

ESTHETIC CROWNS PRODUCE ALLERGIC GINGIVAL REACTION: A CASE REPORT

Ramesh Chandra Das, * Dhirendra Kumar Singh, ** Md. Jalaluddin, *** Rajeev Ranjan †

* Principal, Department of Conservative and Endodontics, Kalinga Institute of Dental Sciences, Bhubaneswar, Odisha, India

** Senior Lecturer, Department of Periodontics & Oral Implantology, Kalinga Institute of Dental Sciences, Bhubaneswar, Odisha, India

*** Reader, Department of Periodontics & Oral Implantology, Kalinga Institute of Dental Sciences, Bhubaneswar, Odisha, India

† Senior Lecturer, Department of Periodontics & Oral Implantology, Kalinga Institute of Dental Sciences, Bhubaneswar, Odisha, India

ABSTRACT

Allergic reaction of oral mucosa to the metals in dental appliances has been reported previously. Typically these reactions have been in response to removal partial dentures. Practically specific allergen identified in the metal alloy containing nickel in anterior crowns. Nickel is one of the most common causes of allergic contact dermatitis. Numerous cases of Nickel – produced allergy have been reported in many medical literatures, this paper is the case report of a patient suffered from the same condition.

KEYWORDS: Allergy; oral mucosa; gingiva; metal alloys

INTRODUCTION

Base metal alloys have become very popular in dentistry in past decade as substitute for gold. Many of these alloys, containing Nickel have been used in the fabrication of porcelain fused-to-metal veneer crowns. An earlier investigation showed that transport of metal elements from cast dental restorations into soft tissue may occur within a period of 15 days. More recent studies have shown that most individuals with confirmed Nickel allergies will exhibit reactions to intra oral patch test with nickel-chromium dental alloy.^[1-4] Thirty percent of the individuals showed allergic symptoms within 48 hours.^[5] Concentration of nickel as small as 2.5mg/ml have been shown toxic to human gingival cell in tissue culture. Another tissue culture study using fibroblasts, has also exhibited the cytotoxicity to nickel containing dental alloys. Base metal alloys have been shown to tarnish and corrode in response to electrolytes, including saliva.^[2-4] Addition of precious metals to the alloys may reduce the corrosion rate, but will not eliminate it. Corrosion

of nickel containing alloys will result in release of nickel and accumulation in adjacent tissues.^[6,7]

CASE HISTORY

A 28 year - old female patient was referred to the Department of Periodontology for evaluation of inflammation of gingival tissue in the maxillary anterior teeth region around the porcelain fused metal crowns. Clinical examination revealed a severely inflamed hyperplastic tissue surrounding the maxillary incisor and canine while is well seen in Fig. 1. The patient had been aware of gingival condition for the last three months and it appeared to be getting continually bad. Probing depth in the region ranged from 3-5 mm with bleeding on probing in all areas. Careful evaluation of crown margins revealed that they were adopted in a clinically acceptable manner to the teeth and that an adequate physiologic zone existed for junctional epithelium and connective tissue attachment. The patient's medical history was essentially negative except for a history of allergies, she was presently taking an anti histamine(Cetirizine di hydrochloride) her dental history revealed a placement of porcelain –fused to metal veneer crowns on the maxillary six anterior teeth within the past six months. Due to the rapidity of onset and the severity of clinical appearance, complete hematologic evaluations were within normal limits. The histologic evaluation of soft tissue was found as chronic gingival hyperplasia. While routine plaque control and root instrumentation procedures were initiated, an investigation of the components of the newly placed crowns was completed. The metal portions of the crown were found to be fabricated from a Nickel-cobalt-chromium base metal. Follow-up allergic testing of the patient confirmed that she was sensitive to nickel. Two months following the initial evaluation, the porcelain fused to metal crowns removed and



Fig. 1: Severely inflamed hyperplastic tissue surrounding the maxillary incisor and canine



Fig. 2: Two months follow-up, provisional crowns fitted with polycarboxyl cement



Fig. 3: One month following removal of the base-metal crowns



Fig. 4: After three months gingival tissues became more firm and pink

replaced with acrylic provisional crowns fitted with polycarboxyl cement, which is seen in Fig. 2. Plaque control was reinforced and light subgingival instrumentation was performed at 2-4 weeks interval. One month following removal of the base-metal crowns, gingival shrinkage and color changes were evident Fig. 3. Three months later, more gingival resolution had taken place. The gingival tissue was pink and firm. Probing depth was acceptable and no bleeding was found upon probing Fig. 4.

DISCUSSION

The gingival reaction exhibited by the patient appears to be a result of sensitivity to her porcelain fused-to-metal crowns. Although specific confirmation of an allergen cannot be made, several materials could potentially serve as a sensitizing agent, including metals within the crowns, components of the porcelain, and the luting medium. Nickel, because of past case reports and collaborating research investigations, appears to be the most likely cause of the gingival reaction. In support of this reaction it has been expressed by the American Dental Association in stating the dental patient's medical record and health history should be expanded to include the sensitivity to metal or jewelry and that the following statement should accompany casting alloys containing nickel: so; the alloy which

contains nickel, should not be used for individuals with a crown nickel allergy..^[8,9]

CONCLUSION

Nickel, -induced allergic reactions should be borne in mind in every case of oral mucosal hyperplasia appearing after dental procedures, especially in the presence of previous allergies and sensitization risks such as ear piercing, nose piercing. Cessation of the nickel exposure by removing the suspected dental appliance is then the only way of treatment. It might be suggested to include the hyperplastic variant within the clinical forms of allergic reactions after dental procedures.

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