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Case Report

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Spondylolisthesis of Degenerative Origin Gr I-II in Adult: Review of the Literature and Presentation of a Clinical Case

Iñaki Arrotegui*

Department of Neurosurgery, Hospital General Universitario de Valencia, Avda Tres Cruces, Valencia, Spain

***Corresponding author:** Iñaki Arrotegui, Consultant Neurosurgeon, Hospital General Universitario de Valencia Department of Neurosurgery, Avda Tres Cruces S/n .46014, Valencia, Spain. Tel: +34627492961; Email: athbio@yahoo.es

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Abstract

Spondylolisthesis is the sliding of a vertebra over the one that follows it. The sliding can be only of the body or of the whole vertebra. In the first case, there must be a lysis at the level of the "Pars Articularis" that allows the body to slide slowly and the posterior arch is left behind. Frequently, it is located at the level of the lumbosacral spine. When there is no lysis, the sliding occurs because there are alterations in the posterior arch, usually of the first sacral. But there may also be alterations in the facet join these pathological events (lysis of the isthmus and dysplasia of the posterior arch of L5 and S1) are attributed to causality, but currently, the intimate cause of spondylolisthesis is still unknown.

Keywords: Lower Back; Neurological Symptoms; Spine Surgery; Spondylolisthesis

Introduction

Herbíniaux, the Belgian obstetrician, described in 1782 a dystosis of labor due to lumbosacral promontory enlargement, which corresponded to L5 S1 spondylolisthesis. Kilian, in 1854, coined the term "Spondylolisthesis", which means slippage of a vertebral body. Wiltse, Neumann, and Mac Nab have proposed a classification for spondylolisthesis, which is accepted today, which divides them into five types [1]. The back, or spine, is made up of many parts. The spine, also known as the spine, provides support and protection. It consists of 25 vertebrae. There are discs between each vertebra that function as pads or impact absorbers. Each disc is composed of an outer band in the shape of a tire called the fibrous annulus, and a jelly-like inner substance called the nucleus pulpous. Together, the vertebrae and discs provide a protective tunnel (the spinal canal) to house the spinal cord and spinal nerves. These nerves run through the center of the vertebrae and exit to various parts of the body. In spondylolisthesis, a vertebra slides forward over the vertebra below [2,3].

Spondylolisthesis occurs when one of the vertebrae of the spine (bones) slides forward on the one below. Spondylolisthesis occurs most often in the lumbar spine (lower back). Some people never learn that they have spondylolisthesis because they have no symptoms. When symptoms appear, they usually include one or more of the following:

- Pain in the lower back, thighs, and legs;
- Weakness in thighs or legs;
- Tight hamstring muscles (back of the thighs);
- Loss of toilet training, or difficulty controlling them.

Spondylolisthesis can alter its appearance. Some notable physical differences are:

- The abdomen protrudes;
- The torso seems shorter;
- Sunken loin (curves too deep in the lower back);
- Way to walk like a duck.

The severity of spondylolisthesis is described using a scale of 1 to 5. Grade 1 indicates that 25% of a vertebra has slipped forward over the one below. Grade 2 indicates that a 50% slip has occurred, and so it continues to grade 5, which represents a 100% slip (known as spondyloptosis) [4-6]. This disease usually occurs in the lumbar region (lower back), as a result of being the region that supports most of the body weight. Men suffer more from spondylolisthesis

than women. This is because, in general, more men than women are involved in physically demanding activities such as weightlifting or soccer, which can cause spondylolisthesis.

There are Two Main Types: Congenital and Acquired

Congenital Spondylolisthesis

It is possible to have this condition from birth, that is, congenitally. It can also develop in childhood. However, it is sometimes discovered only in adulthood. Acquired spondylolisthesis. This can be caused by normal wear or by forcing the spine to handle physically demanding tasks. Poor ergonomics, transporting heavy objects and intense sports (such as lifting weights or gymnastics) can help develop a spondylolisthesis.

Degenerative

Is a form of acquired spondylolisthesis and usually occurs after age 50? While we can see how facial wrinkles develop over time, we cannot see the changes that occur in the spine that also occur with aging. Degenerative changes in the spine weaken the spinal structures and make it susceptible to spondylolisthesis or other problems. Many people with spondylolisthesis have no symptoms. Sometimes a spondylolisthesis is discovered when the patient is x-rayed for an unrelated problem. However, some patients do have symptoms that vary between mild and severe.

Listed below are several symptoms that are usually related to spondylolisthesis:

- Pain in the lower back and sensitivity;
- Pain in the buttock;
- Pain and/or weakness (one or both) in the thighs and legs;
- Difficulty controlling sphincters;
- Tight hamstring muscles;
- Walk similar to the gait of a duck;
- Sunken loin;
- Outstanding abdomen.

The term spondylolisthesis comes from the Latin and means “Sslipped vertebral body”. Degenerative spondylolisthesis is diagnosed when one vertebra slides forward over the one below. This condition occurs as a result of the general aging process by which the bones, joints, and ligaments of the spine become weak and less able to keep the spine aligned [7]. Degenerative spondylolisthesis is more common in people older than 50 years, and much more common in people older than 65 years. It is also more common in women than in men with a ratio of 3: 1.

A degenerative spondylolisthesis normally occurs in one of two levels of the lumbar spine:

- Level L4-L5 in the lower part of the column (most common location),
- The level L3-L4.

Degenerative spondylolisthesis is relatively rare in other levels of the spine, but it can occur in two or even three levels simultaneously. While not it is as common as lumbar spondylolisthesis, cervical spondylolisthesis (in the neck) can occur. When degenerative spondylolisthesis occurs in the neck, it is usually a secondary issue to arthritis in the facet joints. This article reviews the underlying causes, diagnosis, symptoms and the full range of surgical and non-surgical treatment options for degenerative spondylolisthesis [8].

Case Report

A 79-year-old patient, who has been having difficulty walking for some time, but has not been able to walk more than 25 meters without stopping in the last few months. Clinic: lower back and lower limb pain. For many years the patient has been treated with medication for pain. MRI performed a spondylolisthesis Gr I-II (Figure 1). The patient after explanations of the different options that I had, opted for the surgery (Figures 2, 3). After 3 months the patient wanders without help up to 100 meters and a significant reduction of the medication prescribed before the surgery.

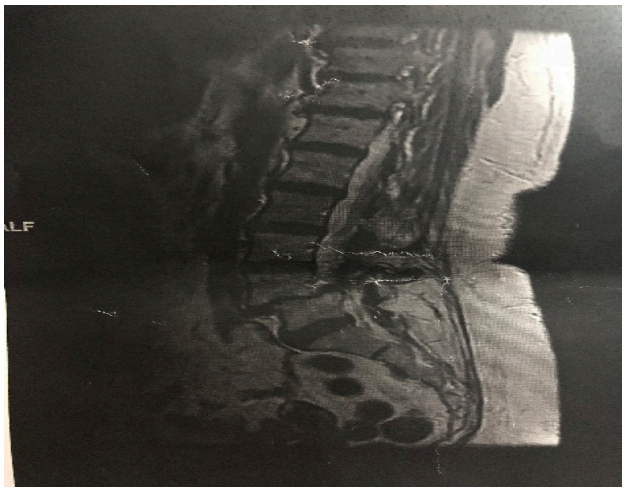

Figure 1: MRI before surgery.

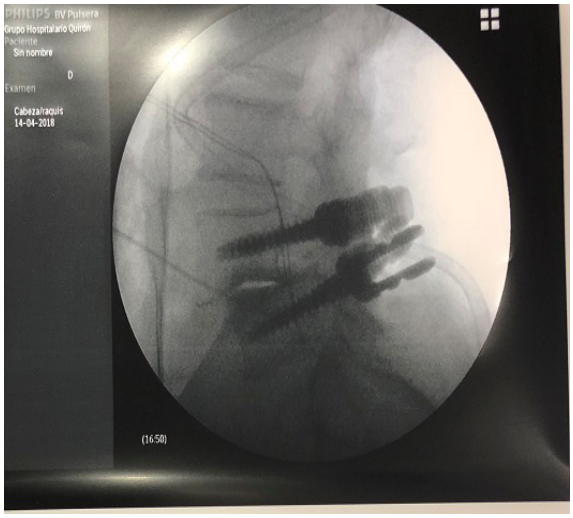

Figure: Lateral view. Reduction of spondylolisthesis.

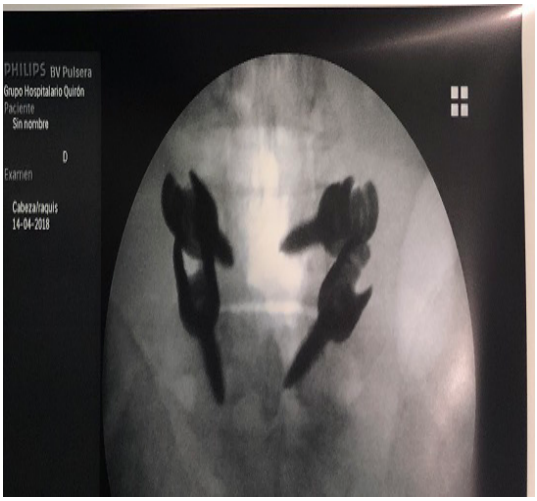

Figure 3: P_A view intraoperative.

Discussion

Causes of Degenerative Spondylolisthesis

Each level of the spine is made up of a disc in the anterior part and a pair of facet joints in the posterior part. The disc acts as a buffer between the vertebrae, while the pair of facet joints constrains movement. They allow the spine to bend forward (flexion) and backward (extension), but do not allow too much rotation [9]. As the facet joints age, they can become incompetent and allow too much flexion, allowing one vertebral body to slide forward over the other. In the adult, low back pain is a very frequent symptom, which is probably caused by instability of the spine. This instability irritates sensitive elements or overloads others, such as inter apophyseal joints, causing the so frequent low back pain.

Sciatica: It is produced by compression and traction of the L5 roots at the foraminal and sacral level in the posterior border of S1, especially in the dysplastic type spondylolisthesis, in which the arch of the vertebra slides forward together with the vertebral body. In these cases, with a 25% slippage, root compression can occur. The Sciatica of isthmic spondylolisthesis (lysis) is explained by the compression suffered by the root by the fibrous reaction, in the area of lysis of pars articularis. Lumbosciatica: it is produced by a combined mechanism of column instability and compression or root inflammation. In relation to the sensory and motor alterations, it is observed much more in the adult than in the child and adolescent. Mainly hypoesthesia is observed in territory L5 and S1 uni or bilateral. The isolated motor alterations are less frequent, but they are also observed corresponding to the roots L5 and S1. The alteration of the Aquilian reflex is frequent to observe, being able to be diminished or absent. It can be committed unilaterally or bilaterally. Intermittent claudication: seen more frequently in degenerative spondylolisthesis, but also in isthmic or dysplastic, when these are associated with herniated nucleus pulpous.

The stabilization and decompression solve the narrow channel segmental problem that was causing the spondylolisthesis. March sui generis: the contracture of the hamstring muscles causes the spondylolisthesis carrier to walk with the hips and knees bent and the trunk forward. The contraction of the hamstring muscles by the vertebral slip produces an alteration of the posture. It is observed that the lumbar lordosis is prolonged towards the thoracic region as the listesis increases. One can even feel a step at level L5 in the isthmic spondylolisthesis. Muscle spasm becomes more evident at the lumbar level. The pelvis rotates backward, and the sacrum becomes kyphotic. In the abdominal region depending on the magnitude of the listhesis, the space between the rib flange and the iliac crest decreases, the abdomen becomes prominent, appearing a depression that crosses it transversely, immediately above the navel.

Surgery for degenerative spondylolisthesis generally includes two parts, which are carried out together in a single operation [10]:

- A decompression (also called laminectomy);
- A fusion of the spine with the instrumentation of pedicle screws.

Decompression surgery (laminectomy) alone is not generally advisable since instability is still present and a subsequent fusion will be necessary for up to 60% of patients. In 1991, a randomized controlled study of the fusion with and without instrumentation of pedicle screws was performed and it was found that the fusion rates were much higher in the instrumented patients, but the clinical results were approximately the same1. However, when these same patients were evaluated 10 years later, patients with

a solid fusion were significantly better than those without fusion [11]. It is a surgery whose recovery is difficult since there is a lot of dissection. The hospital stay is usually one to four days. Full recovery can last up to a year. In general, most patients can begin to perform many of their activities after the fusion has taken three months to heal. Once the bone is fused, then the more active the patient is, the stronger the bone will be [12].

Possible Benefits of Surgery

Vertebral arthrodesis surgery for a degenerative spondylolisthesis is generally quite successful, with more than 90% of patients improving their function and enjoying a significant decrease in their pain.

Possible Risks and Complications

There are numerous risks and possible complications with surgery for degenerative spondylolisthesis and these are basically the same as for any fusion surgery. There are risks that there is no union (arthrodesis, or lack of fusion), hardware errors, persistent pain, degeneration of the adjacent segment, infection, hemorrhage, tear of the dura, damage to the nerve root and all possible risks of anesthesia general (for example, formation of blood clots, pulmonary embolism, pneumonia, heart attack or stroke). Most of these complications are rare, but the increased risks can be seen in certain situations. The factors that increase the risk of the surgery are, among others, smoking (or any nicotine consumption), obesity, fusions in several levels, osteoporosis (thinning of the bones), diabetes, rheumatoid arthritis or the failure of a back surgery.

As degenerative spondylolisthesis is a disease that disproportionately affects people over 60 or 65 years of age, surgery presents some additional risks. The surgical risk is more directly related to the general health of the patient and not to his absolute age. Particularly in patients who have multiple medical problems, surgery can be very risky. For some patients, even if non-surgical treatments have not been successful in relieving symptoms, surgery may present too many risks and intermittent epidural injections combined with a modification of activity may be the best option.

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