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Oral Lichenoid Lesions Associated With Silver Amalgam Restorations – A Case Report

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ABSTRACT

This article describes a clinical case presentation of a female patient, aged 35 years complaining of sensitivity of posterior teeth. During routine clinical examination, white lesions were found on the buccal mucosa. Patient had multiple silver amalgam restorations present on all maxillary and mandibular molars. The case was diagnosed as amalgam lichenoid which was confirmed by diagnostic cum treatment tests. The fillings were removed and temporary restorations were placed. After diminishing of white lesions all the temporary restorations were replaced with Type II glass ionomer cement followed later by composite restorations. The sensitivity of the teeth was due to class five lesions on the buccal aspect of maxillary posteriors which were filled with glass ionomer cement.

Key Words: – Amalgam, Lichenoid, Non Scrapable, White Lesions

INTRODUCTION

The use of dental amalgam as a direct restorative material has been a subject of controversy for

many years. Concerns have been raised over the potential safety of amalgam because of leakage of potential harmful elements such as mercury.

Ecologic considerations have led some countries to promote discontinuing the use of dental amalgam. However, communication of information through the mass media, often not based on scientific fact, has resulted in some confusion regarding the effects of amalgam on human health.¹

The mercury content for dental amalgam is approximately 50%, and studies have illustrated that organic mercury compounds and elemental mercury vapor can cause central nervous system damage as well as neurologic damage.² Mercury also has been established as immunotoxic (including other autoimmune disorders) in experiments with animals.³ Eggleston and Nylander² demonstrated a positive correlation between the number of occlusal surfaces of dental amalgams and mercury levels in the brain ($P < 0.0025$ in white matter). Correlation of inorganic mercury level in human blood shows an increase in level immediately after mastication.⁴ Scientists agree that dental amalgam fillings leach mercury into the mouth, but different studies have concluded that this exposure may be as low as 1-3 $\mu\text{g}/\text{day}$ (FDA), or as high as 27 $\mu\text{g}/\text{day}$. The effects of this exposure are disputed,⁵ and currently dental amalgam is approved for use in most countries, although Norway, Denmark and Sweden are notable exceptions.⁶

Oral lichenoid lesions related to contact are defined as oral-cavity eruptions with an identifiable etiology, and are clinically and histologically similar to oral lichen planus. Within

this group are found oral lichenoid lesions related to contact with dental materials (OLLC), the most common being those related to silver amalgam. Currently, it remains difficult to diagnose these lesions due to the clinical and histopathological similarity with oral lichen planus and other oral mucosa lesions of lichenoid characteristics. This clinical report describes one such rare case and should therefore be considered as differential diagnosis for white lesions.

CLINICAL CASE REPORT

A female patient, aged 35 years, reported to a clinic with a chief complaint of sensitivity of teeth. The patient complained of severe pain when she used to drink cold and eat sweets. Medical history was non-significant. Dental history revealed that the fillings have existed for more than ten years. Oral examination revealed presence of class I silver amalgam restorations in relation to mandibular first, second, third and maxillary first and second molar (Fig 1). Oral examination of the buccal mucosa revealed an irregular white patch which was non - scrapable. The distribution of the patch was diffuse and mostly involved mucosa was within one centimeter above and below the occlusal plane on either side. Maxillary molars and premolars were also found to have class 5 lesions on the buccal side. The overall diagnosis and treatment plan was devised by a multidisciplinary team that included an oral physician, oral pathologist, periodontist, prosthodontist and an endodontist. The plan

included oral prophylaxis, followed by restoration of class 5 cervical lesions which was to be followed by replacement of existing amalgam restorations. The entire diagnosis and treatment was carried in different appointments as follows:-

Appointment 1: After thorough prophylaxis, all cervical lesions were evaluated and then restored with type 2 glass ionomer cement. This was followed by removal of all amalgam restorations. Mandibular left third molar was the only tooth where there was evidence of secondary caries under the restoration. After thorough removal of all affected dentin, a temporary filling in the form of glass ionomer cement (type –II) was given and the patient was discharged and called after ten days (Fig 2).

Appointment 2: Intraoral photographs were taken which were then compared with the photographs taken on the first appointment to know the progress. Comparative study of the photographs revealed decrease in the lesions of the buccal mucosa that confirmed the existence of the lichenoid reaction of amalgam (Fig 1 and Fig 2).

Appointment 3: All temporary restorations were replaced and filled with posterior composites.

Appointment 4: After three months of placing final restorations, the buccal mucosa showed no signs of any previous lesion (Fig 3).



Fig: 1



Fig: 2



Fig: 3

DISCUSSION

Mercury is a cellular and protoplasmic toxin that inhibits cell proliferation and destroys the cell membrane. This element stimulates the peroxide metabolism by removing hydrogen atoms from inorganic compounds. It also precipitates proteins by binding to their sulfhydryl group, reduces cellular RNA, and blocks enzymatic systems ⁷

The reaction of macrophages to dental biomaterials is important because macrophages can initiate and direct inflammatory responses in oral tissues. It is not possible to confirm the diagnosis of oral lichenoid lesion contact with dental material (OLLC) through histology, due to the difficulty in differentiating oral Lichen Planus from Oral lichenoid lesions from a histological viewpoint. ⁸

Histopathologically, these lesions are characterized by a lichenoid tissue reaction in which two key findings can be found: A band-like lymphocytic infiltrate in the lamina propria and a liquefactive degeneration of basal keratinocytes. ⁹

Many oral mucosa lesions with lichenoid characteristics seem to be related to amalgam contact. Currently, the diagnosis of an OLL related to dental materials depends fundamentally on clinical presentation and results of the patch test for mercury ⁹

Four specific histopathological findings useful for distinguishing between clinically similar lichenoid lesions are an inflammatory infiltrate deeply located in some or all areas; a focal perivascular infiltrate; and the presence of plasmatic cells and

neutrophils in the connective tissue.¹⁰ Oral lichenoid lesions associated with silver amalgam can be seen in direct topographic relation to a causal agent. The contact of oral mucosa with certain dental restorative materials or their corrosive by products may induce a response, resulting in immunologically mediated damage of the keratinocytes of the basal stratum of the epithelium.¹¹ Majority of allergic reactions to dental materials correspond to hypersensitivity reaction type IV, mediated by cells (T lymphocytes).

SUMMARY AND CONCLUSION

Oral lichenoid lesions resulting from contact with dental amalgam should be differentiated from oral lichenoid lesions and oral lichen planus. Removal of restorations in relation to the lesion is a confirmatory diagnostic test. In this case the lesions disappeared completely after restorations were removed and replaced by a posterior composite.

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