

## Epilepsy and Oral Health Care

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**Abstract:** Epilepsy is a neurological condition characterised by seizure activity. As an oral health care provider, knowledge about such conditions will help render better dental care to epileptic patients. Epileptic patients suffer from poor oral health, tooth loss, periodontal diseases, recurrent caries etc. Seizure episode in dental clinic is a medical emergency and should be handled cautiously. Only if a dentist is well aware about this kind of medical condition, can he manage and make a positive psychological impact upon the sufferers as well as encourage them to keep good oral hygiene for better general health. This article discusses general considerations, medications interacting with epileptic drugs, management of seizure episode, dental conditions and requirements of epileptic patients and management of status epilepticus. [A Oak, Natl J Integr Res Med, 2018; 9(3):71-74]

**Key Words:** Epilepsy, Seizures, Oral health, Dental problems and management

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**Introduction:** Epilepsy is a recurrent tendency to spontaneous, intermittent abnormal electrical activity in part of the brain, which manifest as seizures in sufferers<sup>1</sup>.

Of the 70 million persons with epilepsy worldwide, nearly 12 million persons with epilepsy are expected to reside in India; which contributes to nearly one-sixth of the global burden. The overall prevalence (3.0-11.9 per 1,000 population) and incidence (0.2-0.6 per 1,000 population per year) data from recent studies in India on general population are comparable to the rates of high-income countries (HICs) despite marked variations in population characteristics and study methodologies<sup>2</sup>.

Patients living with epilepsy have special needs during dental treatment. In almost all aspects of oral health and dental status, the condition of patients with epilepsy is significantly worse than age-matched groups in the general (nonepileptic) population. Furthermore, patients who have poorly controlled epilepsy and experience frequent generalized tonic-clonic seizures exhibit worse oral health in comparison with patients who are better controlled or only have seizures that do not involve the masticatory apparatus<sup>2</sup>.

The number of decayed and missing teeth, the degree of abrasion and periodontal indexes are significantly worse in patients with epilepsy. They also have significantly fewer restored and replaced teeth than the general population<sup>3</sup>.

**Table 1: Simplified version of classification of epilepsy<sup>3</sup>.**

<b>Partial seizures</b>
<b>Simple partial seizures</b> (awareness not impaired)
<ul style="list-style-type: none"> <li>with minor signs (focal motor, versive, phonatory)</li> <li>with somatosensory or special-sensory symptoms (somatosensory, visual, auditory, olfactory, gustatory)</li> <li>with autonomic symptoms</li> <li>with psychic symptoms (déjà vu, illusions, hallucinations)</li> </ul>
<b>Complex partial seizures</b>
<ul style="list-style-type: none"> <li>with simple partial onset followed by impairment of awareness.</li> <li>with impairment of awareness at onset</li> </ul>
<b>Partial seizures evolving to secondarily generalized seizures</b>
<ul style="list-style-type: none"> <li>simple partial seizures evolving to generalized seizures</li> <li>complex partial seizures evolving to generalized seizures</li> <li>simple partial seizures evolving to complex partial and then to generalized seizures</li> </ul>
<b>Generalized seizures</b>
<ul style="list-style-type: none"> <li>Absence seizures</li> <li>Myoclonic seizures</li> <li>Clonic seizures</li> <li>Tonic seizures</li> <li>Tonic-clonic seizures</li> <li>Atonic seizures</li> </ul>
<b>Unclassified seizures</b>

**General Considerations:**

- Detailed medical and dental history of patients is a prerequisite.

- Knowledge about the medications prescribed for the patient.
- Dental Light should not be focused on eyes.
- Longer appointments should not be scheduled.
- Oral hygiene instructions should be given to the patient.
- Oral infections and Toothache that causes pain may provoke epileptic seizures. Such factors should be eliminated and treated during periodic dental appointments.
- Little dental apparatus as possible should be used at one time while treating such patients.
- Use of high volume suction to clear oral cavity of possible debris during dental procedures.
- Reassure the patient.

#### Medications that interfere with antiepileptic drugs<sup>1</sup>.

Antibiotics and antifungals:

- Metronidazole is known to cause seizures and should not be prescribed
- Clarithromycin can reduce phenytoin metabolism, giving increased plasma phenytoin levels;
- Erythromycin may interfere with valproate
- Phenytoin will decrease the effectiveness of antifungals such as ketoconazole and miconazole
- Tramadol enhances the effect of carbamazepine and should be avoided
- Non-steroidal anti-inflammatory drugs (NSAIDs) can increase the plasma concentrations of valproate and phenytoin.

#### Management of seizure<sup>1</sup>.

A generalised tonic-clonic convulsion may occur in the dental chair. The patient may or may not warn of an impending seizure. Consciousness is lost before the seizure begins.

In this situation, the principal aim is to prevent injury to the patient:

- Check that the patient's airway is clear;
- Check the patient's breathing;
- Check the circulation at the radial pulse (at the wrist) or, alternatively, the carotid pulse (in the neck);
- Place the chair in the supine position;
- Clear the area of equipment if an epileptic fit is suspected;
- Turn the patient, if possible, to the side (recovery position). This reduces the risk of aspiration of secretions. If the patient is becoming cyanosed,

gently extend the neck. Do not attempt to place anything in the mouth;

- Use passive restraint only to prevent injury from hitting nearby objects or from falling out of the chair;
- Make an attempt to identify the cause of the fit, such as a missed medication dose or anxiety
- If the seizure lasts longer than 1 minute or for repeated seizures, administer a 10-mg dose of diazepam intramuscularly (IM) or intravenously (IV), or 2 mg of ativan, IV or IM, or 5 mg of midazolam, IM or IV<sup>1</sup>.
- Administer oxygen at a rate of 6–8 L/minute<sup>1</sup>.
- Reassure the patient after they regain consciousness. Ensure that the patient is fully recovered before discharge home with a responsible adult.

#### Dental conditions and requirements of epileptic patients:

**Periodontal considerations :** Gingival overgrowth as a complication of phenytoin use has been well studied. About 50% of patients taking this medication will develop gingival hyperplasia within 12–24 months of initiation of treatment. Despite the existence of newer medications that are equally effective and have fewer side effects, phenytoin remains one of the most commonly used drugs. Evidence regarding best treatment for gingival hyperplasia is lacking. Some clinicians advocate the use of chlorhexidine, folic acid rinses or both, but excellent oral hygiene combined with routine scaling and oral prophylaxis will probably prevent or significantly decrease the severity of the condition. In severe cases, surgical reduction is needed<sup>3</sup>.

The newer antiepileptic drugs produce oral manifestations only infrequently. Xerostomia and stomatitis have been reported rarely as side effects of carbamazepine, and rash that may involve the oral cavity has been associated with lamotrigine and can be exacerbated by the concomitant use of valproic acid<sup>3</sup>.

**Prosthodontic considerations:** In a recent analysis of the prosthodontic status of patients with epilepsy, it was found that compared with age-matched controls, patients with epilepsy have a tendency to become edentulous earlier. It was also found that prosthodontic treatment is suboptimal, as significantly fewer

teeth are replaced, despite the fact that epileptic patients tend to have more missing teeth.

Discouragement of incisal restorations, use of fixed rather than removable prosthesis and inclusion of additional abutments if fixed partial dentures are to be considered. In addition, the use of metal base for complete dentures and telescopic retention with denture bases made of metal or reinforced with metal for nearly edentulous patients is recommended for those with frequent partial seizures involving the masticatory apparatus, frequent generalized tonic-clonic seizures and other seizures associated with falls.<sup>4</sup>

**Trauma:** Generalized tonic-clonic seizures often cause minor oral injuries, such as tongue biting, but also frequently lead to tooth injuries and in some cases to maxillofacial trauma.<sup>2</sup> If an avulsed tooth cannot be found, then a radio-graph is recommended, given the risk that the patient may have swallowed or inhaled the tooth.<sup>5</sup> Phenytoin and phenobarbital both increase epileptic patients' risk of fractures, as these drugs accelerate the excretion and metabolism of vitamin D. For these patients, therefore, a combination of prophylactic anti-epilepsy drugs, in tandem with vitamin D and calcium supplements, is recommended. When treating a patient who has little or no control over their seizures, and when dealing with maxillofacial fractures, it is crucial to make sure that the patient's airway is not blocked. When operating on maxillomandibular fractures, open reduction and fixation should be preferred and bimaxillary fixation should be avoided<sup>6</sup>. Added to these, it also reported that biting the finger of the dentist by the patient during seizure is common.

**Endodontic considerations:** Endodontic treatment can be carried out with the knowledge to recognize the early signs seizure and to take precautions to avoid such incidents. For patients who are adequately controlled with medication, they can undergo endodontic management in a routine way; however, patients whose seizure activity does not decrease in intensity following anticonvulsant treatment may need additional anticonvulsant or sedative medication, hence there is a need of consultation with a neurologist prior to a dental appointment<sup>7</sup>.

**Local anesthesia:** With regard to the safety of administering local anesthesia to epileptic patients, it

has been reported that the issue is still inconclusive and not certain. Local anesthetics administered in therapeutic dosages do not interact with standard antiepileptic drugs. In the case of a critical overdose of local anesthetic, however, clinical conditions such as generalized tonic-clonic convulsions may be observed. Although it has been re-ported that local anesthetic administration during dental treatment is safe, it is also proposed that adrenalin in local anesthetics has a potential effect on epileptic seizures by intravenous injection<sup>8</sup>.

**Orthodontic considerations:** Orthodontic treatment can be conducted easily in epileptic patients. A fixed appliance should be preferred over a removable appliance. An occlusal splint must also be retentive when used to treat epileptic patients who have temporomandibular disorders<sup>4,9</sup>.

**Status epilepticus:** Traditionally, status epilepticus was characterised by 30 minutes of continuous seizure activity or by multiple consecutive seizures without return to full consciousness between the seizures. It is now thought that a shorter period of seizure activity causes neuronal injury and that seizure self-termination is unlikely after five minutes. As a result, some specialists suggest times as brief as five minutes to define status epilepticus<sup>10,11</sup>.

The Resuscitation Council (UK) guidelines from 2006 recommend that medications should only be administered if convulsive movements occur for greater than five minutes or recur in quick succession. Intravenous diazepam is considered first-line treatment for control of prolonged seizures. It may be more appropriate to administer a single dose of midazolam via the buccal or intranasal route in a dental practice setting, depending on the experience of the dental clinician in gaining IV access. Administer oxygen 10 L/min. Check Airway first followed by basic life support measures and immediately contact emergency medical services<sup>10,11</sup>.

**Conclusion:** Epileptic patients can be safely managed in dental set up by a comprehensive and astute clinician. As it is rightly said "Eyes will only see what mind knows", with good understanding and sound knowledge, simple and straightforward treatment planning can improve patients oral and general health. With detailed history and examination even the generalized tonic clonic seizure episodes can be

managed effectively in dental setting. Patients who have not suffered from seizure for a long time do not require special treatment.

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