For Patients Needing Pancreatic Surgery

Your Treatment Team – Health professionals you may encounter as part of your multidisciplinary care:

Primary Care Physician: Your personal primary care physician (PCP) who will provide essential referrals to medical specialists when an undiagnosed health concern arises. Your PCP is the one physician that remains with you throughout your continuum of care.

Radiologist: A physician specialist that uses imaging to diagnose and treat disease.

Gastroenterologist: A physician who specializes in the diagnosis and treatment of digestive system disorders and diseases.

Pathologist: Physician who examines tissue removed by biopsy to examine if it is cancerous.

Surgeon: A fellowship trained hepatobiliary surgeon specialized in surgical procedures of the liver, gallbladder, bile duct, and pancreas.

Nurse Navigator: A specially trained nurse who works closely with all members of multidisciplinary team to ensure that you are receiving the best care possible without delays.

Medical Oncologist: A physician who participated in specialty training to diagnose and treat cancer. A medical oncologist administers chemotherapy.

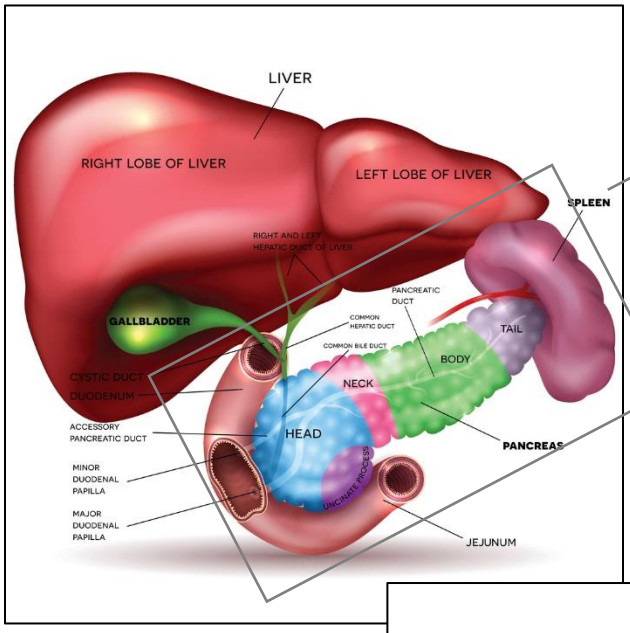
Radiation Oncologist: A physician who specializes in the treatment of cancer utilizing radiation therapy.

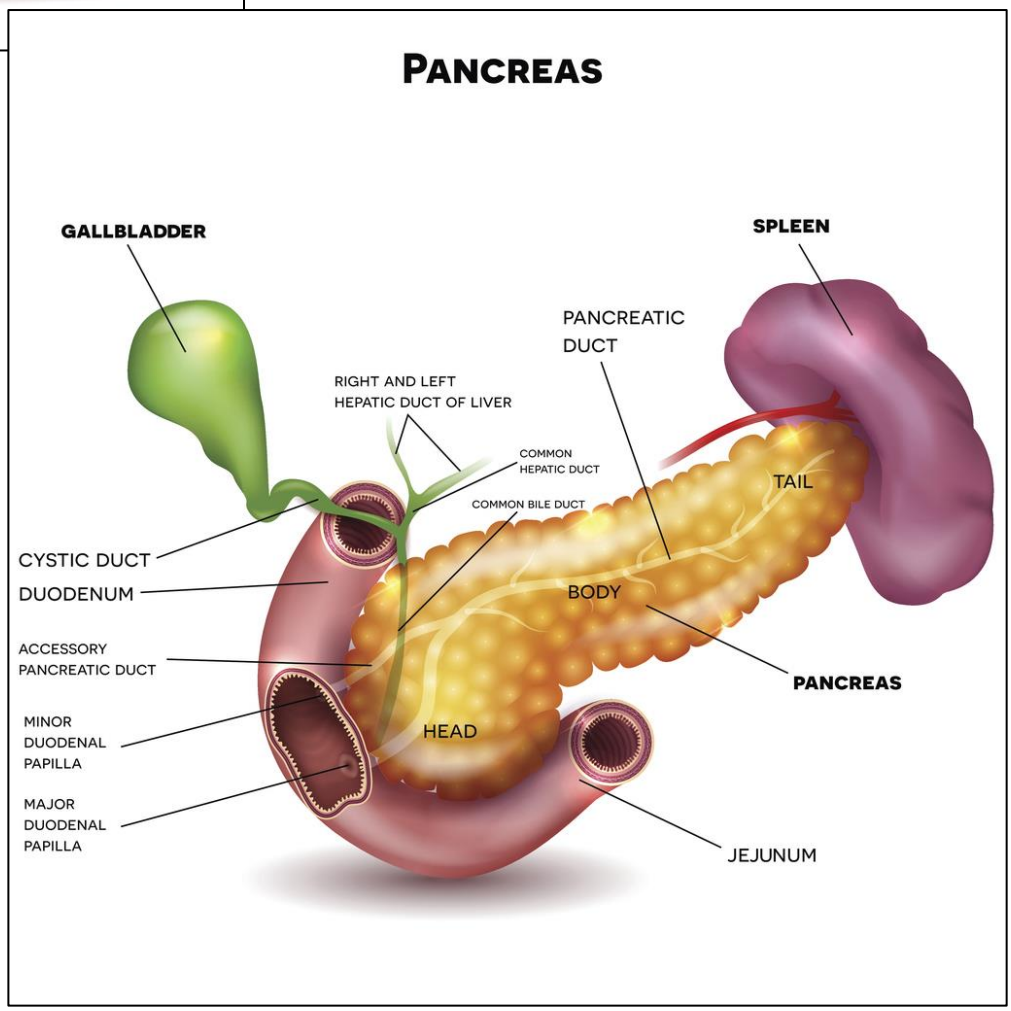
Dietician: An expert in nutrition, and the regulation of diet throughout the continuum of care.

Social Worker: A professional meant to support a patient and family through environmental problems associated with illness and/or disability by offering and referring appropriate resources.

Physical Therapist: A licensed professional with advanced education specializing in the preservation, enhancement of restoration of physical movement and endurance.

Anatomy


LIVER
RIGHT LOBE OF LIVER
LEFT LOBE OF LIVER
SPLEEN
RIGHT AND LEFT HEPATIC DUCT OF LIVER
GALLBLADDER
PANCREATIC DUCT
COMMON HEPATIC DUCT
TAIL
COMMON BILE DUCT
BODY
CYSTIC DUCT
NECK
DUODENUM
ACCESSORY PANCREATIC DUCT
HEAD
PANCREAS
MINOR DUODENAL PAPILLA
UNCINATE PROCESS
MAJOR DUODENAL PAPILLA
JEJUNUM


PANCREAS
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What is the pancreas and what does it do?

The pancreas is a gland in the digestive and endocrine system about 6 inches by 2 inches wide. The pancreas has 4 parts: head, neck, body and tail. It lies in the upper part of the abdomen and towards the back. The head and neck of the pancreas is attached intimately to the duodenum, which is the first portion of the small intestine. The bile duct travels through the head of the pancreas. The tail of the pancreas is adjacent to the spleen. There are several important arteries and veins that travel underneath the pancreas.

The pancreas has two main functions in the body. It is an endocrine gland, producing important hormones to keep your blood sugar balanced. It is also an exocrine gland that secretes pancreatic juice that passes to the small intestine. This contains digestive enzymes to help breakdown carbohydrates, protein, and fat in the first portion of the small intestine.

Pancreatic Cancer

With no effective screening for early detection, in most cases, diagnosis of pancreatic tumors depends of the symptoms the patients develop. Vague symptoms early in the disease, such as feeling full, no having an appetite and weight loss can have many causes and may be difficult to determine. Symptoms that are specific to the location of the tumor may present as jaundice (yellowing of the eyes and skin, dark brown urine, and clay colored stools). Some patients develop severe abdominal pain or back pain from the tumor as well.

Pancreatic Cancer is an aggressive cancer, which tends to spread to other organs and also comes back after surgery. Therefore, surgical resection alone is often note enough to treat the cancer. After you recover from surgery, most patients will need chemotherapy and radiation therapy. This will not be started until you are fully recovered, and no earlier than six weeks after surgery.

Am I eligible to have surgery?

Surgery is usually possible for cancer that is contained to the pancreas and has not spread throughout the abdomen or body. Tumors that involve major arteries may not be resectable, and tumors that involve major veins may or may not be resectable depending on the characteristics.

Some of the tests to diagnose and stage the tumor:

Endoscopy Retrograde Cholangiopancreatography (ERCP): This test combines an upper endoscopy and x-rays to view the pancreatic and bile ducts. These ducts may become blocked

when cancer is present. An ERCP allow a stent to be placed in the bile duct, to open it and allow bile to flow. This will help relieve the jaundice and itching from having a blockage.

Endoscopic Ultrasound (EUS): Similar to the endoscopy used in ERCP, but the tip of the scope has an ultrasound to provide detailed imaging of the pancreas. This test stages cancer based on the size of the tumor, the involvement of lymph nodes, and if the disease has spread. EUS can tell if any major arteries or veins are affected by the cancer, and a biopsy may be obtained.

CT scan with contrast of the chest, abdomen and pelvis: Provides views of the pancreas and surrounding organs to check for disease spread and blood vessel involvement.

MRI scan of the abdomen: An MRI scan uses radio waves and powerful magnets to take pictures. Similar to a CT scan, a special dye may be used to make the pictures clearer. An MRI may be used to clearly see the pancreas, nearby blood vessels, and very tiny tumors that other imaging may not see.

CA 19-9: This blood test measures a tumor marker found in most people with pancreatic cancer. Elevated levels can be occurring in individuals with pancreatic cancer, as well as other health problems. This test is not used to diagnose pancreatic cancer, but is used as an initial indicator, and to monitor how well cancer treatment is working.

Laparoscopy: At the start of surgery a laparoscope (small camera) is inserted into the abdomen to ensure there is no evidence that the cancer has spread to the liver or other sites in the abdomen. If there is no evidence the cancer has spread, the surgery would proceed as planned.

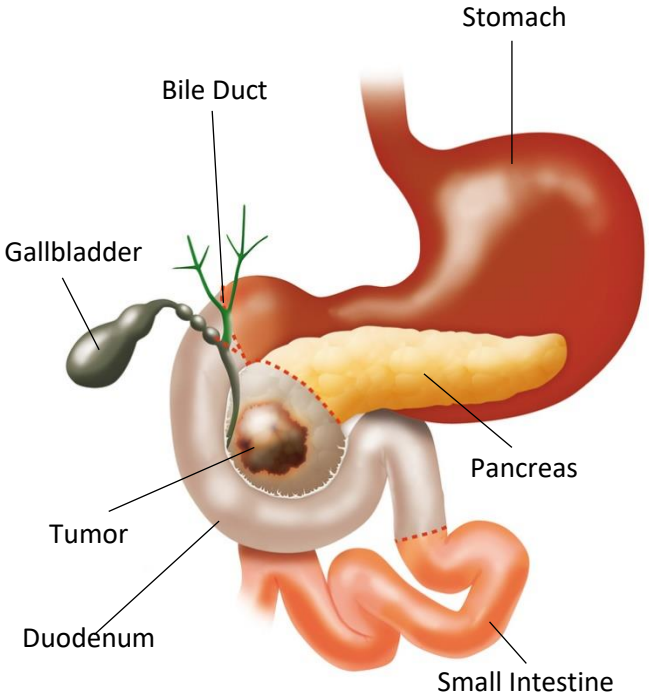
What is a Whipple (pancreaticoduodenectomy)?

A Whipple is the common name for a surgical procedure called a pancreaticoduodenectomy. A Whipple is the recommended treatment of pancreatic cancer in the head/neck of the pancreas. It is sometimes used as treatment for other cancer in the area of the head of the pancreas (bile duct and duodenal cancers). A Whipple involves removing the head of the pancreas, the first part of the small intestinal (duodenum), the common bile duct, the gallbladder, and sometimes a portion of the stomach.

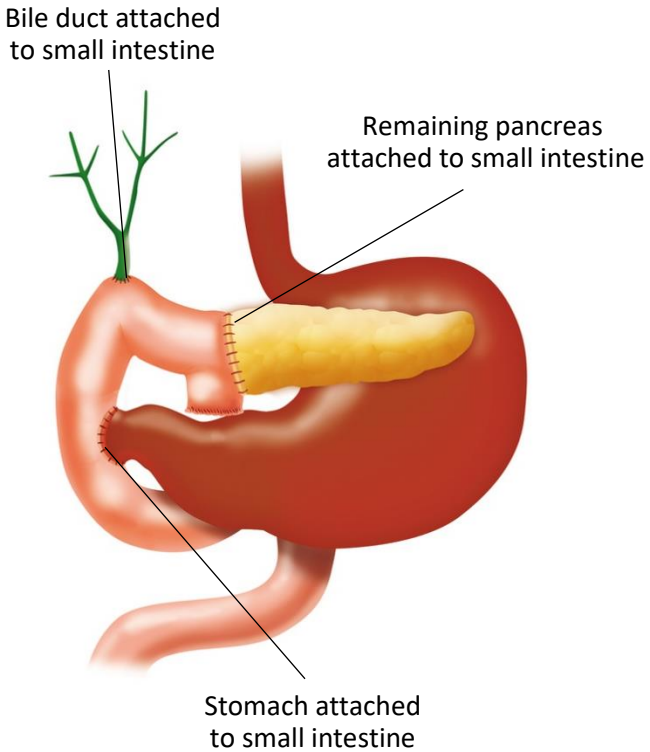
Following the removal of these structures, the digestive tract is reconstructed. This is done in three steps:

1. Connecting the remaining pancreas to the jejunum (the second part of the small intestine).
2. Connecting the stomach to the jejunum.
3. Connecting the end of the bile duct to the jejunum.

Before surgery



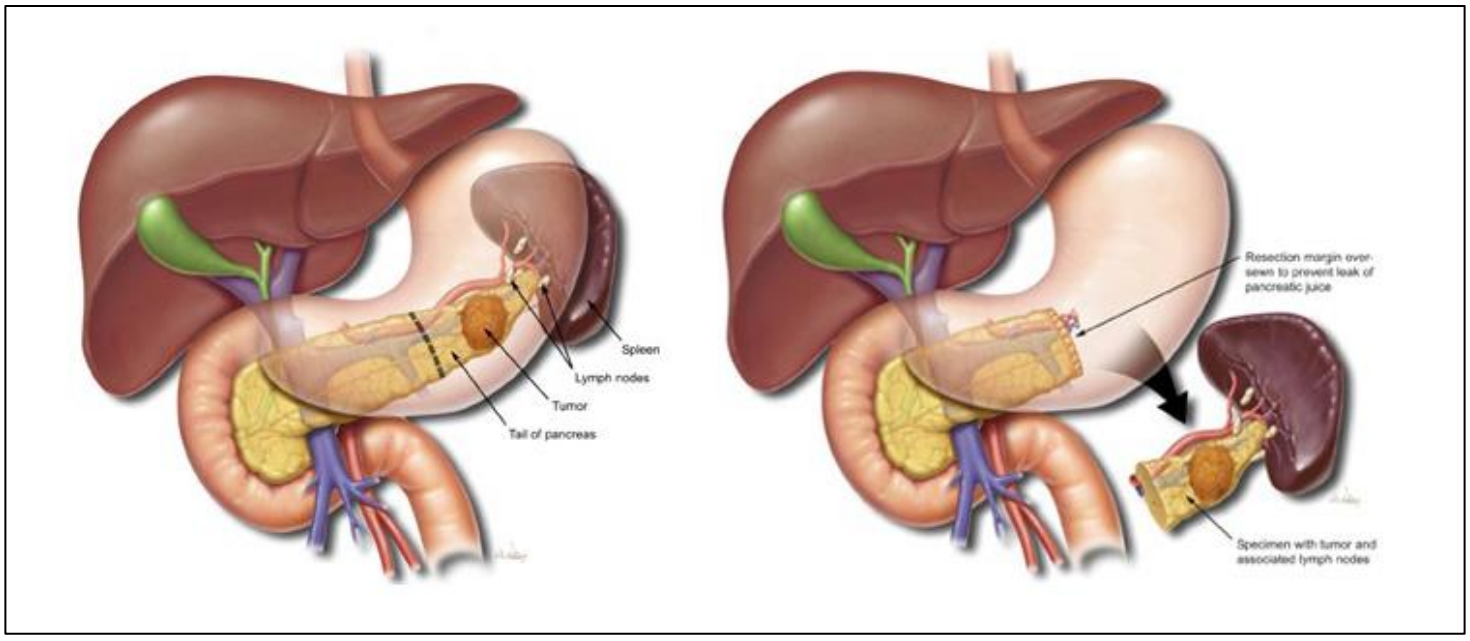
After surgery



What is the Distal Pancreatectomy?

Cancer in the body/tail of the pancreas is treated with a **distal pancreatectomy and splenectomy**. This involves removing the body/tail of the pancreas and the entire spleen. The artery and vein of the spleen are intimately attached to the pancreas in this location and therefore have to be removed with the cancer.

The risks of the operation include bleeding, infection and pancreatic fistula (the leakage of pancreatic juices). A drain is left at the time of surgery, and the fluid in the drain is tested before you leave the hospital to see if there is any leakage. If no pancreas juice is seen in the drain, it is removed before you leave the hospital. If there is pancreatic fluid in the drain, you may be discharged home with the drain as the pancreas heals, and the drain will be removed in the office.



Preparing for surgery

If these tests show that the cancer is removable, this means the operation is possible; further preparation can begin.

- Medical clearance is required for all patients. This allows the medical team to make recommendation to the surgical team about medications and safety measures for your hospital stay.

- Cardiologist clearance is required for any patients with a history of heart disease, diabetes or as recommended by your medical team.

- Lab work and EKG

- Detailed instructions on which medications to take leading up to the day of your surgery will be provided.

- Patients should stay active before surgery.

- Smoking should be decreased or stopped prior to surgery
- You will be given a liquid to drink in order to clean your colon prior to surgery; and then you will be instructed not to eat or drink after midnight before surgery.

What will the incision look like?

The incision is typically vertical in the upper portion of the abdomen. Occasionally a side-to-side incision below the ribs is used as well.

How will my pain be controlled?

Patient-Controlled Anesthesia Pump (PCA): Your pain will be controlled through a patient-controlled anesthesia (PCA) pump which is given either through the epidural in your back or an intravenous (IV) line in your arm. The anesthesiologist (pain doctor) will discuss the epidural with you in detail before your surgery. The pain medication will not completely relieve your pain, but it will bring your pain down to a level you can tolerate for sleeping, coughing, deep breathing, and walking with assistance. Please let your nurse or medical team know if your pain is not adequately controlled. The anesthesiologist or your medical team can make an adjustment to your PCA setting. Please remember that the PCA is only controlled by you, not anyone else. No one should push your PCA button while you are sleeping or any other time.

Intravenous (IV) Catheter: This is inserted into your arm or wrist in the pre-op holding area before going into the operating room. This will be done when you are awake. During and after surgery, you will get medications and hydration through this catheter.

Nasogastric Tube (NG tube): You may have an NG tube inserted through your nose to the stomach in the operating room while you are asleep. The tube will be connected to suction to remove gastric juice and air to allow your GI tract to rest and heal. The NG tube may be removed in 3-4 days depending on your recovery. While you have the NG tube, you will not be able to eat or drink anything by mouth.

Jackson-Pratt (JP): One or two JP drains may be placed during surgery. The JP drain is a plastic tube that exits out the skin and is sutured in place. This tube removes excess fluids in the abdomen to prevent an infection from the collection of fluid. The JP drain will be removed after the incisions have healed, usually before discharge from the hospital. Occasionally, you may take the JP drain home if there is leakage from the pancreas. The drain would then be removed in the office.

Foley Catheter: Will be placed in your bladder during surgery to drain urine from your bladder and help the medical team to measure your urine output. This is removed in 1-2 days after surgery. It will have to be kept in place longer if you have an epidural for pain control.

You may or may not have the following tube:

Feeding Jejunostomy tube (J-tube): The J-tube is a temporary tube that may be placed during surgery and exits out through the skin. The J-tube will be capped and flushed for possible tube feeding in case of nutrition and hydration are needed when you are not able to tolerate enough food or drink by mouth.

How long can I expect to stay in the hospital after surgery?

The average hospital stay is 7-10 days. But your overall stay will depend on how well you are recovering and to ensure there are no complications from the surgery. On the first day after surgery, you will be expected to perform important steps to aid in healing and prevent complications.

Take deep breaths: You should begin deep breathing as soon as you awake from anesthesia. These exercises help prevent pneumonia. An incentive spirometer (IS) breathing device will be given to you. You will need to use it 10 times per hour while you are awake. A respiratory technician or nursing staff member will show you how to do the deep breathing exercises and use the IS. Please do not worry about the breathing exercises when you are sleeping.

Get up out of bed: The first day after surgery expect to be assisted to sitting in a chair.

Walk 3 times a day: You will walk with a physical therapist or the nursing staff beginning the day after your operation.

Wear your TEDS/SCDs: After surgery, it is also important to realize that you will have thromboembolic deterrent (TED) stockings on your legs and intermittent sequential compression devices (SCDs) to help with blood circulation and prevent blood clots. The TED stockings should remain on all day (coming off twice a day for 20-60 minutes) and SCDs should remain on while in bed and at night.

Nutrition Guidelines after a Whipple Procedure

Immediately after surgery, you will not be allowed to eat or drink for about 3-5 days. You will be given only IV fluids. It is normal for bowel function to slow down or stop for a while after this type of surgery. Your healthcare team will be checking daily for signs that your bowel function has returned. These include bowel sounds, passing flatus (gas), and bowel movements. After your bowel function has returned, you will be allowed to have clear liquids such as eating Jell-O and broth. If you tolerate these foods, you may then try other soft, non-spicy foods until you can change back to your usual diet. Your dietitian will begin to work with you to help you with food choices during this time. It is common for patients to have less of an appetite or nausea immediately after surgery. If you are not able to eat enough by mouth, your doctor and dietitian may recommend using your jejunostomy tube (J-tube) for tube feedings if one was placed at the time of surgery. This is important to help your bowel function return to normal and also provide enough calories and protein for healing.

Some symptoms and side effects are more common than others after a Whipple. Most people have at least some of these symptoms and they can range from very mild to very bothersome. Your specific diet recommendations will need to be adjusted with the help of a dietitian to find foods that work best for you.

Nutrition related symptoms after a Whipple procedure may include:

Common

- Feeling full quickly
- Poor appetite
- Loose or fatty bowel movements

Less Common

- Delayed Gastric Emptying (continuous nausea or vomiting)
- Diabetes

You can manage these symptoms by eating at small, frequent meals throughout the day.

After surgery, most patients feel full after eating small amounts of food. To get the nutrition that you need, you should eat three small meals with three snacks in between. Your breakfast, lunch and dinner should be about half the size you were eating before the surgery. Using a salad plate for your meals can help determine your new meal size. Snack between meals are very important to make up for the smaller portions and lack of calories at mealtimes.

Choose foods for meals and snacks that provide a lot of calories and protein in a small portion. This is called calories or protein density. It is important to get enough protein in your diet to help with healing, fight off infection, build blood cells, and rebuild muscle. You should include protein at each meal and snack.

Examples of foods that have a high density of calories and protein are ice cream, yogurt, milk, cheese, peanut butter, eggs, and granola bars. Limit fried foods and tough meats.

At first you may have difficulty tolerating fatty foods such as fried foods, heavy sauces, and gravies. Choose meats that are tender and cooked with moist heat. Limit fatty foods to small amounts until you know whether or not you can eat them without feeling bloated or queasy after the meal.

High Protein/High Calorie Liquid Supplements

Milkshakes, Boost, Ensure, or other liquid supplements can help you increase the calories and protein in your diet without feeling as full. Liquids are usually well-tolerated and can be used to help maintain your weight and speed recovery. Calorie-free liquids (water, coffee, tea, sugar-free beverages) should be consumed in between meals and snack times.

Delayed Gastric Emptying

After surgery, you may find that you feel full quickly after eating only a small amount of food. This can be due to the decreased size of your stomach after surgery. This can be due to delayed or slowed gastric emptying also known as gastroparesis. This is a common side effect after Whipple Surgery.

Fluids are Very Important

It may work best to drink fluids between meals, instead of with meals, to reduce the feeling of fullness at meal times; however, it is VERY important to get enough fluids to prevent dehydration. Most people need to have between 6 and 8 cups of fluids each day. This includes anything that is liquid at room temperature. Keep a bottle of water or other fluid with you at all times as a reminder to take sips throughout the day. It is important to drink enough fluids during the weeks before your surgery and after your surgery. Thirst is not always the best

indicator of proper hydration so it is important to pay attention to the amount of fluids you are drinking. Any fluids (except alcohol) count towards your daily intake, so if you do not like water, other fluids like tea, coffee, and flavored beverages are okay. It is important to drink enough fluids before your surgery and after your surgery.

Important Reminders About Eating After a Whipple

- It is common to have a decreased appetite after surgery. This will return but you may never be able to eat the same amount that you did before and your appetite may not be as “hearty”.
- Eat frequent (5-8) small, high-protein meals/snack daily.
- It may take a few weeks or months to tolerate all the foods you were used to eating before. Trying a small amount of a variety of foods one at a time is the best way to know what works for you.
- Getting enough calories and protein with good nutrition is extremely important for your recovery. If you are not eating enough and you are instructed to use your feeding tube, it is very important that you do so.
- If your doctor prescribes pancreatic enzymes, it is very important that you take these as directed.
- Be sure to keep track of your fluid intake each day and make sure you are taking in enough to prevent dehydration. Keeping a daily journal of your diet after surgery can also help to determine which foods work best for you.
- Consider meeting with a dietician for ongoing nutritional support.

Examples of ways to increase calories:

Food	Suggested Uses
Eggs	Add chopped hard-boiled eggs to salads, vegetables and casseroles. Add extra eggs to: • Custards • Puddings • Quiches • Scrambled eggs • Omelets • Pancakes • French Toast
Cheese*	Melt on top of casseroles, potatoes, and vegetables. Add to omelets. Add to sandwiches.
Peanut Butter	Spread on graham crackers or toast
Milk*	Pour on hot or cold cereal Pour on chicken and fish while baking Mix in hamburger and meatloaf Make hot chocolate with milk

*May need to lower fat content if experiencing pancreatic insufficiency.
Note: Based on information from National Cancer Institute, 2011

Suggestions to cope with the stress of your upcoming surgery:

- Ask for information necessary to best prepare you for your surgery and plan ahead for your recovery.
- Continue any physical activity/exercise program.
- Having clear expectations of recovery time and needs will help reduce fear, frustration, and disappointment if setbacks or delays occur.
- Communicate your needs to your medical team. Every patient is an individual and you know yourself best. Information about your unique needs can be helpful to your team in making decisions about your care during your hospital stay and recovery.
- Ask for help and support from family, friends and others. Accept that you will have limitations and will likely need assistance when you return home-most patients do.

- Accept that sadness, anxiety, and fear are a normal part of your experience. If these feelings become stronger, continue, or interfere with your recovery seek professional help.
- Consider talking with your healthcare professional, or attending a support group.
- Having someone who cares and will listen to you can be very helpful.
- Get spiritual support through prayer, meditation, or whatever spiritual practice serves as a source of comfort for you. If you prefer to speak with a chaplain or someone in Pastoral Care, just let your nurse know and he or she will arrange a visit.

The Role of a Caregiver

As a caregiver, it is just as important for you to know about the patient's procedure and recovery as it is for the patient. In order to provide the best care to your loved one, it's also important for you to stay physically and emotionally healthy.

If you have any questions or concerns, please call our office.

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