

4. Diabetes - may occur when pancreas left behind does not produce enough hormones for adequate sugar control. For diabetic patients, drug dosage may be increased.
5. "Dumping syndrome" - can cause vomiting and loss of water with minerals if it occurs early and can lead to lack of sugar or "hypoglycaemia" if it occurs late.
6. Injury to nearby organs such as the stomach, liver, spleen and intestines.
7. Other complications or risks that may occur include allergy to anesthesia, antibiotics or contrast administered; bleeding during surgery or over the wound; infection of the wound, the lungs, the bladder, or the intravenous lines; blood clots in the legs or "Deep Vein Thrombosis"; chronic pain over the wound or surgical area; heart attack or "stroke", adhesions, hernia and so on.

What will happen after surgery?

- ◆ The patient is nursed in the ICU and cared for by ICU doctor/ anesthetist/ nurses. Patients will return to the normal ward after his/ her condition stabilizes after several days of observation in the ICU.
- ◆ Pain killers are given to the patient to control the pain after surgery.
- ◆ Patients are allowed to eat about 5 days after surgery, depending on the patient's condition
- ◆ Antibiotics may be given or continued if there are elements of infection.
- ◆ A urinary tube may be left in place temporarily.
- ◆ At least 2 temporary tube or "drain" is placed in the area of surgery which may be seen coming out of the body
- ◆ The wound is usually examined 3 days after surgery. Stitches may need to be removed (depending on the stitches used by the surgeon).
- ◆ The patient will be seen again at the clinic for follow-up after returning home. During follow up, further treatment such as chemotherapy will be discussed depending on the specimen which was removed.

When can I return to work or back to normal activities ?

- ◆ Patients who undergo pancreatic surgery will have to stay in hospital for at least 1 to 2 weeks for observation.
- ◆ Sick leave will be granted to patients who requires it.
- ◆ Patients who exercise actively can return to normal activity 2 to 3 months after surgery.

Other matters arising:

- ◆ Patients can be refer back to their surgeons shall there be any questions or queries. You can contact:
 1. Dr. Yoong Boon Koon
 2. Dr. Koh Peng Soon
 3. Dr. Koong Jun Kit
- ◆ The Hepato- Pancreatico- Biliary (HPB) surgical unit , UMMC is always willing assist patients at any time.
- ◆ The HPB Surgical Clinic is held every Monday starting 2 pm at: -

Tingkat 1,
Klinik Pembedahan,
Menara Utama,
Pusat Perubatan Universiti Malaya,
50603, Kuala Lumpur.
Tel : 03-79494422

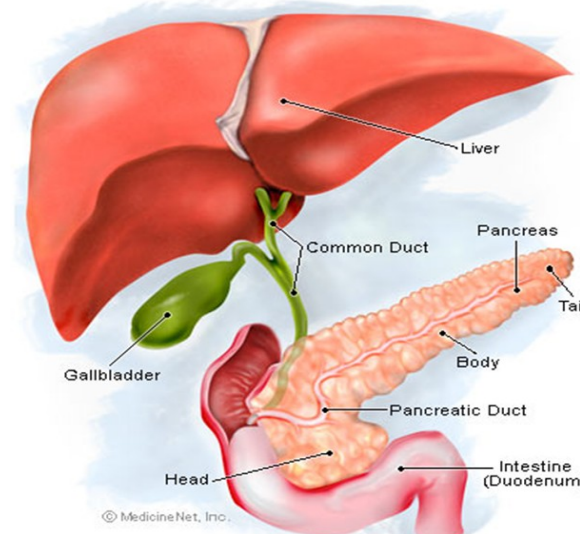
Disediakan Oleh

Hepato-Pancreato-Biliary (HPB), Jabatan Surgery
Tel : 79492639 / 4606

Sebarang Pertanyaan Sila Hubungi

Perkembangan Kejururawatan, Tingkat 8, Menara Utama
Pusat Perubatan Universiti Malaya, 59100 Kuala Lumpur
Tel : 03-79492376/ 2931/ 2798/ 2412

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PANCREATIC SURGERY

Patient Information

The pancreas:

The pancreas lies behind the stomach. It can be divided into four parts, namely the head, neck, body and tail. There are two main functions of the pancreas: -

- ◆ Exocrine function - responsible for producing the enzymes to digest food, such as carbohydrates, fats and proteins.
- ◆ Endocrine function - responsible for controlling sugar levels in the body by producing hormones such as insulin and glucagon.
- ◆ When the pancreas is diseased some of these functions will be affected. Its function could also be affected by removing part or the whole pancreas.

Pancreatic diseases that require surgery:

- ◆ Pancreatic surgery are frequently performed for cancer cases. Surgery can also be done for noncancerous cases.
- ◆ Cancer of the pancreas or pancreatic carcinoma - originates from the pancreas. It can occur in any part of the pancreas and the type of surgery depends on the affected area as well as the stage of the cancer.
- ◆ Cystic tumor of the pancreas - tumors that grow in the pancreas, which contains fluid. These tumors may or may not be cancerous. Surgery is recommended for tumors which are suspicious of being cancerous.
- ◆ Periampullary carcinoma - cancer that occurs in the area that joins the early small bowel (duodenum) with the bile duct and the pancreas
- ◆ Cancer of the bile duct or cholangiocarcinoma - may occur in the head of the pancreas - the type of surgery depends on the extent of the cancer.
- ◆ Pancreatic Surgery can also be offered to cases of non-cancerous conditions such as "chronic pancreatitis", "pancreatic pseudocyst" and so on, but other alternative treatments should be discussed with the patient prior to surgery so that the best treatment can be offered.

The purpose of pancreatic surgery:

- ◆ The main objective of pancreatic surgery is to cure pancreatic cancer. Without surgery, survival is less than a year.
- ◆ To provide symptomatic relieve from pancreatic diseases.

Matters to be considered before pancreatic surgery:

- ◆ Patients should understand that pancreatic surgery is a major surgery where the risk of death during and after surgery is expected to be around 5% and the risks of complications that may occur is approximately 30%.
- ◆ Intensive care unit (ICU) admission are required for the surgery. If there are no ICU beds, surgery will need to be postponed
- ◆ The patient's general health should be optimized and is not weak
- ◆ Bowel preparation - you may be given drugs that cause you to purge to cleanse the small and large intestine before the day of the surgery.
- ◆ Other diseases such as hypertension and diabetes should be well controlled before surgery.
- ◆ Patients who smoke should stop smoking several weeks before surgery
- ◆ Patients who are taking blood thinning medications should stop taking the medications several days before the day of surgery.
- ◆ Vaccines may be given before the surgery if the surgery involves removing the spleen or spleenectomy.
- ◆ Patients are encouraged to wear "TED stockings" and use "incentive spirometry".

Tests necessary before surgery:

- ◆ Blood test
- ◆ Radiological investigations such as "CT scan" or "MRI". "PET" scan if necessary.
- ◆ "Electrocardiogram (ECG)" and "Echocardiogram" - a referral to the Cardiology Unit may be required for certain cases.
- ◆ "Lung function test" - to assess the condition of the lungs.
- ◆ Earlier referral to the anesthetic doctor may be required for certain cases.

Types of pancreatic surgery performed:

- ◆ "Whipple's procedure" or "Pancreatoduodenectomy" -this surgery involves the removal of the head and neck of the pancreas where the tumor is located. The surgery also involves removal of the duodenum, part of the bile duct and part of the stomach. The surgery usually takes 5 to 8 hours.
- ◆ "Distal pancreatectomy" - This surgery involves the removal of the body and tail of the pancreas. Sometimes, the spleen may be removed too.
- ◆ "Triple Bypass" - this surgery is done when the pancreatic tumor could not be removed. The bile ducts and stomach will be joined to the small intestine in this surgery.
- ◆ Occasionally, the cancer is found to have spread extensively during surgery. Under these conditions, surgery would not be continued.

Complications or risks that may occur during and after surgery:

- ◆ Patients should understand that risks and complications can occur in any type of surgery especially in major surgeries such as pancreatic surgery.
- ◆ Complications in anesthesia. (will be discussed in detail by the anesthetic doctor)
- ◆ Complications or risks that may occur in pancreatic surgery includes: -
 1. Leakage of anastomosis or "Anastomotic leak" - the intestinal grafts to the stomach, bile duct or pancreas may have a leak. Further surgery may be required.
 2. Delayed stomach function or "delayed gastric emptying" - the patient will not be able to eat and will have vomiting if fed, as the function of the stomach has not returned to normal after surgery. Usually the function will return to normal in 5 to 7 days after surgery.
 3. "Pancreatic insufficiency" - may occur when the pancreas left behind after surgery does not produce enough enzymes to digest food. Patients may suffer from malnutrition, malabsorption and diarrhea. This may be overcome with medications such as Creon, which are pancreatic enzymes.