pain was greater for teeth with marginal defects in coronal restorations. Sealer extrusion was related to a higher incidence of postoperative pain on the second day.

Single versus Multiple Visits

For patients having retreatment delivered in a single visit, after 24 hours 56% reported no pain, 18% mild pain, and 26% moderate pain. After 48 hours, 70% of patients reported no pain, 16% mild pain, and 14% moderate pain. After 72 hours, 80% had no pain, 12% mild pain, and 8% moderate pain. Seven days after retreatment, 90% had no pain, 6% mild pain, and 4% moderate pain. After 30 days, 90% of patients had no pain and just 1 patient had mild pain.

For patients having CHX retreatment in 2 visits, 30% of patients had no pain, 32% mild pain, 26% moderate pain, and 12% severe pain after 24 hours. After 48 hours, the pain levels were absent in 44%, mild in 34%, moderate in 12%, and severe in 10%. After 72 hours, 58% of the patients had no pain, 22% mild pain, 14% moderate pain, and 6% severe pain. After 7 days, 82% of individuals had no pain, 12% mild pain, and 6% moderate pain. After 30 days, 82% had no pain, 12% mild pain, and 4% severe pain.

For patients having $Ca(OH)_2$ retreatment in 2 visits, 40% had no pain, 36% had mild pain, 16% had moderate pain, and 10% had severe pain after 24 hours. After 48 hours, 42% had no pain, 30% mild pain, 12% moderate pain, and 10% severe pain. Seventy-two hours after retreatment, 66% had no pain, 22% mild pain, 10% moderate pain, and 1 patient was in severe pain. After 7 days, 90% had no pain, 2% had mild pain, 6% had moderate pain, and 1 patient had severe pain. Thirty days after retreatment 74% had no pain, 22% had mild pain, and 4% had moderate pain.

Overall, no significant differences were found between the 2 medications with respect to the incidence of postoperative pain. None of the groups experienced any flare-ups.

DISCUSSION

Less postoperative pain was reported for single-visit endodontic retreatment without intracanal medicaments than for multiple-visit endodontic retreatment. In addition, the group receiving CHX treatment had higher pain intensity than the group receiving $Ca(OH)_2$ treatment.

Clinical Significance

When patients' pain experience was measured for up to 30 days after RCT retreatment, those who were treated in a single appointment without any intracanal medicament had less pain than those who were treated in 2 appointments with either CHX or $Ca(OH)_2$.

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OCCLUSION

Tooth wear and masticatory performance

BACKGROUND

Many factors influence the efficiency of chewing, including dental state, bite force, body size, age, gender, salivary flow rate, jaw movements, temporomandibular disorders (TMDs), and occlusal area of the post canine teeth. In addition, tooth wear may alter masticatory performance. The wear process is complex and includes both the chemical factor of erosion and the mechanical factors of attrition and abrasion. Generally, severe and pathological wear has a multifactorial etiology. Tooth wear alters the morphology of the teeth because tooth substance is lost, which can influence the height of vertical dimension of occlusion (VDO) and can affect patients' function, comfort, esthetics, and quality of life. The effect of tooth wear on masticatory performance was measured using a comminution test.

METHODS

The 52 participants (40 men and 12 women, mean age 40 years) had varying degrees of tooth wear, were at least age 18 years and mentally competent, had a maximum of 1 diastema in the posterior area, and had an ASA score of at least 3. Measures of performance included tooth wear index (TWI) judged on a scale from 0 to 4, dental state, bite force measurements, and masticatory performance. The last consisted of a masticatory efficiency test consisting of comminution of artificial test food made of polysiloxane impression material.

RESULTS

Mean post canine TWI score was 2.2. The average number of occlusal units per participant was 11.9, and mean bite force was 369 N. Masticatory performance, which was defined as the median particle size (X50) after 20 chewing strokes, for the entire group was 4.2. A small but significant decrease between successive X50 scores averaged 0.26. The duplicate measurement error (DME) was 0.34. The reliability of the mean X50 score was 0.966.

Multiple regression analysis confirmed that post canine TWI score had no significant influence on masticatory performance. In addition, no significant effect on X50 was related to age, gender, bite force, or number of occlusal units.

DISCUSSION

No significant relationship was found between the degree of tooth wear of posterior teeth and the median particle size (X50). It should be noted that the results could be impacted by the fact that more men than women were referred for severe tooth wear problems. This could reflect the fact that men consume more acidic drinks than women and perhaps suffer greater erosive tooth wear.

Clinical Significance

The degree of tooth wear of these individuals did not have any effect on masticatory performance. However, future studies may be needed to investigate the impact of occlusal contact area on masticatory function in patients with different degrees of tooth wear, as well as the possible influence of the alteration of occlusal contact area after full rehabilitation of the dentition of patients with tooth wear.