



Review article

Management of Medical Emergencies in Dental Office – A Review

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ABSTRACT

Most emergencies occur during or immediately following local anaesthesia administration for dental treatment procedures. The most frequent medical emergency in the dental office is syncope represented 50%, the next most frequent is mild allergy at 8% followed with hyperventilation occur at 7% of all emergencies. The scope of treatment by the dentist requires pre-preparation, prevention and then immediate level of required management. The dentist must be trained well efficiently to manage frightening medical emergency conditions and associated problems instantaneously to save the life of the patient which make the dental surgeons to more competent and confident in their clinical practice.

KEYWORDS: Emergency Conditions, Emergency Drugs, Emergency Management

INTRODUCTION

Medical emergencies may lead to potential consequences associated with serious health problems [1-5]. Their occurrence is common to uncommon [1,4,5,6]. A thorough medical history is essential to avoid emergencies during treatment[7]. These emergencies may be minor or major. Underlying systemic diseases are responsible for these emergencies [8]. Dentists should be trained efficiently to manage these conditions [9]. The aim of this review is to provide a vision of medical emergencies that can happen in dental office and to discuss the management of such emergencies.

MANAGEMENT OF MEDICAL EMERGENCIES IN DENTAL OFFICE

a) *Syncope*: It is transient loss of consciousness resulting from momentary decrease in blood perfusion to brain. Vasodilatation and vagal stimulation leads to peripheral pooling of blood and reduced cardiac output. It results in low blood pressure, slow pulse and inability of heart to pump blood. Patients may be nauseated, pale and weak with sweaty or cold clammy skin. They may have headache,

dizziness, confusion, pupil dilatation, blurred vision and unconsciousness [2,9-13].

Management: 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/min via mask and reservoir bag). Monitor vital signs and check medical history for associated illness. NH₃ ampules inhalant is used as respiratory stimulant. If patient feels cold, provide blanket or provide cold towel for warm patients. If bradycardia persists, administer 0.5–1mg Intramuscular (IM) or Intravenous (IV) atropine. For hypoglycaemic patients, administration of soft drinks or 50% IV glucose or IM glucagon is advisable. Patient once recovered should be discharged with attendant. If patients do not recover initiate Cardio Pulmonary Resuscitation (CPR) and immediately transfer to hospital[5,9,11-16].

b) *Mild Allergy*: Allergic reaction is an immune reaction to a substance to which the patient has been previously sensitized. These symptoms may be confined to a single

organ / system. It presents with itchy skin rash, flushing, angioedema, rhinitis and laryngeal oedema [13,14].

Management: Anti Histamine such as Diphenhydramine (25-50 mg) or Chlorpheniramine – Avil (10-20 mg) should be administered by oral or parenteral route[14,15,17,18].

Paediatric Dose: IV Diphenhydramine HCL: 1-1.25 mg/kg up to 50 mg maximum or 1-1.25 mg / kg q 6 h for Oral / Parenteral administration.

c) Anaphylaxis: Serve allergic reaction to foreign substance, to which person has already been sensitized. These symptoms appear suddenly and become generalized which results are life threatening. Classic signs of anaphylaxis are itchy erythematous rash with burning sensation of skin, cyanosis, swelling of face, tongue and lips, abdominal pain, pain & tightness in chest, dyspnoea, cough, bronchospasm, laryngeal oedema, stridor, respiratory wheezing, hypotension, tachycardia (rapid pulse). If symptoms become severe it may lead to cardiac dysrhythmia, cardiac arrest, and unconsciousness[9-14,19].

Management: The patient should be placed in supine position and check for circulation, airway, breathing and blood pressure. For hypotensive patient raise patient's legs. For patients with signs of respiratory distress clinician should administer high flow oxygen at a rate of 8-10 litres /mn. To support circulation and to dilate bronchioles IM administration of 0.3 ml of 1:1000 dilution of Adrenaline (0.3 mg) for patients weighing >30 kg, 0.15 ml for patients 15-30kg, 0.075 ml for patients <15kg is necessary. If there is no improvement in patient's response, repeat the dosage every five minutes until the arrival of ambulance with careful monitoring of the patient. Initiate CPR if needed. Diphenhydramine 50mg IM and Hydrocortisone 200 mg IM / IV may also be given. I.V. fluids (5% dextrose in 0.5N saline solution or lactated Ringer's injection) can be given to treat fluid imbalance. Call Emergency Medical Services (EMS) to transfer the patient to hospital [5,9-12,14-17,19].

Paediatric doses of adrenaline

Epinephrine: diluted to 1: 1000 for SC or IM (0.05 – 0.3 mg Maximum); diluted to 1: 10,000 for IV administration.

Children 12-18yrs: 500mcg (0.5ml). Repeat Dose: 300mcg (0.3ml).

Children 6-12years: 300mcg (0.3ml).

Children less than 6years: 150mcg (0.15ml). Repeat every five minutes until the arrival of ambulance[2,9-12,15,16,20].

d) Angina Pectoris: This substernal anginal pain is spasmodic, suffocating, squeezing, dull or heavy pain in the chest which may radiate. Pain radiates to left side shoulder, arm, hand, neck, face and mandible. Pain is gradual in onset lasting for 2-5 minutes. It occurs due to inadequacy of coronary circulation and results in myocardial ischemia[13,14]. It is also accompanied by nausea, sweating, dyspnoea and dizziness[9-12,14,19].

Management: Stop the procedure, position the patient upright and reduce anxiety. Supine position may increase the subjective intensity of pain. Monitor vital signs and provide 100% Oxygen. Administer Glyceryl trinitrate (GTN) 400µg spray or sublingual tabs as needed. Spray 1 or 2 metered doses with no more than 3 metered doses within a 15 mn period. Sublingual tablets 0.3–0.6 mg every 5 mn with no more than three tablets for 15 minutes. For known

angina patient administer aspirin. If GTN is not available then calcium channel blockers like nifedipine 10-20mg sublingual administration is required. If pain is not relieved by 2 doses of GTN over a 10-minute period then suspect for MI and call EMS immediately[5,9-17,19].

e) Myocardial Infarction: MI is caused by deficient coronary arterial blood supply to a region of myocardium due to obstruction from atherosclerotic coronary artery that results in cellular death and necrosis. Suspect MI when radiating anginal pain is not relieved by GTN. There may be weakness, nausea, sweating, pallor, cold / sweaty skin, restlessness, dizziness, dyspnoea and syncope. Associated pump failure results in hypotension, palpitations, slow pulse to tachycardia and pulmonary edema[2,9-12,14,16,19,21].

Management: Call EMS for help. Position the patient upright / flat if faint. Assess circulation, airway and breathing. Administer high flow oxygen for pain relief (15 L/min). Administer GTN and repeat in 5 mn up to 3 tablets (Not advised for hypotensive patients). Aspirin 325 mg with or without Clopidogrel 300 mg can be given orally (if there is no aspirin allergy). If pain continues, administer Morphine 2 to 5 mg IM / IV with High Flow Oxygen. In place of Morphine and Oxygen a mixture of 50% N₂O and 50% O₂ can be used. Record vital signs of the patient. If unconsciousness persists initiate CPR and transfer the patient to nearest hospital[2,5,9-17,19].

f) Heart Failure :Inability of cardiac ventricles to pump blood forward into the arteries. It may be left or right ventricle failure. Left ventricular failure may also be associated with acute MI. LVF presents with dyspnoea, cyanosis, suffocation, haemoptysis, hypotension, palpitations, slow pulse to tachycardia, chest pain and pulmonary Oedema. RVF presents with swollen legs & ankles, pitting Oedema, hepatosplenomegaly (due to impaired venous return) and nocturia[14,22].

Management: Immediately position the patient upright. Administer Oxygen and record vital signs. Administer venodilators such as GTN 0.4 - mg SL for every 5 mn up to 3 tabs to reduce preload. GTN is not advised for hypotensive patient. Captopril or enalapril SC/ IV may be given to decrease after load. Morphine 2-4 mg IV / SC/ IM may be given for patients with chest pain and heart failure. If unconsciousness persists, initiate CPR and immediately transfer the patient to hospital[14,22].

g) Cardiac Arrest: Cardio pulmonary collapse may result from an abnormal heart rhythm or secondary to respiratory arrest. This leads to unresponsiveness (Clinical Death of the Patient - no pulse or no respiration). Time and instant intervention is essential since it is serious and life-threatening.[2,14,16,22].

Management: Absence of patient's response for stimulation confirms unconsciousness. Lay patient supine 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 EMS to transfer the patient to hospital [2,14,16,17,22].

h) Respiratory Arrest: Bronchospasm, hypoxia, airway obstruction by tongue position and size or from foreign body obstruction, drugs, aspiration, and laryngospasm may result in respiratory arrest. Patients will be cyanosed and unresponsive with absence of breathing [23].

Management: If patient is unconscious, position the patient supine. If patient is conscious, position the patient upright. Maintain airway by head tilt chin lift technique and deliver slow ventilation until the patient's chest rises (One breathe every five seconds for adults and for children - one breathe every three seconds) and initiate CPR. Call EMS and transfer the patient to hospital[14,23].

i) Respiratory Obstruction: Upper or lower respiratory tract obstruction results due to accidental slippage and aspiration of foreign objects. In mild obstruction, patient can speak, breathe and cough with feeling of choking. In severe airway obstruction, patient may be holding neck unable to speak, breath, cough and presents with cyanosis. Sometimes this may lead to unconsciousness and cardiac arrest[2,11,12,19,22].

Management:

For Conscious Patient - "Omesis manoeuvre" - In the dental chair ask the patient to turn to side and lean to head down position (lower level than the heart). Ask the patient to cough forcefully and continuously to expel the foreign object. If the foreign object is in the oropharynx, do not allow the patient to sit up. Trendelenburg position will be comfortable for the doctor to retrieve the visible object by Magill intubation forceps. Pulling the tongue forward provides visibility for removal.

If foreign object is not retrieved ask the patient to stand and lean forward, then encircle the patient from behind, support the patient's chest with one hand and give 5 Back Blows with other hand between shoulder blades to expel the foreign object. For infants, the doctor should hold the infant in straddled position (head lower down the trunk position) in one hand resting on his thigh with supporting infant's head. Using heel of the other hand doctor should deliver 5 force full back slaps between shoulder blades of the infant.

"Heimlich manoeuvre" or lower chest thrusts may also be tried to relieve obstruction. Stand behind the victim with arms placed around the victim's waist. A forceful sudden abdominal squeeze should be delivered with inward and upward direction. This pushes diaphragm resulting in assisted cough and helps in expelling of foreign object. This must be repeated for 5 times. This is advisable for older age group and children and not recommended for infants. "Heimlich manoeuvre" in dental chair – dentist should stand astride the patient and place the patient's head in the neutral position. Press the patient's abdomen by placing heel of one hand above the umbilicus and below the rib cage and second hand directly on top of first hand and deliver quick inward and upward thrust. Repeat the procedure until the relief of obstruction. This thrust is followed by turning patient to one side to clear oral cavity.

Chest thrusts recommended for pregnant patients, obese patients and infants. Stand behind the patient and keep the arms below the armpits of the victim by encircling the chest and apply backward thrust in the middle of sternum between the nipples. If obstruction is not relieved, refer the patient

for radiographic examination of chest / abdomen to evaluate position and removal of object[2,11,12,14,19,22,23].

For Unconscious Patient -

Maintain patent airway and start CPR. Administer Oxygen and Call EMS to transfer the patient to hospital [2,11,12,14,19,22,23].

j) Acute Asthmatic Attack: Asthma occurs due to bronchoconstriction and mucous plug formation. It is characterized by recurrent paroxysm of dyspnea, cough, chest tightness, wheezing and gasping sounds on breathing. Severe condition leads to inability to speak, tachycardia and confusion. Life-threatening condition shows "Silent chest" on auscultation, cyanosis, sweating, flushing of face, bradycardia and Hypotension [11,12,14,16,19,22].

Status asthmatics: Asthmatic episode persists despite the therapy. Symptoms are dehydration, dyspnea and cyanosis [14].

Management: Ask the patient to remain calm and sit upright. (supine position worsens dyspnea). Ask the patient to inhale 2 puffs from albuterol inhaler. If patient is unable to inhale, then use volumetric spacer (100 mgs/ puff) and give 4-6 puffs and allow 6 breaths for each puff or use nebulizer. For young children give up to 10 puffs via spacer device. If there is no improvement in 15 seconds, then consider SC/IM administration of 1:1000 dilution of adrenaline 0.3 ml. If no response is observed in 2-3 min oral or IV administration of hydrocortisone sodium succinate 100 to 200 mg should be considered. If condition persists administer IV aminophylline and call EMS to transfer the patient to hospital. High flow 100% O₂(8-10 L/min)can be delivered whilst waiting for ambulance. For paediatric patients 3-5 L/mn O₂ administration is advisable [5,11,12,14-16,19,22,24].

k) Epileptic Seizure: It is caused by sudden discharge of stimuli by cerebral neurons leading to muscle spasm (Tonic phase) and convulsive movements of the body (Clonic phase) which is preceded by prodromal symptoms (aura) like headache, drowsiness, flashing for lights, tingling sensation, behavioural change, strange smell and feeling in gut. Tonic &clonic phase associated with facial grimacing, clamped jaws, tongue biting, noisy breathing, excessive salivation with frothing, incoherent speaking, urinary incontinence, dyspnoea and cyanosis which may lead to confusion and post ictal coma[2,9,10,13,14,16,19].

Management: Discontinue treatment. Remove dangerous objects from the mouth and around the patient and do not attempt to restrain them. Make sure that patient does not injure himself. Head should be supported with cushion. If seizure develops while the patient is seated in the dental chair adjust the chair to supine position. As soon as the seizure stops turn the patient into a lateral position for conscious patient and supine position for unconscious patient. Open and maintain patent airway and avoid aspiration. After seizure stops, if breathing is normal then allow the patient to sleep under supervision. If seizure persists more than 5 minutes, then titrated IV Diazepam 10mg over two minutes (2.5mg over 30 seconds) or titrated IV midazolam 1 ml (1mg) per minute could be administered to break the seizures.

But getting access for IV injections in epileptic patient is quite difficult. So, alternative treatment of choice is

Midazolam buccal infiltration or intranasal administration. Recommended dosages are 10 mg for adults and child >10 years, 7.5mg for child 5-10 years, 5 mg for Child 1–5 years. One repeat dose may be given after 10 minutes or maintenance dose of Phenytoin 100mg/day in two divided doses can be given. Tab. Phenobarbital 50mg is an alternative for diazepam or midazolam. For hypoglycemic patient administer 25 - 50 ml of 50% IV Dextrose. Call EMS if seizure continues or delay in recovery. If no breathing, then administer oxygen 8-10 litres/mn and initiate CPR [2,5,9,10,13,14,16,17,19,21].

l) Hyperventilation Syndrome: Hyperventilation is ventilation more than that is required which results in hypocapnia (low CO₂ level in blood) due to excessive loss of CO₂. This is characterized by rapid breathing, palpitations, sweating, anxiety, chest discomfort, tachycardia, dizziness, lightheadedness, altered consciousness, numbness and tingling of extremities with peripheral paraesthesia, muscle pain, cramp, stiffness and tremors due to sympathetic stress response [9,10,13,14,19].

Management: Terminate all procedure and ask the patient to relax. Position the patient in comfortable position (Sitting) and encourage the patient to rebreathe the expired air since expired air is rich in CO₂. Ask the patient to breathe in and out slowly in the full-face mask or hands cupped over face closing mouth and nose for 10 times. Ask the patient to repeat the cycle until the relief of symptoms. Do not administer O₂ for hyperventilating patients. No drugs are usually required but if symptoms persist administer IM/Oral Diazepam 10 mg or IM Midazolam 3 -5 mg. If the patient becomes unconscious, place him in supine position, maintain airway and initiate CPR until the patient recovers consciousness [9,10,13,14,19,23].

m) Hyperglycaemia (Diabetic Ketoacidosis and Diabetic Coma): Increased blood glucose level than normal due to relative insulin deficiency. Clinical manifestations include intense thirst, polyuria, nausea and dehydration, dry skin, acetone breath, hypotension, rapid and weak pulse, hyperventilation, abdominal pain, altered consciousness and coma in severe cases [2,9,14].

Management: If patient is unconscious place patient in Trendelenburg position. Maintain patent airway and initiate CPR if needed. Rehydrate the patient with IV fluids 5% dextrose or administer 0.9% saline, 1L in 30 min + KCL 20mmol. Insulin 6U IV stat (immediate) or 20 U IM insulin stat then 6U 6th hourly, must be administered with careful monitoring of blood glucose. Oxygen may be administered. Transfer the patient to hospital [2,9,14].

n) Hypoglycaemia: Reduced blood glucose than normal. This may occur as an emergency in diabetes patients who fail to eat after their medication. Clinical symptoms are weakness, sweating, slurred speech, blurred vision, trembling, pale, cold and clammy skin (Hypothermia), nausea & hunger, depressed respiration, rapid pulse, hypotension, head ache, irritability, bizarre behaviour, disorientation, drowsiness, unconsciousness, seizure and coma [2,9,10,13,14,16,19,21].

Management: 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. Rectal honey (30 mL per 500 mL of warm water) may also be helpful. If the patient is unconscious, patient 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. Transfer the patient to hospital[2,5,9,10,13,14,16,17,19,21].

o) Hypothyroidism: Deficient secretion of thyroid hormone than normal. Signs and symptoms of hypothyroidism are anaemia, fatigue, puffy face, pale and dry skin with yellow colour, cold intolerance, hypothermia, cold peripheries with oedema, bradycardia, slow speech, weight gain, head ache with pain in muscles and joints, depression and confusion [13,14].

p) Hyperthyroidism: Increased secretion of thyroid hormone than normal. Signs of hyperthyroidism are anxiety, hyperactivity, nervousness, exophthalmos, flushed skin with profuse sweating, hypersensitivity to heat, hyperthermia, high blood pressure, tachycardia, tremors, rapid speech, dyspnea, weight loss, increased appetite and emotional instability [13,14].

Management for Hypo & Hyperthyroidism: Stop all procedure. Maintain airway. Apply heat with blanket covering for hypothyroid patient. Apply cold pack for hyperthyroid patient. Local anaesthetic with adrenaline should not to be used for hyperthyroid patient. Consult with endocrinologist. If patient is unconscious, then place the patient in Trendelenburg position and initiate CPR if necessary. Rehydrate the patient with IV fluids 5% dextrose, ringers lactate or normal saline. High flow Oxygen may be administered. Call EMS to transfer the patient to hospital [13,14].

q) Adrenal Insufficiency: Sudden discontinuation of steroid leads to adrenal cortex malfunction leading to hypo secretion of cortisol which results in life threatening situations. Clinical features include fatigue, pallor, sweating, pyrexia, hyperpigmentation, vomiting, diarrhoea, craving for salt and water, intense pain in abdomen, hypoglycaemia, hypotension, rapid / weak pulse, confusion, convulsions, circulatory collapse which lead to unconsciousness [10-12,14,16,19,23].

Management: Place patient in Trendelenburg position. Assess circulation and breathing and maintain air way. Administer high flow Oxygen 5-10 L/mn. Review patient's medical history and monitor vital signs. Administer 100 mg IM / IV hydrocortisone or IM dexamethasone 4 mg. If patient is hypotensive administer IV fluids (1 L normal saline or 5% dextrose). If patient is Hypoglycaemic - IV 50% Dextrose 50-100mL or Glucagon 1-2 mg IM should be administered. Call EMS to transfer the patient to hospital [10-12,14,16,19,23].

r) Epinephrine Overdose: This is due to administration of incorrect dose of epinephrine. Clinical features include pallor, weakness, palpitations, anxiety, flushing, sweating, trembling, uneasiness, tachycardia, respiratory failure, headache and dizziness [11,12,14].

Management: Position the patient in semi-supine position. If the patient is not hyperventilating administer high flow Oxygen. Monitor Vital Signs. Contact EMS for assistance. Administer vasodilator - Nitro-glycerine (2 sprays trans lingually or 2 sublingual tablets) with continuous monitoring of blood pressure. If patient is hypertensive administer IV Labetalol or Atenolol. Initiate CPR if necessary[11,12,14].

s) Local Anaesthetic Toxicity: It is due to administration of incorrect dose of local anaesthesia. Clinical symptoms include anxiety, palpitations, tremor, seizures, hypotension, bradycardia, uneasiness, ringing in ears, blurring in vision, confusion, respiratory arrest and cardiac arrest [11,12,14,22].

Management: Place the patient in supine position. Maintain patent airway. Manage symptoms. If patient is having seizure, then administer IV Diazepam 1 ml/min up to 2.5 - 5 mg or Midazolam IM/IV injections. If patient is Hypotensive give IV fluids. If patient is unconscious administer high flow Oxygen and monitor vital signs. If patient is unconscious with signs of allergy, then administer IM/IV epinephrine or antihistamine or corticosteroids. Initiate CPR if necessary and call EMS immediately[5,11,12,14,22].

t) Haemorrhage: Haemorrhage may be primary (at the time of surgery), reactionary (few hours after surgery), or secondary (few days after surgery due to infection). Acquired bleeding results from some medications like aspirin, clopidogrel, dipyridamole, heparin and warfarin. Signs and Symptoms of haemorrhage are bleeding after minor surgery, petechiae, ecchymosis, jaundice, spider Angiomas, mild tremor, hemarthrosis, splenomegaly and dissecting hematomas [11-13,21,23,25].

Management: Patients with congenital bleeding disorders like Haemophilia, Christmas and Vonwillibrands should be treated in special centres under supervision of haematologist. Anti - fibrinolytic agent (e.g. tranexamic acid) post-operatively should be given with haematologist consultation.

Bleeding in liver impairment patients must be managed by administering IV Vitamin K with Haematologist consultation. Opioid analgesics, NSAIDS and sedatives such as diazepam should be avoided in these patients. Antibiotics like Penicillin, Erythromycin, Tetracycline and Metronidazole should be used cautiously.

Emergency management begins by gently cleaning the mouth and locating the source of bleeding. Direct compression in the bleeding site seize further blood loss. Use pressure packs of resorbable oxidised cellulose (Surgicel). Cooling the bleeding site using ice pack or applying moistened tea bag or styptics to that area initiates coagulation effect. Place sutures in the bleeding site under L.A when necessary[21,24].

Use of Tranexamic acid mouthwash 4.8%, application of topical EACA 25% oral solution (250 mg/mL) or Gel foam with topical thrombin reduces bleeding. Tranexamic acid injections 25mg/kg up to 500 mg in 5 ml by slow IV injection for every 8 hours or EACA injections 75 mg/kg for every 6 hours can reduce post-operative bleeding in anti-coagulated patients. Local anaesthesia with vasoconstrictors should be used cautiously because of the risk of rebound vasodilatation, which may increase bleeding risk. For anaemic patient Ferrous sulphate 2-6mg/kg/day

administration shows improvement [11-13,21,23,25]. Try to arrest bleeding and transfer the patient to hospital.

u) Needle Breakage: Breakage of the needle occurs during injection procedures. Clinical features include trismus, pain, dysphagia and migration of needles [11,12].

Management: If needle tip is visible in the patient's mouth, remove the needle using artery forceps. If needle tip is not visible in the mouth then, inform this to the patient. Ask the patient to keep mouth open and advice the patient to refrain from jaw movements. Buried fragment needs to be located as soon as possible by using radiographs or CT scans & should be retrieved surgically by the surgeons immediately [11,12].

v) Hypochlorite Accident: Sodium hypochlorite is introduced beyond the apex. It manifests with severe pain, swelling with or without profuse bleeding from root canal.

Management: Administer regional block anaesthesia and completely drain the canal. Amoxicillin 500 mg q 6 hr for 7 days is to be advised [26].

CONCLUSION

Medical emergencies may be rare but to prepare for the management is indispensable. We recommend training of dental surgeons in the field of management of medical emergencies. For immediate and efficient management, the availability of emergency drugs and equipment in the dental clinics is essential.

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