

# Management of Medically Compromised Patients for Minor Oral Surgery

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## Abstract

Many factors need to be considered while evaluating medically compromised patients undergoing minor oral surgery. Whether the procedure is being performed in the clinic or in the operating room, the impact of the surgery and its potential complications must be kept in mind. In today's age various parameters like lifestyle, heredity, diet and lack of exercise, stress of work in young age contributes to more number of patients with medical problems needing dental treatment. This article aims to update the practitioner with the necessary information to evaluate such patients, add or modify existing medications and carry out effective treatment with minimum intra-op or post-op complications.

**Key Words:** medically compromised patients, pre-operative evaluation.

## Clinical Relevance Statement

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## Brief Objective Statement

The main objective of this paper is to give a handy ready reference of commonly seen medically compromised patients for predictable treatment outcomes for all clinicians.

## Manuscript

Many factors need to be considered while evaluating a patient prior to minor oral surgical procedures, especially in medically compromised patients. The surgeon must be aware of the impact of the procedure and the stress the peri-operative period potentially entails. In addition the pathophysiology of concomitant medical ailments that may modify therapy needs to be considered. Pre-operative assessment, intra-op monitoring and post-operative care need to be modified based on individual requirement<sup>1</sup>. The importance of a proper history and pre-operative assessment cannot be over emphasized.

A simple method of a quick evaluation for reference is given below.

- A- Anemia
- B- Bleeding Disorders
- C- Cardio-respiratory problems
- D- Drug intake or allergy
- E- Endocrine disturbances
- F- Fits (Epilepsy)
- H- Hepatobiliary
- I- Infections (HIV, HBsAg)
- K- Kidney
- L- Likelihood of/ or pregnancy.

## A) Anemia

Anemia is a common finding in our country in undernourished women and children. Assessment of the skin and mucous

membrane will easily demonstrate pallor and a complete haemogram must be done to rule out suspicion. A hemoglobin level of 8 gm % is sufficient for carrying out major surgical procedures and thus minor surgery can be safely carried out<sup>2</sup>. The patient can be started on haematonics along with Vitamin C for improvement of the hemoglobin levels or other drugs as advised by the physician.

## B) Bleeding Disorders

A thorough history must be taken for any bleeding disorders or any medications which the patient is taking which can impair normal coagulation process.

## Haemophilia<sup>3,4</sup>

Classic hemophilia is an X linked recessive disorder that results in deficiency of Factor VIII. Factor levels of 50% to 150% are considered normal. Patients with mild hemophilia can be usually treated on an OPD basis, but it always prudent to carry out procedures in hemophilic after hospitalization. For simple extractions 1-Deamino-8D-Arginine Vasopressin DDAVP 0.3 µg/kg max 20-24µg/kg can be given parenterally, one hour before surgery. In moderate and severe hemophilic estimation of factor by assay is an expensive and un-required step. Factor VIII replacement must be done pre-operatively as advocated by the hematologist. Step wise sequence guideline:

- 1) Factor VIII replacement
- 2) Atraumatic surgical technique,
- 3) Pressure pack soaked in povidone iodine as this acts as haemostatic, for 5 minutes by the clock prior to suturing.
- 4) Use of absorbable gelatin sponge in extraction socket and resorbable sutures must be utilized in this sequence. If required a post surgical transfusion of Factor VIII must be given after 24 hours, in case of multiple extractions or for all four wisdom teeth removals under general anaesthesia.

## Patients on Anticoagulant Therapy<sup>5</sup>

Anticoagulant medications are often given prophylactically to patients who are at risk of thrombus formation and its sequelae. Patients who have undergone heart valve replacement, particularly mechanical valves are treated with warfarin. Warfarin sodium is the most widely used oral anticoagulant and is monitored by the one stage prothrombin time (PT). The recommended International Normalized Ratio (INR) range is 2.0 to 3.0, except for patients with metallic prosthetic valves in whom it should be between 3.0 to 3.5 and has been recommended by the World Health Organization since 1983.

The patient is hospitalized and the INR ratio is checked. The warfarin is stopped (if INR greater than 3.5) and low molecular weight heparins are administered subcutaneously, have a bioavailability of more than 90% and offer a predictable and reproducible anticoagulant response.

## C) Cardio-Pulmonary Disorders<sup>2,3</sup>

Cardiac diseases can be subdivided into ischemic and non ischemic disease. Ischemic disease includes atherosclerotic heart disease, angina pectoris and previous myocardial infarction. Non ischemic diseases includes a variety of etiologies like vascular

(Polyarteritis nodosa), congenital (tetralogy of fallot), infectious (bacterial endocarditis) and many others. Preservation of cardiac health is an essential element of any perioperative protocol. The proper match of oxygen supply to oxygen use in myocardial tissue is the key to maintaining normal contractility and electrical activity.

Angina & Myocardial Infarction (Guidelines) STABLE ANGINA

- 1) Short and morning appointments
- 2) Available Nitroglycerin (Patch) near dental chair
- 3) Stress reduction measures (light talk, relaxed atmosphere, music and ambience)
- 4) Limited use of vasoconstrictor (1: 200,000 only) or can dilute with equal amount of 0.5 percent Bupivacaine and make it 1: 400,000 for better safety and increased duration to control post operative pain.
- 5) Adequate medications for post-operative pain control

Angina & Myocardial Infarction (Guidelines) UNSTABLE ANGINA

- 1) Hospitalize and give prophylactic nitroglycerin (Sublingual or transdermal patch)
- 2) Sedation and oxygen through nasal prongs
- 3) Continuous monitoring of Blood pressure by anesthetist
- 4) Judicious use of vasoconstrictor (1:200,000 only).

## Infective Endocarditis<sup>6</sup>

Dental procedures that involve manipulation of the gingival tissue or the periapical region of the teeth or perforation of the oral mucosa can produce bacteremia. Cardiac conditions associated with the highest risk of adverse outcome from endocarditis for which prophylaxis with dental procedure is recommended are:

- Prosthetic cardiac valves
- Previous history of infective endocarditis
- Congenital heart diseases
- Cardiac transplant recipients who develop cardiac valvulopathy.

In most patients a simple oral dosage is sufficient as tabulated below.

Situation	Agent	Adult Dose	Children Dose
Oral	Amoxicillin	2 g	50mg/ kg
Allergic to Penicillin	Cephalexin	2gm	50 mg/ kg
Azithromycin	Clindamycin		

## Hypertension

In case of hypertensive patients a physician's fitness prior to the procedure

remains a must. Checking of the blood pressure prior to the procedure should be done and the procedure should be postponed if the blood pressure is greater than 180/110.

Under most circumstances the use of epinephrine with local anesthetics is not contraindicated in hypertensive patients unless the systolic pressure is over 200 mmHg & or diastolic is over 115 mmHg<sup>2</sup>.

Measures taken to prevent stress and anxiety help in relaxation and reduction of the blood pressure. Local anaesthesia with 1; 200,000 adrenaline may be used and can be combined with 0.5 % Bupivacaine for better pain control which in turn will prevent hypertension due to anxiety. After extraction slow changes must be made in chair position to prevent orthostatic hypotension. We recommend placement of a suture in the socket to prevent any bleeding after the surgery. In case the blood pressure is higher than the mentioned level then the procedure should be postponed with a referral to the physician.

**Assessment of Respiratory Disorders**

Patients with pulmonary diseases must be carefully assessed because even healthy patients especially smokers, may develop pulmonary / respiratory complications as a direct result of surgery and anaesthesia.

Bronchial asthma is a common pulmonary condition that must be respected for its potential to cause life threatening complications during surgery and anaesthesia. A simple method of a prophylactic use of the salbutamol inhaler of the patient prior to surgery to prevent attack and stress reduction measures will aid in prevention of asthmatic episode in dental chair.

In patients who are heavy chronic smokers or with severe pulmonary disease it is prudent to use pulse oximeter which can be easily applied on the patients finger or toe and is very easy to monitor. This in addition to administration of supplemental oxygen via nasal prongs must be done in case of patients who require it at home also.

**D) Drugs Intake with or Without Modification**

Drugs to be Continued	Drugs to be Stopped	Drugs to be Modified
<ul style="list-style-type: none"> <li>• Antibiotics, Anti arrhythmias, Anti-asthmatic, Anti-epileptics, Anti-hypertensive's, Cardiac drugs, Eye drops, Cortico-steroids, Anxiolytics</li> </ul>	<ul style="list-style-type: none"> <li>• Diuretics- on morning of surgery</li> <li>• Oral ant diabetics - on morning of surgery</li> <li>• Aspirin as per physician guidelines, although may not be stopped</li> <li>• Monoamino oxidase inhibitors- 2 weeks before surgery</li> </ul>	<ul style="list-style-type: none"> <li>• Insulin- managed as per sliding scale in consultation with physician.</li> <li>• Oral anti-coagul-ants- switch to low molecular weight heparin</li> <li>• Corticosteroids dosage doubled on day of surgery</li> <li>• Stoppage of smoking mini-mum of one week before and after surgery</li> <li>• Alcohol to be avoided prior and one week after surgery.</li> </ul>

**E) Endocrine Disturbances Diabetes Mellitus**

Diabetes is a chronic disease characterized by the body's inability to process blood glucose properly. These patients present a special challenge to the surgeon and the anesthetist. Patients with poorly controlled diabetes are predisposed to

impair wound healing. This is characterized by inhibition of the inflammatory response to wounding, macrophage infiltration, angiogenesis, fibroplasias, reparative collagen accumulation and wound-breaking strength. Phagocytic capabilities of polymorphonuclear leucocytes are adversely affected and micro vascular dysfunction may result in compromised local circulation leading to delayed response to infection. A rational approach to properly managing diabetic patients is based on the knowledge of the type of diabetes present, degree of control by the patient, stress associated with the surgery and the likelihood of the patient resuming a normal diet post-operatively<sup>7</sup>.

Management of patient with diabetes BSL levels less than 200 mg %

**1 Non Insulin Dependant patient**

If the sugar levels are less than 200 all surgical procedures can be performed under antibiotic cover (Amoxicillin).

**2) Insulin Controlled Patients**

If the diabetes is well controlled all surgical procedures can be performed under antibiotic cover.

Morning appointments are preferred.

Usual dosage and normal meals on day of appointment

Reduce night dosage of insulin by half till normal diet resumes.

In case of uncontrolled diabetics requiring surgery for infections or fractures the patient must be referred to a maxillofacial surgeon for suitable management.

**Adrenal Gland**

A lack of adrenal cortical activity as in Addison's disease may decrease the production of cortisol and aldosterone and alter cardiovascular activity. Patients who take supplemental glucocorticosteroids may have a suppression of adrenocorticotrophic hormone and may need pre-operative supplementation of cortisol<sup>2</sup>.

- 1) Stop drugs that can decrease cortisol level (eg ketoconazole) at least 24 hours prior to surgery in consultation with the physician
- 2) Usual morning dose of steroid to be taken plus supplemental hydrocortisone pre-operatively.
- 3) Adequate post-operative pain control.

**F) Fits (Epilepsy)**

Dentists should not be unduly worried about treating an epileptic patient under regular medication. A history of convulsion experienced last by the patient must be carefully asked for with a physician's fitness prior to surgery being a must.

**I) Infections<sup>2,3</sup>**

Acute infections like tuberculosis, HIV and Hepatitis B affect the general well being and healing of our patients and must be carefully evaluated. Tuberculosis especially rampant in our country carries no contra-indication for extraction unless in the initial phase of the infection where it can be transmitted via droplets. Universal precautions taken for every patient can prevent professionals from acquiring this.

**HIV**

The blood borne nature of this pathogen has important implications on all health care

professionals. A baseline CD4 count provides guidelines for surgeons to operate. In cases of patients with a count less than 500 but more than 200 universal precautions for disease control must be taken. The platelet count must be measured and surgery must proceed with antibiotic prophylaxis.

**HBsAg**

Due to the problem of salivary transmission Hepatitis B is more dangerous and has an unfavorable clinical course. Vaccination by all health care professionals, check for safety purposes as the vaccination is not 100 percent effective a check up for anti HBs Ag antibody should be done once in two years and universal health care precautions remain the mainstay. A detailed evaluation of the liver function tests of the patient with platelet counts and PT/ INR ratio remains a must. Drugs like metronidazole should be avoided if possible in patients with acute hepatitis.

**K) Kidney**

Chronic renal failure and its ultimate result, end stage renal disease is a worldwide problem that continues to increase. The management of a patient undergoing haemodialysis is limited to conservative management only. If any surgical treatment is required then it should be done with hospitalization provided the renal function tests are normal.

**L) Likelihood of /or Pregnancy<sup>2</sup>**

In women of child-bearing age and if possible in all patients use contemporary digital radiological methods with lead apron for all patients. In pregnant women, it is best to avoid treatment in the first and third trimester. Supine position for long positions must be avoided in third trimester to prevent supine hypotensive syndrome. In case of lactating mothers most drugs are of little pharmacological significance and if possible they should be taken after breast feeding.

**Conclusion**

Oral & Maxillofacial surgery frequently causes temporary but clinically significant alteration & has direct impact on vital organ systems. The physiologic stresses produced by surgery & anesthetic technique necessary for these procedures can lead to serious morbidity & mortality.

Depending on the variables discovered in the assessment, modifications to the usual surgical & anesthetic regimens should be done for a safe and satisfactory outcome.

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