

Treatment of postoperative gastrointestinal dysfunction



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Surgery is a branch of medicine that offers treatment through incisions made on the body made using specialized medical instruments. Surgical procedures can be elective or emergency in nature. There are instructions that a patient is expected to follow when preparing to undergo a surgical procedure. Special measures are taken before and after the surgery. The aim of these precautions is to reduce the risk of death during the procedure and also accelerate recovery time and ensure discharge at earliest time possible. For instance, most patients are expected to keep off solid foods for at least 6 hours before a procedure.

Surgery is associated with a myriad of complications. These may arise secondary to various factors that interplay during a surgical procedure. One of the most common post operative complications is gastrointestinal dysfunction. In older text, it is known as paralytic ileus. This complication is not limited to operations that involve the abdomen. It has happened after many non abdominal related surgeries for instance cardiac surgery. The patient experiences abdominal pain, bloating, failure to pass flatus and delayed defecation. It is detrimental to the recovery of the patient in that it slows the recovery process and prolongs the hospital stay.

Gastrointestinal dysfunction post surgery has been attributed to a number of factors. Surgeries involve incision and manipulation of body tissues and organs. At times, this will be associated with significant post operative pain. To enhance the comfort of the patient, adequate analgesia is administered. Opioids are a popular choice. An example is morphine. Though very effective in relieving pain, opioids are associated with adverse effects such as delayed gut motility and slowed gastric emptying. This increases the transit time that

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food takes from ingestion to excretion. Anesthetic medications are administered during surgery. The body metabolizes these agents and excretes them safely. Residual products of anesthetic agents have been shown to cause gastrointestinal dysfunction. If surgery involves the abdominal area, manual handling of the gut has adverse effects. The manipulation initiates an inflammatory process that results in injury to gut mucosa. Intraoperatively, the total fluid balance is also essential for optimal functioning of the gut. If one loses too much blood or the blood pressure drops, the body reacts by shunting blood from non vital organs to the brain and the heart. As a result, the gut mucosa suffers ischemia. This results in necrosis and requires at least 3 days for healing to occur.

Gastrointestinal dysfunction post surgery has been a key concern for surgeons over the years. This has resulted in various dietary suggestions that are geared towards minimizing the recovery time. Traditionally after a surgery, patients are first given a liquid diet. The diet is then advanced as the patient tolerates. This is common practice in many countries. There are also specialized kinds of diets that are tailored for patients with gastrointestinal dysfunction. Examples are the BRAT, BRATT and CRAM diets.

BRAT is an acronym that stands for bananas, rice, apple sauce and toast. The diet became famous for its use among the pediatric population. It was prescribed for children with gastroenteritis. The diet is composed of foods that are easy to digest and that are well tolerated by most people. When a patient undergoes a major surgical procedure, there may be a tendency to lean towards foods that are easy to digest and well tolerated. Nausea and vomiting are other common post operative complications and a patient is <https://assignbuster.com/treatment-of-postoperative-gastrointestinal-dysfunction/>

likely to choose foods that will stay down once ingested. At a glance, this looks like an appropriate option. It offers several benefits to the post operative patient. The food is easy to chew and digest; it does not induce nausea and delivers nutrients to the patient. At a closer glance however, the Brat diet has various inadequacies that are detrimental to the health of the patient. This is expounded below.

The body tissues are made up of protein. The human body acquires proteins through synthesis and diet. Wound repair utilizes proteins to form new tissue and scar tissue. The Brat diet is predominantly deficient in proteins. It also lacks vitamins, fats and minerals. Carbohydrates are the only nutrients that this diet offers the body. Vitamin C is crucial in wound repair.

Mineral/electrolyte balance in the body is essential for the proper functioning of the heart. When the fore mentioned components are deficient, there is prolonged wound healing and increased risk of wound infection. This ultimately prolongs the hospital stay and increases the risk of post operative complications. Subsequently, the diet has over time lost popularity and its prescription has declined.

The BRATT diet is another popular choice. It is a modification of the Brat diet. The last T stands for tea. Essentially it is similar to the Brat diet in terms of content and nutrient delivery. Tea if sweetened delivers sugar to the body. If milk tea is used, it offers limited amount of proteins to the body which are not enough to promote wound healing. If used for management of diarrhea in children, tea made using cow milk is best avoided. This is because it is often difficult for a child's gut to digest protein in cow milk. BRATT diet also lacks vitamins and minerals.

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CRAM is another post operative diet option. The acronym stands for cereal rice apple sauce and milk. It is a recommended alternative for the BRAT diet in children and adults with stomach upsets, gastroenteritis or other forms of gut dysfunction. CRAM diet gains preeminence over the Brat diet due to its milk content. The milk is essential in delivering essential proteins and fats to that body. It is therefore a healthier option compared to the other two diet plans mentioned before.

Apart from diet, doctors have traditionally employed other measures to reduce the incidence of post operative gastrointestinal dysfunction.

Administration of prokinetic medications is one such example. These are medications that increase the rate of contractions of gut smooth muscle and therefore decreasing food transit time. Another practice has been insertion of tubes to the stomach through the nose. This helps to drain any unwanted food substances from the stomach. Often, the doctor will perform an examination on the abdomen so as to assess for return of normal function.

Modern medical practices are evidence based. Studies centered on the issues of diet post surgery have been done and the results have been interesting. Scientifically proven measures that increase the speed of return of the gut function have been documented. Laxative administration is one example. Laxatives are medications that are administered to aid in passing of stool. A simple concept such as chewing gum has been found to have immense benefit to the post surgical patient. Gum has been shown to promote early passing of stool and decrease gaseous distention of the abdomen. It is a cheap easily available and a well tolerated option for many patients to help alleviate symptoms of gut discomfort. Contrary to popular <https://assignbuster.com/treatment-of-postoperative-gastrointestinal-dysfunction/>

belief, early feeding on a regular diet is beneficial to the post surgical patient. Research has shown that introduction of a regular diet to the patient as soon as possible is associated with improved wound healing, it markedly shortens the hospital stay and overall improves the nutritional balance of the patient. Some surgeries are major procedures that have an impact not only on the patient's physical health but also on their psychology. It is understandable if a patient shies away from a regular diet and opts for specialized diet after a surgical procedure. An assumption that eating a regular diet may complicate issues may force patients to stick to specialized diets that offer inadequate nutritional value. However, research has provided relief to many patients and healthcare professionals. There is no longer any medical basis for a patient to shy away from a regular diet post surgery. If anything the patient will profit more when on regular diet compared to when on a specialized diet.

Fluid balance is ambulatory regardless of the diet option a patient enrolls in during the recuperation period. Surgical procedures result in fluid losses through blood lost and evaporation of water from exposed tissue. As water is lost, an imbalance in the electrolytes also occurs. Fluid balance cannot be neglected in the post surgical patient. It is the role of both the doctor and the patient to ensure that the body is adequately hydrated, the doctor will administer intravenous fluids and the patient is at liberty to take oral fluids. Water is preferred but it can be supplemented with a soft drink. In the setting of electrolyte imbalance, an electrolyte containing drink such as pedialyte can be taken. The electrolytes in the drink will replace any losses present in the body. To reiterate, a patient should not assume that they are

getting adequate fluids from food alone but should be proactive in terms of fluid intake.

As mentioned earlier, the BRAT, BRATT and CRAM diets gained popularity for their use in management of diarrhea and gastroenteritis among the pediatric patient. This practice has however become obsolete with time. The dominant cause of diarrhea among children is viral infection. The common culprit is the rotavirus. Almost all children will have a rotavirus infection at least once in their lifetime. It is an infection that spreads easily from child to child.

Diarrhea can also be secondary to bacterial infection and due to food poisoning. Water and electrolytes are the predominant losses suffered by a child with diarrhea.

Water loss is effected through various mechanisms. The intestinal lining is composed of cells that are responsible for production of enzymes that aid in further digestion of food. The gut lining also acts as a conduit for absorption of nutrients into the blood stream. The intestinal walls also contain lymphoid tissue that helps fight infection. In the setting on invasion of the gut by micro organisms, an inflammatory process takes place. This results in damage to the lining of the small intestine. Consequently, digestion and absorption of food is impaired. Any food ingested is left sitting in the gut lumen. Often, most of the food ingested will contain carbohydrates. When carbohydrates are present in the gut, water is forced out of surrounding tissue into the gut. This will result in watery stools. Some pathogens also produce toxins that potentiate water loss. For instance, rotavirus and cholera produce products that activate specific channels on the gut wall. When these channels open, sodium is pumped from the body tissues into the lumen. Subsequently, <https://assignbuster.com/treatment-of-postoperative-gastrointestinal-dysfunction/>

water follows sodium into the gut and this worsens the water loss during diarrhea.

Often, diarrhea is coupled with nausea and vomiting. This results in further loss of water and chloride ions. A sick child is has a poor appetite and is likely to refuse any food given to them. Decreased food and fluid intake coupled with the increased losses results in a dehydrated child. The negative fluid balance can be severe enough to result in death. The only life saving medical intervention for a child with diarrhea is replacing the lost fluids and electrolytes. In the developing world, many children die from dehydration. These deaths can easily be avoided by use of rehydration solutions.

Oral rehydration salts are commercially prepared powders that are usually reconstituted in boiled water. The salts contain sodium, potassium, sugar and chloride. The world health organization advocates for use of oral rehydration solutions as a first line therapy for management of diarrhea in children. The treatment is easy to administer. A lay man needs minimal guidance and education on how to prepare and give the solution. The treatment is based on the fact that even amid ongoing loses through diarrhea and vomiting, some of the ingested solution will be retained and be beneficial to the ailing patient.

Oral rehydration therapy is not exclusive to children. Adults also suffer from diarrhea. The causes vary from those of children. Traveler's diarrhea can be a major source of discomfort among the adult population. Cholera is profuse diarrhea that results from infection caused by the *Vibrio cholerae* bacteria. The patient suffers massive bouts of diarrhea that result in rapid depletion of

water and electrolyte losses. Without treatment, the risk of death is high among patients with cholera. Administration of oral rehydration therapy among these patients is a simple and cheap way by which life can be preserved.

Oral rehydration solutions offer dual benefit to the patient. The water content replaces the water lost while the electrolyte content replaces any electrolyte deficits in the body. Sugar is an essential component of rehydration salts. The sugar does not deliver energy to the patient but acts as a means by which sodium absorption is enhanced during the oral rehydration therapy. To understand this, it is essential to look at the normal mechanisms by which sodium is absorbed from the small intestine.

There are two mechanisms by which sodium transverse the intestinal walls. It can be transported passively or actively. Passive transport entails movement of sodium across a concentration gradient. Active transport of sodium utilizes energy in the form of adenosine triphosphate(ATP) to move sodium from the gut lumen into the blood stream via specialized channels. During active transport of sodium, the sodium ions are either absorbed independently or together with another molecule in what is referred to as co-transport.

The bulk of sodium body stores are acquired through the co-transport absorption mechanisms. This takes place in the jejunum which is a part of the small intestine. Sugars and amino acids are important molecules that are transported across the intestine wall together with sodium. For the sugar and amino acids to be absorbed, sodium has to be present in the gut. In the long

run, absorption of sodium facilitates absorption of sugars and amino acids and results in nutritional benefit to the patient. Sodium also facilitates the absorption of chloride. As a result, oral rehydration solution is able to replace the two major electrolytes that are deficient in diarrhea and vomiting.

Oral rehydration therapy is the mainstay of management of diarrhea. The therapy can be supplemented in various scenarios using medications. Zinc supplements are offered to the pediatric population. Zinc has been shown to shorten the course of illness and enhance healing of gut epithelium.

There are very few contraindications to oral rehydration therapy. There is also zero chance of adverse effects from taking too much of the solution. In fact, the patient is advised to take as much of the solution as they can tolerate. Even during active vomiting, drinking of the solution should be resumed after the bout of vomiting is over. Vomiting should not be used as an excuse for not taking the rehydration solution. During the rehydration period, a patient is also encouraged to take other fluids such as water, soups and porridge. A regular diet should be resumed as soon as the patient is well enough to eat something and the nausea and vomiting have subsided. Regular diet is favored compared to specialized diet during the recuperation period.