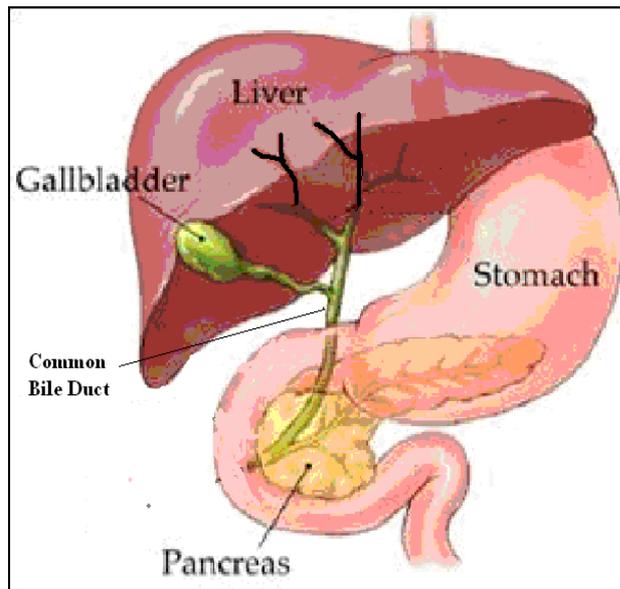


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BILIARY RECONSTRUCTION

*THIS INFORMATION REFLECTS THE PERSONAL PRACTICE OF DR KELLEE SLATER ONLY
AND DOES NOT SUBSTITUTE FOR DISCUSSION WITH YOUR SURGEON.*

WHAT IS MY BILE DUCT AND WHY IS IT SO IMPORTANT?



The normal appearance of the bile duct and gallbladder

The bile duct is the pipe about 5-10mm in diameter that carries bile from the liver into the bowel. Bile is made 24 hours a day in the liver and its job is to break up the fat in the food we eat. The gallbladder is a storage tank for bile and puts extra bile into the system when a fatty meal comes along.

The bile duct might be blocked or damaged in some way for many reasons.

The most common reasons for an obstruction of the bile duct to occur are:

1. Cancer of the pancreas and bile duct
2. Long term damage from gallstones being lodged in the bile duct.
3. Inflammation from diseases such as Primary Sclerosing Cholangitis
4. Narrowing due to external compression of the bile duct e.g. chronic pancreatitis or lymphoma

If you have cancer, you might need major surgery that removes all the tissue in the area. If however you do not have cancer or if you have cancer that cannot be removed, you may require an operation called a **Biliary Reconstruction**.

This information booklet focuses on patients who do not have cancer and are having their bile duct removed or rebuilt for other reasons.

WHAT SYMPTOMS WILL I HAVE IF THERE IS A PROBLEM WITH MY BILE DUCT?

Patients who have a blockage of the bile duct most often will notice a yellowing of the skin and the whites of the eyes. Frequently your family may comment on it before you notice. There is often no pain. Other symptoms you might notice are:

- severe itch
- dark urine – like tea
- pale or white bowel movements
- fever or shivers and shakes
- pain in the upper right abdomen

If the blockage is just on one side of the liver then jaundice will not occur. Jaundice develops when there is a blockage of both side of the liver or the main bile duct and bile cannot flow out of the liver. The bile is then forced into the bloodstream and this gives the characteristic yellow colour of the skin. Bile is very important in the bowel to help absorb the fat we eat.

WHAT TESTS WILL I HAVE DONE IF A NARROWING OF THE BILE DUCT IS SUSPECTED?

Because the most common cause of a narrowing of the bile duct is cancer, an extensive work up will be done. Figuring out the cause of the obstruction can be very complicated and frustrating. The bile duct is in a very important part of the body surrounded by other vital organs. There is no single test to figure out the exact problem. Determining whether cancer is present can be very difficult and sometimes not possible without surgery. Occasionally even with surgery, it may not be possible to determine the presence of cancer.

1. Blood Tests

Liver function tests may show jaundice and tests called tumour markers (CEA, Ca19.9) may give a hint as to the problem you have.

2. CT scan of the abdomen

This will help look for cancer or pancreatitis. It will also help to figure out the anatomy of the liver.

3. Endoscopic Ultrasound

This is a special telescope that is inserted via your mouth into the stomach. There is an ultrasound on the end of the scope and it can look through the wall of the bowel to the bile duct. Biopsies can be taken of the area with a fine needle. You are placed under anaesthesia for this procedure.

4. ERCP – Endoscopic Retrograde Cholangiopancreatography

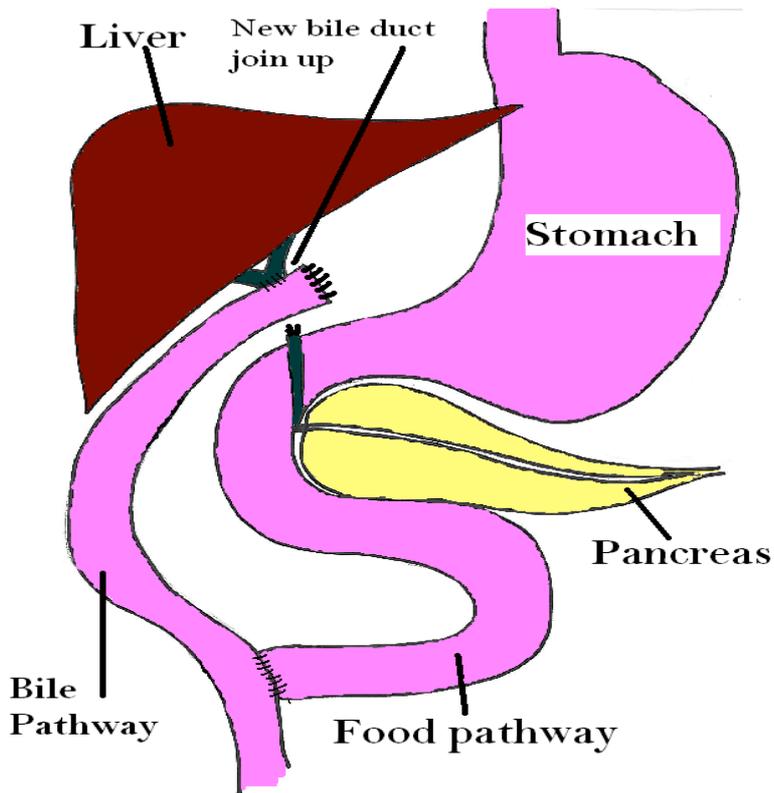
ERCP gives an X-ray picture of the bile duct. It can tell if the problem causing a narrowing of the bile ducts is stones or not. If it is not stones, then it will reveal a tight narrowing of the bile duct. The Gastroenterologist doing the test can get some idea whether the narrowing looks like cancer or not based on this test. Your jaundice can be relieved by this test by placing a plastic tube in the bile duct to bridge the narrowing. The stent tube is temporary and will be removed several weeks later. Sometimes a longer term stent will be placed. ERCP is done under a light anaesthetic by a skilled gastroenterologist. A flexible telescope is inserted via the mouth into the stomach. It is not performed in every patient and has some serious risks including pancreatitis, perforation of the bowel and bleeding.

5. MRI

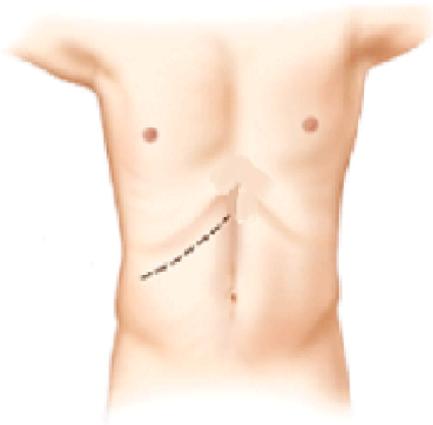
MRI is a type of X-ray that is very useful and will give the same information as an ERCP without the risks. The disadvantage is that it does not treat the problem.

WHAT IS A BILIARY RECONSTRUCTION?

This operation is performed when the bile duct outside the liver is not working well. An ingenious procedure call Roux-en-Y (roo-en-Y) is performed, where a piece of bowel is brought up and stitched onto the cut end of the bile duct above the blockage. Depending on where the problem with the bile duct is, there may be multiple bile ducts to sew onto the bowel. (See picture) It is common to place a small piece of plastic drainage tubing inside the bile duct to hold them open. These plastic tubes usually pass without event in the bowel motions. Rarely patient's will require a small operation to remove them.



This is how your bile duct will drain after a reconstruction for bile duct injury. A piece of bowel is sewn onto the bile duct.



This is the likely incision you will have after a biliary reconstruction.

ARE THERE ANY ALTERNATIVES TO BILIARY RECONSTRUCTION?

A biliary reconstruction is a major operation. Sometimes it is the only solution the problem. Sometimes however, we will make an attempt to place a plastic tube via ERCP across the blockage and stent the problem long term. This stent will require changing every six months. If you have cancer, it will not need changing at all. For non cancerous conditions, the stent may stretch open the blockage and you will not have to undergo surgery at all. This can very long process over a number of years and is not suitable for everyone. Even though surgery seems daunting, it can often be the only way to draw a line under the problem permanently.

Stents can block and cause recurrence of pain, fever and jaundice. If this happens when you have a stent in, you have to come to the hospital as soon as possible for treatment.

WHAT TO EXPECT IMMEDIATELY AFTER SURGERY

Pain Relief

On the first day after surgery, there may be a moderate amount of discomfort at the site of the operation.

You will be provided with suitable pain relief. This is likely to be:

- Patient Controlled Analgesia (PCA) and a “Pain buster” - a button you will press that results in strong pain killers (like morphine) running straight into your IV line. This is combined with a tiny catheter placed in the wound that delivers local anaesthetic. These devices are very safe and have locking mechanisms to prevent overdose.

IT IS VERY IMPORTANT THAT YOUR RELATIVES DO NOT PUSH THE PAIN BUTTON FOR YOU AS THIS WILL RESULT IN AN OVERDOSE OF MEDICATION THAT MAY STOP YOU BREATHING.

Every effort will be made to minimize the discomfort and make it bearable. Your nurses will be monitoring your level of pain frequently.

When you start eating, you will be converted to oral pain relief.

Drain tubes

You will have a number of plastic tubes coming out of your body following surgery. They will vary a little depending on your particular medical need. They will be removed at variable times following your surgery under our direct supervision.

1. **IV line:** In your arm and in your neck (placed under anaesthesia) to give you fluids and pain relief.
2. **Urinary catheter:** tube placed in your bladder so you don't have to get up to pass urine.
3. **Abdominal drain tubes:** one or two soft plastic drains coming out of your abdomen that are placed along the cut surface of your liver to drain blood or bile so it does not collect in your abdomen.
4. **Stomach tube:** you may wake up with a tube in your nose that goes into your stomach to stop vomiting. This will usually be removed a day or two after surgery.

Eating

You will not have anything to eat or drink for the 1 – 2 days after surgery. An intravenous infusion will provide you with the necessary fluids.

We will let you know when you will be able to eat.

It is very common that you will lose your ability to taste food. This will return in the first month after surgery.

It is normal to have a sore throat for a few days after the surgery.

People who drink more than two cups of coffee a day may notice a caffeine withdrawal headache and irritability a few days after surgery.

Urinating/Bowel Movements

For the first few days, there will be a catheter in your bladder so you will not have to get up and pass urine. You will probably not have a bowel movement for several days after the surgery. Your bowels will eventually work, even though you haven't eaten much.

Activity

You can expect your nurse and physiotherapist to help you to get out of your bed on the first day after surgery. You will be able to walk short distances even with all of the tubes and intravenous lines.

As each day passes your tolerance for walking and sitting in a chair out of bed will increase. This is extremely important to prevent pneumonia, clots in the legs and loss of general condition.

Your Incision

You can expect to have a waterproof dressing over your incision for the first 5 days. We will remove the dressing at the appropriate time. You will be able to shower with the waterproof dressing on. It is quite common to have a small amount of leakage from the wound. Usually there will be no stitches to remove. They will dissolve.

Other Medications and Preventative Measures

You will be given a blood thinner once or twice a day as a small injection under the skin. This helps to prevent clots in the legs or deep venous thrombosis (DVT) that may travel to the lungs and be life-threatening. If you are in a high risk group for DVT, you may be sent home with this injection for several weeks after surgery. You or a family member will be taught how to give the injections.

You will be asked to wear TED stockings throughout your hospital stay. These help prevent clots in the legs. You may discontinue these when you are able to get up and walk easily by yourself.

In many instances you will be given a medication to decrease the acid secretions in the stomach. This prevents stomach ulcers that may occur after major surgery.

A physiotherapist will see you daily whilst in the hospital. You will be shown breathing exercises and be given a breathing device (Triflow) to help to expand your lungs and prevent pneumonia.

You must not smoke at all.

After surgery, alcohol should be avoided for at least one month to give your liver the best possible chance to be healthy.

Other Important Information

You can expect to see your primary surgeon every week day. On weekends or at times when your surgeon is operating elsewhere, you will see one of the practice partners. All are very experienced in this type of surgery and commonly assist each other in the operating theatre.

We will make every effort to keep you informed of your progress. We will always be honest and open with you and your family. Feel free to ask questions.

Length of Stay in Hospital

On average most patients will expect a 1 – 2 week hospital stay after the repair of a bile duct injury. This time can differ greatly for individual patients and individual operations. Some people go home faster than other and others stay much, much longer. You will not be discharged before you can walk unaided and care for yourself.

WHAT ARE THE COMPLICATIONS THAT MAY HAPPEN IMMEDIATELY AFTER A BILIARY RECONSTRUCTION?

Bile duct problems can be a challenging problem to fix but the majority of patients do very well. Usually only one operation is required but occasionally it may take several operations to mend the bile duct. This list of complications is not meant to frighten you, even though it seems scary.

The most serious and specific complications that may be seen after a bile duct and the operation to repair it include:

Bile leak

This is usually obvious in the soft drain that is left in your abdomen after the repair operation. Because we are placing many fine stitches in the bile duct, bile can leak around the stitch holes. This usually heals itself. If the bile leak is large in volume or becomes infected, you may require further surgery or drainage in the x-ray department.

Bleeding

This can happen to anyone having surgery. Bleeding require a blood transfusion. It is uncommon to have to return to theatre post repair for bleeding but this certainly may occur. The chances of acquiring a viral disease such as Hepatitis B, C or HIV via blood transfusion are exceptionally low.

There is a terrible bleeding problem that may occur after bile duct surgery called 'haemobilia'. This is where inflammation causes an artery to attach itself to the bile duct, resulting in bleeding into the bile duct. This problem can most often be fixed with special x-ray techniques and is very rare.

Infection

Bile duct surgery may result in infected bile collecting around the liver, liver abscess and wound infection.

Other immediate complications of bile duct surgery

Like all major surgery there are a number of serious complications that may occur. These must be dealt with on a case-by-case basis. Some of these complications are:

- Death: this is rare but does occur after biliary reconstruction.
- Infections: wound, pneumonia, urine, intra-abdominal, IV line related.
- Punctured lung secondary to the IV line in your neck.
- Clots in the legs that may travel to the lungs – deep venous thrombosis and pulmonary embolus. This may be fatal.
- Stomach ulcer that may bleed: this may present as a vomit of blood or black bowel motions.
- Urinary catheter complications: unable to pass urine after the catheter is removed especially in men.

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- Permanent or temporary damage to nerves in the arms, legs and neck due to prolonged immobilization of the operating table. This may result in loss of feeling or movement.
 - Wound pain and prolonged numbness under the wound.
 - Hernia of the wound.
 - Bowel obstruction due to internal hernia or adhesions and this risk is lifelong.

WHAT ARE THE LONG-TERM COMPLICATIONS AFTER BILIARY RECONSTRUCTION?

Once the recovery process is complete, there are very few long-term complications. Most complaints relate to some pain around the wound, numbness and occasionally hernias.

Narrowing of the bile duct

Patients having a biliary reconstruction may develop a narrowing of the new join up between the bile duct and bowel. This occurs in 20-30% of patients who have had a bile duct injury. This is because the blood supply of the bile ducts at the time of injury can be poor and this causes severe scarring. The cut bile duct can also be very small resulting in a very difficult join up. Narrowing of the duct will usually occur in the first year and may present as altered blood tests, jaundice or fever. The solution to this problem is to put drain tubes through the skin into the blocked bile duct. You will then require further surgery to correct the problem.

Loss of weight

It is common for patients to lose up to 5% of their body weight after this type of surgery. The weight will be gained back within 6 months.

AFTER DISCHARGE

Going home

You will not be sent home until you are walking unaided and able to care for yourself. You may need to have help at home preparing meals and cleaning because you will be tired for a few weeks. This is a time to rely heavily on family and friends and it is a good idea to have someone at home with you for the first week or two.

Your medications

We will tell you which medications you should take at home. If needed, you will go home with a prescription for pain medicine to take by mouth. It is also common to leave with a medication to prevent stomach ulcers.

Your incision

Your dressing will be removed before you leave the hospital and if it is not leaking it will be left open to the air. You may wear loose clothing over the top of it.

Your incision may be slightly red along the cut. This is normal. If there is spreading redness or a new painful or uneven bulge appears, this is not normal and you should contact the rooms as soon as possible.

You may see a small amount of clear or light red fluid staining your dressing or clothes. If it is minor cover that part of the incision with a pad. If leaking is severe, or if it is pus, you should contact the rooms.

You may gently wash dried material off from around your incision. Use a towel to pat your wound dry. Do not rub soap, talc or moisturizer into your incision until at least 4 weeks or until it is fully healed.

You may rub vitamin E cream onto the incision after it is fully healed.

It is normal to feel a ridge along the incision. This will go away.

It is normal to have a patch of numbness under the wound. This will not go away, but you will stop noticing it.

Over the next few months your incision will fade and become less prominent.

Your deep muscle layers are sewn together with nylon stitches that do not dissolve. If you are thin, you may feel the knotted end of one of these stitches under your wound. This is harmless. If it annoys you, it can be easily removed at some time after your surgery. Occasionally a stitch may poke out of your wound. This is quite safe. If it bothers you, you may snip it off with a pair of scissors. Otherwise it will disappear about 8 weeks after the surgery.

Passing drain tubes in a bowel motion

During surgery, we may place several soft pieces of plastic tubing to hold open your bile duct. These may pass with your bowel motion at any time after your surgery. It is usual not to notice them. If you do see them in the toilet, it is completely normal. DO NOT retrieve them from the toilet bowl and you DO NOT have to call and let us know they have passed. When these tubes are still inside you they will be seen on an X-ray. It is possible that some tubes remain in the bile duct and do not pass spontaneously. If they do not pass, we sometimes need to remove them with further surgery.

How you may feel

You may feel weak or "washed out" when you go home. You might want to nap often. Even simple tasks may exhaust you.

You might have trouble concentrating or difficulty sleeping. You might feel depressed.

These feelings are usually transient and can be expected to resolve in about 6 – 8 weeks.

Some people have difficulty coming to terms with this very unexpected outcome. It can result in a loss of confidence and a feeling of loss of control. Please talk to us if you feel like this.

Activity

Do not drive until you have stopped taking strong pain medication and feel you could respond in an emergency.

It is normal to not be able to lie on your right side for several weeks after the operation.

You may climb stairs and raise your arms above your head.

You may go outside, but avoid traveling long distances until you ask us about it at your next visit.

Do not lift more than 10 kg for 6 weeks. (This is about the weight of a briefcase or a bag of groceries). This applies to lifting children, but they may sit on your lap.

You may start some light exercise when you feel comfortable.

You may swim after 4 weeks.

Heavy exercise may be started after 6 weeks - but use common sense and go slowly at first.

You may resume sexual activity when you feel ready unless I have told you otherwise.

WHAT CAN MY FAMILY DO TO MAKE THIS EASIER FOR ME?

Income Protection Insurance and Centre link

If you have income protection insurance, start doing the paperwork required to claim as early as possible. Centre link claims take time to process. It is difficult to recover well when you are worried about finances.

Family

This is the time to rely on family and friends for support. If you receive offers of home cooked meals and household help, accept them happily. That way you can concentrate on getting better.

WHAT DO I DO TO PREPARE FOR AN ARRANGED OPERATION?

Fasting

You must have nothing to eat or drink for six hours prior to surgery. (You may take sips of water up until 2 hours before the operation and you may take your medications with a sip of water). You must not chew gum or smoke on the day of the operation.

Medications

- If you are on blood thinners such as Aspirin, Warfarin, Plavix, Iscover, Clopidogrel, Pradaxa, Dabigatran, Rivaroxaban, Xarelto or anti-inflammatory drugs (Brufen, Mobic, Voltaren, etc), they can cause bleeding during surgery. We will advise you about what to do with these drugs prior to surgery. You must let us know about these drugs and the decision to stop them is based on each individual patient's needs.
- Diabetic medications: we will give you advice on whether to take your diabetic medications on the morning of surgery or not. Some diabetics will be admitted the night before the operation.
- If you are on Prednisone, you should not stop this drug suddenly.
- Cholesterol lowering medication should not be taken when you are fasting.
- If you are taking any alternative medications e.g. St John's Wort, fish oil or garlic, you should stop these tablets one week before surgery as they may result in excess bleeding.
- You may continue to take a multivitamin.
- Continue to take all other medications, even on the morning of surgery with a small sip of water.

Other things to know

- You must bring all relevant x-rays to the hospital with you.
- If you smoke, it is in your best interests to stop completely as soon as you can. See your GP for alternatives or call Quitline (131848) if you wish to seek advice.
- You should also abstain from drinking alcohol 24 hours prior to any surgery.
- Bring all your current medications with you to the hospital.
- Bring comfortable pyjamas, personal toiletries, small change for newspapers etc.
- Do not bring large amounts of cash or valuables.

WHAT WILL THIS SURGERY COST ME?

I largely work as a 'no-gap' doctor. This means that the surgeon fee for your operation will be sent to your health fund and there will be no 'gap' or extra amount of money to pay. There are always exceptions and decisions regarding this are made on a case-by-case basis.

If you do not have private health insurance or if you have overseas insurance, you will be given a quotation for surgery, anaesthetic and hospital fees and must pay in full *prior* to the operation.

Outpatient consultations are not covered by the health funds and there will be a charge for these meetings if your surgery is elective. You will get a proportion of this money back from Medicare. There is no fee to be paid for normal care after the operation.

There may be other out-of-pocket fees from your anaesthetist and any other specialists who are asked to look after you. You should ask them ahead of time any out-of-pocket costs. Ask us who will be performing your anaesthetic and you can make enquiries with them.

There may be extra costs for x-ray, pharmacy and pathology. Intensive Care is usually billed straight to your health fund with no more to pay.

You have a right to gain ‘Informed Financial Consent’. Fees from other practitioners are beyond our control and you should ask for the costs from each person who is asked to look after you. Patient’s have a choice when it comes to paying for their health care and you are fully within your rights to negotiate and shop around.

If you have come from out of town, you will usually be flown to Brisbane in an air ambulance. Your family will usually be responsible for their own accommodation, hotel, meal and transport costs. There is some monetary assistance available for private patients through the Patient Travel Subsidy Scheme (PTSS) providing assistance to patients and in some cases their carers, to enable them to access specialist medical services that are not available locally. Please see Queensland Health’s Patient Travel Subsidy Scheme site for details. <http://www.health.qld.gov.au/iptu/html/ptss.asp>. Greenslopes Hospital web site has an extensive list of hotels available in the local area. <http://www.greenslopesprivate.com.au/For-Visitors/off-site-accommodation.aspx>.

ABOUT YOUR SURGEON

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2006 – Present	Staff Surgeon Hepatopancreatic-Biliary-Liver Transplant Princess Alexandra Hospital and Greenslopes Private Hospital Brisbane, Queensland
2004 – 2006	Hepatobiliary and Liver Transplant Fellowship Princess Alexandra Hospital Brisbane, Queensland
2002 – 2004	Liver and Kidney Transplant Fellowship University of Colorado Hospital Denver, Colorado, United States of America
2002	Fellow of the Royal Australian College of Surgeons (FRACS) General Surgery

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