



Disc Herniation: What's in a name?

Several years ago I published a newsletter titled “**Disc Herniations - One Name with Many Meanings**”. I referenced a paper published in Spine in 2001 titled “**Nomenclature and Classification of Lumbar Disc Pathology**” which described the consensus of a combined task force representing the North American Spine Society, American Society of Spine Radiology, and American Society of Neuroradiology. As the name of the paper suggests, they try to define the proper naming and classification of Lumbar disc pathology. It is important to note that while the paper is specifically addressing Lumbar disc pathology the authors state that “**the principles and most of the definitions of this document could be easily extrapolated to the cervical and dorsal spine...**” Since my first newsletter I have continued to observe great confusion in the medical and legal communities on this topic. So, I am writing this follow-up newsletter specifically on the current nomenclature in the hopes that this elucidation will help you in the assessment of your client’s injuries.

Normal Disc: Is a disc that has the disc’s outer region all symmetrically within the confines of the outer region of the vertebral body

Annular Tears: These are essentially fissures between or across the annular fibers or at their attachment vertebral body. They may extend circumferentially, transversely or radially. They are not considered a herniation and are not necessarily trauma induced. Current literature indicates that they can be pain productive.

Disc Bulge: is a symmetrical or asymmetrical presence of disc material representing greater than 50% of the circumference of the disc

Herniation Is a general term defining a localized displacement of disc material beyond the limits of the disc space. By Convention it occupies less than 50% of the disc circumference. It includes sub-definitions of bulges, protrusions, extrusions, sequestration

Protrusion is present if the greatest distance, in any plane, between the edges of the disc material beyond the disc space is less than the distance between the edges of the base, in the same plane.

Extrusion is present when, in at least one plane, any one distance between the edges of the disc material beyond the disc space is greater than the distance between the edges of the base, or when no continuity exists between the disc material beyond the disc space and that within the disc space.

Sequestration is an extrusion in which the displaced disc material has lost completely any continuity with the parent disc

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The authors emphasize that "**The definitions of diagnoses should not define or imply external etiologic events such as trauma. The definitions of diagnoses should not imply relationship to symptoms. Definitions of diagnoses should not define or imply need for specific treatment.**" These caveats are important because it seems that anytime a disc herniation is present on imaging studies it is assumed to be causally related to the trauma from the lawyer's perspective. Similarly, from a surgeon's perspective it is often assumed to be the source of the patient's pain, even if the location or clinical findings do not fit. Additionally, from a rehabilitation perspective it does not mean that treatment is required.

I want to emphasize that the finding and naming of disc pathology is just an observation rather than a clinically significant, causally related and treatable diagnosis. This segues well into an editorial comment. The objective finding of a disc herniation morphology is only relevant in the context of a supportive past and current medical history, subjective complaints that are consistent with the level and side of the pathology, and/or objective orthopedic and neurologic tests that are consistent with the findings. The most significant contribution to determining the significance of the disc herniation is subjective. Most physicians will agree that 80-90% of their diagnosis is derived from taking a medical history and before doing an examination or ordering confirmatory tests (i.e. MRI). In other words, the subjective component of the examination is the most important part of the patient encounter. This is important to keep in mind for those that suggest that if it's subjective it is of little value. To the contrary, subjective complaints are essential in the determination of the clinical relativity of the disc lesion and are intrinsic to the diagnosis of causation. On the topic of subjectivity I would also comment that the interpretation of MRIs using the above criteria is also subjective and subject to the interpreters opinions about what he sees. We've all seen radiologists interpret the same studies differently using different nomenclature and observing different findings, despite looking at the same images.

If you want to look at the entire paper you can try downloading it from the web by cutting and pasting these search terms into your browser's search engine "**Nomenclature and Classification of Lumbar Disc Pathology**". Of course, you can also email me at Dr.Shaw@ShawChiropractic.com and I'll send you a copy.

Copies of my past newsletters can be found on my website at <http://shawchiropractic.com/attorney/newsletters/>

Please continue to the next page for a glossary of terms used in the paper that may be valuable for your future reference. The glossary is part of the original paper too

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Glossary Note: Some terms and definitions included in this Glossary are not recommended as preferred terminology but are included to facilitate interpretation of vernacular and, in some cases, improper use. Preferred definitions are listed first. Confusing or inaccurate alternative definitions are placed in brackets and designated as “Non-Standard.”

Aging disc Disc demonstrating features of normal aging. Spondylosis deformans possibly represents the normal aging process.

Anterior displacement Displacement of disc tissues beyond the disc space into the anterior zone.

Anterior zone Peridiscal zone that is anterior to the midcoronal plane of the vertebral body.

anulus, annulus (abbreviated form of annulus fibrosus) A multilaminated ligament surrounding the periphery of each disc space, attaching, craniad and caudad, to endplate cartilage and ring apophyseal bone and blending centrally with nucleus pulposus. Note: Either anulus or annulus is correct spelling. *Nomina Anatomica* uses both forms, whereas *Terminologia Anatomica* states “anulus fibrosus”

Asymmetric bulge Presence of outer anulus beyond the plane of the disc space, more evident in one section of the periphery of the disc than another, but not sufficiently focal to be characterized as a protrusion. Note: Asymmetric bulge is a morphologic observation of various potential causes and is not a diagnosis. See: bulge.

Balloon disc (colloquial) Diffuse displacement of nucleus through the vertebral endplate, commonly seen in severe osteoporosis.

Base (of displaced disc) The cross-sectional area of disc material at the outer margin of the disc space of origin, where disc material beyond the disc space is continuous with disc material within the disc space. In the craniocaudal direction, the length of the base cannot exceed, by definition, the height of the intervertebral space.

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Broad-based protrusion Protrusion of disc material extending beyond the outer edges of the vertebral body apophyses over an area greater than 25% (90 degrees) and less than 50% (180 degrees) of the circumference of the disc. See protrusion. Note: Broad-based protrusion refers only to discs in which disc material has displaced in association with localized disruption of the anulus and not to generalized (over 50% or 180 degrees) apparent extension of disc tissues beyond the edges of the apophyses. If the base is less than 25%, it is called “focal protrusion.” Apparent extension of disc material, formation of additional connective tissue between osteophytes, or overlapping of nondisrupted tissue beyond the edges of the apophyses of over 50% of the circumference of the disc may be described as bulging. See: bulging disc, focal protrusion.

bulging disc, bulge (n), bulge (v). 1. A disc in which the contour of the outer anulus extends, or appears to extend, in the horizontal (axial) plane beyond the edges of the disc space, usually over greater than 50% (180 degrees) of the circumference of the disc and usually less than 3 mm beyond the edges of the vertebral body apophyses. 2. (Non-Standard) [A disc in which the outer margin extends over a broad base beyond the edges of the disc space.] 3. (Non-Standard) [Mild, smooth displacement of disc, whether focal or diffuse.] 4. (Non- Standard) [Any disc displacement at the discal level.] Note: Bulging is an observation of the contour of the outer disc and is not a specific diagnosis. Bulging has been variously ascribed to redundancy of anulus secondary to loss of disc space height, ligamentous laxity, response to loading or angular motion, remodeling in response to adjacent pathology, unrecognized and atypical herniation, and illusion from volume averaging on CT axial images. Bulging may or may not represent pathologic change, physiologic variant, or normalcy. Bulging is not a form of herniation; discs known to be herniated should be diagnosed as herniation or, when appropriate, as specific types of herniation. See: herniated disc, protruded disc, extruded disc.

capsule Combined fibers of anulus and posterior longitudinal ligament. Note: The interface between outer anulus and posterior longitudinal ligament can be indistinguishable, making useful the term “capsule” and the derivative “subcapsular,” which refers to disc tissue beneath the capsule.

cavitation Spaces, cysts, clefts, or cavities formed within the nucleus and inner anulus from disc degeneration.

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central zone Zone within the vertebral canal between sagittal planes through the medial edges of each facet. Note: The center of the central zone is a sagittal plane through the center of the vertebral body. The zones to either side of the center plane are right central and left central, which are preferred terms when the side is known, as when reporting imaging results of a specific disc. When the side is unspecified, or grouped with both right and left represented, the term **paracentral** is appropriate.

chondrosis See intervertebral osteochondrosis.

chronic disc herniation Disc herniation with presence of calcification, ossification, or gas accumulation within the displaced disc material, suggesting that the herniation is not of recent origin. Note: The term implies the presence of calcification, ossification, or gas accumulation and should not be used for herniations of soft disc material, regardless of the duration of displacement. See: degenerated disc, hard disc.

claw osteophyte Bony outgrowth arising very close to the disc margin, from the vertebral body apophysis, directed, with a sweeping configuration, toward the corresponding part of the vertebral body opposite the disc.

collagenized disc or nucleus A disc in which the mucopolysaccharide of the nucleus has been replaced by fibrous tissue.

communicating disc, communication (n), communicate (v) Interruption in the periphery of the disc, so that fluid injected into the disc space could flow into the vertebral canal and thus into contact with displaced disc material. Note: Communication refers to the status of displaced disc tissues with reference to the parent disc. Containment refers to the integrity of the anulus as container of disc tissues. Uncontained, displaced disc tissues could be noncommunicating if the displaced tissue is sealed off by peridural membrane or by healing of the tear in the anulus.

concentric tear Tear or fissure of the anulus characterized by separation, or break, of anular fibers, in a plane roughly parallel to the curve of the periphery of the disc,

contained herniation, containment (n), contain (v) 1. Displaced disc tissue that is wholly within an outer perimeter of uninterrupted outer anulus or capsule. 2. (Nonstandard) [A

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disc with its contents mostly, but not wholly, within anulus or capsule.] 3. (Non-Standard) [A disc with displaced elements contained within any investiture of the vertebral canal.] Note: The preferred meaning encompasses disc tissues that are enclosed by distended portions of the outer anulus or composite of fibers of the anulus and posterior longitudinal ligament. A disc whose substance is less than wholly contained by anulus is uncontained, as is a disc outside of annular fibers but under a distinct posterior longitudinal ligament or peridural membrane. Designation of a disc as contained, or uncontained, should define the integrity of the anulus enclosing the disc, although such distinction may not be possible with currently available imaging methods.

continuity 1. Connection of displaced disc tissue by a bridge of disc tissue, however, thin, to tissue within the disc of origin. 2. (Non-Standard) [Connection of displaced displaced disc tissue by a substantial bridge of disc tissue to disc within the disc of origin]. 3. (Non- Standard) [Connection of displaced disc tissue by any tissue to disc tissue within the disc or origin.] Note: Tenuous attachments, beyond recognition by most imaging methods, may have significance to the surgeon or endoscopist. Bridges of peridural membrane, or scar, do not represent continuity. See sequestration.

Crock disc See internal disc disruption syndrome.

degenerated disc, degeneration (n), degenerate (v) 1. Changes in a disc characterized by desiccation, fibrosis and cleft formation in the nucleus, fissuring and mucinous degeneration of the anulus, defects and sclerosis of endplates, and/or osteophytes at the vertebral apophyses. 2. Imaging manifestations commonly associated with such changes. 3. (Non-Standard) [Changes in a disc related to aging.] Note: Either of the first two definitions may be correct, depending on context. Clinical features must be considered to determine whether degenerative changes are pathologic and what may or may not have contributed to their development. The term degenerated disc, in itself, does not infer knowledge of cause, relationship to aging, presence of symptoms, or need for treatment. See intervertebral osteochondrosis, spondylosis, spondylosis deformans.

degenerative disc disease 1. A clinical syndrome characterized by manifestations of disc degeneration and symptoms thought to be related to those changes. 2. (Non-Standard) [Abnormal disc degeneration.] 3. (Non- Standard) [Imaging manifestations of degeneration greater than expected, considering the age of the patient]. Note: Causal connections between degenerative changes and symptoms are often difficult clinical distinctions. The term carries implications of

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illness that may not be appropriate if the only manifestations are from imaging. The preferred term for description of imaging manifestations alone, or imaging manifestations of uncertain relationship to symptoms, is degenerated disc rather than degenerative disc disease.

delamination Separation of anular fibers along planes parallel to the periphery of the disc, thought to represent separation of laminated layers of the outer anulus fibrosus.

desiccated disc 1. Disc with reduced water content, usually primarily of nuclear tissues. 2. Imaging manifestations of reduced water content of the disc; or apparent reduced water content, as from alterations in the concentration of hydrophilic glycosaminoglycans.

disc (disk) Complex structure composed of nucleus, anulus, cartilaginous endplates, and vertebral body ring apophyseal attachments of anulus. Note: Most English language publications use the spelling disc more often than disk.¹² *Nomina Anatomica* designates the structures as “Disci intervertebrales” and *Terminologia Anatomica* as “discus intervertebralis/Intervertebral disc.”

disc of origin Disc from which a displaced fragment originated. Syn: parent disc Note: Since displaced fragments often contain tissues other than nucleus, disc of origin is preferred to nucleus of origin. Parent disc is synonymous, but more colloquial.

disc space Space limited, craniad and caudad, by the endplates of the vertebrae and peripherally by the edges of the vertebral body ring apophyses exclusive of osteophytes. Syn: intervertebral disc space.

disc space height The distance between the planes of the endplates of the vertebrae craniad and caudad to the disc.

discal level Level of the vertebral canal between axial planes through the bony endplates of the vertebrae craniad and caudad to the disc.

discogenic vertebral sclerosis Increased bone density and calcification adjacent to the endplates of the vertebrae craniad and caudad to a degenerated disc, usually a manifestation of intervertebral osteochondrosis.

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displaced disc A disc in which disc material is beyond the outer edges of the vertebral body ring apophyses (exclusive of osteophytes) of the craniad and caudad vertebrae, or, as in the case of intravertebral herniation, penetrated through the vertebral body endplate. Note: Displaced disc is a general term that does not imply knowledge of the underlying pathology, cause, relationship to symptoms, or need for treatment. The term includes, but is not limited to, disc herniation and disc migration.

extraforaminal zone The zone beyond the sagittal plane of the lateral edges of the pedicles, having no welldefined lateral border. Syn: far lateral zone, far-out zone.

extraligamentous Posterior or lateral to the posterior longitudinal ligament. Note: Extraligamentous disc refers to displaced disc tissue that is located lateral, or posterior to, the posterior longitudinal ligament. If the disc has extruded through the posterior longitudinal ligament it is sometimes called “transligamentous” or “perforated,” and if through the peridural membrane, it is sometimes refined to “transmembranous.”

extruded disc, extrusion (n), extrude (v) A herniated disc in which, in at least one plane, any one distance between the edges of the disc material beyond the disc space is greater than the distance between the edges of the base in the same plane; or when no continuity exists between the disc material beyond the disc space and that within the disc space. Note: The preferred definition is consistent with the common language image of extrusion as an expulsion of material from a container through and beyond an aperture. Displacement beyond the outer anulus of disc material with any distance between its edges greater than the distance between the edges of the base distinguishes extrusion from protrusion. Distinguishing extrusion from protrusion by imaging is best done by measuring the edges of the displaced material and remaining continuity with the disc of origin, whereas relationship of the displaced disc material to the aperture through which it has passed is more readily observed surgically. Characteristics of protrusion and extrusion may coexist, in which case the disc should be subcategorized as extruded. Extruded discs in which all continuity with the disc of origin is lost may be further characterized as sequestered. Disc material displaced away from the site of extrusion may be characterized as migrated. See: herniated disc, migrated disc, protruded disc.

fissure of anulus Separations between anular fibers, avulsion of fibers from their vertebral body insertions, or breaks through fibers that extend radially, transversely, or concentrically, involving one or more layers of the anular lamellae. Syn: tear of anulus, torn anulus. Note: The

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terms fissure and tear are commonly used synonymously. Neither term implies any knowledge of etiology, relationship to symptoms, or need for treatment. Tear or fissure are both used to represent separations of anular fibers from causes other than sudden violent injury to a previously normal anulus, which can be appropriately termed “rupture of the anulus,” which, in turn, contrasts to the colloquial, nonstandard, use of the term “ruptured disc,” referring to herniation.

Focal protrusion Protrusion of disc material so that the base of the displaced material is less than 25% (90 degrees) of the circumference of the disc. Note: Focal protrusion refers only to herniated discs that are not extruded and do not have a base greater than 25% of the disc circumference. Protruded discs with a base greater than 25% are “broad-based protrusions.”

foraminal zone The zone between planes passing through the medial and lateral edges of the pedicles. Note: The foraminal zone is sometimes called the “pedicle zone,” which can be confusing because pedicle zone might also refer to measurements in the sagittal plane between the upper and lower surface of a given pedicle, which is properly called the “pedicle level.” The foraminal zone is also sometimes called “lateral zone,” which can be confusing because lateral zone can also mean extraforaminal zone or an area including both the foraminal and extraforaminal zones.

free fragment 1. A fragment of disc that has separated from the disc of origin and has no continuous bridge of disc tissue with disc tissue within the disc of origin. Syn: sequestered disc 2. (Non-Standard) [A fragment that is not contained within the outer perimeter of the anulus.] 3. (Non-Standard) [A fragment that is not contained within anulus, posterior longitudinal ligament, or peridural membrane.] Note: Sequestered disc and free fragment are virtually synonymous. When referring to the condition of the disc, categorization as extruded with subcategorization as sequestered is preferred, whereas free fragment or sequestrum is appropriate when referring specifically to the fragment.

hard disc Disc displacement in which the displaced portion has undergone calcification or ossification and may be intimately associated with apophyseal osteophytes. Note: The term hard disc is most often used in reference to the cervical spine to distinguish chronic hypertrophic and

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reactive changes in the periphery of the disc from acute extrusion of soft, predominantly nuclear tissue. See: chronic disc herniation.

herniated disc, herniation (n), herniate (v) 1. Localized displacement of disc material beyond the normal margins of the intervertebral disc space. 2. (Non-Standard) [Any displacement of disc tissue beyond the disc space]. Note: Localized means, by way of convention, less than 50% (180 degrees) of the circumference of the disc. Disc material may include nucleus, cartilage, fragmented apophyseal bone, or fragmented anular tissue. The normal margins of the intervertebral disc space are defined, craniad and caudad, by the vertebral body endplates and peripherally by the edges of the vertebral body ring apophyses, exclusive of osteophytic formations. Herniated disc generally refers to displacement of disc tissues through a disruption in the anulus, the exception being intravertebral herniations (Schmorl's nodes) in which the displacement is through vertebral endplate. Herniated discs in the horizontal (axial) plane may be further subcategorized as protruded or extruded. Herniated disc is sometimes referred to as "herniated nucleus pulposus," but the term herniated disc is preferred because displaced disc tissues often include cartilage, bone fragments, or anular tissues. The term "ruptured disc" is used synonymously with herniated disc, but is more colloquial and can be easily confused with violent, traumatic rupture of the anulus or endplate. The term "prolapse" has also been used as a general term for disc displacement, but its use has been inconsistent. The term herniated disc does not infer knowledge of cause, relation to injury or activity, concordance with symptoms, or need for treatment.

herniated nucleus pulposus (HNP) See herniated disc.

high intensity zone (HIZ) Area of high signal intensity on T2-weighted magnetic resonance images of the disc, usually referring to the outer anulus. Note: High intensity zones within the posterior anular substance may reflect fissure or tear of the anulus, but do not imply knowledge of etiology, concordance with symptoms, or need for treatment.

infra-pedicular level The level between the axial planes of the inferior edge of the pedicle craniad to the disc in question and the inferior endplate of the vertebral body above. Syn: superior vertebral notch.

internal disc disruption Disorganization of structures within the disc space

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internal disc disruption syndrome Internal disc disruption associated with symptoms, which are thought, on clinical grounds, to be caused by the disruption. Syn: Crock disc.

interspace See disc space.

intervertebral chondrosis See intervertebral osteochondrosis.

intervertebral disc See disc.

intervertebral disc space See disc space.

intervertebral osteochondrosis Degenerative process of the spine involving the vertebral body endplates, the nucleus pulposus, and the anulus fibrosus, which is characterized by disc space narrowing, vacuum phenomenon, and vertebral body reactive changes. Syn: deteriorated disc, chronic discopathy, osteochondrosis. **intra-anular displacement** Displacement of central, predominantly nuclear, tissue to a more peripheral site within the disc space, usually into a fissure in the anulus. Syn: (Non-Standard) [intra-anular herniation], [intradiscal herniation]. Note: Intra-anular displacement is distinguished from disc herniation, in that herniation of disc refers to displacement of disc tissues beyond the disc space. Intra-anular displacement is a form of internal disruption. When referring to intra-anular displacement, it is best not to use the term “herniation” in order to avoid confusion with disc herniation.

intra-anular herniation (Non-Standard) See intra-anular displacement.

intradiscal herniation (Non-Standard) See intra-anular displacement.

intradural herniation A disc from which displaced tissue has penetrated, or become enclosed by, the dura so that it lies within the thecal sac.

intravertebral herniation A disc in which a portion of the disc is displaced through the endplate into the centrum of the vertebral body. Syn: Schmorl's node.

lateral membrane See peridural membrane.

lateral recess See subarticular zone.

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lateral zone See foraminal zone.

limbus fracture Traumatic separation of a segment of bone from the edge of the vertebral ring apophysis at the site of anular attachment. Note: Limbus fractures of various types may be accompanied by disc herniation, usually by either focal or broad-based protrusion. They may occur into the anterior zone or posteriorly into the zones where they may compress neural tissues.

limbus vertebrae Separation of a segment of rim of vertebral body ring apophysis. Note: Limbus vertebrae may result from fracture or from developmental abnormalities. Limbus vertebrae is commonly seen in patients who have had Scheuermann's disease. The lesions may be called "rim lesions." The term is derived from the Latin nominative limbus and genitive modifier vertebrae, thus is singular.

marginal osteophyte Osteophyte that protrudes from and beyond the outer perimeter of the vertebral endplate apophysis.

marrow changes (of vertebral body) See vertebral body marrow changes (Modic classification).

migrated disc, migration (n), migrate 1. Herniated disc in which a portion of extruded disc material is displaced away from the tear in the outer anulus through which it has extruded. 2. (Non-Standard) [A herniated disc with a free fragment or sequestrum beyond the disc level.] Note: Migration refers to the position of the displaced disc material, rather than to its continuity with disc tissue within the disc of origin; therefore, it is not synonymous with sequestration.

Modic Type 1,2,3 See vertebral body marrow changes.

nonmarginal osteophyte Osteophyte occurs at sites other than the vertebral endplate apophysis. See: marginal osteophyte.

normal disc 1. A fully and normally developed disc with no changes attributable to trauma, disease, degeneration, or aging. The bilocular appearance of the adult nucleus is considered a sign of normal maturation. 2. (Non-Standard) [A disc that may contain one or more morphologic variants which would be considered normal given the clinical circumstances of the patient Note:

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Many congenital and developmental variations may be normal in that they are not associated with symptoms, certain adaptive changes in the disc may be normal considering adjacent pathology, and certain degenerative phenomena may be normal given the patient's age; however, classification and reporting for medical purposes is best served if such discs are not considered normal. What is clinically normal for a given patient is a clinical judgment independent of the need to describe any variation in the disc itself.

nucleus of origin The central, nuclear portion of the disc of reference, usually used to reference the disc from which tissue has been displaced. Syn: parent nucleus, disc of origin.

osteochondrosis See intervertebral osteochondrosis.

osteophytes Focal hypertrophy of bone surface and/or ossification of soft tissue attachments to the bone.

paracentral In the right or left central zone of the vertebral canal. See central zone. Note: The terms right central or left central are preferable when speaking of a single site when the side can be specified, as when reporting the findings of imaging procedures. Paracentral is appropriate if the side is not significant or when speaking of mixed sites.

parent disc See disc of origin.

parent nucleus See nucleus of origin, disc of origin.

pedicular level The level between axial planes through the upper and lower edges of the pedicle. Note: The pedicular level may be further designated with reference to the disc in question as "pedicular level above" or "pedicular level below." Distinction should be made between designation of the pedicular level in the sagittal plane and the "foraminal zone" which is defined by the planes of the medial and lateral walls of the pedicles in the axial plane. Syn: peduncular level.

peduncular See pedicular.

perforated (Non-Standard) See transligamentous.

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peridural membrane A delicate, translucent membrane that attaches to the undersurface of the deep layer of the posterior longitudinal ligament, and extends laterally and posteriorly, encircling the bony spinal canal outside the dura. The veins of Batson's plexus lie on the dorsal surface of the peridural membrane and pierce it ventrally. Syn: lateral membrane, epidural membrane.

prolapsed disc, prolapse (n), prolapse (v) (Nonstandard) 1. A herniated disc in which disc tissue has protruded or extruded at the level of the disc and below into the suprapedicular level. 2. (Nonstandard) [Any herniated disc.] Note: The term prolapse is not used widely outside of medicine. Medically, it usually means to fall out and down, as with prolapse of the rectum or uterus. Analogy to the disc would apply most closely to disc tissue that has displaced beyond the disc space into the suprapedicular zone. It has been used often, nonspecifically, as synonymous with herniation. Prolapse is not a recommended term for description of disc displacement.

protruded disc, protrusion (n), protrude (v) 1. A herniated disc in which the greatest plane, in any direction, between the edges of the disc material beyond the disc space is less than the distance between the edges of the base, when measured in the same plane. 2. (Non-Standard) [A disc in which disc tissue beyond the disc space is contained within intact anulus]. 3. (Non-Standard) [Any, or unspecified type of, disc herniation.] Note: The test of protrusion is that there must be a localized (less than 50% or 180° of the circumference of the disc) displacement of disc tissue so that the distance between the corresponding edges of the displaced portion must not be greater than the distance between the edges of the base. A disc that has broken through the outer anulus at the apex, but maintains a broad continuity at the base, is protruded and uncontained. While sometimes used as a general term in the way herniation is defined here, the use of the term protrusion is best reserved for subcategorization of herniations meeting the above criteria. See: extruded disc.

radial fissure or tear Disruption of anular fibers extending from the nucleus outward toward the periphery of the anulus, usually in the craniad-caudad (vertical) plane, though, at times, with occasional horizontal (transverse) components. Note: Occasionally a radial fissure extends in the transverse plane to include avulsion of the outer layers of anulus from the apophyseal ring. See: concentric tears, radial tears.

rim lesion See limbus vertebrae.

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ruptured anulus Disruption of the fibers of the anulus by sudden violent injury. Note: Separation of fibers of the anulus from degeneration, repeated minor trauma, other nonviolent etiology, or when injury is simply a defining event in a degenerative process should be termed fissure or tear of the anulus. Rupture is appropriate when there is other evidence of sudden violent injury to a previously normal anulus. Ruptured anulus is not synonymous with ruptured disc, which is a colloquial equivalent of disc herniation.

ruptured disc, rupture (Non-Standard) 1. A herniated disc. 2. (Non-Standard) [A disc in which the anulus has lost its integrity.] See herniated disc, ruptured anulus. Note: Ruptured disc is used colloquially to encompass the same nonspecific meaning as the preferred term herniated disc. The common, nonmedical meaning of rupture, to break apart or burst, and the medical use of rupture in the sense of complete tears of ligament or tendon are analogous to the anulus disrupted by violent injury, which may be appropriately characterized as “ruptured anulus,” which is not synonymous with “ruptured disc.”

scarred disc See collagenized disc.

Schmorl's node See intravertebral herniation.

sequestrated disc, sequestration (n), sequestrate (v); (var: sequestered disc) An extruded disc in which a portion of the disc tissue is displaced beyond the outer anulus and maintains no connection by disc tissue with the disc of origin. Note: An extruded disc may be subcategorized as “sequestrated” if no disc tissue bridges the displaced portion and the tissues of the disc of origin. If there is a fragment of disc tissue that is not continuous with parent nucleus, but still contained, even in part, by anular tissues the disc may be characterized as protruded or extruded, but not as sequestrated. If even a tenuous connection by disc tissue remains between a displaced fragment and disc of origin, the disc is not sequestrated. If a displaced fragment has no connection with the disc of origin, but is contained within peridural membrane or under a portion of posterior longitudinal ligament that is not intimately bound with the anulus of origin, the disc is considered sequestrated. If the fragment is attached to the disc of origin by scar, or other nondiscal tissue, or is merely in apposition to the disc of origin and not connected by disc tissue, it is considered sequestrated. Sequestrated and sequestered are used interchangeably.

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sequestrum Disc tissue that has become displaced from the disc space of origin and lacks any continuity with disc material within the disc space of origin. Syn: disc fragment. See: sequestered disc. Note: Sequestrum refers to the isolated fragment itself, whereas sequestered disc defines the condition of the disc.

spondylitis Inflammatory disease of the spine, other than degenerative disease. Note: Spondylitis usually refers to noninfectious inflammatory spondyloarthropathies.

spondylosis 1. Spondylosis deformans, for which spondylosis is a shortened form. 2. (Non-Standard) Any degenerative changes of the spine that include osteophytic enlargement of apophyseal bone. Note: Spondylosis deformans has specific characteristics that distinguish it from intervertebral osteochondrosis. Both processes include vertebral body osteophytes. The term “spondylosis” is often used in general as synonymous with “degeneration” which would include both processes, but such usage is confusing, so it is best that “degeneration” be the general term and “spondylosis deformans” a specifically defined subclassification of degeneration. See: degeneration, intervertebral osteochondrosis, spondylosis deformans.

spondylosis deformans Degenerative process of the spine involving essentially the anulus fibrosus and characterized by anterior and lateral marginal osteophytes arising from the vertebral body apophyses, while the intervertebral disc height is normal or only slightly decreased. See: degeneration, spondylosis.

subanular herniation (Non-Standard) Disc herniation in which a displaced portion is contained by anulus. Syn: contained herniation. Note: Subanular describes a herniated disc that is contained by anulus and is not synonymous with the nonherniated “intra-anular displacement.” See intra-anular displacement.

subarticular zone The zone, within the vertebral canal, sagittally between the plane of the medial edges of the pedicles and the plane of the medial edges of the facets, and coronally between the planes of the posterior surfaces of the vertebral bodies and the under anterior surfaces of the superior facets. Syn: lateral recess, posterolateral zone Note: The subarticular zone cannot be precisely delineated because the structures that define the planes of the zone are irregular. The lateral recess refers more appropriately to the space beneath the facet at the pedicular level than as synonymous with the entire subarticular zone.

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subcapsular Beneath the composite of anulus and posterior longitudinal ligament. See subligamentous.

subligamentous Beneath the posterior longitudinal ligament. Note: Though the distinction between outer anulus and posterior longitudinal ligament may not always be identifiable, subligamentous has meaning distinct from subanular, when the distinction can be made. When the distinction cannot be made, subcapsular is appropriate. Subligamentous contrasts to extraligamentous, transligamentous, or perforated. See extraligamentous, transligamentous.

submembranous Enclosed within peridural membrane. Note: With reference to displaced disc material, characterization of a herniation as submembranous usually infers that the displaced portion is extruded beyond anulus and posterior longitudinal ligament so that only the peridural membrane invests it. The peridural membrane may also enclose material injected into a leaking disc, hematoma, or abscess. See: transmembranous.

Supra-pedicular level The level within the vertebral canal between axial planes of the superior endplate of the vertebra caudad to the disc space in question and the superior margin of the pedicle of that vertebra. Syn: inferior vertebral notch.

Syndesmophytes Thin and vertically oriented bony outgrowths extending from one vertebral body to the next and representing ossification within the outer portion of the anulus fibrosus.

Tear of anulus, torn anulus See **fissure of anulus** and **rupture of anulus**.

traction osteophytes Bony outgrowth arising from the vertebral body apophysis, 2–3 mm above or below the edge of the intervertebral disc, projecting in a horizontal direction

Transligamentous Displacement, usually extrusion, of disc material through the posterior longitudinal ligament. Syn: perforated. See also extraligamentous, transmembranous.

Transmembranous Displacement, usually of extruded disc material, through the peridural membrane.

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Transverse tear Tear or fissure of the anulus, running in the axial plane (horizontally), usually limited to rupture of the outer anular attachments to the ring apophysis. Note: Transverse tears are usually small and are located at the junction of the anulus and ring apophysis. They may fill with gas and, thereby, become detectable on radiographs or CT. They may be early manifestations of spondylosis deformans. More extensive radial tears may have a transverse component. See: concentric tears, radial tears.

Uncontained 1. Displaced disc material that is not contained by uninterrupted outer anulus. 2. (Non-Standard) [A disc in which a substantial portion of the displaced portion of the disc is outside of disc tissues.] 3. (Non- Standard) [A disc in which a displaced portion is wholly outside of disc tissues]. 4. (Non-Standard) [A disc in which a displaced fragment is not contained within disc tissues, ligament, or membrane]. See discussion under contained disc.

Undisplaced disc A disc in which all disc material is within the intervertebral disc space.

Vacuum disc A disc with imaging characteristics suggestive of gas in the disc space, usually a manifestation of disc degeneration.

Vertebral body marrow changes (Modic's classification) Reactive vertebral body modifications associated with disc inflammation and degenerative disc disease, as seen on MR images. Type 1 refers to decreased signal intensity on T1-weighted spin-echo images and increased signal intensity on T2-weighted images, indicating bone marrow edema associated with acute or subacute inflammatory changes. Types 2 and 3 indicate chronic changes. Type 2 refers to increased signal intensity on T1- weighted images and isointense or increased signal intensity on T2-weighted images, indicating replacement of normal bone marrow by fat. Type 3 refers to decreased signal intensity on both T1 and T2-weighted images, indicating reactive osteosclerosis.

Vertebral notch (inferior) Incisura of the upper surface of the pedicle corresponding to the lower part of the foramen (supra-pedicular level).

Vertebral notch (superior) Incisura of the under surface of the pedicle corresponding to

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