

# FUNCTIONAL RESULTS IN PATIENTS SUBMITTED TO SURGERY FOR DEGENERATIVE LUMBAR DISEASE

RESULTADOS FUNCIONAIS EM PACIENTES SUBMETIDOS À CIRURGIA PARA DOENÇA DEGENERATIVA LOMBAR

RESULTADOS FUNCIONALES EN PACIENTES SOMETIDOS A CIRUGÍA PARA LA ENFERMEDAD DEGENERATIVA LUMBAR

RICARDO DANTAS ROCHA<sup>1</sup>, RAPHAEL DE REZENDE PRATALI<sup>1</sup>, RODRIGO DE LUCA MOTTA<sup>1</sup>, CARLOS EDUARDO GONÇALES BARSOTTI<sup>1</sup>, FRANCISCO PRADO EUGENIO DOS SANTOS<sup>1</sup>, CARLOS EDUARDO ALGAVES SOARES DE OLIVEIRA<sup>1</sup>

1. Hospital do Servidor Público Estadual de São Paulo, Orthopedics and Traumatology Service, São Paulo, SP, Brazil.

## ABSTRACT

**Objective:** To evaluate functional results in patients submitted to lumbar arthrodesis for the treatment of degenerative disc disease. **Methods:** This is a retrospective study that considered patients submitted to surgery due to degenerative disc disease, with a minimum of 12 months of postoperative follow-up. The Oswestry Disability Index (ODI) and Scoliosis Research Society-22 (SRS-22) questionnaires, including total value and domains, were considered indicators of functional outcome and quality of life. **Results:** Sixty-one patients (mean age 60.4 years) met the inclusion criteria and had ODI and SRS-22 data recorded. Nineteen were male and 42 female. The mean of postoperative follow-up was 29 months (12-67 months). There was no statistically significant difference in any score between sexes. The mean values obtained by the questionnaires were ODI 43.4%; SRS-22 Total 2.7; Function/Activity 2.6; Pain 2.8; Appearance 2.6; Mental Health 3.0; Satisfaction 3.4. **Conclusion:** The values of the surgical outcome indicators were consistent with important functional disability, although the satisfaction indicator with the treatment showed satisfied patients.

**Keywords:** Low back pain; Spinal fusion; Quality of life; Surveys and questionnaires.

## RESUMO

**Objetivo:** Avaliar os resultados funcionais em pacientes submetidos a artrodesse lombar para tratamento de doença degenerativa discal. **Métodos:** Trata-se de um estudo retrospectivo que considerou pacientes submetidos à cirurgia devido à doença degenerativa discal, com um mínimo de 12 meses de seguimento pós-operatório. Os questionários Oswestry Disability Index (ODI) e Scoliosis Research Society-22 (SRS-22), incluindo valor total e dos domínios, foram considerados indicadores de resultado funcional e qualidade de vida. **Resultados:** Sessenta e um pacientes (média de idade de 60,4 anos) satisfizeram os critérios de inclusão e tiveram os dados de ODI e SRS-22 registrados. Dezenove eram do sexo masculino e 42 do sexo feminino. A média de seguimento pós-operatório foi de 29 meses (12-67 meses). Não houve diferença estatisticamente significativa em nenhum escore entre sexos. O valor médio dos resultados dos questionários foi: ODI 43,4%; SRS-22 Total 2,7; Função/Atividade 2,6; Dor 2,8; Aparência 2,6; Saúde Mental 3,0; Satisfação 3,4. **Conclusão:** Os valores dos indicadores de resultado cirúrgico foram compatíveis com incapacidade funcional importante, embora o indicador de satisfação com o tratamento tenha mostrado pacientes satisfeitos.

**Descritores:** Dor lombar; Fusão vertebral; Qualidade de vida; Inquéritos e questionários.

## RESUMEN

**Objetivo:** Evaluar los resultados funcionales en pacientes sometidos a artrodesis lumbar para tratamiento de enfermedad degenerativa del disco. **Métodos:** Se trata de un estudio retrospectivo que consideró pacientes sometidos a la cirugía a debido a la enfermedad degenerativa del disco, con un mínimo de 12 meses de seguimiento postoperatorio. Los cuestionarios Oswestry Disability Index (ODI) y Scoliosis Research Society-22 (SRS-22), incluyendo valor total y los dominios, fueron considerados indicadores de resultado funcional y de calidad de vida. **Resultados:** Sesenta y un pacientes (promedio de edad de 60,4 años) cumplieron los criterios de inclusión y tuvieron los datos de ODI y SRS-22 registrados. Diecinueve eran del sexo masculino y 42 del sexo femenino. La media de seguimiento postoperatorio fue de 29 meses (12-67 meses). No hubo una diferencia estadísticamente significativa en ninguna puntuación entre sexos. El valor promedio de los resultados de los cuestionarios fue: ODI 43,4%; SRS-22 Total 2,7; Función/Actividad 2,6; Dolor 2,8; Apariencia 2,6; Salud Mental 3,0; Satisfacción 3,4. **Conclusión:** Los valores de los indicadores de resultado quirúrgico fueron compatibles con discapacidad funcional importante, aunque el indicador de satisfacción con el tratamiento mostró pacientes satisfechos.

**Descriptores:** Dolor de la región lumbar; Fusión vertebral; Calidad de vida; Encuestas y cuestionarios.

## INTRODUCTION

Degenerative lumbar disease (DLD) is a chronic condition widely prevalent in all populations that significantly impacts society.<sup>1-3</sup> It can evolve with different clinical manifestations, but depending on the severity of the symptoms, DLD is associated with some degree of

functional disability with negative impact on patient quality of life.<sup>1,4-6</sup> In recent years, there have been several attempts to develop tools to evaluate the severity of functional disability and quality of life, as well as the clinical outcome following treatment, from the patient's own perspective.<sup>7-9</sup> As part of this effort, the objective quantification of the

Study conducted at the Hospital do Servidor Público Estadual de São Paulo, Orthopedics and Traumatology Service, São Paulo, SP, Brazil.

Correspondence: Raphael de Rezende Pratali. Rua Pedro de Toledo, 1800, Bairro Vila Clementino, São Paulo, SP, Brazil. 04039-901. pratalir@gmail.com

patient's satisfaction with the treatment to which they have already been submitted, represents a challenge for preferential therapeutic treatment considering the individuality of each patient.<sup>10,11</sup>

Using questionnaires to assess quality of life has proved to be useful, enabling the quantification of subjective data based on the patient's own perceptions about their abilities and personal limitations. In the study of spinal pathologies, the use of specific questionnaires covering relevant areas, such as pain intensity, functional limitation, emotional state, and satisfaction with the treatment are recommended,<sup>11-14</sup> the most commonly applied being the Oswestry Disability Index (ODI) and the Scoliosis Research Society-22 (SRS-22).<sup>11,13</sup>

Considering patients with degenerative spine disease who underwent surgical treatment, the use of these specific tools to evaluate quality of life is necessary for an understanding of the clinical outcomes of the treatment performed.<sup>4-8</sup> However, the values obtained from filling out questionnaires do not directly translate the impact of the treatment on the daily activities of the patient, i.e., their quality of life.<sup>15</sup> Currently, assessment of the clinical outcome of a surgical procedure for the treatment of degenerative spine disease is centered on the interpretation of the patient's own satisfaction.<sup>10,11,15</sup> The objective of this study was to evaluate the functional results in a sample of patients submitted to lumbar arthrodesis surgery for the treatment of degenerative disc disease at the same service.

## METHODS

### Type of study, ethical aspects, and sample

This was a retrospective study, considering patients submitted to arthrodesis of the lumbar spine to treat degenerative lumbar diseases at a single service. Following approval by the local Institutional Review Board (opinion no. 1.148.992), the patient data of interest was collected. Patients who underwent a surgical procedure for the treatment of degenerative lumbar disease with at least 12 months of follow-up and who had signed the Informed Consent Form approved by the IRB were included. We excluded patients with other neurological or orthopedic pathologies in addition to degenerative lumbar disease that might influence quality of life.

### Variables

As indicators of clinical results of the surgical procedure of the patients, the ODI and SRS-22 questionnaires, both translated to and adapted for Brazilian Portuguese, were considered.<sup>14,16</sup> Regarding the SRS-22 questionnaire, the value of each of the five domains (Function/activity, Pain, Appearance, Mental health, and Satisfaction), the Subtotal value excluding the Satisfaction domain, and the Total value were considered. Patient demographic data, such as age and sex, were also collected.

### Statistical Analysis

The scores from the questionnaires were compared by sex using the Student's t test. All the statistical analyses were conducted using SPSS, version 20.0 software and the level of significance adopted was  $P < 0.05$ .

## RESULTS

Sixty-one patients were included in the study, 19 (31%) males and 42 (69%) females. The average age of the total sample was 60.4 years ( $SD \pm 14.7$ ), with 58.0 years of age ( $SD \pm 18.7$ ) for the men and 61.1 ( $SD \pm 12.7$ ) for the women ( $P = 0.602$ ). The average postoperative follow-up time was 29 months, ranging from 12 to 67. There was no significant difference between the sexes in terms of postoperative follow-up time ( $P = 0.164$ ). Table 1 shows the values (average, minimum, maximum, and median) of the scores obtained from the ODI and SRS-22 questionnaires, including their domains. Table 2 shows the same values separated by sex and there was no significant difference between the sexes for any of the scores considered ( $P > 0.05$ ).

**Table 1.** Summary of the postoperative surgical results indicator scores.

	ODI	SRS-22						
		Total	Function/activity	Pain	Appearance	Mental	Satisf	Subtotal
Average	43.4	2.7	2.6	2.8	2.6	3	3.4	2.6
SD	21.8	0.6	0.9	0.9	0.9	0.9	1.1	0.6
Min	4	1.4	1.	1	1	1.4	1	1.5
Max	98	4.4	5.	5	5	5	5	4.2
Median	40	2.7	2.6	3	2.6	3	3.5	2.5

SD: Standard Deviation, Min: Minimum; Max: Maximum. Satisf: Satisfaction

**Table 2.** Summary of the postoperative surgical results indicator scores distributed by sex.

	Male average (SD)	Female average (SD)	P
ODI	49.6 (26.9)	40.6 (18.7)	0.138
SRS-22			
Total	2.7 (0.6)	2.8 (0.6)	0.587
Function/activity	2.5 (1.0)	2.7 (0.9)	0.345
Pain	2.9 (0.9)	2.8 (0.9)	0.650
Appearance	2.5 (1)	2.7 (0.9)	0.615
Mental	2.8 (1)	3.1 (0.8)	0.305
Satisfaction	3.5 (1.1)	3.3 (1.2)	0.580
Subtotal	2.5 (0.5)	2.6 (0.5)	0.341

SD: Standard deviation. Student's t test.

## DISCUSSION

The objective of this study was to present values from tools that measure functional ability and surgical results in patients submitted to treatment for degenerative lumbar disease at a single service. Although there are several tools designed to evaluate clinical outcome in spine surgery, a comparison of the results obtained by different questionnaires may identify inconsistencies.<sup>17</sup>

The Oswestry Disability Index (ODI) questionnaire has been widely used for many years as an effective method of measuring functional ability in patients with low back pain.<sup>14</sup> In this study, the average value obtained from the questionnaire was 43.4%, with values higher than 41% considered to indicate intense functionality disability.<sup>14</sup> Additionally, the median was 40%, i.e., half of the patients had ODI scores classified as intense disability. According to the authors of the questionnaire, postoperative ODI scores above 41% should be considered as NO CHANGE.<sup>14</sup>

The SRS-22 questionnaire consists of five domains, including Pain, Function/Activity, Appearance, Mental Health, and Satisfaction. Each domain has five questions, except Satisfaction, which has only two questions, and the results of each domain and the questionnaire total are expressed as averages. It was originally designed to analyze the outcome of surgeries for adolescent idiopathic scoliosis,<sup>18</sup> but also validated as a tool to assess the clinical results of spine surgery in adults.<sup>19</sup> The advantage of this tool is that it permits an evaluation of the surgical outcome based on the patient's own interpretation of the different aspects of their daily life, specifically including their satisfaction with the treatment.

In this study, we observed that the average of the total and domain-specific results of the SRS-22 were approximately half, i.e., 2.5, while the average of the Satisfaction domain was higher, at 3.4. The correlation between the scores of these tools that assess surgical outcomes in the treatment of degenerative lumbar diseases, especially in terms of patient satisfaction with the surgery, is not fully established in the literature.

Some studies have demonstrated that, despite indications of pain improvement and satisfaction with treatment derived from the surgical results analysis tools in lumbar arthrodesis, the patients maintained an unchanged high rate of consumption of medications, a low rate of return to work, and limited functional activity, as measured by the

ODI.<sup>20,21</sup> More recently, a study of adult patients who underwent surgery for the treatment of spinal deformity showed a weak correlation between patient satisfaction, as assessed by the Satisfaction domain of the SRS-2 questionnaire, and both quality of life and radiographic parameters at the end of clinical follow-up.<sup>22</sup>

This study has limitations, especially because it is a retrospective analysis of a convenience sample. Although our intention was to analyze the functional outcome of patients submitted to surgery, based on tools that evaluate the quality of life, it was not possible to consider the occurrence of comorbidities or surgical complications. Another factor that could interfere with the postoperative functional questionnaire results is the presence of labor or litigation benefits, which were also not evaluated in this study.

## CONCLUSIONS

We have presented values of the surgical outcome indicators in patients submitted to treatment for degenerative lumbar disease with follow-up of at least 12 months, measured using tools that quantify quality of life as evaluated by the patients themselves. We observed that the values obtained are compatible with significant functional disability, while the treatment satisfaction indicator results suggest satisfied patients.

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All authors declare no potential conflict of interest related to this article.

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