

Knowledge, attitude, and practice survey on isolation techniques and its importance in restoring non-carious cervical lesions among general practitioners in Chennai

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ABSTRACT

The aim of this study is to assess the knowledge about different methods of isolation available, attitude toward isolation, and its importance in restoring non-carious cervical lesions (NCCLs) in their clinical practice, among general practitioners in Chennai. This study was a questionnaire-based survey of dentists in Chennai district, Tamil Nadu. The self-administered questionnaire contained 10 close-ended questions with multiple choice options. The data collected included demographical data's along with different aspects of restoring NCCLs. Majority of the respondents were not aware of different types of isolation available for restoring non-carious lesions and its importance in the long-term success of the restoration. Knowledge about proper methods of isolation in restoring NCCLs should be imparted to general practitioners, and awareness and attitude should be created for implying them in their day-to-day clinical practice.

Keywords: Non-carious lesions, restoration, isolation, awareness survey

Introduction

Non-carious cervical lesions (NCCLs) are defined as the loss of tooth structure at the cemento-enamel junction, which is unrelated to dental caries.^[1] Grippo put forward a classification of hard tissue lesions of teeth. He defined four categories of tooth wear as follows - attrition, abrasion, corrosion, and abfraction,^[2] and NCCLs are a condition with multifactorial etiology.^[3-6] When considering the long-term health of dentition, NCCLs are becoming an increasingly important factor. These lesions often present diagnostic and restorative challenges for the dental profession.^[7] These lesions can affect tooth sensitivity, plaque retention, caries incidence, structural integrity, and pulp vitality, and they present unique challenges for successful restoration.^[4]

Due to the consequences of the unclear etiology and diagnosis, NCCLs present a confused approach to clinical management. The options considered for treating NCCLs are - nothing, restoration, and restoration with occlusal adjustment. Once the restorative treatment is planned, the dentists must analyze the different causes and aspects and choose the best treatment to be employed. Challenges involve each step of the restoration process, including isolation, adhesion, insertion technique, and finishing and polishing.^[8,9]

One of the important factors for successful restoration is isolation. Problems with restoring NCCLs start with difficulty in obtaining moisture control and gaining access to subgingival margins.^[10,11] The exudation of gingival fluid is one of the challenges involved in adhesion of cervical region, which is already impaired by other factors (such as the absence of enamel in the gingival wall of the lesion and the characteristics of the dentin such as sclerosis). Rubber dam clamps, gingival retraction cords, and periodontal surgery are methods that are commonly employed to retract and control the gingival tissues, and thus, facilitate access and also control moisture while restoring NCCLs.^[9]

It is evident from the literature that there are many techniques and materials available for isolation in restoring NCCLs. Henceforth, this survey was undertaken to assess the existing knowledge of general

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practitioners in Chennai and their attitude and practice toward isolation techniques in restoring NCCLs.

Materials and Methods

The questionnaire was designed for dental practitioners, and a cross-sectional survey was carried out among 100 randomly selected dentists in Chennai district, Tamil Nadu, India Table 1. Data collection was done, and the results were analyzed.

Results

Results were obtained from all the 100 general practitioners. The responses of the survey are mentioned in Table 2.

Discussion

Dental restorations seem to serve both the purpose of function as well as esthetics in modern dentistry. Therefore, the proper handling of the material and adequate isolation is important in the long-term success of the restoration. Contaminants such as saliva, blood, and sulcular fluid seem to influence the restoration and require proper isolation technique.^[12,13]

Rubber dam is one of the most commonly employed methods for performing isolation during restorative procedures and endodontic

treatment.^[14-16] With the available literature, it can be suggested that most of the dentists do not perform rubber dam isolation because of disadvantages such as technical difficulty and patient discomfort.^[14-17]

Rubber dam isolation should be used whenever possible. However, in regard to NCCLs, intrinsic anatomical and morphological characteristics of the cervical region create limitations in the placement of the rubber dam and clamp.^[11] Proper isolation is very difficult, sometimes impossible, when lesions extend proximally or under the gingiva. Sometimes, part of the structure cannot be isolated, and rubber dam promotes restorative material accumulation. Access is also limited, causing problems related to insertion of the restorative material.^[9] Another disadvantage of rubber dam is that it often seems to affect the health of the periodontium to a greater extent.^[9] The occurrence of gingival abscess was already reported due to the retention of the rubber dam into the gingival sulcus.^[18,19] When adequate rubber dam isolation is not possible, other isolation methods has to be employed.

The insertion of non-impregnated retraction cords can help in moisture control.^[20] Cotton roll/gingival retraction cord is one of the commonly employed methods for isolation in NCCLs lesion, but this retraction cord is also associated with gingival damage to a greater extent.^[20] Therefore, the use of alternative techniques of using retraction pastes was considered which could be less damaging

Table 1: Questionnaires in the survey

Questions	Answer options
How often do you encounter NCCLs in your clinical practice?	Very often/occasionally/less common/never
Most of the NCCLs, you encounter are located?	Supra gingivally/equigingivally/subgingivally/not sure
Do you encounter difficulties in restoring NCCLs?	Yes/no
If yes, what problems do you encounter?	Isolation and soft tissue management/insertion of restorative materials and contouring/finishing and polishing/all the above
Do you think isolation is important in restoring NCCLs?	Yes/no
If yes, why do you think it is important?	Moisture contamination prevented, henceforth, the quality of restoration is enhanced, provide better accessibility, visibility to operative field, and help retracting the gingival/infection control/all the above
Do you isolate your operative field in restoring NCCLs?	Yes/no
If yes, how do you isolate your operative field in restoring NCCLs?	Rubber dam/cotton rolls and saliva ejector/cotton rolls and gingival retraction cords/any other, please specify
If No, why do not you perform isolation in restoring NCCLs?	Difficulty in performing Rubber dam isolation/time consuming/discomfort to the patient/all the above
Are you aware of specialized cervical retainers available for restoring NCCLs?	Yes/no
By providing better accessibility and visualization to cervical margins in restoring NCCLs, do you think the quality of restoration is enhanced?	Yes/no
If yes, why?	Easy contouring and finishing of the restoration/better marginal adaptation of the restoration/prevents periodontal problems and maintains gingival health/all the above
Do you think gingival retraction provides better accessibility and visualization to cervical margins in restoring NCCLs?	Yes/no/not sure
Do you retract the gingiva, while restoring NCCLs?	Yes/no
If yes, how do you perform gingival retraction in restoring NCCLs?	Gingival retraction cords/retraction cord impregnated with astringents/hemostatics/any other method
Other than gingival retraction cord, are you aware of any of the gingival retraction methods mentioned below?	Magic foam cord/Expasyl paste/RaceGel/all the above
Do you think these gingival retraction techniques can be employed in restoring NCCLs?	Yes/no
If yes, why do you think these newer gingival retraction techniques can be used?	Enhanced patient and operator's convenience/improves the quality of restoration/preserves periodontal health/all the above/any other, please specify

Table 2: Percentage of response to the questionnaire

Questions	Answer options	Percentage of response (%)
How often do you encounter NCCLs in your clinical practice?	Very often	66
	Occasionally	20
	Less common	12
	Never	2
Most of the NCCLs, you encounter are located	Supragingivally	44
	Equigingivally	39
	Subgingivally	11
	Not sure	6
Do you encounter difficulties in restoring NCCLs	Yes	87
	No	13
If yes, what problems do you encounter?	Isolation and soft tissue management	41
	Insertion of restorative materials and contouring	24
	Finishing and polishing	15
	All the above	20
Do you think isolation is important in restoring NCCLs?	Yes	76
	No	20
	Not sure	4
If yes, why do you think it is important?	Moisture contamination prevented, henceforth, the quality of restoration is enhanced/	54
	Provide better accessibility, visibility to operative field and help retracting the gingiva	10
	Infection control	15
	All the above	21
Do you isolate your operative field in restoring NCCLs?	Yes	76
	No	24
If Yes, how do you isolate your operative field in restoring NCCLs?	Rubber dam	30
	Cotton rolls and saliva ejector	68
	Cotton rolls and gingival retraction cords	2
	Any other, please specify	-
If No, why do not you perform isolation in restoring NCCLs?	Difficulty in performing Rubber dam isolation	35
	Time consuming	21
	Discomfort to the patient	1
	All the above	48
Are you aware of specialized cervical retainers available for restoring NCCLs?	Yes	18
	No	72
By providing better accessibility and visualization to cervical margins in restoring NCCLs, do you think the quality of restoration is enhanced	Yes	29
	No	26
	Not sure	45
If yes, why?	Easy contouring and finishing of the restoration	36
	Better marginal adaptation of the restoration	43
	Prevents periodontal problems and maintains gingival health	10
	All the above	10
Do you think gingival retraction provides better accessibility and visualization to cervical margins in restoring NCCLs?	Yes	65
	No	20
	Not sure	15
Do you retract the gingiva, while restoring NCCLs?	Yes	88
	No	12
If yes, how do you perform gingival retraction in restoring NCCLs	Gingival retraction cords	77
	Retraction cord impregnated with astringents	23
	Hemostatics	-
	Any other method	-
Other than gingival retraction cord, are you aware of any of the gingival retraction methods mentioned below?	Magic foam cord	65
	Expasyl paste	20
	RaceGel	12
	All the above	3
Do you think these gingival retraction techniques can be employed in restoring NCCLs?	Yes	42
	No	34
	Not sure	24

(Contd...)

Table 2: (Continued)

Questions	Answer options	Percentage of response (%)
If yes, why do you think these newer gingival retraction techniques can be used?	Enhanced patient and operator's convenience	36
	Improves the quality of restoration	32
	Preserves periodontal health	10
	All the above	22
	Any other, please specify	-

to the gingiva. These newer gingival displacement methods (Magic Foam cord, Expasyl paste, Stayput, and Racegel) can be used to retract the gingiva in place of conventional retraction methods, which is associated with lesser periodontal damage when compared with the conventional methods.^[21] Another option is a proposed association of Mylar matrix with wood wedges and a photocured gingival barrier.^[9] In any situation, proper isolation is the first step for the success in restoring NCCLs, but it is probably the most underestimated one.

From the survey, it was estimated that majority of the dentists encounter NCCLs in their clinical practice and most of the lesions are located equigingivally or subgingivally. Majority of them found that there is a great difficulty found in isolating non-carious lesions.

Although most of the dentists do not perform isolation, they think that isolation may be important to control moisture, for better visibility and accessibility and for infection control. Isolation is not performed because of its difficulty in the technique employed, discomfort to the patient, and time-consuming. Dentists who performed isolation also used cotton rolls and saliva ejector for restoring NCCLs.

Most of the dentists not aware of specialized cervical retainers available for restoration of NCCLs and they do accept the fact that gingival retraction provides better visibility and accessibility to cervical margins, and the quality of restoration is enhanced, but most of them does not retract the gingival while restoring non-carious lesions and are not aware of newer methods of gingival retraction methods.

Conclusion

From this survey, it is evident that majority of the dentists are not aware of isolation methods for restoring NCCLs and those who are aware also do not imply them in their clinical practice. Henceforth, knowledge about conventional methods of isolation and newer methods of gingival retraction should be imparted.

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