Management of Medical Emergencies in Dental Practice: A Review

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An emergency can strike anytime. The dental practice is no exception to this universal fact. Given the complexity of human body, emergencies in healthcare settings can be gravely dangerous. A medical emergency or complication may range from a syncope to an acute anaphylactic shock which may prove to be life threatening. The best method to counter an emergency is to know it very well. When a doctor is well-equipped with the knowledge of the possibilities that may arise, he/she has a better chance of managing the situation in hand. Hence, the knowledge of possible complications and emergencies that might arise during Dental practice is essential for a safe and successful practice. This paper analysis the different medical emergencies that may arise during dental practice and the various methods available to handle them effectively.

Keywords: Acute anaphylaxis, Basic life support, Dental practice, Medical emergencies, Safe practice, Treatment complications

INTRODUCTION

An emergency is a medical condition requiring immediate treatment.1 The average incidence of emergencies in dental practice is 7.5 per dentist over a period of 10-year2 and this warrants for the need of basic knowledge to identify, access, and manage emergency situations in one’s practice. The general perception about the medical emergency management is one that is shrouded in unwanted mystery. In cases of emergencies, what we are dealing with are the same things that keep us alive, the ABCs, namely airway, breathing, and circulation.1 If we manage to keep, these three factors in balance majority of the problems can be averted. The suggestion that 28% emergencies occur during root canal therapy and 37% during dental extraction procedures,2 the effect of pain and psychological stress over-occurrence of emergencies also need to be considered.

BASIC LIFE SUPPORT (BLS)3

The aim of BLS is to perform effective cardiopulmonary resuscitation (CPR) with attention toward circulation, airway, and breathing termed as CABs/ABCs.

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

Airway: To maintain patency of the 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. CPR4
2. Use of external defibrillator.5

Steps in undertaking CPR:
1. Open airway and give 2 rescue breaths
2. Compress chest 30 times
3. Give two rescue breaths
4. Compress chest 30 times

Continue cycles of 2 breaths and 30 compressions (Figure 1a and b).6

The use of external defibrillator should only be done by a qualified professional and the timely information to and arrival of the emergency response team is vital for unresponsive cases.7

MANAGEMENT OF VARIOUS MEDICAL EMERGENCIES8

Asthma8

Patient administered bronchodilator medication
If the patient is unable to deliver, their own medication gives salbutamol through a large volume spacer. No response to

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medications or symptoms worsens (breathing rate slowed, heart rate slowed, cyanosis developed, etc.) Summon help. Administer salbutamol (10 activations) through the large volume spacer device, repeat at 10 min intervals as necessary. Give oxygen 8-10 L/min delivered via a mask and reservoir bag. The salbutamol should be repeated at 10 min until assistance arrives. If the patient becomes unresponsive, commence BLS procedures (ABC).

**Anaphylaxis**

Cease intravenous drug administration. Commence BLS procedures (ABC).

Patient laid flat, feet/legs elevated. Oxygen administered at a rate of 8-10 L/min delivered via a mask and reservoir bag. Administer 1:100 adrenaline intramuscularly.

Adult and children over 12 years of age: 0.5 mL (500 µg); Child 6-12 years of age 0.3 mL (300 µg); and child <6 years of age 0.15 mL (150 µg).

Repeat adrenaline if no improvement of hypotension, airway swelling, or bronchospasm, as necessary at 5 min intervals depending on respiratory function, pulse, and blood pressure.

Maintain BLS procedures (ABC) until help arrives.

**Cardiac Conditions**

**Mild symptoms**

Administer glyceryl trinitrate, 400 µg (spray or tablet). Repeat glyceryl trinitrate, 400 µg (spray or tablet) after 5 min if there is no (or only partial) resolution of symptoms. If symptoms persist, treat as for “severe symptoms.”

**Severe symptoms**

Call for medical help immediately. Position the patient for their comfort and reassure.

Administer glyceryl trinitrate, 400 µg (spray or tablet) Administer aspirin, 300 mg orally. Administer oxygen (8-10 L/min delivered via a mask and reservoir bag) if the patient is cyanosed if the level of consciousness deteriorates. If loss of consciousness, commence BLS procedures (ABC). When medical assistance arrives, advise them of the drugs you have administered.

**Choking and Aspiration**

Remove any visible obstruction. Encourage patient to a cough. Hospital referral if the object remains and/or the symptoms persist. Failure to dislodge object - conscious patient back-blows/chest thrust. Unconscious - CPR and call for help.
Epilepsy
Protect patient. Do not attempt to restrain them or attempt to place anything between their teeth.

Administer oxygen at 8-10 L/min delivered via a mask and reservoir bag per minute.

Post-seizure place in the recovery position and monitor. If unconscious, commence BLS procedures (ABC). During recovery active supervision and support.

Seek additional medical assistance if:
• This is a “first episode”
• Seizures last more than 5 min
• The individual is in a constant or near-constant state of having seizures (status epilepticus)
• They remain confused after 5 min
• It is difficult to monitor the patient’s condition, or
• You are uncertain.

Fitting can be a sign of hypoglycemia so this should be considered even in known epileptics. A faint (through a drop in blood pressure and transient cerebral hypoxia) can also lead to a seizure which tends to be short in duration.

Faint (Syncope)
Lay the patient down flat and elevate the legs. Administer oxygen (8-10 L/min delivered via a mask and reservoir bag). Reassure patient when they regain consciousness.

If the patient does not regain consciousness, promptly commence BLS procedures (ABCD).

Hypoglycemia
Conscious patients administer oral glucose provide food high in carbohydrate as the patient recovers. Actively supervise patient during recovery. Depressed consciousness or lack of cooperation administers glucagon via the IM route 1mg for adults and children over 8 years of age of who weigh more than 25 kg, 0.5 mg for children under 8 years or weighing <25 kg).

If glucose cannot be administered or if the patient is unresponsive to the administration of glucose, BLS procedures (ABC) should commence immediately.

Hyperventilation
Reassure and calm the patient. For conscious patients with clinical signs of or actual low oxygen, saturations administer

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Figure 2: (a) Emergency equipment for dental office, (b) emergency drugs for dental office
oxygen. If the patient loses consciousness, commence BLS procedures (ABC).

**ESSENTIAL EMERGENCY ARMAMENTARIUM FOR DENTAL OFFICES (FIGURE 2A AND B)**

Proper preparation of the dental office is essential for the prompt recognition, and successful management, of medical emergencies that do arise in dental offices. Following are some suggestions for the basic emergency drugs and items of equipment needed in the well-equipped dental office (Fig. 2a & Fig. 2b).

**SUMMARY**

Even though medical emergencies in dental offices can be a challenge to the practitioner and the team, with the proper skill set, training, and carefulness, many of the emergencies can be effectively managed. The presence of emergency armamentarium in the office might prove to be the deciding factor with respect to the outcome. In the case of a medical emergency, with proper knowledge and training, a dentist can successfully prolong life until emergency services arrive.

**REFERENCES**