Department of Hepatobiliary and Pancreatic Surgery

About Pancreatic Surgery
A guide for patients and relatives
Introduction

This booklet has been written to provide information about the surgical procedures that are commonly performed for pancreatic disorders. These procedures are used in the management of several conditions involving the pancreas, such as benign pancreatic growths, pancreatic cancer, and pancreatitis (acute or chronic).

The majority of surgical procedures performed on the pancreas will involve resection (removal) of the portion that is affected.

The type of surgical operation for pancreatic tumours depends on the location of the tumour in the pancreas and on the type of the tumour.
What is the pancreas?

The pancreas is a gland that lies at the back of the upper abdomen, behind the stomach. It is shaped like a tadpole; the rounded head lies attached to the duodenum (a part of the intestine that forms the outlet of the stomach), while the body and tail extend across to the left side. The pancreas produces digestive juices and aids digestion of food. Pancreatic juice and bile mix with food in the intestine and help digestion. The pancreas also produces insulin which controls the level of sugar in the blood. Lack of insulin causes diabetes.

*The pancreas and its location in the body*
The operation to remove the head of the pancreas is called pancreaticoduodenectomy.

There are two types of pancreaticoduodenectomy: the Whipple’s procedure and the pylorus preserving pancreaticoduodenectomy (PPPD). Your surgeon will decide on whether to perform a Whipple’s or PPPD operation according to the type of tumour that you have and what is seen during your operation.

**Whipple’s procedure**

In the Whipple operation the head of the pancreas, lower quarter of the stomach, common bile duct, gallbladder, duodenum (first part of the intestines) and surrounding lymph nodes are removed. The remaining pancreas, bile duct and stomach are then rejoined to the small intestine (jejunum). This allows pancreatic juice, bile and food to flow back into the small intestine, so that digestion can proceed normally.

The operation normally takes 4-7 hours.

**Reconstruction following a classical Whipple’s procedure**
Pylorus-preserving pancreaticoduodenectomy (PPPD)

The PPPD is a variation of the original Whipple’s operation where the lower end of the stomach is not removed so that the valve (pylorus) which controls the flow of food from the stomach remains and continues to function. It is otherwise a very similar procedure with similar risks.
Distal pancreatectomy

If the problem is in the tail of the pancreas your surgeon will recommend an operation called distal pancreatectomy (removal of the tail of the pancreas). Occasionally this operation may also require removal of your spleen. This operation can often be performed laparoscopically (keyhole surgery) and this may be offered to you.

**Distal Pancreatectomy**
**Splenectomy**

Splenectomy is removal of the spleen. The spleen helps the body’s defense against some infections. Without a spleen your immunity to those bacteria is reduced. You will be given the following vaccinations to improve your immunity: Streptococcus pneumoniae, Haemophilus influenzae type B and Neisseria meningitidis. In addition, you will need to take an antibiotic every day (usually penicillin) on a long term basis to help prevent infection.

**Total pancreatectomy**

This operation involves the removal of the whole pancreas. It is essentially a combination of the pancreaticoduodenectomy and the distal pancreatectomy. You will become permanently diabetic following removal of the whole pancreas. You will be given more information about being diabetic and will also see a diabetic specialist nurse.

**In some cases, patients who were expected to undergo a Whipple’s procedure will undergo a total pancreatectomy. This is occasionally necessary if the tumour is more extensive than expected.**
**Bypass procedure**

If your surgery is for suspected cancer, the tests that you have had indicate that the cancer is localised and has not spread. At the time of surgery, your surgeon may find that it is not possible or advisable to remove the growth. Such a situation arises in 1 in 10-15 cases (7-10%). This may be because the tumour has spread to another location like the liver. It could also be because the tumour has grown beyond the pancreas and become fixed to important blood vessels close by. In these circumstances your surgeon will not remove the tumour and may carry out a bypass procedure, so that future blockage of the bile duct or stomach is prevented. This is done with a ‘y’ shaped bowel reconstruction called a Roux Loop.

**Roux en Y bypass procedure**

![Diagram of Roux en Y bypass procedure](image)
What are the benefits of surgery?

Without surgery, the average survival of patients with pancreatic cancer is less than one year, and very few survive more than 2 years. The operation aims to completely remove the cancerous growth, and give the best chance of curing the problem. The chance of the cancer recurring depends on the type of tumour that you have. A successful operation can improve your chance of cure to 10%- 50%. This will only be accurately known after the operation, when the pathologist examines the removed pancreas. Your surgeon will receive the full pathology report 2-3 weeks after surgery.

What alternative treatments are available?

Chemotherapy may be able to shrink the cancer or delay its growth. If the tumour has not spread, but cannot be removed surgically because it is extending to nearby structures, then you may be advised a combination of chemotherapy and radiotherapy. However, no treatment other than surgery is able to cure this problem.

What anaesthetic will I have?

Our usual anaesthetic technique for pancreatic surgery is a combination of general and epidural anaesthesia. You are put completely to sleep, and a tube is put into your windpipe, so it is not uncommon to get a sore throat after the operation.

The epidural is a way of blocking the spinal cord nerves that supply the area of the operation. An epidural is a fine tube which your anaesthetist will place in your back before you are put to sleep with the general anaesthetic. It remains in place for 3-5 days after the operation. The tube is very fine, so that you can lie on your back. A local anaesthetic will be applied before the tube is put in.
The epidural helps you to breathe deeply, which would be difficult to do if you were in a lot of pain. You will also be able to sit and move around. The epidural is very safe; the chance of any permanent nerve damage is very rare, less than 1 in 10,000.

We will give you a PCEA (patient-controlled epidural analgesia) button to control the amount of painkiller that you get. You can press the button whenever you need more pain relief, and a pump will deliver it into the epidural. The pump is designed to prevent an overdose, so for a few minutes after you have pressed the button it will not deliver another dose.

The team at the pre-assessment clinic can guide you and help with any questions that you have. You will also have a chance to meet the anaesthetist on the day of the operation and also ask them any questions you might have.

Some patients may need to be monitored in the Intensive Care Unit after surgery. Before we would be able to proceed with the operation we would first need to confirm that a bed will be available in this Unit.

What are the risks and possible complications?

Pancreatic operations are major procedures, with associated risks and complications. Nowadays the operation has become much safer. This is mainly as a result of pancreatic surgery being carried out by a smaller number of surgeons who have more experience in this type of surgery. At Oxford, over 70 pancreatic resections are performed annually, with less than 2.5% mortality.

If you have other medical problems, your risks may be higher than average. Complications following pancreatic surgery occur in 20-50% of patients but the team at Oxford is well equipped and experienced in managing these complications. Possible complications include:

- Those related to general anaesthesia and the epidural
- Chest infection and problems with breathing
• Bleeding, which may result in blood transfusion
• Wound infection
• Blood clots forming in the legs.
• **Anastomotic leak** (1 in 8-10 patients): After the tumour is removed, the cut ends of the pancreas, bile duct and stomach are sewn to the intestine. In some patients, pancreatic juice or bile can leak into the abdomen (space around the organs). Your surgeon will leave a drain tube in the abdomen, in order to identify and remove any leaked fluid. In most patients who develop leakage after the surgery, the leakage heals on its own. Sometimes patients need a further operation, and the entire pancreas may then need to be removed. Patients who develop a leak need a much longer time than usual to recover.

• **Delayed emptying of the stomach** (1 in 10 patients): After the surgery, you will not be allowed to eat until your bowel function has returned. This usually takes 6-7 days. In some patients, the stomach may take longer to recover after surgery. During this period, they may not be able to tolerate food well and may need to receive nutrition via a feeding tube or intravenously (into a vein) for several weeks.

**What are long-term consequences of the operation?**

• **Malabsorption**: The pancreas produces enzymes which help digest food. Removal of part of the pancreas decreases production of these enzymes. This can result in poor digestion of food, causing loose stools which are greasy and pale.

You will need long-term treatment with pancreatic enzyme capsules and will be prescribed Creon capsules to be taken just before food. The usual dose is 25,000 units with snacks and 50,000 units with meals. You can vary the dose of enzyme that you take from one day to the next, depending on your diet. Foods that contain a large amount of fat will need more
Creon. The dose of Creon can be increased if your stools remain loose and greasy.

You will meet a dietician on the ward, who will guide you. Please see our information booklet “A guide to eating and pancreatic enzyme supplements” for more details.

- **Loss of weight**: It is common for patients to lose weight both before and after surgery. We would expect you to start regaining some of the lost weight 2-3 months after surgery.

- **Alteration in diet**: Though there are no specific restrictions to what you can eat, you may find your physical ability to eat is restricted. You may need to have small meals and snack between meals to minimise symptoms of bloating or discomfort. It will take several months for your ability to eat to return to normal. It is advisable to avoid drinking alcohol for the first few months after surgery.

- **Diabetes**: The pancreas produces insulin which controls blood sugar. In our experience, patients who are not diabetic before surgery are unlikely to develop diabetes after having half their pancreas removed. Patients who are diabetic before surgery are likely to need additional diabetic medication or insulin after surgery.

### How do I prepare for surgery?

Try to stop smoking as soon as possible, in order to reduce the risk of any breathing problems during and after the operation. You will also need to plan for any additional help you may need at home whilst recovering, particularly if you live alone. You will be invited to attend the pre-assessment clinic at the John Radcliffe Hospital before the operation. Please bring a list of your medication with you to the hospital. During this appointment our team will give you further instructions and explain what you can expect during your admission.
What happens after the operation?

After spending some time in the recovery area of the operating suite, you will return to the ward. The nursing staff will monitor your progress and administer painkillers. You will be on intravenous drips to give you fluids and certain drugs and you will not be allowed to eat for the first 4-5 days. You will have a urine catheter in your bladder, a tube in your nose going to your stomach, and an abdominal drain. After 4-5 days, these tubes will be removed once we are confident that you are making a good recovery and there is no evidence of internal leakage. It is important that you get out of bed and move about as soon as possible. Our physiotherapist will assist you with breathing exercises, which are important in order to prevent a chest infection.

How long will I be in hospital after the operation?

Most patients are able to go home 7-14 days after the operation. The ward nurses will give you painkillers to take at home as needed, and arrange a follow up visit at the surgical out-patient clinic. You will also be prescribed an injection to take once a day to thin your blood and reduce the risk of blood clots forming in your leg veins.

When can I return to normal activities?

On your return home, you will find movements and activity difficult for the first few weeks. You may also feel low in mood, but this will resolve shortly. It is important to keep as active as possible, but also to rest. You will need 2-3 months to return to normal activities. There are usually no restrictions on activities after that time.
Will I require any further treatment or follow up?

In some cases, the survival rate for patients with pancreatic cancer can be improved by having chemotherapy. We will discuss the option of having chemotherapy with you and you may be referred to the oncologist, a cancer chemotherapy specialist, at your local hospital.

You are likely to need continued monitoring for a few years, in order to monitor for any recurrence of the cancer or pancreatitis. Routine scans are presently not advised, but are performed if there is any evidence of a problem. Follow up may be shared between the surgeons at Oxford and your oncologist at your local hospital, so that the need for trips to Oxford is minimised.

When should I call my doctor after surgery?

Call your doctor if you:

- Develop a fever
- Develop an unusual degree of pain
- Develop nausea, vomiting or diarrhoea, or cannot eat properly
- Become jaundiced (yellow eyes, dark urine)
- Your scar becomes red and painful, or has a smelly discharge.
For further information:

- www.cancerbacup.org.uk  
  Tel: 0800 181 199

- www.pancreaticcancer.org.uk  
  Tel: 0203 535 7099

- National Cancer Information Service  
  Tel: 0207 613 2121

- Cancer Information Centre (Churchill Hospital)  
  Tel: 01865 225 688

Useful contact numbers:

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<thead>
<tr>
<th>Service</th>
<th>Phone Number</th>
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<tbody>
<tr>
<td>John Radcliffe Hospital</td>
<td>01865 741 166</td>
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<tr>
<td>Churchill Hospital</td>
<td>01865 741 841</td>
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<tr>
<td>HPB (Hepatobiliary and Pancreatic) Unit</td>
<td>01865 235 668</td>
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<tr>
<td>Secretary</td>
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<td>Cancer Nurse Specialists</td>
<td>01865 235 130</td>
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<td>or call the Churchill hospital and ask for bleep 1386/1891</td>
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<tr>
<td>Pre-assessment clinic at John Radcliffe</td>
<td>01865 857 635</td>
</tr>
<tr>
<td>Oxford Upper GI Ward at Churchill</td>
<td>01865 235 061</td>
</tr>
<tr>
<td>Intensive care unit at Churchill</td>
<td>01865 235 084</td>
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If you have a specific requirement, need an interpreter, a document in Easy Read, another language, large print, Braille or audio version, please call 01865 221 473 or email PALSJR@ouh.nhs.uk

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