AN INTRODUCTION TO

SPINAL ALIGNMENT

This booklet is designed to inform you about spinal alignment. It is not meant to replace any personal conversations that you might wish to have with your physician or other member of your healthcare team.

Not all the information here will apply to your individual treatment or its outcome. The information is intended to answer some of your questions and serve as a stimulus for you to ask appropriate questions about spinal alignment and spine surgery.
SPINAL ALIGNMENT

About the spine
The human spine is made up of 24 bones, called vertebrae. Between each vertebra are discs which provide the cushion necessary for spinal rotation and bending. The spine is comprised of the cervical (neck) spine, the thoracic (chest) spine, the lumbar (lower back) spine, and sacral bones. There are natural curves within the spine which are important for maintaining balance while standing, and overall spinal alignment.

Why is spinal alignment important?
Spinal alignment refers to how the head, shoulders, spine, hips, knees, and ankles relate and line up with each other. Studies have shown that a properly aligned spine is associated with a higher quality of life. When the spine is out of alignment, the body’s tendency is to compensate in order to maintain balance and a horizontal gaze (ability to look up straight). For example, a person could compensate by rotating the hips forward. This can lead to stress on muscles and joints, ultimately causing the body to try to compensate even more.

What are my treatment options?

Many symptoms related to back pain as a result of malalignment may be treated without surgery via methods that involve medication, rest, heat, and physical therapy. It is important that you speak to your physician about the best options for you.

If your symptoms do not improve with other methods, your physician may suggest spinal surgery. Surgery is reserved for those who do not gain relief from nonoperative forms of treatment, patients whose symptoms are increasing or worsening, and/or patients who present a spinal condition that indicates the need for surgery.

Causes of malalignment

There are several causes that may contribute to the spine being out of alignment. The majority are related to the natural aging process, in which the tendency is for the spine to curve beyond the normal range. Genetics can also play a contributing role if a person is born with a malaligned spine or predisposition for malalignment. Other causes include complications from a previous spine surgery (e.g., adjacent segment disease), trauma, or tumors. Malalignment can lead to back pain.
When planning for your surgery, your surgeon may choose to take certain measurements of your spine to help determine the best course of action. For example, your surgeon may measure the degrees in the curvature of your lower back (lumbar lordosis), as well as certain angles of your pelvis (pelvic incidence). Studies show that the relationship between these two measurements can help determine your spinal alignment. A common goal in the surgery is to achieve proper spinal alignment.

**Glossary**

**Kyphosis** is the natural curvature of the thoracic portion of the spine.

**Lordosis** is the natural curvature of the lumbar and cervical portions of the spine.

Your surgeon may choose to place one or more implants into your disc space. These may include hyperlordotic implants which can help restore proper disc height as well as the lordosis in your lower back. Generally, some method of fixation will also be used to act as a stabilization device (internal brace) to help hold everything in place while fusion (bone healing) occurs.

Software solutions are available to help surgeons calculate and evaluate spinal measurements, the type of implant(s) needed, and where to place them during surgery. Through surgical planning software, a surgeon has the ability to model the surgery beforehand, set goals, and then confirm the outcome postoperatively.

**Lumbar lordosis (LL)** is the spinal curvature in the lumbar spine.

**Pelvic incidence (PI)** is a spinal measurement derived from the fundamental relationship between the sacrum and the pelvis.

**Spinal alignment** refers to how the head, shoulders, spine, hips, knees, and ankles relate and line up with each other.
If you have any questions about spinal alignment or spine surgery in general, please call or see your physician, who is the only one qualified to diagnose and treat your spinal condition. This patient information brochure is not a replacement for professional medical advice.

RESOURCES

For more information about spinal alignment please visit:

www.nuvasive.com

If you would like to learn more about patient support and education for chronic back, leg, and neck pain sufferers and their loved ones, please visit:

www.thebetterwayback.org
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