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Improvement of Oral Lichenoid Lesions Following Amalgam Filling Removal

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Abstract: The main aim of this study was to determine the effect of amalgam fillings removal on lichenoid reactions remission in Iranian patients. In a randomized before after clinical trial study, nineteen cases with clinical diagnosis of lichenoid reactions and amalgam fillings at the same side were selected. The amalgam fillings, which were next to the lesions, were replaced by composite and the possible improvement of these lesions was evaluated 3 months later. Amalgam fillings were replaced in 19 patients. 3 (16%) revealed complete remission, 8 (42%) showed partial improvement and 8 (42%) showed no improvement. In general, the results of this study showed that replacing amalgam fillings with composite can be used as an effective way for managing oral lichenoid reactions.

Key words: Amalgam filling, composite, filling removal, lichenoid reaction, lesion size, VAS

INTRODUCTION

Oral Lichen planus is a relatively common disease of the oral mucosa that involves the cell-mediated arm of the immune system. According to the studies on different populations, it has a prevalence of about 0.1 to 4% (Lind *et al.*, 1986; Ditrichova *et al.*, 2007). The various terms for oral lichen planus in the literature are oral lichenoid reactions, lichenoid contact lesions and lichenoid contact stomatitis and are used interchangeably, which is confusing. The similarity which exists between oral lichen planus and the lesions caused by reaction to some materials and drugs suggests the use of lichenoid reactions in this study. According to results achieved by earlier studies a relationship between lichenoid reactions and amalgam fillings exists (Ostman *et al.*, 1994; Laeijendecker *et al.*, 2005). Despite the fact that lichenoid reaction often occur after amalgam fillings, it seems necessary to investigate lichenoid lesions improvement as a result of amalgam fillings removal. Furthermore, this study is the first one in Iranian patient with lichenoid reaction.

MATERIALS AND METHODS

This was a before-after study and patients were randomly selected from those who referred to Dental

School, Tehran University of Medical Sciences. Twenty patients with Lichenoid reactions which were next to the amalgam fillings were enrolled in this study during September 2006 to November 2007. All patients had clinically and histologically confirmed diagnosis of OLP by WHO criteria. All participants took part in the study after giving written informed consent according to institutional guideline of ethics committee.

Inclusion criteria's of this study were: amalgam fillings next to the Lichenoid reactions; minimal interval of 3 months between amalgam filling therapy and occurrence of the lesion; not having an autoimmune disease; no use of lichenoid causing drugs in the past 3 months and ;no sign of graft versus host disease.

The longest diameter of lesions was measured by a scaled tongue blade before and 3 months after amalgam fillings removal. After amalgam removal, all cavities were filled with composite. All participants took part in the study after giving written informed consent according to institutional guidelines of ethics committee.

The results of clinical improvement of lesions were assessed based on the following criteria; Having no change after amalgam removal attributed to no improvement; decrease of 5 mm or less in diameter attributed to partial improvement; decrease of more than 5 mm attributed to complete improvement.

The burning sensation of these lesions was determined by VAS (visual analogue scale). Patients were asked to give a number to the burning sensation before and after intervention. This symptom was ranked based on the following criteria; no decrease of burning sensation: no improvement; decreases of less than 5 degrees: partial improvement; decreases of 5 or more than 5 degrees: complete improvement.

In order to avoid further inconvenience, the patient in whom the amalgam fillings removal could endanger the teeth vitality were excluded from the study and if there were more than one filling next to the lesion (e.g., 3 fillings in the lower jaw or 2 in the lower and 3 on the upper arch) they were completely replaced by composite. The interval of 3 months have been chosen because the time needed to reveal the effect of amalgam fillings removal on lichenoid reactions is 2 to 3 months (Wong *et al.*, 2003). The results were analyzed using SPSS11 software.

RESULTS AND DISCUSSION

Among 20 cases, which entered our study, 19 completed the treatment process including replacing amalgam fillings with composite and a 3-month follow up. Patients' Mean age was 45.6 with a minimal age of 21 and maximum age of 62.

The most common sites were buccal (47%), gingiva (26%) tongue (21%) and lip (5%).

Mean interval between lichenoid reactions occurrence and oldest amalgam fillings was 22 months with a minimal range of 3 months and maximum range of 60 months.

Mean size of lesions was 19.37±6.24 mm before intervention and 13±8.52 after intervention, which showed a significant difference between lesion size before and after intervention (p = 0.002). Table 1 demonstrates improvements according to lesions' size.

Mean burning sensation of lesions was 5.26±1.36 before intervention and 2.95±2.17 after intervention, which demonstrated a significant decrease of this symptom after amalgam fillings removal (p = 0.001). Table 2 demonstrates improvement of burning sensation improvement in lesions of studied patients.

Close contact to amalgam fillings causes the raising of lichenoid reactions that are clinically and histologically very similar to lichen planus but the etiology of the first one is well determined. These oral lesions are probably the result of allergic reaction to leaking products and/or plaque accumulation on dental fillings. In this study 19 cases of oral lichen planus like lesions were examined in a period of one and a half year. The treatment plan included replacing amalgam fillings with composite and a

Table 1: Frequency of lesion improvement (size reduction-sign) in studied patients

Lesion size	No. of subjects (%)
Complete improvement	3 (16)
Partial improvement	8 (42)
No improvement	8 (42)

p = 0.002

Table 2: Frequency of burning sensation improvement (symptom) in lesions of studied patients (p = 0.001)

VAS score	No. of subjects (%)
Complete elimination	8 (42)
Partial decrease	4 (21)
No decrease	7 (37)

p = 0.001

3 months follow up. After intervention it was revealed that replacing amalgam fillings with composite results in a significant difference in lesions size reduction (p = 0.002) and improvement of burning sensation (p = 0.001). This completely supports our assumption achieved by years of clinical experience (the occurrence of lichen-planus like lesions next to the amalgam fillings).

In a similar study, in 52 patients with oral lichen planus topographically related to amalgam restorations, other materials replaced the fillings in 18, 16 of whom experienced complete remission of the lesions within 1-12 months. These results are discussed in relation to the results of epicutaneous patch tests for possible allergy to a number of mercury compounds. The term oral lichenoid reaction is suggested to describe these lesions (Lind *et al.*, 1986). The results of the present study are in the same path, as mentioned before in our study 3 cases (16%) showed complete improvement and 8 cases (42%) revealed partial improvement. Although previous studies suggest a follow up period of 2 to 3 months to eliminate lichenoid signs, maybe we could gain more reliable results if the patients were to be monitored for a longer period.

In another study, amalgam fillings were replaced by composite to determine contact allergies in patients with oral lichen planus and to monitor the effect of partial or complete replacement of amalgam fillings following a positive patch test reaction to ammoniated mercury, metallic mercury, or amalgam. In group A (20 patients), the oral lesions were confined to areas in close contact with amalgam fillings. In group B (20 patients), the lesions extended 1 cm beyond the area of contact with amalgam fillings. In group C (20 patients), the oral lesions had no topographic relationship with amalgam fillings. Partial or complete replacement of amalgam fillings was recommended if there was a positive patch test reaction to ammoniated mercury, metallic mercury, or amalgam. Amalgam fillings were replaced in 13 patients of group A, with significant improvement. Dental amalgam was replaced in 8 patients of group B, with significant improvement. In group C, amalgam replacement in

2 patients resulted in improvement in 1 patient. These results were evaluated after 3 months. Contact allergy to mercury compounds is important in the pathogenesis of oral lichen planus, especially if there is close contact with Amalgam fillings and if no concomitant cutaneous lichen planus is present. In cases of positive patch test reactions to mercury compounds, partial or complete replacement of amalgam fillings will lead to a significant improvement in nearly all patients. These results are similar to what we achieved in our study (16% of complete improvement and 42% of partial improvement). In a study conducted by Wong *et al.* (2003) (39Yo) patients had positive patch test findings. 30/33 patch test positive patients had replacement of their amalgam fillings, with 28 (87Yo) patients experiencing improvement of symptoms and signs within 3 months. This confirms that mercury allergy is a factor in the pathogenesis of OLL in some cases. In cases where patch test negative patients improve with amalgam replacement, mercury may be acting as an irritant in the pathogenesis of OLL (Wong and Freeman, 2003).

The purpose of another similar study was to investigate the relationship between amalgam restorations and oral lichen planus. Eighty-one patients with oral lichenoid lesions were characterized clinically and skin patch tested for amalgam or mercury hypersensitivity. Thirty-three of these patients had amalgam fillings in contact with oral lesions replaced and were followed to determine the outcome. Clinically, 2 patient groups were identified: (1) 30 patients with probable amalgam-contact hypersensitivity lesions (ACHLs) and (2) 51 patients with Oral Lichen Planus (OLP) but no clear relationship with amalgam. Amalgam replacement resulted in lesion improvement in 93% of ACHL cases. No such improvement was observed in the OLP cases treated ($p < 0.001$). OLP is a heterogeneous condition within which an ACHL subgroup can be identified. ACHLs, but not other OLP lesions, respond favorably to amalgam replacement. A strong clinical association between lesions and amalgam restorations plus a positive patch test result was a good predictor of lesion improvement on amalgam replacement (Thornhill *et al.*, 2003). As in present study we only chose patients with close contact to amalgam fillings.

The pathogenetic relationship between Oral Lichenoid Reactions (OLR) and dental amalgam fillings is still a matter of controversy. To determine the diagnostic value of patch tests with amalgam and inorganic mercury (INM) and the effect of amalgam removal in OLR associated with amalgam fillings this other study was

performed by DONSCHE A. in this study, amalgam removal led to benefit in 97.1% patients, of whom 29.5% were cured completely. Of all patients with OLR associated with dental amalgam fillings, 97.1% benefited from amalgam removal regardless of patch test results with amalgam or INM (Dunsche *et al.*, 2003). This study shows that the removal of amalgam fillings can be recommended in all patients with symptomatic OLR associated with amalgam fillings. Results of the present study support other studies investigated the causative relation of lichenoid reactions and amalgam fillings.

CONCLUSION

Overall, the results of this study proved that the replacement of dental amalgam fillings with composite could contribute to improvement of sign and symptoms of some OLP patients. Yet, further studies are needed in the field of pathophysiologic procedure of these lesions and their relation to amalgam fillings.

REFERENCES

- Ditrichova, D., S. Kapralova, M. Tichy, V. Ticha and J. Dobesova *et al.*, 2007. Oral lichenoid lesions and allergy to dental material. Biomed. Pap. Med. Fac. Univ. Palacky Olomouc Czech Repub., 151: 333-339.
- Dunsche, A., I. Kastel, H. Terheyden, I.N. Springer, E. Christophers and J. Brasch, 2003. Oral lichenoid reactions associated with amalgam: Improvement after amalgam removal. Br. J. Dermatol., 148: 70-76.
- Laeijendecker, R., S.K. Dekker, P.M. Burger, P.G. Mulder, T. Van Joost and M.H. Neumann, 2005. Oral lichen planus and allergy to dental amalgam restorations. Arch. Dermatol., 141: 1472-1473.
- Lind, P.O., B. Hurlen, T. Lyberg and E. Aas, 1986. Amalgam-related oral lichenoid reaction. Scand. J. Dent. Res., 94: 448-451.
- Ostman, P.O., G. Annerdh and A. Skoglan, 1994. Oral lichen planus lesions in contact with amalgam fillings: A clinical, histologic and immunohistological study. Scand. J. Dent. Res., 102: 172-179.
- Thornhill, M.H., M.N. Pemberton, R.K. Simmons and E.D. Theaker, 2003. Amalgam-contact hypersensitivity lesions and oral lichen planus. Oral Surg. Oral Med. Oral Pathol. Oral Radiol. Endod., 95: 291-299.
- Wong, L. and S. Freeman, 2003. Oral Lichenoid Lesions (OLL) and mercury in amalgam fillings. Contact Dermatitis, 48: 74-79.