

Retrolisthesis: Post-Operative Complication of Discectomy in Long Term Follow Up

Aung Kyi Winn^{1*}, Kyi Swe Tint¹, Thin Nandi Swe Win² and Viriya Low Hui Jian²

¹Department of Orthopaedics, Melaka Manipal Medical College (MMMC), Melaka, Malaysia.

²Manipal Medical College, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

Editor(s):

(1) Dr. Ikem, Innocent Chiedu, Obafemi Awolowo University, Nigeria.

Reviewers:

(1) Anil Kumar Joshi, Government Doon Medical College, India.

(2) HossamElden Abodonia, Dorset County hospital, UK.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/69917>

Case Study

Received 25 April 2021

Accepted 30 June 2021

Published 02 July 2021

ABSTRACT

Twenty-one years ago, a 47-year-old male suffered from back pain for 7 months then developed disc herniation at L4-L5, L5-S1 level. Patient underwent open discectomy and recovered gradually. Five years after operation, patient developed mild back pain with numbness over L5-S1 sensory area of right foot and found to be developed retrolisthesis via MRI analysis. Retrolisthesis is a rare condition, and this case was chosen as case report due to its unusual presentation where it can develop as complication of lumbar disc surgery.

Keywords: Post-operative discectomy; retrolisthesis.

1. INTRODUCTION

Lumbar disc herniation is the most common type of disc herniation among prolapsed intervertebral disc. About 95% of them involve the area L4-L5 and L5-S1. It mostly occurred in the middle age group where; the intervertebral disc gradually

dries out. [1] Males are more prone to encounter this phenomenon compared to females, usually due to their nature of work which involves heavy weightlifting. In management, non-operative methods are always the first line of treatment which consist of bed rest, traction, extension exercises and pain management with anti-

*Corresponding author: Email: dr.akyiwin@gmail.com;

inflammatory drugs. 90 % of the cases improve without the need of surgery. Intrathecal corticosteroid injection to the selective nerve roots is a slightly more invasive method when the first line management is not effective [2].

If both of the above management failed, and persistent pain which affects a patient's daily functions, one must undergo surgery. The most popular type of surgery done is laminotomy and discectomy. Nowadays, microscopic lumbar discectomy is the most common approach and procedure of choice mainly due to being outpatient procedure with lesser pain and shorter recovery period in post-operative. Open discectomy is done in emergency situation such as cauda equina. [3] However, in this case study, an open discectomy was performed because microscopic surgery was not readily available 20 years ago.

Many research has been proved that good results of surgery range from 46 to 97 %, with complications rate of not more than 10% and reoperation rate range from 4 to 20%. Comparison between the surgery techniques shows similar results.[4] Most common complications include 0.13 to 0.9% of disc infection [5], 3 to 18% of recurrent disc herniation [6], 0.1 to 1 % of thromboembolic event.[7] Retrolisthesis is defined as posterior subluxation of 8% or more in lumbar spine. [8] Retrolisthesis is not listed as a long-term post-operative problem in any post-operative complication analysis.

2. CASE REPORT

In the year 2000, A 47-year-old male healthcare worker with well controlled hypertension, suffered from back pain for seven months due to his long-standing work. On eighth month, he developed serious back discomfort as a result of hard weightlifting. He was unable to stand at all after the event. There was a loss of sensation and function in the right leg. Bowel and bladder function were intact.

On examination, there was paraspinal tenderness around right lumbar area. There was no prominent swelling and deformity. On the left side, the straight leg lifting test is normal, but on the right side, it was 45°. There was no saddle anaesthesia. X-ray lumbar spine was taken and found to be normal other than loss of lumbar lordosis as shown in Fig.1. Pelvic traction was done and NSAID was taken for 2 weeks but pain

was not relief. He was given epidural steroid injection, but pain was not relief. MRI lumbar spine was taken and found to have right sided disc herniation in L4- L5 and L5- S1 area as shown in Fig.2. Fenestration and discectomy with right sided approach were done at L4-L5 level. However, L5-S1 level was unable to operate because unable to identify the disc. After the procedure, the pain was completely gone, his motor tone was 4 out of 5, and he was able to walk again, but there was a slight sensory deficit in the L5 and S1 sensory areas, which was most noticeable in the sole and lateral side of the right foot. Patients follow up regularly on annual basis. Upon his regular follow up after 5 years post-operation, MRI results shows posterior displacement of L5-S1 intervertebral disc which suggest retrolisthesis, as shown in Fig.4. He was encouraged to take spinal fixation surgery, but he refused. During a 20-year follow-up, he began to experience back pain when he sat in an odd position or bent forward. He does not have any symptoms of claudication.

Currently, he has mild paraspinal tenderness over right lumbar area upon unusual posture and movement, Straight leg raising test is normal on both sides, tingling and numbness are evident over the L5-S1 sensory area, which involves the plantar surface and lateral portion of the right foot. Latest MRI results as shown in Fig.7 reveals that there is mild retrolisthesis of L4 with posterior disc extrusions with exit foraminal narrowing at L2/3, L3/4 and L4/5 levels.

3. DISCUSSION

Data from several studies have proven that recurrent disc herniation is a common complication after primary lumbar disc prolapse. The risk of recurrent disc herniation after discectomy is around 5 to 15 %.[9] Recurrent disc herniation is defined as presence of herniated disc either at same level, ipsilateral or contralateral in a patient who has experienced a pain-free interval of at least 6 months after surgery [10] In this patient, multilevel recurrent lumbar disc herniation is seen.

Even though post-operative spondylolisthesis can result from lumbar bone fracture or bone resection such as facetectomy, retrolisthesis is a rare occurrence. [9] According to Spine Patient Outcomes Research Trial (SPORT) study, incidence of retrolisthesis at L5-S1 was 23.2% [10] However, the study found that the majority of patients had developed underlying retrolisthesis

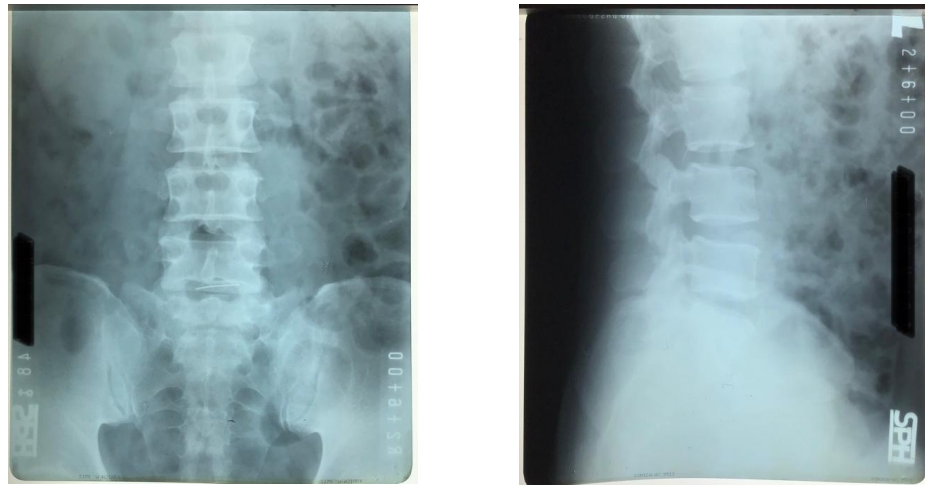


Fig. 1. Lumbar Xray AP and Lateral View before Operation

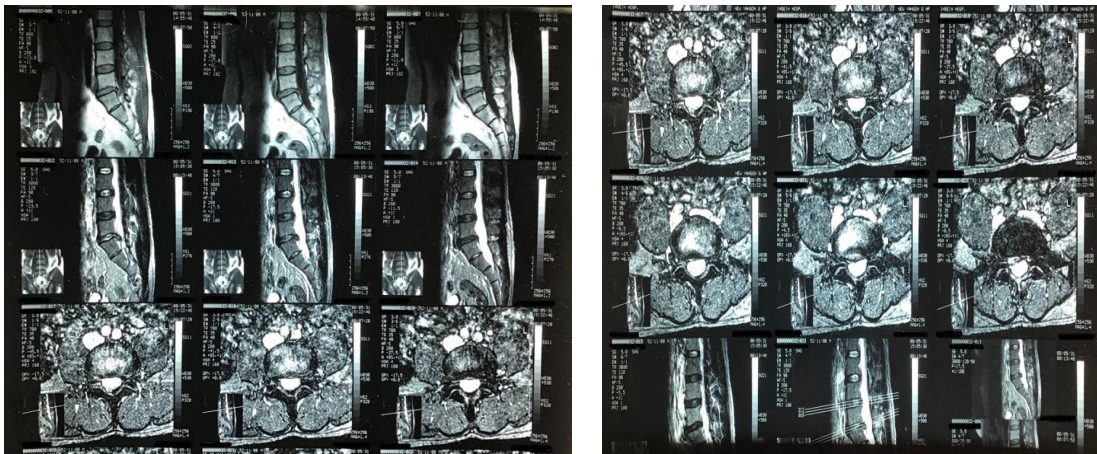


Fig. 2. Lumbar MRI before operation

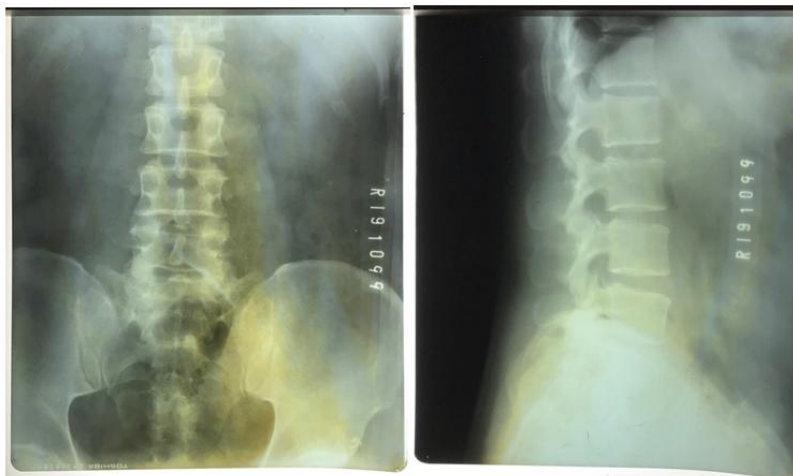


Fig. 3. Lumbar Xray AP and Lateral View after Open Discectomy

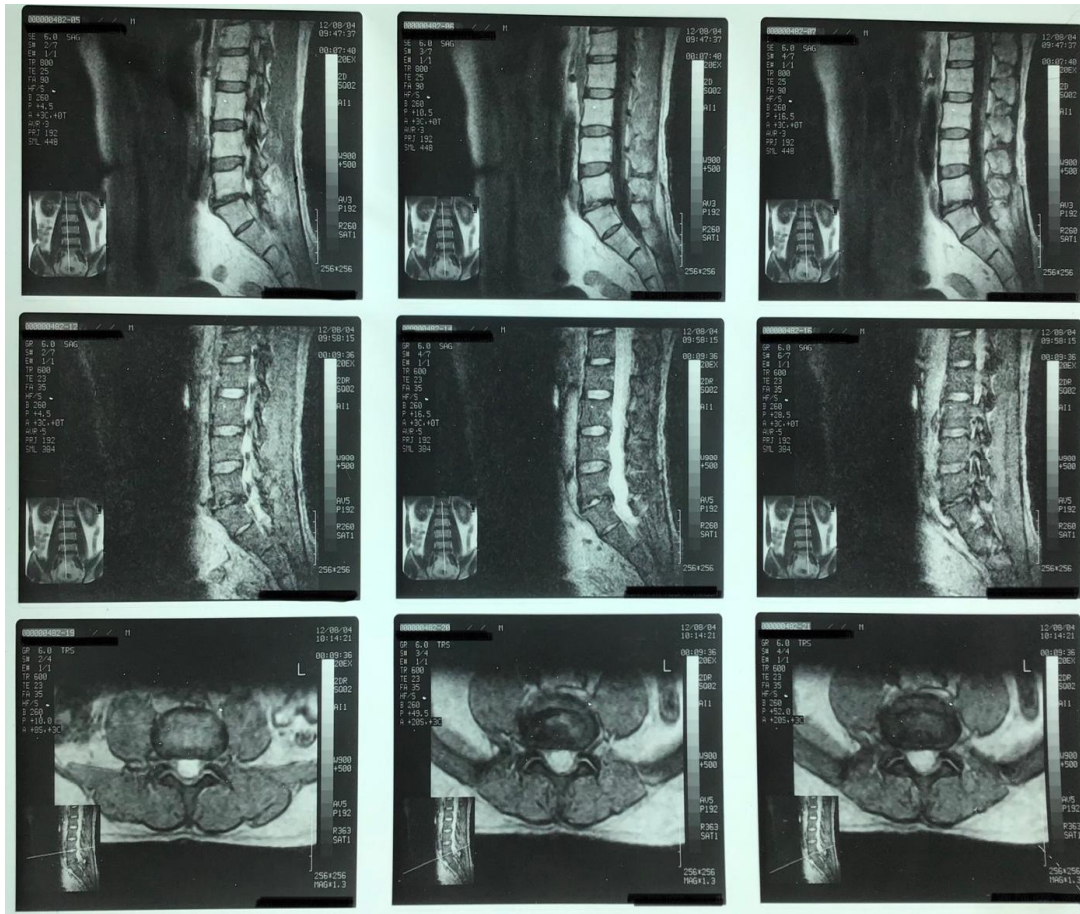


Fig. 4. Post-operative 5 years follow-up Lumbar MRI

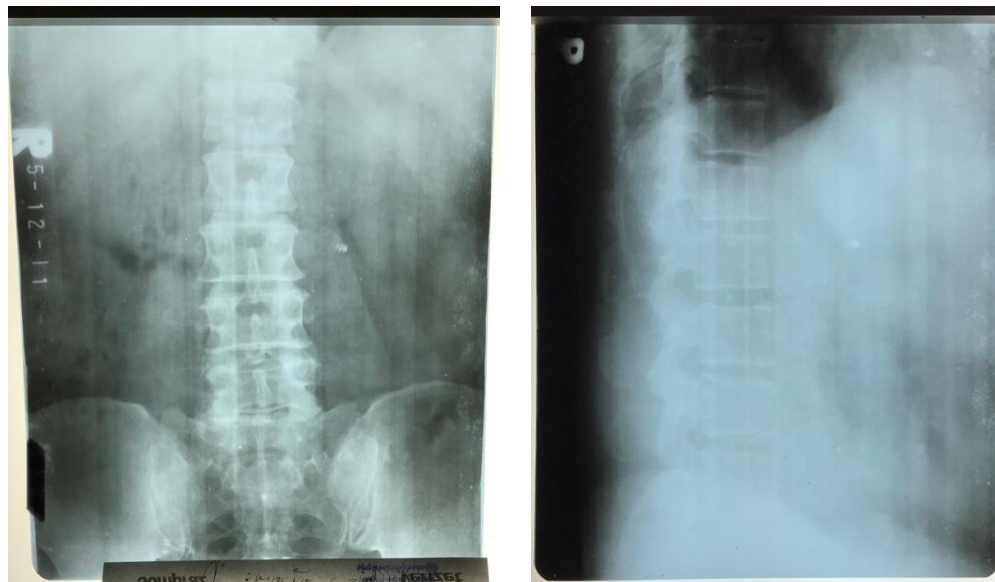


Fig. 5. Post-operative 11 years follow-up Lumbar Xray

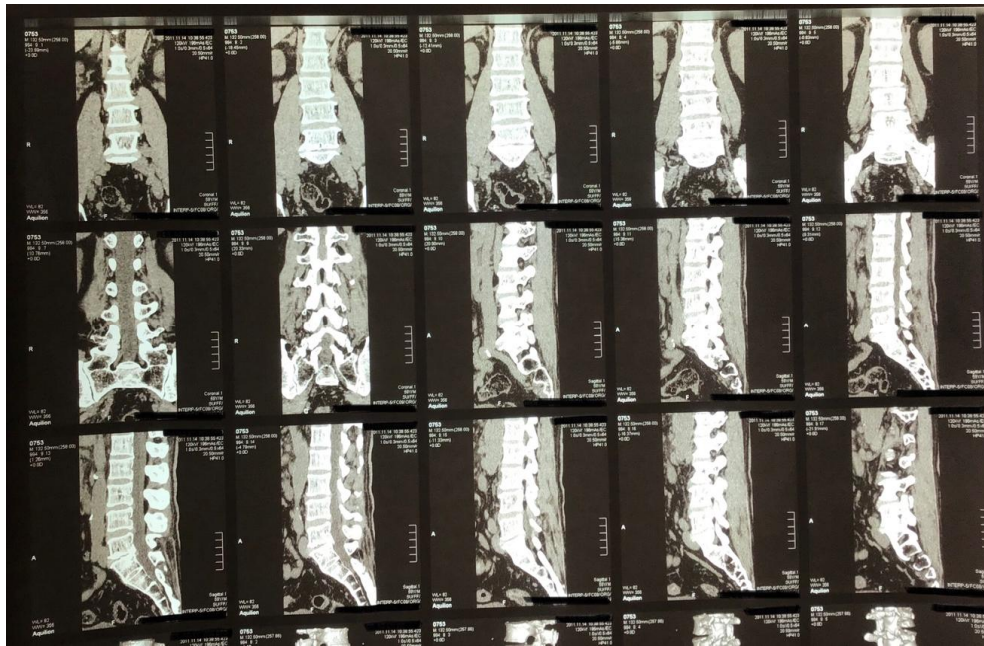


Fig. 6. Post-operative follow up 11 years Lumbar CT scan



Fig. 7. Post-operative follow up 21 years Lumbar MRI

prior to surgery, rather than thereafter, and that these patients have considerably worse pain and body function outcomes after four years. [11] However, in this case report, patient did not have any underlying retrolisthesis prior to operation.

Another study done by SPORT whereby 8 years follow up for lumbar discectomy and discovered

18.5 % of patients developed retrolisthesis which is confirmed by MRI analysis showing posterior degeneration and intervertebral disc T2 signal loss.[12] However, there is a lack of literature evidence to support the relationship between retrolisthesis as one of the complications of lumbar discectomy. According to one study, degenerative spine illnesses produce disc space

narrowing and lumbar vertebra retrolisthesis at the same time. [13] This could be the pathology resulting from postsurgical retrolisthesis in this patient.

4. CONCLUSION

Overall, after 21 years of post-discectomy follow-up, patient is relatively healthy with basic body functions and mild symptoms of retrolisthesis. There is not enough evidence or research previously showing the direct relation of development of retrolisthesis due to post-discectomy. However, in this case, it's possible that the aetiology is directly tied to the surgical intervention, given the patient was free of this ailment prior to the surgery.

CONSENT AND ETHICAL APPROVAL

Informed consent was taken from the patient and no ethical clearance is required.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Solomon L, Warwick D, Nayagam S. eds. Apley's system of orthopaedics and fractures. CRC press;2010.
2. Weinstein JN, Lurie JD, Tosteson TD, Skinner JS, Hanscom B, Tosteson AN, Herkowitz H, Fischgrund J, Cammisa FP, Albert T, Deyo RA. Surgical vs nonoperative treatment for lumbar disc herniation: the Spine Patient Outcomes Research Trial (SPORT) observational cohort. JAMA. 2006;296(20):2451-9. DOI: 10.1001/jama.296.20.2451. PMID: 17119141 PMCID: PMC2562254.
3. Azar FM, Canale ST, Beaty JH. Campbell's Operative Orthopaedics, E-Book. Elsevier. Chapter 2020;39:1746- 1759.
4. Spangfort EV. The lumbar disc herniation: A computer-aided analysis of 2504 operations, Acta Orthop Scand Suppl. 1972;142:1-99.
5. Haaker RG, Senkal M, Kielich T, Krämer J. Percutaneous lumbar discectomy in the treatment of lumbar discitis. European Spine Journal. 1997;6(2):98-101.
6. McGirt MJ, Ambrossi GLG, Dato G, Sciubba DM, Witham TF, Wolinsky JP, Gokaslan ZL, Bydon A. Recurrent disc herniation and long-term back pain after primary lumbar discectomy: review of outcomes reported for limited versus aggressive disc removal. Neurosurgery. 2009;64(2):338-345.
7. Ramirez LF, Thisted R. Complications and demographic characteristics of patients undergoing lumbar discectomy in community hospitals. Neurosurgery. 1989;25(2):226-231.
8. Vogt MT, Rubin D, Valentin RS, Palermo L, Donaldson 3rd WF, Nevitt M, et al. Lumbar olisthesis and lower back symptoms in elderly white women. The study of osteoporotic fractures. Spine.1998;23:2640-7.
9. Babar S, Saifuddin A: MRI of the post-discectomy lumbar spine. Clin Radiol 57:969-981, 2002
10. Swartz KR, Trost GR. Recurrent lumbar disc herniation. Neurosurgical focus. 2003;15(3):1-4.
11. Jiayong Liu, Nabil A. Ebraheim, Matthew Robon, Chris G. Sanford, Richard A. Yeasting, 4:34111. Effect of Lumbar Disc Space Narrowing and Retrolisthesis of Vertebra on the Intervertebral Foramen, The Spine Journal. 2006;6(5);54S-55S. ISSN 1529-9430 Available:https://doi.org/10.1016/j.spinee.2006.06.377
12. Kang KK, Shen MS, Zhao W, Lurie JD, Razi AE. Retrolisthesis and lumbar disc herniation: a postoperative assessment of patient function. The Spine Journal. 2013;13(4):367-372.
13. Shenoy K, Stekas N, Donnally III CJ, Zhao W, Kim YH, Lurie JD, Razi AE. Retrolisthesis and lumbar disc herniation: a postoperative assessment of outcomes at 8-year follow-up. The Spine Journal. 2019;19(6):995-1000.

© 2021 Winn et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/69917>