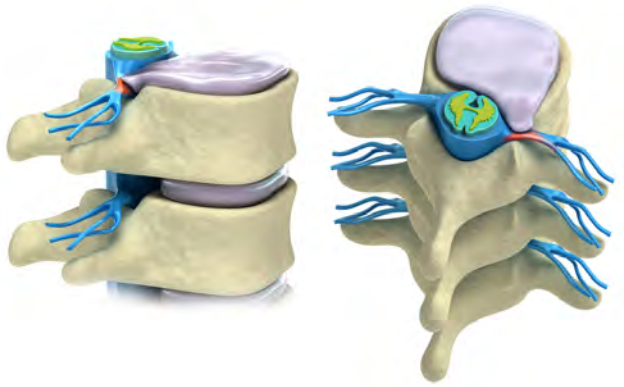
SPINAL ANATOMY

Disc degeneration, prolapse, saddle seats and wedges

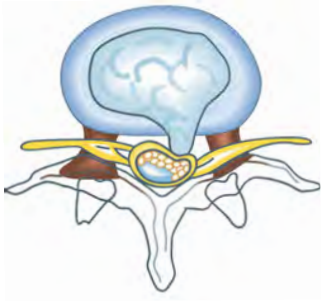
The vertebral coloum consists of multiple blocks of bones with cartilagenous discs in between. The blocks of bones are called verterbrae and the cartilageonous part is called the disc. The blocks of bones and discs are alternatively arranged one over the other like a tower. The discs functions as a cushion between two adjacent vertebrae. At the back of each block of bone is a hole. All the holes put together form a tunnel and this is called the spinal canal. The spinal cord which is the continuation of the brain runs through the spinal canal. The spinal nerves come out of the spinal cord and go to different parts of the body. The spinal cord is like the motorway from the brain and the spinal nerves can be considered the "A Roads" from the motorway to different parts of the body. There are 31 pairs of spinal nerves in the human body.

The intervertebral discs are plump and keep the vertebral bodies apart. The disc looks like a "jam doughnut". The doughy part on the outside is called the "annulus fibrosus" and the jammy part in the inside is called the "nucleus pulposus".



Degeneration - Unfortunately due to injury, age, genetic make up; the discs may become damaged and lose water. The disc is then called degenerate or dehydrated (lost water). This change is now permanent and cannot be undone. A dehydrated disc does not cushion the vertebrae and may cause back pain. They become like a half inflated car tyre. A half inflated car tyre causes wobbliness of the car. Similarly the degenerate disc may cause some micromotion between the vertebrae and cause back pain. By performing core stability exercises the muscles around the spine can be toned up. The toned up muscles may decrease the wobbliness / micro motion between the vertebrae and may help with back pain.

Disc Prolapse - Sometimes the degenerate disc may suddenly deteriorate and the jammy part of the doughnut may come out. This is called a disc prolapse. This will cause leg pain in addition to the back pain.



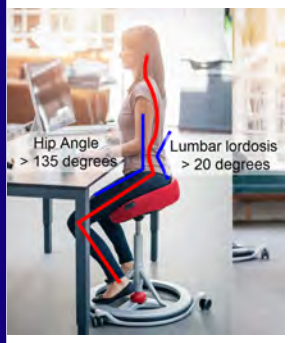
In a true disc prolapse the leg pain is worse than the back pain. 90 to 95% of discs prolapses get better without any intervention. Pain killers and gentle mobilisation is all that is required. Core stability exercises may prevent a further disc prolapse.

Just like how brushing one's teeth improves dental health, doing regular core stability exercises may improve spinal health.

In office workers the two identifiable causes of back pain are sitting for long periods and sitting in the same position without moving.

The natural spine has curves in the front and back to increase stability. There is no natural side to side curve. The curve to the front is called lordosis and the curve to the back is called kyphosis. Both in the neck (cervical spine) and in the lower back (lumbar spine) the spine is curved forwards. In the mid back (thoracic spine), behind the chest wall, the curve is backwards.

When sitting in a normal chair the lumbar lordosis is decreased. If the hip is higher than the knee then the curve is restored. Maintaining a high hip angle and a high lumbar lordosis maintains the spine is a natural position and decreases the abnormal stresses on the spine. This type of seating is available in a saddle seat like the Capisco.



Saddle chair and stools - It is again important to note that the chair should not be too comfortable. It should not encourage one to sit for long periods without moving. Sitting for long periods without moving is a risk factor for back pain. A saddle chair maintains the hip angle and the lumbar lordosis.

Seat wedges - A car seat is also not the most ergonomic. Since cars that go a great speeds, have to be lower, the seats are also lower. This may decrease the hip angle and therby the lumbar lordosis. Having a seat wedge can hopefully address this.

Coccydynia - Pain in the tail end is called Coccydynia. One of the simplest ways to address "Coccydynia" is to use a wedge with a Coccyx cut out. This will decrease the load going through the coccyx.

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