

A Case of herpes zoster infection following composite Resin restoration: Any Relationship?

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ABSTRACT

Objectives: : Reactions to dental materials is well documented in the literatures, this includes cases of allergic reactions to composite resin. However, these are more of localized hypersensitivity reactions. In this case however, there were interplay of many other factors cumulating to the outbreak of herpes zoster. It was the case of a 56year old known hypertensive and diabetic patient who had composite restorations done in two of her teeth, but eventually developed herpes zoster infection 1 week post resin restoration failure. The ability to recognize the clinical presentation of herpes zoster and differentiate it from a localized allergic reaction was key in this case. Prompt response in utilizing the appropriate drugs, resulted in early resolution of the lesions and avoidance of post herpetic neuralgia as a complication.

KEY WORDS: herpes zoster, composite, allergic reaction, dental material.

INTRODUCTION: Herpes zoster infection is known to occur as a secondary infection occurring as a result of the re-activation of the latent virus; Varicella Zoster in the dorsal nerve ganglia. The virus is deposited in the ganglion following an earlier exposure to the virus usually resulting in the primary infection of chicken pox. Herpes zoster usually presents as painful vesicles following a dermatome. Factors that have been reported to predispose to a secondary reinfection include: immunosuppression, ageing, diabetes mellitus etc.^{1,2}

Dental composite is one of the most commonly used dental restorative materials in Dentistry because of its several positive qualities. It is traditionally presented in two forms: chemical cured two paste variety, and the light cured single paste variety; etch, prime and bond systems.³ Some of it's desirable qualities include

excellent aesthetics-(tooth coloured), acceptable working time, excellent mechanical strength, and durability. However, due to the dimensional changes following final polymerization, marginal leakages and likely re-occurrence of dental caries, failure of the material at bonded margins occur.³ Also, it is known that the reaction of the monomer during polymerization is incomplete, although there has been an improvement from 15-50% of unreacted methacrylate to 1.5%-5%, unreacted molecules of methacrylate.⁴ The unreacted monomer is reported to cause different presentations of hypersensitivity reactions. From immediate burning sensation of mucosa surfaces to delayed lichenoid reactions on the adjacent tissues and contact dermatitis.^{4,5}

There has been reports of different arrays of allergic reactions to different dental materials over the years in the literature. Some examples include reactions to dental amalgam, Zinc oxide, Eugenol, Metals such as Nickel, chromium, plastics as latex, resins as BIS-GMA, HEMA etc.^{6,7,8}

Allergic reaction to dental composites in both dental staff and in patients are documented in the

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literature, however, the scenario of herpes zoster infection breaking out in the face of failed/failing composite filling, is rare, considering the number of related searches made.^{9,10,11}

Case report

This is a case report of a rare occurrence of a 56 year old patient who visited our dental facility on referral from another health facility. The patient was referred on account of her dissatisfaction with previous dental treatment due to premature failure of her dental fillings and reactions to the dental material. She was scheduled to be seen in about a week from the first day of her referral. However, in about 4 days to her scheduled date for treatment, she presented with complains of intense dental ache, gingival inflammation and ulcerations adjacent to the failed filled tooth.

History:

She gave a history of biting on compact bone when eating about 2 weeks earlier. The sudden hard bite she said led to a partial fracture of her left upper (maxillary) tooth. This led to her visiting the dentist for dental fillings. On that appointment, she said a light cured tooth colored material was used to fill the fractured tooth. However, the dental fillings was said to have began falling off in chips a few days after placement and a sense of unpleasant taste was reported to have been present from the onset of the filling. The taste was reported to have worsened as the material wore off. Also, about a week after dental fillings, she said she began to experience, burning sensations on the left side of her tongue, ulceration on gingival tissues, buccal mucosa and the angle of her on the same side of the filled tooth. She reported the development of vesicles extra-orally, as the days progressed around her mouth and chin on the affected side. She also complained of intense pain from her soft tissues and the entire lower left quadrant (teeth), worse on the anterior left segment. The pain could not be suppressed by 'over the counter' analgesics. She said she then returned to the dental clinic with these complains but the dentist was not on seat and was said to be a locum dentist to that facility. She insisted on seeing a different dentist and was then referred to our facility.

On further enquiry, about her general health, she

stated that she was a known hypertensive and diabetic that was hospitalized for a week, just before her dental visit, on account of sudden onset of slurred speech following an exaggerated spree of anger. She was hospitalized for about 3 days, and was successfully managed back to normalcy. When asked about any history of recent stressful event, she narrated the incidence of a domestic emergency that was emotionally stressful and warranted her embarking on a long journey to another state in the country. In the course of the trip, she encountered a vehicular accident, but sustained no physical injuries.

Her vital signs were: T-36.4°C, P-68b/m, R-24c/m, Bp-160/100mmHg, Weight-105kg.

Clinical Examinations: Extra-orally, face was symmetrical but there was unilateral blister/vesicular lesions occurring on the left side of her lower jaw(chin) and angle of the mouth on the same dermatome. Lesions did not cross the midline.

Intraorally:

NB :{UR-upper right maxillary segment, UL-upper left maxillary segment, LR-lower right mandibular segment, LL-lower left mandibular segment} Oral hygiene was generally poor, plaque and calculus (3+) was present, halitosis was absent. Hard tissue examination revealed; UR1-8, UL1-8, LR1-8, LL1-8, were all present, palatal shear fracture of her UL5, and buccal fracture of LL6, failed composite filling of her LL6 and #UL5 noted.

Tenderness to percussion of LL5,6 was present.

There was gingival inflammation and sloughing around marginal and part of the attached gingiva of LL4,5,6 with root exposure of LL5. Ulcerations were present on the anterior left margins of her tongue, buccal mucosa, floor of mouth on the same side.

Investigations: Periapical X-rays of LL5,6 revealed no pupal communication of the buccal fracture of LL6 but radiolucency beneath composite filling on the tooth was noted.

Electrical Pulp Test of LL4,5,6 revealed they were all vital at 9, 10, 11 respectively.

Diagnosis made were: 1) Herpes Zoster infection secondary to intense emotional and physical stress in combination with hypersensitivity reaction to composite filling.

2) Failed composite filling of occluso-buccal fracture of LL6,

3) Failed composite build up of palatal shear fractured UL5

4) Acute localized marginal gingivitis of LL5,6 and left oral ulcerations secondary to herpes zoster infection.

5) Generalized chronic marginal gingivitis secondary to poor oral hygiene.

Treatment done: Based on the history and clinical findings, the expertise of an oral medicine specialist was requested remotely. Haven been furnished with the patients history, clinical findings and photos. The specialist affirmed the likely diagnosis of Herpes zoster reactivation. Following patient education on the diagnosis and re-assurance of it's management, she was placed on Gabapentin 300mg daily x 7 days, Acyclovir 400mg 4 x daily for 10 days, paracetamol 1g(2 tabs) 6-8hrly x 5 days. She was also instructed to utilize lignocaine spray or gel on oral ulcers before brushing, and she was told to practice oral mouth bath daily with warm saline mouth rinse before and after meals for one week (using ½ levelled teaspoon of salt in a full cup of water and not to swallow). She was thereafter co-managed with the input of the oral medicine specialist, until the complete resolution of the acute lesions.

Under local anesthesia, the failed composite filling on LL6 was removed and replaced with a temporary dressing of Dycal (calcium hydroxide) and Zinc oxide eugenol.

Careful use of handpiece and bur was used for the removal of the remnant composites on palatal fractured UL5.

Scaling and polishing could not be carried out immediately due to the acute inflammatory state of her oral soft tissues. Before discharge on this visit, she was counseled about her raised blood pressure and the need to visit her managing physician, should the pressure remain elevated after the pain from her dental challenges subsides.

Follow-Up Appointment: T 36.4°C, P-68b/m, SpO₂-97%, Weight 105kg, Blood pressure-130/80mmHg, Fasting blood sugar profile FBS-140mg/dl.

She was reviewed in 2 weeks, and scars of healed erupted vesicles could be seen, no new lesions were present. She reported a marked improvement in her overall health but still complained of intense pain from her anterior left

segment when she bites, closes her teeth together or takes fluids.

Intraoral examinations revealed, all ulcerations were healed, but there was persistence of localized acute gingival inflammation and recession of marginal gingival around LL5. There was mild tenderness to percussion of LL4,6 but intense tenderness to light percussion of LL5. Periapical X-ray revealed, widening of periodontal ligament space and radiolucency between LL4 and LL5. A repeated electrical pulp test, showed LL4,5,6 vital at 9,10,11.

An impression of queried crack tooth syndrome of LL5 was made. She was given the option of having a root canal treatment and subsequent crowning done on her LL5 or an extraction. She opted for an extraction with strong insistence. The need for dental replacement in the future was explained to her and the possible options were enumerated.

Treatment Done: Scaling and Polishing and basic oral hygiene instructions were given. Glass Ionomer Cement was used to replace the temporary dressing on her LL6.

Forceps and elevator extraction was done. Extraction was eventful, as the tooth though markedly luxated and mobile, was difficult to extrude out of the socket. A close assessment of the extracted tooth did not reveal a clinically visible cracked tooth, but rather a lot of calcific material deposited on the root surface of the extracted LL5. This prompted more enquiry of pain from lower anterior jaw nor anywhere else. Patient was quite satisfied with treatment outcome.

Discussion

Reports of patients reaction to different dental materials are well documented in the literature, but most of these reactions occur locally within the oral environment.^{9,10,11} In this case however, the occurrence of herpes zoster infection in response to composite filling after an initial localized response, seems an uncommon scenario.¹¹ There were series of physical and emotional stressors occurring within the same time frame of the restorative procedure, the patients age, sex, as well as positive diabetic health status, were all factors in favor of a reactivation of a varicella zoster infection.^{12,13} This condition could easily have been



Figure 1 Early lesions at week 1



Figure 2 marked gingival recession on LL5,6



Figure 3 more crust as the days progressed



Figure 4 extracted LL5 had calcific material



Figure 5 crusted lips as the days progressed.



Figure 6 healed blisters at 2 weeks and 2 days

from the patient, who reported a long history of calcium supplement consumption due to arthritic pains.

Postoperative instructions were given, patient was placed on Augmentin 625mg bd x 1/52. Flagyl (Metronidazole) was not prescribed because, patient reported reaction to the drug. Analgesics and warm saline mouth bath were also recommended. Patient was reviewed in another 2 weeks, extraction socket was healing

misdiagnosed as a localized hypersensitivity reaction to composite, which in most reports appears as contact dermatitis, a lichenoid reaction or eczematous lesions on keratinized skin.^{4,11}

A misdiagnosis could have resulted in mismanagement and delayed utilization of appropriate medication, a factor which is known to determine the occurrence or prevention of post herpetic neuralgia, a known undesirable complication of herpes zoster infection.^{1,2}

The learning point of this case, is the vital role of a wholistic approach in considering relevant history (both social and medical), general health status and clinical signs and symptoms in order to arrive early at an accurate diagnosis. This will aid prompt treatment and help to prevent complications.^{2,12} It further buttresses the need for the oral healthcare specialist to be knowledgeable about the possible dental materials capable of stimulating various hypersensitivity reactions in patients who are prone and their common presentation.^{4,6,7} this will enable the clinician differentiate between localized hypersensitivity reactions and a systemic reaction or a re-activation of an infective process such as herpes zoster in any given situation. Also relevant, is the importance of paying close attention to patients insistent complains, as it occurred in this case. The persistence and insistence of this patient about the pain from her left lower teeth, despite the general improvement in her overall health presentation, prompted further investigation that aided arrival at the right diagnosis and management of her LL5 which eventually gave her complete relief.

Limitation of the report: a patch test, would have aided in confirming the specific composite resin and it's role in the reactivation of herpes zoster in this patient.

Conclusion

This was a case of herpes zoster re-infection occurring following composite filling. The successful management was based on the knowledge of possible allergic reactions to dental composites and recognition of the clinical signs of herpes zoster. Composite resin restoration was one of the possible positive triggers for the reactivation of herpes zoster in this patient.

RECOMMENDATION:

- 1) Patch testing should be utilized in Restorative dentistry clinics in patients with history of allergy to dental materials.
- 2) Further studies should be done on the effect of long term use of calcium supplements on roots of teeth in adult.

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