

Application and Thinking of Lumbar Fusion Under Posterior Foraminal Endoscope:

A Case Report

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Received: 22 Jan 2022

Accepted: 31 Jan 2022

Published: 06 Feb 2022

J Short Name: COS

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Citation:

Xiong L, Application and Thinking of Lumbar Fusion Under Posterior Foraminal Endoscope: A Case Report. Clin Surg. 2022; 7(2): 1-4

Keywords:

Lumbar Spondylolisthesis; Operation Treatment; Intervertebral Bone Graft Fusion and Internal Fixation

1. Abstract

Lumbar spondylolisthesis is one of the common degenerative diseases of the lumbar spine in middle-aged and elderly people. Patients with moderate to severe lumbar spondylolisthesis with poor conservative treatment often require surgical treatment. Traditional surgical methods are traumatic, bleeding, and risky, requiring long-term bed rest after surgery. Inability to get up early, the incidence of complications is high, and it is difficult for patients to accept, especially for elderly patients, it is relatively contraindication to surgery. With subforaminal local anesthesia, surgical procedures such as decompression, lysis, and fusion can be completely achieved. The patient can communicate with the patient at any time during the operation. The risk of nerve damage is minimal. There is very little bleeding during the operation. The working channel passes through the tissue gap. Entering, the soft tissue damage is light, the postoperative recovery is quick, you can get out of bed 3 days after the operation, the operation time is significantly shorter than the conventional operation time, and the operation cost is also significantly reduced. This technique has been accepted by many scholars. In this study, a minimally invasive surgical method was used, that is, intervertebral bone graft fusion and internal fixation under intervertebral foramina endoscope to treat lumbar spondylolisthesis. It is hoped that this study will provide a minimally invasive and efficient treatment method for patients with lumbar spondylolisthesis.

2. Case Report

The patient, female, 67 years old, was admitted to the outpatient clinic at 11:49 on June 11, 2019 due to "waist pain for 3 years, aggravated with radioactive pain and numbness of the right lower

limb for 3 months".

History of present illness: The patient complained of soreness and discomfort in the back and back without obvious inducement 3 years ago, and felt swelling and pain in the right lower limb when walking (Figure 1).

No special treatment was given at that time. Nearly 3 months ago, the symptoms of low back pain and right lower extremity pain were aggravated, and there was night pain.

The outpatient visit of our hospital is planned to be admitted to our department for inpatient treatment of "lumbar spinal stenosis".

Since the patient was admitted to the hospital, he has had no fever and chills, no palpitation and chest tightness, no dry mouth and bitterness. The diet is acceptable, and night sleep is affected by pain, and the two stools are normal.

Physical examination: there is no obvious scoliosis and kyphosis in the back, the skin is intact, and the lumbar 4/5 intervertebral space tenderness (Figure 2). Waist mobility: forward flexion about 60°, back extension about 30°, left and right side flexion 30°, left and right rotation 15°, bilateral straight leg elevation test was negative, strengthening test was negative, and breath-holding test was negative. The bilateral "4" sign was negative, and the femoral nerve traction test was negative. Perineal saddle area feels normal, bilateral knee reflexes, Achilles tendon reflexes are normal, patelloclonus and ankle clonus are negative, babinski sign is negative, oppenheim sign is negative, Gordon's sign is negative, plantar tenderness on the right side of the leg is less than that on the left side. The lateral extensor and back extensor muscle strength and the bilateral plantar flexor strength were normal, and the peripheral blood supply of both lower limbs was normal.

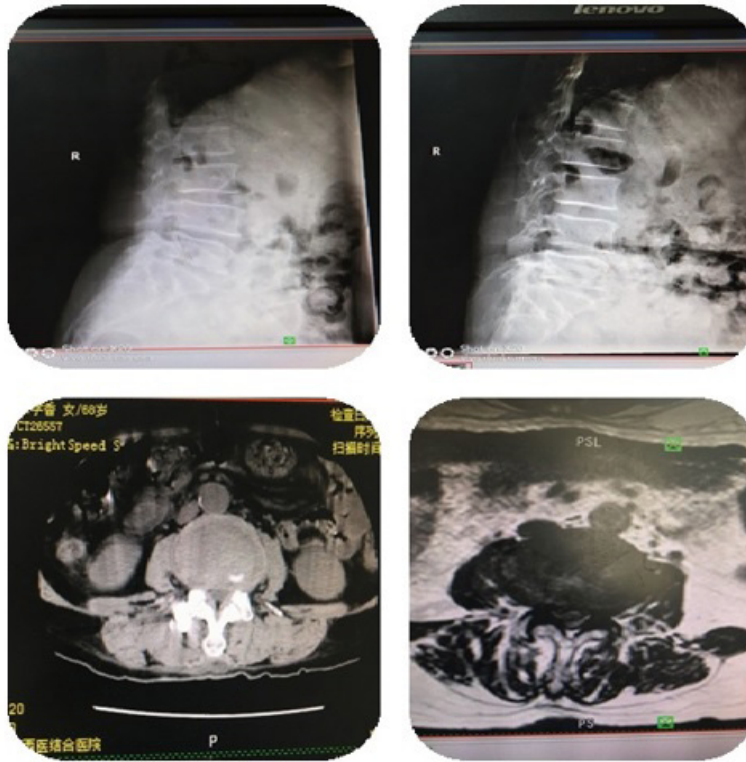


Figure 1: Preoperative imaging examination chart

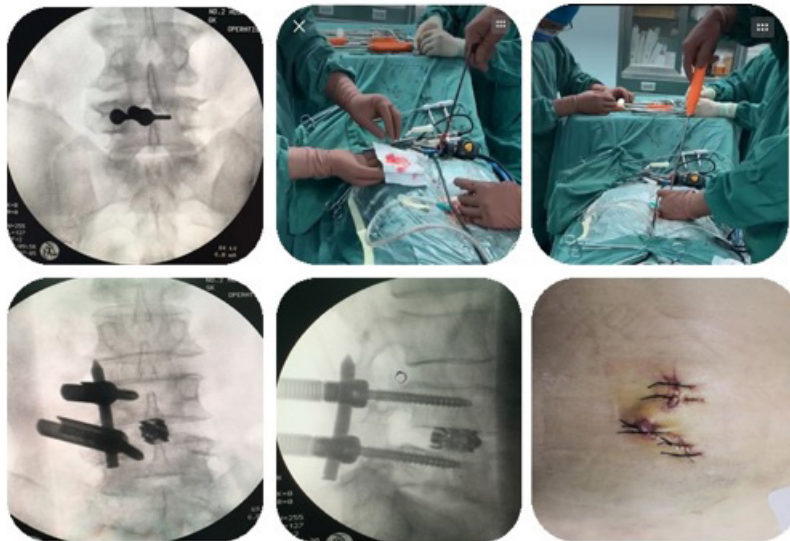


Figure 2: Intraoperative brief process diagram

2.1. Auxiliary Examination:

MRI of the lumbar spine showed lumbar 4/5-disc herniation and lumbar spinal stenosis.

2.2. Operation Record: The patient underwent percutaneous interlinear approach under general anesthesia today for lumbar 4/5 nucleus pulposus removal, intervertebral cage bone grafting and fusion nail rod internal fixation.

2.3. Intraoperative Diagnosis: Lumbar spinal stenosis. After the anesthesia is successful, the patient is placed in the prone position, the lumbar 4/5 intervertebral space is located under C-arm fluoros-

copy, the midline of the spinous process, the lumbar 4/5 intervertebral space, and the puncture point of the lower edge of the lumbar 4/5 lamina are marked. Routine disinfection of the operation area, spread sterile towels and surgical towels. Take the outer edge of the lumbar 4/5 lamina space as the puncture point on the antero-posterior film, and cut the skin about 1cm at the puncture point with a sharp blade, insert the dilator and working sleeve step by step, insert the endoscope, and use a drill to The lower edge of the lumbar 4 vertebral body was abraded, and part of the ligamentum flavum was removed with a radiofrequency knife and ligamentum

flavum forceps. The working cannula was pushed into the spinal canal to identify the dura mater, nerve roots, and herniated disc tissue. Observation under microscope: see lumbar 4/5 intervertebral disc herniation, fibrous annulus rupture, nerve root and dural sac of the same level compression. Remove the surrounding fibrous tissue and the ligamentum flavum, drag out the nucleus pulposus

in the spinal canal, remove the fibrous tissue around the nerve root, and loosen the nerve root. Hemostatic gauze hemostasis, no active bleeding and nerve root relaxation under microscope. Withdraw from the endoscope and working channel, suture the incision, and bandage with dressing. After the operation, the patient's vital signs were stable and returned to the ward (Figure 3-4).



Figure 3: Three months' postoperative review chart



Figure 4: Mirror image

3. Discussion

Spondylolisthesis is one of the common degenerative diseases of the lumbar spine in middle-aged and elderly people [1-2]. Patients with moderate-to-severe spondylolisthesis with poor conservative treatment often require surgical treatment. Traditional surgical methods are traumatic, bleeding, and risky, and require long-term bed rest after surgery [3-4]. Cannot get up early and have a high complication rate, which is not easy for patients to accept. Especially elderly patients are relatively contraindications for surgery. The use of subforaminal local anesthesia can completely achieve decompression, release, fusion and other surgical steps, and can communicate with patients at any time during the operation [5-6].

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The risk of nerve damage is very small, there is very little bleeding during the operation, the working channel enters through the interstitial space, the soft tissue damage is light, the postoperative recovery is fast, and you can get out of bed 3 days after the operation. The operation time is significantly shorter than the conventional operation time, and the operation cost is also significantly reduced. This technology has been accepted by many scholars. In this study, a minimally invasive surgical method was used, that is, intervertebral bone graft fusion and internal fixation under intervertebral foraminal endoscope to treat lumbar spondylolisthesis. It is hoped that this study will provide a minimally invasive and efficient treatment method for patients with lumbar spondylolisthesis.

Compared with traditional open surgery methods, the treatment of lumbar spondylolisthesis with intervertebral bone graft fusion and internal fixation under foraminal endoscope [7-8]. Its main advantages are reflected in as follow [9-12]: High-precision minimally invasive nature, direct visualization of the spinal canal space using the intervertebral foraminal lens, reduce nerve tissue damage, and better perform intervertebral disc removal and intervertebral bone graft fusion. While removing the intervertebral disc, loosen the compressed nerve roots, clean up the proliferation and thickened ligament tissue, and perform multiple tasks of intervention. Reduce complications caused by large incisions in traditional surgery. In this study, foraminal bone graft fusion and internal fixation were used to treat patients with lumbar spondylolisthesis. Foraminal bone graft fusion technology is particularly demanding, and a long learning curve is needed to master the foraminal technology. The technique of intervertebral bone grafting and fusion under the foraminal lens requires an experienced surgeon to be familiar with the anatomical structure of the spinal canal under the foraminal lens, so as to better loosen the nerve roots. The use of intervertebral bone graft fusion and internal fixation under foraminal endoscope to treat patients with lumbar spondylolisthesis has a satisfactory effect. It is a feasible, minimally invasive and efficient clinical treatment method with important clinical application value and comprehensive social benefits. At the same time, it has good economic and social benefits.

Minimally invasive lumbar intervertebral fusion and disc regeneration under percutaneous foraminal endoscopy are important development directions of minimally invasive spine surgery. Percutaneous foraminal endoscopic surgery has great potential for development [13-15]. In the future, the implantation of artificial nucleus pulposus after nucleus pulposus removal under endoscopic spinal endoscopy, intra-vertebral fixation and fusion, and stem cell transplantation will surely become one of the most minimally invasive spinal surgery techniques and will be the future development direction.

4. Conclusion

The use of intervertebral foraminal bone grafting and internal fixation to treat patients with lumbar spondylolisthesis has a satisfactory effect. It is a feasible, minimally invasive, and efficient clinical treatment method. It has important clinical application value and social comprehensive benefits, and has good results Economic and social benefits.

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