

## Case Report

# Oral lichenoid contact reaction to amalgam occurring as a leukoplakia-like lesion: a case report

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## ABSTRACT

This article reports a case of oral lichenoid contact reaction (OLCR) in which a bilateral lesion involving the buccal mucosa was observed. Its relevance lies on that the lesions could be misdiagnosed as an oral leukoplakia, since they showed a typical feature of a homogeneous white plaque; however, fortunately, this misjudgement was spared because one of the lesions, on the right-buccal side, was in direct contact with an amalgam filling. Hence, the suspicion of mucosal contact reaction was made and the patient successfully treated by amalgam replacement. Comments on diagnosing of OLCR is also included in this report.

**Keywords:** Oral mucosal contact reaction, Hypersensitivity reaction, Oral lichenoid lesion, Diagnosis, Amalgam filling

## INTRODUCTION

Oral mucosal contact reactions (OMCR) is not a very common type of oral change, although the oral mucosa is exposed on a daily basis to many potential products capable of causing some allergic reaction.<sup>1,2</sup> The amalgam filling, or better, its components, particularly the mercury, is the most common substance in producing OMCR. The reason is the long contact of amalgam fillings with oral surfaces, which, eventually, may trigger an oral mucosal reaction. Due to its delay nature, this process falls in the category of a type IV, cell-mediated, hypersensitivity reaction, also called delayed hypersensitivity.<sup>3,4</sup> Concerning the particular event of a contact reaction to amalgam, the mucosal changes are called oral lichenoid contact reactions (OLCR) due to its similarity, both clinical and histopathologically, to the idiopathic oral lichen planus.<sup>4,5</sup>

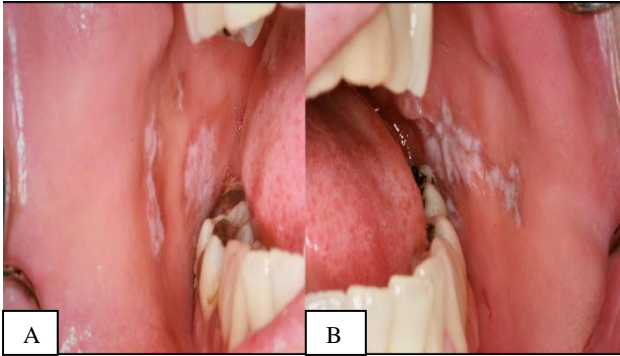
At times, the clinical evaluation of hypersensitivity reaction poses some difficulty because lesions, very

often, do not follow a specific clinical pattern. It helps the diagnosis when a lesion is in direct contact with amalgam restoration; otherwise, the investigation requires a very sharp mind. This report describes a case showing in the patient a combination of a contact lesion to amalgam filling and another of more subtle recognition as OLCR.

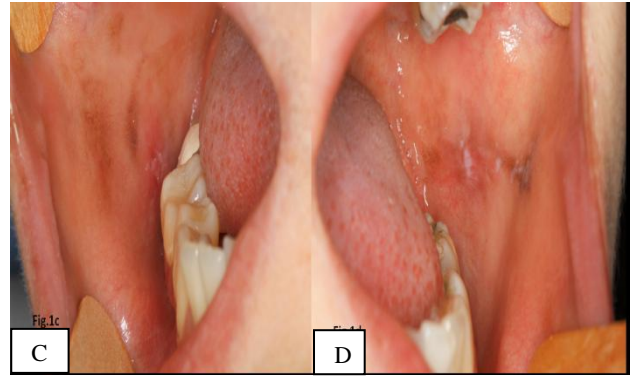
## CASE REPORT

A 28-year-old Brazilian-African woman was referred to our oral medicine clinic for evaluation of white patches on her oral mucosa. She was not aware of these lesions until her dental surgeon had noticed them and asked her to come to our clinical facility. Oral examination showed white plaques on both buccal mucosa. At the right side, there was a clear contact of the lesion with an extensive amalgam filling. On the left side, there was also amalgam filling but not in direct contact with the lesions (Figure 1A and B). There was no sign of erythematous areas in combination with white patches. Some small areas of physiological melanin pigmentation can also be seen. On

medical records, she reported allergies to seafood, jewelry and dypirona.



**Figure 1 (A and B):** The clinical presentation showing white patches resembling leukoplakia lesion. On the buccal right side, however, there is a clear contact of the lesion to the amalgam filling.



**Figure 1 (C and D):** Shows great improvement with the remission of the lesion on the buccal right side and substantial reduction of the lesion's size on the left side after the amalgam replacement, within 3-month follow-up.

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DIVISÃO DE CLÍNICA DERMATOLÓGICA - INSTITUTO CENTRAL

DERMATITE DE CONTATO - TESTES EPICUTÂNEOS - FICHA Nº \_\_\_\_\_

ETIQUETA

DATA: 13/10/2020  
15/10/2020  
17/10/2020

1. NOME: Clayton M. Soares  
2. MATRÍCULA: 522  
3. IDADE (ANOS): 28  
4. SEXO: (1) M (2) F 2  
5. COR: (1) BRANCA (2) NEGRA (3) PARDA (4) AMARELA \_\_\_\_\_  
6. PROFISSÃO ATUAL: \_\_\_\_\_  
7. OUTRAS ATIVIDADES: \_\_\_\_\_  
8. TEMPO DE EVOLUÇÃO DA DERMATITE (MESES): \_\_\_\_\_  
9. LOCALIZAÇÃO: Buccal  
10. RESULTADO DOS TESTES EPICUTÂNEOS: Não

10.1 BATERIA DO STANDARD BRASILEIRO DE DERMATITE DE CONTATO - GBDC

Nº	SUBSTÂNCIA	48 H	96 H	Nº	SUBSTÂNCIA	48 H	96 H
1	ANTRAQUINOMA			16	NEOMICINA		
2	BÁLSAMO DO PERÚ			17	NITROFURAZONA		
3	BENZOCÁINA			18	PARABENOS		
4	BICROMATO DE POTÁSSIO			19	PARAFENILENODIAMINA		
5	BUTIL, FENOL, P-TERCIÁRIO			20	PERFUME - MIX		
6	CARBA-MIX			21	PPD - MIX		
7	CLORETO DE COBALTO			22	PROMETAZINA		
8	COLOFÔNIO			23	PROPYLENOGLICOL		
9	ETILENODIAMINA			24	QUATERNIUM 15		
10	FORMALDEÍDO			25	QUINOLINA - MIX		
11	HIDROQUINOMA			26	RESINA - EPOXI		
12	IRGASAN			27	SULFATO DE NÍQUEL		
13	KATHON CG			28	TEREBINTINA		
14	LANOLINA			29	THIMEROSAL		
15	MERCAPTO - MIX			30	TIURAM - MIX		

10.2 BATERIA DE COSMÉTICOS

Nº	SUBSTÂNCIA	48 H	96 H	Nº	SUBSTÂNCIA	48 H	96 H
C1	ÁCIDO SÓRBICO			C6	TRITANOLAMINA		
C2	BHT			C7	GERMALL 115		
C3	CLORACETAMIDA			C8	TIOLGOLATO DE AMÔNIO		
C4	TOLUENOSULFONAMIDA/FORMALDEÍDO			C9	AMERCHOL L - 101		
C5	BRONOPOL			C10	CLORHEXIDINE		

**Figure 2:** The Brazilian standard skin test showing positivity only for nickel sulphate (blue arrow) but negative for thiomersal.

As a diagnosis of OLCR was very likely, a biopsy was at this point deemed unnecessary. In order to investigate the patient's profile to some skin test, she was referred to a dermatological center for a standard skin-patch test,

which revealed a positivity only to nickel sulphate (Figure 2). Later on, after her consent, she had their amalgam filing replaced by nonmetallic dental restorations. The clinical aspects have improved

substantially after 3 month following the amalgam replacement (Figure 1C and D).

## DISCUSSION

Lesions characterized as OLCR appear to be the result of cell-mediated contact hypersensitivity that which occurs in susceptible individuals, who have been sensitized through long exposure to mercury, a component of the amalgam dental fillings. According to the studies, OLCR develops through a trans-epithelial route of entrance of the metal haptens released from amalgam filling.<sup>3,6</sup>

Most importantly, however, is the clinical recognition of OLCR. This is not something that can often easily be made, except for cases in which the lesion is direct contact with the amalgam filling, as it was seen this patient on her right buccal mucosa.<sup>4,5,7</sup>

In general, OLCR or, broadly, OMCR, do not exhibit a distinctive clinical pattern. They can appear as an oral lichen planus-like lesion, or as a diffuse erythematous lesion along with white patches or, even, as painful ulceration.<sup>8</sup> A manifestation of an OLCR as leukoplakia lesion, seen in the present case, is not anything unusual, but it may mislead the clinician in considering as a true leukoplakia, instead of a contact stomatitis, and rendering it a wrong clinical intervention. In case in which may linger some doubts to differentiate between OLCR and leukoplakia on a clinical basis, a biopsy is able to rule out a leukoplakia lesion as, for OLCR, the histopathological feature is histopathologic findings are not specific; they show inflammation in lamina propria with lymphocytes and plasma cells, hyperkeratosis and acanthosis, resembling to lichenoid reactions lichenoid reaction, which, by a diagnosis standard, can definitely exclude leukoplakia.<sup>3-5</sup>

The treatment of a contact stomatitis is the removal of the causal agent (in the present case was the amalgam). In some instances, however, the agent associated with the oral lesion is not apparent, and it becomes a challenge for clinicians. In this respect, some authors suggest the skin-patch test in order to confirm the allergy. Nevertheless, they have pointed to some difficulties of this test, such as the analysis of the positive result and the requirement of a multidisciplinary team, besides the risk of false negative results. In this present case, the skin test was only positive for nickel sulphate but negative for thiomersal, a substance that contain some amount of mercury. Therefore, reinforcing some previous report that even in

very clear cases (as was this present one) in which there is a direct contact of lesion to amalgam filling, the skin-patch test may result negative for mercury.<sup>3,5,7</sup>

Finally, invasive and expensive investigation using skin-patch test is recommended only for cases in which extensive dental filling rehabilitation would be necessary in order to observe is the lesion suspect of being a hypersensitivity reaction would disappear after amalgam replacement.

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## REFERENCES

1. Vivas AP, Migliari DA. Cinnamon-induced oral mucosal contact reaction. *Open Dent J.* 2015;9:257-9.
2. Calapai G, Miroddi M, Mannucci C, Minciullo PL, Gangemi S. Oral adverse reactions due to cinnamon-flavoured chewing gums consumption. *Oral Dis.* 2014;20:637-43.
3. Luiz AC, Hirota SK, Dal Vecchio A, Reis VM, Spina R, Migliari DA. Diagnosing oral lichenoid contact reaction: clinical judgment versus skin-patch test. *Minerva Stomatol.* 2012;61:311-7.
4. Laine J, Konttinen YT, Beliaev N, Happonen RP. Immunocompetent cells in amalgam-associated oral lichenoid contact lesions. *J Oral Pathol Med.* 1999;28:117-21.
5. Thornhill MH, Pemberton MN, Simmons RK, Theaker ED. Amalgam-contact hypersensitivity lesions and oral lichen planus. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2003;95:291-9.
6. Raap U, Stiesch M, Kapp A. Contact allergy to dental materials. *J Dtsch Dermatol Ges.* 2012;10:391-6.
7. Issa Y, Brunton PA, Glenney AM, Duxbury AJ. Healing of oral lichenoid lesions after replacing amalgam restorations: A systematic review. *Oral Surg Oral Med Oral Pathol.* 2004;98:553-65.
8. Vieira G, Oda M, de Freitas P, Migliari D. Painful oral ulceration developed as lichenoid contact reaction. a case report. *J Dent Oral Disord Ther.* 2016;4:1-2.

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