

CASE REPORT

Oral Lichenoid Lesions Associated With Amalgam Restorations - Three Case Reports

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ABSTRACT

Introduction: Oral lichenoid lesions (OLL) are clinical and histological contemporaries of the classical oral lichen planus (OLP) that commonly develop due to chronic mucosal contact reactions to amalgam restorations. Their diagnosis is usually based on the direct contact of the affected mucosa with the amalgam restorations, clinical appearance, and lack of migrations. The objective of this article is to present three cases of OLL associated with amalgam restorations.

Cases report: Three clinical cases were diagnosed as OLL as the patients chief complaint was burning sensation in the oral mucosa adjacent to amalgam restorations. The treatment involved replacing the amalgam restorations with composite resin. A complete remission of the painful symptoms as well as complete healing of the lesions was observed within 3 weeks.

Conclusion: Dentists should be aware of OLL occurrence close to amalgam restorations. The replacement of amalgam restorations with non-metallic restorations can result in resolution of OLL in most instances.

Keywords: Dental amalgam, lichenoid lesions, lichen planus, oral mucosa.

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INTRODUCTION

Lichenoid reaction to dental materials has been widely reported. Many studies have documented contact

hypersensitivity to dental materials such as amalgam, resins and casting alloys presenting as lichenoid reactions. Amalgam has been used as a restorative material since 1831. Its positive characteristics include strength, longevity, good marginal adaptation, ease of handling and being cost effective. However, in addition to corrosion and metallic color, the major disadvantage of amalgam is the potential toxicity of mercury for both patients and the environment.¹

The pathognomic relationship between oral lichenoid lesions (OLL) and dental amalgam fillings is still a matter of controversy. Several studies have suggested that when amalgam restorations are in direct contact with the oral mucosa, they may alter the antigenicity of basal keratinocytes by the release of mercury and other metal salts as corrosion products in susceptible individuals and may induce lichenoid lesions.² These OLLs are frequently observed on the tongue, lips, gingiva, and buccal mucosa that are in direct contact with amalgam restorations. They are classified into four types; lesions related to direct contact (OLLC), most commonly associated with amalgam restorations; lesions related to drugs (OLLD); lichenoid lesions in chronic graft versus host disease (cGVHD); and lesions associated with systemic diseases such as lupus erythematosus and oral lichen planus (OLP).³

Oral lichen planus has clinical and histological similarities to OLL but they exist as two separate diseases; OLL is related to direct contact with dental materials and OLP is an autoimmune disorder. Clinically OLP is in most cases bilateral and OLL unilateral. OLL shares the clinical features of OLP and is often presented in number of forms including reticular, erosive, atrophic, plaque type, papular or bullous. Histologically the presence of plasma cells and occasional eosinophils are claimed to be diagnostic for OLL. In relation to their symptomatology, these lesions can vary from 'burning' sensation to severe pain. However, OLL do not migrate and involve only the oral mucosa directly in contact with dental amalgam restorations, which is a differentiating feature

from the true OLP. It is well known that direct contact with metals can induce several dermatoses and thus replacing amalgam with another metal-free material is essential for definitive remission of the associated lesion.⁴

In the present article, we report three cases of OLL caused by direct contact with amalgam restorations, in which all the lesions had undergone clinical remission after replacement of the amalgam by composite resin.

CASE REPORT

Case-1:

A 34 year old woman presented to our institution, complaining of burning sensation and discomfort on right and left buccal mucosa since one month. A detailed history was taken and no relevant history of sensitivity to drugs or associated skin lesions were noted. The clinical intra-oral examination revealed an erythematous area interspersed with white striae of size 4cm x 4cm on right and left buccal mucosa, close to the mandibular molars (Fig-1). Large class I with buccal extension amalgam restoration was present on mandibular left first and second molars and also in the right second molar. The patient gave a history of having those fillings done almost 6 to 7 years back. Besides these areas, the oral mucosa was healthy.

The mucosal lesions were provisionally diagnosed as OLL due to their appearance and location. Patient refused to get patch test done for various reasons. The treatment recommended to the patient was immediate replacement of the amalgam restorations by a composite restoration in the mandibular left first and second molars and in right second molar. The composite restorations were done according to the standard clinical procedure.

After ten days the patient returned for review. She no longer felt the burning sensation in her mouth. Although a complete remission of the intraoral lesions was still not observed, there was reduction in size and severity of the lesion (Fig 2).

Case-2:

A female patient, 59 years of age reported to our institution with burning sensation of the right buccal mucosa of two months duration. There was no other relevant medical history. Intraoral examination revealed presence of a class I buccal extension amalgam restoration on the mandibular right first molar and a metallic (Nickel-chromium) crown on second molar. An erythematous lesion of 6cm x 4cm was found on the buccal mucosa in close proximity to the amalgam filling and the lesion was non scrapable (Fig-3). It was decided to replace the amalgam restoration with a composite resin restoration and follow up the case.

Patients reported after two weeks with relief of symptoms and almost complete clinical healing of the lesion (Fig-4).

Case-3:

A female patient of 45 years age, reported with pain and burning sensation to spicy foods on the left buccal mucosa. No relevant history of associated skin lesions was reported. Intraorally, a large erythematous area with ulceration in the center and surrounded by white striae was observed. A large disto-occlusal amalgam restoration on maxillary left first molar closer to the buccal mucosal lesion was observed (Fig-5). After removal of the offending amalgam restoration, the lesion was completely healed within three weeks (Fig-6).

DISCUSSION

The pathogenic relationship between dental restorative materials causing reactions and oral lichenoid lesions found in these patients was confirmed. Despite the benefits of amalgam fillings, there is growing concern regarding the potential adverse effects arising from exposure to mercury released from set amalgam. Mercury has been shown to accumulate in the oral mucosa, and in some individuals this can cause a chronic lichenoid reaction of oral mucosa adjacent to an amalgam filling. In order for a contact allergic reaction to be established, mercury salts and other metal ions which are leached from amalgam have to penetrate the epithelial lining and bind with the host keratinocyte surface proteins. In susceptible individuals this results in a cell mediated response directed at basal keratinocytes.⁵

An OLL generally represents a type IV hypersensitivity reaction, often called delayed type of hypersensitivity, as the reaction takes a longer period (months to years) to develop. The pathophysiology of type IV hypersensitivity is complex. CD8 lymphocytes + cytotoxic T cells + helper T cells recognize the antigen (metallic element) in a complex with either type 1 or 2 major histocompatibility complex. The antigen presenting cells (macrophages) secrete interleukins which stimulate the proliferation of CD4 + T cells. These activated cells further induce the release of other type 1 cytokines, thus mediating the immune response.⁶

The lesions of OLL resemble those of oral lichen planus (OLP) and it is therefore necessary to exclude likely OLL when making a diagnosis of OLP. OLP is a more widespread condition involving many anatomical sites within the oral cavity (or elsewhere, including skin and genitalia) and distinct from OLL. Both OLP and OLL can be considered potentially

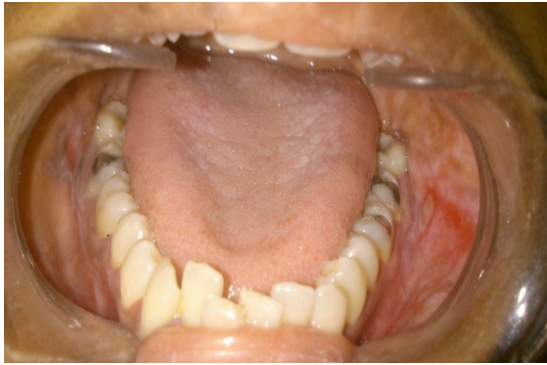


Figure-1: Oral lichenoid lesions on right and left buccal mucosa, found closer to large amalgam restorations.

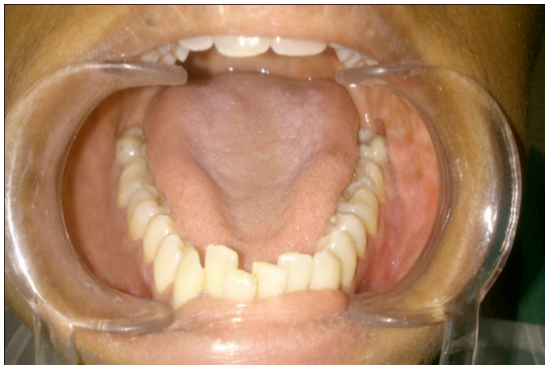


Figure-2: Healing observed ten days after the replacement of amalgam restorations with composite resin.



Figure-3: Severe lichenoid lesion on the buccal mucosa at the time of detection.



Figure 4: Remission of the lesion after replacing amalgam restoration on 46.



Figure-5: Oral lichenoid lesion observed on left buccal mucosa.



Figure-6: Resolution of the lesion after removal of the offending amalgam restoration.

malignant and thus it is important for subsequent management to be able to accurately diagnose each condition.⁷

The prevalence of OLLs among women is approximately three times more than that in men. Typically, the clinical presentation in both conditions can be reticular white patches, papules or plaques with or without erosions or ulceration areas. Diagnosis is facilitated by detailed history and clinical findings. OLL caused by hypersensitivity to amalgam and its constituents typically have a clear anatomical relationship to the dental amalgam fillings, so they are usually unilateral and not symmetrical. They are most commonly seen on buccal mucosa and tongue where the covering lining mucosa comes in contact with the restorations. The gingiva, palate or floor of the mouth being sites further away from the restorations, are rarely affected, and patients almost never have associated cutaneous symptoms. These clinical features help to distinguish OLL from OLP, but it can still be difficult for the clinician to make a clear distinction, if multiple amalgam restorations have been placed.⁸

Patch testing may be useful to identify those patients with susceptible hypersensitivity reactions to amalgam or mercury. The test should be carried out in a special dermatology or oral medicine centre and is done by using commercially available kits which are placed on skin of the back or forearm in wells and

held in place for 48 hours with adhesive tape. The test results are generally read at 48 and 72 hours but evidence has shown that late readings at 10-14 days can capture previously missed positive reactions. A systematic review revealed that there is a limited relationship between a positive patch test result and healing of OLLs after the replacement of amalgam; 90% of patients improved after removing amalgam restorations when the results of patch test were positive and 68% improved when it was negative, which supports the view that patch test has limitations as an indication for replacing amalgam restorations.⁹ Other studies also suggest the removal of amalgam fillings in all patients with symptomatic OLL associated with amalgam fillings because an improvement or healing of OLL can be expected for 97% of patients if no cutaneous LP is present.¹⁰

CONCLUSION

The replacement of amalgam restorations can result in the resolution or improvement of OLL in most instances. The topographic relationship between OLL and the amalgam restoration is a useful prognostic marker.

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