agMOOCs

Diet in Stress, Burns & Surgery

Prof. V. Vijaya Lakshmi
(PJTSAU, Hyderabad)

Diet in stress, burns & surgery

Prof. V. Vijaya Lakshmi

(PJTSAU, Hyderabad)

Let us see you today everybody is stressed out and we have a lot of stress. This also affects our nutritional status. So let us see what happens in stress and during burns. The burns also needs a lot of dietary treatment and after surgery pre and post-operative surgical cases also require a change in the diet. Let us see all this.

What is stress???

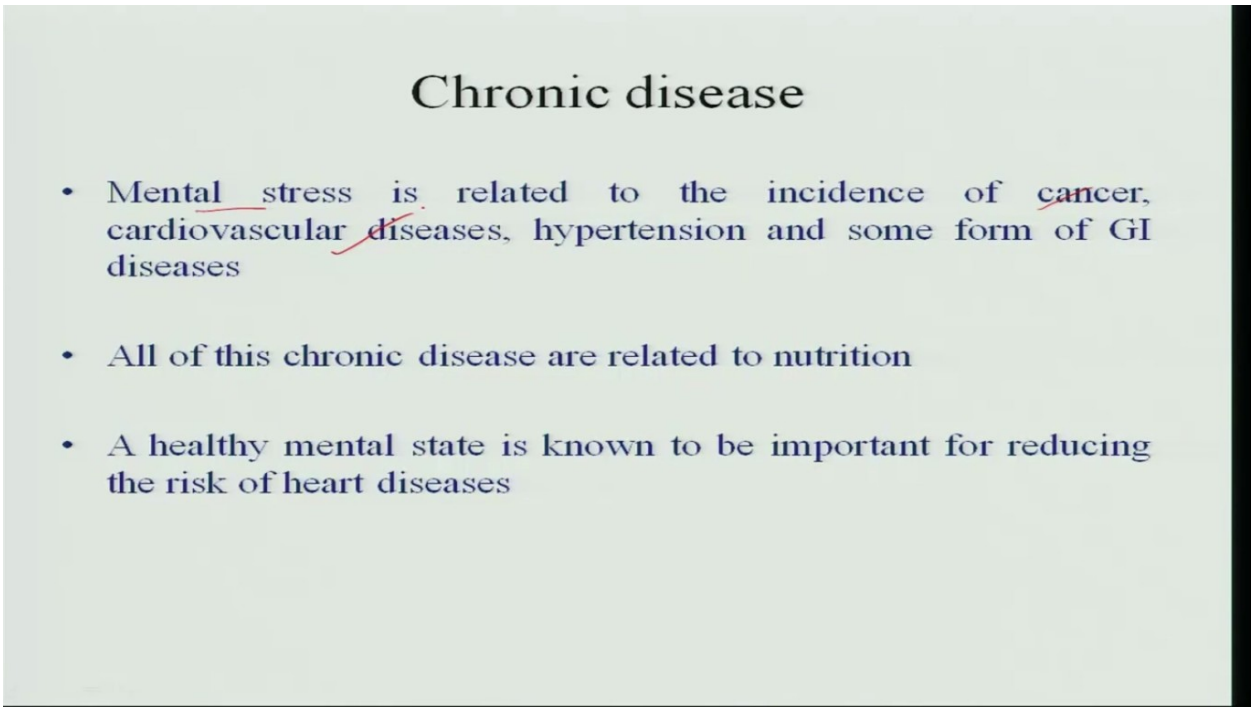
- Its an stimulus or condition that threatens the body's mental or physical well-being
- It can be mental emotional or physical

So what is stress? I think everybody of us know what is stress. It is a stimulus to the condition that threatens the body mentally or physically. So our well-being is changed whenever we are stressed. So it can be mental, emotional, or physical.

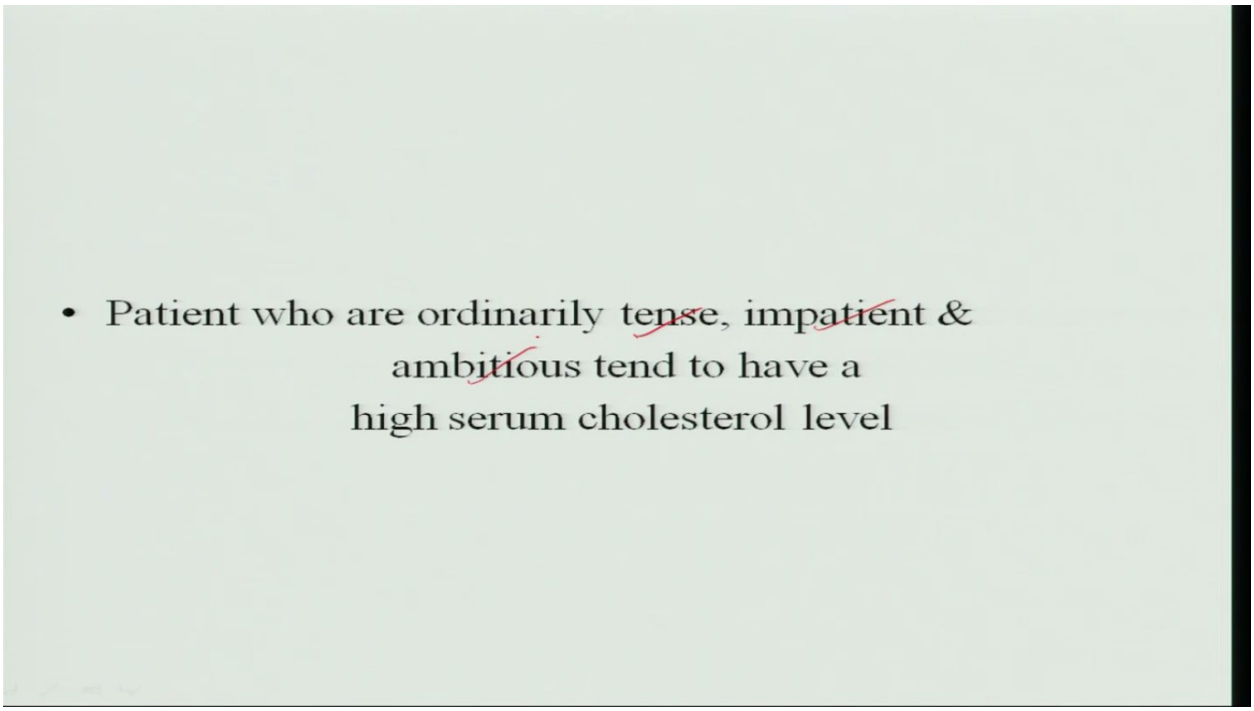
Not all stress is negative

- A balanced amount of stress maximizes health
- Human being need some stress for mental well-being
- Mental stresses related to ambition, drive & desire may in fact be perceived as positive

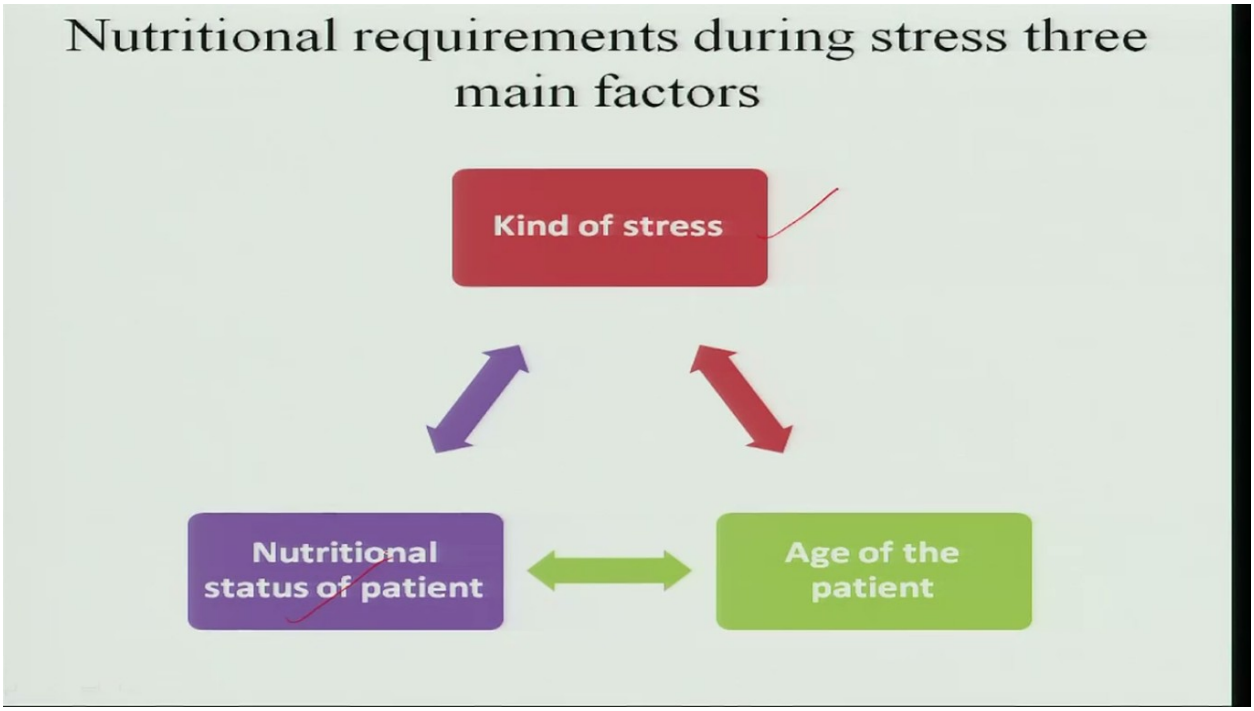
But all stress are not negative. So a balance in the amount of stress actually maximizes health. If you are lazy again your health spoils. So there should be some stress in working and that should be in a balanced amount when we are healthy. So when there is a goal we work out and now human being needs some stress for mental well-being. And these are related to ambition, drive and desire and so this is a positive stress.



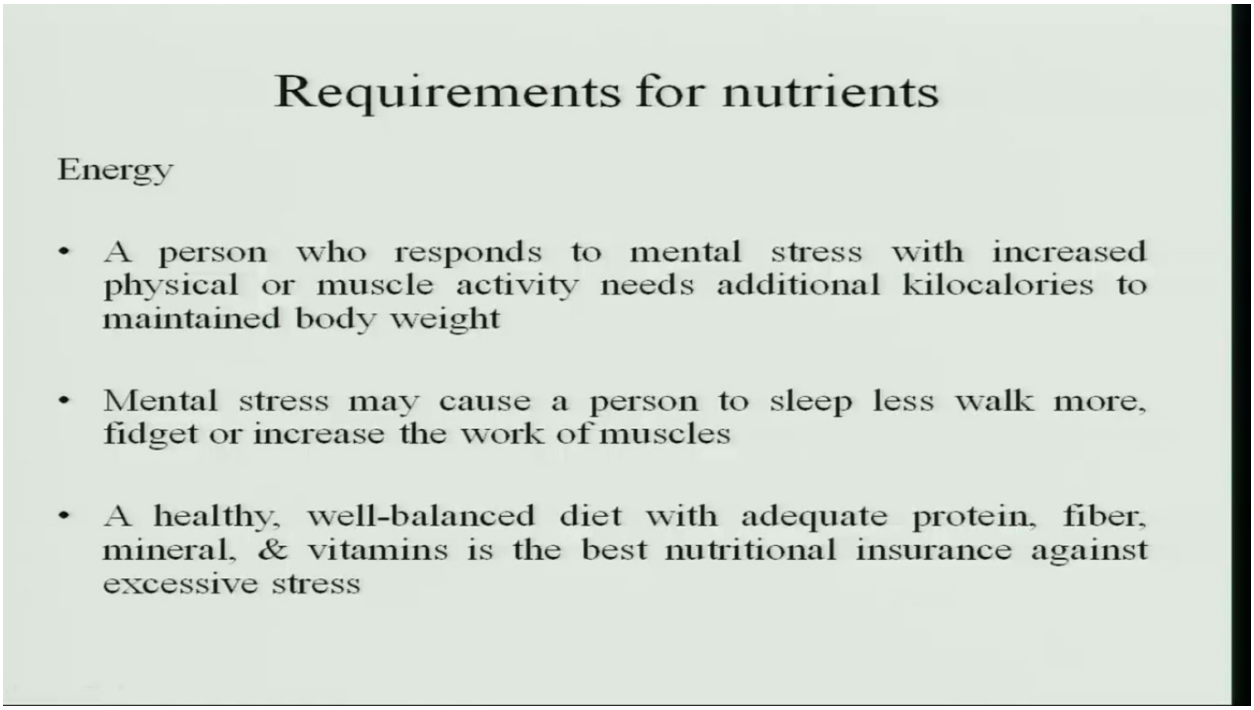
Now chronic disease means the mental stress is related to the incidence of cancer, cardiovascular disease, hypertension, and different forms of gastrointestinal diseases. Whenever we have certain diseases there is a chronic stress in our body. Some chronic diseases which always is in our mind and our mind is stressed. Both mentally, emotionally and physically we are stressed out. So all of these chronic diseases are related to nutrition. So healthy mental state is known to be important in reducing the heart disease. WHO has said what is health it is a state of good physical, mental, and social well-being of an individual, isn't it?



Now patients who are ordinarily tensed, impatient, and too ambitious they lead to have high serum cholesterol levels. So our stress also increases the substances that are present in our body.



So nutritional requirement during stress have three factors. It depends upon the kind of stress. So it depends upon the nutritional status of patient. Some who are very stressed out they also have anorexia. They don't like to eat food. So the nutritional status is imbalance and it they become undernourished. At the same time some other people are there when they are stressed out they tend to eat more and more amount of food. So here their nutritional status becomes over nutrition and leads to obesity. So you have to see the nutritional status of the patient. Then also the age of the patient. So if the age also can have an multiple effects on the nutritional status of an individual.



Now requirements for nutrition for these stressed patients are energy. A person who responds to mental stress will increase physical or muscular activity. So that is a way to remove the stress from their body. So they need additional kilocalories so that they can maintained the body weight. And mental stress it may cause a person to sleep less and walk more. So when you are stressed out you don't get sleep. It leads to insomnia. So the other way to pass your time is work more. Therefore they tend to sleep less and walk more so or they will be fidgeting or doing something some activity is being done to forget the stress. So this increases the work of the muscles. So a healthy well balanced that with adequate protein, fiber, vitamins and minerals is the best nutritional diet for relieving the stress.

What is burn??

- Tissue injury caused by thermal radiation, chemical or electrical contact
- Resulting in protein denaturation burn wound edema & loss of intravascular fluid volume due to increased vascular permeability

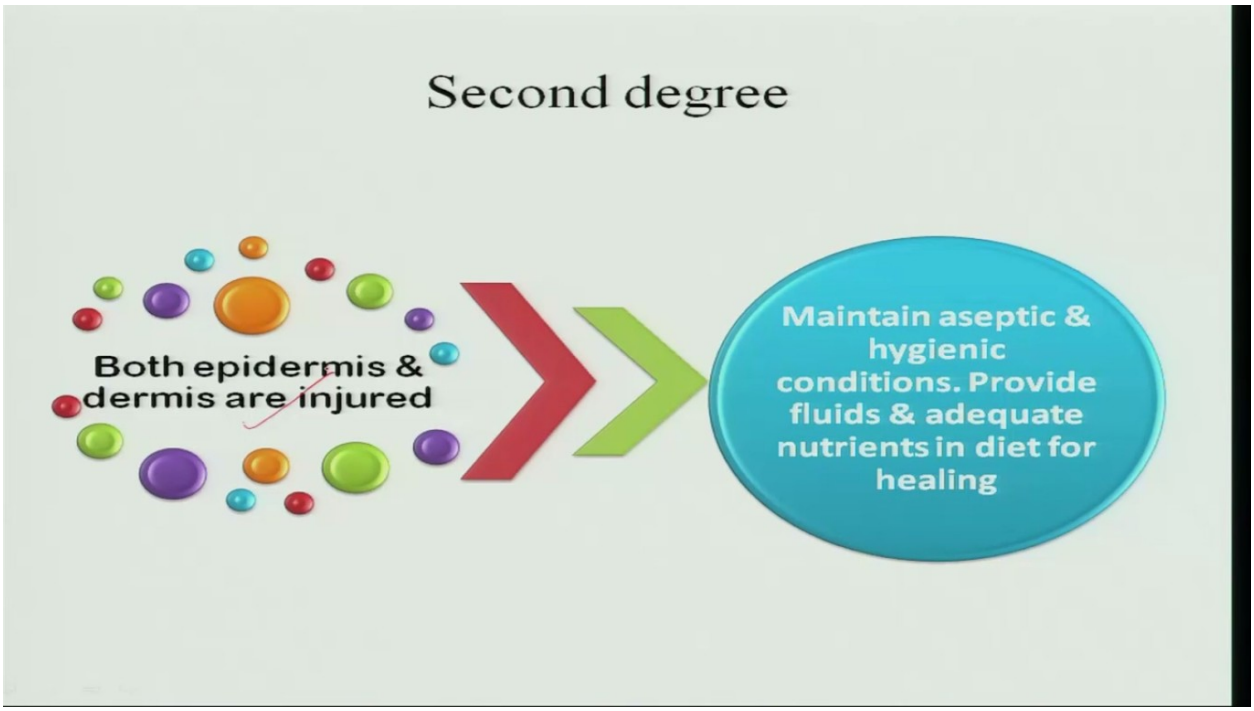
Now what is burn? Burn is a tissue injury which is caused by thermal radiation or it can be a chemical radiation. Some acid is fallen on the skin it will burn or it can be a electrical contact. So all these three can cause burn in the body. So this one is nothing but the protein in the body is denatured and the wound becomes edematic and there is loss of intravascular fluid. The volume decreases and so there is the cell walls are broken. Therefore the permeability is increased.

Classification

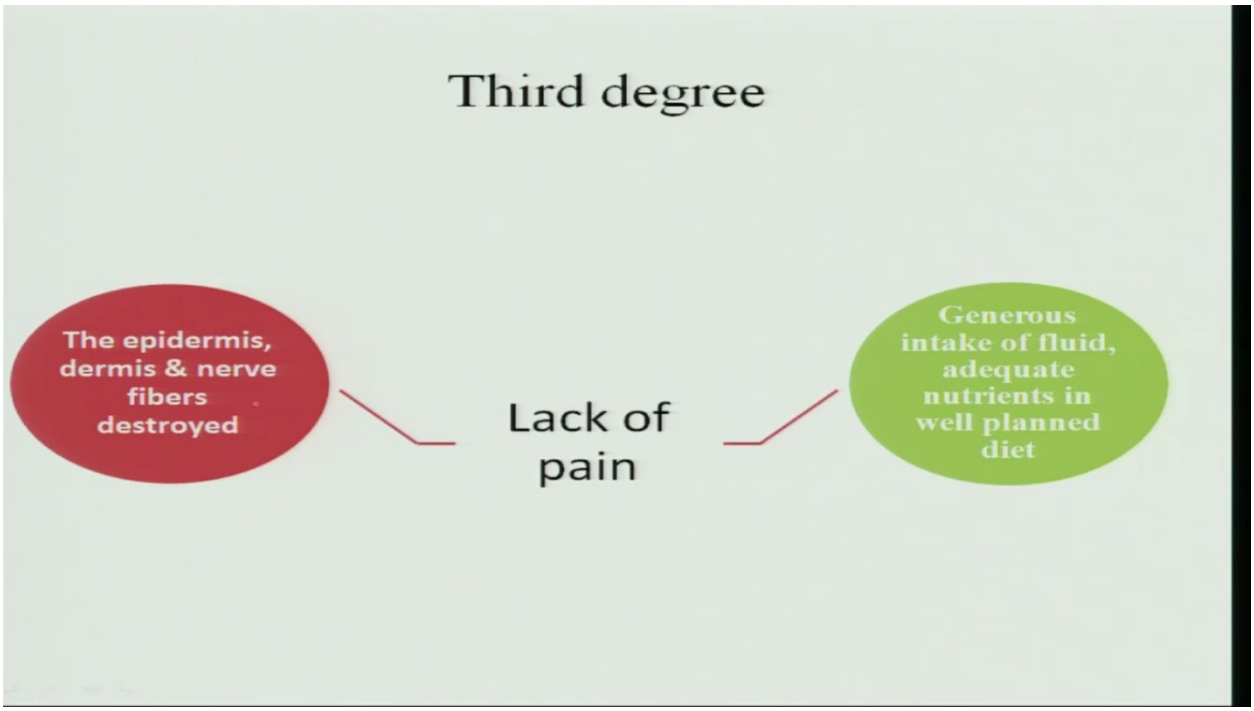
First degree only epidermis is affected

Include oral fluids
Medications for pain relief

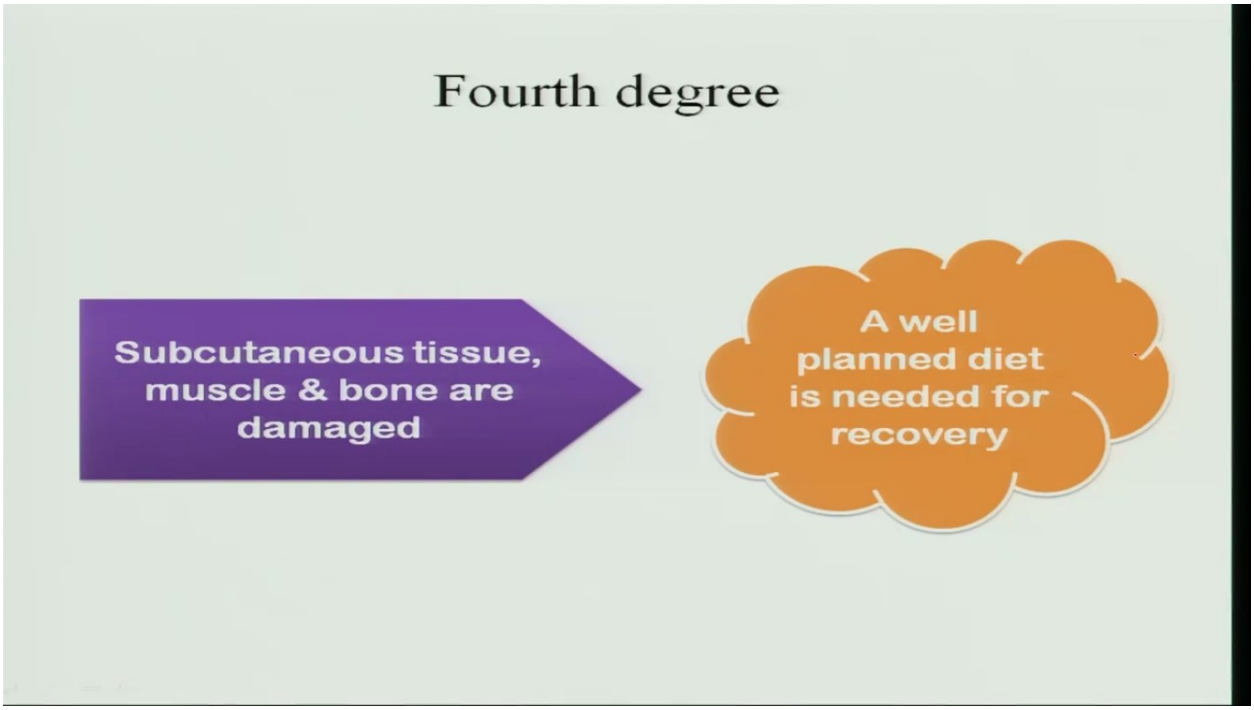
Now we can classify burns into different degrees of burns. Sometimes it is only the skin that is burnt. Sometime a little more and sometimes it burns so badly that the bones are seen. So we can classify burns into different stages. We have first degree of burns which is only the epidermis is affected. That is only the outer skin is affected. So this includes oral fluids and medications and some amount of pain relief or some ointment will the relief the burns.



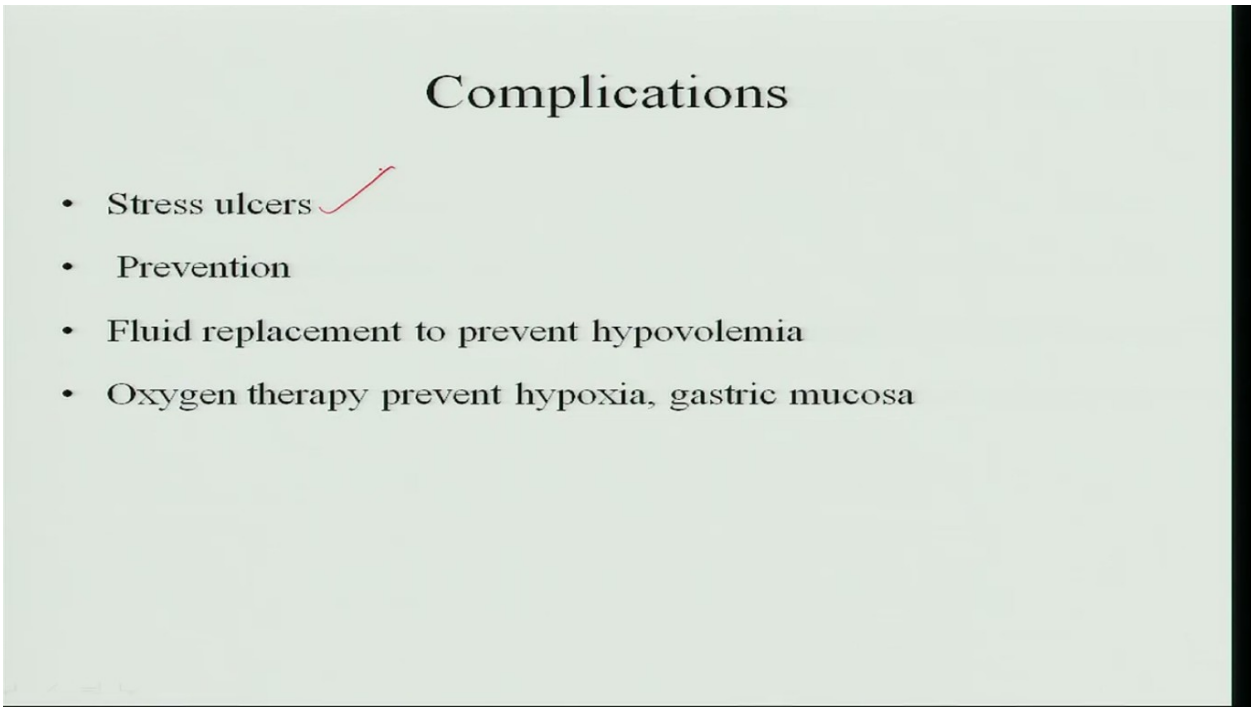
Now second degree of burns here both dermis and the epidermis or injured. The skin has seven layers. The first layer is the dermis then follow epidermis then followed by the dermis. So here both the layers are injured and here again you maintain an aseptic conditions that means you clean the wound and keep it very hygienic and provide fluids and adequate nutrients then healing occurs.



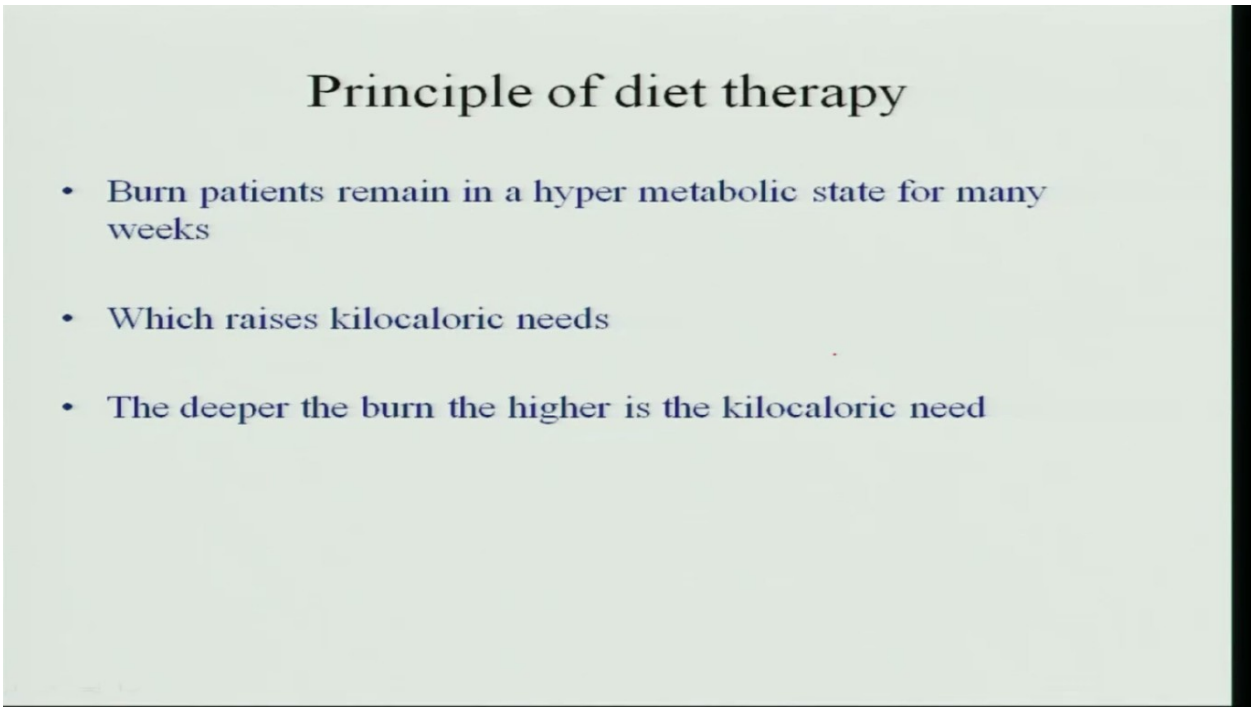
Now third degree burn is the epidermis and dermis and also the nerve fibers that are present under these are damaged. So here there is lack of pain because the nerves also are damaged. So generous intake of fluid is necessary. Adequate nutrients and a well-balanced plan diet is essential.



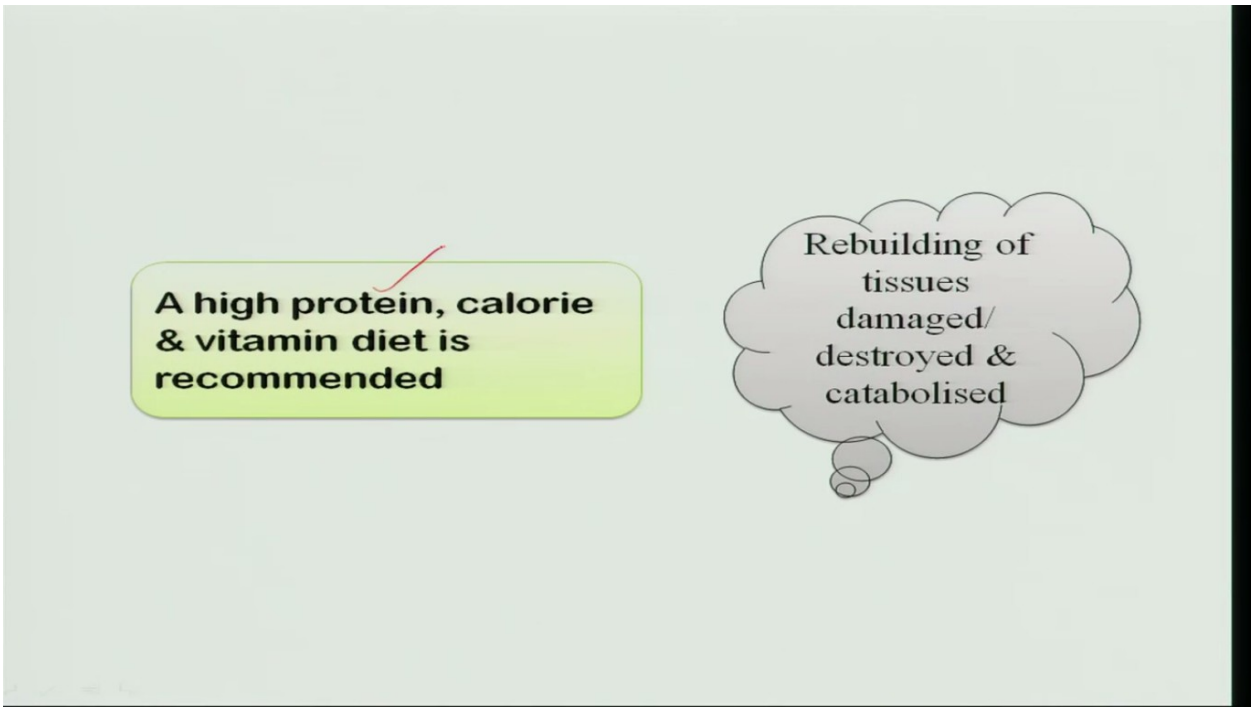
Now fourth degree burn even the subcutaneous tissue is burned. Some amount of muscle and bone also are damaged. So this is the highest degree of burn which can occur. So it reaches the bone also. So here we can give a well-planned diet is needed for a longer period for recovery.



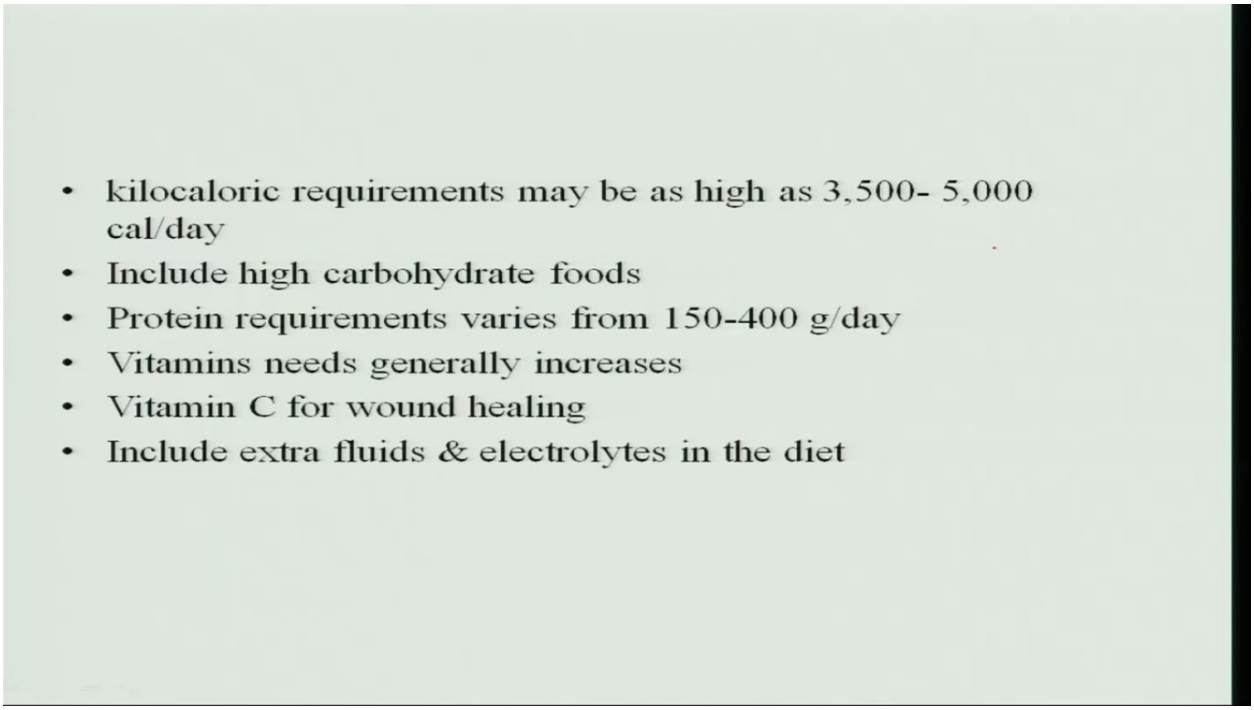
Now complications of burns. It may be stress ulcers first of all because the burn causes stress on the body. It may form ulcers. Then so we have to prevent and fluid replacement has to be done because there will be hypovolemia. I told you all the cells are broken and fluid keeps on losing out from the injury. So there is hypovolemia. The volume of fluid in the body decreases. So you have to replace the fluids. Then oxygen therapy to prevent hypoxia. There may be shortness of breath. So you give them oxygen therapy and gastric mucosa also should be retained back to its original shape.



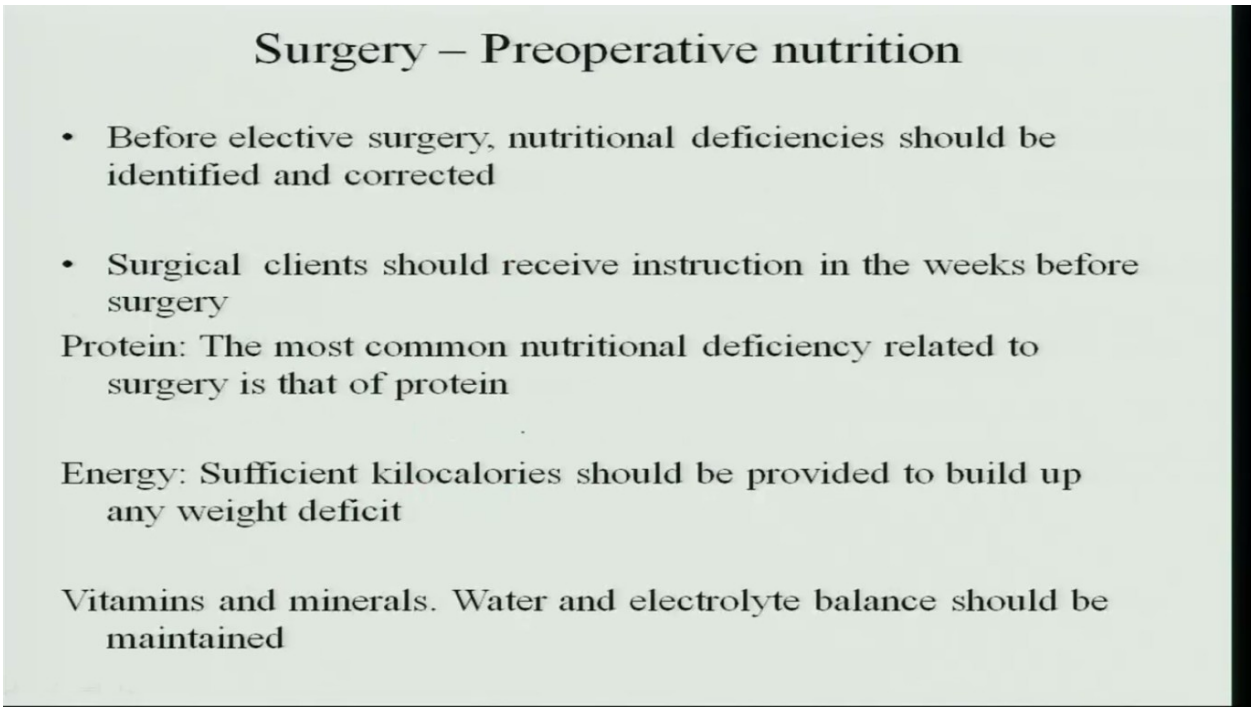
Now principles of diet therapy the burn patients are always in the hyper metabolic state. So for many weeks you have to increase the kilo calorie content of the diet. The deeper the burn the higher the requirement for calorie intake.



Then you have to give a high protein intake. Then a high vitamin diet and high calorie diet is required. So this high protein is required for rebuilding of tissues, damaged tissues, and destroyed tissues or the tissues the protein that is catabolised has to be regained. Therefore, you have to give the high protein diet.



Now kilo calorie or the energy requirement the increases by 3500 to 5000 kilo calories per day and we have to give them high carbohydrate foods which are easily digested and assimilable in the body. Then protein requirement it increases from 60 grams per day to 150 to 400 grams per day depending upon the amount of burns that occur in the body. Then vitamin needs increase. Vitamin C is very important for wound healing as vitamin C function we have so it is the most required vitamin for collagen formation. Therefore vitamin C is very important for burn patients. Then include extra fluids and electrolytes in the diet because there is loss of fluid.



Now surgery. Surgery also requires care. Before the surgery you have a preoperative and postoperative care for surgery. So preoperative nutrition before any surgery is carried out all the nutritional deficiency should be identified. So an assessment of nutrition should be done. Identify the deficiency and treat them. Only after all the nutrition deficiencies are corrected then one should undergo a surgery. Now they should receive instructions at least a weeks, few weeks before the surgery to correct their deficiencies. Now protein, the most common nutritional deficiency is related to protein. When the surgery occurs there is a lot of loss of protein. So you have to increase the protein content. Then sufficient amount of energy should be provided so that if the patient is under weight it comes to normal or optimal weight. Then water and electrolyte balance should be maintained. Adequate amount of vitamins and minerals should be given.

- **Immediate preoperative period**

  Usually nothing is given by mouth for at least 8 hours before general surgery.

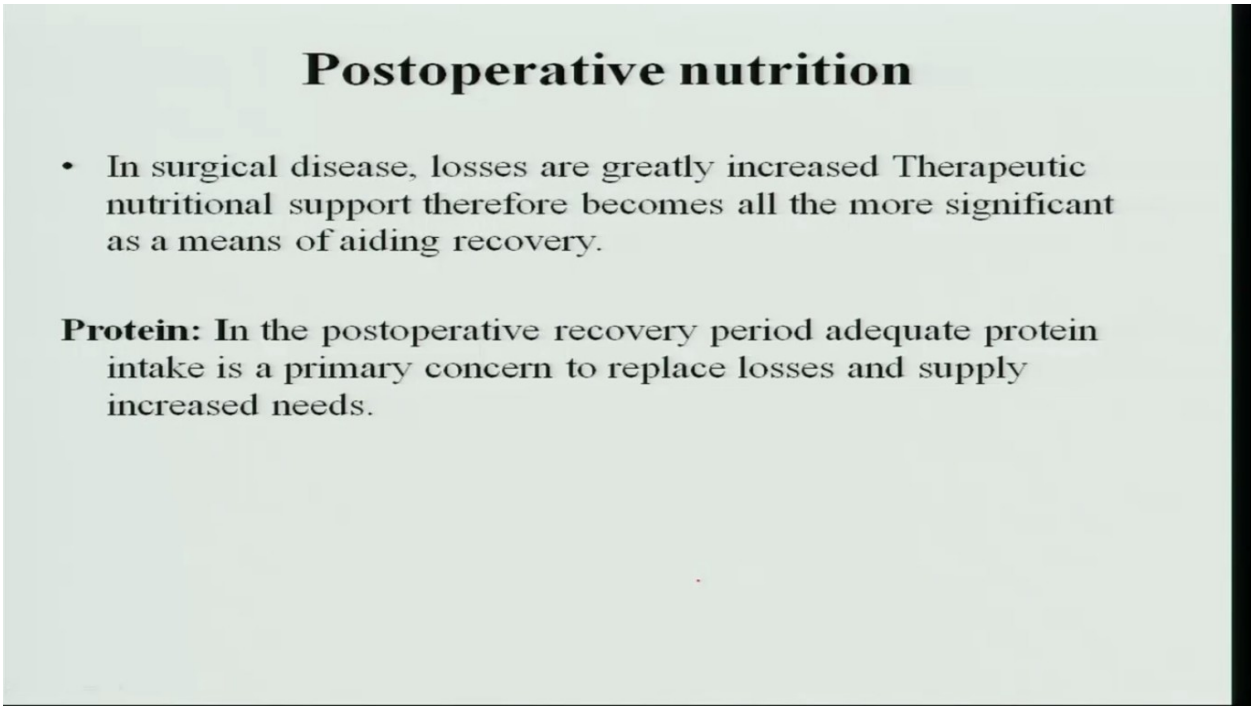
  In case of emergency surgery, if the patient has recently eaten a meal, gastric suction is used to remove it.

So immediate preoperative. Just before the surgery usually nothing is given by mouth. At least 12 hours before the surgery by mouth nothing is given. So in case of emergency surgery sometimes the surgery becomes inevitable and it becomes an emergency. Then after a meal is taken the gastric suction is done and the gastrointestinal tract is emptied.

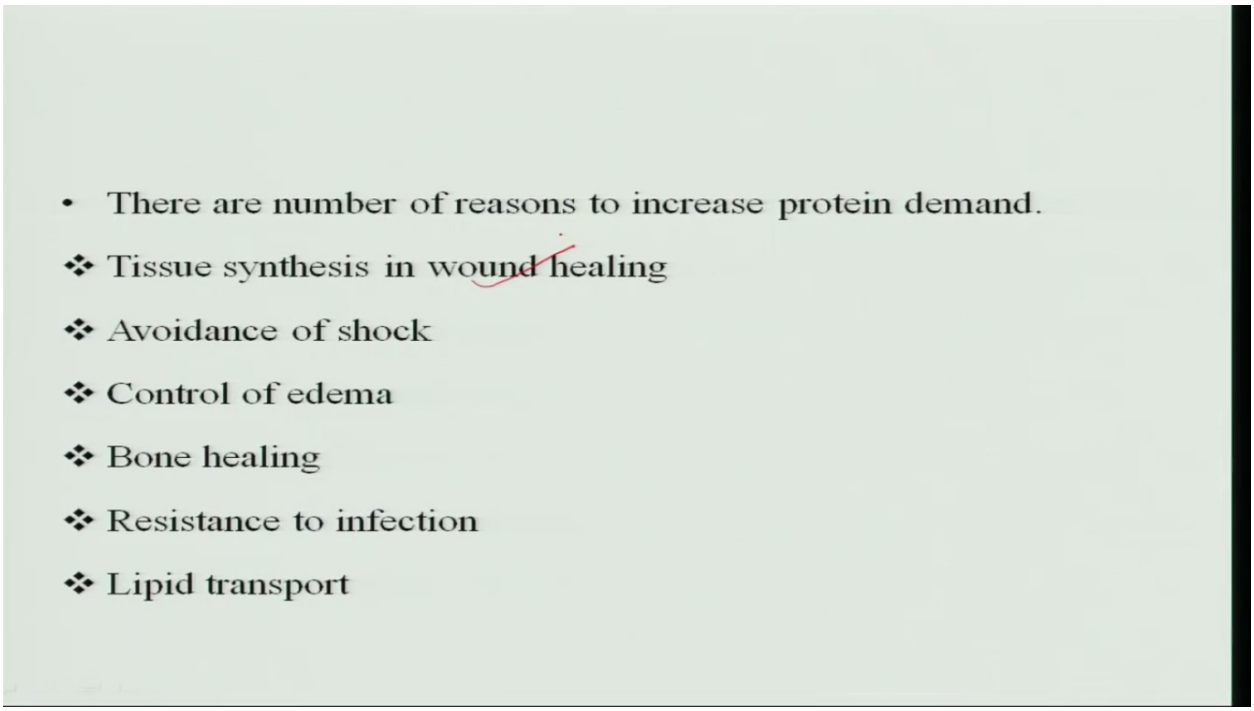
Planning the preoperative diet

- Patients who have lost much weight prior to surgery may benefit considerably by ingesting a high protein high calorie diet.
- The diet may be of liquid, soft, or regular consistency depending upon the nature of the pathologic condition.
- Foods which provide a maximum amount of nutrients in a minimum volume are essential.
- Small feedings at frequent intervals are likely to be more effective than large meals.

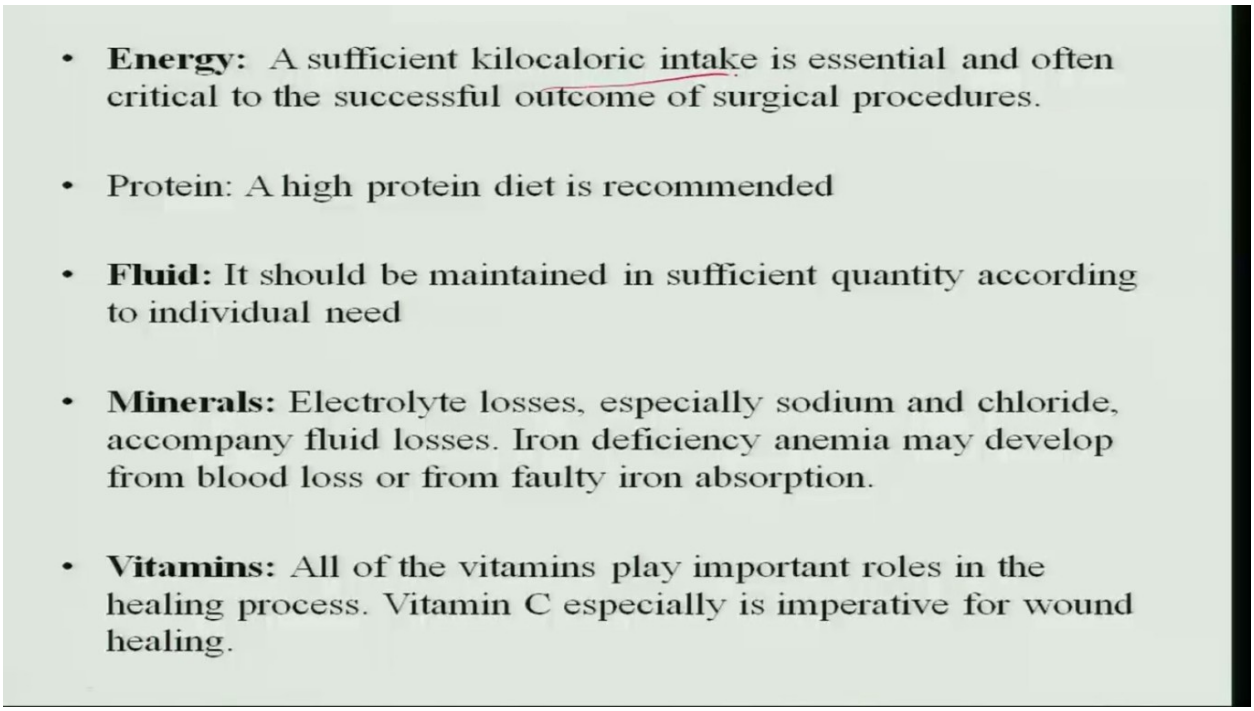
Now planning the preoperative diet, the patients who have lost much weight prior to surgery should be ingesting high-protein and high calorie diet so that they regain their weight and come back to normal weight. So diet may be liquid, soft, or regular in consistence depending upon the condition of the patient. If the patient can have a normal that give him a normal diet. If he is not able to consume normal diet it can be soft or liquid diet depending upon the pathological condition of the patient. Now foods which provide maximum amount of nutrients in a minimum volume that means there should be nutritionally dense food can be given so that the patient can eat less and get more out of the food that is given and you give them small feedings with frequent intervals so that they can eat large amounts.



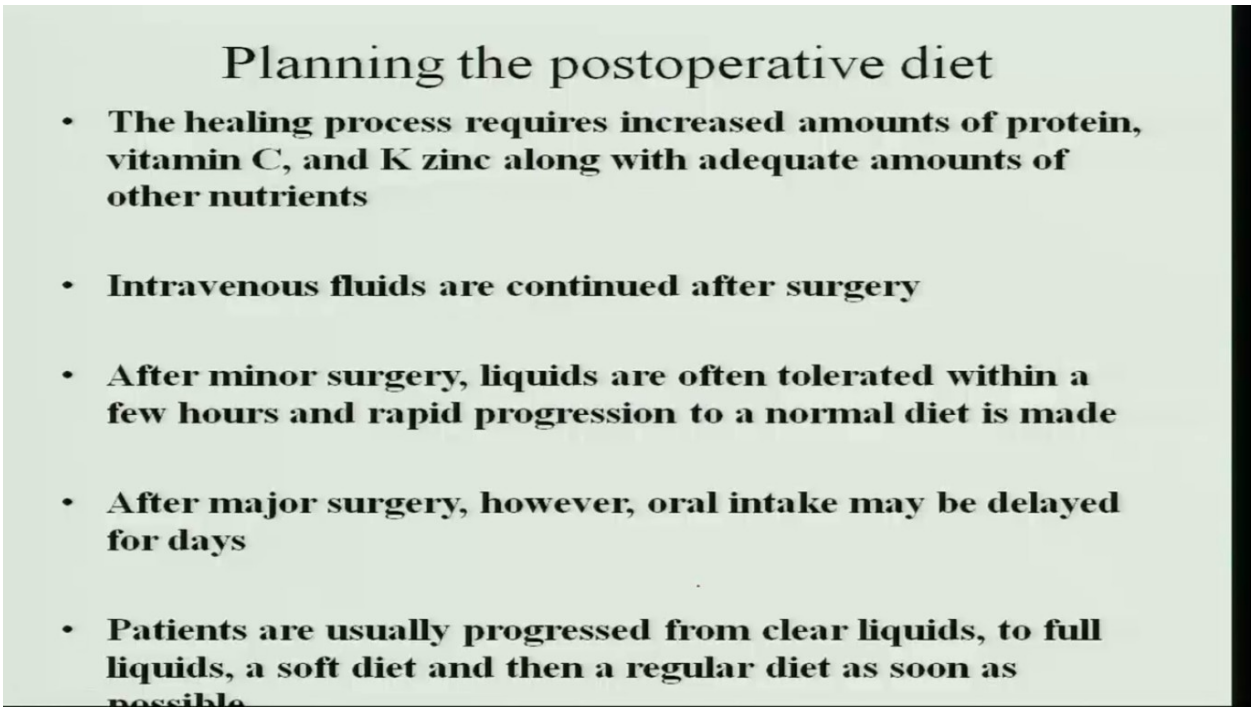
Now after the surgery is over nutrition is again very important. So there are a lot of losses during after surgery. So therapeutic nutrition support becomes the most significant part of the treatment after surgery. Now protein the post-operative recovery period adequate protein has to be given. Primarily it has to actually repair the tissues and also bring back the tissues to normal condition. So maintenance and repair is the most important function that the protein has to be carried out in post-operative cases.



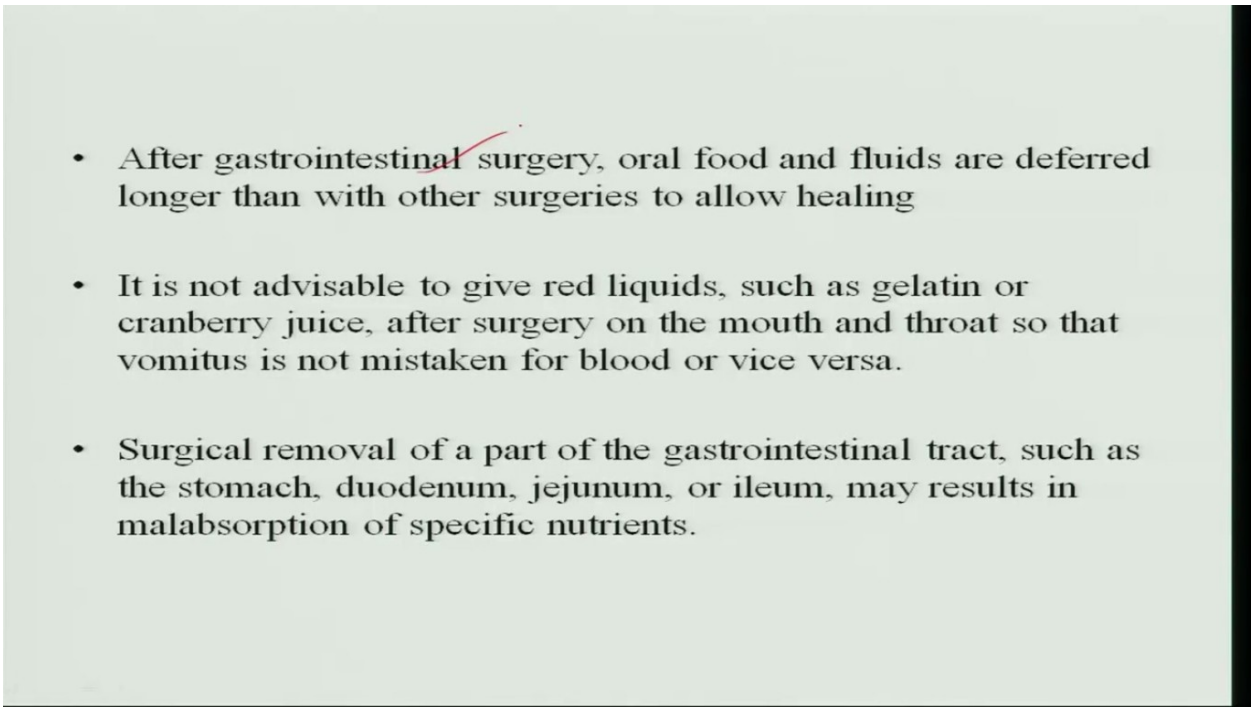
So there are a number of reasons to increase the protein demand. So there should be tissue synthesis for wound healing. There should be avoidance of shock. If the patient goes to shock because of lower nutritional status that can be avoided. Then control of edema. If the protein level goes down too much then there may be increase in the fluid accumulation in the body leading to edema. Then bone healing wherever surgery has occurred. Then resistance to infection because after post-operative stage becomes a very fragile stage where any infection can attack the individual. Therefore resistance to infection is obtained by increasing the protein content. Then for lipid transport in the form of lipoproteins.



Now energy. A sufficient kilo calorie intake is essential and critical for successful outcome of the surgical procedures. So you have to give sufficient amount of calories so that they have sufficient source of energy to withstand these surgical procedures and a high-protein diet is recommended. Then fluid should be maintained in sufficient quantities and minerals that is electrolyte losses especially sodium and chloride can be replaced. Iron deficiency may be developed because there is a lot of blood loss during surgery so that has to be recouped and vitamins, all the vitamins play important role in healing process especially vitamin C which has an imperative role in collagen formation. So these vitamins have to be supplemented in the diet or given as supplements.



So how to plan a post-operative diet? So healing process requires increased amount of protein, vitamin C, vitamin K, zinc and adequate amounts of all the other nutrients. So immediately after the surgery the individual is not given food through mouth therefore intravenous fluids are continued after surgery and through these intravenous force fluids, the nutrients also can be supplemented. If it is a minor surgery liquids are often tolerated within few hours after surgery. But if it is a major surgery however, the oral intake may be restricted for a few days therefore the nutrients have to be supplemented.



So initially we give them clear fluid diets followed by full fluid diets then soft diets and come back to normal diet. So if it is a gastrointestinal surgery oral food and fluids and effort for a longer time because healing has to be occurred in the gastrointestinal tract and it cannot tolerate food going through it. Then surgical removal of part of the gastrointestinal tract like stomach or a part of the intestine then it results in specific nutrient recommendations. Therefore, surgery before surgery and after surgery the diet is very important. Before surgery the patient has to be brought back to his normal condition. I mean the normal optimal health condition and post-operative state the patient has to recover very fast through nutrients and come back to normal stage. In the similar way a burn patient also needs to come back to his health status thereby we have to give him high calorie, high protein, and high fluid diet and also the vitamins and minerals to protect against any infections.

Thank you.