

Lumbar Decompression Guidelines **(Discectomy, Laminectomy, Nerve Decompression,** **Foraminotomy)**

Introduction

Lumbar Decompression Surgery is carried out when compression is causing leg symptoms or Cauda Equina syndrome.

Microdiscectomy/ Discectomy - surgery that aims to remove a part of a bulging or prolapsed intervertebral disc in the spine.

Laminectomy - removes the lamina to create space for the spinal cord.

Forminotomy - bone is removed to increase the size of the foramen where the nerve exits the spine.

Indications for Surgery

The indication for surgery is when the spinal cord or exiting nerves are being compressed causing leg pain, sensation change or loss of power. Compression of the Cauda Equina that causes symptoms i.e. Cauda Equina Syndrome requires emergency decompression surgery.

Expected Inpatient Length of Stay

If the surgery has been elective and has gone smoothly length of stay is most likely one night. In the case of emergency surgery, poor baseline or significant pain post op the length of stay can vary.

Surgeons

Mr Brennan, Mr Hughes, Mr Wiggins, Mr Liaquat, Mr Fouyas, Mr Kawsar, Mr Demetriades. Mr Khan, Mr Sokol, Mr Kandasamy, Mr Kaliaperumal

Follow-up

Post surgery all patients are reviewed by a physiotherapist on the ward. The advice and education in the post-op booklet will be discussed and all patients are encouraged to watch the post-op video. Within the booklet there are three exercises to commence straight away (core setting, knee rolling and pelvic tilts) and one lumbar stretch to be started at four weeks post-op. All are to be done within a pain free range with the aims of gradually stretching out the scar tissue as it forms and improving strength around the back. On discharge patients will be referred for outpatient physiotherapy to be seen four weeks post-op in their local area.

Scope of practice

This statement is designed to guide physiotherapists on current best practice when treating patients following lumbar decompression surgery. They were produced by a systematic review of the current evidence based literature, medical and peer consultation. They were correct at the time of writing. The statement and recommendations should always be used in conjunction with clinical reasoning skills,

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experience and peer discussion whilst following any specific post operative instructions. As always patients should always be managed on a case-by-case basis.

Aim

The aim of these guidelines is to provide physiotherapy staff with a series of recommendations from the current evidence base and to assist them in the management of patients who have undergone lumbar decompression surgery.

Literature Review Question

What is the most effective method of rehabilitation for patients following lumbar decompression surgery for full return to function?

Search Process

Appraisal process: a systematic computer-assisted search was completed.

Data Bases: (Medline, Embase, Cinahl, Cochrane, AMED)

Original Guideline (05/05/2016)

Data Base	Dates	Limitations
Medline	1990-2016(Jan)	English
Embase	1990-2016(Jan)	English
Cinahl	1990-2016(Jan)	English
Cochrane	1990-2016(Jan)	English
AMED	1990-2016(Jan)	English

Key Words

Lumbar discectomy	Function
Lumbar diskectomy	Return to work
Lumbar microdiscectomy	Return to sport
Lumbar disc surgery	Time to discharge
Lumbar decompression	Pain
Post operative	Revision surgery
Post surgery	Success rate
Rehabilitation	Quality of life
Physiotherapy	Physical Therapy
Exercise program	Endoscopic lumbar discectomy
Education	Minimally invasive spinal surgery
Advice	Transforaminal endoscopic surgery

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Updated Guideline (20/11/2023)

Data Base	Dates	Limitations
Medline	2015 - 2023	English Language, Human
Embase	2015 - 2023	English Language, Human
Cinahl	2015 - 2023	English Language, Human
Cochrane Library	2015 – 2023	English Language, Human
AMED	2015 - 2023	English Language, Human

Key Words

	AND	AND	AND
Lumbar	Discectomy	Post Operative	Return to Sport
	Diskectomy	Post Surgery	Return to Work
	Microdiscectomy	Rehabilitation	Function
	Disc Surgery	Physiotherapy	Time to discharge
	Herniated Disc	Physical Therapy	Quality of Life
	Laminectomy	Exercise Program	Pain
	Nerve Decompression		Revision Surgery
	Foraminotomy		Success Rate
	Decompression		

NB Endoscopic surgery key words removed in updated guidance as this is not a current surgery.

Evidence base

Original guidance results - There were 20 articles found to be relevant including 14 randomised controlled trials, 1 survey, 1 literature review, 2 Cochrane systematic reviews, 1 series case study review and 1 long term follow up of a previously documented RCT.

Updated guidance results – were derived from 4 randomised controlled trials and 1 literature review.

Keypoints

Active exercise programmes should begin at approximately 4 weeks post surgery.

Patients who begin exercise programmes from 4 weeks post surgery show a faster decrease in pain and disability than no treatment. There are no research papers looking at the optimal time to begin rehabilitation with the majority of programs starting around 4 weeks post surgery. There is no evidence that active exercise programs from 4 weeks post surgery increase the risk of re-operation rates. (A1)

Higher intensity exercise programmes lead to a faster decrease in pain and disability and quicker return to work rates.

In studies where patients undertook more intense exercise programmes they showed quicker short term functional benefits. There was insufficient data to

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advocate any specific type of exercise but all of the intense exercise programmes used incorporated a mixture of core stability, flexibility and aerobic training. (A1)

Home exercise programmes are as effective as supervised programs as long as compliance is good.

There is no significant difference between supervised and home exercise programs in terms of pain relief and disability. In patients who lack compliance however there may be benefit in taking part in a supervised exercise program. (A1)

Rehabilitation programmes that encourage early mobilisation may reduce post-operative pain in the first 6-12 weeks following surgery.

Early advice on transfers (sit – stand), encouragement to walk and commencement of exercises from day 1-2 post-operatively may show a relative reduction in pain (VAS score) in the first 6-12 weeks following surgery compared to those programs where active mobilisation is not encouraged. (B)

Rehabilitation programmes that encourage regular range of motion exercises, functional strengthening and cardiovascular exercise may reduce post-operative pain in the first 6-12 weeks following surgery.

More regular range of movement exercises, muscular strengthening exercises and spinal stabilisation in functional positions, combined with cardiovascular exercises (e.g. swimming after 6 weeks post-operatively) may reduce pain in the first 6-12 weeks following surgery compared to those programs that include exercises that have less emphasis on functional exercises. There is no conclusive evidence to suggest better outcome with additional lumbar multifidus training. (B)

Longer term outcome may be better with face to face physiotherapy intervention than with no intervention but there is not conclusive evidence to say what this intervention should include. (A3)

Updated Keypoints

Health behaviour change counselling and incorporating cognitive-behavioural strategies during post op physiotherapy can improve outcomes

Patients whose rehabilitation is adjunct with brief health behaviour change counselling through motivational interviewing or targeted CBT incorporation into physiotherapy had improved health outcomes (greater reduction in pain and disability and greater improvement in physical health and ability). (A3₁ & B₂)

Neural mobilisation can enhance traditional physiotherapy post laminectomy

The addition of neural mobilisation to traditional physiotherapy (TENS and progressive abdominal and back strengthening exercises) can improve pain and functional disability however there is insufficient research to make definite recommendations. (A3 3)

Engagement in a low level walking programme has shown to improve outcome post microdiscectomy

Starting a low level progressive walking programme at week 3 post op has been shown to improve pain, increase physical activity, reduce disability and improve QoL. (B₄)

Post discectomy trunk muscle endurance training can be enhanced with the use of dual tasking

Evidence shows that utilising cognitive tasks during muscle endurance training can mitigate the negative impacts of fear avoidance, especially during back extension in patients post lumbar discectomy. (B 5)

General Recommendations

0-2 weeks post op

- Use pain relief in the first few weeks to allow more comfortable movement (C)
- Post Discectomy/Microdiscectomy limit the amount of sitting in the first 2 weeks. No longer than 15 minutes and limit to 4 times per day. (C)
- Frequent change of position (C)
- Start light house work tasks – no heavier than 5kg. (C)
- Don't lift heavy items (3-5kg) for up to 6 weeks. (C)
- Start post op exercises – core setting, knees rolls and pelvic tilts (see post op booklet) (C)
- Encourage early walking, little and often to start. (C)
- Don't put the back into extreme positions, avoid forward bending and twisting movements (C)

2-6 weeks post op

- Continue with post op exercise programme and progress as indicated. (C)
- Gradually increase sitting times. (C)
- Commence low level progressive walking programme (B)
- For those patients with Coflex spacers, the manufacturers recommend NO extreme bending or twisting movements for 4 weeks.
- Return to driving 2 - 4 weeks depending on recovery. The patient must be able to do an emergency stop and not be taking heavy painkillers that make the patient drowsy. Check with insurance company. (C)
- Swimming can be commenced once wound is fully healed around 4 - 6 weeks. (C)
- Start stretching and stability programmes: gradually build up. (C)

6 weeks + post op

- Return to work: should be considered on an individual basis, it is worth considering phased returns and engaging with occupational health for advice.

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The timescale of returning to work can vary widely 2-12 weeks depending on demands of the job. (C)

- Higher intensity exercise programmes lead to a faster decrease in pain and disability and quicker return to work rates. (A1)
- Home exercise programmes are as effective as supervised programmes as long as compliance is good. (A1)
- Patient can consider return to the gym at 6 weeks by gradually increasing activity. (C)
- Gradual return to contact sport i.e. rugby 12+ weeks. (C)

Please also see

<http://intranet.lothian.scot.nhs.uk/NHSLothian/Healthcare/AZ/neurology/Pages/PatientLeaflets.aspx> and click on Neurosurgery - INFORMATION FOR PATIENTS for information given to patients prior to surgery including risks/expectations of surgery (for physiotherapist information only)

Physiotherapy patient information leaflet available at

<http://intranet.lothian.scot.nhs.uk/NHSLothian/Healthcare/AZ/Physiotherapy/PatientInfoLeafletNetwork/Pages/Spinal,NeckHead.aspx> click on physiotherapy after lumbar surgery

Appendix 1

Levels of Evidence

Evidence from large randomised controlled trials (RCTs) or systematic review (including meta-analyses)†	A 1
Evidence from at least one high quality cohort	A 2
Evidence from at least one moderate size RCT or systematic review	A 3
Evidence from at least one RCT	B
Expert opinions	C
Laboratory Evidence*	D

† Arbitrarily, the following cut-off points have been used: large study size ≥ 50 patients per intervention group; moderate study size ≥ 30 patients per intervention group.

* Arbitrarily, added by Lothian Physiotherapy Musculoskeletal Network Group
Modified from: MacAuley D and Best TM (2007) Evidence-based Sports Medicine. 2nd Edition. BMJ Books. Blackwell Publishing. Oxford, UK.

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