Temporary disability in operated spine patients. Preliminary report
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Abstract

Background: Occupational spinal injuries have become a large-scale health problem. The purpose of this study was to review the differences in occupational spine pathologies as well as factors that could alter the recovery time and the possibility of returning the patient to work.

Methods: We carried out a statistical preliminary review study in 37 patients who were workers affiliated with the Instituto Mexicano del Seguro Social (IMSS) who underwent surgery for spinal pathology, comparing days of disability with proposed international statistics as well as time to return to work.

Results: The study showed that 37% of patients remain active in their occupations 2 years after surgery. Disability days generated by the pathology in this study group (212.3 days) are significantly higher than what has been established according to the Medical Disability Advisor (56 days, almost four times higher).

Conclusion: There is a need to develop the same analysis in other hospitals, comparing the proportion of patients who return to work and total disability times for diagnosis. Spinal surgery is not a guarantee for returning to occupational activities and must be taken into account as patient goals for surgery or employment outcome.

Key words: Spine surgery, occupational disability, social security.

Introduction

Among the working population >30 years of age, the temporary disability to work associated with low back pain has become a problem of great magnitude because of its complicated individual, economic, social, health and work aspects. In developed countries it represents the first reason for work absence.1

In this group of patients, the main symptom for which they seek medical care is low back pain, which is classified according to the duration of the symptoms into: acute if <6 weeks and chronic if >12 weeks. There are various etiologic or anatomic classifications. According to the origin of the pain, these are divided into structural mechanics; herniated disc; spinal stenosis; spondylolysis; spondylolisthesis; primary or secondary neoplasms; referred back pain; infections such as discitis, osteomyelitis, abscesses; metabolic conditions such as osteoporosis and osteomalacia; and according to the structures injured of the anterior and posterior segment.2

In industrialized countries this condition is the second cause of medical consultation, ranks in fifth place in hospital admissions, is the third cause of surgery and the third cause of chronic functional impairment after respiratory diseases and injuries. In addition, it is considered the leading cause of temporary disability for work in persons <45 years old and the most outstanding pathology in adults >65 years of age.1,3,4 For this reason, low back pain has a considerable predominance in public health and has become one of the five leading causes of absenteeism from work.1,3,5 In short, we can say that the significance of low back pain is not due to its prevalence but on the health effects of workers and the occupational impact due to absenteeism and costs of temporary disability from work.1

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The elements involved such as aggravating circumstances in the evolution of the condition are factors such as age, gender, traumatic events, postural habits, metabolic disorders, smoking, obesity, intoxication, occupational, among others.5

Other factors that can influence the duration of the disability are type of surgical procedure, for example, laminectomy; location within the vertebral column; underlying cause of the disorder and its severity; additional procedures carried out with the laminectomy, discectomy or fusion; poorly indicated surgical therapies; complications; treating acute episodes with bed rest; work requirements; ability to modify occupational activities, adherence to treatment, type of rehabilitation; low cultural and economic status, lack of job satisfaction; psychological disorders, and duration of the disability are all risk factors.6,7 Therefore, the permanence of the health problem and therefore the incapacity is highly variable depending on several factors: if the nerve compression is cervical, thoracic, lumbar, or sacral, if the disorder affects the spinal cord, and if the occupation has characteristics of being sedentary, light, medium, heavy or very heavy (Table 1).

Table 1. Disability days proposed by the Medical Disability Advisor for discectomy and type of work carried out

<table>
<thead>
<tr>
<th>Occupational classification</th>
<th>Minimum</th>
<th>Optimal</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedentary</td>
<td>3</td>
<td>14</td>
<td>35</td>
</tr>
<tr>
<td>Light</td>
<td>7</td>
<td>21</td>
<td>42</td>
</tr>
<tr>
<td>Average</td>
<td>14</td>
<td>42</td>
<td>84</td>
</tr>
<tr>
<td>Heavy</td>
<td>35</td>
<td>49</td>
<td>112</td>
</tr>
<tr>
<td>Very heavy</td>
<td>42</td>
<td>56</td>
<td>140</td>
</tr>
</tbody>
</table>

About 70-80% of the population in Western countries suffers from back pain at some point in their life. It becomes the main cause of limitation of mobility, decreased quality of life and long-term disability. In consequence, it is one of the main causes of absenteeism from work and one of the most common reasons for physician consultations in traumatology and orthopedic services. All this places low back pain as the most expensive mechanical disorder and the first cause of work disability of musculoskeletal origin.8

In Europe, only the annual costs associated with low back pain are between 1.7 and 2.1% in the gross domestic product. In Spain, low back pain is the condition with the highest prevalence in the adult population >20 years of age, with 14.8% for acute low back pain, from 7.7% for chronic low back pain, and 0.8% of low back pain of inflammatory characteristics. Certainly, in addition to the costs involved in the condition of temporary disability for work produced by this diagnosis, one must add the direct costs such as healthcare, prescription of clinical tests, hospitalizations or surgeries. The indirect costs are decreased productivity and absenteeism from work.8

In the U.S. it has been estimated that the employee with low back pain receives 102 days of disability on average throughout their lifetime, varying between 39 and 3903 days. In the U.S., the cost of a painful event associated with low back pain is $52.95 dollars and in France of $101.66 USD. These figures do not take into account invasive procedures. In the UK, absenteeism associated with this disorder is from 13%. Similarly, the European Guidelines report that 11-12% of the population suffers from disability associated with low back pain.9 As an example, arising from this elevated frequency and high costs, numerous international studies have been carried out to establish risk factors of this disorder in which various factors have an influence, such as mechanical, imbalance between the muscular strength of an individual and the physical stress generated by their profession, and intense physical activity in forced postures of the trunk such as torsion and anteflexion.10

To demonstrate the magnitude of this problem in Mexico, in 2007 Covarrubias9 reported that if 30% of the 6.5 million patients with chronic low back pain require disability, this means that there were 1.9 million people with temporary work disability. If each one requires 12 days on average, this equals 23.4 million days, ≈84% of the total of disabilities of the IMSS, and the Institute of Security and Social Services of the State Workers (ISSSTE), which translated economically means 1.2 billion pesos.9

In the IMSS, spine-related ailments are the main disorders that cause temporary disability from work as a consequence of the disability. To better illustrate how the disease behaves, the Internal Occupational Health Information System of the IMSS reported in 2009 that there were 68,875 occupational risks rated that resulted in 1,462,983 days of temporary disability from work and 1142 pensions for permanent disability. There were also 1737 cases of disability and 24 deaths. From 2009-2012 there were 284,225 occupational risks that translated into 7,106,020 days of temporary work disability and 5365 pensions for permanent disability. There were 7973 rulings that were invalidated and 95 persons died due to a spine-related disorder.

Based on this issue, we carried out a study that would identify the approximate time of temporary disability from work in patients who underwent spine surgery in a third-level care hospital of the IMSS, analyzing the time of disability granted before and after the spine surgery, determining the employment status of employees operated at
Temporary disability in the operated spine

2 years postsurgery and comparing the days of temporary work disability awarded in this hospital with what is stipulated in the measurement tool (Medical Disability Advisor®), a guide utilized in the IMSS for the prescription of temporary disability from work according to the diagnosis and job performed.

Subjects and Methods

We carried out a preliminary, statistical study of a review of 37 patients admitted to an IMSS hospital and operated on for some type of spinal condition. We compared days of disability with what is proposed internationally and the time for returning to work.

The inclusion criteria were as follows: an insured employee who underwent some type of spinal surgical procedure between January 1 and December 31, 2009 in the department where the study was carried out. The information was complemented with the medical records of the insured employee, obtaining the date on which the surgery was performed, diagnosis for its performance, gender and work status (active or retired).

Using the social security data, we obtained from the Institute’s information system the following: type of disability (occupational risk or general disease), number of temporary disability days for work awarded for the illness, date of start of disability and actual work situation.

The actual age was estimated using the formula:

\[
\text{age} = 2012 - (1900 + X)
\]

where \(X\) is the number comprised by the third number of digits extracted from the social security number. This pair of numbers contains the last two figures of the year of birth.

Disability days prior to surgery were calculated using a recount of days from the date of start of the disability to the date of surgery, whereas postsurgical days were calculated by means of days of temporary disability for work minus the days prior to surgery.

A preliminary retrospective study was reported with descriptive statistics of the variables of disability and employment situation. Measures of central tendency and variability for disability and the absolute percentages for the employment situation at 2 years postsurgery were calculated.

Results

In the 37 patients reviewed, it was found that ten did not require disability: four were retired, one was a student and the reason is unknown for the remaining patients. When these cases were excluded, the population was comprised of 27 patients: 15 females (56%) and 12 males (44%); 26 of the patients were seen for general disease (96%) and only one due to occupational risk (4%).

The diagnoses that originated the surgery were divided into four groups: six tumors (22%), 12 lumbar disc disorders (45%), seven cervical disc disorders (26%), and two fractures (7%) (Figure 1). The average age of the patients was 49.9 years (95% CI 45.9, 53.9), where 95% CI denotes a 95% confidence interval.

Table 2 shows the distribution of the population according to gender, diagnosis and average ages. There is no statistical evidence of age differences between genders, 48.9 (95% CI 44.1, 53.8) for males and 51.1 (95% CI 43.5, 58.7) for females.

The total average of days of temporary disability for work awarded by the study hospital center with respect to the spine disorder treated surgically was 212.3 days (95% CI 162.1, 262.5).

Figure 2 shows the separation in the number of days: ITT = days presurgery + days ITT postoperative. The average days of temporary disability for work prior to surgery (preoperative) was 31.33 (95% CI 11.1, 51.6) with an average of 180.96 days of temporary disability for work after surgery (post-Qx) (95% CI 137.8, 224.2).

![Figure 1. Percentage distribution of the diagnoses.](image-url)
Table 2. Ages by gender and diagnosis

<table>
<thead>
<tr>
<th>Diagnoses</th>
<th>Male</th>
<th>Female</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tumors</td>
<td>n (%)</td>
<td>3 (11.1%)</td>
<td>3 (11.1%)</td>
</tr>
<tr>
<td>Average age</td>
<td>40.3</td>
<td>60.0</td>
<td>50.2</td>
</tr>
<tr>
<td>Lumbar disc disorders</td>
<td>n (%)</td>
<td>8 (29.6%)</td>
<td>4 (14.8%)</td>
</tr>
<tr>
<td>Average age</td>
<td>49.0</td>
<td>38.0</td>
<td>45.3</td>
</tr>
<tr>
<td>Cervical disc disorders</td>
<td>n (%)</td>
<td>4 (14.8%)</td>
<td>3 (11.1%)</td>
</tr>
<tr>
<td>Average age</td>
<td>55.3</td>
<td>61.3</td>
<td>57.9</td>
</tr>
<tr>
<td>Fractures</td>
<td>n (%)</td>
<td>0 (0%)</td>
<td>2 (7.4%)</td>
</tr>
<tr>
<td>Average age</td>
<td>-</td>
<td>48.5</td>
<td>48.5</td>
</tr>
<tr>
<td>Total</td>
<td>n (%)</td>
<td>15 (55.6%)</td>
<td>12 (44.4%)</td>
</tr>
<tr>
<td>Average age</td>
<td>48.9</td>
<td>51.1</td>
<td>49.9</td>
</tr>
</tbody>
</table>

Figure 2. Histogram of the number of days of temporary pre- and postoperative disability for work. ITT, temporary disability for work; Pre-Qx, Presurgical; Post-Qx, postsurgical.

Figure 3. Box diagram for the disability days.

The difference in the averages between the disability awarded before and after surgery can be seen in the bar graph where a large percent of the cases are grouped in totally exclusive graphs; in fact, 75% of the cases for the days of temporary incapacity for work prior to surgery was ≤33 days (third quartile Q3), whereas 75% of the cases for postoperative patients was >112 days (first quartile Q1) (Figure 3).

The results according to diagnosis are described in Table 3. The diagnosis related with tumors are those that had, on average, less time of temporary disability from work, 142.83 days (95% CI 35.2, 250.5); however, there is no statistical evidence to demonstrate that there is a significant difference between the days allocated for the different diagnoses. Despite that, the means, medians, interquartile intervals, minimum and maximum vary among the different classes of diagnoses (Table 4). Interquartile intervals are not mutually exclusive as can be seen in Figure 4. The current picture of patients (in 2012) is ten retirees (37%) and 17 without pension (63%). Of the retirees, seven were due to disability (26% of the total), two due to retirement because of advanced age (7%) and one for widowhood (4%) (Figure 5).

Of the patients without pension, seven were not accounted for by the institution (26%), and only 10/27 patients studied were occupationally active and accounted for 37% (Figure 6).

**Discussion**

The number of days allocated nationally due to temporary work disability according to different diagnoses is higher than what has been established by national and international sources even within the institution. These averages are highly variable among the various medical units. In the specific case of surgical intervention in our unit of study, the scenario is not different. The average days of postoperative disability for diagnoses of lumbar and cervical disc hernia-
Temporary disability in the operated spine

The average number of temporary disability days pre- and postsurgery according to diagnosis is shown in Table 3.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Cases</th>
<th>Age</th>
<th>Average days ITT</th>
<th>ITT pre-Qx</th>
<th>ITT post-Qx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tumors</td>
<td>6</td>
<td>50.17</td>
<td>142.83</td>
<td>26.83</td>
<td>116.00</td>
</tr>
<tr>
<td>Disorders of lumbar disc</td>
<td>12</td>
<td>45.00</td>
<td>241.25</td>
<td>32.75</td>
<td>208.50</td>
</tr>
<tr>
<td>Disorders of cervical disc</td>
<td>7</td>
<td>59.33</td>
<td>208.57</td>
<td>32.43</td>
<td>176.14</td>
</tr>
<tr>
<td>Fractures</td>
<td>2</td>
<td>48.80</td>
<td>260.00</td>
<td>32.50</td>
<td>227.50</td>
</tr>
<tr>
<td>General</td>
<td>27</td>
<td>49.9</td>
<td>212.30</td>
<td>31.33</td>
<td>180.96</td>
</tr>
</tbody>
</table>

ITT, temporary work disability; pre-Qx, presurgery; post-Qx, postsurgery.

Table 4. Minimum and maximum values and quartiles of temporary work disability according to diagnosis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Min</th>
<th>Q1</th>
<th>Average (Q2)</th>
<th>Q3</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tumors</td>
<td>28</td>
<td>28</td>
<td>165</td>
<td>172</td>
<td>299</td>
</tr>
<tr>
<td>Lumbar disc disorders</td>
<td>17</td>
<td>119</td>
<td>263</td>
<td>356.5</td>
<td>518</td>
</tr>
<tr>
<td>Cervical disc disorders</td>
<td>112</td>
<td>115</td>
<td>159</td>
<td>315</td>
<td>340</td>
</tr>
<tr>
<td>Fractures</td>
<td>144</td>
<td>144</td>
<td>260</td>
<td>376</td>
<td>376</td>
</tr>
<tr>
<td>General</td>
<td>17</td>
<td>115</td>
<td>168</td>
<td>315</td>
<td>518</td>
</tr>
</tbody>
</table>

Min, minimum value; Max, maximum value; Q1, Q2, and Q3, first, second and third quartiles, respectively.

Figure 4. Box diagram for temporary disability days for work according to different diagnoses.

Undoubtedly, many factors intervene in the number of days granted to each person who is surgically intervened due to a spinal column disorder: type of diagnosis, age, gender, physical activity, size of the person surgically intervened, postoperative care including the family, among many others. It can also be seen that there is no statistical difference sufficient to conclude that the days of tempo-
rodilla para trabajo son diferentes entre diagnósticos, grupos de edad o entre géneros. La pregunta sigue siendo cuáles son los factores que realmente afectan a los pacientes en este momento y abre la oportunidad de revisar otros departamentos e investigar las diferencias en el cuidado.

Puede haber casos de pacientes que han sido trasladados al hospital paracirugía de columna que no requieren discapacidad para trabajo por cualquiera de las siguientes razones: tienen una pensión por discapacidad, desempleo o edad avanzada; están conservando sus derechos, están asegurados como estudiantes, son autoempleados o familiares, o están utilizando tiempo de vacaciones para recibir tratamiento quirúrgico.

En el estudio se encontró que 27% de los sujetos asegurados que se vieron no necesitaban discapacidad: 40% de estos pacientes estaban retirados, uno era un estudiante y los que restaban estaban en alguna otra categoría.

En el hospital donde los datos para este estudio fueron obtenidos, se encontró que el tiempo de discapacidad para trabajo antes de la cirugía fue menor que el tiempo de discapacidad para trabajo después de la cirugía (p valor 0.0009).

Este es debido en gran medida a la realidad de que los pacientes a los que se les refiere a una unidad de atención médica secundaria o a una unidad de atención médica de tercer nivel han sido previamente evaluados en las unidades de atención médica primaria y sólo se les programan para la cirugía que necesitan. Los pacientes que son admitidos al servicio de emergencia también son evaluados para ser intervenidos quirúrgicamente de manera oportuna.

Un dato interesante que se encontró en este departamento es que la edad promedio de los pacientes con discartelación de discos lumbares es menor que la edad promedio de los pacientes con discartelación discal cervical (p valor 0.003).

El hecho de que tan solo 37% de los pacientes estudiados estén activos en el trabajo al año de la cirugía sugiere que un tercio de los pacientes que se someten a cirugía de columna tienen un buen resultado, permitiéndoles volver a su ocupación previa. Por lo tanto, debemos considerar que nuestra atención a esta condición debe ser principalmente preventiva, antes que curativa, y que el ambiente laboral se debe concentrar en el ergonómico de la ocupación añadiendo medidas de cambio postural. Al mismo tiempo, esto debe despertar nuestra curiosidad científica y académica para revisar de manera amplia los protocolos de tratamiento conservador vs. tratamiento quirúrgico en el trabajo o para cambiar el enfoque para el que la cirugía es determinada. No necesariamente necesitamos pensar que la cirugía permita al trabajador volver a la misma actividad laboral. En este grupo la cirugía no fue restaurativa en la mayoría de los casos (en >60%).

En conclusión, el tamaño y diseño del estudio nos permiten concluir la necesidad de realizar este análisis similar en otros centros hospitalarios con un mayor número de pacientes y comparar los resultados en dos aspectos: proporción de pacientes que regresan a sus actividades laborales anteriores y el tiempo de discapacidad total según diagnóstico y comparar los resultados con tendencias internacionales y entre hospitales. Con un grupo de estudio más grande, los resultados pueden ser comparados entre diferentes diagnósticos y técnicas quirúrgicas. Es imprescindible revisar los costos asociados a esta condición en los trabajadores inscritos en el sistema de seguridad social y analizar las razones que generan el gran número de días de discapacidad porque esto aumenta los costos para el sistema de seguridad social.

**Referencias**