CASE REPORT

**Oral lichenoid reaction in association with amalgam fillings: A case report**

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**Abstract**

Oral lichenoid reactions (OLRs) are Type IV hypersensitivity reactions and most commonly seen in the buccal mucosa in close contact with amalgam restorations. They are often misdiagnosed causing months of pain and discomfort to the patient when they can be simply managed by removal of the offending amalgam restoration and replacing it with an intermediate one. This case aims to highlight one such case of OLR which was completely resolved on replacing amalgam with glass ionomer cement.

**Introduction**

On a daily basis, the oral cavity is exposed to a wide variety of substances, some of which may contain certain components which can cause irritation to the oral mucosa leading to the development of oral lesions. In the field of dentistry, exposure to allergens such as local anesthetics, restorative materials, and drugs such as antibiotics and latex gloves can affect few individuals causing oral lesions/reactions.

Oral lichen planus (OLP) is a chronic inflammatory disease which manifests as a white patch affecting the mucosal surface of the oral cavity. The exact cause is unknown, but it is thought to be the result of an autoimmune process, a cell-mediated reaction leading to damage to basal keratinocytes. Under the microscope, the affected area shows a characteristic change: A band-like, mainly lymphocytic, immunoinflammatory infiltration next to the basement membrane. There is liquefaction degeneration of the basement membrane and destruction of basal cells.

It is now well-documented that other conditions can mimic lichen planus clinically and/or histologically, and this has led to the concept of lichenoid reaction. Since the clinical manifestations and histopathological changes of lichenoid lesions and those for OLP are similar, it is important to distinguish between the two groups of lesions based on their etiology which, in turn, affects their treatment modalities.

Oral lichenoid reaction (OLR) is a Type IV hypersensitivity reaction which is usually delayed and can take days or months or years to develop. The most common dental restorative material to elicit such a chronic mucosal reaction is amalgam. Amalgam has been used as a restorative material for more than 150 years. It is an alloy composed of a mixture of approximately equal parts of liquid mercury and a powder consisting of silver, tin, copper, and other trace metals including zinc.

The OLR occurs mostly due to a hypersensitivity reaction to mercury. Mercury released from amalgam restorations are taken up by oral soft tissues. In susceptible individuals, it causes a reaction either in the form of reticular white patches, papules, plaques, erosions, or ulcerations similar to oral lichen plan.

Following is a case report showing a distinctive OLR due to amalgam contact hypersensitivity.

**Keywords:**
Dental amalgam, lichen planus, Oral lichenoid reaction

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Case Report

A 32-year-old female patient reported to the department of dentistry with a chief complaint of burning sensation on the left buccal mucosa in relation with mandibular first and second molar region for the last 6 months. The patient also complained of an inability to eat spicy food. The patient had no past medical history of any systemic diseases, allergies, hospitalization, or use of medication.

The patient had a history of amalgam fillings done by a private practitioner about 6 months ago. The patient was apparently fine before that and had no similar complaint. The complaint started only after the amalgam fillings had been done.

Extraoral examination shows the absence of any unusual skin lesions. On intraoral examination, the presence of amalgam fillings with respect to 16, 17, 26, 27, 36, 37, and 46 (F.D.I. tooth numbering system) were seen in the oral cavity. A reddish white lesion was seen on the left buccal mucosa in relation to 36, 37 region [Figure 1] as well as on the attached gingival in relation to 36 [Figure 2]. A similar but smaller patch was seen on the right buccal mucosa in relation to 46. All intraoral mucosal lesions were seen in adjacent to the amalgam restorations. No other mucosal sites were involved.

The patient was initially treated by a general medical practitioner with local steroid application. Following which the patient had temporary relief, however, recurrence of the lesion was seen on stoppage of local steroid application.

At this stage, a cutaneous patch test was done to detect contact hypersensitivity. The patch test was performed by the department of dermatology. It was done on the upper back region using a commercially available kit and held in place for 48 h by an adhesive tape. The patient reported back after 48 h with a complaint of itching on the mix patch [Alloy + Hg]. The patches were removed and examined. A slight erythematous reaction was noted on the mix patch area. Although a positive patch test may facilitate diagnosis of OLL caused by a hypersensitivity reaction, it is not 100% reliable as false positives may occur.

For confirmation of this diagnosis, an incisional biopsy of the lesion was taken and sent for histopathological testing. The histopathological section showed the presence of an atrophic, parakeratinized stratified squamous epithelium with a dense, band-like inflammatory cell infiltrate in the underlying connective tissue with the presence of liquefaction degeneration of the basal epithelium layer. The presence of eosinophilic cell infiltrate seen in the subepithelial connective tissue [Figure 3]. Based on the clinical representation, history, patch test result, and histopathological results, a final diagnosis of OLR was given which was confirmed by the department of dermatology wherein it was stated the most probable cause was the amalgam fillings as assumed by us too.

On receiving confirmation, the amalgam fillings were removed and temporary restorations of zinc oxide eugenol were done. The patient showed immediate improvement with significant relief from pain from the 3rd day onward after removing the amalgam fillings. Burning sensation reduced and the lesions
started healing and gradually decreasing in size [Figure 2]. On noting definitive improvement in soft tissue lesion [Figure 4], the temporary fillings were replaced using glass ionomer cement.

The patient was asked to follow-up with us periodically for the last 10 months and has shown full recovery with completely healed lesions and no recurrence [Figure 5].

Discussion

The term “lichenoid tissue reaction” was first coined by Pinkus (1973) to describe the histological pattern featuring either atrophic or orthokeratinized stratified squamous epithelium with a dense lymphoplasmacytic infiltrate in the superficial lamina.[7]

OLRs are known to be caused by a hypersensitivity to amalgam restorations in close contact with the oral soft tissue, usually buccal mucosa or tongue.[2] Mercury salts leached from the amalgam fillings penetrate the epithelial lining of the oral mucosa, directly bind to the basal keratinocytes and accumulate in the adjacent mucosa. In susceptible individuals, it causes a reaction either in the form of reticular white patches, papules, plaques, erosions, or ulcerations which is similar to that found in lichen planus; hence, the term “Lichenoid.” Although the lesions resemble those of OLP, the two conditions are distinct.[8]

OLP is a more widespread condition involving many anatomical sites within the oral cavity (or elsewhere including the skin and genitalia) as opposed to OLR caused by hypersensitivity to amalgam which is usually in close contact with the amalgam restoration usually the buccal mucosa or tongue.[2] The gingiva, palate, and floor of the mouth are usually not affected and the patients never have cutaneous symptoms.

OLP and OLR are common inflammatory diseases that demonstrate similar clinical characteristics. OLP is a chronic relapsing condition of unknown etiology for which there is no cure at present as a result treatment is largely palliative and directed at suppressing both the disease activity and the occurrence of painful erosive lesions.[9] By contrast, the causative agent of OLR (mercury or amalgam alloy) is known.

It is important to distinguish between these two lesions as their management and clinical outcome are completely different. A diagnosis of OLR should be based on a synthesis of all available information including patient history, clinical examination, histopathology, and patient management. Patch testing may be routine diagnostic tool although the interpretation of the results can be challenged.[10]

For the majority of patients, OLR lesions resolve completely within 3–6 months when the offending amalgam restoration is replaced with other materials or when the dentist prevents mucosal contact with restorations.[2] This is distinctly seen in our case. The patient had temporary relief on local steroid applications which recurred on stoppage of steroids. However, the patient had instant relief after the amalgam restorations were removed (within 3 days). When the amalgam restorations are removed, they should be done using a rubber dam, abundant irrigation, and high aspiration volume to diminish exposure to the material.

Conclusion

Given the high prevalence of amalgam restorations and the low number of reported adverse effects, amalgam is clearly a safe restorative material and is in use for more than 150 years. In a small number of susceptible individuals, however, OLR may develop on areas of the oral mucosa that is in direct contact with amalgam fillings. However, these lesions are rare.

Clinical significance

When OLR s occur, they can be eliminated by removing the amalgam restorations and substituting it for another material. These, oral lichenoid lesions, usually heal up after removal of the stimuli (amalgam) and this serves as a confirmatory test for OLR.
References
