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Patient Satisfaction After Nonsurgical Root Canal Treatment

To evaluate patient satisfaction and quality of life after primary root canal treatment—as well as the association between the level of clinicians' training and experience on these parameters—Hamasha and Hatiwsh from Jordan University of Science and Technology studied a random sample of 302 patients undergoing root canal treatment. Patients received treatment from either an undergraduate dental student, a graduate dental student or a faculty member and were interviewed before and 2 weeks after completion of root canal treatment. The study utilized the Oral Health Impact Profile (OHIP) questionnaire and 7 semantic differential scales.

Inside this issue:

- Preoperative Ibuprofen And Inferior Alveolar Nerve Block
- Patient Preferences for Treatment of Apical Periodontitis
- Retrospective Evaluation Of Perforation Repairs In Endodontically Treated Teeth

The authors found a noticeable improvement in the quality of life after root canal treatment. Satisfaction with the time required for root canal treatment revealed that patients were significantly more sat-

isfied with the rapid treatment provided by specialist and graduate students than with that provided by undergraduate students ($p < .05$). More than 90% improvement postoperatively was noted for pain, eating and difficulty relaxing.

Satisfaction with root canal treatment was not associated with age, gender or smoking status. Patients with higher incomes were more satisfied with the root canal treatment and felt their treatment was more pleasant than were those with lower incomes ($p < .05$). Patients receiving root canal treatment for their anterior teeth reported a higher rating for semantic differential scores in the items of postoperative aesthetic and time involved compared with that related to treatment of posterior teeth ($p < .05$). On the other hand, satisfaction of chewing ability was higher for posterior teeth compared with that of anterior teeth ($p < .05$).

Adequately tapered root fillings yielded more improvement scores because of better cleaning and shaping, and fewer symptoms. Root canal treatment of teeth with vital pulps, in general, relieved acute symptoms (e.g., pulpitis), thus yielding better outcomes in terms of quality of life. Treatment of teeth in patients exhibiting poor oral health, including gingivitis or missing teeth, may generate better treatment outcomes and thus produce more improvement in their quality of life.

Conclusion

The impact of root canal treatment on quality of life was significant. More than 90% of patients reported improvement in OHIP after root canal treatment. Using the 7 scales of satisfaction, endodontic specialists generated higher satisfaction rates.

Hamasha AA, Hatiwsh A. *Quality of life and satisfaction of patients after nonsurgical primary root canal treatment provided by undergraduate students, graduate students and endodontic specialists.* Int Endod J 2013;46:1131-1139.

Preoperative Ibuprofen and Inferior Alveolar Nerve Block

Profound anesthesia is the goal when treating patients who present to the dental office with symptoms of irreversible pulpitis. Inferior alveolar nerve block (IANB) is the standard injection technique used to achieve regional anesthesia for mandibular molar treatments. Studies have shown that the IANB technique fails in 30% to 90% of these cases.

To evaluate the effect of preoperative oral ibuprofen on IANB with 2% mepivacaine containing 1:100,000 epinephrine for patients with symptomatic irreversible pulpitis, Noguera-Gonzalez et al from Universidad Autónoma de San Luis

Potosí, Mexico, conducted a prospective, randomized, double-blind, placebo-controlled study.

The study included 2 study groups, each consisting of 25 patients who exhibited symptomatic irreversible pulpitis of a mandibular posterior tooth. The patients presented prolonged moderate or severe pain (>10 seconds) after cold testing and indicated their pain scores on a Heft-Parker visual analog scale. The patients received identically appearing capsules containing either 600 mg ibuprofen or gelatin placebo 1 hour before administration of IANB with 2% mepivacaine containing 1:100,000 epinephrine.

After 15 minutes, the anesthetic blockade was assessed by a 3-step examination (lip numbness, positive/negative response to cold testing and clinical discomfort during endodontic access). IANB success was defined as the absence of pain during any of these evaluations.

After IANB, all the patients reported lip numbness. Statistically significant differences were measured between the ibuprofen and placebo ($p < .05$); the IANB success rates were 72% (18/25) in the ibuprofen group and 36% (9/25) in the placebo group.

Table 1 indicates the pre- and postoperative pain in both treatment groups. At 24 hours, only 4 patients had moderate-to-severe pain (1 in the ibuprofen group and 3 in the placebo group). At 48 hours, no

patients reported pain. No patient reported adverse effects or flare-ups from ibuprofen or placebo.

The results of this study allow for the following hypotheses:

- Selection of mepivacaine over lidocaine may achieve superior levels of anesthesia during inflammatory conditions, such as irreversible pulpitis, especially when the expression of tetrodotoxin-resistant sodium channels is up-regulated.
- Premedication with ibuprofen plays an important role in controlling the expression of prostaglandin E₂ in peripheral and central tissues, where overexpression is observed during painful dental inflammation. This factor might contribute to improved anesthetic blockade during painful clinical conditions.
- Premedication with ibuprofen may indirectly enhance the effect of mepivacaine by reducing the expression of tetrodotoxin-resistant sodium channels.

Conclusion

Preoperative oral administration of ibuprofen significantly improved the efficacy of mepivacaine IANB in patients with symptomatic irreversible pulpitis.

Noguera-Gonzalez D, Cerdá-Cristerna BI, Chavarria-Bolaños D, et al. *Efficacy of preoperative ibuprofen on the success of inferior alveolar nerve block in patients with symptomatic irreversible pulpitis: a randomized clinical trial.* Int Endod J 2013;46:1056-1062.

Table 1. Pre- and postoperative pain between groups

Group	Preoperative pain (%)		24-hour postoperative pain (%)		
	Moderate	Severe	Moderate	Severe	No pain
Placebo	16/25 (64)	9/25 (36)	2/25 (8)	1/25 (4)	22/25 (88)
Ibuprofen	13/25 (52)	12/25 (48)	1/25 (4)	None	24/25 (96)

Patient Preferences For Treatment of Apical Periodontitis

Apical periodontitis (AP) is a prevalent disease that represents a host response to the infection of the root canal systems of the affected teeth. The tooth with AP can be treated with root canal treatment (RCT) with the intent of retaining the affected tooth, or be extracted. If the infected tooth is extracted, the space can be left edentulous or subsequently restored with a removable or fixed bridge, or an implant-supported crown (ISC).

Dentists' preferences notwithstanding, the important ethical principle of patient autonomy suggests that patients' values should play a substantial role in clinical decisions. It appears that information on patients' thought processes and preferences for the management of teeth with AP is lacking. Thus, Azarpazhooh et al from the University of Toronto, Ontario, explored patient preferences for management of a tooth affected by AP, when considering its retention via RCT vs its extraction.

The study used a cross-sectional mail-out survey. The sampling frame randomly selected 800 patients who had previously been treated in the graduate endodontics, periodontics or prosthodontics clinics ($n = 200$ /clinic), or who were scheduled to receive RCT or ISC ($n = 200$). This was complemented by a convenience sample of patients in 10 community practices in Toronto ($n = 200$). Participants were asked to select their general preference for anterior and posterior teeth with AP between

Table 2. Treatment preferences

Preference question	n	%
General preference questions	Saving an anterior tooth vs extraction: If you develop an ache in a FRONT tooth, would you prefer to treat the tooth and retain it or to pull it out?	
	Treat and retain it	413 97.2
	Pull it out	12 2.8
General preference questions	Saving a posterior tooth vs extraction: If you develop an ache in a BACK tooth, would you prefer to treat the tooth and retain it or to pull it out?	
	Treat and retain it	381 89.6
	Pull it out	44 10.4
Specific preference questions	Saving an anterior tooth via RCT vs extraction: If you develop an ache in a FRONT tooth, would you prefer to treat the tooth and retain it or to pull it out?	
	RCT and restoration	399 93.7
	Pull it out	27 6.3
Specific preference questions	Saving a posterior tooth via RCT vs extraction: If your dentist said this aching BACK tooth would have to receive RCT and restoration to be retained or be extracted, what would you prefer?	
	RCT and restoration	356 83.8
	Pull it out	69 16.2

saving the tooth or extraction, and their specific preference for tooth retention via RCT or extraction.

Responses to the 4 preference questions are summarized in Table 2. Participants' specific preference for tooth retention via RCT was slightly but significantly lower than their general preference (anterior tooth, 93.7% vs 97.2%; posterior tooth, 83.8% vs 89.6%; $p < .005$). Higher annual income, previous RCT, functional dentition, good/excellent self-rated oral health and regular dental visits were associated with higher preferences for tooth retention in response to different questions.

Conclusion

Within the limitations of this survey study, the responses of participants reflected a higher value for reten-

tion of an anterior than a posterior tooth affected by AP. One enabling factor (higher annual income), several need factors (previous RCT, functional dentition and good/excellent self-rated oral health) and one dental health behavior factor (regular dental visits) were associated with higher preferences for tooth retention in response to different questions, but none of the predisposing factors appeared to have such impact. When RCT and extraction are viable options, patients should be advised about the treatment options in an impartial manner and encouraged to communicate their individual preferences.

Azarpazhooh A, Dao T, Figueiredo R, et al. A survey of patients' preferences for the treatment of teeth with apical periodontitis. *J Endod* 2013;39:1534-1541.

Retrospective Evaluation of Perforation Repairs In Endodontically Treated Teeth

Perforations are unfavorable iatrogenic complications that may occur during endodontic treatment or post-space preparation. Such events have been shown to occur in 2% to 12% of all endodontically treated teeth.

The factors that may contribute to coronal perforations include

- pulp chamber calcifications
- unfavorable crown-root angulations
- excessive removal of coronal dentin
- oversized post-space preparation
- poorly angled post-space preparation

Factors that may contribute to mid-root and apical perforations include

- excessive flaring of coronal canal
- overzealous instrumentation of curved canals
- attempted negotiation of blocked, transported or ledged canals

Perforations may lead to breakdown of the periodontium, resulting in alveolar bone loss and pocket formation. Previous studies have shown that teeth subjected to perforations have success rates of 54% to 86%. However, most previously reported studies have had a small sample size and relatively short-term follow-up periods.

Pontius et al from the University of Marburg, Germany, evaluated the healing outcome of perfora-

tion repairs (70 perforation repairs, 69 patients) performed by 6 endodontic specialists in 6 private practices between 1998 and 2010 using a non-surgical or combined nonsurgical/surgical approach. Treatments were performed with the aid of a dental operating microscope.

Recalls of ≥ 6 months were obtained on 49 patients (50 teeth). Two calibrated observers evaluated the radiographic results on recalls up to 9.7 years, with a mean of 37 months. Pre-, intra- and postoperative data were evaluated with respect to treatment outcomes and possible prognostic factors.

Successful outcomes were defined as follows:

- no indication of apical periodontitis
- no radiolucency adjacent to the perforation site
- no continuing root resorption
- absence of clinical signs and symptoms
- no loss of function

Forty-seven of 50 teeth (94%) had no clinical symptoms and were rated "functional." The statistical evaluation identified significant differences for the location of the perforation, preoperative radiographic coronal status and gender. The location of the perforation was found to be a significant prognostic factor for success ($p = .03$).

Each of the failed cases exhibited perforations at or close to the level of the osseous crest. Additionally, teeth with coronal restorations that were rated "unacceptable" before intervention were associated with a higher failure rate ($p = .02$). When

combining radiographic and clinical findings, 45 of 50 teeth (90%) were rated as successful.

Conclusion

This retrospective study of 50 cases produced a success rate of 90% from a collection of perforation repairs performed in 6 different practices. Within the limits of this investigation, the location of the perforation, the coronal status of the restoration and the gender of the patient were factors that significantly affected the outcome. However, the high success rate of the perforation repairs must be viewed with caution because 40% of these teeth had recall periods of < 2 years.

Pontius V, Pontius O, Braun A, et al. Retrospective evaluation of perforation repairs in 6 private practices. *J Endod* 2013;39:1346-1358.

In the next issue:

- Dentin conditioning with intracanal medicaments
- Clinical outcomes of endodontic microsurgery
- Multidisciplinary treatments

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