Management of Medical Emergencies in Dental Practice
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Allergies/Hypersensitivity Reaction Part 2

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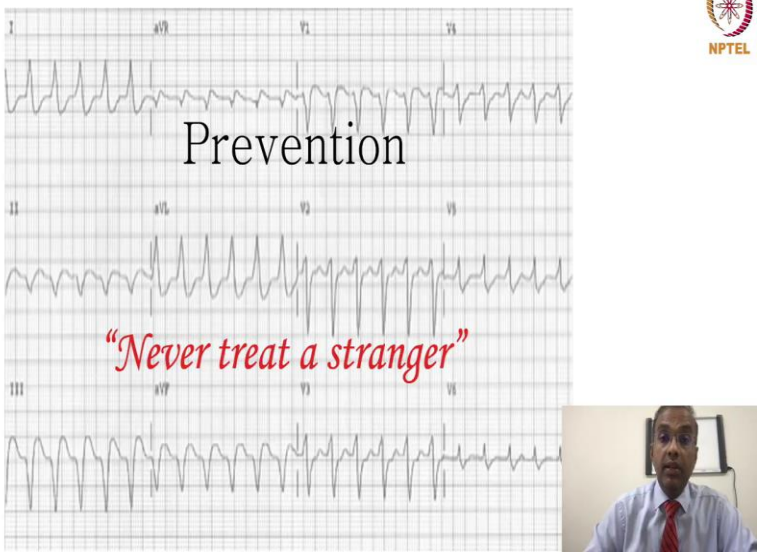

So, once you know, it is not advisable, mean we do not until unless we know that the patient has got in the history of allergy we do not we normally do not go for patch test, we normally do a skin test and go into that. But yes, it is if you have a patient who is got a history of allergies, yes, you need to get a patch test done you need to refer him to a center with the patch test facilities that are available and get it done from a concerned physicians.

Now, why is it important to do this test, as an old dictum says, never treat a stranger. I am not telling you that you have to only call up your relatives and friends and do the treatment for them. Stranger in the sense. Get acquainted with your patients. Know them, talk to them, they are not your subjects, it is just not a CT scan or an X ray or OPG. Just to apply it in the air and read up.

The other patients you have a subject in front of you. We need to understand them. We need to get familiarized with the body familiarize with the history, only then we will be able to be preventable. We can if you ask the patient, just get a form fill it up and say, are you allergic? And no I am not allergic. I am sure most of you take case histories, you can see there is a column just, are you allergic? No, (())(01:33) tick tick. How?

No you need to take a proper detail history you need to understand cardiac issues, you got any neurological issues you got any nephrotic issues only when you understand the person's physiology and even a meager treatment will come if you do not understand the body's physiology immediately, and can turn into a catastrophe.

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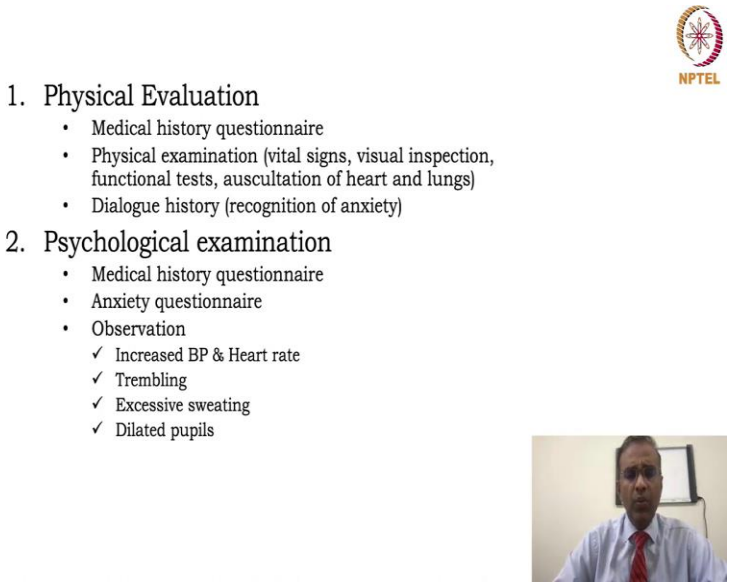

That is why always understand the patient. How do you understand? 2, Physical evaluation we all do it normally. But a detailed medical history questionnaires is a mandate. This is where most of our younger generations are miss out on it. We are in a hurry to finish our cases probably. We got patients waiting in a OPD we want to finish it as early as possible. Or even if you are a surgeon, you have got a couple of patients lined up for the surgery you want to finish it, more cases more the merrier.

No, until unless you are thorough with the patient. It is not advised to go ahead and numbers not numbers does not matter if even if one catastrophe happens it can ruin out the whole practice of a person. Medical history, Physical examination, I am going to mention what history needs to be done. Specific pathology, physical examination like a simple vitals, auscultations, functioning the examinations of heart it is mandatory and it everybody needs to know how to use an auscultation use a stethoscope and find out what is the normal murmur, normal sound of a heart sounds like, what is the breathing of a lungs sounds like.

It is important to know even if you do not know how to find out an abnormally at least you should know what is normal. When you know normal, you know that there is not normal. That is what is important. That is the first step towards learning. What is not normal, identification of what is not normal is a first step to once know what is not normal. Yes, you know there is something wrong and refer to a person who knows what is abnormal.

That itself is that is quite sufficient to do it. And Dialogue history, talk to the patient. You just by talking to them you can understand is they are anxious is there any recognition of anxiety is very important. That is where the psychological examination comes here to take away anxiety questionnaires and patients sometimes increased BP and heart rate you can see that patient is anxious you might have to give the patient's anxiolytics before you manage, because why am, why is it important of knowing an anxious patient?

Why is it important know it is psychological status when you are talking about allergy here. Because it is a compounding factor. Imagine a patient who is already apprehensive about your treatment is got a tachycardia already and he is trembling and sweating. You inject him in local anesthesia or any antibiotics or something or you give him from drug you end up in allergy right now you do not know whether it is because of his trembling and his condition right now or you do not know it is allergy or either way round. It can be co influenced and synergetic effect.

Everything becomes faster for you. Already there is a tachycardia be the tachycardia normally comes at a probably a third a second stage is slightly a delayed stage of an allergic reaction but you already have it in stage one. So, imagine that it is going to complicate the management. So, we need to make simple as possible, we do not want to complicate our treatment. So, that is the reason why it is required as one of my senior colleagues used to say, local anesthesia, it gives anesthesia for the nerves but the vocal anesthesia given anesthesia for the whole body not, did not mean a general anesthesia, the vocal anesthesia controls the patient's anxieties. So, before a local anesthesia vocal anesthesia is mandatory, try to make it as a habit.

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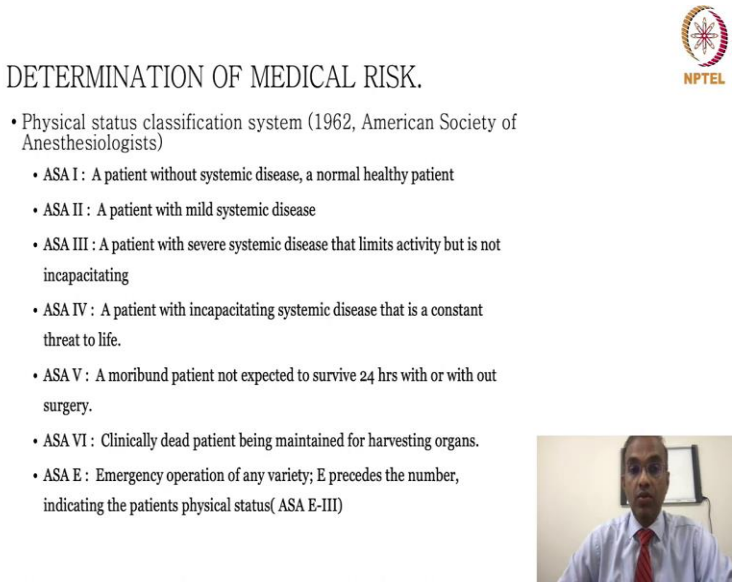

So, once you have a Dialogue history, when you understand the patient's you have to categorize them into one of the conditions of the patients. This is American society of Anesthesiologists, have classified the physical status of the patient into ASA 1, ASA 2, ASA 3, and so, forth. What is ASA 1? I am sure you all have aware of what is this exactly, ASA 1 is a patient without any systemic disease a normal healthy individual. ASA 2, A patient with mild systemic disease but fine he is having probably as mild control diabetic or uncontrolled hypertensive is on medications.

ASA 3, a patient with severe systemic disease that limits activity but not incapacitated. He is got diabetes, he is got blood pressure but he does normal activity. But and it is not stopping him to do anything which is that this is the limits activity but he cannot, no he cannot climb 10 flights or he cannot do a marathon but he can do a normal activities.

ASA 4, A patient with incapacitating system disease, a constant threat to life, he cannot even stay, if you are clinic if your hospital your chamber is in first floor he cannot even climb one floor type 4. Type 5, A moribund in patient not expected to survive 24 hours very critical patient. You do not have to explain this and we cannot survive for 24 hours, very severe patients. Type 6, is clinically dead, there is no nothing much to be done you can harvest organs if it is required for the patients.

ASA E, is an emergency variety, normally we do not know what is the condition patient emergence in emergency but it usually comes in emergency situation. We do not want to end up in emergency, ASA E, all the times because the patient came to you talking, in a dental practice nowhere emergency, I mean ASA 5 and ASA 3, normally does not come if a patient comes to you say I wanted a root canal done I wanted to be pulled out means he is coming and talking to you is neither in ASA 1, ASA 2, ASA 3. So, you cannot say is ASA 3, ASA E is normally not applicable for a routine outpatient management to the patients.

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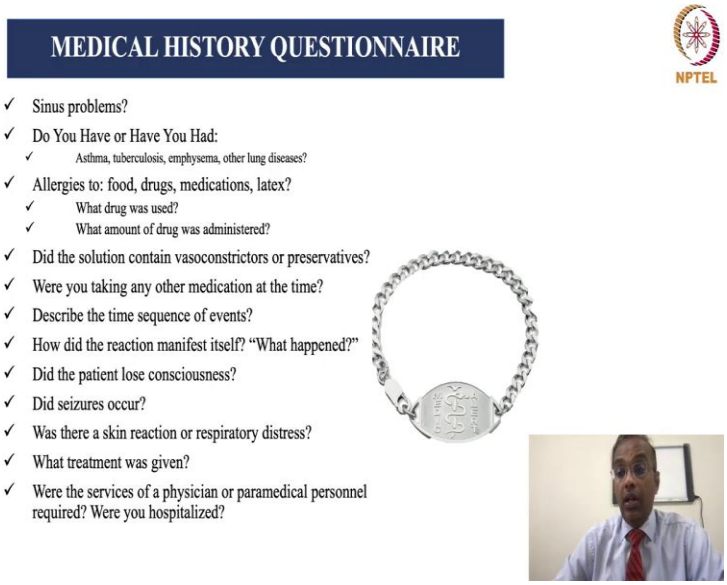

Now, coming to the history part. What all we are supposed to do? We have to have a dialogue history of the patient, you ask him, are you having sinus problems? Why is sinus problem because runny nose the patient the commoners normally say? They never say runny nose, I have a sinus problem. It can indicate that probably is having an allergic rhinitis allergy. You have to be really cautious and check out what sort of allergy, when it happens. What season, is it seasonal? Is it a hay fever? Or is it a dust alergy? So, it needs to be more inquisitive and take out the history as much as possible.

And do you have any asthma, tuberculosis, emphysema, lung diseases, all these needs to be checked out because it is a pre-existing condition can decapitate the patient if there is not any untoward happening. Allergy to food drugs, medications, and even latex for the matter gloves, you are wearing gloves and putting the gloved hand into the mouth or even if surgery you are

wearing the patient doing the surgery with the gloves hand So, the, you might not be allergic to latex the patient can be listed latex that needs to be checked out.

If the drug, what drug is allergic, if he knows, make a note of it. And if he know the drug, ask him how much? Is it 1 injection, 1 tablet, 2 tablet what is the amount which is causing it and ask him about the past dental history having undergone any surgeries, any dental procedures, if it is So, any vasoconstrictors, anything can be used. A Local anesthesia is a local anesthesia was used, which sort of local anesthesia was used? Try to because we have a normal tendency to know that patient does lame man, he is not medically qualified.

We do not they do not know anything. But trust me, out of 7 out of 10 patients they know more medical latest updates than most of our clinicians. I am telling you from my practice that they come up with a lot of situations and scenarios and lot of options. You do not have to explain to them the option they know that thanks to the internet and smartphones, most of the patients are well educated even before they come into your outpatient department.

So, ask them they have answers for you. But and the only thing is you should know what to ask. So, you can enlist answers from them. And once if they have any history of allergy, ask them what medications with them, what was the time sequence, what happened, and what all happened he might explain to you until the last part there is loss of consciousness if they had.

Check out if they had seizures, any respiratory distress, anything that and if a patient gives a history asked him what treatments were done, if not us check for the records. Most of the patients like a brace I have shown in the picture here, they might be carrying a braces that I am allergic, I am epileptic they might be having braces also.

And if it is required, once you check it out, if it is not elicimettric, ask for the consultant's phone number, talk to the physician, you might get a better history to talk to the physician to find out it really it was a serious, because most of the physicians if you have any catastrophe like this in anaphylaxis or any allergic reaction. They do remember it is not that we do not remember Yes. Oh, yeah. 3 months ago, a patient had come yes, he had an episode. Yeah, we have to do a catastrophe for him.

Yes, yes, we have we had to admit him we had to intubate him, they account it, they might not remember, So, it is difficult to remember the whole scenario, but because in a scenario like India, we do not have a personalized physician. So, we can be because the most of the patients they keep doing physician shopping, they keep changing the doctors. So, do not expect a physician to answer the whole thing. But definitely in untoward things like that. Most of the physicians they do remember and you can contact to them and then they will get back to you with answers.

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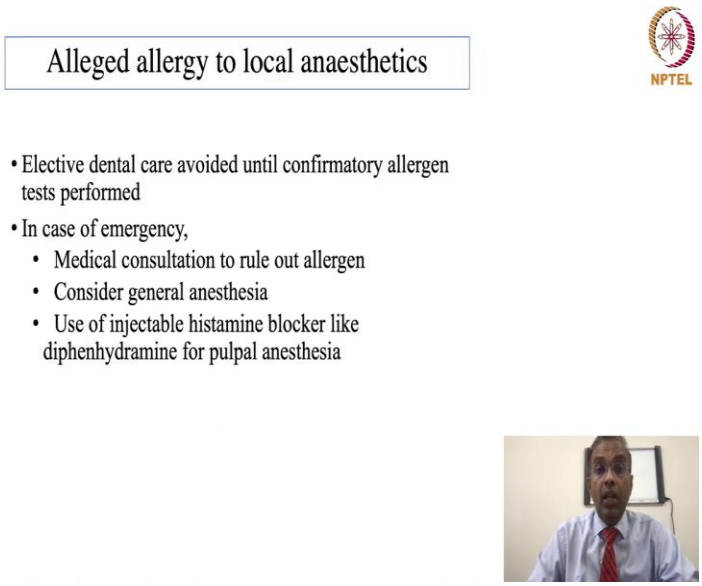

So, sticking coming back to a specifically for dental practice. The most allergies to local anesthesia is what we normally read about it when you read about local anesthesia, the effective dental care should be avoided if any of the allergen test performed, turns out to be positive. Elective dental, except for emergencies not you are not supposed to do any histories of emergency is where there. If needs to be done, yes we have to do a skin test means you have to give a subdermal injection of subcritical or injection of local anesthesia and find out if villain fare injection is coming up.

And in case of emergency like you need to do an probably a trauma or an acute pulpitis which needs an extraction or root canal or any emergency for that matter. It needs to be bleeding something like that. If it is, you have a time, get a medical consultation to rule out any allergen. Nor take the patient to a general anesthesia. Avoid local anesthetics take the patient general anesthesia for the same procedure because I am not telling general anesthesia not safe but it

might be that some drugs might be allergic to it but you have a better control of the body in a general anesthesia a patient is intubated, the whole is you have better control of the patient you can, with airway is a catastrophe airway.

Once you secure an airway and the cardiac nucleus, your physicians or anesthesia's qualified enough to treat the arrhythmias and prevent there will be a preventable disease we do not have to, you do not end up in a scenario where you want to lose the patient on the table. And if it is a small like you want to do as we serve an access osteotomy or something like that, instead of local anesthesia you can use a your diphenhydramine like your injection Hubble can be used for small infiltration that gives us a decent amount of local anesthetic effect to do an pulpal anesthesia for direct So, to relieve pain and an emergency cases can be achieved.

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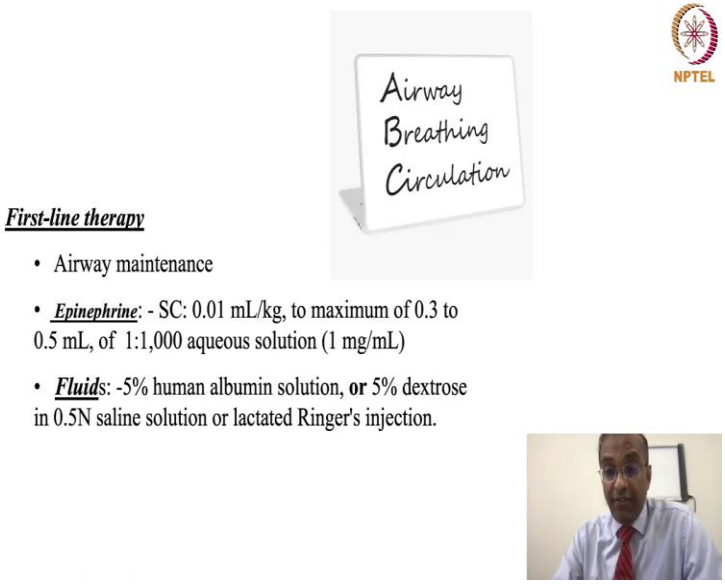

In spite of this, if an allergic reaction sets in, mind you airway breathing circulation, I am not going in detail of it because I am sure you are all aware of it. Or it might be a class 1 other session there emergencies, a-airway, b-breathing, c-circulation, this needs to be maintained. Once the airway is secure, probably by using a chin lift manual or a jaw thrust manual, airway is maintain and the patient is breathing. And you when you secure I mean in a initial stage you do not do it that is I am talking about only in later stage if it enters the latest stage these things are maintained, it becomes an epitome for that.

Once you are sure that airway and breathing circulation is a maintained, you have to go for a first line of choice drug of choice is your epinephrine that is your adrenaline subcutaneous 0.01 milliliter per kg that is usually 0.3 to 0.5 ml of 1 is to 1000, mind you again, 1 is to 1000 concentration of adrenaline epinephrine is injected subcutaneously. 1 is to 1000 that is catch word hear, it because we as a dentist, we all know, 1 is to 1 lakh, 1 is to 80,000, 1 is to 2000, that is what the concentrations were to use in local anesthesia. But in a management of allergy and anaphylaxis, it is 1 is to 1000. That is the take home message for you.

Now, that counters for the adrenaline leads to vasoconstriction, your tries to retain the volume inside and it reduces lot of sequelae that is caused due to histamines and other mediators of anaphylaxis. Number 1. Number 2, as I said already the it is lot of tissues are extravasated there is a volume depletion in the body.

Once there is a volume depletion in the body, the cardiac load is being traced and that can lead to a cardiac activity. So, to prevent that, we need to supplement with fluids, probably a 5 percent dextrose or a normal saline as a lingus lactate, an 4 line needs to be secured and started. Not only epinephrine fluids is also, because what is lost needs to be replenished only then the heart can be controlled to it. Now, in your fluids is an 4 you need to give an 4 line and start it but epinephrine is an emergency. It is an emergency thing.

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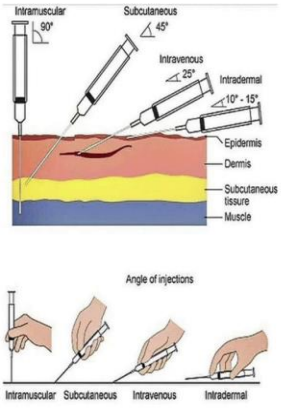

So, I thought let me explain to you how an injection of enter where subcutaneous injection is given. Now, in this picture, you can see this is a different layers of the body. This outermost is epidermis. Next is dermis. The yellow thing is subcutaneous tissues. And the last, the blue is the muscle in this picture. So, the needle with the different angulation of the needle, you can reach the different levels of this, the skin.

If you keep a 90 degree, means you are going for the in-depth penetration normally the intramuscular when doing the deltoid or even the gluteus normally we have to inject 90 degrees to reach the depth of the muscles So, that you can deposit that injection or the drug deep into the muscles. On the contrary, in the subcutaneous you are supposed to make an angulation of 45 degrees and intravenous 25 degrees and intradermal there it is very superficial like in your test dose. Intradermal a we normally give it as 10 to 15 degrees. So, we just implant it in a skin. In the skin test what we did we do an intradermal injections. Then this is how you normally hold the syringes in different injection patterns So, that you get an achievable angle So, you can deposit the drug in the area of your interest.

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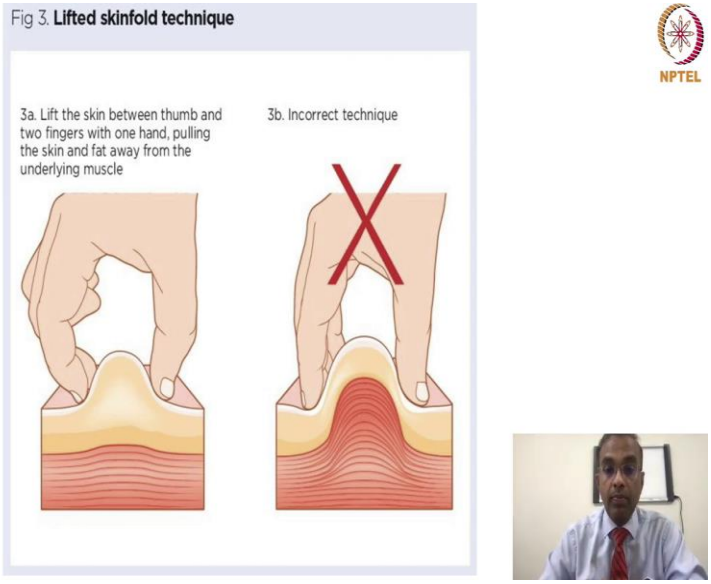

To make it easy, you normally pinch it, you take a skin you can pinch the thing but you are supposed to pinch it gently, not very, not you cannot take a deeper pinch and when you take a deeper pinch and pull it now you can pick up the muscles you can see in the second picture, the

muscles are getting pulled up once the muscles are getting pulled up even the 45 degrees end up giving an injection intramuscular but not the subcutaneous.

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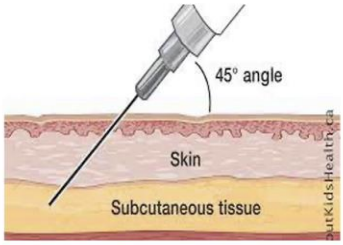

The subcutaneous is a gentle holding of the tissues a fold and at a 45-degree angulation you can see this in the picture here gently at a 45 degree can see your depositing drug in the subcutaneous tissues. So, what do we inject? 0.3 to 0.5 ml of 1 is to 1000 epinephrine.

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Not only that a patient who are, you can advise this to the patient. Normally in our clinics we normally keep a 1 is to 1000 prefilled syringes. So, that in case of emergency we, you do not waste time loading the syringes and you can be prefilled syringes can be done. Also, you get an auto-injectors epinephrine and this is just like an you do it, insulin auto-injectors, you get it just pulled and subcutaneous or intradermal injections. Similarly, in adrenaline auto-injectors are also, available.

A patient who has a history who had a history of previous allergies or anaphylaxis or anything like that, it is advisable for them to carry with themselves an autoinjector also, or even this it can be made available in your practice. Probably it might be expensive to have this compared to a prefilled 1 is to 1000 injections in the clinic. But yes, for a patient. They can carry they can inject themselves in the body when it is there any signs of allergy setting for those patients.

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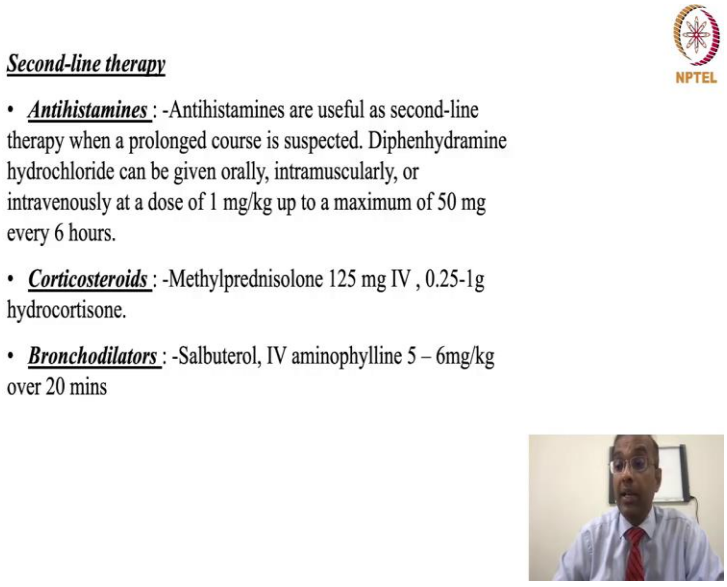

It may be life saving for the part. Once this emergency phase is set in and started like your ABCs are maintained, that you have given an antihistamine and started the fluid therapy for the patient. Then you need to start for as I mentioned, the effect lingers around 48 hours. So, antihistamines has it all most of the biggest culprit for most of the things which happened in that Plexus system. So, antihistamines are supposed to be given immediately as a second line of drug.

Normally as cetirizine or a diphenhydramine can be given either orally or intramuscularly or depending on the severity the patient is unconscious, you can do intramuscular or intravenous, at the dose of 1 is to 1 milligrams per kg bodyweight. And it is approximately 50 milligrams every 6 hourly the patient has to be given to it.

And to prevent the widespread inflammation set, So, I told you neutrophils and monocytes, taking the inflammation to reduce that part and to prevent the platelet activation due to the inflammation, you would have to give in on steroids. And Methylprednisolone 125 milligrams or 0.25 to 1 grams of hydrocortisone IV can be given to the patient. And if the if there is any bronchospasm and to give a salbutamol, aminophylline over 20 minutes to make sure the (())(21:07), adequate bronchodilation and it helps in the breathing for the patients.

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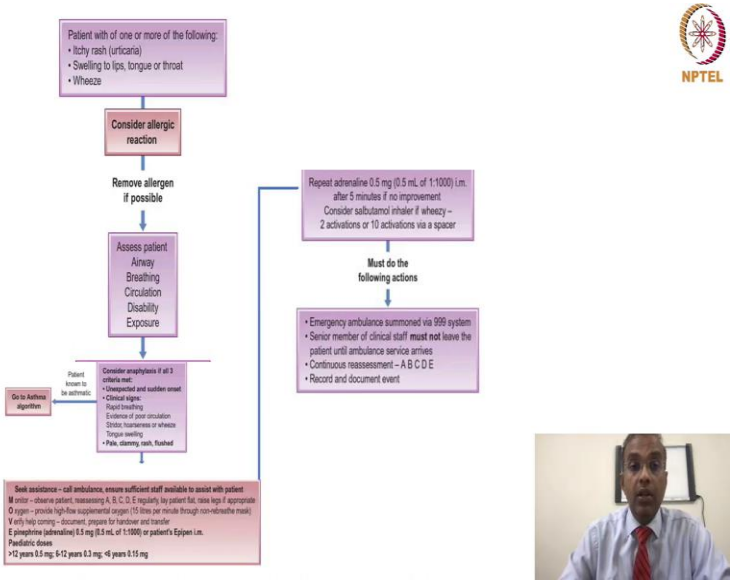

To summarize the management here. The patient with one of the following Itchy rachying, swelling and wheezing you have to say consider any allergic reaction, stop the collagenation do not expose the patient for more allergic contents. Which if it is set in already first, first and foremost, airway breathing and circulation wants to secure the airway, breathing circulation considered an if it is anaphylaxis if any of the 3 then expected sudden onset clinical, rapid breathing, evidence of poor circulation, Strider and as I said, abdominal cramping, calm, calm because the peripheral vasoconstriction.

And if in spite of this, the patients asthmatic, start the asthmatic protocol, if not shift the patient do abc, given an epi reference 0.5 and 0.3 to 0.5 milligram of 1 is to 1000 subcutaneously. And after this repeat it again after five minutes if there is no improvement. And apart from this, you have to give bronchodilators like salbutamol or aminophylline, you can either give us an roto inhalers or even or even a spacer based on even nebulization's can also, be given to the patient. After all this, you have to call for an emergency services to prevent and the patient needs to be admitted and monitored for the next 48 hours to make sure in no other sequelly of the scene remains.

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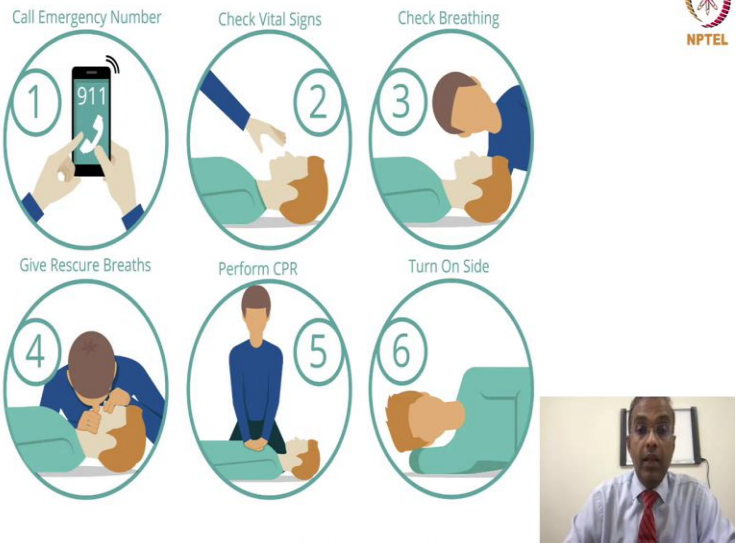

So, if the cardiac event happens, you have to sit in the emergency CPR protocol, check for the vitals, check for the breathings, start giving rescue breathings and perform CPR which I am not going to explain in this talk right now. You need to cardiac compressions and breathing to the patients. And you have to turn him on one side. Once he regains his consciousness because he still have bronchospasm and responses is low, there might be chance of aspiration of saliva and the whole cavity contents that needs to be taken care of.

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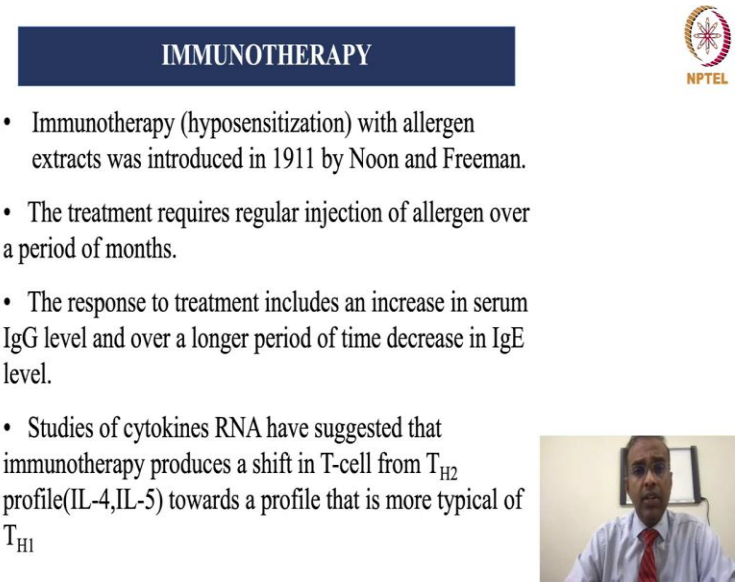

Okay, next about the management on a dental chair or in your practice. But for a theoretical concern or a part of you. There is other management modalities includes immunotherapy that is hyposensitization of the allergen. How they do is? They do a regular injections of allergen of the very low doses to the two main to re sensitize the patient in a longer duration, So, that he will be less immuno response to the allergen. And I the in increase in the level of treatment, increase in the level of IgE level over a long period of time.

That increased level of IGE will be adding a protective for the patient So, that it decreases IgE response to the patient. That is how it works. The over a period of time that is called immunotherapy means you are replacing or you are activating more of immunoglobulin G level in the body So, that when an allergen comes the IgE response comes down. That is where the typical shift of immune from setting up an anaphylaxis will be prevented.

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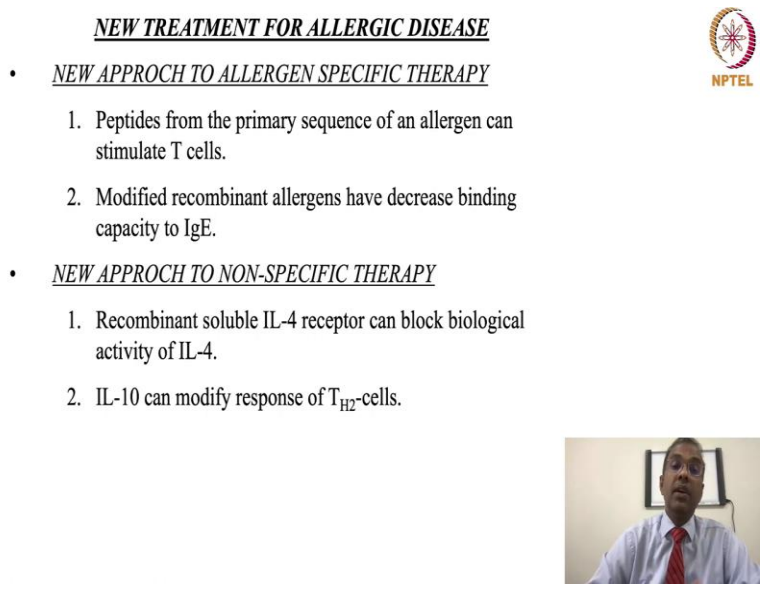

And other modalities include approaches specific therapy allergen is peptides can have an allergens peptides primary sequence can be used to stimulate that T-cells. And recombinant allergens, if you know an allergen, specific allergen that needs to be used. Like for example, if somebody needs to be given in local anesthesia or any specific drug needs to be given, the you need to use a recombinant material of the same drug, which is of less allergic potential compared to the non-recombinant or a freely available drug can be used.

And nonspecific therapies include recombinant solutions of interleukin 4 receptors can block the activities of ID 4. So, you can take an interleukin 4 receptors as recombinant solutions can be injected the patient which blocks activity interleukins 4 and it also, modifies interleukins of interleukin 10 bare why the thymic cells the T lymphocytes will not get activated once T lymphocytes may not getting activated means there is no IGE getting stimulated.

When there is no IGE getting simulated, there is no attachment of IGE into the muscles, there is no activation of allergen and there is no release of chemo tactics or chemical mediators for the allergen that passing. That is how the newer treatment or recombinant technology can be used in the management.

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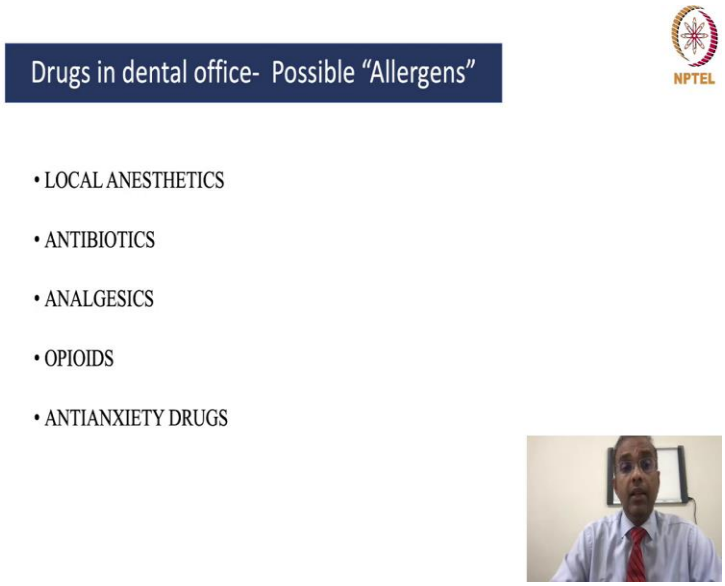

So, what all when we talk about allergens what we have to be careful in our office. Most commonest one is local anesthesia every day we use. Antibiotics, Analgesics, Opioids, Antianxiety drugs. These are the main five drugs normally we use on a routine basis in a dental office. So, we have to be careful, we have to ask history revolving around any usage of this.

Like for example, if the patient says I am allergic to paracetamol, I am I normally take only diclofenac for my pain, why do you want diclofenac? Why do you want to worry? there is no point. If they say I am allergic to diclofenac, what is the point in this prescribe? So, most of the patients they know what they take. So, try to use drugs which normally they take on a on or pre-previously prescribed to them, if it is acceptable for the present condition, So, they you can stick to the same.

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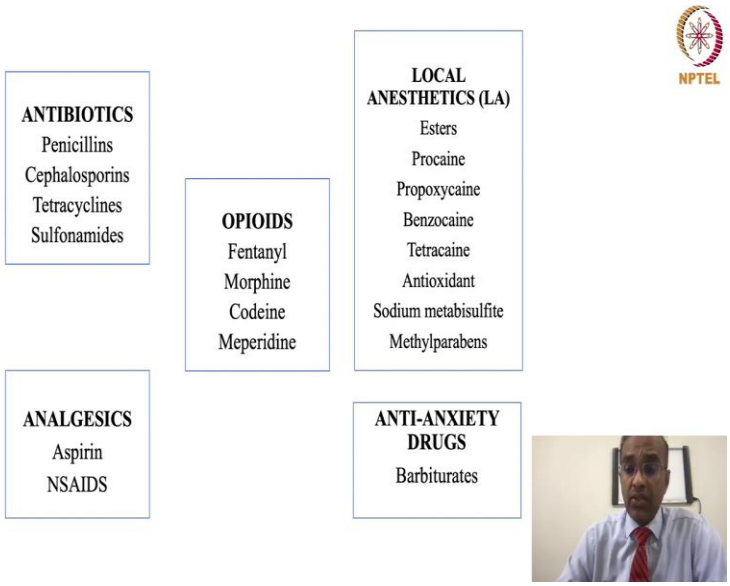

Antibiotics like Penicillins, Cephalosporins, Tetracyclines, Sulfonamides are known to cause allergy. So, specific history needs to be revolving around that. And local anesthetics esters are known to cause nowadays anyway, we do not use much of esters, but yes, Methylparaben this is one thing which we all know.

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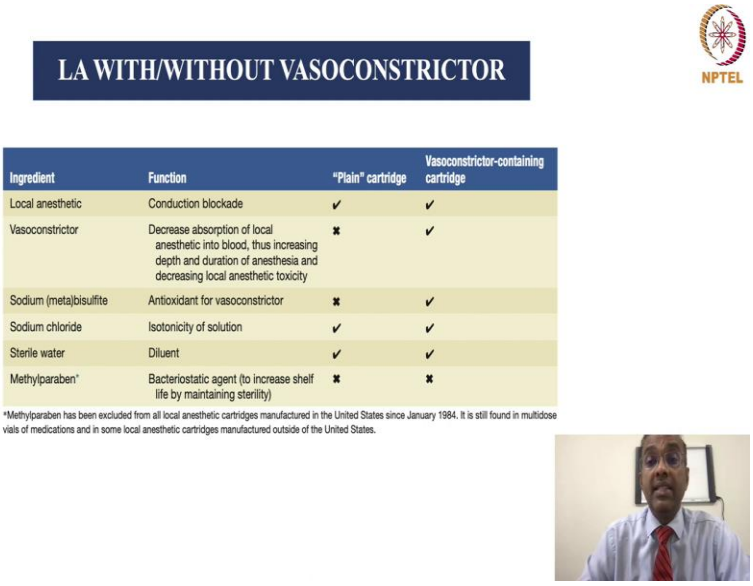

Methylparaben leads to allergic reactions and local anesthesia. But mind you this chart depicts to that in 1984 itself, you can see the both with and without vasoconstrictor, local anesthesia is free

of Methylparaben, nowadays most of the, we do not get local anesthesia with Methylparaben, we are all paraben, we use all paraben-free local anesthetics.

So, we do not have to worry about in a day to day patient, but still, the patient can be allergic to any other thing, you might be allergic to local anesthetic molecule per say, you can be allergic to Methylbisulphate. So, if any doubt you can do a skin test and before proceeding, giving a complete block blockage for the patient.

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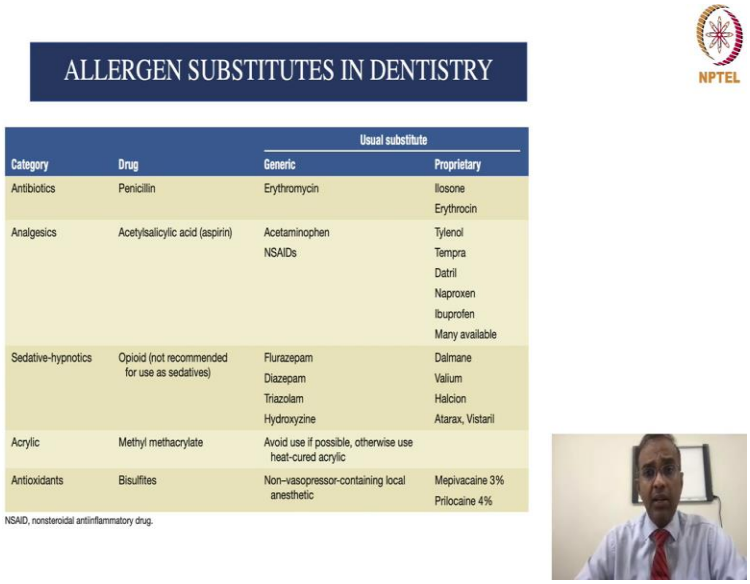

Category	Drug	Usual substitute: Generic	Usual substitute: Proprietary
Antibiotics	Penicillin	Erythromycin	Ilosone Erythrocin
Analgesics	Acetylsalicylic acid (aspirin)	Acetaminophen NSAIDs	Tylenol Tempra Datril Naproxen Ibuprofen Many available
Sedative-hypnotics	Opioid (not recommended for use as sedatives)	Flurazepam Diazepam Triazolam Hydroxyzine	Dalmane Valium Halcion Atarax, Vistaril
Acrylic	Methyl methacrylate	Avoid use if possible, otherwise use heat-cured acrylic	
Antioxidants	Bisulfites	Non-vasopressor-containing local anesthetic	Mepivacaine 3% Prilocaine 4%

NSAID, nonsteroidal antiinflammatory drug.

And if at all if the patient is known to have an gives a history of allergy to any of the drugs like Penicillin allergies, we cannot give him an amoxicillin you might have to shift or to erythromycin to the patient or Analgesics, aspirin allergy can shift him to Acetaminophen diclofenac. So, NSAIDs can be given. And Sedative opioids, normally not recommended in most of our practices. But yes, if the patient is allergic to it, you can use it as a (())(28:27) and hydroxyzine can be given to the patients.

Acrylic, this is one which we normally use in RPDs. And we do it if the patient is allergic to methyl methacrylate, that is your acrylic component which we use in fabrication of most of the dentures. Avoid if possible. Methyl methacrylate I mean we can make a cast partial denture for that matter. We do not need to do acrylic dentures, we can avoid it. But if avoidance is impossible, like probably because of economical reasons or whatever reasons for that reason,

obturators, whatever. In that cases, instead of an cold cure, it is better to use a heat-cured acrylic because heat-cured acrylic has less allergic potential compare to a cold cure.

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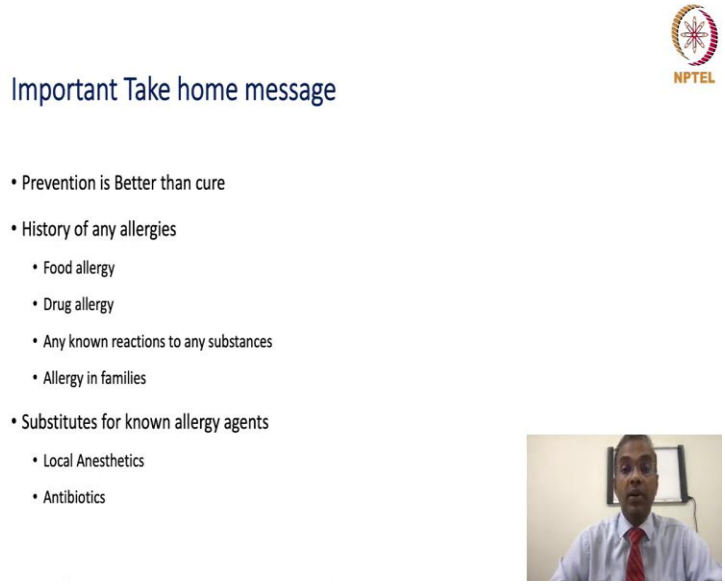

Now, coming to the end, take home message is, Prevention is better than cure. Understand the disease. So, I hope I am able to give you a brief insight about the allergies and anaphylaxis in particular. And so, knowledge of allergies and hypersensitivity it's prevention and management is very very epitome, only when you have an knowledge of course it, we know what is it then you expect what is it then the questions in the history form comes out as for them.

Even a simple food allergy, drug allergy, any reactions to any subject any allergies amongst families, the all history needs to be elicited. The important thing is we never never treat a stranger, get familiarized with them understand in and out of the patient, not only his dental problems, not only his presenting problems, we have to take a complete history, spend 5 minutes and set vocal anesthesia has got more effective compared to just a simple local anesthesia.

And know the substitutes, if the patient is known allergic like antibiotics and local anesthesia, which is just mentioned in the previous slides, it is always you should know, you should have a backup armamentarium. You can say you are allergic to local anesthesia? Boss, I cannot treat you have to leave my clinic. No, you cannot say that you have to have an answer. How can you?

How can I manage the patients who does not have it? With this, thank you. I hope you were able to get some information about anaphylaxis. Thank you. Have a nice day.