

ISSN (P): 2521-3466
ISSN (E): 2521-3474
© Clinical Orthopaedics
www.orthoresearchjournal.com
2021; 5(3): 177-180
Received: 22-05-2021
Accepted: 24-06-2021

Dr. Gaurav M
Assistant Professor, Department
of Orthopaedics, Bangalore
Medical College and Research
Institute Bangalore, Karnataka,
India

Dr. Chethan BA
Senior Resident, Department of
Orthopaedics, Shri Atal Bihari
Vajpayee Medical College and
Research Institute Bangalore,
Karnataka, India

Impact of location of disc relative to root - Axillary Vs shoulder on functional outcome in patients with lumbar disc herniation following micro-discectomy

Dr. Gaurav M and Dr. Chethan BA

DOI: <https://doi.org/10.33545/orthor.2021.v5.i3c.338>

Abstract

The purpose of this study was to evaluate the functional outcome following surgery in axillary versus shoulder type of disc herniation.

Patients who presented to Victoria & Bowring hospitals with disc herniation were divided into two groups, Shoulder and Axillary group of disc herniation. All the patients in study underwent discectomy. The study period spanned from February 2017 to July 2018 with the sample size of 116 patients.

They were followed for a minimum of 12 months.

Functional outcome was measured using Oswestry Disability Index score. The patient global outcomes were categorized based on the Modified Macnab criteria.

The mean ODI improved significantly from 66.58% to 14.00% in the axillary disc group and from 63.59% to 13.88% in the shoulder disc group ($p < 0.05$). And the final outcome was found to be Excellent or good in 56 of the 64 patients in the shoulder disc group and in 46 of the 52 patients in the axillary disc group. Though we did not find any significant difference in the functional outcome, knowledge of the functional outcome following discectomy in shoulder vs axillary disc herniation, helps the spine surgeon provide patients information for an effective decision making.

Keywords: Oswestry disability, shoulder, axillary

Introduction

Lumbar disc herniation is the most common diagnosis among the degenerative abnormalities of the lumbar spine (affecting 2 to 3% of the population), and is the principal cause of spinal surgery among the adult population. Non-operative treatment is the mainstay of initial management of LDH. More than 90% of patients will improve with conservative care, and surgery is rarely indicated before six weeks after onset of symptoms in the absence of cauda equine syndrome [1]. Lumbar discectomy is the most commonly performed spine surgery in patients with failed conservative treatment [2, 3].

Two types of disc herniation can be described according to the direction of herniated disc material: shoulder type and axillary type. Axillary disc herniation is described when the extruded disc fragment lies in the recess between the lateral border of cauda equina and medial to the nerve roots, while in the shoulder type the disc lies lateral to the nerve roots.

Aims and Objectives

The purpose of this study was to evaluate the functional outcome following surgery in axillary versus shoulder type of disc herniation.

Methodology

Patients who presented to Victoria & Bowring hospitals between February 2017 to July 2018, with lumbar disc herniation who required primary operative intervention with conventional open lumbar discectomy after a course of conservative treatment were studied. Based on the pre-operative MRI and intraoperative finding, the patients were divided into two groups: one with an axillary disc herniation and the other with shoulder disc herniation. All patients underwent discectomy.

The patients were followed up in outpatient setup for a minimum of 12 months.

Corresponding Author:
Dr. Chethan BA
Senior Resident, Department of
Orthopaedics, Shri Atal Bihari
Vajpayee Medical College and
Research Institute Bangalore,
Karnataka, India

Lower limb pain was assessed using VAS score. Functional outcome was measured using Oswestry Disability Index score. The patient global outcomes were categorized as excellent, good, fair, and poor based on the Modified Macnab criteria [4, 5] at the final follow-up. Perioperative data such as operative time, hospital stay, and time to return to work were evaluated. Return to work was defined as resuming work tasks/work hours after a period of sick leave [6, 7]. Surgical complications and recurrence were also documented.

Surgical technique

The conventional open lumbar discectomy was performed via posterior interlaminar or translaminar access. The operation started with a 1-inch long skin incision under general anesthesia. A microscope-assisted lumbar laminotomy was then performed. Ligamentum flavum was resected followed by exposure of the epidural space and herniated disc compressing the neural tissues. The herniated disc can be removed with careful nerve root dissection and retraction. The operation was finished with complete hemostasis and standard wound closure.

Observation and Results

A total of 116 patients met the inclusion criteria. The mean age of patients was 34.9 years (range 19-45 years). Mean follow up was 1.29 years (range 12 months - 2 years). The incidence of axillary disc was 44.8% (52 cases) and shoulder disc was 55.2% (64 cases) among the operated cases.

Table 1: Age group

Age group	19yrs-45yrs
Follow-up	9mon – 2yrs

Table 2: Mean Age

Mean age – 34.9yrs
Mean follow-up - 1.29yrs

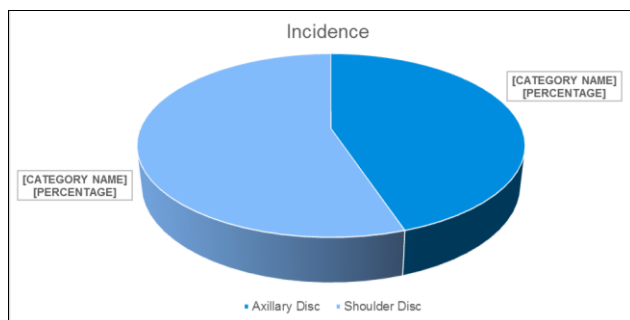


Fig 1: Incidence

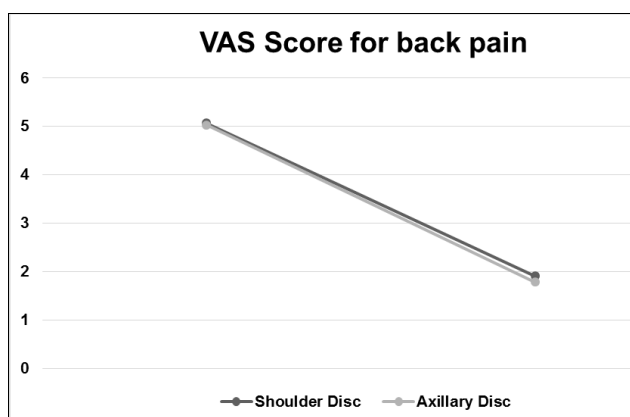


Fig 2: VAS Score for back pain

The mean (±standard deviation) VAS score for back pain improved from 5.06 ± 2.00 to 1.90 ± 1.01 in the shoulder disc group and from 5.02 ± 1.83 to 1.77 ± 0.76 in the axillary disc group.

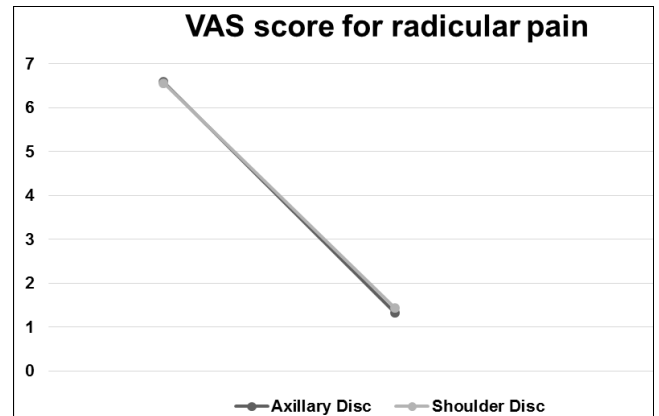


Fig 3: VAS Score for radicular pain

The mean VAS score for radicular pain improved from 6.55 ± 2.31 to 1.43 ± 1.02 in the shoulder disc group and from 6.58 ± 1.77 to 1.32 ± 1.02 in the axillary disc group.

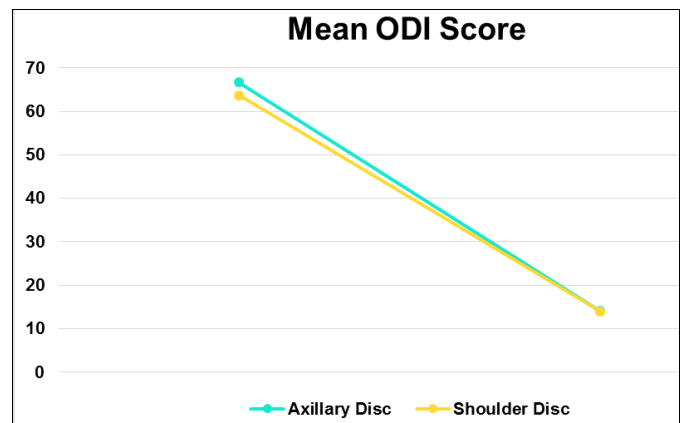


Fig 4: Mean ODI Score

The mean ODI improved significantly from 66.58% ± 15.78% to 14.00% ± 11.06% in the axillary disc group and from 63.59% ± 15.57% to 13.88% ± 12.16% in the shoulder disc group (p<0.05). 1 patient with axillary disc herniation had dural tear during surgery which was repaired. However, he reported good outcome at 1 year follow up.

1 patient in shoulder disc herniation group developed symptomatic reherniation which required surgery at 6 months follow up. Based on the Modified Macnab Criteria, the final outcome was found to be excellent or good in 56 of the 64 patients (87.5%) in the shoulder disc group and in 46 of the 52 patients (88.46%) in the axillary disc group.

Table 3: Modified Macnab Criteria

Outcome	Characteristics
Excellent	No pain, no restriction of mobility, Return to normal work and level of activity
Good	Occasional non radicular pain, Relief of presenting symptoms, Able to return to modified work
Fair	Some improved functional capacity, Still handicapped and/or unemployed
poor	Continued objective symptoms of root involvement, Additional operative intervention needed at index level irrespective of length of postoperative follow-up

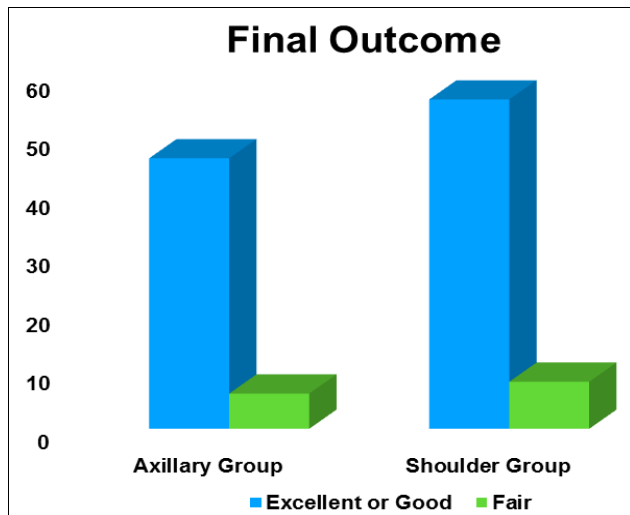


Fig 6: Final outcome

Discussion

Axillary disc herniation is a type of disc extrusion, which affects both exiting and descending nerve roots. The extruded material travels posteriorly into the axilla between the nerve roots laterally and thecal sac medially [8]. In shoulder type of disc extrusion,

the extruded disc material lie lateral or ventral to nerve root on axial images. As the surgical approach to the disc herniation is different according to the direction of the disc material, nomenclature and the identification of this disc herniation is utmost important [9, 8,10].

Due to the relative difficulty in handling the axillary disc herniation while removing the disc material there is a theoretical increased risk of complication during surgery.

An axillary type of disc herniation is a common cause of incomplete removal of herniated disc material in cases of percutaneous endoscopic lumbar discectomy. Remaining herniated disc fragments located in the epidural space compressing the traversing nerve root have been found [11]. However in our cases done via conventional open micro discectomy, we did not find much difficulty removing all the fragments.

Shriver *et al.* found overall complication rates of 12.5%, 13.3%, and 10.8% for open microdiscectomy, micro-endoscopic discectomy (MED), and percutaneous micro-discectomy respectively in their analysis of 42 studies [9].

The purpose of our study was to find out if any difference is there in the functional outcome following surgery for axillary and shoulder disc herniation.

In our study we did not find any significant difference in the functional outcome between the two groups.

Table 4: Oswestry Disability Index

Oswestry Disability Index	
This questionnaire has been designed to give the doctor information as to how your pain or condition has affected your ability to manage everyday life. Please answer every section and circle in each section only the ONE number that applies to you. We realize that you may consider that two of the statements in any one section relate to you, but please just circle the number that most closely describes your problem.	
<p>Section 1: Pain Intensity</p> <ol style="list-style-type: none"> The pain comes and goes and is very mild. The pain is mild and does not vary much. The pain comes and goes and is moderate. The pain is moderate and does not vary much. The pain comes and goes and is very severe. The pain is severe and does not vary much. 	<p>Section 6: Standing</p> <ol style="list-style-type: none"> I can stand as long as I want without pain. I have some pain on standing, but it does not increase with time. I cannot stand for longer than one hour without increasing pain. I cannot stand for longer than 1/2 hour without increasing pain. I cannot stand for longer than 10 minutes without increasing pain. I avoid standing because it increases the pain right away.
<p>Section 2: Personal Care</p> <ol style="list-style-type: none"> I would not have to change my way of washing or dressing in order to avoid pain. I do not normally change my way of washing or dressing even though it causes some pain. Washing and dressing increases the pain, but I manage not to change my way of doing it. Washing and dressing increases the pain and I find it necessary to change my way of doing it. Because of the pain, I am unable to do some washing and dressing without help. Because of the pain, I am unable to do any washing and dressing without help. 	<p>Section 7: Sleeping</p> <ol style="list-style-type: none"> I get no pain in bed. I get pain in bed, but it does not prevent me from sleeping well. Because of pain, my normal night's sleep is reduced by less than 1/4. Because of pain, my normal night's sleep is reduced by less than 1/2. Because of pain, my normal night's sleep is reduced by less than 3/4. Pain prevents me from sleeping at all.
<p>Section 3: Lifting</p> <ol style="list-style-type: none"> I can lift heavy weights without extra pain. I can lift heavy weights, but it causes extra pain. Pain prevents me from lifting heavy weights off the floor, but I manage if they are conveniently positioned (e.g., on a table). Pain prevents me from lifting heavy weights off the floor. Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned. I can only lift very light weights at the most. 	<p>Section 8: Social Life</p> <ol style="list-style-type: none"> My social life is normal and gives me no pain. My social life is normal, but increases the degree of pain. Pain has no significant effect on my social life apart from limiting my more energetic interests, e.g., dancing, etc. Pain has restricted my social life and I do not go out very often. Pain has restricted my social life to my home. I have hardly any social life because of the pain.
<p>Section 4: Walking</p> <ol style="list-style-type: none"> I have no pain on walking. I have some pain on walking, but it does not increase with distance. I cannot walk more than one mile without increasing pain. I cannot walk more than 1/2 mile without increasing pain. I cannot walk more than 1/4 mile without increasing pain. I cannot walk at all without increasing pain. 	<p>Section 9: Traveling</p> <ol style="list-style-type: none"> I get no pain while travelling. I get some pain while travelling, but none of my usual forms of travel makes it any worse. I get extra pain while travelling, but it does not compel me to seek alternative forms of travel. I get extra pain while travelling, which compels me to seek alternative forms of travel. Pain restricts all forms of travel. Pain prevents all forms of travel except that done lying down.
<p>Section 5: Sitting</p> <ol style="list-style-type: none"> I can sit in any chair as long as I like. I can only sit in my favorite chair as long as I like. Pain prevents me from sitting more than one hour. Pain prevents me from sitting more than 1/2 hour. Pain prevents me from sitting more 10 minutes. I avoid sitting because it increases pain right away. 	<p>Section 10: Changing Degree of Pain</p> <ol style="list-style-type: none"> My pain is rapidly getting better. My pain fluctuates, but is definitely getting better. My pain seems to be getting better, but improvement is slow at present. My pain is neither getting better nor worse. My pain is gradually worsening. My pain is rapidly worsening.
<p>0-10 Minimal disability 11-20 Moderate disability 21-30 Severe disability 31-40 Crippled (incapacitated) 40-50 Bed-bound</p>	<p>Patient's Signature: _____ Date: _____</p>

Table 5: Assessment of Oswestry Disability Index (ODI)

Score	Interpretation
0-20%	Minimal Disability: Can cope with most daily activities
21-40%	Moderate Disability: Pain and difficulty with sitting, lifting and standing. The patient may be disabled from work
41-60%	Severe Disability: Pain is the main problem, but other areas are affected
61-80%	Crippled: Back pain impinges on all aspects of the patient's life
81-100%	These patients are either bed-bound or else exaggerating their symptoms

Conclusion

Lumbar discectomy for LDH is an established and effective treatment for symptomatic patient that have failed conservative treatment. With knowledge of the functional outcome following discectomy in shoulder vs axillary disc herniation, the spine surgeon can provide patients information for an effective decision making. In our study we did not find any significant difference in the functional outcome.

12. <https://doi.org/10.1227/NEU.0000000000000628>.

References

- McCulloch JA. Focus issue on lumbar disc herniation: macro and microdiscectomy. *Spine*. 1996;21(24 Suppl):45S-56S.
- Gray DT, Deyo RA, Kreuter W, Mirza SK, Heagerty PJ, Comstock BA. Population-based trends in volumes and rates of ambulatory lumbar spine surgery. *Spine*. 2006;31(17):1957-1963. discussion 1964. <https://doi.org/10.1097/01.brs.0000229148.63418.c1>
- Best NM, Sasso RC. Success and safety in outpatient microlumbar discectomy. *J Spinal Disord Tech*. 2006;19(5):334-337. <https://doi.org/10.1097/01.bsd.0000210119.47387.44>
- Yeung AT, Tsou PM. Posterolateral endoscopic excision for lumbar disc herniation: Surgical technique, out come, and complications in 307 consecutive cases. *Spine (Phila Pa 1976)*. 2002;27:722-731.
- Macnab I. Negative disc exploration. An analysis of the causes of nerve-root involvement in sixty-eight patients. *J Bone Joint Surg Am*. 1971;53:891-903.
- Hees HL, Nieuwenhuijsen K, Koeter MW, Bültmann U, Schene AH. Towards a new definition of return-to-work out-comes in common mental disorders from a multi-stakeholder perspective. *PLoS One*. 2012;7:e39947.
- Steenstra IA, Lee H, de Vroome EM, Busse JW, Hogg-Johnson SJ. Comparing current definitions of return to work: A measurement approach. *J Occup Rehabil*. 2012;22:394-400. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6205246/#bib0095>
- Lee S, Lee SH, Choi WC, Choi G, Shin SW, Kaul R. Percutaneous endoscopic inter laminar discectomy for L5-S1 disc herniation: axillary approach and preliminary results. *J Korean Neurosurg Soc*. 2006;40(2):79-83.
- Choi KC, Kim JS, Ryu KS, Kang BU, Ahn Y, Lee SH. Percutaneous endoscopic lumbar discectomy for L5-S1 disc herniation: trans foraminal versus inter laminar approach. *Pain Phys*. 2013;16(6):547-556.
- Li ZZ, Hou SX, Shang WL, Song KR, Zhao HL. The strategy and early clinical outcome of full-endoscopic L5/S1 discectomy through inter laminar approach. *Clin Neurol Neurosurg*. 2015;133:40-45.
- Kyung-Chul Choi, MD, PhD, June-Ho Lee, MD, PhD, Jin-Sung Kim, MD, PhD, *et al*. Unsuccessful Percutaneous Endoscopic Lumbar Discectomy: A Single-Center Experience of 10 228 Cases, *Neurosurgery*, 2015 April;76(4):372-381.