

## RESULTS OF SURGICAL TREATMENT OF MULTI-LEVEL LUMBAR SPINAL DISC DISEASE AND/OR LUMBAR SPINAL STENOSIS

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### ABSTRACT

During the period of 1984-1993, 16 cases of multi-level lumbar spinal stenosis and 257 cases of multi-level lumbar disc disease were operated. Two cases with multi-level lumbar disc disease were operated by automated percutaneous nucleotomy and 27 of them were by percutaneous laser nucleotomy. Preoperatively, instability was seen in seven cases and two of them were operated by spinal instrumentation and five of them by interbody fusion with autolog bone graft. In the other cases neither instrumentation, nor interbody fusion were used. Nineteen cases underwent re-operation because of fibrosis, recurrences or new disc disease at another level. None of the cases underwent re-operation because of instability.

**Key Words:** Multilevel lumbar disc disease, spinal instability.

### INTRODUCTION

Instability is the most common reviewed complication of spinal surgery. In many articles, it is offered to use instruments after spinal surgery to avoid this complication. It is emphasized that occurrence or progress of instability seems to be promoted by resection of the posterior spinal elements rather than disc. This retrospective review of our institutional experience with operation on the lumbosacral spine was undertaken to identify patient characteristics and treatment methods associated with outcomes.

### MATERIALS AND METHODS

During the period of 1984-1993, 1171 lumbar spinal disc disease and/or lumbar spinal stenosis operations were performed in Dokuz Eylül University, Department of Neurosurgery, 71 of these were re-operations because of fibrosis, recurrences or new disc disease at another level. Eighteen cases were operated by percutaneous automated nucleotomy and 104 cases were by percutaneous laser nucleotomy. 978 cases underwent open surgery. 257 patients were suffered from multi-level disc disease and 16 cases were from multi-level spinal stenosis. Twenty-nine of multi-level disc disease cases were out of this study, because they were operated by percutaneous techniques. Preoperatively, instability was seen in seven cases and two of them were operated by spinal instrumentation (Alicı PSI) and five

of them by interbody fusion with autolog bone graft. Among the 244 patients which were operated by open surgical techniques, male/female ratio was 105/139, and the average of the patients' age was 48,3 (22-83) years.

Cases are summarized in table 1.

**Table 1.** General characteristics of the patients.

	Patient No (%)
<b>AGE YEARS</b>	
60 <	206 (84,4 %)
60 >	38 (15,6 %)
<b>SYMPTOMS</b>	
Low back pain	216 (82,1 %)
Leg pain	67 (25,4 %)
Gait disturbances	48 (18,2 %)
<b>CLINICAL SIGNS</b>	
Straight leg raising test	198 (75,2 %)
Sensory disturbances	104 (39,5 %)
Motor disturbances	117 (44,5 %)
<b>DISC DISEASE</b>	
Bilateral	24 (9,2 %)
Two level	210 (79,8 %)
Three level	9 (2,5 %)
<b>SPINAL STENOSIS</b>	20 (7,5 %)
<b>SURGICAL PROCEDURES</b>	
Only discectomy	158 (60,0 %)
Hemilaminectomy	25 (9,5 %)
Total laminectomy	32 (12,2 %)
Facetectomy	22 (8,4 %)
Mixed	19 (7,2 %)
Interbody fusion	5 (2,0 %)
Instrumentation	2 (0,7 %)

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All the patients were followed-up periodically up to date.

## RESULTS

Postoperatively, neurological deterioration was seen in two patients (0.8 %). Sixteen patients (6.5 %) were re-operated because of fibrosis (10 cases), recurrence of disc disease (2 cases), and new disc disease at another level (4 cases). Retrospectively the cases were analyzed by Japanese Orthopaedic Association (JOA) score and in 22 patients (9.0 %) the score was decreased. Two patients had additional neurological deficits quite after surgery, and the other patients had subjective symptoms. In two patients with severe low back pain, discitis was found. None of the plain radiograms showed pathological findings in these patients.

## DISCUSSION

Lumbar disc disease and lumbar spinal stenosis are common diseases. Many types of treatment modalities were described up to date. In the results of classical surgical procedures, the importance of postoperative spinal instability, due to resection of the posterior elements, are impressed (1,2,4-7). Reducing the need for future surgery is part of the rationale and, fusion is sometimes described as a prophylactic procedure (3,8). Fusion is also performed for some patients with spondilolisthesis, radiographic evidence of excessive vertebral slippage with spinal flexion, degenerated disc, or simply chronic low back pain, based on the theory that instability may be a cause of pain in such patients (2).

Variability occurs among clinical specialities as well as geographic areas. Neurosurgeons generally have ignored or avoided lumbar fusion, where as its popularity among orthopaedic surgeons has increased (3). Deyo (2) reported that 27,111 patients were operated by Neurosurgeons and Orthopaedic surgeons. And he found that both groups performed nearly equal numbers of lumbar spinal procedures, but neurosurgeons performed fusion in only 5% of cases, whereas orthopaedic surgeons performed fusion in 25% of cases.

During the period of 1984-1993, 263 lumbar spinal open operations were performed for multi-level lumbar disc disease and/or lumbar spinal stenosis in Dokuz Eylül University, Department of Neurosurgery.

Herno et al (4) published 146 patients who underwent surgery for lumbar spinal stenosis. Surgical technique was described as bilateral laminectomy extended laterally to decompress the nerve roots without any fusion. His follow-up period was 7-13 years and he im-

pressed that the chances of a patient requiring reoperation after surgery for lumbar spinal stenosis is very low.

It is mentioned that patients undergoing fusions had a complication rate 1.9 times greater than those who had surgery without fusions. The blood transfusion rate was 5.8 times greater, nursing home placement rate 2.2 times greater, and hospital charges 1.5 times higher. Six week mortality was 2.0 times greater for patients undergoing fusions.

Reoperation rates at for years were similar in most diagnostic subgroups (2).

In this study, preoperative radiological investigations revealed spondilolisthesis in 7 patients (2.8 %) and fusion was performed all of them. All the other patients were operated by discectomy, hemilaminectomy, total laminectomy and facetectomy without any fusion procedure. In the early postoperative period, neurological deterioration was seen in two patients (0.8 %). During the follow-up period, 20 (8.2 %) patients had complaints and, 1 grade decreasing found according to JOA(5) score. With radiological investigations, none of them had instability criteria (5) such as abnormal mobility, abnormal slide and, anterior tilting.

As a result, we believe that fusions with or without instrumentation increase postoperative mortality and morbidity. Indication for these procedures should be limited. They are not suitable for prophylaxis and may be used only for the cases which have instability criteria before the initial operation.

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