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# Transforaminal Lumbar Interbody Fusion in Multilevel Lytic Listhesis – A Rare Case Report

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## Abstract

Spondylolisthesis is a spinal condition that affects the lower vertebrae (spinal bones). This disease causes one of the lower vertebrae to slip forward onto the bone directly beneath it. It is a painful condition but treatable in most cases. We have described an unusual case of multilevel lytic spondylolisthesis in a patient presenting with back pain and neurogenic claudication. The patient underwent an uneventful post-operative recovery. At a recent follow-up, 3 months after the surgery, the symptoms of the patient were significantly improved. The patient was ambulating without aid and did not complain of any leg symptoms.

**Keywords:** Spondylolisthesis, Vertebrae, Lytic spondylolisthesis, Spinal, Neurogenic, Claudication

## Introduction

Spondylolisthesis is a pathological condition that is defined as the olisthy of one vertebral body over another. The term was coined for the 1st time in 1854 by Killian [1]. Multiple etiologies can lead to spondylolisthesis. Most often, either congenital anomalies predisposing to spondylosis and slip progression or gradual degeneration of the posterior facet joints (dysplastic), or defects in the pars interarticularis (isthmic) are responsible. However, other types such as traumatic and pathologic also exist. Spondylolisthesis at multiple levels is rare.

To the best of our knowledge, there has been no published report of 4-level lytic spondylolisthesis with severe L2-S1 B/L foraminal compression. This article is the first report on an unusual case of 4-level lytic spondylolisthesis of the lumbar spine in a patient with back pain and neurogenic claudication.

## Case Report

A 45-year-old female presented with 1-year history of low back pain that progressively worsen over the past 2 months and was associated with bilateral buttock, lateral thigh, and calf pain along L4 and L5 dermatome. Pain was increased on walking and standing and relieved by rest. Claudication distance measured 15 min. Physical examination revealed tenderness over the lumbar spine. Lumbar flexion and extension were limited and painful. There were no motor weakness and sensation intact. The patient presented with crouch gait. Plain radiography of the lumbar vertebrae revealed L2-L3 lysis, Grade 2 lytic spondylolisthesis at L3–L4, Grade 2 lytic listhesis L4–L5, and Grade 1 lytic listhesis at L5–S1 (Figs. 1 and 2). Magnetic resonance imaging revealed showed L3-L4, L4-L5, and L5-S1 lytic listhesis with B/l foraminal compression.

L2–S1 decompression laminectomy and with TLIF at L3-L4, L4-L5, and L5-S1 of L2–S1 with posterior instrumentation and local bone graft were performed to decompress the spinal cord and stabilize the lumbar spine (Figs. 4 and 5). Intraoperatively, the patient was found to have severe foraminal compression from L3 to S1 level. The patient underwent an uneventful post-operative recovery. At a recent follow-up, 3 months after the surgery, the symptoms of the patient were significantly improved. The patient was ambulating without aid and did not complain of any leg symptoms.

## Discussion

Spondylolisthesis commonly classifies as one of the five major etiologies: Degenerative, isthmic, traumatic, dysplastic, or pathologic-isthmic spondylolisthesis results from defects in the pars interarticularis. The cause of isthmic spondylolisthesis is undetermined, but a possible etiology includes microtrauma in adolescence related to sports such as wrestling, football, and gymnastics, where repeated lumbar extension occurs [1]. Chiari (1892) had a much broader conception of the etiological factors and distinguished between luxation forward of the whole vertebra due to articular facet deficiency and luxation forward of the anterior part of the vertebra due to a lesion of the neural arch. Meyerding (1932) defined it as a

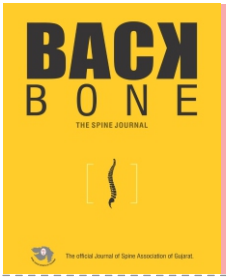


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**Figure 1:** Pre-operative X-ray.

**Figure 2:** Pre-operative X-ray.

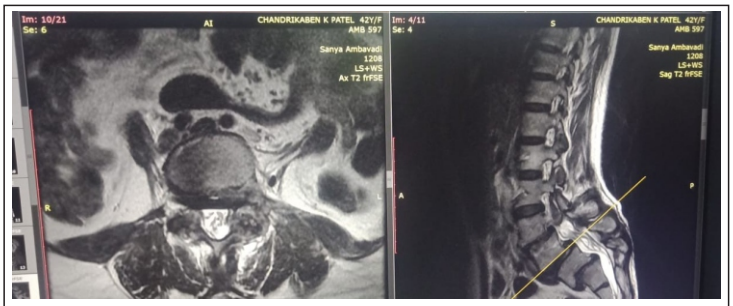

**Figure 3:** Pre-operative magnetic resonance imaging.

**Figure 4:** Post-operative X-ray.

**Figure 5:** Post-operative X-ray.

subluxation of a vertebra, usually forward and most commonly at the lumbosacral level, Colonna (1954) stated that spondylolisthesis was produced as the result of a defect between the inferior and superior articular surfaces of the neural arch [2]. The clinical presentation and natural history of spondylolisthesis are variable. Chronic pain of long evolution is normally the earliest and most important manifestation. It is sometimes found by accident, while in other cases, the process can evolve until it severely compromises the spinal content at the affected level [3,4].

Roussouly et al. described four typical subtypes of sagittal orientation of the lumbar spine and pelvis. Type IV of this classification is characterized by a high sacral slope and a high pelvic incidence with associated significant lumbar lordosis. Such spinopelvic configuration has a relatively vertical S1 endplate in the sagittal plane and might predispose to anterior displacement of the lumbar vertebrae above. However, such predisposing anatomic feature is not observed in our case [4].

When considering options for surgical treatment of adult isthmic spondylolisthesis, the surgeon must consider several different options, such as decompression, fusion, instrumentation, reduction, and type of bone graft to be used. All of these decisions must be individualized as deemed appropriate for each particular patient. When symptomatic, radiculopathy is the typical complaint in adults with isthmic spondylolisthesis, as in this patient. When the patient presents with radicular leg pain, decompression is a favored choice for surgical treatment [5].

The body mass index remains a global anthropometric parameter describing a spondylolisthesis population which is often characterized by overweight. This overweight might lead to an increased axial load of the L4–L5 disc and facet joints, but it might also lead to an anterior displacement of the trunk and enhance the risk of degenerative spondylolisthesis [5].

## Conclusion

We have described an unusual case of multilevel lytic spondylolisthesis in a patient presenting with back pain and neurogenic claudication. Thorough evaluation for multilevel segmental involvement in spondylolisthesis is important because of the frequency of severe symptomatic spinal stenosis or foraminal encroachment. Good surgical outcome can be expected from decompression and stabilization of multilevel degenerative spondylolisthesis. The pathogenesis of multilevel lumbar lytic spondylolisthesis can be complex and heterogeneous.

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**Declaration of patient consent:** The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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