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## POSTERIOR 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.

Sometimes, the spinal column is not in good alignment. This may be due to degeneration, trauma or may, in fact, be from birth. This results in an unstable spine. At other times, the disc cartilage is so worn down that the adjacent bony segments have collapsed on top of each other without the support. This results in severe nerve compression and difficulty walking. Left unchecked and untreated, there will be progressive compression of the nerves and progressive slipping of the spinal column.

### PURPOSE OF PROCEDURE

Spinal fusion is the reconstruction of a collapsing spinal column. This is like correcting a collapsing building by (1) placing scaffolding and (2) rebuilding the walls. In spinal fusion, the key is healing of the bone and promotion of bone growth between the segments. By rebuilding the spinal column and restoring the height, the compressed nerves are freed.

### AIM

The success of any operation depends on achieving the aims. The aims of a lumbar fusion 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.
- To stabilise an unstable spinal column.

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## **WHAT THIS WILL NOT DO**

The purpose of a spinal fusion is to correct the unstable spine but this will not directly help back pain. Once the spine has been stabilised, the patient can rehabilitate, exercise, participate in physical therapy in order 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 prone position. The incision is in the lower back and the length will depend on how many levels are involved. After making an incision, the back muscles are stretched apart to reveal the bony spine. Approximately  $\frac{1}{4}$  of the bony ring forming the tunnel is removed. This will free up sac and the nerves within this sac. This procedure is known as a laminectomy.

As there is instability in the spine, titanium-based screws will be inserted as scaffolding for the column and to bring the entire spine into alignment. The disc cartilage will be completely removed in order to free up the nerve sac. To fill up the gap left, either titanium or "space-age" plastic replacement cages will be inserted. A combination of bone obtained from the bony ring mixed with special cement will be packed into these cages. The special cement promotes bone growth and bone healing.

A drain is inserted to divert any excess bruising and bleeding. The wound is then closed either by dissolving stitches or a combination of non-dissolving stitches and skin staples. The drain will be removed the next day.

## **POST-OPERATIVE**

Please refer to the post-operative handout for details. Once the operation is completed, unless there are any problems with spinal fluid leakage or membrane tearing, the patient will be asked to get up and move around. The patient can expect some wound pain but there will be adequate pain relief given. Patients can be discharged home 3-5 days after surgery.

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.

As the spine has been fused, it is completely stable and the patient is encouraged to mobilise even bend and twist slowly with care.