



Brisbane Liver and Gallbladder Surgery
Suite 207, Ramsay Specialist Centre
Newdegate Street, Greenslopes QLD 4120
Phone: 3847 3000 Fax: 3847 3002
Web Site: www.brisliver.com.au

MAJOR INCISIONAL HERNIA REPAIR

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

YOUR ADMISSION DETAILS:

Your admission date is: _____

Date of your operation: _____

Fasting time from: _____

Greenslopes Private Hospital Admissions (Phone 1800 777 101) will contact you the day
prior to your surgery

Dr Kellee Slater 2012

WHAT IS AN INCISIONAL HERNIA?

An incisional hernia occurs when there is a hole in the deep layers of an old surgical scar. As the muscle layers separate, a piece of bowel or fat from inside the abdominal cavity may protrude through this hole. A hernia will appear as a lump in the surgical scar and become more prominent when standing up. The lump may disappear or become smaller when lying down. Hernias come in all shapes and sizes. They may be barely noticeable or they may protrude and hang down a long way when standing up.



Diagram 1. An incisional hernia is when a section of bowel or fat protrudes through a hole in the deep muscle layer beneath a surgical scar.

WHAT IS A DIVARICATION?

A divarication is a pronounced ridge of weakened tissue that runs vertically from the breast bone to the pubic bone. It is especially prominent when the abdominal muscles are tensed. (when attempting to stand up from lying) The central muscles of the abdominal wall are usually closely opposed straps. Anytime a patient develops enlargement of the abdomen e.g. during pregnancy, obesity or fluid in the abdomen, these muscles will separate and a bulge will occur between them. It is very common for a woman to develop a divarication in addition to a hernia at the belly button after giving birth. A divarication is not a true hernia as there is no risk that bowel can get caught in this type of weakening. Because a divarication is not dangerous it is usually not repaired. Because some women do not like the appearance of a divarication, some might opt to have the weakness repaired by a plastic surgeon. This is a major operation and should not be taken lightly.

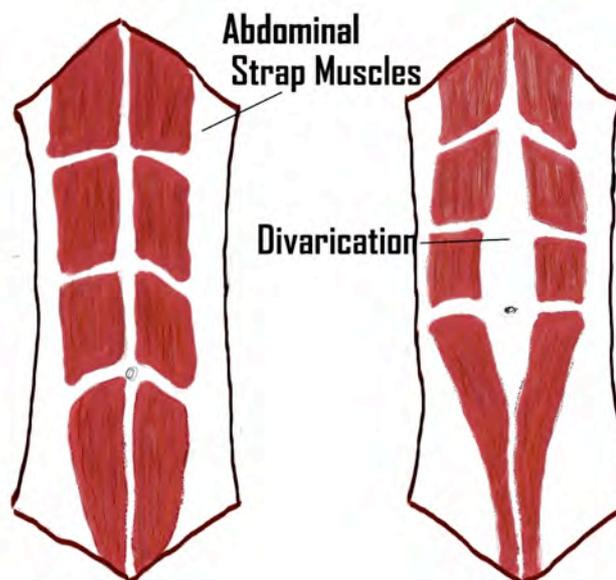


Diagram 2. Illustrates how the muscles of the abdominal wall stretch apart creating a bulge.

WHAT CAUSES AN INCISIONAL HERNIA?

There are many factors that contribute to the formation of a hernia.

- Wound infections after surgery
- Many operations via the same incision
- Obesity
- Diabetes
- Smoking
- Operations for severe pancreatitis
- Colostomy or stomas
- Long term prednisone or immunosuppression drugs

WHAT PROBLEMS CAN INCISIONAL HERNIA CAUSE?

Incisional hernias do not get better without treatment and will typically grow larger over time. Hernias cause discomfort and sometimes pain. Patients will complain of a dragging sensation or a squelching noise as the bowel moves around in the hernia. It may be difficult to have a bowel movement without holding the hernia. The feared complication of incisional hernia is when a piece of bowel becomes trapped, loses its blood supply and dies. This is a surgical emergency and can be life threatening. Symptoms of this include sudden, extreme pain in the hernia, inability to push the hernia back in, vomiting or redness over the hernia. Should this occur, you should go immediately to the Emergency Department.

HOW ARE INCISIONAL HERNIAS TREATED?

Incisional hernias can be extremely difficult to repair because the tissues we are working with are stretched thin and have very little strength. Each case is assessed on an individual basis. There may have been previous attempts made at repairing these hernias and this can make the surgery more complicated. A good way to think about fixing a hernia is to liken it to patching a hole in a plaster wall. The edges of the hole are difficult to pull together, so a patch or “mesh” is placed behind the defect. This reinforces the weakened tissue and muscle. The mesh can be made of several different types of material. (see below) The mesh becomes incorporated into the body and adds extra strength. The mesh can be used in a variety of ways but it is usually placed against the muscle inside the abdominal cavity. The weakened muscle layer is then pulled closed over the top of the mesh. These tightened layers will eventually weaken again and the mesh is there to bridge the gap as they separate.

Incisional hernias can be repaired in two different ways.

1. **Open technique** – an incision is made through the old scar and the contents of the hernia are returned to the abdomen. Finally a mesh is placed across the hole.
2. **Laparoscopic or keyhole technique** – smaller incisions are made around the periphery of the abdomen and the hernia is repaired from inside the abdominal cavity using a mesh.

In either technique, the mesh may be fixed in place using dozens of surgical tacks and stitches. These metal fixations may be permanent and easily visible on a scan or they might be dissolvable.

Sometimes a combination of both keyhole or open techniques are used. Laparoscopic surgery seems to have a lower rate of wound infection but a higher risk of bowel injury. This is because the scarring in the abdomen can be significant after previous surgery. Bands of tissue called adhesions form after all abdominal surgery and this might trap loops of bowel in a spiderweb of tissue. This tissue has to be released during the hernia repair and this might be more difficult in keyhole techniques. It is easy to miss small holes made in the bowel during the dissection. Laparoscopic incisional hernia repair can also have a poorer cosmetic and functional result because the abdominal wall muscles are not able to be pulled together as well as the open technique.

Both techniques have their pros and cons and are acceptable. Incisional hernia surgery is carefully tailored to the individual. Post operative recovery and pain is similar with both techniques and there is no big advantage to keyhole surgery in this respect.

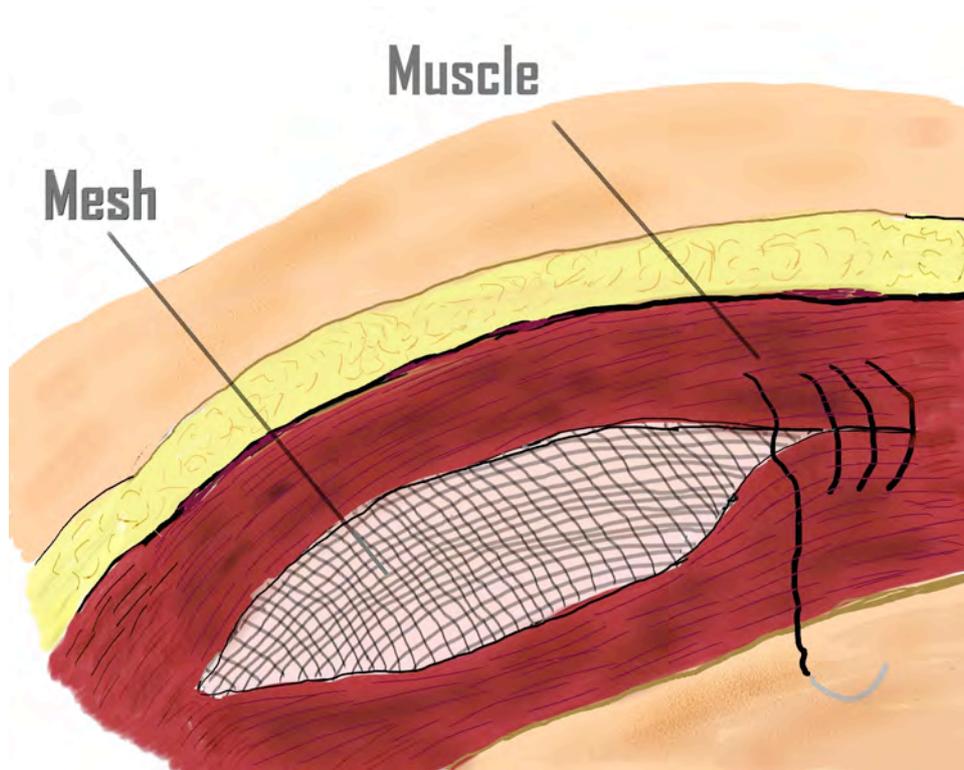


Diagram illustrates how the mesh is inserted behind the muscle layer and the muscles are sewn together over the mesh.

WHAT TYPES OF MESH ARE AVAILABLE?

There are many types of mesh on the market and the choice will often boil down to surgeon preference and experience in using that type up mesh. Mesh falls into a couple of categories.

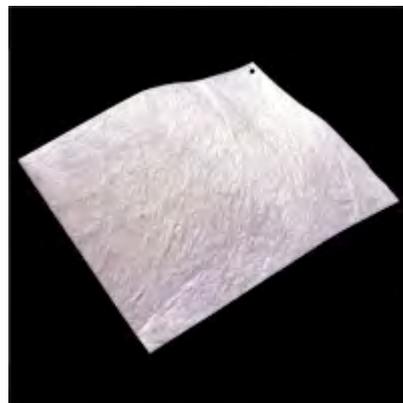
1. Synthetic mesh



Ethicon Physiomes®

These meshes are made of a nylon often coated with a dissolving type of material that can make these types of mesh safer to place in contact with the bowel. There are many different brands of mesh and one is not generally more effective than another.

2. Biologic mesh



Cook Medical Surgisis® Biologic Mesh

This mesh is made from highly purified animal products – usually pig and offer some advantages because they completely disappear over time. They are excellent when used in wounds that are infected.

ARE THERE ANY ALTERNATIVES TO HAVING INCISIONAL HERNIA SURGERY?

There are no treatment alternatives for fixing incisional hernias other than surgical repair. Some people wear a support garment called a truss. This is an elastic band that can attempt to keep the hernia in place. This will not fix the hernia and can be quite uncomfortable. These garments are generally used when someone is unfit to undergo surgical treatment.

WHAT WILL MY ABDOMEN LOOK LIKE AFTER INCISIONAL HERNIA SURGERY?

No surgeon can ever make your abdomen look the way it did when you were born. Your abdominal wall will always be scarred. You will never have a so called “wash-board” appearance to your abdomen. The aim of incisional hernia surgery is to bring the muscles back together. This returns some function to the abdominal wall and gets rid of the unsightly hernia bulge. It may be easier to have a bowel movement after the hernia is repaired.

The initial appearance is different for the two surgical techniques:

Open surgery

Your old incision will be opened and the skin lifted up so the mesh can be placed behind the defect. The muscle layer is then pulled together with non dissolving nylon stitches. The wound is then closed with invisible stitches. Bruising is normal and the wound may bulge for some weeks as fluid collects under it. Over time, this will smooth out.

Laparoscopic surgery

The best way to describe the appearance after this approach is that you will look like an “upholstered cushion”. There is a special instrument used to put stitches into these hernias. The result is many tiny puncture wounds in the abdominal wall.

A volume of fluid will collect where the hernia once was. It may seem for a while that the hernia has come back. There may also be a lot of bruising. Over time, this fluid collection will disappear and smooth out. The contour of the “upholstery” will also smooth out over time. With laparoscopic surgery, there may be a gap to feel under the skin where the hernia used to be. This is why laparoscopy is only suited to incisional hernia with small gaps in the muscle. If wide necked hernias are fixed this way, the cosmetic and functional results are not as good.

Seromas – fluid collections

Almost all incisional hernia operations will result in an accumulation of fluid under the surgical wound. This is expected and is not a complication. Frequently, a surgical drain will be left in the wound for a few days or even a few weeks to minimize this problem.

Despite this, it is still common, for a leak of fluid to occur and this will often present as a lump under the wound several days and even weeks after surgery. Occasionally it is necessary to insert a fine needle into these fluid collections to drain them. This may need to be done several times. It is usually painless. Sometime the fluid may escape from the wound. This can be a dramatic gush, but the problem is usually minor. Call the office the following day if this occurs.

When biologic meshes are used, the inflammation that occurs as the mesh disappears can be significant. The wound may suddenly become red several weeks after the repair. The seromas will persist for weeks and even months. This is normal

Good results take time

Incisional hernia repairs take many months to heal. Your abdominal wall will change shape over time. It will take at least six months for the inflammation, fluid collections and scarring to settle. Be patient during this time.

WHAT ARE THE COMPLICATIONS OF SURGERY FOR INCISIONAL HERNIAS?

There are different risks depending on whether the operation is done open or laparoscopically.

Risks Specific to Open Incisional Hernia Repair

- **Injury to the bowel** may occur in an open operation. This is because the bowel may be caught up in scar tissue (adhesions) and easily torn. This is usually repaired at the time of the operation, but it may prohibit the use of mesh. Rarely, bowel contents may leak out of the wound after surgery and require another operation and many weeks in the hospital. Bowel perforation can be fatal.
- **Mesh infection:** the mesh used to repair the hernia may become infected. This is rare. If infection occurs, the mesh needs to be removed at another operation. Synthetic mesh is rarely used where there has been leakage of bowel content or if the wound is already infected. The biologic mesh will be used in this case.
- **Wound infection:** occurs in 1 – 4% of patients having this surgery.
- **Recurrence of the hernia:** mesh pulling away from the edge of the repair is very common. It is likely that approximately 10-20% of incisional hernias come back. This risk can be minimized by not lifting heavy weights for at least six weeks after surgery. Lifting very heavy weights may be off limits forever in very big hernias. The risk is increased in patients who have a poor immune system, diabetes, obesity, smokers or those who have has multiple previous hernia repairs.
- **Loss of skin:** when you have had multiple incisions, there is a risk that the blood supply to the skin may be very poor. Another incision may result in the death of the skin over the wound. This is a big problem if it occurs and may require weeks of dressings and further plastic surgery including skin grafts. It is uncommon.

- **Exposed Mesh:** occasionally the mesh may wear through the skin and become exposed. If this happens it will need to be removed. Mesh has been known to migrate from its original position and end up in the bowel, bladder or other organ. Further surgery is often required in this situation.
- **Numbness of the skin:** after any surgery, there will be numbness of the skin around the wound that is permanent. This is something that your body gets used to.
- **Bowel obstruction:** because the mesh is often placed fully in the abdominal cavity, there is the risk of a piece of bowel sticking to the mesh leading to a blockage of the bowel or leakage of bowel content. This is uncommon and the risk is life long.
- **Pain:** it is very common to have discomfort or pain for several days and weeks after the surgery. This is usually manageable with pain medicine. Rarely there can be pain related to nerves being trapped in scar tissue. This can be permanent and required treatment by a pain specialist. Occasionally these trapped nerves can result in chronic pain that alters lifestyle.

Risks Specific to Laparoscopic Incisional Hernia Repair

Encompasses all the previously mentioned complications plus:

- **Injury to the bowel** may occur more easily in laparoscopic surgery and is more difficult to detect. This will result in a leak of bowel fluid into the abdominal cavity and require an open operation to repair. This is a serious and possibly life threatening complication and can result in many months in hospital.
- **Conversion to open operation:** this is not really considered a complication. Sometimes it is just not possible to repair hernias with keyhole surgery. This is usually due to bowel stuck in the hernia that is not safely removable. If this is the case, then we will make a bigger cut and fix it with the open technique. This is considered sound judgment.
- **Injury to any other organ** in the abdomen may occur with laparoscopic surgery: aorta, liver and stomach. This is rare.
- **Gas embolism:** in keyhole surgery, gas is used to inflate your abdomen. A bubble of carbon dioxide may get into a blood vessel and causes life threatening heart problems. This is very, very rare.
- **Re-operation:** if we have to re-operate for any reason, this may be done with keyhole surgery or an open operation.
- **Complications of the metal or absorbable tacks used to hold the mesh in place:** it is possible that the tacks used to secure the mesh may erode through bowel, muscle, bladder and skin and cause further problems.

General Risks:

- **Death:** approximately 1/10,000 risk for all patients having this type of operation.
- **Bleeding:** usually occurs in the first 24 hours and may require further surgery. This bleeding may be from the abdominal wall or from inside the abdomen. You may require a blood transfusion if the bleeding is severe.
- **Other blood vessel problems:** heart attack, stroke. This is very rare.
- **Infections:** wound, pneumonia, urine, intra-abdominal, IV line related.
- **Permanent or temporary damage to nerves** in the arms, legs and neck due to prolonged immobilization on the operating table. This may result in loss of feeling or movement in arms or legs.

- Clots in the legs that may travel to the lungs and be fatal.
- Wound pain, abnormal (keloid) scarring or hernia of the wound.

WHAT IS THE PROBLEM WITH BEING OVERWEIGHT AND SMOKING

- Obesity is fast becoming the biggest contributor to the formation of incisional hernias. This is because of the pressure created in the abdominal cavity by too much fat. As the pressure increases, it looks for a way to release and does this through the weakest point – a surgical scar.
- If your Body Mass Index is >35 i.e. you are morbidly obese, the surgery is far more difficult and the risks of complications including bowel perforation and recurrence of the hernia are far higher. There is no point repairing a hernia until the weight problem is brought under control. The hernia has a very high chance of coming back if the cause is not rectified. If it is medically suitable, we may recommend a period of weight loss before you have surgery. This can be a long and difficult process and we recommend you seek professional help for this.
- You will not receive incisional hernia surgery while you are still smoking. There is strong evidence that smoking leads to poor wound healing and failure of the repair.

WHAT TO EXPECT IMMEDIATELY AFTER SURGERY

Pain Relief

Pain Relief

Every effort will be made to minimise your discomfort. Your level of pain control will be monitored frequently.

There is very little difference in pain for either laparoscopic or open incisional hernia surgery and pain after surgery has more to do with the operation that occurs under the skin rather than the size of the wound.

It is very common to have pain in the right shoulder after keyhole surgery. This is due to the effect of the gas pumped into your abdominal cavity during the surgery. The pain typically disappears one day after surgery.

The major types of pain relievers after incisional hernia surgery are:

1. Panadol, Panamax, Paracetamol

You will be amazed the power of regular Paracetamol. It will cut down the need for the very strong pain pills.

They do not cause constipation.

Do not take more than 8 tablets a day or serious liver damage may occur.

2. NSAIDs (Indocid, Brufen, Mobic)

These are excellent pain relievers. They do not cause constipation.

They must be used very cautiously in the elderly and those with kidney problems because it might cause kidney failure.

They may cause stomach ulcers. If you experience any pain in the upper abdomen you must stop this medication immediately and seek advice.

3. Narcotics (like morphine – but in tablet form)

- a. Oxycontin SR – taken twice a day regularly – lasts 12 hours.
- b. Endone – taken only for severe pain occurring in between doses of Oxycontin.

It would be expected that you might only need these strong painkillers for a week or two after discharge. These tablets cause significant constipation. It is recommended that you take a laxative whilst on these drugs and drink plenty of water. Fruits like prunes and pear juice are excellent remedies for constipation.

4. Patient Controlled Analgesia (PCA)

This is used for the first few days after the surgery. This is 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.

Drain tubes

It is likely you will wake up after surgery with one or more soft plastic drain tubes coming out of your abdomen. We will advise when these need to be removed. When using the biologic mesh made from animal products, the manufacturer recommends that the drains be left in for up to two weeks after the operation. These types of mesh tend to make the body produce a great deal of fluid as they incorporate into the tissues. You may need to go home with the drains in place and they will be removed as an outpatient. It is normal for

redness to occur around the drains. It is also normal for there to be a slight odour especially as you empty the drain.

Eating

When you will be able to eat again, depends how much dissection of the bowel has taken place. In most instances, you will start oral intake with fluids and then solid food will follow within 24-48 hours of surgery. It is very common to feel slightly nauseated for 12 hours following surgery. Medication to prevent this will be available.

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

Urinating/Bowel Movements

If your hernia is very large, you will have a catheter placed in your bladder under anaesthesia before surgery begins. It will be removed in due course after the operation, usually when you are mobile again.

After any surgery, a patient may have trouble passing urine. This is uncommon and if it occurs, is temporary. Occasionally a catheter needs to be inserted to help you pass urine.

There may be some disturbance to your bowels in the week after surgery. Moving your bowels relies heavily on the muscles of the abdominal wall. The best strategy to move your bowels after surgery is to drink plenty of water (about 8 glasses a day), do not lie in bed all day long and try natural laxatives like prunes and fibre. If this does not work you will be started on a mild laxative like Movicol. When you sit on the toilet to have a bowel movement, lean slightly forward and relax. Sometimes, sitting with your feet resting on a small footstool will help.

Activity

It is very important to begin light activity shortly after surgery. If your hernia surgery is extensive, a physiotherapist will assist you. This is to prevent pneumonia, clots in the legs and loss of general condition. You can expect to have to wear stockings on your legs whilst in hospital to prevent clots and have an injection of Heparin twice a day under the skin for the same reason. Increase your activity as you feel able.

Your Incision

Your dressing will be waterproof and left in place for 5 days after the surgery. The dressing is like a second skin and some fluid will collect underneath. This is normal and not an infection. Remove the dressing after 5 days, wash the wound off in the shower and leave it open to the air. You may wear loose clothing over the top of it.

You may gently wash dried material off from around your incision. Pat your wound dry with a towel. 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.

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 call the rooms or if it is after hours, the Emergency Department.

Because seromas are normal after hernia repair, lumps under the wound are normal. Fluid has an uncanny way of making its way to the surface. Occasionally a small split in the incision may occur and a gush of fluid will come out. There is no need to panic. Get in the shower and let all the fluid come out. It should stop after a short time. It is likely that more will come out as you stand up. Call the office the next day and we will have a look at the wound. Put a pad over the wound (a ladies sanitary pad works well) As long as the drainage stops, there is no need to come to the emergency department in the middle of the night.

If leaking is continuous or if it is pus you should call the rooms or if it is after hours, the Emergency Department.

It is normal to have patches of numbness around the surgical 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. Please come and see us on a non urgent basis if this occurs.

Length of Stay in Hospital

Length of stay is variable depending on the size of the hernia. Patients with large hernia repairs may need several days in hospital.

Other Important Information

You can expect to see your primary surgeon every week day. On weekends or in 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 are always honest and open with you and your family. Feel free to ask questions.

AFTER DISCHARGE

What can I eat after I have hernia surgery?

It is best to eat a low fat, high protein diet after any surgery. If there is a lot of dissection of the bowel involved, then you will be started off on clear fluids and solid foods within a few days. We will often wait until you pass flatus before starting solid food.

How you may feel

It is quite common to feel very tired and to want to have daytime naps for the first 2 weeks after surgery. Listen to your body and rest when you need to.

This is transient and can be expected to resolve in 2 – 4 weeks.

Activity

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

You may climb stairs and lift your arms above your head. Try to avoid straining when moving your bowels and take a laxative if this is a problem.

Do not lift more than 10kg at least 6 weeks after hernia surgery. (This is about the weight of a briefcase or a bag of groceries) This also applies to lifting children, but they may sit on your lap. Your hernia repair will never be as strong as your abdominal wall used to be and repeated heavy lifting will lead to a recurrence of the hernia.

Resume all exercise in a sensible manner and if your wound hurts or pulls stop doing the activity immediately.

You may start some light exercise when you feel comfortable.

You may swim after 2 weeks or when your wound is fully healed.

You may resume sexual activity when you feel ready unless your doctor has told you otherwise.

WHAT PREPARATIONS DO I NEED TO MAKE BEFORE MY SURGERY?

Hospital

Hospital

The hospital will call you the day before your operation to confirm your admission time. 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.

Medications

- If you are on blood thinners such as Aspirin, Warfarin, Plavix, Iscover, Clopidogrel, Pradaxa, Dabigatran, Rivaroxaban 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, you will not have incisional hernia surgery until you stop. See your GP for alternatives or call Quitline (13 18 48) 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?

□ 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 money to pay. There are always exceptions to this and decisions regarding payment are made on a case-by-case basis.

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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. 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 about any out-of-pocket expenses.

There may be extra costs for x-ray, pharmacy and pathology. 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 shop around.

ABOUT YOUR SURGEON

□ **Dr Kellee Slater** MBBS (Hons) FRACS

Dr Kellee Slater MBBS (Hons) FRACS

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