A Survey of Management Strategies for Noncarious Cervical Lesions

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Both causation and management of noncarious cervical lesions (NCCLs) (abfractions, wedge-shaped defects, stress-induced cervical lesions, and cervical erosion) remain debatable. A survey of clinicians' perceptions was therefore conducted at a recent professional meeting to determine optimal approaches to NCCL management. Examples of lesions differing in depth (1, 2, and 3 mm) were presented as being either sensitive or nonsensitive, and participants recorded their responses to the presented individual scenarios. This report provides information regarding correlations between increases in lesion depth, lesion sensitivity, and professionals' willingness to restore them. It was also noted that decisions to ensure mechanical retention positively influenced estimates for restoration longevity. *Int J Prosthodont 2014;27:87–90. doi: 10.11607/ijp.3585*

The loss of cervical tooth structure in the absence of caries has been called abfraction,[1] a wedge-shaped defect,[2] a stress-induced cervical lesion,[3] cervical erosion,[3] and a noncarious cervical lesion (NCCL).[4] Such lesions were thought to be attributed to oral hygiene practices,[5] chemical erosion,[6] and occlusal forces.[1–3,7–11] The idea has been brought forth that these lesions may have multifactorial etiology[6,12,13]; hence, the convenient term NCCL has been widely adopted.[6,8,10,12,14] NCCLs demonstrate age-dependent increases in size and number and tend to be found more often on buccal/facial surfaces.[15] The lesions provide a convenient way to test the clinical performance of adhesive restorative materials and they also appear to benefit from mechanical retention. Heintze et al's recent meta-analysis[16] suggested that a mean of 10% of such restorations were lost after 3 years of clinical service. Dislodgement and marginal discoloration were also recorded as shortcomings, although very little secondary caries was recorded.[15] Preparing the lesion with a bur prior to composite resin placement appeared to improve restoration retention over time,[15,17,18] while preparation beveling and the type of isolation used (rubber dam vs cotton roll) had no significant effect.[15]

The purpose of this report was to survey a selected group of clinicians to determine their approach to the management of NCCLs.

Materials and Methods

Attendees at a spring meeting of the Greater New York Academy of Prosthodontics (GNYAP) participated in a survey designed to quantify collective perceptions regarding NCCL management. The participants were a mix of general dental practitioners and prosthodontic specialists of varying experience and ages. Digital images of different and specially selected NCCLs were projected: 1-, 2-, and 3-mm deep cervical lesions with and without sensitivity symptoms, followed by a standardized set of posed questions (choice of monitoring, sealing, or restoring) for each of the six resultant scenarios. In addition, audience members were asked if the age of the patient would affect the treatment decision, if the tooth's anterior location was an esthetic concern and if this location would change the outcome, if there was a need for placement of mechanical retention, and what effect a restoration might have on progression of the lesion. Finally, the restoration's presumed longevity (1 to 3 years, 4 to 6 years, or more than 6 years) was also requested. All but the last of the follow-up questions were yes or no answers. Responses were received using a wireless remote-based electronic survey system (Turning Technologies). The group of respondents (n = 108) was composed of 50% GNYAP Fellows (54), 38% prosthodontic residents (41), and 12% guest clinicians (13).

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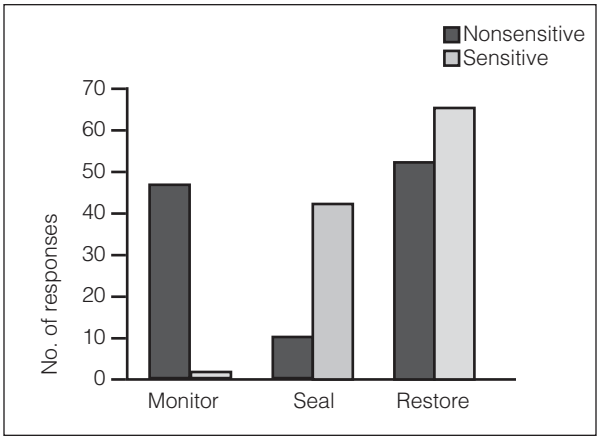

Fig 1 Responses for a 1-mm-deep lesion.

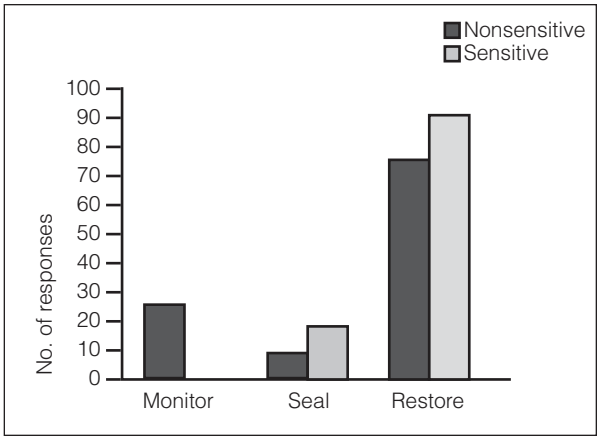

Fig 2 Responses for a 2-mm-deep lesion.

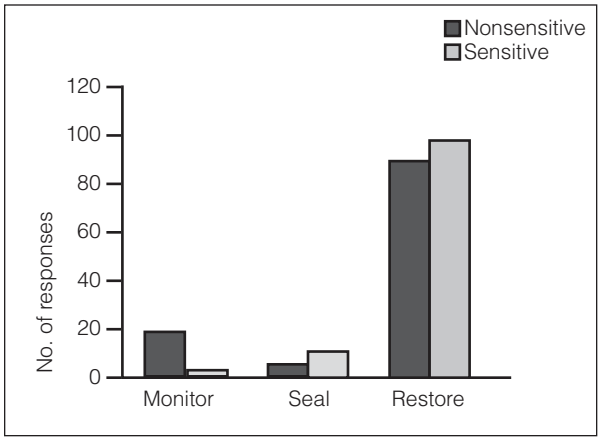

Fig 3 Responses for a 3-mm-deep lesion.

Table 1 Results of Questions 8 through 12

Question		Response
8	Would the age of the patient affect your decision?	Yes: 54 (52%) No: 50 (48%)
9	If the tooth was sensitive and an esthetic concern, would you change your treatment?	Yes: 79 (76.7%) No: 24 (23.3%)
10	If you chose to restore, would you place mechanical retention?	Yes: 64 (60%) No: 42 (40%)
11	Do you think restoring an NCCL will prevent or slow progression?	Yes: 66 (59.5%) No: 45 (40.5%)
12	How long do you think the restoration would last?	1–3 y: 44 (40%) 4–6 y: 49 (45%) > 6 y: 16 (15%)

Statistical analysis was completed using Pearson chi-square and contingency coefficients.

Results

For the nonsensitive 1-mm-deep lesion, 48.2% of clinicians would restore, 46.2% would monitor, and 9.3% would seal the lesion. For the sensitive 1-mm-deep lesion, 60% would restore, 1% would monitor, and 38.9% would seal the lesion (Fig 1). For the nonsensitive 2-mm-deep lesion, 70.4% would restore, 23.2% would monitor, and 6.5% would seal the lesion. If that same lesion was sensitive, 85% would restore, 0% would monitor, and 15% would seal the lesion (Fig 2). For nonsensitive 3-mm-deep lesion, 85% would restore, 17% would monitor, and 2.7% would seal the lesion. If the same lesion was sensitive, 91% would restore, 1% would monitor, and 8.3% would seal the lesion (Fig 3).

The additional five questions elicited the responses reported in Table 1.

Chi-square (χ^2), contingency, and Pearson coefficient analyses were performed on selected questions using data from only the attendant fellows subgroup. The authors felt this would represent more time-dependent clinical experience. As the lesion depth increased, the participants' willingness to place a restoration also increased ($\chi^2 = 49.14$; $P < .0001$). This trend was also true when the lesion was deeper and the tooth was sensitive ($\chi^2 = 20.71$; $P < .0004$). These findings were independent of participant status between the fellows and students/residents, but there were insufficient numbers to determine if guest participants were significantly different from the others. The question "If you chose to restore, would you place mechanical retention?" (Fig 4) was cross-referenced with the question "How long do you think the restoration would last?" (Fig 5). Chi-square analysis revealed a significant correlation between placing mechanical retention and projected longevity ($\chi^2 = 13.56$; $P < .001$, contingency coefficient = 0.34).

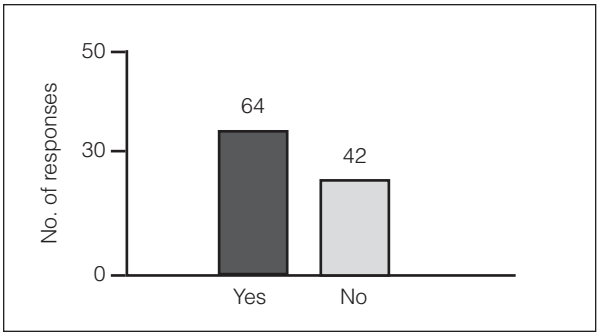

Fig 4 Response to the question: If you chose to restore, would you place mechanical retention?

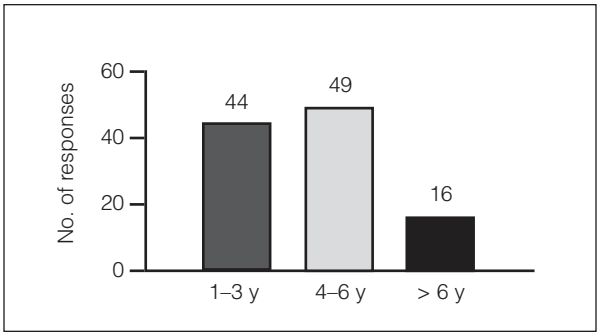

Fig 5 Response to the question: How long do you think the restoration would last?

Discussion

The GNYAP's spring meeting is attended by fellowship members, residents from local graduate programs, and a small group of guests consisting mainly of the invited speakers. The members are older and have more clinical experience than the students/residents.

Unsurprisingly, the participants were more likely to prescribe a restoration for deeper lesions. In addition, when lesions were sensitive and as lesion severity increased, participants were more likely to restore them. Despite the difference in age and experience, there was no significant difference in treatment decisions between the members and students/residents. This may be due to the fact that many members of the GNYAP organization are also faculty members from the graduate programs represented, and, therefore, the two groups share a common training pathway.

Once a decision was made to restore an NCCL, different approaches to restoration selection were evident. When placing direct composite resin, 61% said they would use mechanical retention, while others would rely on the adhesive properties of composite resin. This shows some disagreement on what role mechanical retention plays in adhesive restorations. It appears that standards for mechanical retention need to be scientifically ascertained and that clinical studies should also compare performance of restorations with and without mechanical retention. Participants who elected to use mechanical retention believed that such restorations last longer, which suggests that mechanical retention is regarded as positively correlated with restoration longevity. It appears that clinicians restore NCCLs to prevent propagation of the lesion, reduce sensitivity when present, and improve esthetics. The latter two reasons are patient driven while the former is clinician driven. Clinicians are also inclined to provide anecdotal support for the notion that management of an incipient lesion is related to providing a preventive intervention despite the absence of rigorous scientific data to endorse this approach. The questions in this survey focused on restorative treatment decisions and did not include air abrasion, occlusal adjustment, or soft tissue grafting. These treatments may be viable options in the management of these lesions and could also serve as variables in future studies.

Conclusions

This survey sought to gather data regarding management strategies for NCCLs among a selected group of prosthodontists and residents in the specialty. As NCCLs increase in depth, so does the willingness to restore them. When NCCLs are sensitive, clinicians were also more likely to restore. Participants who do not use mechanical retention have a lower estimate of restoration longevity.

Acknowledgment

The authors reported no conflicts of interest related to this study.

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Literature Abstract

UK dentists' experience of iatrogenic trigeminal nerve injuries in relation to routine dental procedures: Why, when and how often?

Authors surveyed the experience of a group of United Kingdom (UK) clinicians on local anesthetic (LA)-related trigeminal nerve injuries (TNIs). The clinicians were sampled from those who attended 12 UK study days. A total of 79% of attendees completed a questionnaire (n = 415). The clinicians had a mean 19 years of clinical experience. Among them were general dental practitioners (GDPs) (n = 290; 64%) and oral surgery specialists (OS) (n = 125; 36%). Authors estimated the incidence of TNIs for the UK general dental practice workforce to be 3,770 TNIs per year or 0.13 TNI per clinician per year. The incidence of TNIs increased for OS to 0.39 TNI per specialist per year. A majority of TNIs reported by GDP and OS were temporary (68% or 61%, respectively). LA-related injuries were most prevalent with GDPs while TNIs associated with third molar surgery were more common with OS. Authors suggested that the results indicated the incidence of LA-related nerve injuries and the frequency of permanent injuries higher than previously thought. They suggested that clinicians consider using high concentration buccal infiltrations to replace mandibular block anesthesia. Patients should also report any altered sensation that persisted for more than 48 hours.

Renton T, Janjua H, Gallagher JE, Dalgleish M, Yilmaz Z. *Brit Dent J* 2013; 214:633–642. **References:** 44. **Reprints:** Professor Tara Renton, Department Oral Surgery, Kings Health Parners Dental Institute, Kings College Hospital, Denmark Hill Campus, Bessemer Road, London, SE5 9RS. **Email:** Tara.renton@kcl.ac.uk—*John Chai, Evanston, Illinois, USA*