RESULTS

The DBRCT and 2 cohort studies found that the risk of nerve damage was not increased with 4% articaine over the use of 2% lidocaine. Four cohort studies determined that caution should be used when using the articaine solution, but found no evidence to explain these results.

DISCUSSION

Further research is needed to gather evidence concerning the safety of the 4% articaine solution for an inferior alveolar nerve block. For the present, caution should be used when considering the use of articaine rather than lidocaine.

> **Clinical Significance**
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> The use of 4% articaine is becoming more popular based on its shorter onset of anesthesia, more profound degree of anesthesia achieved, and longer duration of anesthesia compared to lidocaine. As more evidence is gathered to support the infiltration anesthesia technique, the incidence of inferior alveolar nerve damage with articaine use may be diminished.

Stirrup P, Crean S: Does articaine, rather than lidocaine, increase the risk of nerve damage when administered for inferior alveolar nerve blocks in patients undergoing local anaesthesia for dental treatment? A mini systematic review of the literature. *Br Dent J* 226:213-223, 2019

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Emergency apical periodontitis pain relief

BACKGROUND

Patients who require endodontic treatment often present with acute pain from a necrotic pulp. The suggested emergency treatments include complete chemo-mechanical disinfection (CMD) of the root canal system and systemic or local antibiotic treatment. Since January 1, 2013, the Swedish general dental insurance plan has ceased reimbursement for CMD of the root canal system in necrotic teeth as an emergency treatment. Only the removal of tissue from the pulp chamber (RNT) is now reimbursed. The efficacy of these 2 emergency treatment procedures to alleviate the pain of localized symptomatic apical periodontitis underwent comparison.

METHODS

The inclusion criteria included spontaneous pain and/or pain on percussion and palpation, nonbleeding pulp in the canal orifice, pain of 4 or greater on a Numeric Rating Scale (NRS), and patient age 18 years or older. Fifty-seven consecutive patients from the Malmö University emergency clinic met the criteria and were diagnosed with symptomatic apical periodontitis with no swelling and/or fever. Each had preoperative pain levels and the intake of analgesics documented. Patients were randomly assigned to CMD or RNT. From 3 to 5 days postoperatively the patients were each contacted by phone to grade their current pain level and report the intake of any analgesics and antibiotics postoperatively.

RESULTS

Patients' average preoperative pain rating in the CMD group was NRS 7.0 but it declined to NRS 1.4 postoperatively. Patients' average preoperative pain rating in the RNT group was NRS 7.4, declining to NRS 2.1 postoperatively. The mean pain relief achieved did not differ statistically. Eighty-seven percent of the patients in the CMD group achieved satisfactory pain relief, compared to 81% of the RNT patients. One patient in each treatment group developed increased pain and local swelling 3 to 5 days postoperatively and was prescribed antibiotics. Patients determined their own use of analgesics, whether opioids or non-opioids.

DISCUSSION

Both CMD and RNT achieved significant pain-relieving effects and reached a level considered clinically acceptable with or without analgesics. Removal of necrotic and infected tissue from the pulp chamber to alleviate dental pain from symptomatic apical periodontitis may offer a cost-effective alternative to complete chemo-mechanical disinfection.

> **Clinical Significance**
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> Adequate pain relief was obtained with both treatments, although analgesics were required in some cases. Removing the necrotic pulp tissues should be considered an emergency treatment, with follow-up for complete chemo-mechanical disinfection of the root canal system ideally scheduled at the emergency appointment.

Wolf E, Dragicevic M, Fuhrmann M: Alleviation of acute dental pain from localised apical periodontitis: A prospective randomised study comparing two emergency treatment procedures. *J Oral Rehabil* 46:120-126, 2019

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PEDIATRIC DENTISTRY

Audiovisual distraction to manage anxiety

BACKGROUND

Children often experience dental anxiety, which can be defined as a cognitive emotional response to an experience or stimulus related to the dental environment. Three main factors contribute: a difficult experience in the dental office, vicariously experiencing a difficult experience a role model has had in a dental setting, and psychodynamic and personality traits of the child. As a result of their anxiety, children avoid dental visits whenever possible and exhibit poor behavior control during visits, which has a negative effect on their oral health. This negative effect can result in more problems, which can then exacerbate the child's dental anxiety when they are addressed. The dentist plays a key role in diminishing or eliminating dental anxiety in pediatric patients and in promoting good oral hygiene habits. One of the nonpharmacological means for managing dental anxiety is audiovisual distraction. Its efficacy in managing children's dental anxiety was evaluated.

METHODS

The PubMed, Cochrane Central Register of Controlled Trials, and Embase databases were searched for randomized controlled trials (RCTs) that assessed dental anxiety, pain, behavior, vital signs, and patient satisfaction with the use of audiovisual distraction.

RESULTS

Nine cohort studies met the inclusion criteria, all including young patients who had previously had dental treatment. Five used a crossover design and 4 were RCTs. Altogether they reported on 697 children ranging in age from 3 to 16 years old. Comparisons were hampered by the fact that they employed many different scales to measure anxiety. All of the evidence was of low quality.

The Faces version of the Modified Child Dental Anxiety Scale was used to compare the efficacy of audiovisual distraction to that of control groups with respect to pain. Although several meta-analyses indicated that audiovisual distraction results were significantly different from the control group results, the overall results did not indicate a statistically significant difference between the 2 approaches. Significant differences were noted in 6 of the 9 studies between audiovisual distraction and traditionally managed groups (controls) for behavior. Children who were provided with audiovisual distraction had behavior that was significantly better or showed a significant decrease in disruptive behavior compared to children in the control groups. One study showed the group given audiovisual glasses had better behavior than that given an iPad for distraction.

One study found no significant difference in blood pressure between groups using audiovisual distraction and control groups. Two reported on the relationship between blood oxygen saturation, with 1 finding no significant difference between the 2 groups and 1 citing significant differences. With respect to pulse rate, 6 studies reported results. Two indicated a significant reduction in pulse rate for the audiovisual distraction group compared to controls, One reported that average pulse rate was lower when the iPad was used than with the audiovisual glasses.

When the patient's satisfaction was measured, 3 of the 9 studies found a majority of children were satisfied with the results of audiovisual distraction. Among the methods used, video eyewear was preferred over wearing sunglasses. In addition, 3D video glasses or use of an iPad was preferred for future visits.

DISCUSSION

Because dental anxiety is a significant problem among pediatric dental patients, dentists need to find a way to address the

Clinical Significance

Significant differences were found in the levels of anxiety and the measurement tools used to quantify children's anxiety. This makes it difficult to compare results across the 9 studies identified in the search. Although further high-quality research is needed to verify the results obtained, it appears that using audiovisual distraction methods such as video glasses or an iPad that engages the child effectively can allow the dentist to perform needed dental work without having to deal with behaviors caused by dental anxiety.