ORIGINAL ARTICLE

SENSITIVITY ASSOCIATED WITH NON CARIOUS CERVICAL LESIONS AND THERE RESTORATIVE TREATMENT

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ABSTRACT

Background: Tooth structure loss can be due to carious or non carious lesions. Non carious lesions are of different type's attrition, abrasion and erosion. They may be symptomatic or asymptomatic and treated accordingly.

Objectives: To assess sensitivity linked to non carious cervical lesions (NCCLs) and there restoration.

Design: Cross sectional study.

Methods: Total 100 patients were examined and information was filled on a questionnaire. In these patients 700 teeth with NCCLs were evaluated. Patients with permanent dentition and symptomatic or asymptomatic NCCLs were included. Patients with primary dentition, cracked enamel, carious lesions, defective restorations, pulpitis, active untreatable periodontal disease, xerostomia, braces or hostiry of bleaching were excluded from the study. Sensitivity was assessed by cold air syringe and recorded by the visual analogue scale (VAS). Data collection was done and analyzed on SPSS version 20. Analysis was done using Spearman's correlation and Mann Whitney test.

Results: Males (73%) had more NCCLs than females (27%). Mean age of patients was 50 years. Majority (75%) of the patients did not have sensitivity (12%) had mild, (10%) moderate and (3%) had severe sensitivity. Majority (55%) of the patients did not get restorative treatment. Rest (45%) opted for restorative treatment, 13% patients opted because of sensitivity and 32% because of esthetic reasons.

Conclusion: NCCLs were found more in males and middle aged patients. Weak positive correlation was found between age and NCCLs. Majority of patients did not have sensitivity or esthetic concerns and did not get restorative treatment.

KEYWORDS: Abrasion, Sensitivity, Dental wear

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INTRODUCTION

Noncarious cervical lesions (NCCLs) are not related to dental caries. These can be caused by abrasion, erosion and abfraction, resulting in tooth surface loss. According to appearance NCCLs can be classified as wedge-shaped, disc-shaped, flattened, irregular, or smooth.[1]

Multiple etiological factors could be involved, some are identifiable because of apparent etiology others are not easily identifiable.[2]

The incidence of non-carious cervical lesions is increasing as teeth are retained longer. It is an important factor to consider in retaining healthy dentition in patients. [3]

These lesions can become sensitive and carious affecting pulp vitality, thus presenting unique challenges for successful restoration.[4, 5, 6] and [7]. The symptoms of sensitivity depend on the amount of dentin exposed to the environment, the amount of reparative or sclerotic dentin formed, and the proximity to the pulp.

Patients get NCCLs restored due to esthetic concerns or sensitivity to protect pulp. The indications for treatment of NCCLs are dentine hypersensitivity, poor aesthetics, food stagnation, and likelihood of pulpal exposure. Their treatment varies considerably between dental surgeons.

When NCCL is painless and esthetics is not affected there is usually no complaint by the patient. Thus non carious cervical lesions may be restored to replace lost tooth tissue, to prevent further damage or for esthetic reasons.

Several treatment options are available for treating non carious cervical lesions but lack of evidence about prognosis of such lesions with or without treatment may be a major reason for variation in dentist's treatment options.[5, 8, 9]

The restorative material used and the skills of the dental surgeon influence the longevity of the restoration. [10]

Non carious cervical lesions may be associated with gingival recession, sensitivity and esthetic complaints. Treatment of NCCLs with gingival recession is challenging for clinicians.[11]. The lesions produced due to brushing are more prominent and deep in the incisor and premolar area than in the molar area.[12]

The author conducted the study to assess sensitivity linked with NCCLs and management of such lesions. Many people have NCCL with different level of sensitivity due to sclerotic dentine deposition or different sensitivity thresholds. That is why it was important to carry out a study in our population and assess sensitivity associated with these lesions and the treatment done to relieve sensitivity.

METHODS

This study was conducted in three months time period. Purposive sampling technique was done to collect data on a questionnaire. Total 100 patients with 700 teeth with NCCLs were examined. Patient's demographics and NCCLs were analyzed. Patients with permanent dentition and symptomatic or asymptomatic NCCLs were included. Patients with primary dentition, cracked enamel, carious lesions, defective restorations, pulpitis, active untreatable periodontal disease, xerostomia, braces or history of bleaching were excluded from the study.

Sensitivity was assessed with cold air from triple syringe and recorded by the visual analogue scale (VAS). Each patient was asked to rate the perception of sensitivity after application of air by dental syringe at 45 to 60 psi, 2 mm away from and perpendicular to the tooth for 3 seconds. Neighboring teeth were isolated by operator's fingers during testing. Patients response was recorded on VAS as 0 = not sensitive, 1-3 = mild, 4-6 = moderate and 7-10 = severe. Data was analyzed on SPSS version 20.0. P-value <0.05 was taken as statistically significant.

RESULTS

In 100 patients with NCCLs, 700 teeth had these lesions. Out of 100 patients 73 were males and 27 were females. Majority (65%, n=65) of patients were middle aged with mean age of 50 years. Teeth most commonly involved with NCCLs were premolars. The most common method for maintaining oral hygiene was brushing with paste. Mostly patients (50%, n=50) used hard brush followed by medium (35%, n=35) and soft (15%, n=15). The type of brush used and NCCLS did not have any significant association (p=0.43). Majority (75%, n=75) of the patients did not have sensitivity, the rest (25%, n=25) had sensitivity. In patients with sensitivity 3% had severe sensitivity, rest 12% had mild and 10% had moderate. Out of 100 patients with NCCLs, 45% patients wanted restorations. 32% of patients wanted restoration for esthetic reason and 13% for sensitivity. Rest 55% did not want treatment as not concerned about esthetics and did not have sensitivity. As shown in Table 1.

Table I: Restoration of NCCLs

Factor	Percent (n)
Restoration	
Restored	55 (50)
Not Restored	45 (55)
Reason for restoration of NCCL	
Esthetics	32 (32)
Sensitivity	13 (13)
Restoration Material	
RMGIC + Composite	13 (13)
Composite	32 (32)

DISCUSSION

Tooth wear could be physiological or pathological, physiological wear occurs throughout life.

Non-carious cervical lesions are relatively common clinical conditions that may require restorative treatment. [13-15]

Mostly middle aged and old people have NCCLs. [14, 16 - 19]. In our study also, we found mostly patients (65%) were older than 40 years and had non carious cervical lesions. This could be because teeth are retained longer in older patients with more exposure to causative factors.

The etiologic factors include corrosive food and drink consumption, inadequate brushing techniques, especially in gingival recession cases and occlusal factors. Gingival recession and bone loss associated with aging can also increase the likelihood of these cervical lesions [20 -22].

The observation that older patients are more at risk of developing NCCLs signifies the importance of preventive measures from an earlier age. Preventive interventions include changes in diet, patient's behavior, brushing technique, use of protective night guards to reduce bruxing and occlusal adjustment. [5, 23, 24]. The preventive measures would also prevent future restorative treatment.

Our findings showed that premolar teeth were more commonly involved, which is consistent with other reports. [5, 12, 14, 16, 20, 25 - 27]. This may be due to their position in the arches, greater occlusal forces and harmful brushing techniques. [14]

There is variation amongst dentists about treatment planning of NCCLs. [12] In our study 45% of patients wanted restorative treatment and that also mostly for esthetic reasons 32% and only 13% for sensitivity. Patients with moderate to severe sensitivity opted for restorative treatment. There is limited longevity of these restorations, due to secondary caries and high rate of dislogement.[28]

Inadequate moisture control, Occlusal loads, quality and adhesion to different dental substrates (enamel and dentin) and mechanical properties of restorative materials are important factors affecting longevity of these restorations. [22 - 24, 29]

According to studies [5, 12, 14] during the selection of restorative materials, low modulus of elasticity, good adhesion to dentin, resistance to wear and ability to endure acid dissolution should be considered. RMGIC has greater longevity as compared to composite due to better mechanical and chemical bond to tooth. Thermal expansion and contraction of RMGIC is less due to which there are less chances of gap occurring at margins and secondary caries.

All of the sensitive restorations were done with sandwich technique with RMGIC and composite. The esthetic restorations were done with composite.

In our study no significant association was found between NCCL and teeth sensitivity. This is in contrast to few studies, [26, 30] the reason for teeth sensitivity is due to dentin exposure at cervical area after enamel loss. NCCL gradually become less sensitive over a period of time due to formation of reparative or sclerotic dentine.[21]

Mostly when the NCCLs are painless and esthetics is not affected, there is no complaint by the patient. Sometimes, these are not completely painless, because the dentin is partially or completely covered by plaque, tartar, or gum. Removal of this coverage followed by the application of stimulus like a delicate air blast, can initiate a pain. Pain and sensitivity are major factors that influence the decision for restorative treatment.

Dentists need to choose the best treatment strategy, which involves problem identification, diagnosis, etiological factor removal or treatment and where necessary restoration. Recognizing and identifying the etiology of NCCLs affects prevention and management of such lesions.

CONCLUSION

Middle aged male patients were mostly involved with NCCLs. Teeth most commonly involved with NCCLs were premolars. Most NCCLs were not sensitive and patients did not want to get them restored. Patients with severe sensitivity or esthetic concern opted for restorative work.

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