

## Instrumentations of the lumbosacral segment

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### Introduction

The lumbosacral segment has a key position within the lumbar spine as a junction between the mobile lumbar spine and the rigid sacrum. This paper bases on 4 different patient groups (patient election following OP done or assisted by the first author) to study the role of L5/S1.

### Patients and method

- 1) The investigation includes indication of all fusions and the number of fused segments including L5/S1 between 6/06 and 2/08, altogether 200 operations
- 2) the dates of isthmic spondylolisthesis (IS) base on all operations between 5/02 and 8/11. Sex distribution, grade and symptoms of olisthesis were analyzed.
- 3) 162 fusions because of adjacent disc disease ADD between 2002 and 2012 were analyzed concerning L5/S1.
- 4) the relation of fusion or severe pathologies of L5/S1 to pain of the sacroiliac joint leading to fusion was analyzed in 58 patients with arthrodesis of the SI-joint between 11/09 and 6/13.

### Results

200 patients 6/06 to 2/08, including

76 with instrumentation L5/S1:	38%
22 Modic-I- disc degeneration	29%
21 isthmic spondylolisthesis	28%
14 failed-back-syndrome	18%
8 degenerative spondylolisthesis	11%
5 adjacent disc disease	6%
2 long distance- spondylodesis	4%
1 facett osteoarthritis	1%
1 pseudarthrosis	1%
1 rheumatoid arthritis	1%
1 L5-radiculopathy after fusion	1%

Following L4/5 the lumbosacral segment is the second, in isolated fusions the most often fused segment (48%). Altogether 38% of all lumbar fusion operations include L5/S1, according to all fused segments (340/200 patients) 23%.

In IS > 60% are female; 90% of operation indications in IS concerned L5/S1, in 86% radicular pain was the indication. Paresis was existent in 12%, without exception by foraminal stenosis L5. Long distance fusions demonstrated a rate >35% ADD of L5/S1. From 59 segments in caudal ADD 36 (61%) were lumbosacral.

54% of SI-joint-fusions was performed after lumbar spondylodesis including L5/S1, furtheron 9% in severe degeneration of this level; 16% followed lumbar fusions without L5/S1, only in 21% idiopathic degeneration was the cause of SI-arthrodesis.

### Conclusion

More than 1/3 of all lumbar fusions concern L5/S1, surprisingly Modic-I-degenerative disc disease in the same percentage (30%) as isthmic spondylolisthesis, followed by failed back syndrome with 18%. 38% of all lumbar fusions include L5/S1, in relation to other lumbar segments L5/S1 is with nearly one quarter the most often fused lumbar level. Nearly 2/3 of operations of caudal disc disease include the lumbosacral junction. Also 2/3 of all indications for SI-joint fusion can be seen after fusion or severe pathology of L5/S1.