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A case report of 3-level degenerative spondylolisthesis with spinal canal stenosis

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ABSTRACT

INTRODUCTION: Lumbar degenerative spondylolisthesis is a major cause of impaired quality of life and diminished functional capacity in the elderly. Degenerative spondylolisthesis often involves only one or two level and tend to present with one or two level spinal canal stenosis.
CASE REPORT: The authors describe an unusual case of degenerative spondylolisthesis involving 3 levels of the lumbar spine from L2 to L5. The patient was a 58-year-old woman who suffered chronic back pain and neurogenic claudication. Plain radiography revealed grade I degenerative spondylolisthesis at L2–L3, L3–L4 and L4–L5. Elevated pedicle-facet joint angles and W-type facet joints at the lumbar spine was observed. Magnetic resonance imaging showed L2–S1 spinal cord compression at the lumbar spine. Patient underwent L2–S1 decompression laminectomy and posterior lateral fusion of L2–S1 with posterior instrumentation and bone grafting. Symptoms improved significantly at 4 months follow-up.
CONCLUSION: Thorough evaluation for multilevel segmental involvement in degenerative spondylolisthesis is important because of the frequency of severe symptomatic spinal stenosis or foraminal encroachment. Good surgical outcome can be expected from decompression and stabilisation. The pathogenesis of multi-level lumbar degenerative spondylolisthesis can be complex and heterogeneous.

1. Introduction

Lumbar degenerative spondylolisthesis is a result of degenerative disorder of the intervertebral motion segment. It is a major cause of severe spinal canal stenosis and is often related to low back pain and leg pain. It often results in impaired quality of life and diminished functional capacity in the elderly. Degenerative spondylolisthesis often involved only one level (62%) and tend to present with severe localised stenosis at L4–L5 level.[1] However it is well known that degenerative spondylolisthesis occurs in multiple levels of the lumbar spine and the frequency of multilevel spondylolisthesis is reported to be 5–11%.[2] Multilevel segmental involvement is considered to be important for cauda equina dysfunction and for evaluation of decompression levels. To the best of our knowledge, there has been no published report of 3-segments degenerative spondylolisthesis with severe L2–S1 spinal stenosis. This article is the first report on an unusual case of multilevel degenerative spondylolisthesis of the lumbar spine in a patient with back pain and neurogenic claudication.

2. Case report

This 58 year-old female presented with 4-year history of low back pain that progressively worsen over the past 1 year and was associated with bilateral buttock, lateral thigh and calf pain along L4 and L5 dermatome. Pain was increased upon walking and relieved by rest. Claudication distance measured 5–10 m. Physical examination revealed tenderness over the lumbar spine. Lumbar flexion and extension were limited and painful. There was weakness of the bilateral extensor hallucis longus (i.e. muscle strength grading of 4/5) and sensation at L4 and L5 dermatome was reduced. Plain radiography of the lumbar vertebrae revealed grade I degenerative spondylolisthesis at L2–L3, L3–L4 and L4–L5 (Figs. 1 and 2). Radiological studies showed elevated pedicle-facet angle and W-type of facet joints from L2 to L5. Magnetic resonance imaging revealed showed severe multilevel spinal canal stenosis from L2 to S1 (Figs. 3).

L2–S1 decompression laminectomy and posterior lateral fusion of L2–S1 with posterior instrumentation and bone graft was performed to decompress the spinal cord and stabilise the lumbar spine (Figs. 4). Intraoperatively, patient was found to have severe degenerative stenosis from L2 to S1 level.

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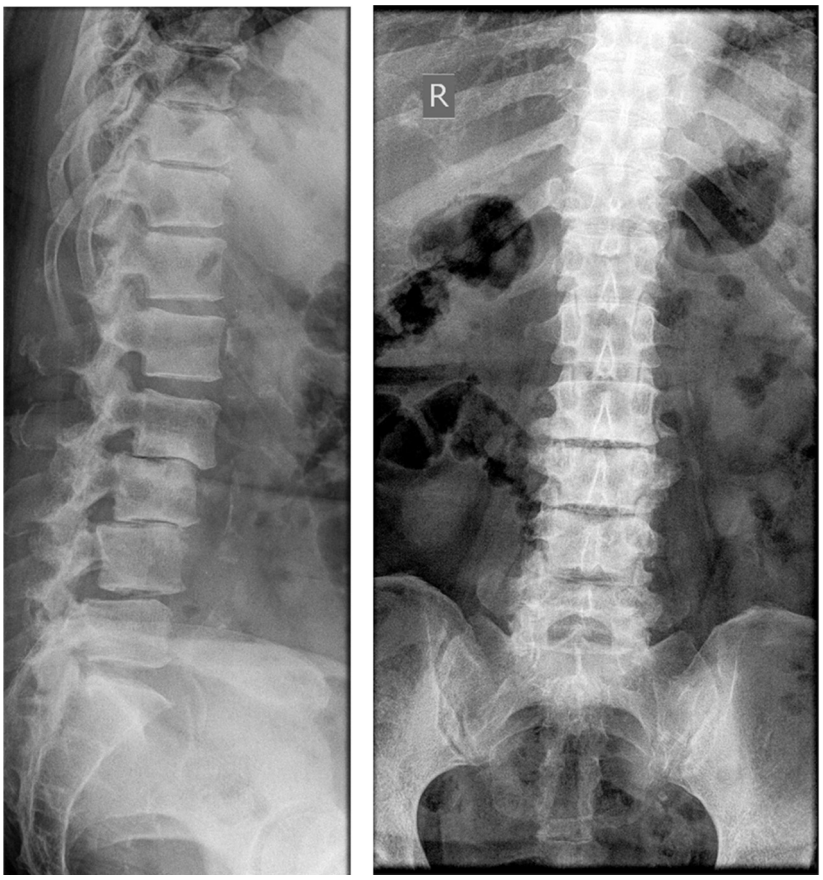

Fig. 1. Plain radiographs of the lumbar vertebrae, anteroposterior (Left) and lateral neutral (Right) view, showing grade I degenerative spondylolisthesis at L2–L3, L3–L4 and L4–L5 associated with disc space narrowing. The pedicle-facet angles were 127° at L2, 126° at L3, 123° at L4, and 124° at L5. The amount of slip over L2–L3, L3–L4 and L4–L5 were 9 mm, 7 mm and 6 mm, respectively.

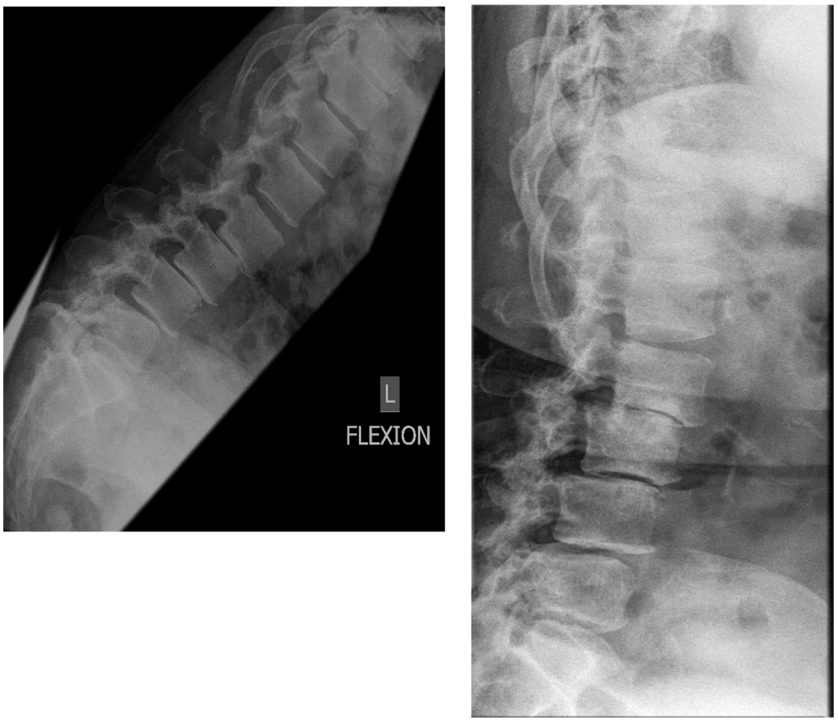

Fig. 2. Flexion (Left) and extension (Right) view of the lumbar vertebrae showed a stable lumbar spine.