Management of Medical Emergencies in Dental Practice
Professor Doctor S.Jimson
Sree Balaji Dental College and Hospital, Chennai
Epilepsy- Status Epilepticus

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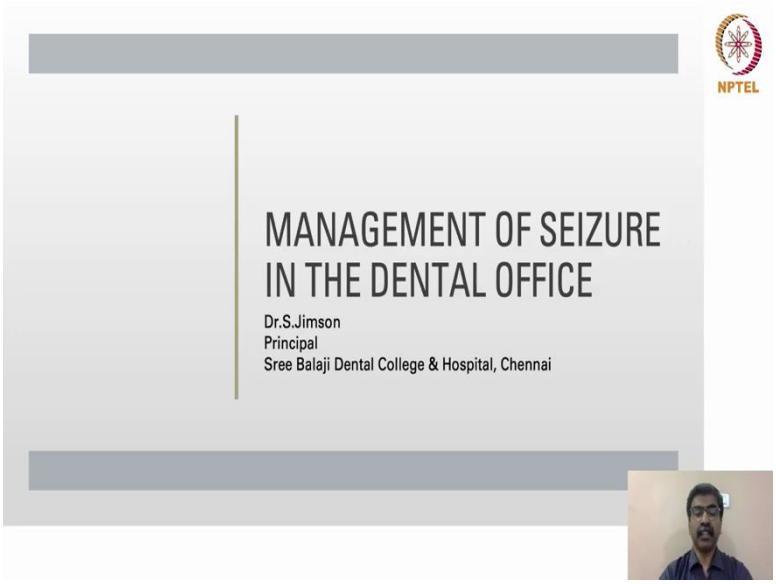

Hi, all. The topic for this week is Management of Epilepsy in the dental office. Through the course of this comprehensive lecture, we will be covering the basic aspects, clinical features, establishing a diagnosis and the emergency management of a patient presenting with seizures in the outpatient department. The presentation will also have clinical scenarios for more clarity pertaining to the topic.

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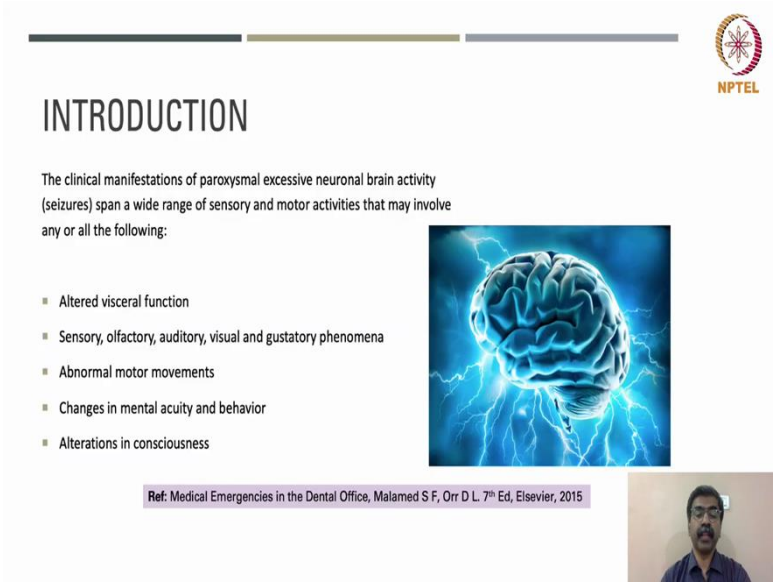

Seizures, otherwise, the interpretation of excess paroxysmal neuronal brain activity span a range of variable motor as well as sensory activities that manifests as altered visceral function, sensory, olfactory, visual, auditory and gustatory phenomena, abnormal motor activity, mental activity and behavioural changes and altered consciousness.

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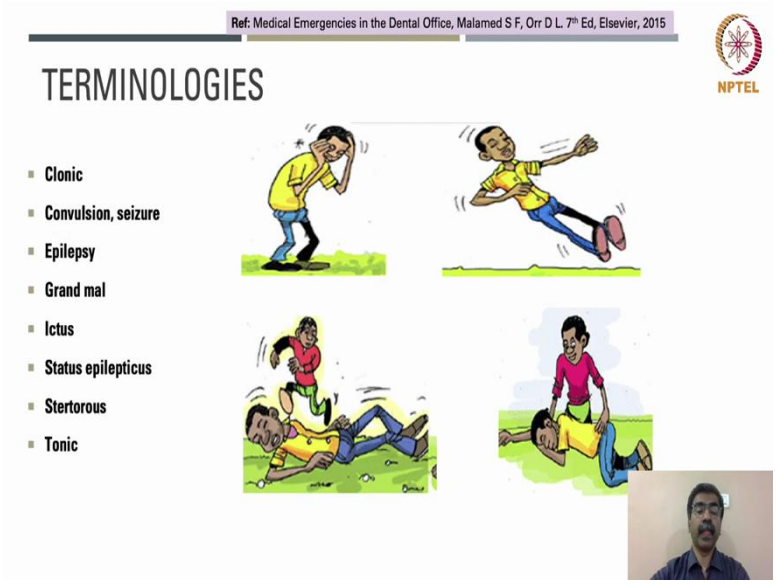

So, before we go into the detail of the presentation, you all should know about certain terminologies which are going to come again in this presentation. Clonic, it means it is an intermittent muscular contractions and relaxation, the clonic phase being the actual convulsive portion of a seizure.

Convulsion or seizure is defined by Huglins Jackson in the year 1870 as a symptom which is an occasional and excessive and a disorderly discharge of nerve tissue. The more modern definition is a paroxysmal disorder of cerebral function characterized by an attack involving changes in the state of consciousness, motor activity or sensory phenomena. Seizure is sudden in onset and usually of brief duration. The term convulsion and seizure are synonymous.

Epilepsy is to take hold of, epilepsy is defined as a recurring paroxysmal disorder of cerebral function marked by sudden brief attacks of altered consciousness, motor activity or sensory phenomena. Convulsive seizures are the most common form of attack.

Grand mal is French name for great illness. The first known use of the term dates way back and back to 1897. Ictus is a seizure and status epilepticus is a condition in which seizures are so prolonged or so repeated that recovery does not occur between attacks. It is a life-threatening medical emergency. Stertorous is characterized by snoring, used to describe breathing. Tonic

is a sustained muscular contraction and patient appearing rigid or stiff during the tonic phase of a seizure.

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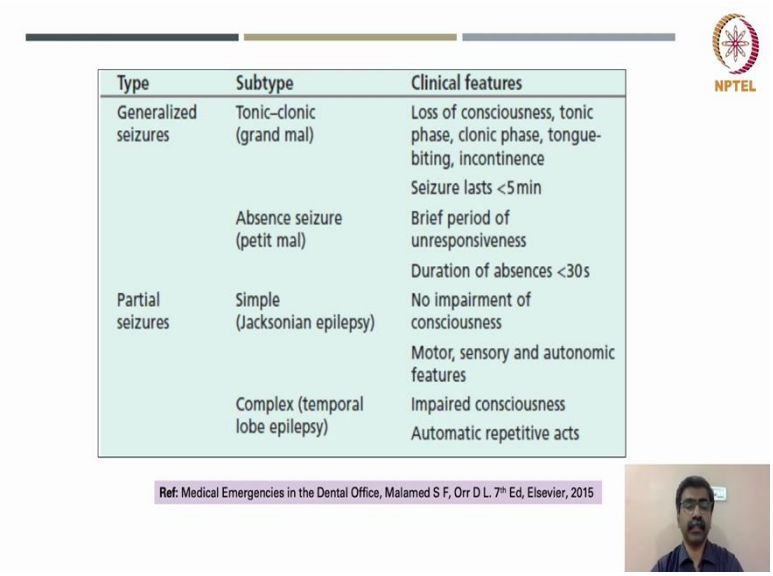

The seizures are generally classified as generalized seizures and partial seizures and the subtypes include tonic-clonic or grand mal, absent seizures or petit mal. And in partial seizures, it is simple which is Jacksonian type of epilepsy or complex which is a temporal lobe epilepsy. In the clonic-tonic or the grand mal, the clinical features include loss of consciousness, tonic phase, clonic phase.

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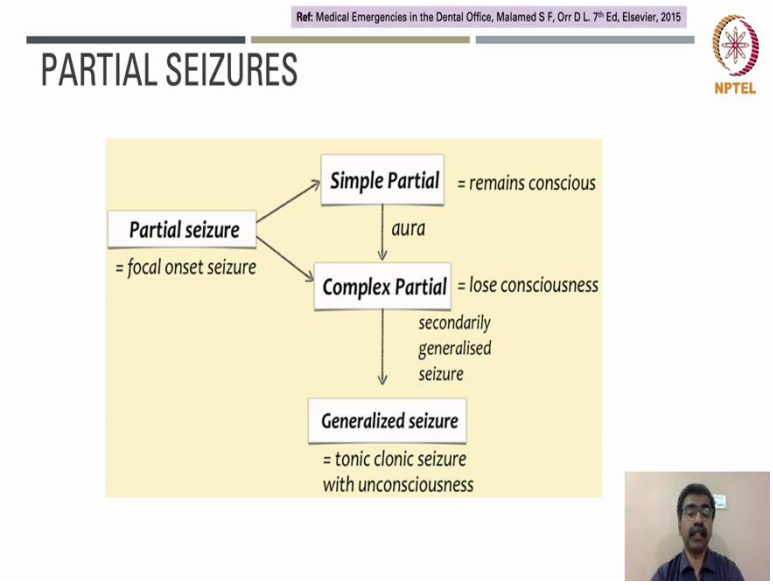

The partial seizures is characterized by sensory, motor, autonomous and psychic symptoms. The patient remains conscious. The signs and symptoms elicited correspond to the brain area that is affected called the ictal focus.

The partial seizures can be categorized further into simple partial showing specific motor, sensory symptoms and complex partial showing more complex signs such as delusions, hallucinations, and deja vu that occurs spells. Focal seizures are usually localized wherein disturbance of awareness or consciousness with varying degrees of amnesia though present does not cause the patient to lose consciousness.

If the focal type turns generalized, then it is invariably associated with unconsciousness. Generalized issues are generally considered more clinically dangerous due to their potentially, potentiality to cause greater injury and leading up to post seizure complications.

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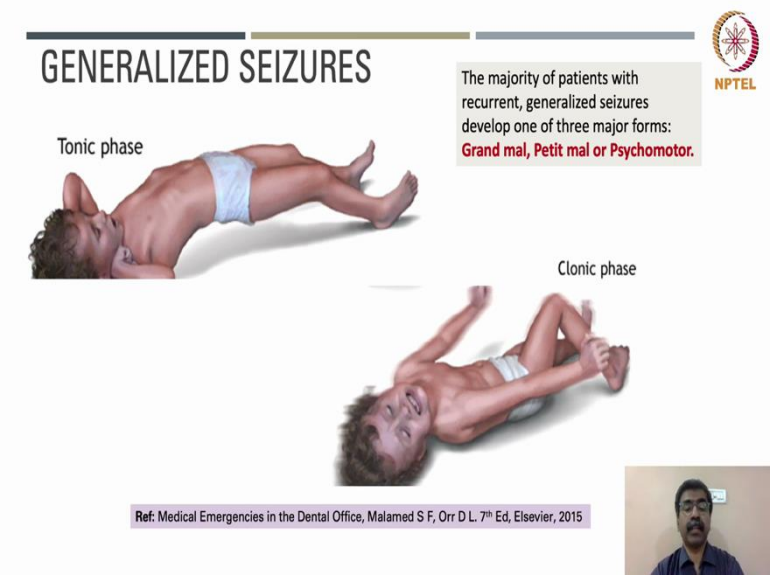

They generalized seizures inclusive of three major forms, the grand mal, the petit mal or the absence siezures or psychomotor seizures. One among the three forms is most commonly seen in patients with recurrent seizures.

The grand mal is known as the tonic-clonic seizure and is seen in about 90 percent of the patients. 60 percent of epileptics are of tonic-clonic form alone whereas 30 percent person experience additional seizure types.

The grand mal occurs equally in both sexes and in any age group. Although more than two thirds of cases occur by the time the individual reaches puberty. The tonic-clonic seizure may be produced by neurologic disorders, including neoplasm, cerebrovascular accident, meningitis

and encephalitis or it may also develop in a neurologically sound, brain secondary to a systemic, metabolic or toxic disturbance.

Other causes include drug withdrawal, fatigue stimulation, menstruation, fatigue, alcohol, other or other intoxications and falling asleep or awakening. Neurologically induced tonic-clonic seizures usually last about 2 to 3 minutes and seldom more than 5 minutes which is the clonic phase. The entire seizure including the immediate postictal period lasts 5 to 15 minutes but a complete return to normal pre-ictal cerebral function may take up to 2 hours.

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The petit mal seizures occur in about 25 percent of patients and childhood incidence is less than 5 percent and usually is seen in adolescents and children by 3 to 15 years of age. Incident decreases with the age and persistence beyond 30 years is rare. They occur frequently and individuals may experience multiple daily episodes.

It occurs shortly after awakening or during periods of inactivity. Exercise reduces the incidence of absence issue and typical absence issues are characterized by sudden behavioural arrest and unresponsiveness that may be accompanied by eye lid and facial clonus, automatisms and autonomic tonic or atonic features.

The duration rarely exceeds 10 seconds. No aura or postictal state is observed. The individual exhibits no moment during the episode other than perhaps a cyclic blinking of the eyelids. The episode usually terminates just as abruptly as it began and if the individual is standing at the onset of the seizure, the posture usually remains erect throughout the episode.

A petit mal triad is recognized consisting of myoclonic jerks, akinetic seizures and brief absence or blank spells without associated falling and body convulsions. Individuals also exhibit characteristic EEG patterns consisting of three cycles per second.

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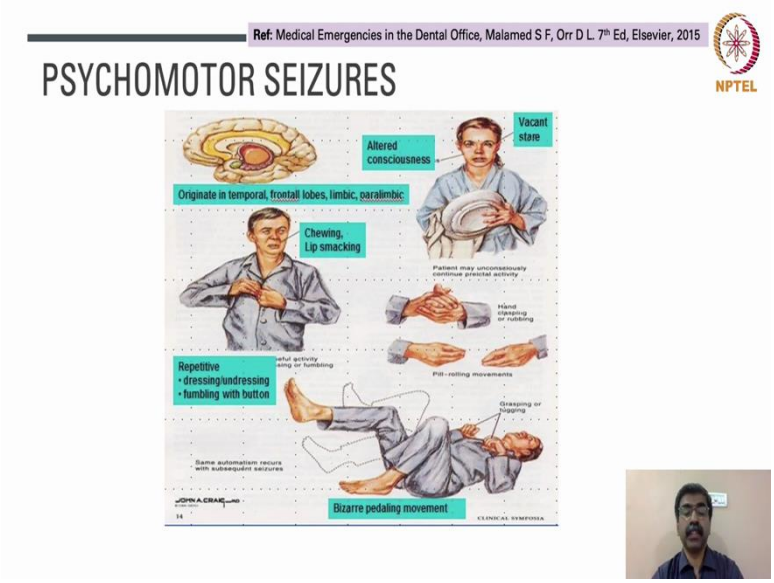

In psychomotor seizures which are present in 2 percent to 25 percent of children and in 15 to 50 percent in adults. They involve extensive cortical regions and produce a variety of symptoms. They last longer than simple partial seizure and it is usually 1 to 2 minutes and the onset and termination are more gradual and the involved and associated impairment of consciousness.

Such episodes often progress into generalized issues and common causes of psychomotor seizures include birth injury, tumours and trauma. Psychomotor seizures include most seizures that do not meet the criteria for grand mal, petit mal and Jacksonian seizures.

Individuals with psychomotor epilepsy often exhibit automatisms and apparently purposeful moments, incoherent speech, turning up the head, shifting of the eyes, smacking of the lips, twisting and breathing moments of the extremities, clouding of consciousness and amnesia.

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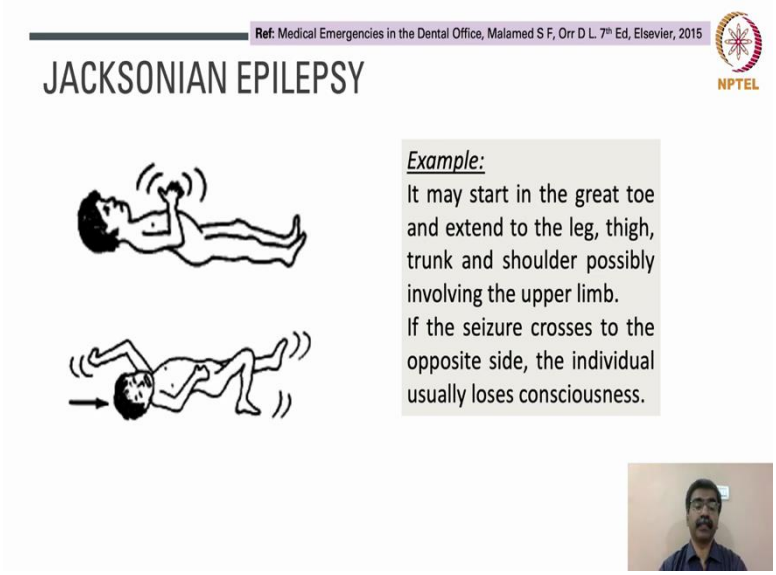

Next, we will see what is Jacksonian epilepsy, where the individual often remains conscious despite an obvious impairment of consciousness which is a simple partial seizure. And the focal convulsion of Jacksonian epilepsy may be motor, sensory or automatic. And this type of epilepsy begins in the distal muscles of one limb as convulsive jerking or as paraesthesia on the face as a localized, chronic spasm that spreads in a more or less orderly manner. And this is a classic Jacksonian march.

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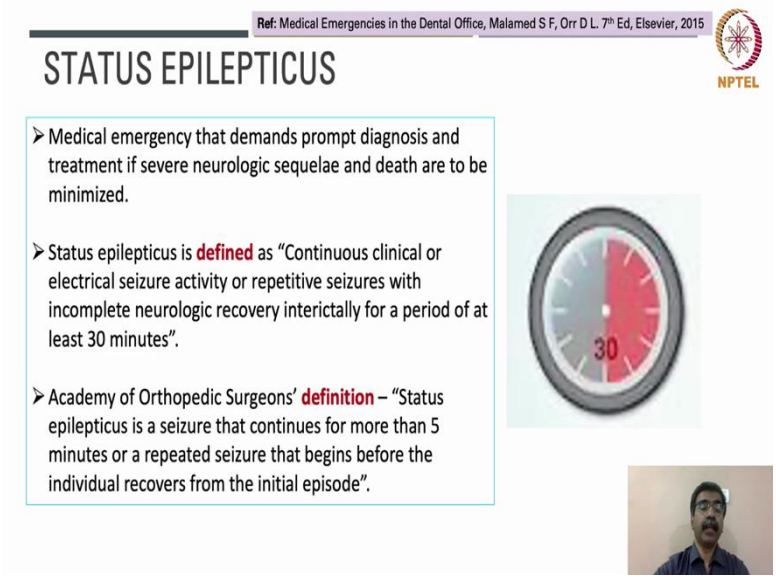

What is status epilepticus? And since most a seizures terminate spontaneously within 1 to 2 minutes, patients having continuous seizure activity for 10 minutes or longer should be treated as if it is a case of status epilepticus.

Status epilepticus is usually categorized as a generalized or partial and convulsive or non-convulsive. The convulsive or the tonic-clonic status is a true medical emergency and carries an acute mortality rate of 10 percent and the long-term mortality rate of more than 20 percent.

And convulsive seizures, typically a tonic-clonic seizures, a non-compliance with anti-epileptic drugs is the most noted factor precipitating status epilepticus. So, when a patient gives a history of epilepsy, you should always find out if a patient is on the anti-epileptic drugs.

Status epilepticus is also more common in patients whose epileptic causes are known and prolonged absence issues and psychomotor seizures are non-convulsive status and include mild to severe alterations in the level of consciousness and confusion with or without automatisms.

Absent status may last hours or days and is usually precipitated by hyperventilation, photic stimulation, psychogenic stress, fatigue or minor trauma and frequently terminating in a generalized seizure. Non-convulsive status does not constitute an acute, life-threatening medical emergency in the dental office.

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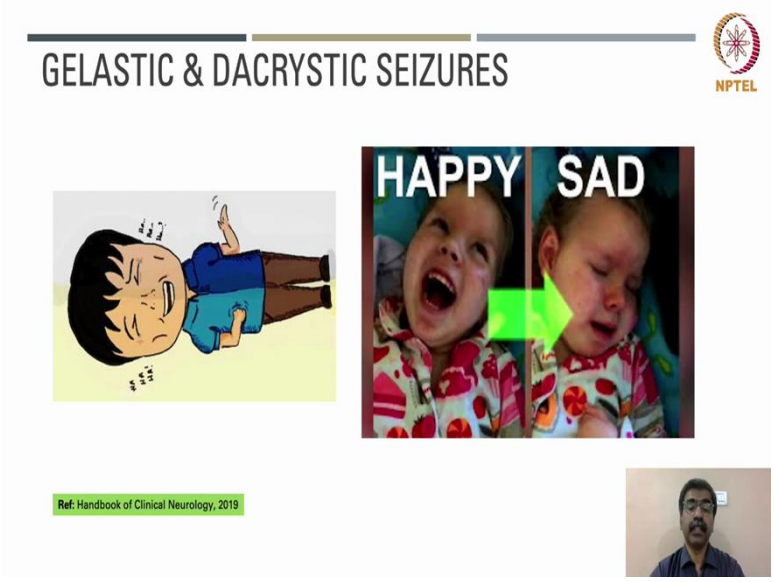

What a gelastic and dacrystic seizures? First let us see, what is the gelastic seizures and it is characterized by brief, frequent and mechanical bursts of laughter, facial flushing, pupillary dilation and at times repetitive complex behaviours may accompany laughing.

An additional seizure types, focal or generalized may develop and are often medically refractory. Cognition remains normal. In 35 to 40 percent of the individuals however the spectrum of outcomes includes many with deterioration and severe cognitive deficits at the onset of epilepsy.

Behavioural problems including aggression, anxiety and mood disorders are prominent features. Gelastic seizures are uncommon, uncommon epileptic seizure type with laughter as the main ictal manifestation. They typically occur in association with hypothalamic hamartomas but laughter may also occur in complex partial seizures of frontal or temporal lobe origin.

What are dacrystics seizures? And they are characterised by paroxysmal ictal or peri-ictal crying or weeping. They have been reported in patients with hypothalamic hamartomas, frontal temporal and orbitofrontal seizures.

Seizures are characterised by stereotyped crying and may encompass lacrimation, sobbing or sad facial expression. The most common occurring along with gelastic seizure or generalized tonic-clonic seizures.

High hypothalamic hamartoma is usually the cause when patients have both dacrystic system and gelastic seizure whereas isolated dacrystic seizures are typically associated with mesial temporal sclerosis.

The proposed pathophysiology is thought to be from excitation of neurons in the hypothalamus or secondary to the hypothalamic autonomy released phenomenon from this inhibited regulatory cortex and dacrystic seizures are often medically refracted.

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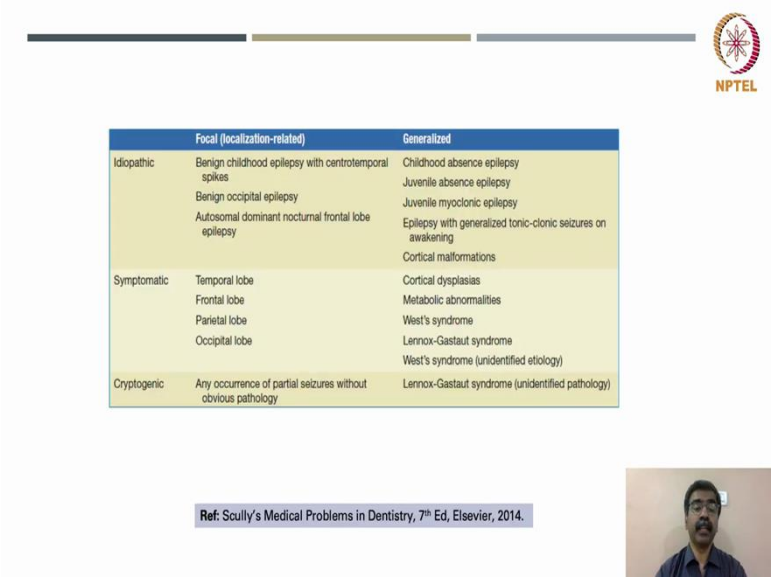

Epilepsy can also be subdivided further into three categories, idiopathic, systematic sorry, symptomatic and cryptogenic. In idiopathic in which it is where you have an identifiable relation and it is neither identified nor suspected. In symptomatic it is of identified underlying

some brain lesion and cryptogenic in which an underlying lesion is suspected but cannot be identified with current technology.

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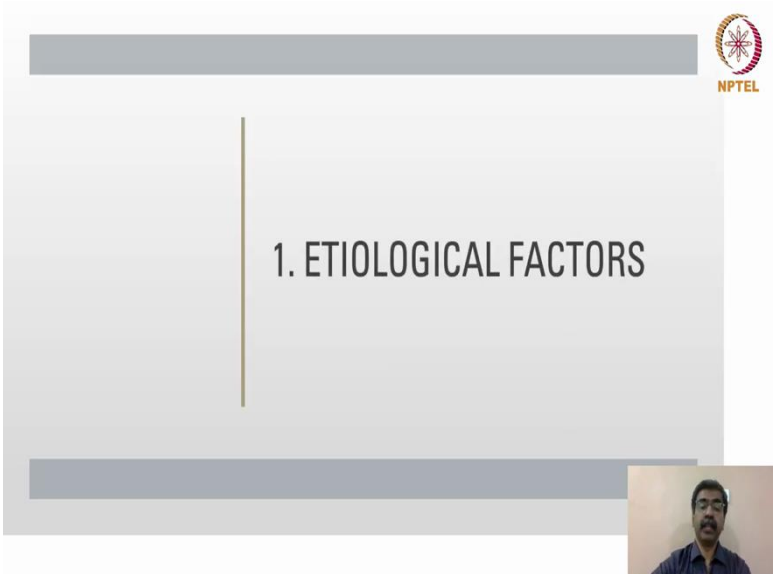

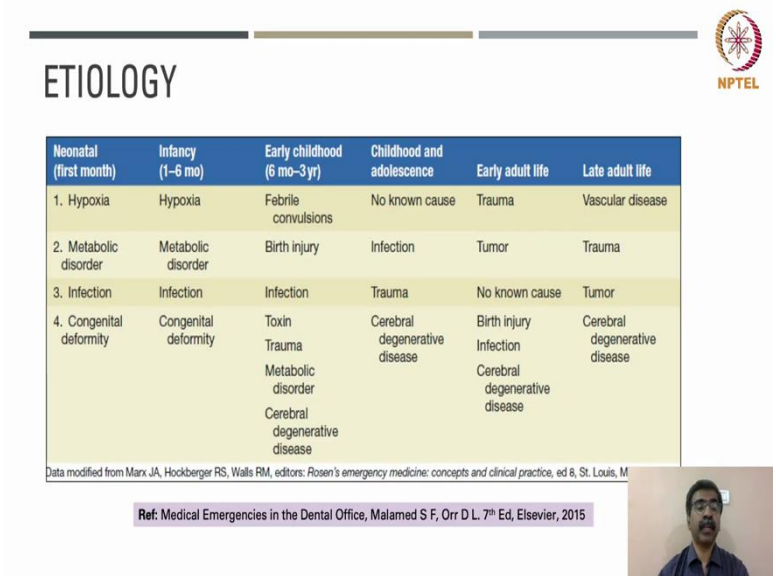

What are the etiologic factors? In neonatal, infancy, early childhood, childhood and adolescence and early adult life and later adult life. In neonatal, it can be hypoxia, metabolic disorders, infection, congenital deformity. And in infancy when the child is between 1 and 6 months, it again can be hypoxia, metabolic disorders, infection and congenital deformities.

Whereas, in early childhood when the child is 6 months to 3 years, you can have a febrile convulsions. It can be due to birth injury, infection can be due to some toxins, trauma, metabolic disorders again and cerebral degenerative disease.

If it occurs during childhood or adolescence then it is attributed to no known cause, can be infection, trauma, cerebral degenerative disease. In adult life, can be termed, it can be due to trauma, tumour, can be due to no known cause or birth injury, infection and cerebral degenerative disease. And if it happens during the late adult life, it can be due to a vascular disease, trauma or tumour or again it can be a cerebral degenerative disease.

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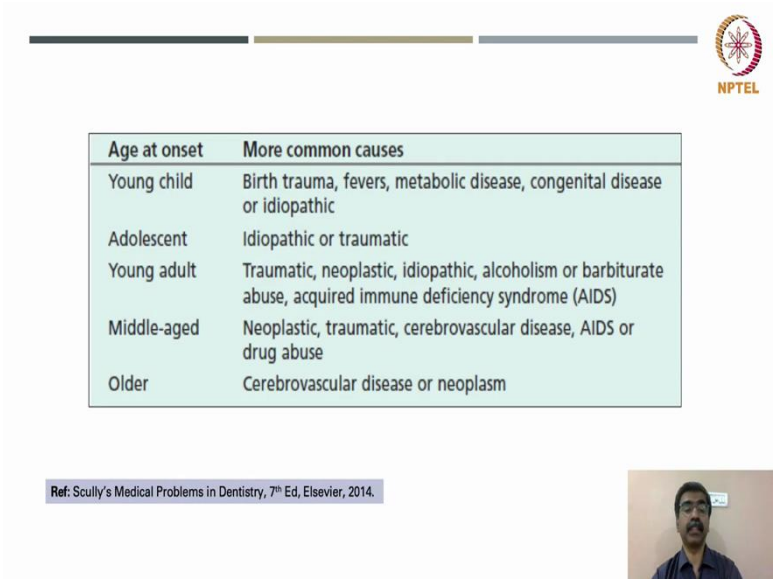

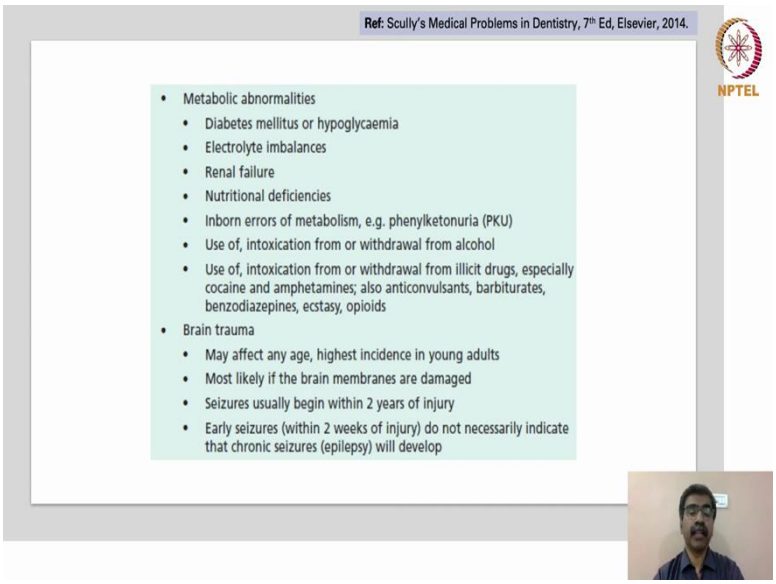

And we have already covered this the previous slide. Age of onset in adolescents, again in adult middle-age or older. The metabolic abnormalities include diabetic mellitus or hypoglycaemia, electrolyte imbalances, renal failure, nutritional deficiencies, inborn errors of metabolism, like phenylketonuria, use of intoxication from or withdrawal from alcohol, use of intoxication or

withdrawal from illicit drugs, especially cocaine and amphetamines, also, anticonvulsants, barbiturates, benzodiazepines, ecstasy drugs or opioids.

The brain trauma may affect again any age and the highest incidence is from young adults and most likely if the brain membranes are damaged. And seizure usually begins within 2 years of injury or they can be early seizures as well within 2 weeks of injury and do not necessarily indicate that chronic seizures will develop.

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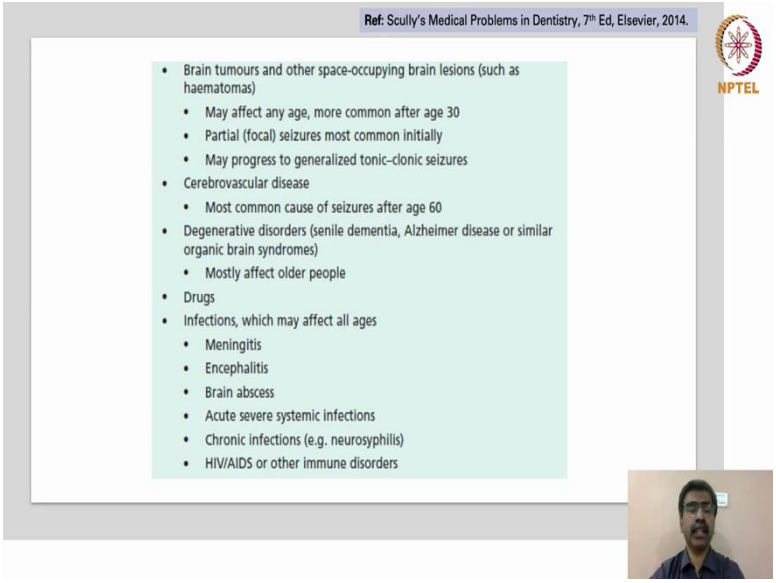

Then next cause as I mentioned before is brain tumours or any other space occupying brain lesions such as hematomas. They may affect at any age, more common after age 30. Partial seizures are more most common initially and may progress to generalized chronic toni-clonic seizures.

The cerebrovascular disease and most common cause of seizures after 60 and degenerative disorders like senile, dementia, Alzheimer disease, are similar organic pain syndromes, and they mostly affected older people.

Many drugs can also be the reason for epilepsy. Infections like meningitis, encephalitis, brain abscess, acute severe systemic infections, chronic infections like neurosyphilis, HIV or any other immune disorders.

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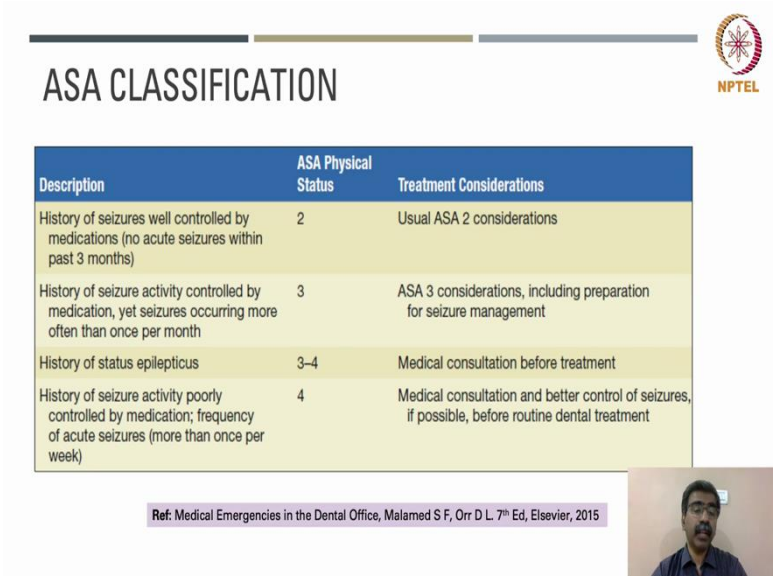

You have an ASA classification as well where the history of seizures are well controlled by medications, no acute seizures within the past 6 months. Usually, it is considered as a ASA physical status 2.

And if the history of seizure activity is controlled by medication yet seizures occurring more often than once per month, you will have ASA physical status of 3. And if the patient gives you a history of status epilepticus, it is between 3 and 4. And if the history of seizure activity is poorly controlled with medication and the frequency of acute seizures or more than once a week, then the ASA physical status is 4.

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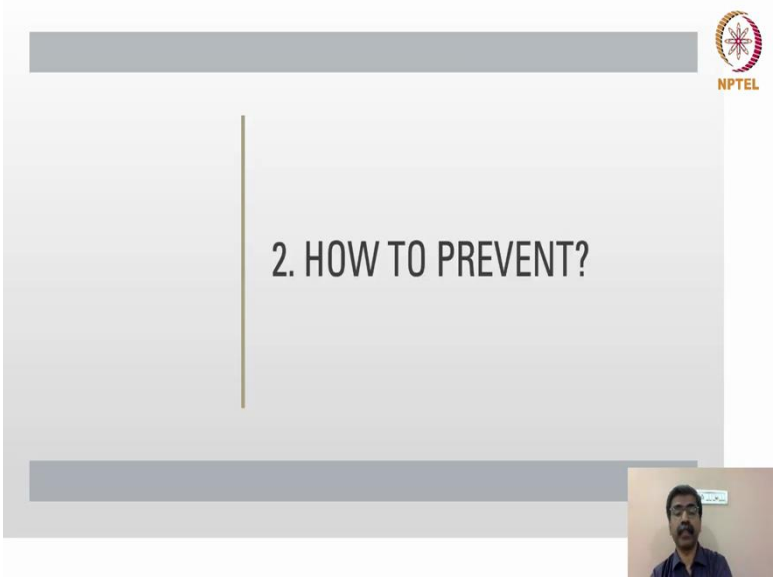

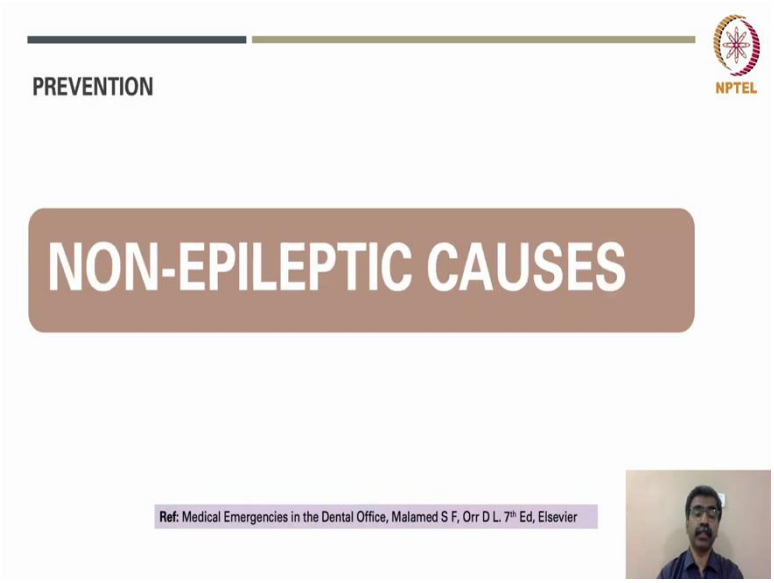

And how do you prevent? You have non-epileptic causes and epileptic causes. The non-epileptic causes include the prevention of acute seizure activity in the dental office sometimes may be difficult because of the idiopathic nature of most seizures.

Physical evaluation of the patient before treatment may facilitate the prevention of seizures produced by metabolic or toxic disturbances. Sometimes a local anaesthetic overdose that is exempt if I have to give you an example, a toxic reaction is most likely a non-epileptic cause of the seizure in the dental office.

And adequate patient evaluation and preparation, care and selection of local anaesthetic agents and use a proper administration technique go a long way in preventing a toxic reaction.

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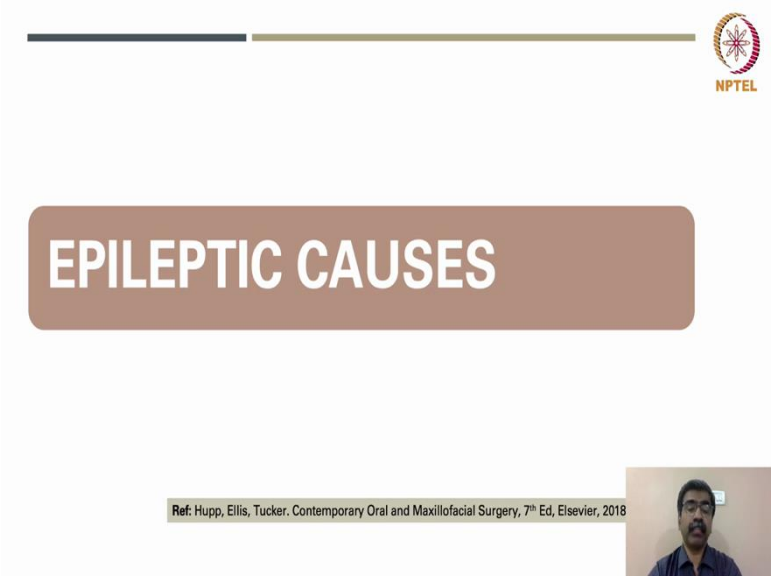

And what are the epileptic causes? Patients with a history of seizures should be questioned about the frequency, time, duration and cycle of seizures. Seizures can result from ethanol withdrawal, high fever, electrolyte imbalance, hypoglycaemia or traumatic brain damage or they can be idiopathic as well.

Medications used to control the seizure disorder, particularly about patient compliance and any recent measurement of serum levels. The patient's physician should be consulted concerning the seizure history and to establish whether oral surgery should be deferred for any reason.

If seizure disorder is well controlled, standard oral surgical care can be delivered without any further precautions. And if good control cannot be obtained, the patient should be referred for treatment and a deep sedation in the office or hospital.

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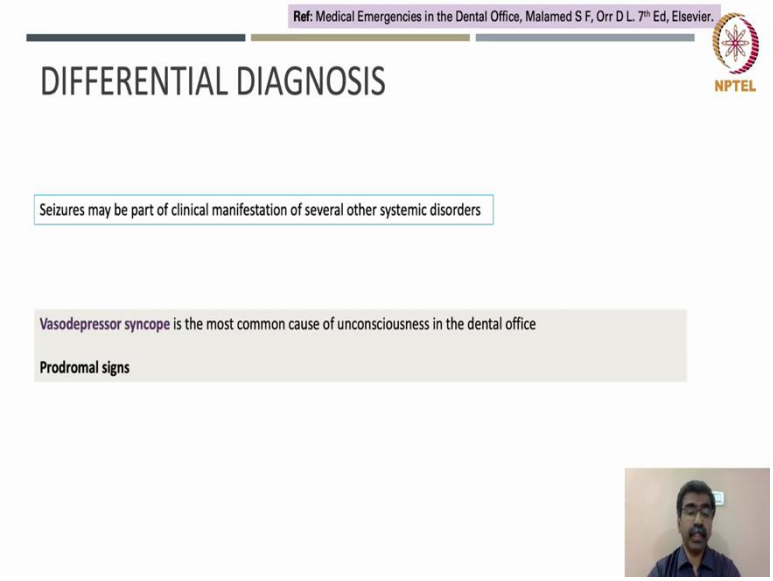

What are the likely differential diagnosis? Vasodepressor syncope is the most common cause of unconscious in the dental office if hypoxia or anoxia persists. A distinguishing factor that indicates vasodepressor syncope is the presence of a different precipitating factor which most likely is fear the dental office.

The prodromal signs sorry, exhibited by suffering from vasodepressor syncope are lightened redness, nausea or vomiting and diaphoresis before losing consciousness whereas epileptic patients do not exhibit such signs.

So, the duration of unconscious in cases of vasodepressor syncope normally is quite brief and recovery begins once the blood flow to the brain increases. Muscles are flaccid and no convulsing moments are present initially and blood pressure and heart rate are also depressed

and bladder and bowel incontinence are rare. When syncope patients regained consciousness, they do not experience disorientation or confusion. They are alert and can perform simple mental calculations.

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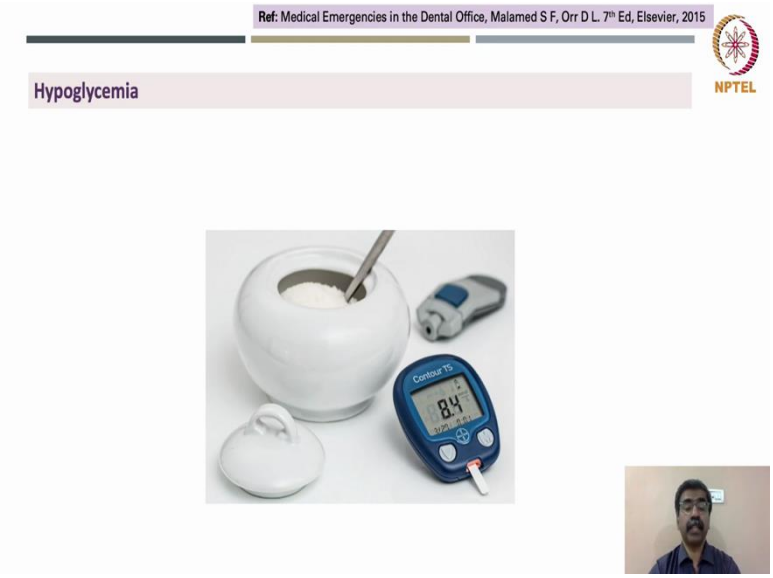

Hypoglycemia may progress to the loss of consciousness and seizures may develop. The patient's medical history and clinical signs can provide evidence. An additional management in the situation requires the administration of IV dextrose either 50 percent for adult or 25 percent for a paediatric solution.

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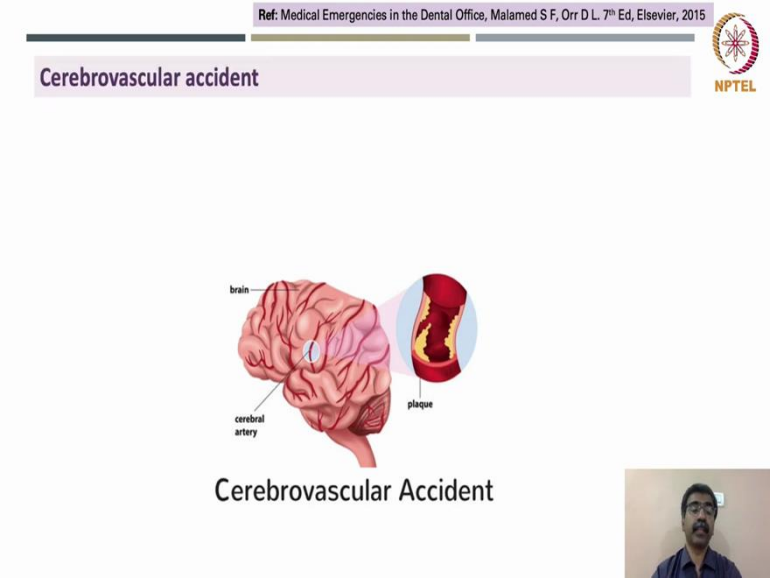

It can also be a cerebrovascular accident which may lead to the loss of consciousness and possible convulsions, possible presence of an intense headache before the loss of consciousness

and of signs of neurological dysfunction, a point out towards cerebral vascular accident. It can be an example can be muscle weakness or paralysis.

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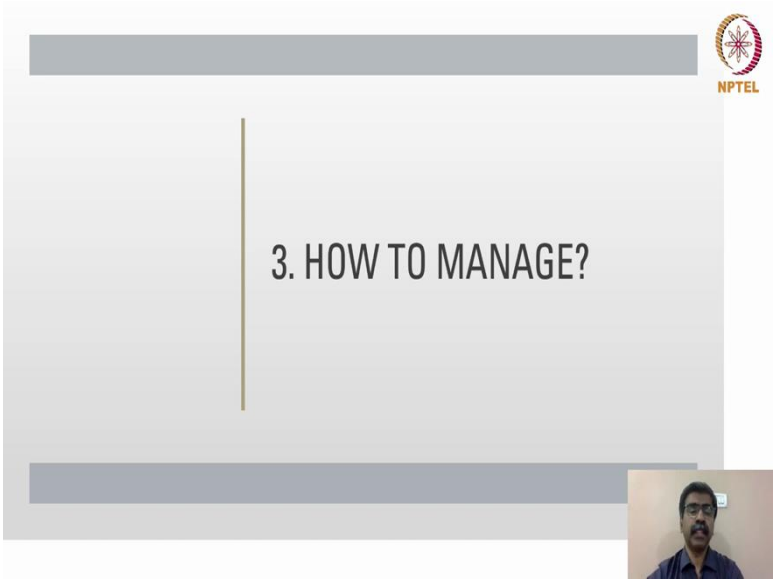

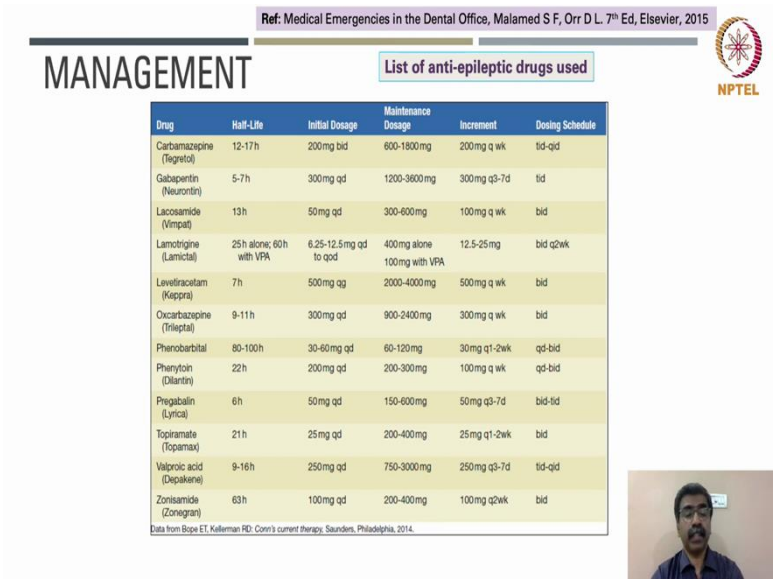

Now, how do you manage? See we are going with a differential diagnosis, the vasodepressor syncope, hypoglycaemia, cerebrovascular accident and the general principles include the medical management to explain I mean the BLS should be initiated if as apnea lasts more than 30 seconds.

And BLS is not in the scope of this presentation which will be discussed later by Dr. Kannan Balaraman. So, I am not going to the detail. And the emergency drugs be made available at unit at all times and prevention of an epileptic episode through though through anxiety control and early morning appointment should be considered.

And these are the few the list of anti-epileptic drugs used. The most commonly used anti-epileptic drug is the Carbamazepine. It is also called as Tegretol. You have Gabapentin, Lacosamide, Lamotrigine, Levetiracetam or Keppra again Oxcarbazepine, Phenobarbital, Phenytoin, Pregabalin, Topiramate, Valproic acid and Zonisamide.

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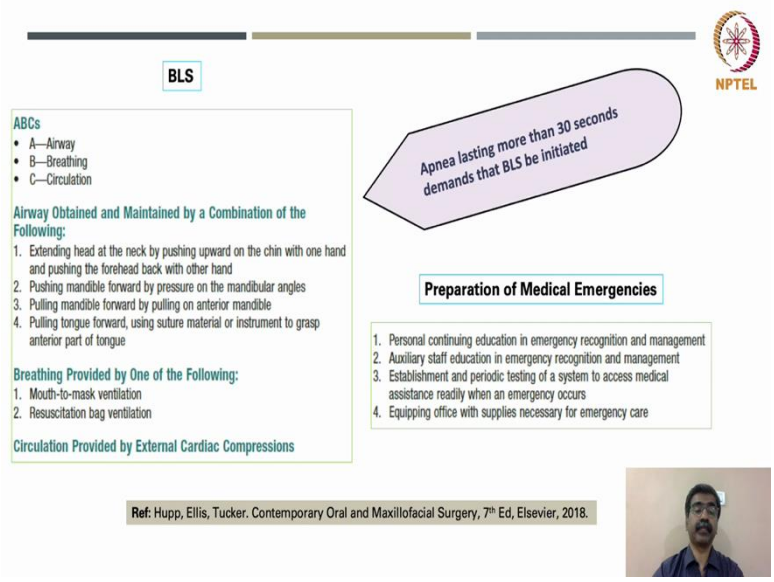

As I mentioned before, I am not going into the basic life support which will be discussed in the last week, the eighth week lecture by Dr. Kannan Balaram.

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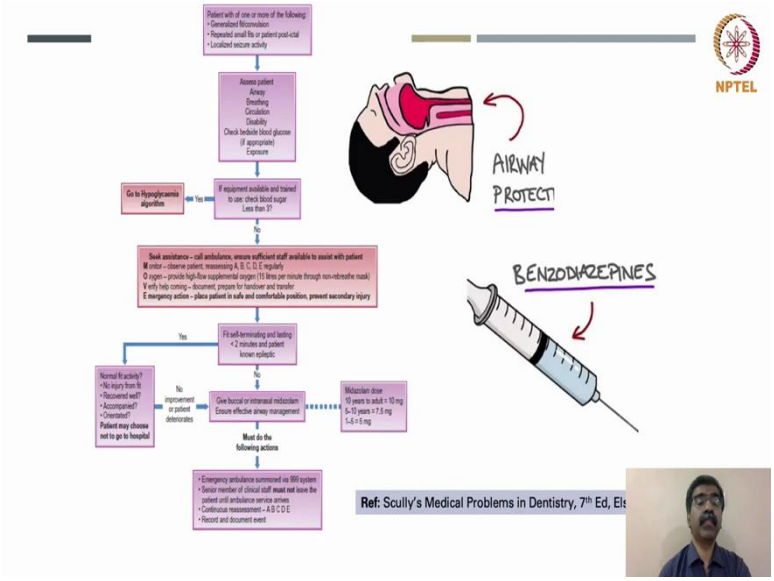

This is the flowchart where which you should be which you should know when the patient with one or the more following generalized convulsion or repeated small fits or patient with the postictal and localized seizure activity.

First you have to what you have to do is assess the patient. Check for airway breathing, circulation and disability and check bedside blood glucose, blood glucose if required and also expose.

And if equipment is available and trained to use check blood sugar. And if it is less than 3, go to hypoglycaemia algorithm. If it is no, you seek assistance- call for ambulance, ensure sufficient staff is available to assist with a patient.

Monitor- observe patient. Again, reassess A, B, C, D, E regularly. We provide oxygen high flow supplemental oxygen, a 15 litres per minute through non rebreather mask. Verify and if the help is coming- document, prepare for handover and transfer. And emergency action- place the patient in safe and calm comfortable position to prevent secondary injury.

And usually if it is self-terminating and lasting less than 2 minutes and patient is known epileptic. If the normal fit activity, there is no injury from fit, recovered well or if the patient is accompanied, oriented patient may choose to not go to the hospital.

Or improvement our patient deteriorates, then you need to give a buccal or intranasal midazolam. Ensure effective airway management and the dosage of midazolam should be if for a 10 year to adult, 10 milligrams, between 5 and 10, it can be 7.5 milligrams and if the patient if the child is 1 to 5 years, is it is 5 milligrams.

And you have to follow the following actions, emergency ambulance summons and 108. Senior member of the clinical staff must not leave the patient until ambulance service arrives. And you continuously reassess and record and document the event.

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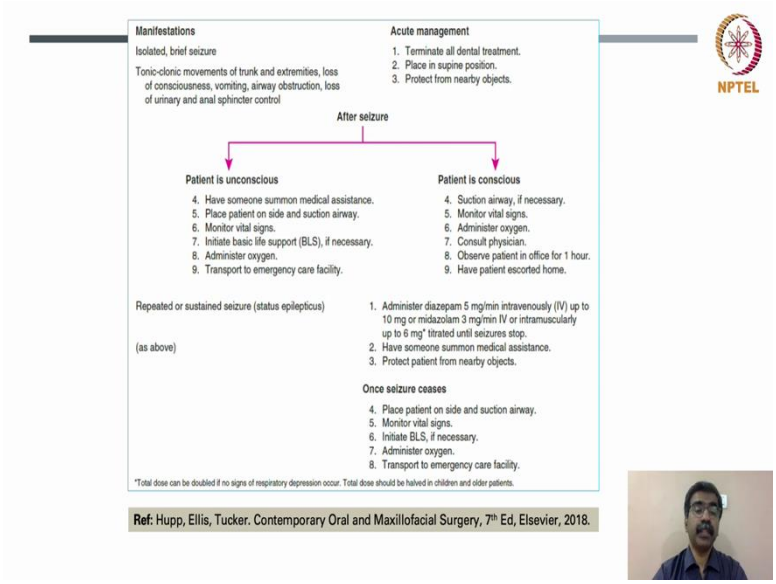

The dental management if it is a term immediately terminate all the dental treatment, patient place the patient supine position, protect from the nearby objects. And if the patient is after seizure if the patient is unconscious, you should have some someone summon the medical assistants. Place the patient on side and suction the airway. Monitor vital signs. Initiate basic life support if necessary. Administer oxygen and transport the patient to the emergency care facility.

And if the patient is conscious, you suction the airway if required. Monitor vital signs. Administer oxygen. Consult a physician and observe patient in office for 1 hour and have the patient escorted home.

As I have already mentioned before, you can administer diazepam 5 milligrams per minute intravenously, up to 10 milligrams of midazolam 3 milligram per minute IV or intramuscularly up to 6 milligrams titrated until seizures stop.

You have someone summon medical assistance. Protect the patient from nearby objects. And once the seizure seizes, place the patient on side and suction airway. Monitor vital signs. Initiate BLS if necessary and administer oxygen and transport to the emergency care facility.

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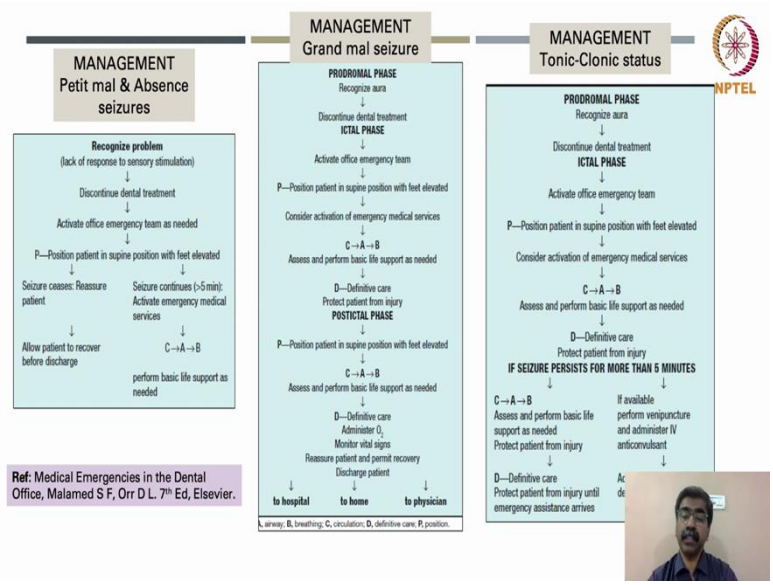

If the management of I mean, the management of petit mal epilepsy and absence seizures include, recognition of the problem initially. And if there is a lack of response to sensory stimulation, immediately discontinue the dental treatment.

Activate your office emergency team as required and position the patient in supine position with feet elevated. And if the seizure ceases, reassure the patient and if the seizures continue more than 5 minutes activate emergency medical services immediately. And if the seizure has ceases, then allow the patient to recover before discharge and perform basic life support as required if the seizures continue for more than 5 minutes.

If it is a grand mal seizure, there will be both prodromal phase and ictal phase and you have to recognized the aura and discontinue the dental treatment immediately. And activate the office emergency team which is mandatory because when you are in a private practice, there would not be people to help you out. You will be alone.

So, position the patient in the supine position with the feet elevated as I mentioned before and consider activation of emergency medical services again and assess and perform the basic life support if required.

And in definitive care, protect patient from injury and continue the patient with the supine position with feet elevated. Assess and perform basic life support as needed. And for definite care, administer oxygen, monitor vital signs, reassure the patient, permit recovery and following which you can discharge the patient.

In tonic-clonic status, you have the prodromal phase, recognize the aura, discontinued dental treatment. And in ictal phase, activate office emergency team and position the patient in the supine position with feet elevated.

And if the seizure persists of more than 5 minutes, follow that C-A-B procedure and the definitive care, protect patient from injury until the emergency arrives. And if available, perform venipuncture and administer an anticonvulsant, IV anticonvulsant and administer 50 percent IV dextrose solution.

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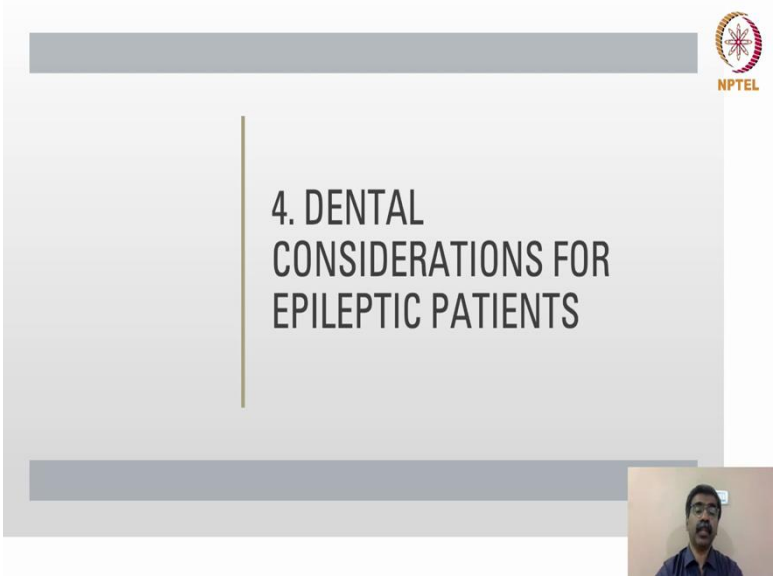

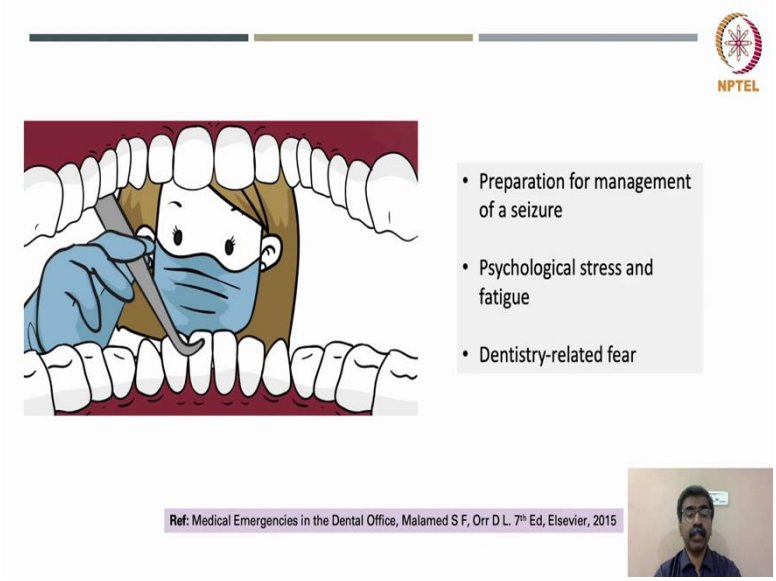

So, what are the dental considerations? The major consideration is preparation of the management of seizure, if it occurs. The psychological stress and fatigue increase the likelihood

of seizures developing and if the individual exhibits dentistry related fear, minimal or moderate sedation should be considered during the treatment.

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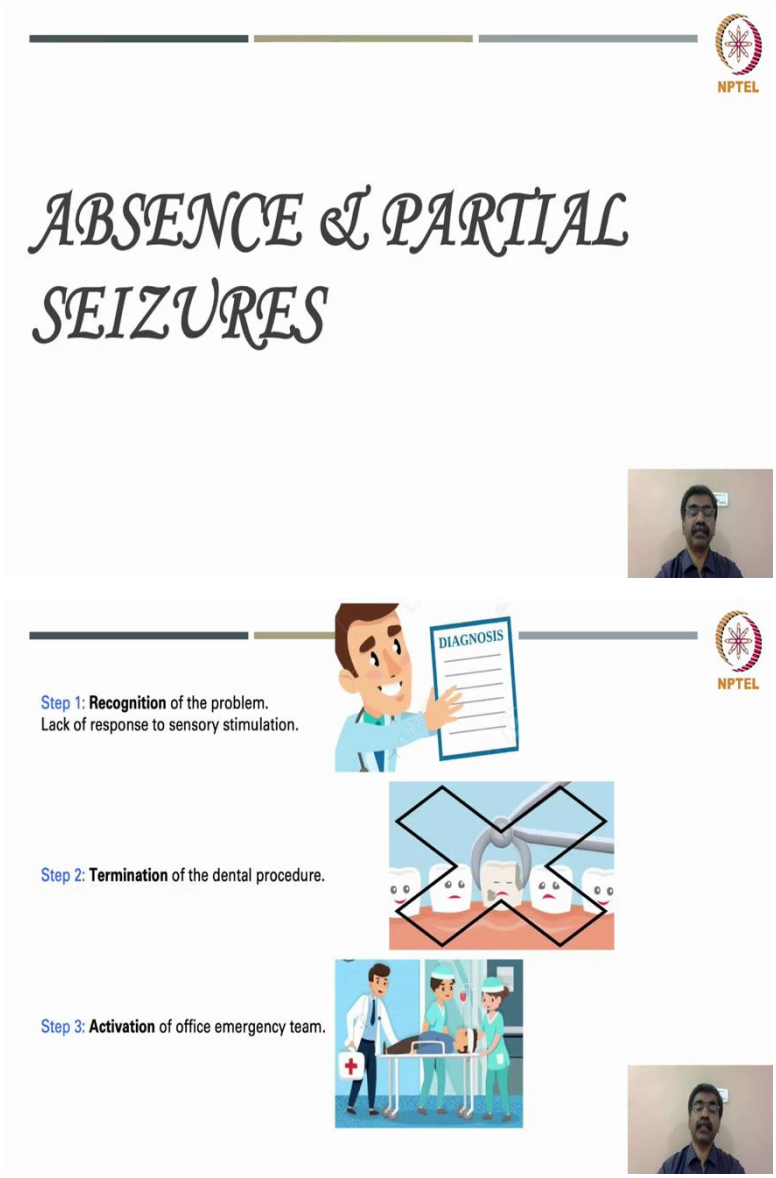

If the individual exhibits, then the patient with a history of tonic-clonic seizure exhibits aura, cease the ongoing procedure immediately. Remove as much dental equipment removable dental appliances from the patient's mouth as possible before the individual loses consciousness and progresses to the ictal phase to avoid risk of aspirating dental appliances.

Step two is activating the dental office emergency team. And in step three, the victim is not seated in the dental chair. Gently place the patient on the floor in the supine position and the seizure occurs when the patient is seated in the dental chair, lead the victim in the dental chair and position the dental chair supine.

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Consider, consideration of summoning the medical services where most clonic-tonic seizures are of brief duration and hence seeking medical assistance should be considered for the following reasons. If a seizure is still ongoing, when the emergency personnel arrive, a patent pain and IV administration of anti-convulsant drug therapy may be easier to achieve.

And if the seizure was terminated by the time emergency personnel arrive which is a much more likely occurrence. Emergency workers can help evaluate the patient's postictal state including the need for possible hospitalization.

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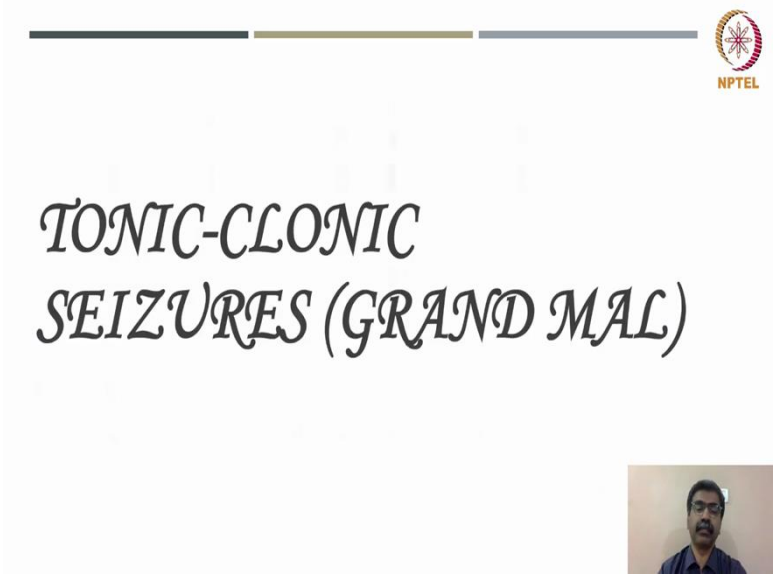
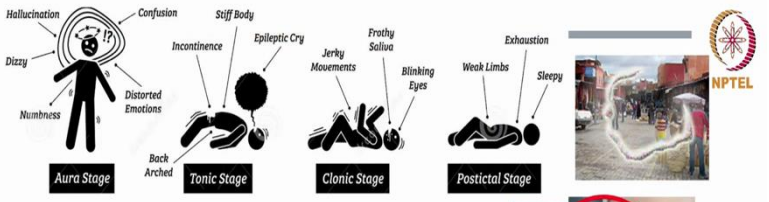
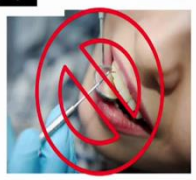
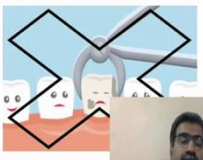






Prodromal (pre-ictal) phase

Step 1: **Recognition** of the problem (aura) and termination of the dental procedure.



Ictal phase

Step 2: **Activation** of the dental office emergency team.

Step 3: **P (position).**

Step 4: Consideration of **summoning emergency medical services.**

Step 5: **C A B (Circulation-Airway-Breathing)— BLS as needed.**

Step 6: D (definitive care).

In tonic-clonic, you have the prodromal or the pre-ictal phase and the recognition of possible aura and termination of dental procedures should be done. And the ictal phase, activate the dental office emergency team and position patient in the supine leg elevated position and considering a consideration of summoning a medical emergency service. Circulation-Airway-Breathing and BLS, if required.

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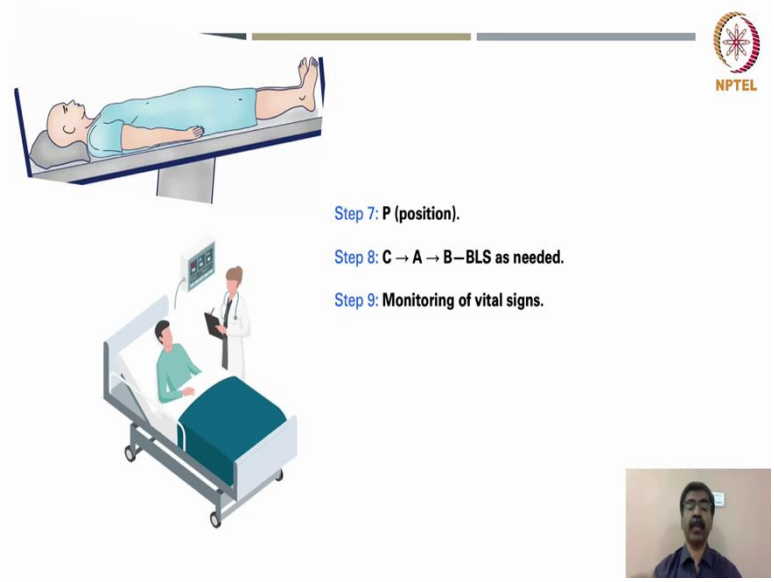

And in step D you have the definitive management which includes the following protocol. If the victim is on the white bed or a well-padded carpeted floor, an area devoid of hard objects that may cause injury, the rescuer may permit the patient to cease with little risk of injury to the victim.

Gently restrain the victim's arms and legs from gross exaggerated movements, allowing for minor moments to prevent injury from resulting from joint overextension or dislocation. No attempt should be made to hold the patient's extremities in a fixed position because of the risk of bony fractures.

If the floor is not padded, however the head must be protected from traumatic injury through placement of a thin, soft item, like a blanket or a jacket beneath the victim's head ensuring that the head is not flexed forward upside in the airway.

When the victim has a seizure in the dental chair, the danger is that the victim may fall from the chair or be injured by a nearby dental equipment. So, the typical dental chair is a good site on which we have a seizure.

The headrest of, the headrest on most dental chairs is normally well padded so that no additional protection is necessary for the head and leave a bare but padded headrest, a donut or a pillow may throw the patient's head forward increasing likelihood of partial or complete airway obstruction.

Removing the doughnut or pillow from the headrest permits better extension of neck and lifting of the tongue includes which helps in maintaining the airway.

In the next step, where we position the patient in the supine head elevated like what you see in the picture. And step 8, again the C-A-B procedure and BLS as required. And last step is monitoring of the vital signs and the vital signs should be monitored and recorded at regular intervals at least every 5 minutes. And blood pressure and respiration may be depressed in the immediate postictal period. The return to baseline values is gradual and the heart rate may be near the baseline level, slightly depressed or slightly elevated.

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One of the members of the office emergency team should move as much equipment as possible away from the victim while other two members stand by the patient to minimize the risk of injury. Tight binding clothes should be loosened to prevent injury by straining patient and as aid breathing.

Reassure the patient because reassurance of the patient and recovery from the seizure occurs slowly with the patient initially somnolent but rousable and generally became increasingly alert. Returning, return to normal pre-seizure cerebral functioning may require as long as 2 hours.

The patient also experiences significant confusion and orientation. At this point, the patient should be reassured that all is right and recovery includes a return of the vital signs to approximately base on levels and disappearance of the occlusion and disorientation of any early postictal period and the last step is discharge the patient.

And criteria for hospitalization of the post seizure victim who has a history of epilepsy include a lack of orientation to space and time. If the patient recovers more completely and hospitalization is not warranted, discharged from the dental office in the custody of a responsible adult, relative or a close friend.

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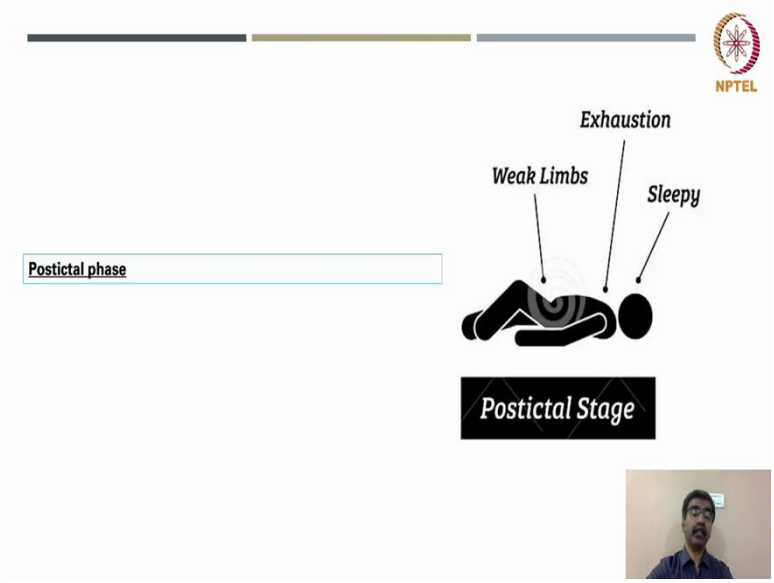

The postictal phase is a period of generalized depression involving the central nervous system, cardiovascular and respiratory system. The degree of depression is related to the degree of stimulation experienced during the preceding ictal phase. And during the postictal phase, significant morbidity and even death may occur.

So, the ictal phase is a highly dramatic and emotionally charged event for eyewitness and attention is quickly focused on the patient. Once the convulsions end, the patient relaxes and so fortunately for the rescuers.

This response is premature because the patient may demonstrate significant CNS and respiratory depression during the postictal phase to a degree that respiratory response and the airway obstruction may become evident.

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In the pre-ictal phase and here I have already mentioned is about the administration of 50 percent dextrose solution and subsequent management.

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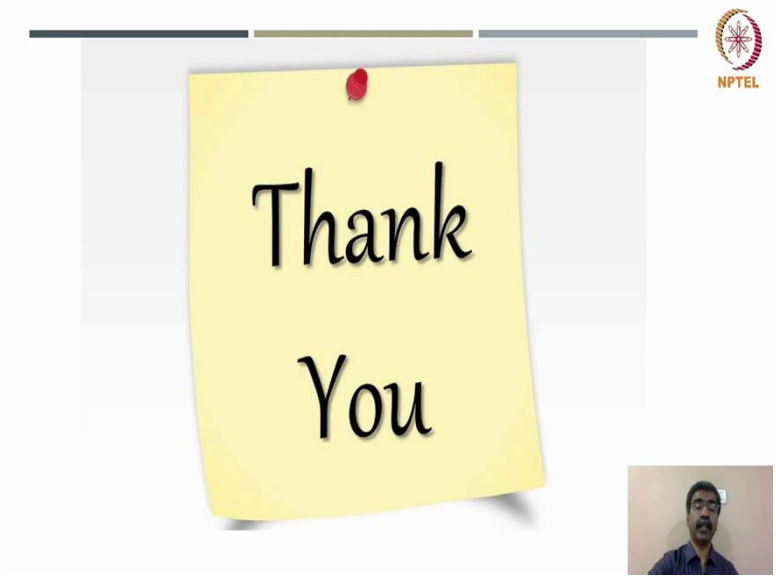

Thank you for the patient listening. And you will also get to see a couple of clinical scenarios in the management of epilepsy. Thank you again.