

Worrisome Implications of Accidental Injection of Colourless Corrosive Chemicals Intraorally into Perioral Tissue Spaces: A Severe Negligence

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ABSTRACT

During certain treatment procedures in a dental clinic, few colourless chemicals like Local Anaesthetics (LA), sodium hypochlorite, formalin, hydrogen peroxide, xylene, chloroform etc., are often used simultaneously. Instead of LA, these chemicals may be accidentally injected in oral soft tissues due to casual handling. These accidental injections produce severe corrosive effects in and around perioral tissues and may lead to chemical necrotising cellulitis within 24 hours. Osteolytic changes of underlying bone and fatty infiltration with necrosis of the soft tissues can also occur. These events of accidental injection of such corrosive chemical solutions in patients during dental treatment may occur owing to the use of empty LA bottles for storage of these corrosive chemicals which can be easily mistaken for LA solution. Every solution has its indicated use in dentistry and treatment procedure. While performing any treatment procedure in dental clinic, utmost care and precautions must be taken to avoid any medical negligence in administering such corrosive chemicals intraorally which may make the patient's life havoc because of hazardous complications in maxillofacial region. This paper reviews accidental intraoral injection of these colourless chemicals and also discusses the adverse effects, prevention and management of such inadvertent injections. Successful management includes cautious debridement and empirical drug therapy (antibiotics and analgesics).

Keywords: Debridement, Hypochlorite, Injury, Necrosis, Treatment

INTRODUCTION

Successful and effective treatment cannot be rendered to patients in a dental office without the use of LA agents. Their indications and use in dentistry are highly unvaried; untoward eventful complications are also sporadic [1]. The paramount achievement in dentistry to occur is the evolution and advancement of safe LA. Several anaesthetic agents like lignocaine, bupivacaine, ropivacaine etc., are available that provides rapid onset and sufficient duration of surgical anaesthesia. Allergy or systemic toxicity is sporadic and rare occurrence after the administration of LA [2]. However, all LA agents have the potential to produce predictive and threatening toxicity if used carelessly [1]. During certain dental treatment procedures, few colourless chemicals like sodium hypochlorite, formalin or hydrogen peroxide are often used simultaneously along with LA. Injury from accidental injection of these corrosive chemicals may occur upon casual handling [3]. There have been reported as well as unreported events of accidental injection of such corrosive chemical solutions in patients during dental treatment owing to use of empty LA bottles for storage of these corrosive chemicals which can be easily mistaken for LA solution [4]. The accidental injection of these corrosive liquids like formalin into oral and maxillofacial tissue spaces may lead to chemical necrotising cellulitis within 24 hours. Osteolytic changes of underlying bone and fatty infiltration with necrosis of the soft tissues involved have also been reported [5].

DIFFERENT CHEMICALS AND THEIR SIDE-EFFECTS

Formaldehyde is generally available in a powder form (paraformaldehyde) or solution form (formalin) in water and methanol. Owing to its fixative and disinfectant properties, formalin has been widely used in dentistry. Fixative labelled as 10% buffered formalin is in fact a 4% solution of formaldehyde (i.e., 10% solution made from a 37-40% commercially pure solution of formaldehyde) [6]. Cases have been documented in literature wherein formalin solution was erroneously injected intraorally

rather than LA for nerve blocks or formalin had been used for irrigation during impacted mandibular third molar surgery instead of using isotonic saline solution for irrigation [3,5,7-12]. Sodium Hypochlorite (NaOCl) solution is one of the most routinely used irrigating solutions for endodontic treatment procedures. It dissolves necrotic tissues, has lubricant properties and is very effective against broad spectrum of microorganisms [13]. Nevertheless, it is also highly toxic to normal vital tissues. A 1% concentration of NaOCl provides sufficient antimicrobial effect and tissue dissolution, but often, the concentration of NaOCl used in endodontics has been as high as 5.25% [14].

However, clinical complications have been reported in literature because of the erroneous use of NaOCl, which includes inadvertent accidental injection into the periapical tissues or maxillary sinuses, allergic or hypersensitivity reactions or splashing into the patient's eyes [15]. In 1913, Hydrogen Peroxide (H₂O₂) was first used in dentistry. It is a clear, colourless and odourless chemical solution. It forms an acidic solution when completely dissolves in water and pH of the resultant solution varies according to concentration. Its use is indicated for treatment of various dental diseases like gingival diseases, periodontal diseases, mouthwash, bleaching, and wound debridement. H₂O₂ is highly irritant and cytotoxic solution. Concentration of 10% or higher is highly corrosive to mucosa as well as skin and causes burning sensation and extensive tissue damage. Current guidelines indicate H₂O₂ as a hazardous liquid if used at concentration above 5% [16].

DISCUSSION

Transparent, clear, colourless solutions such as LA, sodium hypochlorite, hydrogen peroxide, formaldehyde, xylene, chloroform and normal saline are routinely used in dentistry, so the tissues are predisposed to accidental injury erroneously [17]. Though such incidences are very rare, but they are also rarely reported in the literature [Table/Fig-1] [3,5,7-18] owing to obvious negligence and litigational considerations.

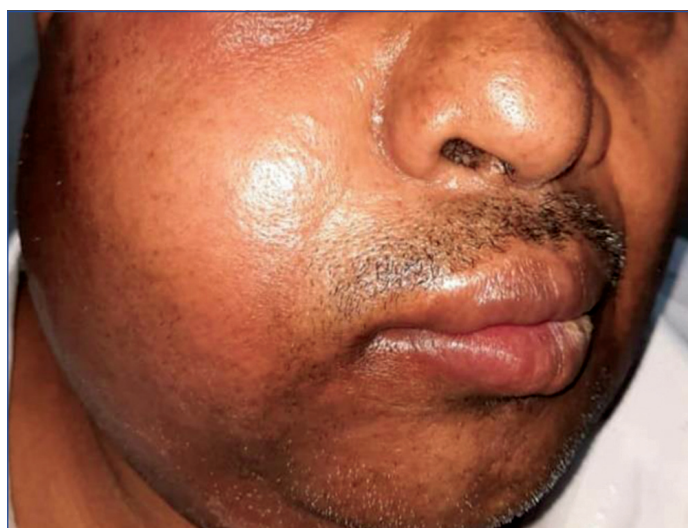
S. No.	Authors	Solution injected	Procedure performed	Clinical symptoms	Management	Follow-up findings
1.	Hermann JW and Heicht RC, 1979 [14]	Sodium hypochlorite	Endodontic treatment of a mandibular left molar (left mandibular block).	Severe pain, immediate trismus, Massive swelling, deviation of the midline and uvular soft tissue, difficulty in swallowing.	<ul style="list-style-type: none"> Intravenous administration of 5% dextrose injection in water was started. Fentanyl 0.05 mg Intravenous (i.v) to reduce the pain. Admission under Intensive Care Unit (ICU). i.v. fluids. 50 mg demerol Intramuscular (i.m.) every four hours for control of pain. Erythromycin oral suspension 250 mg four times daily (QID) hospitalised for four days. 	Complete resolution in two weeks.
2.	Lian CB and Ngeow WC, 1998 [7]	Formalin	Irrigation during third molar surgery.	Sore throat, difficulty in swallowing saliva, swelling.	<ul style="list-style-type: none"> Immediate irrigation of surgical site with copious amounts of normal saline. Immediate administration of i.v dexamethasone (10 mg) intraoperatively. ICU admission for further observation. i.v. penicillin G (50,000 units QID), i.v. metronidazole (500 mg TDS), i.v. ranitidine 50 mg three times a day (TID), i.v. dexamethasone (4 mg QID for one day), i.v. fluids (5 L), potassium chloride (1g/24 hour), 3 mg morphine in the form of patient controlled analgesia. Oral antibiotics (500 mg of amoxicillin three times a day and 400 mg of metronidazole two times a day for five days) were prescribed on discharge. 	Healing was uneventful.
3.	Gursoy UK et al., 2006 [15]	Sodium hypochlorite	Injection into the maxillary palatal mucosa for endodontic purpose.	Sudden, severe pain for two days, Ulceration and necrosis of the palatal mucosa	<ul style="list-style-type: none"> No surgical intervention was required. 	Tissues healed without scarring within 30 days.
4.	Gupta DS et al., 2011 [8]	Formalin	Local infiltration for upper first molar extraction.	Severe pain and burning sensation, Severely tender swelling and erythema intraorally and extraorally.	<ul style="list-style-type: none"> Continuous monitoring for 72 hours. Local injection of triamcinolone acetonide 10 mg/mL (steroid) once daily for five days. Prophylactic antibiotics (amoxicillin with clavulanic acid and metronidazole, eight hourly) for five days. i.v. dexamethasone (8 mg) dose for three days in tapering doses. i.m. diclofenac sodium Twice daily (BD) for three days followed by oral tablets. Povidone iodine gargles. 	At the end of 1 week, the patient was completely comfortable.
5.	Waknis P et al., 2011 [13]	Sodium hypochlorite	Local infiltration in labial vestibule in lower left canine region.	Severe pain and burning sensation, extraoral ecchymosis, tissue destruction, paresthesia.	<ul style="list-style-type: none"> Nerve block was administered to reduce pain. Local injection of steroid (2 mL of dexamethasone- 4 mg/mL). Copious irrigation with normal saline. Debridement of necrotic tissue. Daily dressings for 7seven days. Medications (Antibiotics and Analgesics for five days). 	Wound healing was satisfactory at the end of one month. An extraoral scar and a small area of paresthesia persisted even after five years.
6.	Arakeri G and Brennan PA, 2012 [9]	Formalin	Posterior superior alveolar nerve block for upper second molar extraction.	Progressively increasing swelling and severe burning over the cheek region and around eye, heaviness in the chest, not associated with dyspnoea.	<ul style="list-style-type: none"> 8 mg of dexamethasone was administered i.v. Prophylactic empiric course of high-dose broad spectrum. intravenous antibiotic (amoxicillin 1 gm) was commenced. Repeated exploration and drainage of site with normal saline and placing small gauge tube drain. Systemic antibiotic course with analgesic was started. 	<ul style="list-style-type: none"> Uneventful recovery and discharge after five days. No functional deficit No signs of paresthesia.
7.	Vaka RB et al., 2014 [3]	Formalin	Extraction of supernumerary tooth between 14 and 15.	Relentless burning pain, breathlessness, extraoral oedema, Necrosis and sloughing of tissues.	<ul style="list-style-type: none"> Hydrocortisone 100 mg. Antibiotic prophylaxis- amoxicillin (1 gm i.v.). Incision with Corrugated Rubber Drain (CRD) placed, repeated aspiration and saline irrigation. Shifted to the ward for close surveillance. Systemic antibiotic therapy along with analgesics. 	Lost on follow-up.
8.	Dandriyal R et al., 2014 [10]	Formalin	Inferior alveolar nerve block for lower third molar surgery.	Sharp burning pain, swelling and pus discharge along with severe trismus on 27 th day, Orthopantomogram (OPG) suggestive of osteolysis in the angle region and Computed Tomography (CT) scan findings were suggestive of necrosis of medial pterygoid.	<ul style="list-style-type: none"> Immediate exploration and meticulous debridement of pterygomandibular space, placement of CRD. Prophylactic broad-spectrum antibiotics along with analgesics were prescribed for seven days. Good oral hygiene maintenance by using 15 mL povidone-iodine gargles twice to thrice daily. Surgical excision of necrotised muscles and soft tissues under GA. 	Completely asymptomatic after one year of follow-up.
9.	Bector A et al., 2015 [5]	Formalin	Inferior alveolar nerve block.	Severe burning sensation, pain, swelling, trismus, periorbital oedema, Ulcer.	<ul style="list-style-type: none"> Local Anaesthetic (LA) solution (2% lignocaine hydrochloride with 1:80,000 adrenaline) was administered to relieve pain. Repeated isotonic saline injection and content aspiration. i.v. saline infusion along with oral dexamethasone (5 mg). Systemic antibiotics and analgesics (i) amoxicillin 250 mg daily; (ii) metronidazole 200 mg orally three times daily for five days along with analgesics, vitamin B complex and chlorhexidine mouthwash. Oral dexamethasone was continued twice daily for five days with tapering off the dose. Regular irrigation with normal saline and povidone-iodine (1% w/v) solution. 	At the end of four weeks, the patient was completely comfortable with no signs of paresthesia and no functional deficit. Mucosal wound healing was complete without any complication.

10.	Swami PC et al., 2016 [12]	Formalin	Incisive nerve block and lingual infiltration.	Severe burning sensation and pain, palpable tender swelling, ulcerated lesion, paresthesia of lower lip.	<ul style="list-style-type: none"> • Injection of normal saline (5 mL) for irrigation and dilution. • Pheniramine maleate (Avil) 45 mg i.v. for 3 days. • Dexamethasone 8 mg IM for 3 days in tapering doses. • Cefixime 1 g i.v. diclofenac sodium 75 mg IM and ranitidine 50 mg i.v. all twice daily. • Trypsin/chymotrypsin 50 BD orally. 	Symptom-free at four month follow-up.
11.	Jain J et al., 2016 [16]	Hydrogen Peroxide	Posterior superior alveolar nerve block for crown cutting procedure for an upper molar tooth.	Exposed necrotic bone in left palate region.	<ul style="list-style-type: none"> • Acrylic splint was made for the maxilla to protect the wound from trauma. • Sequestrectomy under LA and multiple bleeding points were created in the palate to facilitate healing. • Surrounding soft tissues were freshened and Absorbable Gelatin Sponge (AbGel) was secured over the bleeding points on exposed bone with stay sutures. • Wound was regularly irrigated with betadine-saline everyday for three to four days. 	Complete bone epithelisation and healing was observed within three weeks.
12.	Sarode SC et al., 2018 [11]	Formalin	Infiltration into the buccal mucosa for incisional biopsy.	Severe pain, burning sensation, erythema, extraoral tender swelling, necrotic tissue.	<ul style="list-style-type: none"> • Observation for 48 hours. • 2 mL dexamethasone i.v. immediately. • Dexamethasone 8 mg i.v. BD in tapering doses for 3 days. • Diclofenac sodium IM TDS/day. • Taxim 1 gm i.v. BD/day for five days. • Metronidazole 400 mg i.v. TDS/day for five days. • 2% betadine mouthwash. • Necrosed tissue was excised and the defect was reconstructed with collagen membrane. 	After two weeks, the oral tissues appeared healthy with no postoperative scar formation.
13.	Verma P et al., 2018 [17]	Chloroform	Buccal infiltration for restoration w.r.t. upper central incisor.	Swelling, burning pain, soft tissue necrosis, permanent sensory and motor nerve damage.	<ul style="list-style-type: none"> • Ibuprofen to alleviate pain. • Diphenhydramine to control the swelling and allergic reaction to chloroform. 	One year after the accident, total numbness, asymmetric muscle movements of the upper lip asymmetric facial appearance, occasional throbbing pain lispings, inadvertent spitting while speaking, and saliva drooling while sleeping. Overall, the accidental injection permanently affected the patient's quality of life.
14.	Acharya S et al., 2019 [18]	Xylene	Local injection for endodontic retreatment of upper central incisors.	Severe pain, large swelling with the skin becoming purple in colour after 24 hours, necrosis of tissue and lot of purulent discharge.	<ul style="list-style-type: none"> • Immediate dexamethasone (Decadron 0.25 mg i.m.) along with diclofenac sodium administration. • LA administration for pain control. • Repeated injection of isotonic saline and aspiration of the content. • Medications prescribed for two weeks- 1) Amoxycillin with potassium clavunate (625 mg) twice daily; 2) Metronidazole (200 mg) thrice daily; 3) Trypsin, bromelain, rutoside and diclofenac combination twice daily; 4) oral dexamethasone (5 mg) twice daily for five days. • Incision and drainage of the swelling followed by repeated betadine irrigation and CRD placement. 	Took 25 days for complete healing.

[Table/Fig-1]: Review of literature of accidental injection of different solutions, clinical symptoms, management and follow-up [3,5,7-18].

Formalin can enter the human body either by inhalation, ingestion or injection. Following entry, the metabolism of formaldehyde in human body forms an intermediate that accumulates within the body and can lead to fatal metabolic acidosis [19]. The orally ingested fatal dose of formaldehyde is about 50-100 mL which can lead to fatal myocardial depression [20]. In cases of accidental entry of formalin into the intravascular compartment, patients have developed acute haemolysis and cardiac arrhythmias which are fatal, leading to death. Following formalin ingestion, death can also occur because of metabolic acidosis, circulatory shock and Disseminated Intravascular Coagulation (DIC). Formalin also has direct oxidant effect on Red Blood Cells (RBCs) [21]. Within seconds after the accidental intraoral injection of formalin (approximately, five seconds), the patient complains of severe, sharp, shooting, relentless, burning pain and a sensation of fiery intense discomfort at the injection site as well as ipsilateral side of face. An apprising oedema along with sloughing and necrosis of surrounding tissues becomes evident within 24 hours leading to chemical facial necrotising cellulitis [Table/Fig-2].

Formalin may also lead to osteolysis of the jaw bone or fatty infiltration and necrosis of the surrounding muscles. Depending upon type of nerve injury caused, formalin injection can cause permanent anaesthesia/paresthesia of anatomic regions supplied by nerve injured by the solution. Eventually, the patient may develop abscess, trismus and periorbital oedema suggestive of spread of



[Table/Fig-2]: Facial oedema along with infection to adjacent spaces.

cellulitis and infection to adjacent spaces [3]. Many authors have reported cases of accidental administration of formalin during dental treatment procedures [3,7-10] [Table/Fig-1].

In literature, there are numerous reported cases about complications following root canal irrigation with NaOCl [13-15] [Table/Fig-1]. Most of the NaOCl mishaps are the consequences of accidental extrusion of the solution beyond the apex. However, the inadvertent

accidental injection of NaOCl instead of LA solution is an extremely rare misuse; however, such incident can result in severe acute disastrous complications. NaOCl is highly irritating solution when administered into oral tissues. Patient immediately complains of severe acute burning pain and sensation. NaOCl has severe cytotoxic effects on the vital tissues at cellular level leading to severe vasculitis, haemorrhage, ulceration and irreversible cellular injury [13]. Following contact with vital interstitial tissues, NaOCl ensues a violent reaction causing intense pain, oedema, swelling and tissue destruction. Patient experiences severe burning pain even when the tissues are anaesthetised. Swallowing NaOCl is more hazardous as it may cause pharyngeal oedema and oesophageal burns [22,23]. Extraorally, ecchymosis may appear corresponding to the area of infiltration/injection, and may persist as a marked facial depression. The depression is indicative of the subcutaneous tissue loss and subsequent scar contracture [13]. Inadvertent administration of NaOCl into the maxillary sinus has been documented in various case reports with complications varying from non significant, to burning sensation and accompanying nasal bleeding, to severe acute facial pain requiring hospital admission and surgical intervention under General Anaesthesia (GA) [24-26].

After inadvertent accidental administration of H₂O₂ solution in oral tissues, it causes soft and hard tissue damage leading to sloughing of the tissues, severe pain and fetid odour. Soft tissues exposed to high concentration of H₂O₂ undergo chemical injury resulting in erythema/mucosal sloughing [27]. In dentistry, xylene and chloroform are used in endodontic retreatment as a guttapercha solvent. Acharya S et al., reported a case where during retreatment of root canal treated tooth, xylene was injected instead of LA for pain control [18]. Verma P et al., reported a case of an accidental chloroform injection for non surgical retreatment of tooth #8 as part of a restorative treatment plan in a 69-year-old woman [17].

Reasons of Accidental Injection of Chemicals Intraorally

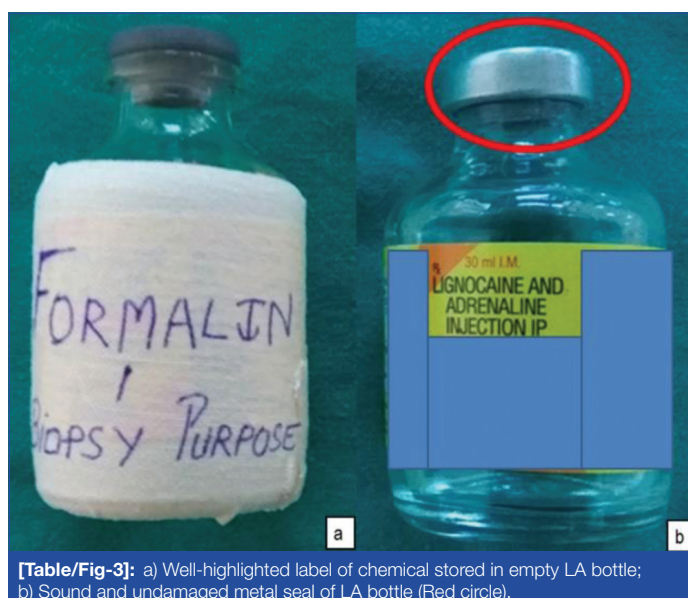
Various reasons can be put forth for occurrence of such unfortunate incident and tragic scene in dental office [3,8,13,28].

1. The most prodigious and key strategic factor which lead to such hapless episodes is improper repository i.e., storage of dental chemicals in LA bottles or unlabelled containers. There is documented remarkable (58.5%) reuse of empty LA bottles by practitioners for storage purpose [28].
2. The repeated use of empty LA bottles for preserving and transferring biopsy tissue specimens in lieu of distinctly labelled biopsy bottles is also one of the major factors accountable for such mishaps.
3. Most of the dental practitioners and dental institutions still routinely depot formalin in LA bottles for preserving extracted teeth.
4. Abated awareness of the dental assistant about these corrosive solutions is also accountable for such unforeseen incidents. About 40% of dentists are still assisted by unskilled assistants [28].
5. Usage of disposable syringes instead of cartridges for administration of LA.
6. Gross error and negligence can occur when solutions are loaded in a similar 2 mL syringes simultaneously.
7. Use of LA and NaOCl is almost simultaneous during root canal treatment and there is a high possibility that the clinician mistakes one for another.
8. Even, the use of face mask during the treatment procedures probably masks the pungent and offensive odour of formalin solution.

Precautions to Prevent any Accidental Injection of Chemicals Intraorally

Taking certain precautions may prevent such repentant mishaps in the dental office to some extent [3,5,10,15,29,30].

1. Proper labelling and separate storage and shelving should be done for each of such chemicals.
2. The LA solution should be kept and stored separately from such corrosive colourless solutions. There should be one predefined area where only LA bottles are kept.
3. It is extremely required to safely keep other colourless dental solutions and chemicals aside from the clinical area. All chemicals that are not used for injection must be physically removed from clinical areas.
4. Practice of reusing empty LA bottles for storage of dental chemicals should be discouraged to deter such incidents.
5. LA bottles, if at all to be reused, should never be used with existing labels. Once empty, existing original labels should be removed immediately and must possess a new well-highlighted label of chemical stored [Table/Fig-3a].
6. All the staff working (assistants and attendants) in dental clinic should have a thorough introduction and knowledge of dental drugs and chemicals used in the clinics and their severe side-effects.
7. Different type of syringe and needle should be used for loading different solutions and preferably 2 mL syringe should be used solely for loading LA solution. To avoid inadvertent administration of NaOCl during endodontic treatment, NaOCl solution should be loaded in special syringes, which are clearly distinguishable from syringes used for loading LA.
8. Clinician should check and confirm the contents of the syringe before injecting if it is loaded by the assistant or the dentist himself should load the syringe. It should be made customary and mandatory to check the sound and undamaged metal seal at neck [Table/Fig-3b] or collar of LA bottle while loading LA into syringe.
9. Some clinicians administer NaOCl from standard 2 mL disposable dental syringes, with the belief that the long, fine needles are quite helpful for irrigation purpose. This habit is potentially dangerous. To avoid future risks and complications, clinicians should refuse to use NaOCl loaded in LA delivery devices, or unclearly labelled cartridges and carefully confirm the solution before injecting into patients.
10. Lastly, it is sole responsibility of the operating clinician for any unfortunate mishap in handling the dental chemicals and solutions. So, it is obligatory and binding for good clinician to delve, examine and confirm the contents of syringe before administering LA.



[Table/Fig-3]: a) Well-highlighted label of chemical stored in empty LA bottle; b) Sound and undamaged metal seal of LA bottle (Red circle).

Guidelines to Prevent, Manage and Treat Complications

Irrespective of the utmost care and precautions taken, if the clinician encounters such unfortunate mishaps, the following guidelines must be executed to prevent, manage and treat complication in patients [3,5,13,29].

1. Terminate the ongoing dental treatment procedure;
2. Monitor vital signs (Blood pressure, pulse, respiratory rate, temperature, oxygen saturation);
3. Do not panic, report the regrettable incident to the patient and obtain written consent form.
4. Initiate i.v. prophylactic antibiotic regimen (1.2 gm amoxicillin plus clavulanic acid and 500 mg metronidazole) and i.v. ranitidine 50 mg.
5. Administer LA solution carefully to relieve pain, if required.
6. Place tube drain through vestibular incision into tissue space at the affected region of nerve block, irrigate with isotonic saline, aspirate the injected contents and thus, reduce the neurotoxic effects of formalin. A large bore needle (18 gauge) can also be used for irrigation. This will dilute the chemical like formalin and may prevent tissue necrosis.
7. Repeat the maneuver (point 6) for several times to eliminate as much of injected solution as possible from the tissue spaces.
8. Place CRD into tissue space in-situ for continuous drainage of the chemical solution.
9. In case of bleeding, let the bleeding continue as it helps to flush the irritant out of the tissue.
10. Administer early i.v. (8 mg dexamethasone) as well as local submucosal (2 mL of dexamethasone - 4 mg/mL) corticosteroids to prevent/reduce the severity of inflammatory reaction
11. Monitor patient at emergency room/recovery room for minimum four-six hours and discharge only if vitals are within normal limits.
12. Systemic antibiotics, analgesics and other medications should be prescribed:
 - Amoxicillin plus clavulanic acid (625 mg TID orally for five days)
 - Metronidazole (400 mg TID orally for 5 days)
 - Analgesics
 - Oral steroids (8 mg dexamethasone BD for 3 days followed by tapering dose)
 - Vitamin B complex
 - Chlorhexidine mouthwash

Antibiotic prophylaxis will prevent secondary infection or spreading of existing infection.
13. Daily follow check-up is mandatory. Hospitalisation should be advocated in case of increasing swelling, tissue destruction/necrosis or airway obstruction.
14. Periodic monitoring of the injected site is required; the affected site should be thoroughly irrigated with povidone-iodine (1% weight/volume) and normal saline solution and corticosteroids should be administered daily at site of injection locally for five days.
15. Swab should be sent for culture and sensitivity testing in case of prolonged course of infection and culture specific antibiotics should be administered.
16. Meticulous debridement and surgical excision of necrotic tissue/muscle under GA/LA should be performed, if required.

Sometimes, in case of formalin accidents where formaldehyde enters the blood stream, artificial ventilation may be required to maintain oxygen saturation, as it causes haemolysis. Dialysis may be required to remove formalin from the bloodstream. Infusion of N-acetylcysteine with haemodialysis is indicated to prevent the

conversion of formaldehyde to formic acid thereby reducing the metabolic acidosis [20,29-31].

Use of LA and other clear colourless solutions is almost simultaneous during various dental treatment. Although no established guidelines exist about the management and treatment of patients with intracorporeal administration of such corrosive chemicals, prevention of such incidents is best rather than treating the complications.

CONCLUSION(S)

To conclude, extreme precautions and care should be taken while handling and using clear colourless chemical solutions such as LA, sodium hypochlorite, formalin, alcohol, acrylic monomer, hydrogen peroxide, etc., which are frequently used in dental office. In case of accidental administration of any corrosive solution, patient should be informed. Immediate surgical exploration and meticulous debridement of the site should be done in order to limit the tissue damage and necrosis. Necrotic soft tissue should be excised. Prophylactic broad-spectrum antibiotics, analgesics and steroids should be prescribed.

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