CORPUS PUBLISHERS

Global Journal of Physical Medicine and Rehabilitation (GJPMR)

Volume 1 Issue 1, 2024

Article Information

Received date : July 24, 2024

Published date: August 14, 2024

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Keywords

Prognosis; Post-surgery; Lower back pain; Dakar; Senegal

Research Article

Functional Prognosis Factors of Persistent Lower Back Pain After Surgery

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Abstract

Persistent lumbosciatic after surgery is common, secondary to two essentially etiopathogenic mechanisms. They are also sources of physical disability among other things and the results on functional prognosis factors are contradictory.

Objective: Our objective was to determine the functional prognosis factors of patients with persistent lumbosciatic after surgery.

Methods: We conducted a single-center, cross-sectional study lasting 6 months, including the patients with lumbosciatic persisting beyond 4 weeks, after surgery. Patients with severe cognitive impairment were excluded. After identifying the initial impairments, the patients were invited for an assessment of functional capacities (Oswestry Disability Index) and quality of life (SF12).

Results: 46 patient files were retained. The average age of the patients was 49.39±14.53 years. The sex ratio was 1 and more than ¾ of the patients were married (78.26%). Forty-three percent (43.48%) of patients were technicians. More than half of our patients consulted within less than 3 months (53.13%). Isolated discectomy (62.12%) was the main surgical procedure performed. After rehabilitation treatment, the average ODI score was 37%±18%. The functional prognostic factors are marital status, static spinal disorders, pain, paralysis in lower limb. They were associated with "sexual life, sleep, postural, intensity of pain, walking, physical dimensions".

Discussion and conclusion: Our results confirm certain functional prognostic factors for persistent lumbosciatic, after surgery ostoperative, in a context of late rehabilitation care. The most impaired functional areas are loading handling, walking, postural, pain intensity and sexual life.

Introduction

Persistent lumbosciatic after surgery mean persistent pain in the lumbar and sciatic regions. dermatom, 6 weeks after surgery. Its average prevalence is 14.9% [1] and the surgical revision rate for lumbosciatic varies between 5- 20% [2]. Despite continued advances in surgical techniques, a substantial number of patients continue to experience disabling symptoms after lumbar surgery. This clinical issue raises complex questions regarding the underlying mechanisms, optimal postoperative management and the effectiveness of rehabilitation approaches. Whatever the type of surgery can considerably reduce pain and promote an early improvement in muscle strength, in the early post-operative period from the second week. It must be followed by functional rehabilitation, the objective of which is to encourage the occurrence of a lull and to improve the function of the lumbar spine and finally to facilitate the resumption of professional activities. Which is not always the case in our regions. Some functional prognostic factors have been identified by studies, some of which can lead to surgical revision. These are female gender, age, residual pain, early return to professional activities, psychological disorders. In Senegal, rehabilitation is little known by most health professionals, and there are insufficient staff, leading to late and irregular treatment. It is in this context of late post-operative rehabilitation, and lack of knowledge of the functional prognosis factors of our patients operated on for lumbosciatic, that we carried out this study. The objective of which is to determine the functional prognosis factors of persistent lumbosciatic after surgery, in patients beneficed of surgery, at the CNHU Fann, in Dakar.

Methodology

We conducted a cross-sectional, retrospective, descriptive and analytical study lasting 6 months at the Department of Physical Medicine and Rehabilitation, CNHU Fann, Dakar, Senegal. Included in the study were patients with persistent lumbosciatica at 4 weeks post-operatively, aged over 18 years, who freely consented to participate in the study, and who had undergone a clinical evaluation before starting physiotherapy. Associated cognitive disorders, likely to interfere with social and professional integration, or to limit the administration of the questionnaire constituted the non-inclusion criteria. These cognitive disorders were assessed by the execution of oral commands, the designation of objects, and the recall at 1 minute and 5 minutes of previously memorized words (car, hat, flower, peanut, donkey).

From the database of the Physical Medicine and Rehabilitation department, patients meeting the inclusion criteria were listed. Using a questionnaire, sociodemographic characteristics were recorded, as well as data relating to the surgical intervention. Impairments and activity limitations were also noted. The initial assessment of deficiencies was qualitative. Then the reachable patients were called for a quantitative assessment of activity limitations and restrictions in order to determine the evolution. The

assessment of activity limitations was carried out using the Oswestry Disability Index in its French version. This includes 8 dimensions, rated from 0 to 5, including the intensity of pain over the past week, personal care, lifting and moving objects, walking, sitting, standing, sleeping and the social life. The total score is established as a percentage of disability (score obtained divided by 40 then multiplied by 100) and ranges from 0% (no disability) to 100% (total disability). The physical, Mental and Social quality of life of patients was assessed by the "Medical Outcome Study Short Form" questionnaire, also validated in French. This questionnaire contains 12 questions covering 8 dimensions. The MOS SF makes it possible to obtain a mental and social quality of life score (MOS-M) and a physical quality of life score (MOS-P) constructed so that the average in the general population is 50. In our study the MOS SF score was established using the MOS Calculator. Our patients were classified into 4 socio-professional categories: technicians, workers, teachers, without professions. The data were analyzed with SPSS 2019 software (IBM Statistics SPSS Version 26). The graphs were obtained using Microsoft Office Excel Professional Plus 2021 software for MacOS.

Limitations of the Study

The main limitations of our study are the absence of quantitative evaluation during the initial consultation in Physical Medicine and Rehabilitation (ODI scale, numerical pain scale) and the lack of knowledge of the average follow-up at the final evaluation. We also highlight the unavailability of scales used in national languages, requiring translation for patients who do not attend school.

Results

During the study period, 46 patient's files were retained. The average age of the patients was 49.39±14.53 years with a median of 49.5 years (37-58.25) and extremes of 20 and 82 years. A predominance of patients aged between 50-59 years was found (28.26%). The sex ratio was 1 and more than ¾ of the patients were married (78.26%). Forty-three percent (43.48%) of patients were technicians and 15.22% were unemployed. Manual workers represented 15.22% of patients and teachers 26.09%. A little more than half of our patients (53.13%) consulted within less than 3 months. One patient, or 2.2%, had a history of lumbar surgery. Isolated discectomy was the main surgical procedure performed in our study with 62.12%. Other surgical procedures are laminectomy (29.73%), the combination of laminectomy and discectomy (5.41%), drainage of a hematoma (2.70%). Deficiencies found in our patients are spinal stiffness (30.4%), a static spinal disorder (27.91%), including 23.26% loss of lumbar lordosis. A motor deficit was found in 63, 1% of patients, located on the levator pedis muscle (44.19%), the gluteus medius muscle (27.91%) and the sural triceps (23.26%).

Pain was present in 26.1% of patients. Among them, 41, 66% of patients had spinal pain and 58,33% of patients had neuropathic pain. A sensory deficit was noted in 97.83% of cases. 19.6% of patients had a urinary disorder. Initial functional limitations were dominated by a reduction in walking distance (32.6%), a limitation in physical activities (67.4%). After rehabilitative treatment, patients with persistent postoperative lower back pain had an average ODI score of 37%±18% with a median of 35% and extremes of 8% and 82%. The disability was severe (ODI≥41%) in 41.30% of cases. The pain remained intense in 23.91% of patients. Lifting heavy objects without pain was impossible in all patients and 57.7% of patients were no longer able to lift heavy objects. The walking distance was limited to less than 500 meters, due to pain, in 46.6% of patients, including 11.1% with walking aids. A maximum sitting posture of less than one hour was found in 65.2% of patients. Sixty-six-point six percent (66.6%) were unable to stand for more than an hour. The sexual life of patients with persistent post-operative lower back pain is impaired in 35.2% of cases, including 26.4% severely with almost non-existent relationships. Social life was impaired, with at least a reduction in leaving the home (32.5%). Thirteen-point nine percent (13.9%) of patients had a sleep duration of less than 4 hours. The mean score of the physical dimension of quality of life was 39.96±8.08 and that of the mental dimension of quality of life was 49.54±11.01. The overall ODI score was not associated with pain, sociodemographic characteristics, and initial functional limitations. The functional prognosis factors for persistent lombosciatic , after surgery are marital status, pain, motor deficit, static spinal disorders (Table 1).

Table 1: Fonctional prognosis factors.

Facteurs Pronostiques	Oswestri Disability Index							
	Dimensions							
	Pain Intensity	Personal Care	Load Heandling	Walking	Sitting Position	Standing Position	Sleep	Sexual Life
Sexe	0,73	0,673	0,13	0,449	1	0,175	0,08	0,502
Marital statut	0,313	0,674	0,299	0,041*	0,314	0,677	0,036*	0,036*
Profession	0,164	0,676	0,26	0,146	0,474	0,688	0,384	0,269
Spine Stiffness	0,478	0,22	0,894	0,067	0,686	0,116	0,787	0,862
Static Spinal Disorders	0,15	0,868	0,492	0,019*	0,206	0,011*	0,139	0,525
Limb Paralysis	0,035*	0,457	0,941	0,936	0,955	0,588	0,016*	0,566
Pain	0,443	0,319	0,391	0,036*	0,296	0,588	0,123	0,019*
Sensory Deficit	0,743	0,52	0,637	0,474	0,152	0,158	0,488	0,743

Discussion

Persitent lumbosciatic after surgery is becoming more and more common. The risk of failure after spine surgery is estimated between 10 and 46%. Alshammari et al. [3] in 2023 found an average prevalence of persistent post- operative lower back sciatica of 14.9%. They are responsible for surgical revision between 5-20% of cases [4]. the results of our study are in line with the data in the literature, which mentions post-operative lumbosciatica as a condition which affects young adults, with an average age between 40-59 years and a preferred age group over fifty [5-7], making advanced age a risk factor for post-operative lumbosciatica [8,9]. Generally, studies are in favor of a female predominance [4,5,10]. Contrary to the data in the literature, which mention a predominance of post-operative lumbosciatica among manual workers, farmers and sedentary people, we found a population of post-operative lumbosciatica, dominated by technicians (midwives, senior technicians and nurses). This suggests the involvement of repetitive, inappropriate and sustained demands on the lumbar spine when carrying out professional tasks. These findings also lead us to question the delay in resuming professional activities of our technicians who have undergone lower back sciatica, compliance with the neurosurgeon's instructions, the provision of post-operative education, before leaving the hospital and the involvement of the occupational physician in the post-operative management of lumbosciatalgia.

In general, recommendations call for 4 to 6 months of absence from work after lumbar spine surgery [11]. Other risk factors for the occurrence of persistent postoperative lower back sciatica include the type of surgery, the presence and intensity of preoperative pain, psychological factors [12]. The start time for rehabilitation varies in the literature between 4 -12 weeks, after the surgical intervention. These studies consider physiotherapy, overlooking the interest of therapeutic education, cryotherapy, and nerve blocks in the management of lower back sciatica, in the early postoperative period [13,14]. The functional outcome of patients with persistent postoperative lumbosciatic is variable. In our study, the average ODI score was 37%±18% with a median of 35% (23%-52%) and extremes of 8% and 82%. And overall severe disability was noted in 41.30% of patients. Our data are consistent with those in the literature, despite open surgery in all our patients and the absence of early treatment [4,6,15]. It is noted that the functional capacities of patients with persistent post-operative lumbosciatic decrease after two years of follow-up.

Parker [16] in his study noted a decrease in the overall ODI score ranging from 52.16±18.42 (pre-operative) to 17.30 ±17.26 at 3 months post-operative, with a slight increase at 2 years post-operative (19.33±20.42). The disability of patients with persistent post-operative lower back pain affects all dimensions of the ODI scale, but in a variable manner. In our study, 62.22% of patients were able to perform personal care without increasing pain. Our data are in agreement with those of Bugis [7] who found 69.7% of patients capable of performing personal care without increasing pain. A lumbar spine procedure, in general, interferes with load handling capacity, reduces walking distance, alters posture and disrupts social relationships, sex life, and sleep. In our study, all these dimensions were more frequently altered, compared to the Bugis study [7]. The functional prognostic factors for postoperative sciatica vary depending on the study [17]. The ODI score, the duration of progression of pain in the lower limbs, have been the subject of several studies, but the results remain contradictory [10,18-20]. Low back pain and mobility of the lower limb in anteflexion are not associated with the overall ODI score of patients with persistent postoperative lumbosciatic pain [18-21]. In our study, the Lassegue sign was not studied. However, we found an association between postural dimension of the ODI scale and static spinal disorders. The functional prognostic factors consistently found in the literature are quality of life and intensity of lower limb pain [22].

Conclusion

Persistent lower back pain after surgery is more common in adults technicians. Open dissectomy is constant. Despite late rehabilitation treatment at the CNHU Fann, functional capacities, evaluated by Owestry Disability Index remain satisfactory. However, moving objects constantly causes pain and the walking distance remains limited in almost half of the cases. Functional prognostic factors are marital status, pain, motor deficit and static spinal disorders.

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