**Title Page**

**Type of manuscript:** Case Report

**Title of Manuscript:**

NEGLIGENCE OF DENTAL STAFF AUXILIARIES – A short case report.

**Authors**

1. Kiran S Palakurthy MDS

Department of Prosthetic Dental Sciences.

AlFarabi College for Dentistry and Nursing

[palakurthykiran@gmail.com](mailto:palakurthykiran@gmail.com)

+966507877233

Affiliation Address: AlFarabi College for Dentistry and Nursing, Riyadh, Saudi Arabia

1. Dr. Praveen Mamidi MDS

Professor & Head,

Department of Prosthodontics.

Panineeya Mahavidyalaya Institute of Dental Sciences.

[Praveen\_mds@yahoo.com](mailto:Praveen_mds@yahoo.com)

1. Dr. Mohammad Zakaria Nassani DDS, PhD

Department of Prosthetic Dental Sciences,

AlFarabi College for Dentistry and Nursing

1. Dr Mahmoud Darwish BDS, MSc PhD

Department of Prosthetic Dental Sciences, AlFarabi College for Dentistry and Nursing

**Correspondence Address**

Dr. P S Kiran

12-1-1/c/20

Sathyanagar, Lalapet, Secunderabad. India

Contact: +966507877233, +919000297550 : Email ID : [palakurthykiran@gmail.com](mailto:palakurthykiran@gmail.com)

**Details**

Total Number of Pages: 9

Total Number of photographs: 4

Word Count Abstract: 146

Article Text: 2018

Source of Support/Funding: None

Conflict of Interest: None

**NEGLIGENCE OF DENTAL STAFF AUXILIARIES – A short case report**

***ABSTRACT:***

A clinical dental practice involves handling of various toxic and non-toxic solutions for effective treatment delivery in any clinic set up. The inadvertent use of these solutions may sometimes leads to irreversible systemic complications. Proper care, dental operative protocols, rules and regulations for the disinfection, sterilization, storage of all the consumable and non-consumable materials and equipments should be predetermined and followed strictly to avoid unnecessary complications at the operative chair. The present paper report us about the inadvertent use of a foreign solution in lieu of a local anesthetic solution during a simple dental extraction and series of complications occurred thereafter. The suggested standard protocols should be followed to overcome these complications at the dental operatory area. It is also suggested to the dental councils to implement standard policies and amendments to enforce effective supervision among the dental staff auxiliaries to overcome/avoid such nuances/complications occurring thereof.

Keywords: Formalin, Local anesthetic agent, Saline, Sodium hypochlorite, Dental mal-practice.

**NEGLIGENCE OF DENTAL STAFF AUXILIARIES – A short case report**

***INTRODUCTION:***

Extraction of teeth is a relatively common procedure in dentistry performed under local anesthesia. Hopeless mobile tooth, grossly decayed tooth, irreparable damage to tooth due to trauma are few reasons wherein the extraction of teeth is advised. Improper care of extracted wound site results in post extraction complications. These complications range from severe to mild depending upon the procedure undertaken while extraction.

One of the reasons for the extraction of a tooth is by iatrogenic damage of tooth. Though very common complication yet limited sources of literature are noticed. This paper enlightens about the complications arises due to iatrogenic damage and negligence among the dental staff auxiliaries and possible treatment protocols to adapt for prevention of these iatrogenic accidents in the dental clinics. This clinical case report is of a failed root canal treatment leading to extraction of the tooth. The complications raised due to the negligent attitude of the dental staff and auxiliaries during extraction may result in physical trauma and also psychological trauma to the patient. At times, few dental clinics use a dental syringe for loading the solutions used in the dental operatory like saline solution, sodium bicarbonate (hypo) solution which is clear solutions and visually mimics the lidocaine hydrochloride solution. The dental personnel should label the contents of syringe immediately after loading with any solution. The damage to the soft tissues happens when an unlabeled syringe is used to treat in the operatory chair, which might lead to inadvertent consequences. If the unlabeled foreign solution is accidentally infiltrated during extraction assuming as a local anesthetic agent, it does not only lead to damage of soft tissue but also life threatening situations.1-3 The present case is an accidental infiltration of a foreign solution instead of the local anesthetic agent resulting in soft tissue necrosis and superceding infection.

***CASE REPORT***

A 56 years old male patient reported to the private dental hospital in Hyderabad, India with a necrotic sloughing in the lower anterior labial vestibule & floor of the mouth and a sinus opening on the chin with active pus discharge extra-orally. There was a direct communication between the floor of the mouth & lower anterior labial vestibule underneath the base of the mandible. (Fig 1)

The past dental history reveals that, ten days before the patient visited a general dentist for extraction of his lower anterior failed root canal treated the tooth with no pre-existing, pre-morbid conditions. According to the history provided by the patient, the dentist had infiltrated a foreign solution in both the buccal & lingual vestibule in the lower anterior region for extraction of teeth. The dentist after trying to extract, failed to do so, leaving the root in the alveolus, since adequate anesthesia is not achieved during the extraction procedure leading to the traumatic procedure at the extraction site.

After a few hours the patient developed stinging sensation in the tissues near to the extracted site, which was explained to the patient as a routine phenomenon and was placed on antibiotics. Two days later the patient noticed a yellowish tissue mass in the lower labial vestibular region. He visited the dentist with the same ailment and was told that it could be an infection because of the attempted traumatic extraction and the area was copiously irrigated and the patient was switched to another medication. The patient returned to the dentist with a sinus opening on the chin and pus discharge on the 8th day. The dentist referred the patient to our hospital, as he was not able to handle the case.

It was assumed that the reaction of tissues in the labial and lingual vestibular regions of the mandibule is due to the foreign solutions injected instead of lidocaine hydrochloride anaesthetic agent.

A detailed physical and general examination are initiated and the patient was placed on broad spectrum antibiotics & planned for a surgical procedure on the 10th day, post the incident. A Mandibular CT scan was advised which showed favorable intact buccal & lingual cortices (Fig 2 & Fig 3). The surgical profile is advised before the surgical intervention of the extracted site. The differential diagnosis is concluded as a granulomatous ulcer with sinus opening extra-orally or infected ulcer due to trauma. There was an aesthetic concern, as the floor of the mouth was breached and hence decided to operate the case under general anesthesia with the patient’s consent to avoid untoward consequences during the surgical procedure.

**PROCEDURE*:*** The patient was prepared for operating under general anesthesia. The general physical examination was done and the consent obtained from the physician and the anesthetist before the procedure. Vitals are recorded normal and the patient was operated under general anesthesia.

Necrotic slough was removed from both buccal & lingual vestibule. The remaining root portion is also removed from the extraction socket. The excision in the lingual vestibule was done minimally as care was taken not to impinge on the vital structures like salivary gland duct orifices. The skin adjacent to the sinus was excised & closed secondarily and tissues sent for the histo-pathological report. The floor of the mouth was closed secondarily; the esthetic concern of the patient was also taken into consideration. The bone surface intraorally was left to heal by secondary intention. Broad spectrum antibiotics were administered parentally on the following three days with NSAIDs. Patient discharged the following day with post-operative care instructions and reviewed after one week. After one week, post-operative healing was uneventful. A recall after two months’ post-surgery shows the soft tissue was totally healed and there was no evidence of tissue necrosis. (Fig 4). Second recall after 4 months done and patient refered for prosthodontic treatment to restore the functions.

The necrotic slough along with 2mm of normal tissue is excised and sent for histo-pathological examination. The histo-pathological report says chronic inflammatory lesion with pus, fibrin and proteinaceous substances, macrophages and macro-nuclear lymphocytes with bacterial involvement.

**DISCUSSION**

Dental Malpractice, or dental negligence is defined as an avoidable injury caused by a dentist who fails to take proper care.4 Any case where a dentist has performed poorly, negligently or inappropriately which results in avoidable harm being caused to a patient can lead to a dental negligence compensation claim. The type of dental claims can be divided into a) Injury: Dental malpractice, or dental negligence may involve harm to the patient, whether through poorly performed procedures, incompetence, or failure to diagnose. b) Serious injury: Serious harm to a patient experiencing life changing injuries, due to unsafe practice. A dentist can cause serious infection due to unsafe practices, fail to diagnose a case of oral cancer, or improper use of dental tools resulting in permanent injury.5-6

According to the criminal negligence and liability of Indian Penal Code section 88, the act performed causing any harm to any person – if it is for the benefit of that person – is not a crime, provided the act which causes harm was done in good faith and or expressed or implied consent of that person, to suffer that harm, was obtained.7

Certain guidelines are framed by the General Medical Council of the United Kingdom about the information given to the patients during the consent process but there are still variations among these followed by the practicing surgeons. Complications such as pain, swelling, trismus, bleeding, infection, damage to other teeth and temporary or permanent nerve damage are noticed during different surgical procedures.7,8

Very few cases in dentistry reported soft tissue necrosis following foreign material infiltration.9-11 Usually dental clinics do not label the contents of the loaded syringe. Most common substances which can be mistaken for local anesthesia by the dental care providers are formalin, sodium hypochlorite, hydrogen peroxide, spirit, fixer, developer and monomer solution.

In a survey conducted by Mahal and Shaw, it was noticed that one third of the dentists never follow Local Anesthesia test dose before the procedure and 48% of the dentists use it only when the history is suspicious. Though mandatory, this aspect is most neglected and under reported event in minor oral surgical procedures. In a study group of 1484 practioners, only one third of the practioners are aware of the rules and regulations for the safe disposal of empty Local anesthesia bottles.12

Few case reports have shown accidental infiltration of hypochlorite instead of the anesthetic solution. The clinical complications encountered were like pain, soft tissue necrosis and bone sequestration. Management of complications related to sodium hypochlorite has been described. Initially, the swelling should be treated with cold compresses. After 1 day, these should be replaced by warm compresses and warm mouth rinses to stimulate local microcirculation.10

Hospital admission and aggressive supportive measures must be considered in cases of the unfavourable clinical outcome. The patient should be informed that healing will take some days or even weeks, and that symptoms resolve completely in most cases. However, paresthesia might persist for a longer period if infiltrated near the nerve. Surgical intervention depends on the nature and severity of the incident. To reduce the acute pain, local anesthesia may be helpful along with the prescription of analgesics. The use of antibiotics is routinely recommended in these incidents, because of the presence of necrotic tissue and the risk of infection. Intravenous steroids, although not used in this case, have also been recommended.

**Precautions to be taken**:

An only trained person should be involved in labeling the clinical equipment. Loaded syringes should be disposed at the end of the day. Syringes should be loaded as and when required. All the solutions should be stored at the appropriate temperatures. Solutions should be checked for turbidity, sediments and change in color. All solutions should be noticed for their date of expiry before loading. Solutions should never be preloaded. All the toxic and non-toxic are stored and loaded in a specially designated area, away from the operatory except the local anesthetic agent.13

The dentist should feel the moral and professional responsibility towards their patients in all the oral care delivery systems as well the general health, since solutions once injected cannot be withdrawn. Hence the operator has to be very careful while injecting the solution.14

A legally constituted body should be established to check periodically the proposed clinical establishment act to prevent the iatrogenic incidents.14,15 The council should frame the guidelines and establish the protocol check for the implementation of the guidelines established and take initiative to include a new amendment in the dentist act of their respective countries.

Suggested protocol to be followed to avoid inadvertent use of toxic and non-toxic solutions during oral care delivery system

1. Air tight formalin container should never be stored in the operatory area or in the surgical tray.
2. The biopsy specimen should be taken in a kidney tray to the formalin stored area, instead of taking the formalin to the surgical area.
3. The dentist should check personally the label & contents of the vial/ampoule before injection.
4. Performing the local anesthesia hypersensitivity test should be made mandatory.
5. Different storage areas should be designed for all the solutions like LA Vials in the refrigerators, formalin containers near the sink.
6. Sodium hypochlorite, hydrogen peroxide, saline should never be preloaded and stored in the syringes.
7. Developer and fixer solutions should be stored in the dark room area only.
8. The dentist should be aware and paste the details of the manufacturer, expiry date, the shelf life of all the solutions near to his working area.

**Conclusion**

**TO CONCLUDE**: **“*PRIMUM NON NOCERE”***

It’s the Hippocratic oath taken by the doctors and medical professionals, which means – “Do no harm” to the patient. It states that, given an existing problem, it may be better not to do something, or even to do nothing, than doing a wrong thing that can cause more harm to the patient. Negligence actions which occurs in the dental office, cannot be framed as unintentional by the dental office auxiliaries. The few suggested protocols in this paper helps the dentist and the supporting staff in avoiding the actions which harm the patient and provides a better care to the individuals in the dental operatory.

**Acknowledgements**: Nil

**Declaration of Conflicting interests:** The authors declare that there is no conflict of interest.

**References**

1. Gouda M, Dabarakis N, Kafas P. Is allergy to local anesthetics in dentistry possible?  *Res J Biol Sci* 2009; 4:899–904.
2. Malamed SF. Handbook of Local anesthesia. 5th ed. New Delhi: Elsiever, 2011, p.330–1.
3. Gupta DS, Srivastava S, Tandon PN, Jurel S, Sharma S, Singh S., Jr Formalin-induced iatrogenic cellulitis: A rare case of dental negligence. *J Oral Maxillofac Surg*. 2011; 69:525–7.
4. [Nassani MZ](https://www.ncbi.nlm.nih.gov/pubmed/?term=Nassani%20MZ%5BAuthor%5D&cauthor=true&cauthor_uid=28598526). Aspects of malpractice in prosthodontics*.* [*J Prosthodont.*](https://www.ncbi.nlm.nih.gov/pubmed/28598526) 2017; 26(8):672-681.
5. Moles DR, Simpler RD, Bedi R. Dental Negligence: a study of cases assessed at one specialised advisory practise. *Br Dent J*. 1998; 184:130-133.
6. Lopez-Nicolas M, Falcon M, Perez-Carceles MD, et al: The role of a professional dental organisation in the resolution of malpractice claims the professional dentist college in the region of Murcia (Spain). *Med Law*. 2011; 30:55-63
7. Lopez-Nicolas M, Falcon M, Perez-Carceles MD, et al. Informed consent in dental malpractice claims. A retrospective study. *Int Dent J* 2007; 57:168-172
8. Schwarz E. Patient complaints of dental malpractice in Denmark 1983-86. *Commun Dent Oral Epidemiol* 1988; 16:143-147
9. Arakeri G, Brennan PA. Inadvertent injection of formalin mistaken for a local anesthetic agent: Report of a case. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2011; 113:581–2.
10. Smędra-Kaźmirska A, Zydek L, Barzdo M, Machała W, Berent J. Accidental intravenous injection of formalin. *Anaesthesiol Intensive Ther.* 2009; 111:133–5.
11. Williams M. Post-operative nerve damage and removable of the mandibular third molar: a matter of common consent. *Br J Oral Maxillofac Surg* 1996; 34:386-8
12. Mahal AS, Shah N. Implications of the growth of dental education in India. *J Dent Educ.* 2006; 70:884–91
13. Kannabiran K. The clinical establishment (Registration and regulation) bill 2007: A brief review. *Ind J Med Ethics.* 2008; 5:108–9.
14. Phadke A. The Indian Medical Association and the clinical establishment Act, 2010: Irrational opposition to regulation. *Ind J Med Ethics*. 2010; 7:229–32.
15. Dentists (code of ethics) Regulation 1976. [Last accessed on 2012 Aug 04]. Available from:<http://dciindia.org/annoncment_pdf_files/pdf_files/CODEOFETHICSREGULATIONS1976.pdf>
16. Lee JS, Curley AW, Smith RA. Prevention of wrong-site tooth extraction: Clinical guidelines. *J Oral Maxillofac Surg* 2007;65: 1793-9.