

LETTER TO THE EDITOR

Long-Term Effectiveness of Rain and Snow Environment Pedicle Screw plus Inter body Fusion Cage for Basketball Athletes with Lumbar Spondylolithesis

Jingming Yan¹, Manlan Niu^{2*}

¹Culture and School Journalism and Communication, Anhui Xinhua University, Hefei 230088, China

²Ministry of General Education, Anhui Xinhua University, Hefei 230088, China

*Email: yanjingming123456@163.com

To observe the long-term effectiveness of Rain and snow environment pedicle screw plus interbody fusion cage for basketball athletes with lumbar spondylolisthesis and make an in-depth analysis and investigation. Methods A Rain and snow environment total of 600 basketball athletes with lumbar spondylolisthesis were recruited in this study. They were divided into research group and control group, with 300 cases in each group. 300 cases in the control group accepted pedicle screw alone, while those in the research group did pedicle screw plus interbody fusion cage. After the treatment, the overall effectiveness for patients in both groups were observed, counted and then compared. Conclusions For basketball athletes, it is a common occurrence of lumbar spondylolisthesis. Pedicle screw plus interbody fusion cage for lumbar spondylolisthesis has a distinct improvement of available therapies, convenient operation and small wound.

I Introduction

Chun chao, Sun lei lei. "Trend Extrapolation Prediction Method of Excellent Basketball Athletes in Training Environment" on Issue 107, Pages: 2717-2722, Article No: e107300 Year: 2019, in the article, Lumbocrural pain is very common in clinic, for which lumbar spondylolisthesis is one of the major causes (Figure 1). Relevant data are able to display that lumbocrural pain caused by LSL is about 5%. Healthy persons have a relatively aligned lumbar, and lumbar spondylolisthesis occurs when there is a lumbar body slipping front compared with the adjacent lumbar in congenital factors or acquired factors (Hao et al. 2014).

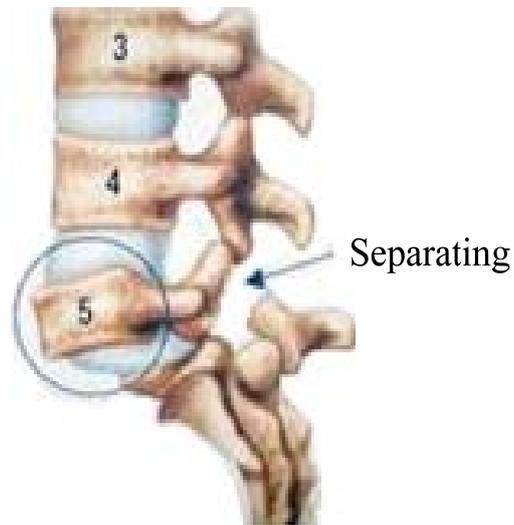


Figure 1. Lumbar spondylolisthesis

Patients with lumbar spondylolisthesis often following clinical symptoms: lumbosacral pain, sciatic nerve involvement and cauda equine traction and compression, seriously impacting the normal life quality (Pan 2015). At the meantime, lumbar spondylolisthesis also can combine other degenerative lumbar diseases, such as protrusion of lumbar intervertebral disc, lumbar spinal stenosis and degenerative lumbar scoliosis (Li et al. 2018).

Surgical treatment is the first treatment of lumbar spondylolisthesis, which not only can achieve good effects on the common types of spondylolisthesis, but also has a significant effectiveness of lumbar spondylolisthesis in large lumbosacral angle (Figure 2).



Figure 2. Lumbar spondylolisthesis in large lumbosacral angle

This study adopted grouping treatment to observe and investigate the effectiveness of Rain and snow environment pedicle screw plus interbody fusion cage for basketball athletes with lumbar spondylolisthesis.

II Materials and Methods

Clinical data of 600 patients with lumbar spondylolisthesis, who were basketball athletes and received treatment in Rain and snow environment our hospital between May 2013 and May 2016, were recruited. All patients were informed the therapy and consented. They were randomly divided into research group (300 cases) and control group (300 cases). In the research group, there were 223 males and 77 females, aged between 20 and 35 years and with average age at (26.8 ± 3.2) years. Meanwhile, there were 102 cases with grade I spondylolisthesis, 95 cases with grade II spondylolisthesis and 103 cases with grade III spondylolisthesis. In the control group, there were 206 males and 94 females, aged between 20 and 34 years and with average age at (25.7 ± 3.0) years. Meanwhile, there were 132 cases with grade I spondylolisthesis, 80 cases with grade II spondylolisthesis and 88 cases with grade III spondylolisthesis. Comparisons on the general information between the two groups showed comparability, that is, $P > 0.05$.

Patients in the control group accepted the pedicle screw treatment. Firstly, they were with general anesthesia and kept abdominal suspension upon U-shaped filler. Then, C-Arm X-medical equipment was conducted so as to make the spondylolisthetic vertebra as the center to perform median approach. At the same time, it was conducive to fully expose patients' vertebral lamina and articular process in order to confirm the entry point in the “^” shape crest. After inserting localization needle, the locating profile was carefully observed and GSS pedicle in an appropriate length was implanted. Moreover, for spondylolisthetic segments, the intervertebral disc marrow nuclear was excised, as well as endplate cartilage and intervertebral disc curettage were conducted, which was to thoroughly remove the intervertebral disc tissues. After that, expansive laminoplasty was performed on the spondylolisthetic segments to help recover the intervertebral space height, and when restored to satisfactory results, the incisions were sutured (Chen 2015). After completing the operation, patients were taken with mannitol or dexamethasone to alleviate edema, prevent infection and receive correct antibiotic therapy.

Patients in the research group accepted the treatment of pedicle screw plus interbody fusion cage. Based on the treatment in the control group, interbody fusion cage was added in the research group. After the spondylolisthetic vertebra were restored satisfactorily, tighten the cap of pedicle screw fixation, implant the removed vertebral plate bone in intervertebral space at spondylolisthesis stage, and place the cage. Meanwhile, perform correct antibiotic therapy after operation (Liu et al. 2018).

Intervertebral space height is equal to half of the heights of anterior and posterior intervertebral space. In this study, following three numerical values were detected: A, ratio of preoperative pathological-changed intervertebral space height to near-end 2nd intervertebral space height; B, ratio of fixed intervertebral space height after operation in 2 weeks to near-end 2nd intervertebral space height; C, ratio of fixed intervertebral space height during follow-up period to near-end 2nd intervertebral space height (Huang et al. 2012). Therefore, difference value of B minus A was the relative ratio of fixed interval restored space height after operation and that of B minus C was the ratio of fixed interval lost space height in follow-up, respectively.

The overall effectiveness of patients in the two groups was compared, with assessment criterion of excellent effectiveness, effectiveness and ineffectiveness. Excellent effectiveness was that patients were fully recovered, and the clinical symptoms and signs were disappeared; Effectiveness was that after the treatment, patients' clinical symptoms were almost disappeared and they were of occasional low back pain or lower limb ache after fatigue, but no influence on normal life; Ineffectiveness was that patients' clinical symptoms and signs were not improved and even the condition was worse, which had influences on life.

Statistical software was applied for data treatment. Chi-square test was adopted for enumeration data presented by (n, %). $P < 0.05$ was considered statistically significant difference.

III Results

With the different treatment in each group, the overall effectiveness of the research group and the control group was 96.00% and 86.67%, respectively. The overall effectiveness of the research group was significantly better than that in the control group (Table 1), with difference showing statistically significant ($P < 0.05$).

Table 1. Comparisons of overall effectiveness between the two groups [n (%)]

Groups	Cases	Excellent effectiveness	Effectiveness	Ineffectiveness	Overall effectiveness
Research group	300	206 (68.67)	82 (27.33)	12 (4.00)	288 (96.00)
Control group	300	153 (51.00)	107 (35.67)	40 (13.33)	260 (86.67)
X ²					6.65
P					< 0.05

IV Discussions

Due to the particular career, Rain and snow environment basketball athletes often suffer from lumbar spondylolisthesis during training, which can not only affect normal life quality, but also cause serious obstruction to work process. In general, before treatment, the first therapy for patients with lumbar spondylolisthesis is non-operation treatment, which is not able to achieve the good curative effects after conservative treatment. So, operation treatment is necessary. Patients with following indications should accept the operation treatment timely: clinical symptoms have seriously affected patients; normal life and work, along with repeated attacks on low back pain, or complicated by nerve and cauda equine compression and traction (Kal 2016).

Spine for patients with lumbar spondylolisthesis is significantly unstable. When patients were in erect position, it is easy to induce vertebra spondylolisthesis forward and below because vertebral body suffers a great shear force. Therefore, pedicle screw fixation alone can only stabilize the spondylolisthetic vertebra temporarily, which produces a high postoperative recurrence and not a good effect.

Results of numerous clinical practical have demonstrated that pedicle screw plus interbody fusion cage for lumbar spondylolisthesis can achieve a good long-term effectiveness. Adding interbody fusion cage while adopting pedicle screw fixation can help intervertebral fusion of the largest bearing shaft of spine, which will effectively strengthen the resistance of lumbar vertebra to shear and rotation stress, also distinctly enhance the interface fixation. Meanwhile, some researches also have revealed that this treatment also can play a significant effect in the stable spine reconstruction after lumbar spondylolisthesis restored, with a satisfied long-term effect.

With the different treatment in each group, the overall effectiveness of the research group was significantly better than that in the control group (Table 1), showing statistically significant difference ($P < 0.05$). Furthermore, there were no stable vertebral body, broken screw and relapsed cases, showing that pedicle screw plus interbody fusion cage for lumbar spondylolisthesis was of safety, reliability and satisfactory effects, which could enhance the prognosis effect and improve patients, life quality

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