Dental Negligence: Case Reports of Accidental Formalin Injection and Chemical Burn Caused by Sodium Hypochlorite

K P Saujanya, Fareedi Mukram Ali, Sanjay Japati, Lalitha Srivalli

Abstract

Health profession including dentistry is considered as the noble profession, but mistakes do happen in every profession. The dental negligence can lead to serious complications and can cause a threat to one’s life. Many of the dental practitioners are still not aware of such things. This article describes two of such cases of accidental exposure to chemicals.

Key Words: Chemical burn, formalin, injection, sodium hypochlorite.

Introduction

Dental negligence can be of various forms, some of which are accidental injection of the toxic substance, instead of local anesthesia or the contact with the toxic substance, which causes hazardous effect on the oral mucosa. Formalin is used in dentistry as a disinfectant, antiseptic and tissue preservative; which is a 35-40% standard aqueous solution of formaldehyde. It is a toxic substance, which mainly affects respiratory tract, gastrointestinal tract, and the skin. There are various forms of formalin toxicity, like exposure to formalin vapors, skin contact, accidental ingestion or injection of formalin. Sodium hypochlorite is used as an endodontic irrigant as it is an effective antimicrobial and has tissue-dissolving capabilities. It has low viscosity allowing easy introduction into the canal architecture, an acceptable shelf life, is easily available and inexpensive, but it has negative property as it can cause soft tissue inflammation, if it contacts outside the confines of the root canal.

The present article reports two cases of dental negligence, one of accidental formalin injection and the other of chemical burn caused by sodium hypochlorite to lip mucosa.

Case Reports

Case 1

A 28-year-old male patient referred to the department from outside clinical practitioner with a complaint of severe pain at right side posterior and lingual of mandibular ramus area. The private dentist has injected the formalin instead of local anesthesia for giving inferior alveolar block. Fortunately, he had injected very less quantity. Patient now complains of severe pain in that region. Clinically sloughing is seen at pterygomandibular raphae area (Figure 1). Usually, these cases require debridement and surgical intervention, but as the damage was less in the present case, it was decided to manage conservatively. The area was cleaned by copious irrigation with normal saline. Analgesics, antibiotics, and steroids were given to the patient, and the patient kept on constant observation and dressing change. After 15 days, patient had no complaint of any pain or irritation and also there was no evidence of necrosis in that area.

Case 2

A 31-year-old male patient referred from the private practitioner with a complaint severe burning sensation and ulcers on lower lip since 2 days (Figure 2). Patient had undergone root canal treatment 3 days before form outside private dentist and accidentally sodium hypochlorite contacted to his lower lip mucosa, which resulted in a chemical burns at that area. The area was irrigated with copious amount of normal saline, and analgesics and antibiotics were given to the patient. Patient...
kept on constant observation. After 10 days, there was complete healing of the area.

Discussion

Instead of proper precautions, accidents sometimes happen in the health profession, as in dentistry. The word negligence is derived from the Latin word *neglego* or neglect and is defined as “lack of proper care and attention; culpable carelessness.”²

Formalin is generally used in dentistry for the preservation of biopsy specimens as 10% concentration and the main reason for formalin accidents is because it is most commonly placed in a local anesthetic bottle for the collection of specimen.⁷ Sodium hypochlorite is used as a root canal irrigant, which has toxicity in the form of damage to eyes, skin or oral mucosa; extrusion beyond the apex of tooth and accidental injection instead of local anesthetic. The damaging effect of sodium hypochlorite on contact with skin or oral mucosa is that, alkali’s combines with proteins or fats in the tissue to form soluble protein complexes or soaps, which resulted in chemical burn.⁴⁻⁶

Conclusion

Every dentist should have enough knowledge of precautions and management about handling of the toxic chemicals, to avoid the complication and to improve patient’s quality of life.

References


Figure 1: Sloughing at pterygomandibular raphae region caused by accidental formalin injection.

Figure 2: Chemical burn on lower lip mucosa on right side, caused by contact with sodium hypochlorite.