

Management of Medical Emergencies in Dental Office - A Review Article

**Dr. Kanupriya¹, Dr. Gagandeep Singh², Dr. Rudhra Koul³, Dr. Shubhangi Mittal⁴,
Dr. Kirti⁵, Angad Mahajan⁶**

^{1,4,5}Post graduate first year, Department of Conservative Dentistry & Endodontics, Genesis Institute of Dental Sciences & Research, Ferozepur, Punjab.

^{2,3}Senior Lecturer, Department of Conservative Dentistry & Endodontics, Genesis Institute of Dental Sciences & Research, Ferozepur, Punjab.

⁶Final year MBBS student, Sri Guru Ram Das Institute of Medical Sciences and Research, Mehta Road, Vallah, Amritsar, Punjab, India.

Corresponding Author: Dr. Kanupriya

DOI: <https://doi.org/10.52403/ijrr.20240824>

ABSTRACT

Effective management of medical emergencies in a dental office is crucial for ensuring patient safety and maintaining a high standard of care. The importance of pre-emptive preparation, including staff training, emergency equipment availability and clear action plans is emphasized. The integrity of patient's medical history and risk assessments into routine practice is a preventive measure to mitigate the likelihood of emergencies. By fostering a proactive approach to emergency management, dental offices can enhance patient safety and improve outcomes in critical situations.

Keywords: Dental offices, medical emergencies, Risk assessment and management.

INTRODUCTION

It is truly said "when you prepare for emergency, emergency ceases to exist". With the increasing sedentary life style, more medically compromised patients will be visiting the general dental practice^[1]. An absolute knowledge of patient's medical problem is vital for providing safe and appropriate dental treatment in the context of any systemic disorders or other underlying

general health condition. Many factors can potentiate the occurrence of life threatening emergencies in dental offices such as growing trends towards single visit dental appointments, increased use and administration of drugs in dentistry. The common medical conditions encountered by the dentists in daily practice include drug cardiac, pulmonary, infectious diseases etc.^[2]. Dental practitioners and their staff need to have appropriate skills, training and equipment available to deal with such conditions^[1].

MANAGEMENT OF EMERGENCIES SYNCOPE

It is transient loss of consciousness. In dental office cause of syncope are drug administration, orthostatic hypotension, epilepsy, hypoglycemic reaction, acute myocardial infarction, hyperglycemia and hyperventilation syndrome and most commonly stress. The signs and symptoms are light headedness/ dizziness, pallor, sweating, slowing of pulse rate, dropping of blood pressure, nausea and loss of consciousness. This can be prevented by taking proper history before initiating treatment^[3].

If syncope occurs during dental treatment, firstly discontinue the procedure. Patients

should be placed in supine position with elevated legs (Trendelenburg position) to facilitate blood flow to brain. Check circulation, airway, breathing and maintain airway by Head tilt – Chin Lift technique (Jaw thrust maneuver if necessary). Administer 100% oxygen (8-10 litres/mn via mask and reservoir bag). Monitor vital signs^[4]. If bradycardia persists, administer 0.5–1mg intramuscular (IM) or intravenous (IV) atropine. Patient once recovered should be discharged with attendant. If patients do not recover initiate Cardio Pulmonary Resuscitation (CPR) and immediately transfer to hospital.

SEIZURES

It is caused by a disturbance in the electrical activity in the brain that leads to a series of uncontrolled muscle movements. They are caused by various factors, such as epilepsy, head injuries, infections, brain tumors, stroke, drug or alcohol withdrawal, and other medical conditions and usually occurs for 1 or 2 minutes^[5].

If a seizure occurs while a patient is on the dental chair firstly clear all the instruments away from the patients. Then place the dental chair in a supported, supine position and place the patient on his/her side. In case the seizure last longer than 3 minutes call 911. If patient becomes cyanotic from the onset, administer oxygen at a rate 6-7L/minute and be aware of the possibility of compromised airway or uncontrolled seizure^[6].

ASTHMA

Asthma is a chronic respiratory condition that affects the airways in the lungs. The most common signs and symptoms are difficulty in exhalation, wheezing or whistling sounds, anxiety, nervousness, coughing, perspiration on forehead, choking sensation, and bluish tinge of skin^[7].

If a patient is experiencing asthma attacks due to emotional stress, he/she would benefit from a stress reduction exercise before beginning the treatment (especially if he/she indicates a fear of dentistry). Some asthmatics are claustrophobic; in those cases, nasal cannula

may be used instead of a nosepiece. Asthmatic patients should be reminded to bring their medication with them to all dental appointments. Aspirin, other nonsteroidal anti-inflammatory drugs and penicillin are contraindicated in asthmatics, because they might trigger asthmatic attacks. Any anesthetic containing bisulfite as a preservative is also contraindicated in an asthmatic patient.

If the asthmatic attack occurs on dental chair then the patient should be made to sit in sit upright position (erect/semi-erect) because it is easier to breathe in this position. If the patient is on medication, then he/she should take it according to the prescribed directions^[8]. Patients should then administer bronchodilators. Oxygen administration should follow, using nasal prongs or a face mask. In more severe asthmatic episodes or when aerosol therapy is ineffective, epinephrine (0.3 mL of a 1:1000 dilution) may be injected subcutaneously or IM, hydrocortisone succinate, 100 to 200 mg IV^[8]. When patients have severe respiratory embarrassment, it may be necessary to obtain outside emergency medical assistance.

CARDIAC ARRHYTHMIAS

Cardiac arrhythmias can be described as an abnormality in rate, regularity or site of origin of cardiac impulse. It may be detected as a change in the rate or rhythm or both of the pulse^[9].

The dentist can manage this by reducing anxiety of patient as much as possible by keeping short morning or early afternoon appointment. Avoid excessive use of epinephrine. In case of severe arrhythmias, use anesthetic without epinephrine^[9]. Dentist should avoid use of general anesthesia, electrosurgery units and ultrasonic scalers. One should be prepared to deal with life-threatening arrhythmia by stopping the dental procedure and evaluating the vitals and using an automated external defibrillator if no pulse is established. If needed nitrous oxide-oxygen can be used.

CARDIC ARREST

Cardiac arrest refers to sudden collapse and no respiration or pulse^[8]. Patients who reports history of heart failure are at an increased risk during dental treatment.

Clinical manifestation includes cold and pale skin, sweating, pitting edema of the ankles, fatigue, dyspnoea on exertion, hyperventilation, wheezing sound, cyanosis, frothy pink sputum and dyspnoea at rest.

The treatment should be conducted in a stress-free environment. During dental treatment if there is absence of patient's response for stimulation it confirms unconsciousness. Then lay down the patient in supine position with slight elevation of feet (10 degree). Assess circulation, airway and breathing. Open the patient's air way by head tilt and chin lift technique (Jaw thrust manoeuvre if necessary). Initiate CPR and then move to Automated Electric Defibrillator (AED) for early defibrillation. Give 100% oxygen and contact ambulance to transfer the patient to hospital^[8].

DIABETIC MELLITUS: HYPOGLYCEMIA

Hypoglycemia is the major issue with dental practitioners when treating diabetic patients, particularly if patients are fasting. Clinical symptoms of hypoglycaemia include sweating, tremors, with progressive drowsiness, confusion and coma^[8].

Conscious patients can normally be treated with 10-20mg of oral glucose/ 200ml of fruit juice or sublingual "Gluco-gel". After 10 minutes, repeat, oral glucose till symptoms subside. Small amount of honey may be placed in to the patient's buccal fold. If the patient is unconscious, patient is placed in Trendelenburg position. Monitor circulation, airway and breathing. Administer glucagon 1mg SC/IM/IV and give IV glucose 50%. For children below 8 years give 0.5mg glucagon. Oxygen may be administered for unconscious patient.

HEMOPHILIA

Hemophilia is a genetic disorder characterized by a deficiency or dysfunction

of clotting factors in the blood, which impairs the body's ability to form blood clots normally^[10].

The first step that should be taken prior to any dental procedure is coordination with the patient's hematologist. Additionally, it is important to assess the hematologic needs of the patient prior to any invasive dental procedures such as periodontal surgery, deep scaling, and extraction^[8]. Postoperatively, it is recommended that the patient avoid any analgesic medication that increases the possibility of bleeding such as aspirin and other non steroidal anti inflammatory drugs. Paracetamol is safe and can be advised.

PREGNANCY

The treatment recommendation during pregnancy should be viewed as general orientation, not as strict rules. Interconsultation with the obstetrician or physician is very useful for knowing medical condition of the patient, dental needs and treatment option.

During treatment, the patient should be reclined at a slight angle, typically 30 to 45 degrees. Avoid lying them completely flat, especially during the second and third trimesters, as this can compress the inferior vena cava, potentially leading to decreased blood flow and low blood pressure (a condition known as supine hypotensive syndrome). Placing a wedge-shaped pillow or cushion under the right hip can help and then tilt the patient slightly to the left. This position helps to reduce pressure on the vena cava and improve blood flow to the heart and placenta.

During first trimester (from conception to 14 weeks) only emergency treatment is indicated, avoiding elective procedures^[11].

The second trimester (from 14 weeks to 28 weeks) is the safest period for elective dental treatment. It is advisable to avoid X-rays during this period. It is preferable to postpone extensive reconstructions or major surgery procedures until after delivery.

The first part of the third trimester (from 29 weeks to delivery) is still a good period for elective dental treatment^[11]. Keeping the

patient sitting for long period of time is not advised since supine hypotension syndrome might develop. However, in the second half of the third trimester, all elective dental treatment should be postponed, due to risk of premature delivery.

FOREIGN BODY ASPIRATION

Many dental materials and instrument are of small size and when exposed to saliva it may be difficult to manipulate them correctly. When the patient is placed in the supine position or semi raised position, such objects might be swallowed or aspirated into oropharynx. Depending on the size, shape and flexibility of the object, swallowing may pose only minimum risk or potentially can prove fatal.

There should be use of rubber dam to prevent aspiration of dental material and instruments. In case a foreign body is aspirated into oropharynx, the patient should sit up and be instructed to cough forcefully. The immediate priority is to ensure that the airways remain free. In case vigorous coughing is not effective then Heimlich maneuver should be used^[8]. In case retrieval of the object is not possible, the situation should be explained to patient. Chest and abdominal X-rays and clinical evaluation in the hospital should be done to identify location of object.

CONCLUSION

Knowledge is power, so know, what to do, know your limitations and most of all, know when to call the experts. Medical emergencies may be rare but challenging occurrences in the dental clinic, tasking the knowledge, skills and materials available. Serious medical emergencies in dental procedures are not common but a dental doctor must be equipped to handle such events. An effective management of an emergency condition in the dental clinic is ultimately the dentist's responsibility. The development of life-threatening situations can be minimized using certain factors like pretreatment physical evaluation of each patient, which consists of a medical history questionnaire, dialogue history and physical examination and possible

modifications in dental care to minimize medical risks.

Declaration by Authors

Ethical Approval: Not Required

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Tevatia S. Medical Emergencies in dental practice: a review. WJPLS 2016; 2(1): 129-45.
2. Vaughan M, Park A, Sholapurkar A, Esterman A. Medical Emergencies in the dental practice – management requirements and international practitioner proficiency: A scoping review. Aust. Dent. J 2018; 63(2): 455-66.
3. Gururaju C, Raghu K, Thanuja R, Jayaprakash K. Management of Syncope in Dental Camps. J Oral Health Comm Dent 2013; 7 (2):72-4.
4. Findler, M, Elad, S, Garfunkel, A, Zusman, SP, Malamed, SF, Galili, D, Kaufman, E. Refu'at ha-peh veva-shinayim. 2002; 19(1): 27-99.
5. Joshi SR, Pendyala GS, Saraf V, S, Mopagar V. A comprehensive oral and dental management of an epileptic and intellectually deteriorated adolescent. Dent Res J 2002; 10(4): 562-7.
6. Bryan, RB, Sullivan, SM. Management of dental patients with seizure disorders. Dent. Clin. N. Am. 2006; 50(4): 607.
7. Gani F, Caminati M, Bellavia, F. Oral health in asthmatic patients: a review: asthma and its therapy may impact on oral health. Clin Mol Allergy 2020 18(1): 22
8. Mohideen, Khadija, Balakrishnan, Thayumanavan, Balaji, Suraj, Balasubramaniam, Murali, KM, Vidya. Management of medical emergencies in dental office –a review. IJMRHS 2017; 6(2): 170-5.
9. Rhodus, NL, Little, JW. Dental management of the patient with cardiac arrhythmias: an update. Oral Surg. Oral Med. Oral Radiol 2023; 96(6): 659–68.
10. Shastry SP, KaulR, BaroudiK, UmarD. Hemophilia: a dental considerations and

- management. *J Int Soc Prev Community Dent.* 2014; 4(3): 147-52.
11. KurienS, KattimaniVS, SriramRR. Management of pregnant patient in dentistry. *J Int Oral Health* 2013; 5(1): 88-97.

How to cite this article: Kanupriya, Gagandeep Singh, Rudhra Koul, Shubhangi Mittal, Kirti, Angad Mahajan. Management of medical emergencies in dental office - a review article. *International Journal of Research and Review.* 2024; 11(8): 222-226.
DOI: <https://doi.org/10.52403/ijrr.20240824>
