Basic Resuscitation in Dental Office: A Review

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Medical emergencies are little understood by most dental surgeons. Medical emergencies can occur in dental clinics. Hence, there is a significant need for increased awareness among dental professionals in the field of emergency medicine. Every dental professional should be trained in emergencies occurring which have life-threatening potential and should be able to tackle life-threatening emergency anywhere in any situation. Dental professionals should be aware of protocols for initial stabilization of the patient in the dental office at time of risk. Every patient expects his dentist to be familiar with emergency interventions which include basic life support, advanced life support and specific drugs to be administered in emergencies. This is a widely discussed topic with poor understanding among dental practitioners. Emergency can occur in any dental office without any warnings. Further, it has been noted in recent times there is an increase in a number of medico-legal cases due to rise in a number of death in the dental chair. This review article aims at briefing the basic protocols required to manage the medical emergency having life-threatening potential occurring in the dental office or elsewhere.

Keywords: Basic life support, Cardiopulmonary resuscitation, Medical emergencies

INTRODUCTION

Life-threatening emergencies can occur anytime in the dental office. All possible drug interactions procedures (e.g. administrating intralesional injections, local anesthetics etc.) in dentistry have the potential to develop allergic reactions, which may lead to life-threatening conditions. In dental practice the most common emergency occurs after drug administration most often local anesthetics, parenteral administration of antibiotics, analgescics and sedatives. The most likely scenario of drug-related emergency like anaphylactic shock can occur in the dental office. Aspiration and swallowing of endodontic instruments can occur mostly in children and mentally retarded patients during dental treatment leading to life-threatening emergency. Emergency can also occur due to anxiety of dental treatment and fear of pain during treatment or while administering anesthesia. Unfortunately, the incidence of cardiopulmonary respiratory arrest in the dental office is on the rise. Most cardiopulmonary arrest occurs due to deterioration of airway during dental procedures (e.g., rubber dam application) outcome depends on rapid evaluation and diagnosis with adequately maintained patent airway with adequate ventilation.

A detailed medical history should be taken for each patient. Fitness should be cleared by physician for medically compromised patients before commencing dental treatment. This may prove as a preventive effort to avoid emergency in the dental office.

Around 87.8% of medical practitioners in India respond to emergencies in the dental office. Every patient expects that his dentist to be familiar with emergency interventions occurring in dental office which includes at least basic life support (BLS) requirements and if required advanced methods including administrating specific drugs, use of manual/automated external defibrillator (AED), use of advanced airway devices, etc. It is mandatory for all health care professionals including dental surgeons to be aware of various protocols and procedures for tackling emergencies. Every dental surgeon must be aware of the method for initial stabilization in a patient with risk arising in the dental office, which implies dental surgeon should have know-how of BLS. Providing BLS to a victim by dental surgeon for initial stabilization is a great contribution until definitive medical care is provided. Our goal must be instituting basic and simple resuscitative measures before full cardiopulmonary arrest occurs in the dental office.

Since dental office emergencies occur anytime, dental surgeons should be knowledgeable in resuscitation skills. Routine reviews and updates on life-saving interventions are good assets to keep one’s knowledge abreast. Courses by American Heart Association like BLS, advanced cardiac life support provide an excellent opportunity to renew knowledge and skills. The mainstay of safe practice requires...
Steps for giving CPR to patient are as follows:

1. Position of patient and dentist: Position the patient on a safe firm flat surface in order to provide effective care. Dental surgeon’s position should be besides patient to render utmost care promptly

2. Assess/check for a response: First step is to assess the patient and check for his response. Tap the victim’s shoulders and shout “hey are you ok?” If patient does not respond then he is unresponsive

3. Check for breathing: If patient is unresponsive check for breathing of the patient, breathing could be assessed simply by seeing for chest movements or listening to breath sound. Sometimes agonal gasping may be presented that are not normal breathing. Agonal gasps may be present in first few minutes of sudden cardiac arrest. Gasp may sound like a snort, or a groan

4. Activate emergency response system: If a patient is not breathing or there is no normal breathing, i.e. Only gasping dental surgeon must activate emergency response system and call for AED

5. Pulse check: Dental surgeons should not take more than 10 s to check the pulse. Pulse check should be made by palpating carotid pulse. Pulse should be felt for at least 5 but not more than 10 s


7. Give two rescue breaths: Give two rescue breaths over a period of 1 s each using pocket mask, bag valve

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**BLS-GOLDEN RULE**

A Step Wise Approach

The golden rule of BLS is to perform effective cardiopulmonary resuscitation (CPR) with emphasis on circulation, airway and breathing termed as (CAB’s). The CAB’s can be further stated as:

Circulation: Adequate supply of blood to vital organs by chest compressions.

Airway: To maintain patency of airway.

Breathing: Effective breaths to be given to prevent respiratory arrest.

BLS also includes the use of automated/manual defibrillator along with CPR.

Thus for ease of knowledge, BLS can be divided as:

1. CPR
2. Use of external defibrillator.

**CPR**

External cardiac massage, today known as chest compressions was introduced in 1958. Artificial respiration along with artificial circulation was combined to form CPR. Initially, mouth to mouth ventilation was effective for artificial respiration and chest compressions were effective for artificial circulation. Now formal combination of two techniques to create CPR as practiced today.

Dental surgeons must follow guidelines of American Heart Association for giving effective and quality CPR for resuscitation of risky patient on the dental chair.
mask, etc., while watching for patients chest rise. While giving breaths make sure to give enough air to make patient’s chest rise. If giving breaths does not result in chest rise, dental surgeon may again try to open the airway and give breaths that result in chest rise.13

8. After every five cycles of CPR dental surgeon may again check for carotid pulse.14

If pulse present check for response of patient.

If no pulse felt again resume CPR till emergency response team rescues.

Good quality CPR: For good quality CPR following points must be considered
1. Push hard, push fast: compress at the rate of 100 compressions per minute
2. Allow full chest recoil after each compression
3. Minimize interruptions in chest compressions
4. Avoid hyperventilation.

AED
AEDs are computerized devices that can identify cardiac rhythms that need shock, and they can deliver a shock. AEDs are simple to operate, allowing dental surgeons to attempt defibrillation safely.15

Ventricular fibrillation is rhythm generally noticed in cases of sudden cardiac arrest. The treatment to correct this is defibrillation. AED can sense abnormal rhythms and automatically deliver rescue pacing or defibrillation shock as appropriate.

Ventricular fibrillation if not corrected at an appropriate time may lead to asystole and finally death. Thus, early defibrillation is critical for victims with sudden cardiac

Figure 1: Position for cardiopulmonary resuscitation17
arrest. The earlier the defibrillation occurs, the higher is the rate of survival.16

Keeping of AEDs in the dental office can reduce the time between the collapse of patient and defibrillation, thus increasing the rate of survival.

Use of AEDs by dental surgeons: Once AED arrives at dental office in the state of emergency; put it on patient’s side easily operable by dental surgeon. AEDs are available in different models with slight differences. Basic steps to operate and principle mechanism remains the same. Basic steps to operate AEDs are as follows:
1. Power on AED
2. Attach pads
3. Clear victim and analyze the rhythm
4. If AED advises a shock, clear the victim and deliver a shock.

Resume CPR after delivering shock.

Follow voice commands of AED during procedure.

Shift the patient to tertiary care center when emergency medical services (EMS) team arrives.

CONCLUSION

Most of the dental colleges in India do not offer training to tackle emergencies in the dental office, and it is our duty as doctors to save lives in emergency conditions. Preparedness to recognize and manage emergencies occurring in dental office with BLS should be included in undergraduate curriculum of B.D.S. Thus such training rendered to dental surgeons will not only help them in their daily practice, but in any situation even occurring in their vicinity or elsewhere.

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REFERENCES


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