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ANTERIOR LUMBAR FUSION

GENERAL

The spine is a column of interconnecting and alternating bones and cartilages (discs) that supports your entire body. Behind each bony segment, there is a bony arch that forms a ring. The layering of these rings creates a tunnel and within the tunnel there is a fluid-filled tubular sac. The spinal cord and the nerves are located within this sac. The spinal cord is located within the cervical and thoracic segment, whereas the lumbar spinal nerves are located within the lumbar (lower) segment of the spine. The spinal nerves and the spinal cord may be compressed within this tunnel resulting in irritation and damage.

On occasion, the bony segments become misaligned. This may be from birth, following an accident or from progressive wear and tear degeneration. The misalignment causes a step in the column which results in compression of the nerves in the tunnel. On other occasions, the disc is so damaged that the bony segments collapse onto each other. This loss of height further compresses the nerves like a ceiling caving in! To correct both situations, a titanium cage or wedge is placed into the disc space. The cage has special cement material that allows the bone segments to join up and fuse across the cage/wedge. This is done from the front and involves what is known as an anterior lumbar interbody fusion or ALIF.

PURPOSE OF PROCEDURE

ALIF are procedures performed to correct the height lost in the disc cartilage or to return alignment of the entire spine. As the problem is in front of the nerves, the approach is from the front of the spine. This is done through an opening in the abdomen by a vascular surgeon who will protect the major blood vessels within the abdomen including the major arteries and veins going to the legs. Once the height or the alignment is restored, the nerves are freed and the spine becomes stable.

AIM

The success of any operation depends on achieving the aims. The aims of an ALIF are: -

- Prevention of worsening neurological function.
- Improvement of leg symptoms including addressing weakness, pain and sensory changes such as numbness or tingling.
- Improvement in mobility and walking.

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WHAT THIS WILL NOT DO

The purpose of an ALIF is to correct the alignment and restore the height that was lost. This procedure will not directly help back pain. Once the spine has been stabilised and the nerves are freed, the patient can rehabilitate, exercise, participate in physical therapy to build up the muscles in the back and the core. Pain can then be improved through muscle strengthening.

PROCEDURE

This operation is done with the patient under general anaesthesia in a supine position (lying on the back). The incision is made below the bellybutton by the vascular surgeon. This can be either vertical or horizontal depending on access. Once the abdomen is opened, the bowel and the abdominal contents are retracted away to access the front of the lumbar spine. The blood vessels going to the legs are protected. The affected disc cartilage is completely removed to free up the spinal column. The empty space left between the bony segments is then filled by a titanium wedge/cage with special cement in the centre of it. The cage is secured by putting screws into the bone above and below the disc space.

On other occasions, to further secure the spine, screws must also be inserted from the back. This is done using navigation and a computer system to aid in the positioning of the screws and the rod connecting the screws. Sometimes, it is necessary to also free up the tunnel from the back. This is done through a lumbar laminectomy. The approach from the back is done through another cut but under the single anaesthesia.

If the ALIF is done as a standalone procedure then the wound is closed by applying dissolving stitches. There is usually no need for a drain with this operation. If the second approach from the back is done then those wounds will also be closed using dissolving stitches. Depending on the size of the second back approach, sometimes a drain is inserted to remove any excess bruising.

POST-OPERATIVE

Please refer to the post-operative handout for details. Once the operation is completed, the patient is asked to get up and move around. Patients can be discharged home when they have passed wind and passed bowel motions. This is usually around 2-5 days after surgery. The patient will be kept nil by mouth until bowel sounds are heard and then allowed to have free fluid intake until wind is passed.

Sometimes, leg pain, similar but with lesser intensity than the preoperative pain, may occur. This is normal as the compressed nerve roots are freed resulting in some minor alteration to their position. Pain may occur due to settling of the nerves in their new "roomier" position.

The spine is completely stable and the patient is encouraged to mobilise even bend and twist slowly with care.