Heal Talk



# Encountering Syncope in Dental Clinics : A Review

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## Abstract

The time is now past when dentist is expected only to fill a tooth, extract a tooth, or replace a tooth. As a member of the health team, he is expected to be concerned with the patient's total health. He must understand body function interrelationships as they pertain to the oral cavity. Let us not misunderstand. It is most important to know how to handle the mechanical arts of dentistry. Our livelihood depends on it. But it is equally important to know when to opt for an ideal treatment plan, when to modify a treatment plan, or when to delay definitive dental treatment because of the patient's medical problems.

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Syncope (Greek, Synkope, meaning cessation, pause) is a transient loss of consciousness and Postural tone with spontaneous recovery and no neurological sequelae. In other words defined as T-LOC (Transient Loss of consciousness) due to transient global cerebral hypoperfusion characterized by rapid onset, short duration, and spontaneous complete recovery.

Syncope also known as vasovagal syncope but more often termed as common faint & is frequently observed , usually benign and self –limiting process which is potentially life threatening. In two surveys in the year 1986 of dental office emergencies, vasodepressor syncope was the most common emergency observed, accounting for 53% of all reported emergencies.

During worldwar II more than 25000 blood donor's fainted, and all recovered. Yet despite its seemingly innocuous nature, any loss of consciousness, produces physiologic changes and can play the victim's life in danger. Lewis introduced the term "vasovagal" implying therein that both vasodilatation and bradycardia were involved in the response.

## Pathophysiology

Syncope is caused by a decrease in perfusion to the reticular activating system, the neuronal networking in the brain stem which supports consciousness. It most often occurs while standing. In the vertical position blood pressure and blood flow to the brain are critically dependent on a normally functioning cardio vascular system and abnormalities in cardiac output or in autonomic reflexes controlling blood pressure can cause syncope.

It may also be induced by hypocapnia which causes cerebral vasoconstriction leading to a reduction in cerebral blood flow. In addition as the brain is enclosed in the non distensible cranium manoeuvres that is raise intracranial tension may suddenly reduce cerebral blood flow leading to loss in consciousness.

Syncope episode represents an episode of unconsciousness which may be due to a benign condition with no prognostic implications or on the other hand may be of a more sinister nature indicating life threatening condition like cardiac disease so syncope is considered as an important medical emergency.

## Epidemiology

Syncope is a common clinical problem that can affects up to 3.5% of general population, in 40% of cases exact cause of syncope remains elusive and 30% of affected patients experience recurrent episode.

## Predisposing factors

Factors that can precipitate vasodepressor syncope are classified into two groups. The first group consist of psychogenic factors and the second group consist of non psychogenic factors

| Psychogenic factors | Non-psychogenic factors |
|---|---|
| • Fright<br>• Anxiety<br>• Emotional stress<br>• Receipt of unwelcome news<br>• Pain, especially sudden and unexpected pain<br>• The sight of blood or surgical or other dental instruments | • Erect sitting or standing posture<br>• Hunger from dieting or a missed meal<br>• Exhaustion<br>• Poor physical condition<br>• Hot,humid,crowded environmen |

**Table. Predisposing factors for vasodepressor syncope**

| |
|---|
| **Reflex ( neurally- mediated) syncope**<br>**Vasovagal:**<br>* Mediated by emotional distress: fear, pain, instrumentation, blood phobia<br>* Mediated by orthostatic stress<br>**Situational:**<br>* Cough, sneeze<br>* Gastrointestinal stimulation (swallow, defaecation, visceral pain)<br>* Micturition (post- micturition)<br>* Post- exercise<br>* Post- prandial<br>* Others (eg., laught, brass instrument playing, weightlifting)<br>**Carotid sinus syncope**<br>Atypical forms (without apparent triggers and/ or atypical presentation) |
| **Syncope due to orthostatic hypotension**<br>Primary autonomic failure:<br>* Pure autonomic failure, multiple system atrophy, Parkinson's disease with autonomic failure, lewy body dementia<br>Secondary autonomic failure:<br>* Diabetes, amyloidosis, uremia, spinal cord injuries<br>Drug induced orthostatic hypotension:<br>* Alcohol, vasodilators, diuretics, phenothiazines, antidepressants<br>volume depletion:<br>Hemorrhage, diarrhea, vomiting, etc. |
| **Cardiac syncope (cardiovascular)**<br>Arrhythmia as primary cause:<br>Bradycardia:<br>* Sinus node dysfunction (including bradycardia/tachycardia syndrome)<br>• Atrioventricular conduction system disease<br>• Implanted device malfunction.<br>Tachycardia:<br>• Supraventricular<br>• Ventricular (idiopathic, secondary to structural heart disease or to channelopathies)<br>Drug induced bradycardia and tachyarrhythamias<br>Structural disease:<br>Cardiac: cardiac valvular disease, acute myocardial infarction/ ischaemia, hypertrophic cardiomyopathy, cardiac masses (arterial myxoma, tumors etc.) pericardial disease/ tamponade, congential anomalies of coronary arteries, prosthetic valves dysfunction<br>Others: pulmonary embolus, acute aortic dissection, pulmonary hypertension |

**Table .Classification of syncope**

## Signs and Symptoms:

**Can be distributed into three Phases:**

**Phase-I**

**Pre-syncope**

1. Warm feeling in face and neck.
2. Pale or ashen coloration.
3. Sweating.
4. Feels cold.
5. Abdominal discomfort.
6. Lightheaded or dizziness.
7. Mydriasis (Pupillary dilatation.)
8. Yawning.
9. Increased heart rate.
10. Steady or slight decrease in blood pressure.

**Phase-II**

**Syncope**

1. Patient loses consciousness.
2. Generalized muscle relaxation.
3. Bradycardia (Weak thready pulse.)
4. Seizure (Twitching of hands, legs, and face.)
5. Eyes open (Out and up gaze.)

**Phase- III**

**Post-syncope**

1. Variable period on mental confusion.
2. Heart rate increases (Strong rate and rhythm.)
3. Blood pressure back to normal levels.

## Diagnostic Test

To make the diagnosis of vasovagal syncope: Hearing your description of the symptoms you experience (called a medical history). Tilt testing is sometimes performed to try to reproduce an episode. Tilt testing involves what doctors call a postural stress test. While the blood pressure and heart rate are monitored, the patient is tilted up to 80° (almost standing) to try to trigger an episode of loss of consciousness.

**The following is a description of a tilt test**

- Testing is usually done in the morning on an empty stomach
- Typically there are 2 nurses and a doctor in the room
- The patient lies on their back on a motorized table
- A blood pressure monitor is attached to the finger and the arm, and EKG electrodes are connected to monitor the heart rate
- An intravenous is inserted in the hand or arm
- The patient is monitored for 10 minutes at rest
- The table is raised to 80° and monitored for 30 minutes
- If an episode does not occur during this phase, a medication is usually added to trigger an event (Isoproterenol or nitroglycerin)
- If an episode occurs, the patients is quickly returned to the lying` position, and the test is

over

A tilt test is not a perfect test. 75% of patients that are felt to have vasovagal syncope will have a positive test. People that do not have fainting will have a positive test (i.e. faint) 15% of the time. The nurse or doctor will ask questions about the similarity of symptoms to episodes that have occurred spontaneously before the test.

## Management

- Stop all dental treatment.
- Remove all objects from the patient's mouth.
- Place patient in supine position with legs and arms elevated and head at level of heart. If patient is pregnant roll onto left side.
- ABC's, Ensure that the airway is open.
- Use Ammonia ampule to stimulate breathing.
- Oxygen 3-5L/min by nasal canula, 10L/min by mask.
- Reassess airway.
- If unconscious for more than 1 minute activate EMS.
- Start IV if available.
- Augment ventilation if respiratory effort is poor (Use Ambu bag.)

## Dental Treatment Considerations

- Delay further dental treatment 24 hours especially if the patient lost consciousness.
- If the patient lost consciousness they must not be permitted to leave unescorted or drive a motor vehicle.
- Determine the cause of the syncope episode prior to completing further treatment.
- As stress is the major cause of syncope in the dental practice so it is rightly said “Prevention is the key to management of syncope.” This includes taking a complete medical history and thorough evaluation of the patient.
- Use stress management protocols, morning appointments, should be scheduled.
- Ensure that patients do not miss meals prior to treatment.

## Prevention

Prevention of vasodepressor syncope is directed at the elimination of factors that may predispose an individual to faint. Most dental offices are not hot, humid, or crowded. Adequate air conditioning eliminates the heat factor. Patient hunger, the result of dieting or a missed meal before the dental appointment also should be considered; each patient, especially those who are anxious, should be requested to eat a light snack or meal before their dental appointment to minimize the risk of developing hypoglycaemia in addition to psychogenic response. Modification in dental treatment should be seriously considered for the more medically compromised.

## Proper Positioning

An important contributing factor in most cases of vasodepressor syncope is the patient's position in dental chair. Today, patients will be placed in a supine or semi-supine (30 to 45$^0$) position, a practice that has reduced any instances of vasodepressor syncope in the dental chair.

## Anxiety Relief

Most cases of vasodepressor syncope in the dental office involve psychogenic factors. Thus each potential patient must be evaluated carefully for the presence of dental anxiety. If the patient is overly anxious, dental treatment should be modified to minimize or to eliminate it.

## Differential Diagnosis for Unconsciousness

**General**

1. Postural Hypotension.
2. Psychological (Stress)

**Under 40 Years Old**

1. Hypoglycemia.
2. Epilepsy.
3. Acute Adrenal Insufficiency.

**Over 40 Years Old**

1. Myocardial Infarction
2. Cerebral Vascular
3. Acute Arrhythmia's

**No Response to BLS**

1. Drug Induced (Overdose)
2. Hypoglycemia/Hyperglycemia.
3. Acute Adrenal Insufficiency.

## Clinical Relevance

The exact mechanisms in the development of syncope remain unresolved. In patients of recurrent syncope, alterations in cerebrovascular homeostasis, baroreflex activity or neurohumoral secretions or reactivity, may each play roles to a greater or lesser extent. Delineating clearly these responses, would help in appropriate pharmacological and lifestyle interventions for patient's syncope. Because the diseases that may cause syncope span multiple specialties, it is prudent for the primary care physician to work collaboratively with relevant specialists to devise an optimal evaluation and management plan for each patient.

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