

Case Report

ADVERSE EFFECT OF POLYSULFIDE IMPRESSION MATERIAL: CASE REPORT

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الخلاصة :

تعتبر مادة المطاط المتعدد الكبريت من المواد التي يشيع استخدامها في مجال طب الأسنان . وقد ينتج عن استخدامها بعض الأعراض الجانبية مثل التهاب الأنسجة الداعمة السنوية والأرتكاس التحسسي للأجسام الأجنبية والانتفاخ الاستنشاقى . تصف هذه المقالة حالة ظهور أعراض فرط الحساسية بعد عمل طبعة مطاطية لجهاز سني كامل وكيفية علاجها .

Polysulfide rubber is a commonly used impression material in dentistry. However, it has some side effects including foreign body reaction, acute toxic reaction, periodontal destruction, and aspiration emphysema. This report describes a patient who developed a hypersensitivity reaction to polysulfide material following secondary impression for upper and lower complete denture and its management.

Introduction

Polysulfide rubber is an elastometric material containing large molecules forming a three dimensional network. It is supplied as base and accelerator. The base material consists of low molecular weight organic polymer containing a reactive mercaptan (-SH) group and 20 % reinforcing agent such as titanium dioxide, zinc sulfate, copper, carbonate or silica. The catalyst is composed

of lead dioxide with or without manganese dioxide and inert oil.^{1,2,3} A contact with living tissues in the mouth may induce adverse tissue reaction such as foreign body reaction, toxicity and hypersensitivity. The most likely induced problem for the patient arises from pieces of impression material being left in the sulcus. The irritations can range from minor to severe reactions. Microscopic examination of the curretted specimen shows an amorphous acellular mass unlike human tissues. However, several authors reported reaction to components of catalysts in elastomer impression materials. A study conducted by Spranley and others (1983) showed that toxicity was not strongly related to lead content.¹⁰ It is suggested that the

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hypersensitive reactions are caused by haptens from the biomaterial combining with mucosal or cuticular proteins to form antigens. The reactions are expressed as delayed hypersensitive reaction of a general or dermal type among dental patients.⁹ The purpose of this report is to describe a patient who developed hypersensitivity reaction to polysulfide material following secondary impression for upper and lower complete denture.

Case Report

The patient was a 60 year old female receiving treatment at the dental clinics of King Saud University, Saudi Arabia. A final impression was made by a senior dental student for construction of the upper / lower complete dentures. The impression was made using polysulfide material following the manufacturer's instructions*. After the impression was made, the patient started to develop redness, itching and oedema in the oral and perioral tissues. The next day, she presented with erythema and ulceration in the peri-oral tissues (Fig.1). Careful evaluation was made and the patient was treated with topical corticosteroids (Betamethasone valerate ointment 0.1%) applied four times a day. After seven days, the patient recovered completely with no residual lesion.

Discussion & Conclusion

Polysulfide rubber is one of the most widely used impression materials in prosthodontics with various adverse effects

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that have been reported including: foreign body reaction, acute toxic reaction, periodontal destruction, and aspiration emphysema.¹³ Overall, they pose a minor problem in the polymerised form. However, the free or unpolymerized components could leach into the gingival tissue area both on acute basis as well as chronic bases.



Figure 1. Peri-oral erythema and ulcerations.

Despite the fact that polysulfide is reported to be cytotoxic in vitro,¹⁴ the literature lacks cases with allergic reaction to polysulfide. In fact, this is the first reported case in the reviewed literature. However, elastomeric impression materials other than polysulfide, were reported to evoke allergic reactions. Several cases of polyether contact dermatitis and stomatitis have been reported. Most of the cases are due to prolonged contact, particularly with the catalyst of the polyether rubber impression material. The catalyst as well as the freshly mixed polyether elicited positive skin reaction interpreted as being delayed hypersensitivity reaction.^{14,15}

It is claimed that alkylbenzene sulfate in

the catalyst of polyether is the cause of irritation.^{14,6} However, other pathogenic mechanisms and etiologic factors responsible for the reactions observed should also be considered.'

The signs and symptoms that developed in this case are those of delayed hypersensitivity reaction. In the literature, it is suggested that the low molecular weight of the components may act as a hapten. Haptens are non-antigenic substances. They usually have small molecular weight chemical groups. By themselves, they are not immunogenic and require a link to body proteins to produce immunogenic reaction.

Summary

Polysulfide rubber impression materials are certified by the ADA, but adverse responses may be encountered and one should be aware of and recognize these responses and be prepared to treat them properly.

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