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## Post-Laminectomy Syndrome

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#### Related Terms

- Failed Back Surgery Syndrome
- Failed Back Syndrome

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- [Sciatic Nerve Pain](#)
- [Lumbar Spine Surgery](#)

#### Differential Diagnoses

- Arachnoiditis
- Cauda equina syndrome
- Degenerative disc disease
- Fracture of the spine
- Infection (discitis, osteomyelitis, epidural abscess)
- Inflammatory disease
- Neurological disease
- Osteoarthritis
- Osteomyelitis
- Osteoporosis
- Pseudarthrosis (failure of a spinal fusion surgery to result in actual fusion)
- Psychosocial and environmental factors
- Recurrent disc herniation
- Rheumatoid arthritis
- Spinal instability
- Spinal stenosis
- Tumor

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- [Lumbar Laminectomy](#)
- [Spinal Fusion Surgery](#)
- [Neck Pain Therapy](#)

#### Medical Codes

⊕ **ICD-9-CM:** 722.8, 722.80, 722.81, 722.82, 722.83, 737.12

#### Definition

Post-laminectomy syndrome refers to the persistence of pain and disability following laminectomy. Laminectomy is a type of back surgery performed to relieve nerve compression (radiculopathy) or nerve root injury in the spine caused by disc herniation or spinal canal narrowing (spinal stenosis) related to degenerative changes.

The spinal canal is formed by the posterior (back) portion of the vertebrae that surround the spinal cord and protect and confine the spinal nerves. A disc herniation or spinal stenosis may occur and cause pressure on the spinal cord and/or one or more spinal nerve roots. Removing a section of the bony arch, or lamina, which forms the posterior part of the spinal canal (laminectomy) allows for decompression of the nerves.

Post-laminectomy syndrome specifically refers to pain associated with symptoms not relieved following laminectomy. However, the term often is used more broadly to describe poor outcomes following any type of spinal surgery. The classic term laminectomy often is used to describe a partial laminotomy, which is removal of only a portion of the lamina to provide access to a disc herniation. The most frequent surgery preceding a diagnosis of post-laminectomy syndrome is lumbar discectomy. Spinal surgery may be performed in patients who do not improve with nonsurgical (conservative) treatment, even though surgical results are less predictable in the absence of correlation between specific clinical findings and imaging study results. In those cases, decompression may fail to provide relief, and the result is post-laminectomy syndrome.

The causes of poor results or failed back surgery syndrome, a term inclusive of post-laminectomy syndrome and persistent pain after other spinal procedures, including spinal fusion, include poor patient selection (i.e., operating when nerve compression did not exist), nerve root injury at the time of surgery, delayed surgery, infection in the disc space or epidural space, unrecognized lateral spinal stenosis or instability, arachnoiditis, and reherniation. Rarely, the first surgery will have been performed on the wrong side or at the wrong level (malpractice). Surgery may have been performed appropriately and the pathology corrected; however, psychosocial factors may contribute to chronic pain that develops after surgery.

**Risk:** The risk for poor surgical outcome is increased in cases of poor patient selection, a history of a previous unsuccessful surgery, and in an individual with a pre-existing documented history of clinical depression or other psychiatric disorder.

#### Factors Influencing Duration

Duration depends on source of pain, underlying cause, and method of treatment. The type and amount of surgery and rehabilitation required have an effect on the duration of disability. Permanent disability may occur for individuals in certain job situations. Psychosocial factors have a significant impact on disability. Chronic opioid therapy may increase duration.

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**Specialists**

- Clinical Psychologist
- Neurosurgeon
- Occupational Therapist
- Orthopedic (Orthopaedic) Surgeon
- Pain Medicine Physician / Pain Specialist
- Psychiatrist
- Physical Therapist
- Psychiatrist
- Rheumatologist

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- Arthritis
- Cancer
- Cardiopulmonary disease
- Depression and other mental disorders
- Diabetes
- General debility
- Obesity
- Osteoarthritis
- Psychosocial stressors
- Rheumatoid arthritis

**Incidence and Prevalence:** About 450 cases of herniated disc per 100,000 require surgery in the US (Sleigh). Incidence of post-laminectomy syndrome correlates with data on the number of surgeries performed, of which an estimated 10% to 15% are considered unsuccessful (Wheeler).

**Source:** [Medical Disability Advisor](#)

**Diagnosis**

**History:** The medical history of individuals with post-laminectomy syndrome varies considerably; however, all the individuals will previously have had back surgery and are still experiencing **low back pain and/or leg pain (sciatica)**. The individual may complain of a variety of symptoms including stiffness, local tenderness, generalized discomfort, and pain radiating to the leg, which may be indicative of nerve involvement.

**Physical exam:** The individual will be examined lying flat (supine), sitting, and standing. Palpation along the spine may reveal areas of localized tenderness from prior surgery. The physician will evaluate posture, gait, and range of motion and may observe asymmetry, deformity, or spinal curvature. The exam will include a complete neurovascular and musculoskeletal exam to rule out all possible causes of symptoms other than post-laminectomy syndrome.

**Tests:** Flexion and extension **x-rays** of the spine may be obtained to determine the whether post-operative instability is present; it is a potential source of persistent pain. **MRI** with contrast and **CT/myelography** may both be performed to evaluate for persisting nerve compression, discitis or other disc disease, and to rule out infection or tumor. Lab studies include blood work to detect infection (e.g., white blood cell [WBC] count, erythrocyte sedimentation rate [ESR]). If an infection is suspected, a **bone scan** (nuclear imaging bone scan) and/or MRI may be ordered to examine bone and soft tissue in more detail. Nerve conduction and **electromyography (EMG)** studies may be performed to evaluate nerve root pain. Often, these studies fail to identify a specific source for the ongoing pain. Both psychological evaluation and a second surgical opinion should be obtained before spinal surgery is repeated.

**Source:** [Medical Disability Advisor](#)

**Treatment**

An anatomic cause for the "failed" surgery must be ruled out so that appropriate treatment can be provided. Conservative treatment usually is recommended initially, and may include additional **rehabilitation** efforts (e.g., **physical therapy**, exercise) and pain management using a combination of oral medications (e.g., analgesics, nonsteroidal anti-inflammatory drugs [NSAIDs], antidepressants, muscle relaxants, and anticonvulsants). Anesthetics or steroids may be injected in the form of trigger point injections, epidural steroid injections, and/or selective nerve root injections. Chronic opioid (narcotics) therapy may be prescribed for pain control. While these drugs may decrease pain, they do not predictably alter disability. Opioids usually are delivered orally. Implantation of a pain pump for chronic spinal pain is rarely indicated. Long-term (chronic) opioid therapy is common for treating non-malignant conditions, but controversy exists about long-term benefits vs. side effects, including affects on functional status (Soin).

Spinal cord stimulation is another pain management technique that employs an implantable, battery-powered unit that provides constant stimulation of the spinal cord. Relief of symptoms is reported in about 50% of patients (North).

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Repeat surgical intervention (discectomy, [vertebral fusion](#), and/or additional laminectomy) is only occasionally indicated, and then only when a clear-cut diagnosis has been established. Individuals with recurrent back pain without any identifiable physical cause may benefit from treatment by a pain specialist and [psychotherapy](#).

Source: [Medical Disability Advisor](#)

## ACOEM



AMERICAN COLLEGE OF  
OCCUPATIONAL AND  
ENVIRONMENTAL MEDICINE

ACOEM's Practice Guidelines, the gold standard in effective medical treatment of occupational injuries and illnesses, are provided in this section to complement the disability duration guidelines.\*

[Low Back Disorders](#)  
[Neck and Upper Back Disorders](#)

*\* The relationship between the MDGuidelines (MDA) content and ACOEM's guidelines is approximate and does not always link identical diagnoses. The user should consult the diagnostic codes in both guidelines, as well as the clinical descriptions, before assuming an equivalence.*

Source: [ACOEM Practice Guidelines](#)

## Prognosis

The outcome of post-laminectomy syndrome is extremely variable; it can range from complete relief to a lifetime of worsening pain. While an initial surgery, performed for appropriate reasons may yield good results, in patients who fail to improve, second or additional surgeries have less predictable results. The success rate declines with each additional surgery. Multiple surgeries on older individuals often have poorer outcomes. Unresolved psychosocial factors (e.g., marital or sexual problems, job dissatisfaction, pending litigation) and documented clinical depression or other psychiatric disorder may delay or prevent recovery.

Source: [Medical Disability Advisor](#)

## Rehabilitation

The goal of rehabilitation in post-laminectomy syndrome is to maximize functional abilities of the individual. Because post laminectomy syndrome is a chronic condition, a comprehensive assessment at a tertiary or multi-disciplinary pain/rehabilitation clinic may be necessary. Consequent to the evaluation, individuals with post-laminectomy syndrome may best benefit from a comprehensive multidisciplinary rehabilitation intervention.

During the evaluation, surgically treatable structural causes may be sought, but they are rarely found. In some cases, additional surgical management is conducted, with mixed results.

Consistent with a multidisciplinary program, some individuals with the post laminectomy syndrome improve with the combination of intensive physical rehabilitation and cognitive and behavioral treatment for pain management. Some pain programs include peer group support, which may benefit the individual.

Spinal cord stimulation with an implantable, battery-powered unit that stimulates the spinal cord may be tried. Only about half of the individuals will respond to spinal cord stimulation, and, generally, with only a 50% or less decrease in pain (North).

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Another option is to administer opioids (narcotics) for pain control, either orally or from an implanted pump which delivers the medication directly to the spine/spinal cord or nerves. This option may control pain but may also impact the functional status of the individual.

An ergonomic assessment may be beneficial prior to returning to work, and if necessary, a vocational counselor may be necessary to identify a suitable job. Additional information may provide greater insight into the implications for rehabilitation treatment (Epstein; Fischgrund). For additional guidelines for management of back pain see [Low Back Pain](#).

## FREQUENCY OF REHABILITATION VISITS

### Nonsurgical

Specialist	Post-Laminectomy Syndrome
Physical Therapist	Daily for up to 6 weeks †
Occupational Therapist	Daily for up to 6 weeks †
Physical Therapist	Up to 15 visits within 6 weeks
Clinical Psychologist	Up to 12 visits within 6 weeks

† As part of multidisciplinary intervention (work condition).

*The table above represents a range of the usual acceptable number of visits for uncomplicated cases. It provides a framework based on the duration of tissue healing time and standard clinical practice.*

Source: [Medical Disability Advisor](#)

## Complications

Post-laminectomy syndrome may be complicated by instability, infection, surgical trauma, or bleeding. Pseudarthrosis or failure of fusion may occur following surgery designed to produce fusion (failed back surgery syndrome). Additional surgery may be necessary to address some of these conditions. Opioid dependence and altered functional status are possible results of chronic pharmacologic pain management.

Source: [Medical Disability Advisor](#)

## Return to Work (Restrictions / Accommodations)

Individuals with this diagnosis rarely return to work, especially if their pre-morbid occupation required significant physical labor. If successfully treated by additional surgery, or multidisciplinary rehabilitation, they may return to sedentary, light or medium work.

An analysis of transferable skills and potential job retraining may be necessary in order to return the individual to work in any occupation. Company policy on medication usage should be reviewed to determine if pain medication use is compatible with job safety and function.

Source: [Medical Disability Advisor](#)

## Failure to Recover

If an individual fails to recover within the expected maximum duration period, the reader may wish to consider the following questions to better understand the specifics of an individual's medical case.

### Regarding diagnosis:

- Is the location of the pain the same as before surgery or is it in a different

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location?

- What were the results of the neurovascular and musculoskeletal exams?
- Have WBC count and ESR suggested the presence of infection?
- Have results of postoperative flexion extension bending x-rays, MRI, CT/myelography, EMG, and suggested a surgically treatable cause?
- Has individual had a complete psychiatric evaluation to rule out psychosocial factors?
- Has individual been referred to a clinical psychologist for a complete psychological evaluation including neuropsychological testing (Minnesota Multiphasic Personality Inventory) to identify contributing psychosocial factors?
- Has individual had a second surgical opinion?
- Has a functional assessment been performed to identify approximate activity tolerances?
- Have conditions such as tumor, arthritis, osteomyelitis, osteoporosis, muscle spasm and other conditions with similar symptoms been ruled out?
- Is impending litigation affecting the patient's presentation and rehabilitation?

## Regarding treatment:

- Did the original surgery fail, or was there a 1-year or longer interval of little or no pain and normal function before the current pain began?
- Has the true cause of the failed surgery been determined?
- What has been the individual's response to conservative treatment (analgesics, NSAIDs, antidepressants, muscle relaxants, physical therapy, and exercise)?
- Did individual have additional surgery? Was it done in stages?
- Was electrical stimulation tried to stimulate bone healing in the case of a failed fusion?
- Is individual active in psychotherapy?
- Is evaluation at a multidisciplinary pain center indicated?
- Has individual consulted with a pain specialist?
- Has a pain pump been employed?
- Is individual receiving chronic opioid or other pharmacologic therapy?
- Has spinal cord stimulation been performed?

## Regarding prognosis:

- How severe are the symptoms? Are they incapacitating? Can the individual perform the normal activities of daily life?
- Has individual undergone multiple back surgeries?
- Has individual's work area been evaluated and organized ergonomically?
- Is individual's employer able to accommodate the needed restrictions?
- Does individual have any comorbid conditions that could increase length of disability?
- Is individual receiving regular psychological counseling? Would such counseling be beneficial?

Source: [Medical Disability Advisor](#)

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**Source:** [Medical Disability Advisor](#)

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