

Oral chemical ulceration due to unusual cause from the dental unit: A case report

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Abstract

Oral chemical ulceration is a rare condition. The causes differ from misuse of dental material by dentists and over-the-counter drugs (OTC) to the herbal ingredients in our foods. This report represents a case of chemical ulceration of the mouth caused by hydraulic oil leakage inside a dental chair

Introduction

Oral ulceration can emerge from various causes, including thermal, physical, chemical, immunological, and malignant processes. Chemical oral ulceration is relatively rare compared to other reasons; it can occur from the misuse of dental material, over-the-counter dental product ingredients, side effects of drugs, or consequence of suicidal attempt as ingestion of chemical products.¹¹ We present a case report for oral chemical ulceration as a result of iatrogenic hydraulic oil leaking from the air unit of a surgical handpiece during surgical tooth extraction.

Case Report

A 24- year-old female was referred to the oral, maxillofacial and diagnostic sciences department-collage of dentistry at Majmaah university after surgical extraction of the lower left first molar at oral and maxillofacial surgery clinic-Alzulfi general hospital for a chief complaint of developing multiple painful ulceration in the mouth.

Patient history stated that she had a history of surgical extraction of the lower left first molar a day before the lesion developed. During the surgery, as the surgical handpiece is working patient feels a burning sensation on the contralateral side of the mouth, which is not anesthetized. The patient told the surgeon that, unfortunately, the surgeon ignored the feeling and continued the procedure as there was no patent reason. After 24h, the patient started to develop multiple painful ulceration in the mouth, making the patient unable to eat or drink.

Her medical and social history is unremarkable. The intra-oral examination revealed diffuse painful ulceration affecting most of the oral cavity: the socket of an extracted tooth, soft palate, buccal mucosa, ventral side of the tongue, the floor of the mouth, and left side of the lower lip (fig.1), (fig.2)

The patient was emotionally compromised, and she doesn't eat or drunk since the lesion started but stated she was on a limited soft diet. The patient was informed and consented to take photos but refused to insert any instrument in the mouth or hold the mucosa as she couldn't tolerate the pain. After discussing the case with her surgeon, he found the event was caused by (a faulty solenoid valve) leading to leakage of hydraulic fluid oil into the dental unit air, which was work with water during the procedure. The final diagnosis is oral chemical ulceration induced by iatrogenic hydraulic oil leakage from the dental unit.

The treatment plan given to relieve the inflammation and pain as follows: Topical corticosteroid prednisolone Sodium phosphate (Predo? 15mg/5ml JPI, Riyadh-Saudi Arabia) as syrup, instruction to keep it in the mouth for at least three minutes and spit it out four times/day for two weeks (patient rejected to swallow as she was fasting during Ramadan). Lidocaine hydrochloride B.P (Xylphil? 2% Philadelphia Pharmaceutical Co, Amman-Jordan) as a gel applied every three hours to control the pain. Follow-up after two weeks revealed most of the lesions healed except for partial healing in the floor of the mouth(fig.3,4); the patient explained as the tongue covers the floor of the mouth, preventing the topical agent from reaching the affected area.

The patient was instructed to continue the topical corticosteroid two times/day for two weeks and hold it below the tongue for one minute, swish and spit for additional one minute; the patient given recall after two weeks. At 2nd Follow-up, the visit showed complete resolution of oral and lip ulcers with the exceptions of shallow erythematous area on the tip of the tongue (fig.5). Patient able to eat and drink smoothly and during the examination, the patient agreed to hold the mucosa.

Discussion:

This case report represents a patient with oral chemical ulceration causing sloughing of the mucosa as a result of the unanticipated event for leakage of hydraulic fluid oil inside the air of the dental unit where admix with water during surgery. Oral chemical ulceration is mainly reported by iatrogenic trauma caused by dentists from various dental materials such as Sodium Hypochlorite, Formocresol, or etching material.¹¹ Also, it is reported that a wide range of over-the-counter dental products such as (chlorohexidine, hydrogen peroxide) mouthwash, and cautery ingredients known as Silver Nitrate are used for treating aphthous ulcers.²² The chemical material potentially affects contact oral mucosa due to multiple factors: 1-How the chemical agent works. 2-quantity exposed to the offending tissue. 3-time elapsed of contact tissue. 4- (PH) strength of this material.³³

In this case, it clearly happens from unintentional leakage of hydraulic fluid oil in the present faulty solenoid valve, which controls the dental unit during surgical extraction of the lower left first molar tooth leading to exposure to the causative agent. According to the dental chair manufacturer (VIC dental), hydraulic fluid oil is used in the dental chair for operating and changing positions. One of the disadvantages of hydraulic fluid is that it's corrosive and can cause a catastrophic event if contact with the skin.⁴⁴

The diagnosis of oral chemical ulceration is based upon careful history taken of the patient and precise clinical presentation.⁵⁵ However, the diagnosis can be challenging if a previous history can't be achieved. In this case, clinical history obtained from the patient likely judged oral chemical ulceration as strongly the final diagnosis. The biopsy is usually not indicated as an additional diagnostic tool with no specific feature for oral chemical ulceration will be revealed.⁶⁶ However, excluding other lesions might be helpful if the diagnosis is obscure.⁷⁷

The histopathological finding consists of coagulation necrosis focally in the epithelium, intracellular edema, and altered cell morphology, where underlying connective tissue has a mild inflammation infiltration. ⁸⁸

Management of Oral chemical ulceration consists of stopping or preventing the offending agent, maintaining the fluid-food intake, reducing inflammation, controlling the pain, and accelerating healing time. In mild to moderate cases of oral chemical ulceration, usually, no treatment is required concerning patient reassurance.⁹⁹ However, a short course one to two weeks of topical steroids will reduce the inflammation and help the patient recovery. In our case, we extend the course of treatment due to partial healing in the floor of the mouth for additional time to ensure complete healing. ¹⁰¹⁰Topical anesthetic, either as gel or rinse, will reduce pain and increase the quality of life. Accelerating healing can also be achieved with hyaluronic acid. ¹¹¹¹A prophylactic antibiotic with surgical debridement is warranted in severe cases of oral chemical ulceration. ¹²¹²

Conclusion:

Oral chemical ulceration requires careful identification and elimination of the cause, as this is might happen

during dental treatment. The management of such a lesion range from no intervention in mild cases to extensive surgical decoration in severe form. Although, to our knowledge, no report of a prior example of an oral mucosal chemical ulceration caused by hydraulic fluid leakage from the dental chair exists in the literature.

Conflict of interest

Declaration of Competing Interest

The author declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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