

Common terms you might find in your MRI report

If you underwent an MRI scan (magnetic resonance imaging) of your spine, you would probably have a report with several incomprehensible medical terms. This article will explain the most common terms you will encounter and what their implications are for you, if you find them in your MRI report.

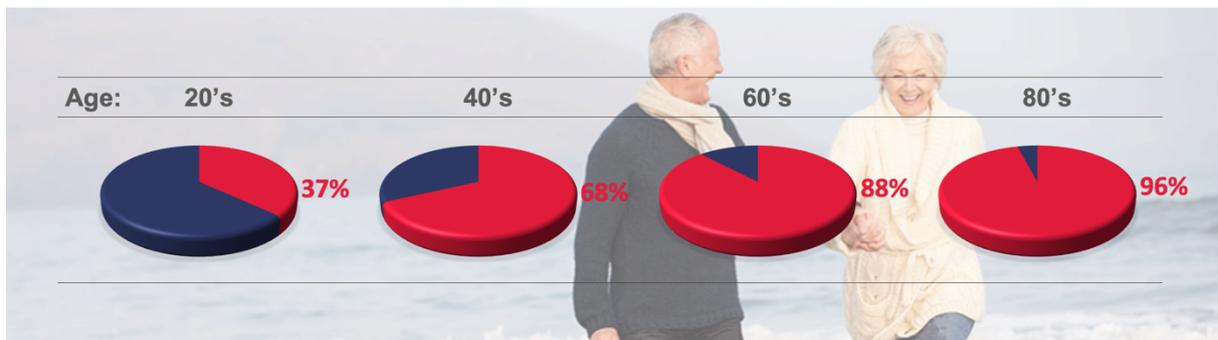
It is important to know that not everything that is described in an MRI report has to be considered as ill. It has been shown that even disc bulges or protrusions can be found in many people without any symptoms of back pain¹ and the rate of alterations of the intervertebral discs increases with age including in asymptomatic individuals². Consequently, the occurrence of some disc degenerations during aging can be considered normal.

When your doctor has sent you to an MRI scan, the aim is to find a specific reason for your back pain. However, in about 90% back pain is non-specific³, which means that there is no specific finding in the MRI scan which can be linked to the pain. In this case chances are high that your back pain will improve with conservative treatment⁴. Degenerative changes of the lumbar spine are commonly present and increase with age irrespective of the presence of low back pain. Therefore, they are not considered a specific reason for back pain as they can be found with a similar frequency also in asymptomatic people.

It is worth mentioning that there is no “pain scan” and no imaging technique (radiograph, CT, MRI, etc.) is perfect. MRI does not involve X-rays and may provide detailed information on the spine. However, often it reveals alteration of the spine which are not relevant for the health and may worry patients unnecessarily. Another, limitations to an MRI scan is that it is taken when lying down, in a position where most people are comfortable. Therefore, it is not a reliable method to reveal any abnormal findings related to a person’s posture or spinal alignment, which can be evaluated best clinically.

So, if you had an MRI scan done, it’s best to talk to your treating doctor, who can explain to you whether the findings in your MRI scan are relevant for your health. The explanation of the terms listed below will give a first orientation.

Percentage of disk degeneration in pain-free individuals



Many imaging-based degenerative features don't have to be considered as ill, but are **part of normal aging**.

Glossary:

Aging disc	Normal changes of the disc occurring with age. They are not considered a specific reason for back pain and are frequently found in asymptomatic people.
Annular tear or fissure	Tear in the outer part of the intervertebral disc. A degenerative change that can in some cases be a reason for a disc herniation but does not have to be associated with any symptoms.
Anulus fibrosus	Outer fibrous ring of the intervertebral disc. Tears in the fibrosus ring can be a reason for a disc herniation.
Arthritis	See Osteoarthritis
Bilateral	On both sides
Black disc	See dark disc
Bulge, bulging	Bulges are very common and rarely cause any pain or symptoms. Many people have them at multiple levels in their spine.
Cauda Equina	Latin for the 'tail of the horse', refers to the bundle of spinal nerves running in the spinal canal in the lumbar region. These nerves are responsible for the function of the lower extremities and genital area providing them with sensation and muscle power.
Cerebrospinal fluid (CSF)	Fluid surrounding the spinal nerves. In spinal stenosis CSF circulation can be impaired leading to a decrease of nutrient and oxygen supply for neural tissue, which can cause spinal claudication.
Claudication, Spinal claudication	Is a symptom that goes along with impairment in walking, or pain, discomfort, numbness, or tiredness in the legs that occurs during walking or standing and is relieved by rest. Can be caused by Spinal Stenosis.
Compression	Compression refers to a narrowing of the space around the lumbar nerves. It can be caused by a disc herniation or spinal stenosis. Depending on the amount of narrowing or compression this can lead to symptoms such as radicular pain. If occurring slowly as in the aging spine it can be asymptomatic in many cases.
Dark disc	Normal change of the disc occurring with aging caused by dehydration of the nucleus pulposus. It is not associated with a higher rate of back pain and can be commonly found in asymptomatic people.
Degeneration, Degenerated disc	Is the natural ageing process of gradual dehydration and narrowing of the intervertebral discs. This is commonly visible on MRI scans and is not considered as a specific reason for back pain.
Disc	See Intervertebral disc
Disc height, disc space	Space between two vertebrae, were the intervertebral disc is found. Narrowing of the disc space or loss of disc height are part of the natural ageing process.
Dura mater	A membrane made of connective tissue that surrounds the spinal cord and nerve roots and forms the dural sac.
Dural sac	A tube formed by the dura that that surrounds the spinal cord and the cauda equina and contains the cerebrospinal fluid.

Epidural space	Space within the spinal canal surrounding the dural sac.
Extrusion, Extruded disc	See herniated disc.
Facet joint	Small joints at the back of the spinal column. Two facet joints, one on each side, are found in each spinal motion segment. Degeneration of these joints are commonly found in elder people and can be a reason for back pain in some cases.
Foramen, Foraminal zone	A channel between two vertebrae through which the nerve roots exit from the spinal canal on each side. The borders of the channel are made up by the vertebra, the intervertebral disc and the facet joints. Alterations of these structures can lead to a narrowing of the foramen and consequently compression of the exiting nerve root, which can lead to radicular symptoms (e.g. pain).
Herniated disc, Herniation, Herniated nucleus pulposus	If the annulus fibrosus (outer part) of the intervertebral disc is torn, the nucleus (inner part of the disc) can herniate. If a herniation occurs in vicinity of the nerve roots it can lead to compression and inflammation of the nerve roots, leading to radicular symptoms (e.g. pain, numbness or weakness). However, many disc herniations do not lead to any symptoms and don't have to be treated specifically. Commonly disc herniation will resolve with time.
High intensity zone	Describes the appearance of an annular tear in the MRI. see Annular tear.
Hypertrophy	Ligamentum hypertrophy or facet joint hypertrophy refer to an enlargement of the facet joints and surrounding soft tissue. Depending on the amount of enlargement it may lead to compression of the nerve roots or spinal canal stenosis and may potentially cause symptoms.
Instability	Excessive movement within a spinal segment. In some cases, this can lead to back pain or nerve root compression.
Intervertebral disc	A strong soft tissue connecting two vertebrae, which acts as a hinge, shock absorber and energy converter. It is made up of the annulus and the nucleus pulposus.
Intravertebral herniations	Disc material is displaced beyond the disc space through the vertebral end plate into the vertebral body. This is commonly found in the aging spine and not necessarily associated with any back pain.
Lateral recess	Part of the spinal canal on both sides where the nerve root runs down and can be affected by disc herniation or compression.
Lordosis	The normal curvature of the lumbar spine when viewed from the side. Degeneration of the lumbar spine can lead to a decrease of the lordosis and consequently to a malposition of the spine that, depending on the magnitude can be associated with back pain.
Modic	The Modic classification describes degenerative changes involving the vertebral end plates and adjacent vertebral bodies associated with disc inflammation or degenerative changes of the intervertebral discs. Different stages referred to as type 1 to 3 (or mixed) can be described. Depending on the stage these changes may be a reason for back pain.
Motion segment	Functional unit of the spine consisting of two adjacent vertebrae and the intervertebral disc.

Nerve root	At each level of the spine a pair of nerves emerges between the vertebrae on each side. Depending on the level they are responsible for the function of the lower extremities, genital region, bladder or anal sphincter. Compression of the nerve roots can lead to neurologic symptoms such as radicular pain, numbness, weakness, gait disturbance or bladder and bowel dysfunction.
Nucleus pulposus	Soft inner core of the intervertebral disc which is made up of a gel-like material that consists mainly of water. In the aging spine the nucleus pulposus dehydrates. The nucleus pulposus can herniate through the annulus fibrosus and lead to compression and inflammation of the nerve roots.
Olisthesis	See Spondylolisthesis
Osteoarthritis	Wear and tear changes in a facet joint occurring with age. In advanced stages it may be a source of back pain.
Osteochondrosis	An unspecific term for any disc degeneration. It is part of normal aging and is not necessarily a pathologic finding leading to back pain.
Osteophyte	Osteophytes are also called “bone spurs”. They are bony changes that occur with natural aging. Commonly they are found with other findings such as disc degenerations. Osteophytes occur when the bony edges of the vertebra that attach to the discs enlarge as the disc degenerates. Depending on their location they may come in contact with nerve roots and lead to a nerve compression. However, in most cases they typically do not cause any symptoms.
Prolapsed disc, prolapse	See Herniated disc
Protruded disc, protrusion	Displacement of disc material beyond the normal margin of the intervertebral disc space. Depending on the location and amount of nerve root compression it may lead to stenosis or radicular symptoms. However, this is a very common finding in MRI and most cases is not associated with any symptoms.
Schmorl node	See Intravertebral herniations
Sequestered disc, sequestration	See Herniated disc
Spinal canal	The bony canal within the vertebral column that contains the dural sac, the spinal cord and the nerve roots. Severe narrowing or stenosis of the spinal canal may lead to compression of nerves.
Spondylolisthesis	Refers to the slipping of one vertebra over another. It can be caused by a degeneration of the intervertebral discs which links two vertebrae. In cases of a severe slip neurologic symptoms or pain can occur due to instability or nerve root compression.
Spondylolysis	Describes a bony defect in the vertebral arch. May in some cases lead to instability or spondylolisthesis. It may be a source of back pain but can also be found in asymptomatic people.
Spondylosis	A common nonspecific term used to describe any degenerative changes of the intervertebral discs. It is part of normal aging and is not necessarily a pathologic finding leading to any back pain.

Spondylosis deformans	A term used to describe any degenerative changes of the intervertebral discs and surrounding bone, such as osteophytes. It is part of normal aging and is not necessarily a pathologic finding leading to any back pain.
Stenosis, Spinal stenosis	Narrowing of the spinal canal caused by degeneration of the discs, ligaments or facet joint or by instability. It can result in compression of the nerve roots. Spinal canal stenosis can lead to gait disturbances or claudication. Stenosis of the foramen may lead to compression of one nerve root and radicular symptoms.

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