

## Herniated disc: the result of a process of muscular compression



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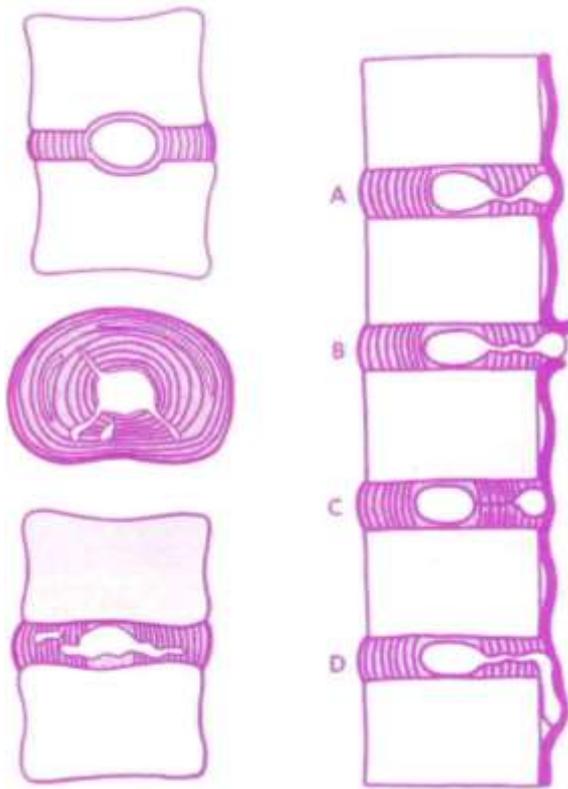
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It is easy to understand the connection between a herniated disc and compressive processes, which can be originated by a direct or an indirect trauma. This is to say that some traumas like falling off a horse, lifting excessive loads with an incorrect posture, and many more, can result in a herniated disc, especially at lumbar level. This pathology can be also caused by several micro-traumas on the vertebral column or by

minor accidents due to sports, exercises, athletics, weight lifting and bodybuilding. Also a job that involves repetitive activities with an incorrect posture can provoke a herniated disc. It is not that easy to understand how a herniated disc could be linked to repetitive gestures involving areas of our body that are far away from the herniated disc. If the cause is found in another area from the part in which the herniated disc appears, it is not that simple to identify all the muscle interactions that provoked the slipped disc. Before examining the ultimate cause of herniated disc, let's try to analyze the connection between a correct posture of the curvatures and the appearance of such pathology.

We all know that our vertebral column is like an engineering project: if our curvatures are regular and respect the physiology of our body, they will work as shock absorbers and allow our muscles to move properly. Delmas index (see Kapandji) clearly shows the mechanic resistance to compression and the relation with the number of curvatures (number of the curvatures plus one). If the vertebral column is too straight, with reduced curvatures and or even with inverted curvatures, will lose a part of its resistance, flexibility and adaptability to the external context.



At the age of 25, the fibers of the fibrous ring start to degenerate, causing the movement of nuclear substances:

A: A small part of the nuclear substances moves backwards, keeping in touch with the nucleus (and in this case it is possible to put it back where it was)

B: “expelled” hernias, which move to the vertebral channel after breaking the posterior ligament.

C: Blocked hernias, under the posterior ligament with no chances of putting it back.

D: migrating hernias, under the ligaments, which can slid downwards or upwards.

When the hernia reaches the posterior ligament, it pushes on it, provoking a low back pain (lumbago). If the hernia reaches the nerve roots, it causes radicular pain, including sciatic neuralgia.

Articular facets, whose aim is to “articulate” the lower and the upper vertebra, lose part of their ability to work properly and dynamically. Wrong curvatures can also cause a loss of stability in the facets, provoking a common pathology: the joint facet syndrome. The ribs move thanks to costovertebral joint processes, and if they are in contact with improper curvatures (thoracic hyperkyphosis, lumbar hyperlordosis reaching a high level on the back, reduction of the thoracic kyphosis or even flattening and interscapular lordosis) they can lose the possibility of moving properly and guaranteeing a right breathing. If the rib insertion point is altered, the chest will be altered, too, and it will not be able to do the right movements.

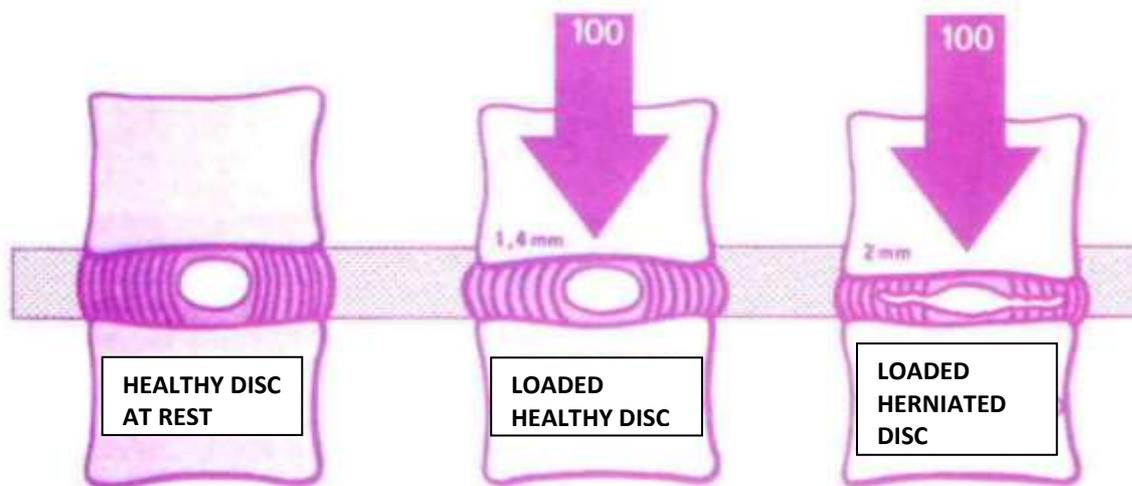
However, the most severe aspect is what happens at lordosis level, that is to say at cervical and lumbar levels.

Thoracic hernias are rare, because this part of the body does not move that much (the costovertebral joint limits the flexion) and because the vertebrae of this part of the body are designed to work in a context of kyphosis.

On the contrary, hernias are very frequent at lordosis level, because this part is very likely to move with a front flexion, which will inevitably cause an increase in the rear of the intervertebral disc space. This will enhance the possibility for the material of the nucleus pulposus to be forced out.

Besides that, the structure of the lumbar vertebrae is not apt to move with a reduced curvature or with an inverted one.

Among the two mentioned pathologies (hyperkyphosis and hyperlordosis and curvatures reduction/inversion) the most severe one is the curvature reduction/inversion, because it causes the curvature to go the opposite way compared to its natural physiology. Hyperlordosis can enhance the possibility of arthrosis, a curvature reduction or inversion is likely to cause a herniated disc.



The lumbar zone is more subjected to heavy loads than the cervical area (torso and arms weights are loaded on the lumbar zone, while the cervical zone only has to deal with head weight) and consequently it is the most affected by this pathology. Lumbar zone allows us to bend easily, because of its mobility, but the risk is to abuse of it and use it incorrectly. We should remember that our hips are meant to bend and flex the torso on the thighs and to bend frontwards, but their main purpose is to be a shock absorber and a stabilizer.

Let's try to understand why a curvature reduction or inversion appears. Even if it seems a contradiction, both pathologies are caused by an excessive tension of the muscles. This tension can have an effect on vertebral column, creating some adjustment curvatures which can evolve into a hyper or hypo pathology, whose result is always a joint adaptation.

It is very important to underline that an excessive muscular tension can become definitive in a short time, following a body economy law, evolving into permanent muscle retractions. Sarcomeres are fixed by the connective tissue and the sheaths in a shorter position than normal, and consequently the muscle will be shorter than before. The retraction will not heal by itself, but it could be treated with some particular methods.

Stretching is not suitable for this purpose and could not be used as a way of treating muscle retraction.

All muscle retractions have a readjusting effect on joints, and every joint readjustment can provoke pathologies such as tendinitis, synovitis, bursitis, radicular pain, joints block, general pain, and even degenerative processes such as arthrosis. It is only thanks to a global stretching that we can modify the retracting muscle tissue and set the joints free.

Every time we try to stretch a muscular area, or even a single muscle, our body uses some defense mechanisms, called “mechanisms of antalgic compensation”. Our body decides not to suffer and not to modify the current situation, activating some systems thanks to which it can move the tensions to other parts (compensations) giving you the illusion of being stretched, even if the day after everything is like it was before. These compensations are temporary or permanent adjustments taking place through the muscular chains (a series of communicating muscles going from the head to the toes), which can move the problem to a different area of our body. This is why we can find the consequences of a foot problem at lumbar level, like a herniated disc, or at cervical level, or vice versa. Not only will the body automatically set these antalgic mechanisms into motion, but also these moving pathologies can be provoked by local therapies that do not take into consideration the muscular chains.

This is why it is extremely important to know all the parameters for a postural and functional evaluation of the patient’s body. The posturologist must be able to read a posture and not only work on the affected area, but also on the area of the main cause, a hidden place which has been occulted by our body antalgic mechanisms in order not to destabilize the current situation.

It is right and proper to mention doctor Nackemson, one of the most important international experts on disc pathologies, according to whom almost 50% of people who undergo surgery to remove a herniated disc, after the surgery will experience the same pain as before.

When it happens, the only explication is that the herniated disc was not the main cause of the patient’s pain. It was caused by a compression generated by the muscular chain that is still compressing and disturbing the nerves.

This is why all the patients who undergo a surgery without having preventively stretched the muscles involved in the compression will not heal after the surgery, and will experience the same symptoms or even a new herniated disc in the intervertebral space under or above the previous one.

When this occurs, it is important to extend the way we are considering the problem. The pathology is the result of a series of muscular interactions, and working on the affected area is useless or even dangerous.

How can the posturologist heal those patients? Posturologists can use a number of different approaches and methods, with the generalist approaches being the most effective.

What should the posturologist take into consideration? Environment, stress, odontostomatological problems, sight problems or general issue in life, relationships, sports, work and lifestyle of the patient.

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