RISKS RELATED TO YOUR SURGERY
Dural Tears: There is a small risk of a dural tear during spinal surgery. A dural tear is a tear in the outer lining of the spinal sac that encloses the spinal cord and fluid. CSF may leak from a dural tear. This may result in headaches after the surgery. Generally any tears that are pertinent are repaired during the surgery. However, further surgery may be required to repair the tear fully. There is a higher incidence of infection when a dural tear occurs.

Complications relating to Bone Graft: In some cases, a pseudarthrosis may occur. This means that the bone grafting does not work and fusion at the site of surgery is not achieved. The chance of this occurring now has been reduced by use of improved biologic materials and implants. We use bone morphogenetic protein (BMP) or other bone substitute in combination with structural bone allograft, cages and hardware which result in very high union rates. Nevertheless, smoking still does reduce he fusion rate by about 20%. If you smoke in the first year following the surgery on you risk the non-union. The diagnosis of non-union does not necessarily equate to incidence of back pain. Recent study demonstrates that 10% of patients undergoing spine fusion will develop non-union but of these only 1% or a quarter of patients will require revision surgery to address the non-union.

Hardware Complications: Occasionally complications can occur with the metal cage, plate, screws used in the fusion. The screws can cause pain, they can move, and back out or unscrew. If these complications occur, further pain may result. Further surgery may be required to correct the problem or to remove the screws, plate and/or cage.

Gastrointestinal Complications: Ulcers may develop in the stomach as a result of the stress of the surgery. During the procedure, the bowel is mobilized and at risk throughout the length of the surgery. This may cause your bowels to go to ‘sleep’ resulting in distention of the abdomen. This may cause nausea and vomiting, which settles with time. You may also suffer constipation from the pain relief medication you give. You may also suffer diarrhoea from the antibiotics you receive.

Thigh Numbness: In a small number of cases, numbness over the thigh may be experienced following the surgery. There are nerves that run across the back of the abdominal wall that can temporarily be irritated as a result of the procedure. This can cause some pain, pins and needles, and numbness in the left thigh. The symptoms usually settle over time.

Bowel Injury: This is a rare complication. This can result in your abdomen becoming distended, rigidity of the abdomen or peritonitis. Further surgical procedure may be needed.

Death: This is an extremely rare complication that can occur for many reasons. Most of the time it is due to an underlying condition (which we may or may not know about before the surgery).

Neurological injury: An injury can occur to your spinal cord or one of your nerve roots during the procedure. This is rare but it can have serious consequences. Sometimes further surgery may be required. The results of such injuries can include:

- **Paraplegia:** this may result in your legs and feet not functioning properly and it can affect your bowel and bladder function as well as sexual function. You may become dependent on the help of others and a wheelchair. This is an irreversible complication.

- **Cauda Equina:** this is an injury to the nerves supplying the bowel and bladder. The result of such an injury is that the bowel and bladder function poorly. This may be permanent.

- **Nerve root injury:** if a nerve root injury occurs, you may sense a loss of power in the legs or the sensation in the legs may be altered. Your balance may become poor. The ability to move the foot up and down may be lost. You may require further corrective surgery or need to wear an orthotic device if you experience more pain. Often you may have some unusual patterns of pain.

Anesthetic Complications: Complications can arise from the anaesthetic you receive. It is the role of the anaesthetist to discuss these with you before you undergo an anaesthetic. You need to be aware that in a small number of cases serious complications can occur and, in very rare instances, death. The common adverse effects of anaesthetic include fatigue, altered mental state, sleep disturbance, nausea and vomiting, sore throat, bruising and venepuncture. If you have an epidural type of anaesthetic, you may experience a headache following surgery. You may also feel some temporary numbness or weakness in your legs. Some of the complications that can be related to your choice of anaesthetic include:

- **Bleeding:** You will lose blood during the procedure. A blood transfusion is rarely required. Bleeding after surgery may result in haemato ma. This is a rare complication. If haemato ma occurs further surgery may be required and there is an increased risk of infection.

- **Infection:** Infection is thought to occur in about 2% of post spinal surgery. Some are minor in nature and some can be very serious. A minor infection can be treated by antibiotics and your stay in hospital may be prolonged. In a small number of cases infections may require further surgery to clean the wound. A serious infection of the prothesis may cause osteomyelitis, an infection in the bone. During surgery an infection in the disc, can also occur. These types of infection may adversely affect the outcome. Extensive surgery may be required to correct the problem. The prostheses may need to be removed and further spinal fusion performed. In a small number of cases, infection can spread to other areas of your body making you seriously ill. In rare instances death can occur from an infection in the heart or the brain. DVT: This is one of the most common complications. It is a blood clot in the vein in the muscles of the calf or thigh. The clot can break and travel into the lungs or heart. DVTs can cause pain, shortness of breath, and even death on rare occasions. A DVT can increase the length of stay in hospital and possibly need for further surgery.

- **Stroke and Heart Attacks:** These complications occur rarely. You are not at increased risk of suffering a stroke or heart attack during or following surgery, your heart would already need to be diagnosed prior to surgery. The stress of the procedure or the anaesthetic may contribute to the stress or heart attack. This may result in being physically or mentally disabled (or both). Death can also result from a stroke or heart attack.

- **Scarring:** A surgical scar is a necessary part of the procedure. The size of the scar will depend upon your particular procedure that is performed. In some cases keloid scarring may make the scar look unsightly.

OTHER COMPlications: The complications raised in this document are the most common and the most serious complications. Other complications may arise during or after your surgery that are not recorded in this document. In most cases, they will be extremely rare complications. It is impossible to advise you of every possible risk associated with your surgery but should you have any specific concerns you need to discuss them with your surgeon.

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**OBLIQUE LUMBAR INTERBODY FUSION**

**(Minimally Invasive Spinal Surgery)**

**Oblique Lumbar Interbody Fusion (OLIF)**

The OLIF that has been recommended will be performed at:

L1/2 
L2/3 
L3/4 
L4/5 
L5/S1

During the procedure, if Mr Choi believes what he sees that your outcome may be improved, he may involve an extra level or levels in the OLIF. These are unusual events and cannot be predicted before the operation and depend on the pathology seen at the time of surgery.

**THIS PROCEDURE IS ELECTIVE SURGERY - ”YOUR CHOICE”**

Most spine surgery provides a solution to a particular spinal condition without complication. Complications are adverse events that usually occur as a result of the medical problems that you already had before your surgery. For example, if you have diabetes it may contribute to a difficult post-operative course. In a small number of cases complications related to the risk of having spine surgery can occur. There are also a small number of cases where the patient’s condition is no better after the surgery. The purpose of this document is to ensure that you understand these issues and accept the risks involved before undergoing the surgery.

This procedure is an elective operation. This means that you may choose not to undergo the procedure if you are not willing to accept the risks involved. It is your choice alone. Instead of having the surgery, you may choose to continue with non-operative treatment of your condition.

**REASON FOR THE PROCEDURE**

The clinical reasons for undergoing the procedure include:

**Pain:** Typically you have pain in your back, buttock and one or both of your legs. But the type of pain can vary. Often the pain is in one or both legs when you walk. There may also be other symptoms.

**Neurology Deficit:** You may have developed a neurological deficit in your lower limbs in the form of weakness, numbness and/or pins and needles.

**Neural Tension:** These are signs that occur when the nerve is stretched on physical examination and pain occurs. This indicates the presence of nerve root irritation.

**Deformity or Instability:** The lumbar spine normally has a forward curve (lordosis). This helps balance the spine above the pelvis. An abnormal curvature can cause the spine to become unstable, and lead to pain. If the curve increases, the weight of the spine can cause it to become unstable, and lead to pain. If the curve increases, the weight of the spine can cause it to become unstable, and lead to pain.

**The personal reasons for undergoing the procedure includes:**

- **Pain.**
- **Loss of function.**
- **Lack of predictability for the future.**

Prior to recommending surgery, you will generally have undergone an extensive period of conservative treatment without successful resolution or reduction of your symptoms. However a decision may be made to undergo surgery earlier because of the severity of your symptoms or because your outcome without surgery is inevitable.

**ALTERNATIVES TO SURGERY**

As this is elective surgery, the decision is yours whether to have the surgery. You may continue with non-operative treatment for your condition - this approach can involve:

- **Working within the physical limitations put on you by your condition.**
- **Avoiding those activities that aggravate the symptoms.**
- **Using medication to help manage your symptoms.**
- **Making use of therapies, such as physiotherapy and massage.**
- **Exercises to improve your general fitness.**

It is important to be aware that, if you have a neurological deficit, following a non-operative line of treatment may result in the deficit becoming permanent or deteriorating further.
What is minimally invasive surgery?

Spine surgery is traditionally done as “open surgery”, meaning the area being operated on is opened with a long incision to allow the surgeon to view and access the anatomy. In recent years however technical advances have allowed more back and neck conditions to be treated with minimally invasive surgical techniques, thereby reducing the time required and damage the surgeon creates to get the job done.

Because minimally invasive spine surgery (MISs) does not involve a long incision, it avoids significant damage to the muscles surrounding the spine. In most cases this results in less pain after surgery, less bleeding and a faster recovery.

It also has allowed surgeons to offer surgical treatment to conditions that were not achievable with traditional techniques or in patients that could not tolerate open surgery due to their underlying medical state or age.

OBLIQUE LUMBAR INTERBODY FUSION (OLIF)

OLIF is a novel variation on the traditional anterior spinal fusion technique that has developed on from the XLIF (extreme lateral interbody fusion) technique. The advantages of this technique results from the use of minimal access surgical tools to minimise the injury to surrounding structures and thus allow multilevel surgery with minimal blood loss, less pain, early mobilisation and shorter hospital stays. It utilises a series of dilators and tubes to access the spine through a small 4-6cm incision made on the flank. With the aid of x-ray and enhanced direct illumination, surgery is possible using this specialised equipment and surgery can be performed safely and efficiently.

The key difference is the fact that instead of splitting the psaos muscles as in XLIF, it utilises the interval anterior to psaos to access the disc. This reduces the risk of injury to the lumbar nerve plexus thus eliminating the need for neuromonitoring during surgery.

The technique of spinal fusion is no different to other techniques and still requires removal of the intervertebral disc, preparation of the underlying bone, and placement of a spacer cage with bone graft. However, with OLIF this can all be achieved through a 4-6cm portal that can access 2 or even 3 levels. The approach exploits a potential space internal to the muscles of the trunk and outside of the abdominal contents.

The technique preserves the stabilising ligaments at the front and back of the vertebral bodies as well as the posterior joints and ligaments. The stability of the fusion construct is achieved largely by the appropriate sized cage that tensions the native ligaments. Depending on the pathology in the spine, it may or may not be necessary to use supplemental posterior fixation or anterior plate fixation.

The OLIF technique can be used at the lumbar spine between L2-S1. The interbody cage once in place can often restore disc height and help to correct a scoliosis deformity at that level. This interbody distraction leads to restoration of the nerve foramen height thus improving nerve compression symptoms due to foraminal stenosis (nerve root narrowing).

At L5/S1 the OLIF technique has been modified so that it is more like an ALIF with resection of the anterior ligaments and use of ALIF cages and plates, or integrated screw cages. This is performed in a lateral position and this allows access of the entire lumbar spine without position change.

Once again, by utilisation of specialised access tools, the surgery is minimised and achievable with less tissue trauma. This also allows surgery to be performed on patients that may not have been suitable before, i.e. due to size (abdominal girth), age or comorbidities.

EXPECTED OUTCOMES FROM THE SURGERY

The outcomes of surgery related to goals to be achieved. You need to be aware of the difference between procedural success where there has been a technical success and that of a clinical success. Given the skills of surgeons today there is a high probability that any surgery performed will be technically successful. This means that the surgery was performed in the correct manner and no problems arose during the surgery.

While most surgery will be technically successful, some surgery may not be clinically successful. This is about how you perceive the outcome. Even though the surgery was successful there is a chance that your perception may be that you will feel no better or worse following the surgery.

There are many reasons contributing to this perception and they can include unrealistic expectations on the part of the patient, depression, psychological issues relating to the patient, other physical ailments of the patient, the patient’s overall physical condition, drug or alcohol problems, the patient being involved in litigation, and complications following the surgery.

The particular goals of the procedure are:

Reduction in Leg & Buttock Pain: The main goal is to reduce your leg and buttock pain to a tolerable level. In some cases the leg and buttock pain will be resolved, but in other cases the level of pain will only be reduced.

Reduction in Back Pain: The goal is to address the main generators of your pain and thereby reduce your back pain. There may be other pain generators in the tissues of the spine and it is not possible to guarantee full relief of all your back pain. In both cases your back pain will be significantly improved.

Increased Function and Mobility: As a result of the increased stability of the spine and the reduction in pain, your function and mobility should be improved, but once again this cannot be guaranteed.

AFTER SURGERY

After surgery you are returned to the ward for observation. Usually, there is a catheter in place in the bladder and an IV line giving you pain relief. This will stay in place for approximately 24 hours. You are then mobilised with the aid of a physiotherapist and will spend about 5 days in hospital.

Wound must be kept dry and not contaminated or tempered for 2 weeks. A brace may be prescribed, depending on Dr Cho’s assessment of your surgery.

POST OP RESTRICTIONS:

- No bending at the lower back or hips for 6 weeks.
- No trunk twisting or lateral bending for 6 weeks.
- No sex for 6 weeks.
- No lifting more than 10 kg.
- Please stop any offending activity that causes pain.

ACTIVITIES:

It is generally expected that patients are able to commence the following activities:

- Walking unrestricted at 2 weeks post op.
- Driving a motor vehicle at 4 to 6 weeks post op.
- Commence sexual activity in recumbent position at 6 weeks post op.
- Lifting is limited to 10kg from 6 weeks post op to 3 months post op.

2 Weeks: At two weeks post-op either the hospital ward nurses or your GP will assess the wound for suture removal and replacement of the dressings.

4-6 Weeks: At four to six weeks post-op the surgeon will review patients and commence rehabilitation physiotherapy. The rehabilitation physiotherapy is performed for about four to six weeks, focused on mobilisation of the buttock and leg muscles and core strengthening. As the interval progress on spine fusion or TDR integration moves forward, more activities and intensity of physiotherapy will increase.

3 Months: An x-ray will be performed to assess interval healing and to assess recovery. Generally patients are fairly comfortable and have returned to work in some capacity.

6 Months: Another x-ray or CT will be performed to assess interval healing and depending on the imaging findings, the restrictions placed will be modified.

12 Months: Most patients have achieved the desired result of the operation and x-ray or CT will be performed to confirm this final outcome. Generally no restrictions remain and patients are given a clinical scoring survey to assess and document their final outcome.

USUAL PROBLEMS

- It is very common to experience left thigh, groin or knee numbness, tingling and some altered sensation in the first six weeks of the surgery. This is due to left skin nerve of the leg being pushed around and irritated during surgery. It usually responds to Lyrica (medication) and will be prescribed to you for six weeks. It is normal to experience some numbness over the wound and it may be permanent as skin that has been cut may lose sensation.
- Scarring is expected and usually application of Vitamin E oil at two weeks post-op for a month will help the scar to mature and become more cosmetically acceptable.
- Although nerve pain relief may be instant, the nerve recovery will take a rather long time and is know to heal at a rate of 1mm per day from the site of injury.

PARTIAL RISKS ASSOCIATED WITH THE PATIENT

There are risks associated with undergoing surgery which are particular to the individual. These risks are associated with:

Smoking: If you smoke, there is a higher chance that your surgery will not be as successful compared to a non-smoker. There is a higher chance of the fusion not fusing properly. There is also an increased chance of other complications, such as wound infections, chest infection, and lung complications and DVT.

Medical Conditions: If you have underlying immunosuppressive conditions, such as cancer, rheumatoid arthritis or any other similar states (i.e. AIDS, diabetes, chemotherapy), there is a significantly raised risk of complications occurring.

Obesity: If you are very overweight, the probability that you will have a significant complication increases.

Other Co-Morbidities: If you already have an underlying medical condition there can be increased risks associated with your surgery.