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Oral Lichenoid Lsions Associated With Amalgam Restorations and Its Management: A Case Report

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Abstract

In the last decade, there have been an increasing number of reports of oral lichenoid lesions secondary to allergy to mercury in amalgam fillings. These oral lichenoid lesions are frequently observed in the tongue, gingiva, and buccal mucosa that are in direct contact with amalgam restorations. This paper describes a case of hypersensitivity reaction on the buccal mucosa associated with the mercury component of dental amalgam restorations in a female patient. Based on the close association of the lesions with the dental amalgam restorations, a provisional diagnosis of a lichenoid reaction to dental amalgam was made and the patient was patch tested. The amalgam restorations were removed under rubber dam isolation with copious irrigation and a high aspiration volume. The amalgam restorations were replaced with an interim restoration of zinc oxide eugenol and were kept on follow up. After 15 days major signs and symptoms were subsided and the cavity was restored with light-cured posterior composite resin. The patient was reviewed after 6 months, and the lesion was resolved. Although oral lichenoid lesions-related conditions present low prevalence in the oral mucosa, they can cause significant discomfort for the patient. Therefore, clinicians should be aware of their occurrence, diagnosis and treatment.

Introduction

Oral lichenoid lesions can be idiopathic or secondary to a variety of causes, including lupus erythematosus (1), graft versus host disease (2), drug hypersensitivity (3) and allergic contact dermatitis from dental materials (4, 5). In the last decade, there have been an increasing number of reports of oral lichenoid lesions secondary to allergy to mercury in amalgam fillings (6-11). These oral lichenoid lesions are frequently observed in the tongue, gingiva, and buccal mucosa that are in direct contact with amalgam restorations (12). Oral Lichenoid Reactions affect oral mucosa which is in direct contact with the dental amalgam restorations causes a delayed, type IV, cell-mediated immune response to mercury or some other metals like gold, palladium, nickel, chrome, and cobalt may induce Oral Lichenoid Reactions (13, 14).

The clinical features associated with oral lichenoid lesions may vary considerably, varying from white linear plaques, associated or not with erythema, to homogeneous white plaques, or ulcerations (15). In addition, more than one form can also be seen (16). This paper describes a case of hypersensitivity reaction on the buccal mucosa associated with the mercury component of dental amalgam restorations in mandibular left and right quadrants in a female patient.

Case Report

A 34-year-old female patient was referred to our clinic with a chief complaint of soreness affecting both the left and right buccal mucosa, which was worsened by consuming spicy foods. She had received amalgam restorations 4 years back, and she first noticed symptoms 5 months before she presented to the clinic, with the symptoms becoming progressively worse with time. The patient's medical history was non-contributory and she was not taking any medication and had no known allergies. Intraoral examination revealed the presence of a reticular, atrophic, lightly erythematous lesion affecting the buccal mucosa of both the left and right mandibular molar region. The lesions were in direct contact with the dental amalgam restoration (figure 1). The remainder of the mucosa was normal. Based on the close association of the lesions with the dental amalgam restorations, a provisional diagnosis of a lichenoid reaction to dental amalgam was made and the patient was patch tested using patch test allergens and a mix patch [alloy + Hg] was placed on the right fore arm and held in place for 2-3 days with a tape. Patient returned to the clinic with the complaint of itching on the mix patch [alloy+ hg] after 3 days. Patch was removed and examination was done. A slight erythematous reaction was noticed on mix patch area. Local anesthesia of 2%lidocaine with 1: 100,000 epinephrine was given to the patient. The amalgam restorations were removed under rubber dam isolation with copious irrigation and a high aspiration volume. The amalgam restorations of 37, 38 and 47 were replaced with an interim restoration of zinc oxide eugenol (DPI) and were kept on follow up. After 15 days major signs and symptoms were subsided and the cavity was restored with light-cured posterior composite resin. The patient was reviewed after 6 month, and the lesion was resolved and the patient had no discomfort (figure 2).

Discussion

Although dental amalgam is the most commonly used direct restorative material for tooth restorations in dentistry (16), some amalgam compounds can promote adverse reactions in the oral cavity, such as oral lichenoid lesions. These alterations seem to be caused by type IV hypersensitivity, which is an excessive manifestation of the immune response to an antigen (15) leading to tissue damage. Such reactions involve T lymphocytes that mediate hypersensitivity in response to a constituent of the amalgam restoration, commonly related to mercury as the allergen (15, 16); other components are rarely involved, such as copper, tin, or zinc. The most common reaction to dental amalgam is the development of oral lichenoid reactions/lesions involving mucosae in direct contact with amalgam restorations (figure 1). An oral lichenoid lesion generally represents a type IV hypersensitivity reaction [17, 18]. Type IV hypersensitivity is called as delayed type of hypersensitivity reaction as the reaction takes a long period to develop and, in the present case, could be few months to years. Unlike the other types of reactions, it is not antibody mediated but it is a type of cell-mediated response. Mercury salts that accumulate in oral mucosa either healthy and damaged [19] will generally cause this type of hypersensitivity reaction in only a susceptible people with reticular white patches, papules, erosions, plaques, or ulceration, similar to that seen in oral lichen

planus —hence the term "lichenoid". Nonspecific toxic reactions which are not as a result of hypersensitivity can also manifest as oral lichenoid lesions. Hypersensitivity to dental amalgam is rare condition. according to HOLMSTRUP it is due to corrosion products of amalgam restorations, and it seems to be related to mercury in almost all the cases, with only a few cases implicating silver, copper, or tin [20, 21].

The pathophysiology of type IV hypersensitivity is complex. CD8+ Cytotoxic T Cells and CD4+ Helper T Cells recognize the antigen in a complex with either type 1 or 2 major histocompatibility complex. The antigen-presenting cells are macrophages that secrete interleukins and they stimulate the proliferation of CD4+ T Cells. These activated cells induce the release of other Type 1 Cytokines, thus mediating the immune response.

Oral lichenoid lesions caused by hypersensitivity to dental amalgam or its constituents typically have a clear anatomical relationship with the amalgam fillings [24], so they are usually unilateral and assymmetrical. They are most commonly seen on the tongue and buccal mucosa where the mucosa comes in contact with dental restorations. The gingiva, palate, or floor of the mouth, being sites farther away from restorations, they are not commonly affected, and patients almost never have associated symptoms. These clinical features help to distinguish oral lichenoid lesions from oral lichen planus and other conditions, eventhen it is difficult for the clinician to make a clear distinction, if there are multiple amalgam restorations [22].

A positive patch test may facilitate diagnosis of oral lichenoid lesions caused by a hypersensitivity reaction, but this can be proved only if resolution occurs after the amalgam restoration has been removed from the tooth. The partial or complete resolution of lichenoid lesions for all lichenoid lesions owing removal of dental amalgam restorations is illustrated in figure 2. In a study lesions with direct contact with amalgam responded better when the restoration was removed than those exceeding the contact zone. Some benefit was noted in 97% of such patients regardless of the patch test result but complete healing was seen in patients who had a positive patch test. Some authors found a good response to replacement of amalgams in patients with the patch test reactions to mercury salts while others did not [22

In this case the restorations were removed under rubber dam isolation and high volume suction and were replaced with an intermediate restorative material. The lesions healed up after removal of the stimulus. This clearly differentiates the lesions from the OLP, which is usually without aetiology. In patients of oral lichenoid reactions, a positive patch test to one or more components of dental amalgam may help to confirm the diagnosis of the condition. Final confirmation, however, depends on resolution of the lesion after removal of the offending dental amalgam restoration. When those amalgam restorations have to be removed, it should always be done using rubber dam isolation, abundant irrigation, and high aspiration volume, to diminish the exposition of the material [23-25].

Conclusion

The present case underwent a healing process of the mucosal lesions after amalgam replacement by composite restoration in the teeth contact with the lesions. Besides, the pain symptoms of the patients disappeared immediately after the replacement of those restorations. Although oral lichenoid lesions-related conditions present low prevalence in the oral mucosa, they can cause significant discomfort for the patient. Therefore, clinicians should be aware of their occurrence, diagnosis and treatment.

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Legends Figure

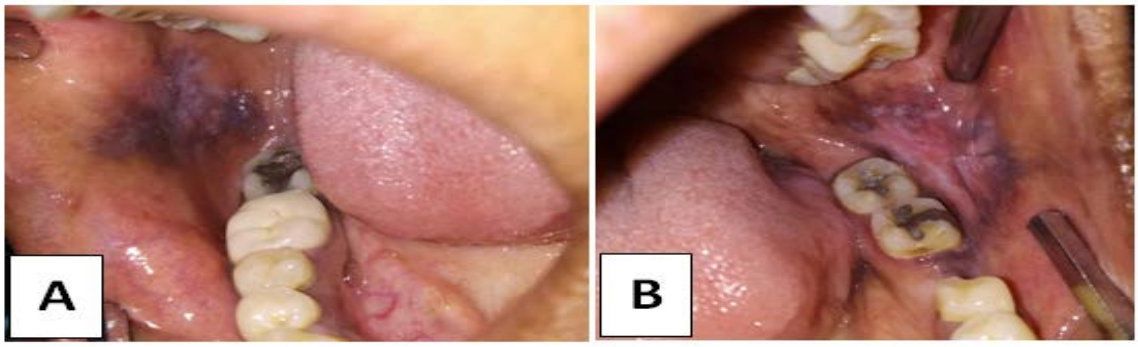

FIGURE 1: PRE OPERATIVE A) RIGHT BUCCAL MUCOSA B) LEFT BUCCAL MUCOSA

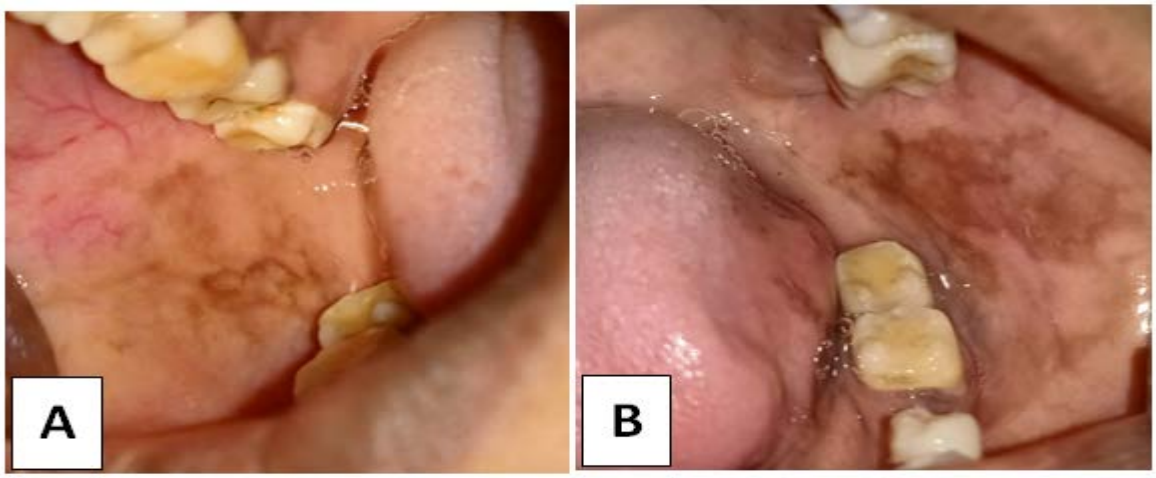

FIGURE 2: POST OPERATIVE A) RIGHT BUCCAL MUCOSA B) LEFT BUCCAL MUCOSA