
Brisbane Liver and Gallbladder Surgery
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REPAIR OF THE BILE DUCT AFTER INJURY **DURING LAPAROSCOPIC OR KEYHOLE** **REMOVAL OF THE GALLBLADDER**

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

YOUR ADMISSION DETAILS:

Your admission date is: _____

On your arrival to hospital, present to Admissions at the designated time. From the main entrance of the hospital, there is a pharmacy on the left. At the end of the pharmacy, there is a lift. Take this to Level 1. This is Admissions.

You will need to stop eating food from: _____

Drink the 2 DEX between: _____

You can drink CLEAR fluids until: _____ **then it is NIL BY MOUTH.**

Your operation date is: _____

The Rooms will call you a day prior to when you are due to enter the hospital to confirm your admission time and when to start fasting.

Register your admission to confirm your personal details and health history.

This must be done at least 48 hours prior to your admission. It can be done in two ways:

You can complete the admission form online at:

<http://www.greenslopesprivate.com.au> then click on the ONLINE ADMISSION button

OR

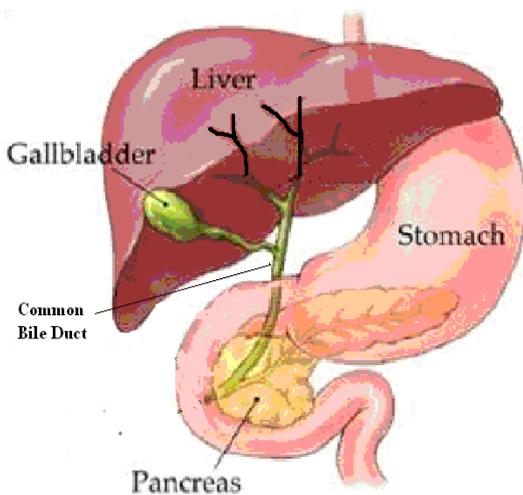
Call Greenslopes Private Hospital Admissions on phone 1800 777 101.

Monday to Friday 8am – 7:30pm or Saturday 8:15am – 12:45pm.

BILE DUCT INJURY DURING REMOVAL OF THE GALLBLADDER

Keyhole or laparoscopic removal of the gallbladder is one of the most commonly performed surgical operations. There are literally thousands done in Australia every year. Damage or injury to the common bile duct is one of the most serious complications of removal of the gallbladder. Fortunately, it is very uncommon (1/1500 cases). When it happens, however, it can be a difficult problem to address. Most patients who have their gallbladder surgery complicated by a bile duct injury will be transferred to a large hospital like the Princess Alexandra or Greenslopes Private Hospital and be managed by a unit like ours, that specialises in the repair of this sort of problem. This booklet is to inform you about your condition and the care you might receive.

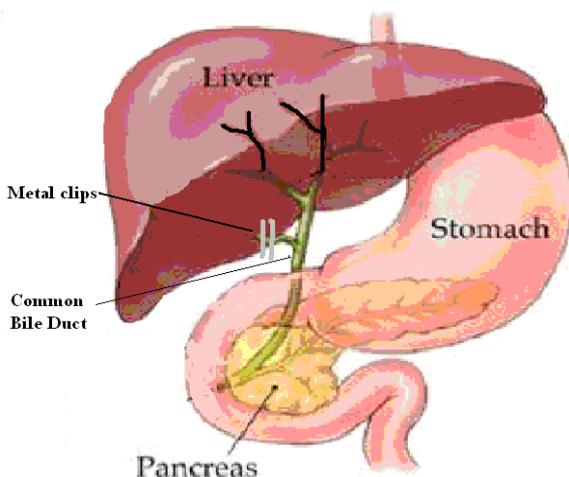
WHAT IS MY BILE DUCT AND WHY IS IT SO IMPORTANT?



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.

After the gallbladder is removed, the bile duct carries on transporting bile into the bowel. Drainage of bile from the liver is essential for your liver to function properly.



The appearance of the bile ducts after removal of the gallbladder. There will be three or four metal clips present. The bile duct remains intact.

WHY HAS THIS HAPPENED TO ME?

Gallbladder disease and gallstones remain a challenging surgical problem. Despite modern medicine and technology progressing rapidly, gallbladder problems can present themselves when they are very advanced. There can be severe inflammation and swelling. Gallstones can be present for years and can erode into all sorts of places, including the bowel, liver and bile duct.

The principle of gallbladder surgery is to remove the gallbladder and stones. Metal clips are placed across the outflow of the gallbladder. The common bile duct is always left intact. Surgeons take many steps during the operation to ensure that only the gallbladder is removed and that the bile duct is not damaged. Sometimes, the inflammation is so severe that it can be very easy to mistake the common bile duct for the gallbladder. The gallbladder can be fused to the bile duct. This is when an injury to the bile duct is most likely to occur. The bile duct injury may not be apparent during the gallbladder operation and it might only be discovered afterwards.

The other reason for a bile duct injury is an unusual configuration of the bile ducts. Everyone has a unique layout of these ducts and occasionally it may be quite easy to damage one because of unexpected anatomy.

If the bile duct is injured, it is also quite common for one of the arteries to the liver to be injured at the same time.

It is fair to say that even a surgeon who removes hundreds of gallbladder operations every year will eventually damage a bile duct. It is a known and accepted complication of this operation.

HOW WILL MY SURGEON KNOW IF I HAVE HAD AN INJURY TO MY BILE DUCT?

There are several ways that this might be discovered:

During the operation:

It can be immediately obvious that there has been a bile duct injury. There are several options for the surgeon in this situation.

- If the surgeon has expertise in complex liver surgery, they will make a bigger cut on your tummy and repair the problem immediately.
- If the surgeon does not feel comfortable operating on the bile duct (this is most common) there are a few options.
 - If you are having your gallbladder removed in Brisbane, your surgeon may call a colleague who is experienced with this problem and the bile duct will be repaired during the same operation via open surgery.
 - If you are in a hospital outside the metropolitan area, then it is likely that you will have a drain tube placed in your tummy to control any leak of bile and you will be transported by air or road to Greenslopes Private Hospital or Princess Alexandra Hospital for further surgery.

Discovered after the gallbladder surgery:

Bile duct injuries may not be apparent until a day or two after surgery or less commonly many weeks after the operation. You may experience:

- Loss of bile in a surgical drain
- Pain that is greater than expected after routine gallbladder surgery
- High fever and chills
- Jaundice

WHAT TESTS WILL I HAVE DONE IF A BILE DUCT INJURY IS SUSPECTED?

If the bile duct injury is obvious during the surgery, no tests will be needed and immediate repair will be performed if suitable expertise is available.

If the bile duct injury presents after the operation, there are several tests we can do to confirm it. Again, sometimes no tests are needed and sometimes many are needed.

1. Blood Tests

Liver function tests may show jaundice and the whites of your eyes might be yellow.

2. CT scan of the abdomen

This may confirm that there is a large amount of fluid present in the abdomen. This is not normal after removal of the gallbladder. This fluid can be bile.

3. ERCP – Endoscopic Retrograde Cholangiopancreatography

ERCP gives an X-ray picture of the bile duct. If the bile duct is injured, it is usually very obvious on an ERCP. This test may also be used to treat minor bile duct problems after gallbladder surgery. A plastic tube called a stent can be placed to stop bile leaking out of a side hole in the bile duct. This can completely fix the problem. The stent tube is temporary and will be removed several weeks later. 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.

4. MRI

MRI is a type of X-ray that is very useful and will give the same information as an ERCP without the risks.

5. Key hole surgery or laparoscopy

Repeating the laparoscopy is sometimes done to work out what the problem is. For minor injuries or a leaking stump of the gallbladder, the problem may be fixed with keyhole surgery alone. If the problem is significant, you will proceed to open surgery under the same anaesthetic.

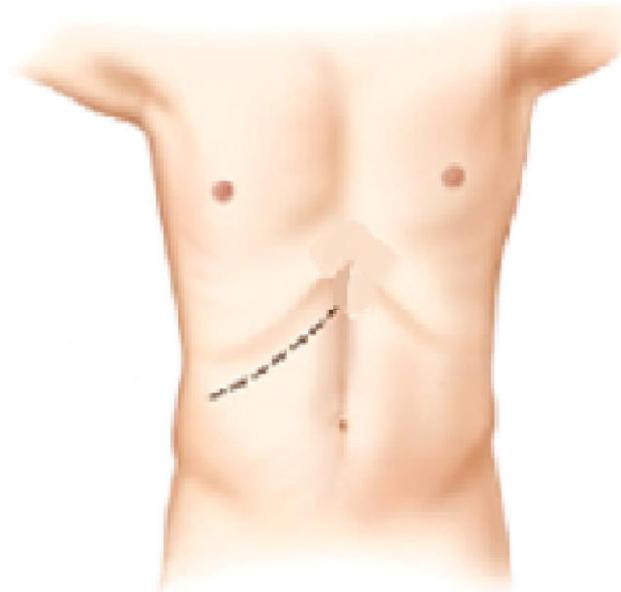
HOW WILL I FEEL IF I HAVE HAD A BILE DUCT INJURY?

Patients with a bile duct injury might experience many things.

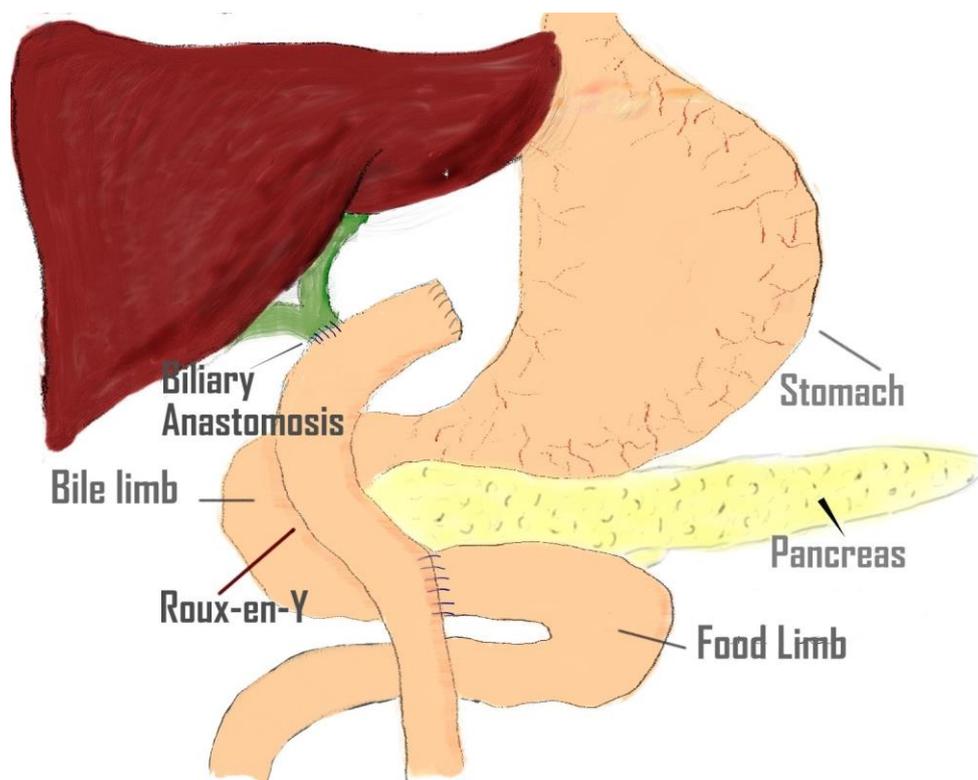
- Pain: sometimes bile in the tummy is painful. You will be given pain relief but the pain will not be better until the problem is fixed.
- Itchy: patients who are jaundiced may be terribly itchy.
- Fear and confusion: like any unexpected complication it is common to feel afraid. This is especially so if you have been transferred to our hospital from outside Brisbane. It can be very intimidating. Please ask questions if you don't understand what is happening.

HOW IS A BILE DUCT INJURY FIXED?

For a major bile duct injury you will have open surgery. The incision will be in the upper part of your abdomen, on the right hand side just beneath the ribs.



Frequently, the entire bile duct will have been inadvertently removed or clips may have been placed across the duct, causing damage that cannot be repaired. If this is the case, it is not possible to stitch it back together. 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. Depending on the type of injury, there may be multiple bile ducts to sew onto the bowel (see picture).



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.

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.
5. **Arterial line:** a fine catheter will be inserted into an artery in the wrist to monitor your blood pressure.

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.

Intensive Care

After the operation is finished, depending on your condition you may be transferred to intensive care. You may be kept asleep (artificial coma) for a short time after the operation. Alternately, you may be woken up straight away. There are many factors that go into making this decision and your family will be told whether you will be awake or left asleep.

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 others 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 REPAIR OF A BILE DUCT INJURY?

Bile duct injury can be a challenging problem to fix. 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 dozens of fine stitches in tiny bile ducts, 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 usually occurs during the course of your initial gallbladder surgery. If there is an injury to the liver artery, the bleeding can be significant and you may 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.

Infection

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

Liver resection

Occasionally, the bile duct and artery to one side of the liver may be so badly damaged that they are not repairable. The decision may be made to remove a section of the liver to fix this problem.

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 bile duct injury.
- Infections: wound, pneumonia, urine, intra-abdominal, IV line related.
- Punctured lung secondary to the IV line in your neck.

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- Damage to the hand from the arterial line in the wrist.
 - 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.
 - 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 hernia or adhesions and this risk is life long.

WHAT ARE THE LONG-TERM COMPLICATIONS AFTER BILE DUCT INJURY?

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

Patient's 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 to 10% of their body weight after this type of surgery. The weight will be gained back within 6 months.

Liver Transplant

Rarely, the bile duct is so badly damaged and over the long term is not able to be repaired. In these cases a liver transplant may be the only option. This is very uncommon.

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. Pat your wound dry with a towel. Do not rub soap, talc or moisturiser 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 forever. Only rarely do they need removal.

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 can 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.

WILL THE SURGEON WHO REMOVED MY GALLBLADDER BE TOLD WHAT HAS HAPPENED TO ME?

Yes, we will let them know how you are going. All surgeons have complications and many patients experience complications. You can be sure that your original surgeon always has your best interests at heart and will be very concerned about your welfare. Bile duct injury can happen even in the best of hands and to surgeons who have done thousands of gallbladder operations.

SHOULD I GO AND SEE THE SURGEON WHO TOOK OUT MY GALLBLADDER?

Yes, most definitely. Your original surgeon will want to see you for follow-up and you should make an appointment to see them after you go home. We will also be following you up and checking your liver function tests for the first year or two.

WHAT IF I AM COMING IF FOR AN ARRANGED OPERATION A LONG TIME AFTER BILE DUCT INJURY?

Hospital

The hospital will call you the day before your operation to confirm your personal and medical details. They will also let you know about any hospital excess you may have to pay.

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.

Shaving and showering

You do not need to shave any body hair from your abdomen before the surgery. If needed, I will do this with sterile clippers after you are asleep, just before the surgery commences. This gives the lowest chance of infection.

There is no evidence to suggest that having a shower in antiseptic prior to surgery decreases infection rates, so just shower normally on the morning of surgery. Do not use any perfume.

Belly buttons

You need to remove any belly button piercings. You can put the ring back in a few weeks after the operation.

For people with very deep belly buttons, it is normal to have a build up of lint and old skin hiding in there. This can be very smelly. Try and clean your belly button with a cotton bud and water a few days before the surgery to decrease the risk of a wound infection.

Make up, nail polish and jewellery

I understand that some women feel quite anxious about going without their makeup. Most of your body will be covered during the operation, so it is important that the anaesthetist can see your face clearly. Your colour can be a good monitor of how much oxygen you are getting. For this reason, it is best to come to theatre with a clean, make up free face.

Nail polish is OK with me as long as you keep it clear on your fingernails. Coloured nail polish can interfere with the device we use to measure the oxygen in your blood. For many women, having a pedicure the day before the surgery can be a good way to relieve anxiety.

Any jewellery you are comfortable with removing, you should leave at home. If you would like to leave your wedding ring on, you may, but this will be covered with tape for the duration of the surgery.

Glasses and contact lenses

You should remove your contact lenses prior to coming to the hospital. You don't need to bring your glasses to the operating theatre. Just put them with your belonging and they will be given back to you in the ward.

False teeth, caps, crowns

Do not take your teeth out before you come to the operating theatre. They will usually be removed by the anaesthetist after you go to sleep. Keeping your teeth in will help the anaesthetic doctor get a good seal on your mouth with the oxygen mask. Your teeth will be well taken care of during your operation and returned to you in recovery before anyone can see you.

Preparations at home

Ensure that you have someone available to care for small children for a little while to take the pressure off your recovery. If you are handy in the kitchen, try to cook and freeze some easy meals to have on hand for when you do not feel like cooking. If you are not a good cook, you might want to give this a miss. Another option for those who are challenged in the culinary department, is to consider ordering precooked meals from companies like Lite'n Easy. Consider hiring some help around the house for a few weeks after the surgery or enlist willing (or unwilling) relatives to help out. Make sure all your bills are paid ahead or on automated payments to reduce the things you have to think about in the recovery period.

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. I will advise you about what to do with these drugs prior to surgery. You must let me know about these drugs and the decision to stop them is based on each individual patient's needs.
- Diabetic medications: I 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 and be looked after by a diabetic doctor.
- 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 complementary 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/scans 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 (13 18 48) if you wish to seek advice.
- You should also abstain from drinking alcohol as soon as this problem is diagnosed.
- Bring all your current medications with you to the hospital.

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- Bring comfortable pyjamas, personal toiletries, small change for newspapers etc.
 - Bring something to do - DVDs, books, laptops. Alternately you can use hospitalisation as an opportunity to rest completely without distractions of the outside world.
 - Do not bring large amounts of cash or valuables.

Income Protection Insurance, Wills and Centrelink

If you have income protection insurance, start doing the claim paperwork before the operation. Centrelink claims can take many weeks to process. It is difficult to recover well when you are worried about finances. Before any major surgery it is wise to get your affairs in order including an Advance Health Directive, Will and Power of Attorney. Talk to your employer and let them know that you may be away from work for many months.

Family

This is the time to rely on family and friends for support. If you receive offers of help, you should accept them. That way, you can concentrate on getting better. It is a good idea to bring your family to any consultations you attend as it is often difficult for patient's to remember things at this emotional time.

WHAT WILL THIS SURGERY COST ME?

We largely work as 'no-gap' doctors. 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 which **must be paid 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. Patients 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>.

YOUR JOURNEY THROUGH THE OPERATING THEATRE

HOW YOU MAY FEEL BEFORE SURGERY

Having a general anaesthetic (being fully put to sleep) can be very scary for some people. It brings up issues about loss of control. People worry about what may happen when they are asleep.

Having an anaesthetic involves a lot of trust and in the end you will have to take a leap of faith and believe that you have chosen a team that will look after every part of your body. You should read this article if you would like to know exactly what goes on just before, during and after an anaesthetic for major surgery. For some people, understanding precisely what happens in the operating room brings a sense of calmness.

CHECKING INTO THE OPERATING THEATRES

You will be greeted at the front desk by one of our friendly executive staff who will do the administrative paperwork. They will also collect any hospital excess you may have to pay. Please bring your health fund and Medicare cards. They will also want to know about your next of kin. With your permission I will call a nominated family member at the end of the surgery and the recovery nurse will also let them know when you are ready to go to the ward.

For major surgery, it is best that you remove **all** your normal clothes including your underpants and bra. This is so we don't lose them or mess them up with blood or antiseptic fluid during your surgery. You will meet one of the pre-op nurses who will help you change into your glamorous theatre gown and paper underpants. For abdominal operations, it is very common that you will wake up completely naked i.e. without your paper underpants. We often remove them in the operating theatre to keep them away from the area we are operating on. Your modesty will be protected as much as possible. Contrary to what you see in the movies, your bottom will not be on view out the back of your gown. Hospital robes wrap around your rear.

You will be measured and fitted with white, knee high stockings to prevent clots in the legs. For some operations, you may have a pair of pneumatic leg warmers placed on your calves to gently massage your legs while you are asleep. This prevents clots in the legs. The look is complete with a puffy paper hat. Any jewelry you would like to keep wearing, like a wedding band will be covered with tape.

You will be weighed and your temperature, blood pressure and pulse will be checked. You will be asked about your allergies and will be given an ID band that will stay on for your entire stay. The nurse will ask you if there are any implants or metal in your body. We ask this because we need to place an earthing plate on your body during the surgery and need to place it away from any internal metal.

You will then go through many repetitive identification processes to make sure we have the right patient and that everyone agrees on the operation you are having done. You will be put on a bed and you will wait and wait and wait until it is your turn to be called into theatre.

This waiting can be quite stressful, and you will feel hungry. You may want to bring something to do during this time. There is also a TV to watch and magazines to read. Rest assured we are moving as fast as we can and because unexpected events happen all the time, delays in hospitals are inevitable. It is possible to develop a headache due to caffeine withdrawal. This is not harmful, and you may have two Panadol with a sip of water to help.

Your clothes, glasses, valuables will be put into a bag and your belongings will be put into a locker whilst you are in theatre. You will be reunited with them when you return to your room in a ward or intensive care. If you have come to theatre from the ward, your belongings will stay in your room and await your return. If you are going to intensive care after the surgery, your belonging will travel with you.

Why do I have to starve before surgery?

For an arranged operation, you must have absolutely nothing to eat or drink for six hours before you go to sleep. When you have an anaesthetic, all the muscles in your body relax. If you have food in your stomach, it can reflux back up into your mouth and even worse, your lungs. This can produce a life-threatening pneumonia. You must also not chew gum prior to surgery as this increases the fluid in your stomach. You may drink clear liquid up until 2 hours prior to your operation. I may give you a sugary drink two hours prior to surgery to help you feel less thirsty and speed up your recovery. It is OK to take your normal medications with a sip of water any time before surgery. It is also fine to brush your teeth.

Special circumstances

There are a few instances where certain precautions take place.

Latex allergy:

Please let the admission nurses know if you have a latex allergy. We need to remove all the latex products from the operating theatre to protect you.

If you take certain medications:

If you have recently had chemotherapy or take immune suppressing drugs like azathioprine or methotrexate, special measures will be taken to protect staff members against coming into contact with these drugs.

If you have certain bacteria on your skin:

Many people have bacteria living on their skin that have been given special names by hospitals. It is likely you will know this from a previous hospital admission. This does not mean you have an infection. We all have bacteria living in and on our bodies, some just have special names and some have a higher chance of being resistant to some antibiotics. It is best if these bacteria are not passed onto other patients as it promotes antibiotic resistance. If you are MRSA "golden staph", VRE, CRE or MRAB positive, then isolation precautions will be taken throughout your stay in the hospital.

If you have false teeth or plates:

Please leave these in. It makes it easier for the anaesthetist to help you breathe as you go off to sleep. If needed, the anaesthetist will remove them after you are asleep and they will be returned to you in recovery.

TAKING YOU INTO THE OPERATING THEATRE

You will be wheeled around to the operating room by one of the theatre orderlies or a nurse. This is where you will say goodbye to your relatives. They will be next able to see you when you return to the ward. Because there are other patients in the recovery unit, relatives are not permitted.

The next stop is the anaesthetic room. This is a small cubicle adjoining the main operating theatre. The orderly will hand you over to the nurse assisting the anaesthetist. You will then have another identification check (you will be very good at reciting your name by this point).

Then the anaesthetist will arrive. They are the person with the good drugs that will make you relaxed, so be nice to them! If they have not met you earlier, they will go through your medical history again and what to expect. They may also explain some risks of anaesthesia, but because you have read this book, you will be aware of them already. This is not meant to scare you. It is our job to tell you about the good and bad aspects of surgery.

The only thing that will go into your body while you are awake is a small plastic tube in your hand called a cannula, drip or IV. This is a small needle and will hurt for a second or two. When it is in the vein, the needle is taken out and a soft plastic tube is all that is left. Once in, you should not be able to feel it. It is secured with tape and you may move your arm. The drip is used to give the medication that will put you off to sleep. If you are having an epidural for post-operative pain relief then this will be done prior to going off to sleep.

Occasionally, some patients have a severe needle phobia. This one small needle can create terrible anxiety. If this is the case, we can sometimes give the anaesthetic without a needle at the beginning. This is done by asking you to breathe on gas for a few minutes. You will drift off to sleep. The IV is placed once you are fully out and you will know nothing about it. This is a slower way to go off to sleep, but for some people avoiding a needle while awake makes a big difference.

Once the IV is in, you will be taken into the main operating theatre. This can be a confronting place too. There are usually 5 - 10 people in the room, all wearing masks and talking. We are all there to look after you. Most operating theatres are set up in a predictable way. There will be an anaesthetic machine with all the monitors to ensure you are safe. There will be several tables filled with surgical instruments ready to perform your surgery. There will also be nurses preparing this equipment and counting each and every instrument to ensure that nothing is missing at the end of your operation. There may also be junior medical staff and orderlies. The operating table is in the middle of the room under big lights. They will not be turned on until you are asleep. The table is narrow and cold. It is narrow because we need to stand close to you to operate and it won't be cold for long because during the surgery you will be covered with a heating blanket.

The trolley you are on will be placed beside the operating table and if you are mobile, you will be asked to move yourself across onto it. The nurses will make sure you are not lying on your gown as it will usually need to be moved aside to expose the area we need to operate on. If you are in pain or not mobile, we will slide you across to the operating table on a special board or float you over on a noisy hover mattress. A lot of activity will then happen around you. We will place padded boards on the side of the bed for you to rest your

arms on. Your leg massagers will be hooked up and switched on and you will feel a gentle compression on your calves.

You will have three stickers placed on your forehead. This helps the anaesthetist monitor how deeply asleep you are. Sticky dots to monitor your heart beat will be placed on your chest. Fluid will be hooked up to your IV line and a clip that reads your pulse placed on your finger. A blood pressure cuff will be wrapped around your arm and the first time it takes your blood pressure, it will inflate very tightly. It will only do that once.

You may already be feeling happy, drowsy or talkative as the anaesthetist may have given you a relaxing medication via the IV. You will not go to sleep yet, but it is unlikely you will remember anything after this until you wake up in recovery even though you will continue to talk to us.

WHAT HAPPENS DURING AN ANAESTHETIC

Sometimes knowing what happens during an anaesthetic really helps you relax and realize that you are well taken care of while you are asleep. Many people's greatest fear is the anaesthetic. They worry about vomiting afterward, being aware during surgery and not waking up. Whilst these things very, very rarely occur, having an anaesthetic is actually far safer than anything you have already done that day, like driving into the hospital.

General anaesthetic consists of three phases

1. Going to sleep – similar to taking off in a plane

Just before you go to sleep, the anaesthetic nurse will ask you to breathe into a mask and fill your lungs with oxygen. This makes sure that you have the maximal amount of oxygen in your blood. This does not put you to sleep. A white medication called Propofol is then given through your IV. The anaesthetist will ask you to keep your eyes open. As this medication goes into your veins, it can cause a stinging sensation in your arm. This is normal and does not damage you. After this injection you will be asleep in about ten seconds. Your breathing will temporarily stop and the anaesthetist will take over your breathing for you by blowing oxygen into your lungs. As soon as you are asleep and if you are having abdominal surgery, the anaesthetist will give a medication that stops your muscles moving. This has many functions. It allows your throat to relax so the anaesthetist can safely place the breathing tube into the windpipe. It also relaxes your abdominal muscles and makes surgery on the abdomen easier. If you have false teeth, they will be removed at this point and returned to you in recovery.

As soon as the muscle relaxer has worked, the anaesthetist will use a special tool called a laryngoscope. This is a smooth spatula with a light that is inserted over your tongue and deep into your throat. The anaesthetist will be able to see your vocal cords and beyond this is your trachea or windpipe. A specially designed hollow tube is placed down the spatula and into the wind pipe. A balloon on the end of the tube is inflated by the nurse to fully occlude your airway and stop any vomit or secretions from entering your wind pipe.

This is often the trickiest part of the anaesthetic and your life can depend on it. There are many signs the anaesthetist will look for before you go to sleep to predict whether getting this tube down will be difficult or not. If you have a small jaw, previous difficulties with intubation, neck problems, difficulty opening your mouth, the anaesthetist will be ready with a different strategy to get the tube down your throat safely. Because your breathing is our number one priority, occasionally putting the breathing tube down can result in damage to your teeth or cuts to your lips. All care is taken and this is uncommon. Having a tube in your throat can leave it sore and dry for a day or too. This is transient. You may also have a swollen uvula (the dangly bit at the back of your throat) for a few days.

Before the surgery starts, if appropriate, you will be given a dose of antibiotics via your drip to help lessen the risk of wound infection. Soft tape will be placed over your eyes to keep them closed and protected. There are other devices we use to monitor your wellbeing during surgery. Tubes like urinary catheters and IV lines will now be placed. Your arms and legs will be padded to protect your pressure areas and you will be positioned for surgery.

2. Staying asleep during the surgery – cruise control

You will be kept asleep by anaesthetic gas piped in via the tube in your windpipe or by a continuous infusion of Propofol in your drip. The anaesthetic machine will steadily and precisely breathe for you. Your anaesthetist will never leave your side and constantly monitors your vital signs. They will give you small doses of medications and fluids to keep everything steady.

3. Waking up – landing the plane

As the surgery comes to an end, the anaesthetist will give you strong dose of pain killer, so you will wake up in comfort. They will turn the gas off and give a medication to reverse the paralysis. While you are still asleep, you will be transferred onto your bed. When you are breathing by yourself, the anaesthetist will remove the breathing tube and suction your throat. Patients rarely remember this. An oxygen mask will be placed on your face and you will be wheeled out to recovery.

APART FROM THE SURGERY, WHAT ELSE HAPPENS WHEN I AM ASLEEP

If you have body hair on the area having surgery, it will be clipped off. Often a larger area that is needed will be shaved. An earthing plate will be placed somewhere on your body, so the electrocautery device can be used to stop bleeding as required. This will be removed before you wake up.

Just before surgery, everyone in the theatre will stop what they are doing and check once again your identity and the operation we are performing.

WHAT SOME PEOPLE WORRY ABOUT BUT WERE TOO AFRAID TO ASK

What if I have my period on the day of surgery?

This makes no difference to you or us. Having a period is a normal part of life. I would suggest that you use a pad and not a tampon as it may be some time before you can change it. If you have any questions about this, ask the nurse who checks you in.

My bladder feels full – will I wet myself?

Just before you go into the operating theatre, many people feel like they need to pass urine. This is usually anxiety. If you have gone to the toilet in the waiting area, it is very unlikely that you will need to go again.

For big operations, we will put a tube in your bladder that will catch all your urine. If you are having a smaller operation and still need to go once you reach the theatre, the nurse will take you to the bathroom.

It is a fact of life that some people occasionally wet themselves during the operation. It does not bother us and you will be cleaned up before you go to the recovery room.

What if I think I am pregnant?

You must let us know at check in, even if you are only suspicious. If you are pregnant it is likely we will delay the surgery. If you are not sure, there are quick pregnancy tests available to check. It is essential that we know because the surgery and anaesthetic drugs can harm your unborn child and even lead to miscarriage.

I always vomit after an anaesthetic

Nausea and even vomiting can happen after an anaesthetic. It is such an unpleasant feeling that it may be an enduring memory of previous surgery. Post anaesthetic nausea is more common if you suffer with motion sickness. Your anaesthetist will discuss this with you and there are many strategies to avoid this troubling side effect.

What if I am breastfeeding?

Breast feeding should not stop you from having a surgery you need. Very small amounts of anaesthetic and pain relieving drugs will pass into your breast milk. Theoretically, this is low risk for your baby. Anaesthetic guidelines suggest you pump and discard breast milk for 24 hours after an anaesthetic. Your baby will need to be fed with previously pumped milk or formula. It is almost certainly perfectly safe however to feed your baby less than 24 hours later. Whether you are up to it of course is another matter. Occasionally, surgery may cause a decrease or even cessation of your milk supply.

Who will be in the operating theatre with me?

It is necessary for your safety for a number of staff, both male and female to be in the operating theatre both before and during your surgery. In addition to your surgeon and anaesthetist, there may be junior doctors, a number of nursing staff, theatre orderlies and x-ray technicians. As this is a teaching facility there may be medical students present.

All of these staff are highly professional. There are definitely moments where you will be exposed whilst preparing you for surgery, but extreme efforts are made to preserve your modesty.

Do you play music while I am asleep?

No. We are concentrating on your care. Music tends to be a distraction. There are many sounds of machines and monitors in the operating theatre and we are listening to those. We also need quiet to enable communication between staff.

What if my bowels work while I am asleep?

This is quite uncommon. If it does occur however, you will be cleaned up prior to moving to recovery.

I am worried about waking up during the operation

Awareness during anesthesia is exceptionally rare. Making sure you are fully asleep is the anaesthetists' main objective. There are a number of monitors and alarms that you will be hooked up to absolutely ensure that this doesn't occur.

I am on the oral contraceptive pill

There is a medication given as the end of some anaesthetics that can interfere with the effectiveness of the pill. Please tell your anaesthetist if you are on the pill. If the medication is used, then you will need to use an alternate contraception for two weeks to avoid pregnancy.

I am worried about my memory after the anaesthetic

There is no doubt that a condition called post anaesthetic cognitive disorder is a real thing. It is more common on patients over 60 and it can result in memory loss that may be permanent. It is not fully understood. If you have concerns, your anaesthetist would be happy to discuss it with you.

RECOVERY – THE WAKE-UP ROOM

When you wake up, is likely that you will be wearing a gown but be completely naked underneath. You will be covered with a blanket.

The recovery room is the first thing most patients will remember after going to sleep. It will almost be like no time has passed.

You will have a nurse by your side monitoring your vital signs. You will stay in recovery until you are fully awake and your observations are within normal limits. The nurse will monitor your pain and keep you comfortable.

If you have a catheter in your bladder, you may feel a need to pass urine. This feeling will go away.

As you wake up you may have a tube in your throat that the nurse will remove. It is unlikely you will remember this.

If you snore you may have a small tube in your nose or mouth to help you breathe until you are fully awake.

If you have false teeth, they will be returned to you in recovery.

Your family is not allowed in recovery so we can respect the privacy of other patients.

RETURN TO THE WARD

When you return to the ward you may be drowsy, nauseated or in pain. Your nurse will be monitoring these things closely.

They will be checking you pulse, blood pressure, temperature and dressings regularly for abnormalities.

There is a very strict criteria of observations that the nurses must follow. If you fall outside these criteria for any reason the nurses must notify the medical team. Very often this is just a false alarm. It may sometimes seem dramatic, but it is done for your safety.

If you are on strong pain killers like morphine or Fentanyl you will be required to wear an oxygen mask.

HOW DO I HANDLE MY ANXIETY?

Every person suffers from some level of anxiety. You are not human if you do not. Having an operation is up there in the top ten of major life events. A little bit of anxiety can be good thing. It can make you hesitate before taking a misstep. When anxiety gets out of control however, it becomes a medical problem and stops you doing things that you should or want to do. Some people suffer anxiety about many things and for some it can be an issue only in certain situations.

Common symptoms of anxiety are

- Overwhelming negative thoughts
- Sleepless with worry
- A constant stream of bad thoughts “the chatter”
- Physical symptoms such as chest pain, nausea, headache

There are many techniques to address your anxiety. There are mindfulness, meditation and distraction techniques. Sometimes anxiety is so bad that medication is needed.

It is normal to be anxious before surgery but if the feeling of anxiety is overwhelming please talk to me or your GP about it. Help and suggestions are also available at Beyond Blue: www.beyondblue.com.au

ABOUT YOUR SURGEON

A/Prof Kellee Slater MBBS (Hons) FRACS FACS

2018	Associate Professor University of Queensland
2015	Fellow of the American College of Surgeons
2017-2019	National Chair of the Australian Board in General Surgery
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
1989 – 1994	MBBS (Honours) University of Queensland