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Accidental Injection of Formalin: Case Report of Severe Negligence in Dental Office

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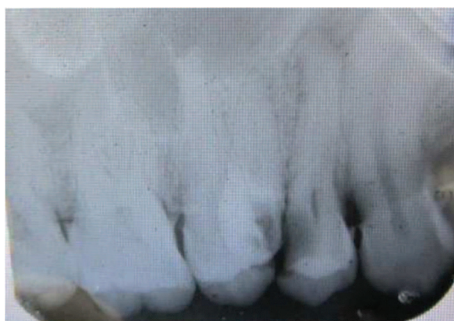
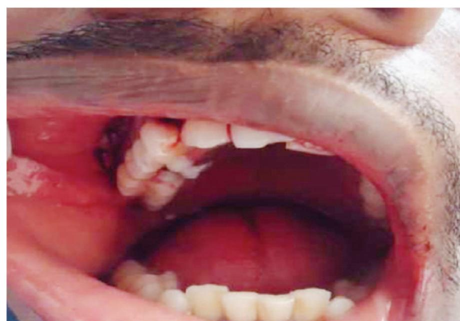
Dear Sir,

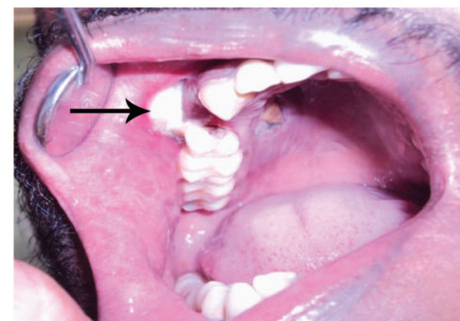
Trenchant service cannot be rendered to dental patient without the use of local anesthetics. Their application in dentistry is so mundane and untoward consequences are thereby sporadic. The cardinal achievement in dental science to occur is the ontogenesis of safe and impelling local anaesthesia. Numerous agents are available that provide expeditious onset and sufficing duration of surgical anaesthesia. Systemic toxicity is been hardly reported after the administration of local anaesthesia [1]. On the contrary, all local anesthetics have the potential to produce portentous toxicity if used heedlessly [2]. Here, we present an unconventional case which the dentist (author) encountered while administering formalin in lieu of local anesthesia in a dental institution. Male patient aged 28 years reported to Theja Instititute of Dental Sciences, with the chief complaint of pain and food impaction in the maxillary right anterior region since a week. Personal history revealed that he was non-alcoholic, non- smoker and currently employed in a private concern as electrician. On intraoral examination, 14& 15 teeth were decayed due to dental caries and presence of a supernumerary tooth betwixt the former was noticed. Medical history did not infer any positive findings and no systemic abnormalities were detected. Radiographic investigation incarnated the pulpal involvement in supernumerary tooth (distally) and 14 (mesially), which evoked to be root cause of immense pain [Table/Fig-1]. Pertaining to the patients need and concern, the supernumerary tooth was advised for extraction owing to the food lodgment in the respective region. As a conventional procedure, the dental assistant (intern) loaded the dental syringe with local anesthesia. Instantly after the onset of injection, the patient carped of relentless burning pain on the injected site and on the respective side of face. The dentist (author) corroborated it as a dyspathetic reaction and the patient was administered hydrocortisone 100mg. In short notice, the patient griped about breathlessness. His vital signs were monitored and revealed to be pluperfect and the recuperated medical history was vetted again. The aberrancy of neither the cardiovascular nor respiratory signs was appreciated in the patient. The dental procedure was abruptly terminated and in course of time, the breathlessness subsided gradually.

On examination of the local anesthetic bottle, it was incontestable that formalin was injected erroneously. The patient was intimated about the erring injection and bolstered up. Consent form was acquired from the patient to proceed with further management. Antibiotic prophylaxis was initiated with intravenous administration of amoxicillin (1g). The local anaesthesia was administered with meticulous care. Few minutes later, at the site of injection, a buccal vestibular incision was placed and forthwith pungence of formalin breath was noticed. The formalin was aspirated from the site and circumambient tissues with the aid of corrugated rubber drain. In the due course, severe bleeding was encountered at the injection site thereby saline irrigation was performed until the stench of formalin breath subsided. Conjointly, the extraction of 14 had to be performed on patient's demand, as the patient was reluctant in undergoing root canal manoeuvre for the same. The wound was closed with 3-0 silk sutures (Mersilk) to control hemorrhage [Table/Fig-2]. Patient was consoled and reassured after the culmination of treatment. He was shifted to the ward and monitored under close surveillance. Systemic antibiotic therapy was commenced along with analgesics, to ease the trauma. An apprizing edema was evident on the very next day, extra orally. Sloughing and necrosis of surrounding tissues was found bucally and labially [Table/Fig-3]. Saline-irrigation was implemented and patient was given instructions to report next week for periodic monitoring, but the patient did not come for further follow, instead he went to the prior practitioner.

To rule out the dialectics, which lead us to this hapless episode, the strategic factor was storage of dental chemicals with unlabelled containers. Unremarkably most of the dental practioners and dental institutions in India still prevail to depot formalin in the local anesthetic bottles for perpetuating teeth [3]. Literature documents that in a parallel scenario, where the formalin was injected fortuitously for local anesthesia and improper repository was one of the prodigious factors [3]. Surprisingly, in an occurent survey, it has been evinced that among the 1484 practioners in India, 58.5% academicians reused local anesthetic bottles for storing biopsy specimens [4]. The above statement reasserts the etiology involved behind the tragic scene. Secondly, the abated awareness of the dental assistant is also accountable for this unforeseen scenario. In the incumbent







[Table/Fig-1]: Intra oral periapical view of 14, 15 & Supernumerary teeth **[Table/Fig-2]:** Sutures after extraction of 14 and supernumerary tooth **[Table/Fig-3]:** Necrosis and sloughing of tissues labially and palatally

situation, dental assistant (intern) loaded the formalin injudiciously in lieu of local anesthesia. It is mandatory for a good clinician to delve the vial contents again, before administration of local anesthesia, which was not taken care of by the dentist (author). As postulated in literature 40% of dentists are still assisted by unskilled assistants [4]. Undergraduates need to be emphasized about the drug safety and toxicity of dental chemicals if at all to serve inside dental operatory. The former information was not accentuated by the dentist (author) to the undergraduate (intern), which lead to the current presumptuous incident. Continuing dental education curriculum ought to colligate this aspect to avert similar affliction. Irrespective of the precautions, if the dentist encounters such mishaps, the respective guidelines must be implemented to handle such patients.

1. Terminate the current dental treatment abruptly.
2. Avoid panicking and narrate the regrettable incident to the patient.
3. Obtain consent form and initiate antibiotic prophylaxis (I V).
4. Drain the injected formalin and place loose sutures to enhance healing.
5. Seek the aid of an oral surgeon or nearby hospital if the dentist prefers to handle the complication with safety.

In future to circumvent such circumstances, the specific protocols need to be cultivated by the dental practitioners, which have been recuperated from the repentant episode.

i. Local anesthetic bottles, if at all to be reused for perpetuating specimens, must possess a label.
ii. Unskilled assistants should not be entertained to work in dental operatory.
iii. It is extremely safe to keep the dental chemicals aside from the clinical area, if they are not indicated for injection purpose.

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