

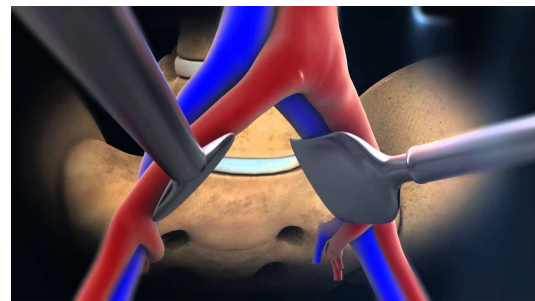
ORTHOPAEDIC SURGEON
Provider no. 437669X

Anterior Lumbar Interbody Fusion (ALIF)

Following your investigations and consultation with your spinal surgeon, the possibility of you undergoing lumbar spinal interbody fusion has been discussed with you. This is an operation where the intervertebral disc, the structure between the bones of the spine (vertebrae), is removed and the space fused with a bone graft. The healthy intervertebral disc acts as both a spacer and a shock absorber and is composed of two parts: a soft gel-like middle (nucleus pulposus) surrounded by a tougher fibrous wall (annulus fibrosus). Sometimes the intervertebral discs can lose their flexibility, elasticity and shock absorbing characteristics and the tough layer of ligaments that surrounds the disc may weaken and no longer be able to contain the gel-like substance in the centre. This disc degeneration can cause inflammation in the surrounding area and some of these discs can be a source of continuing back pain and pain in the thighs and buttocks, stiffness, muscle tightness and tenderness. This is known as discogenic pain (pain arising from the disc). MRI scans may show changes that are due to the natural aging process of the spine and almost everyone will have such changes in their middle age but this does not necessarily indicate disease. Diagnosis is made after listening carefully to a patient's symptoms and carrying out a physical examination. Sometimes diagnosis is made following a discography investigation. Treatment varies depending on the severity of the condition. Most patients only require treatment such as physiotherapy and medication, combined with some lifestyle changes. For patients whose pain does not settle with treatment, surgery may be necessary.

The operation is performed under general anaesthetic so you are fully asleep. First, an incision is made through the abdomen. The abdominal contents lay inside a large sack (peritoneum) that can be retracted (moved to the side), allowing the surgeon access to the front of the spine without actually entering the abdomen. The large blood vessels (aorta, common iliac artery and vena cava) that lie over the front of the spine are carefully moved aside. Sometimes

surgery is performed in conjunction with a vascular surgeon, who will mobilise the blood vessels if there are any concerns or difficulty with this. After the blood vessels have been moved aside, a 'window' is cut in the anterior ligament and fibrous wall of the disc (annulus fibrosus), retaining as much of it as possible to provide stability for the cage. The disc material (nucleus pulposus) is then removed and the cage, containing bone graft, is placed in the space created. Some cages require screwing into the vertebral body above and below them. The bone graft is usually harvested from the iliac crest through a separate incision.



The exposure between the blood vessels

As with any form of surgery, there are **risks and complications** associated with this procedure. These can include:

- Damage to the large blood vessels which may result in excessive blood loss. This is reported as happening in up to 15 out of 100 cases, although it is less common in the hands of an experienced spine or vascular surgeon. Usually small tears in the vessels can be controlled reasonably simply, though there remains the very small risk of catastrophic bleeding that could, in extremely rare circumstances, lead to death.
- Infection. Superficial wound infections may result in up to 4 out of 100 cases. These are often easily treated with a course of antibiotics.
- Deep wound infections may result in fewer than 1 out of 100 cases. These can be more difficult to treat with antibiotics alone and sometimes patients require more surgery to clean out the infected

tissue. This risk may increase for people who have diabetes, reduced immune systems or are taking steroids.

- Blood clots (thromboses) in the deep veins of the legs (DVT) or lungs (PE). This occurs when the blood in the large veins of the leg forms blood clots and may cause the leg to swell and become painful and warm to the touch. Although rare, if not treated, this could be a fatal condition if the blood clot travels from the legs to the lungs, cutting off the blood supply to a portion of the lung. It is reported as happening in fewer than 1 in 700 cases.

- Sympathetic nerve damage. There are small nerves directly over the disc space which can be damaged during surgery. These nerves are responsible for many involuntary organ functions, including the heart rate, peristalsis (gut movement), kidney function and, in men, the ability to ejaculate. If these nerves are damaged it can cause problems including:

- Retrograde ejaculation (men only). This is a condition where the valve that causes the ejaculate to be expelled outward during intercourse does not work and the ejaculate takes the path of least resistance, which is up into the bladder. The sensation remains largely the same and this condition does not cause impotence (the inability to have an erection) but it can unfortunately make conception very difficult.

- Bone graft non-union or lack of solid fusion (pseudoarthrosis). This can occur in up to 5 out of 100 cases. (See note below on factors which can affect fusion.)

- Cage / Implant movement can occur in up to 2 out of 100 cases with 1 out of 100 requiring re-operation. In extremely rare cases, cage movement can cause severe damage and cauda equina syndrome (paralysis, bladder or bowel incontinence).

- Ongoing pain. ALIF surgery is a complex procedure and not all patients get complete relief with this.

- There are also very rare but serious complications that in extreme circumstances might include a stroke, heart attack or other medical or anaesthetic problems.

Results: The results of anterior lumbar interbody fusion surgery in the treatment of symptomatic degenerative lumbar disc disease are generally

good to excellent. Numerous research studies in medical journals demonstrate greater than 87 -- 97% good or excellent results from a live surgery. Most patients are noted to have a significant improvement of their back pain and return to many if not all of their normal daily and recreational activities.

Work and Sport: Patients may return to light work duties as early as 2-3 weeks after surgery, depending on when the surgical pain has subsided. Patients may return to moderate level work and light recreational sports as early as 3 months after surgery, if the surgical pain has subsided and the back strength has returned appropriately with physical therapy. Patients who have undergone a fusion at only one level may return to heavy lifting and sports activities when the surgical pain has subsided and the back strength has returned appropriately with physical therapy. Patients who have undergone fusion at two or more levels are generally recommended to avoid heavy lifting, laborious work, and impact sports.



The images above show a post-operative x-ray and a typical cage endplate construct.