



## Physiotherapy Influence on Quality of Life in Patients with Degenerative Spinal Diseases After Surgery

## KEYWORDS

degenerative spinal disease, physiotherapy, quality of life

Tsvetelina Bizheva

Daniela Lubenova

Ivan Maznev

Kristin Grigorova-Petrova

Antoaneta Dimitrova

**ABSTRACT**

**Objective:** To evaluate the effect of physiotherapy on the quality of life in patients with degenerative spinal diseases in early postoperative period.

**Material and methods** - 20 patients treated in the Department of neurosurgery in Sofamed Hospital were studied. The quality of life was assessed before surgery and on day 12 after operation using the questionnaire short form 36 health survey. All patients performed everyday exercises to facilitate transfers, to improve coordination, activities of daily living and gait.

**Results:** Physical therapy improves physical health and the emotional state of patients.

**Discussion:** Results shows that the early postoperative physical therapy improves the quality of life in patients, after spinal surgery.

**Introduction**

Degenerative spinal diseases are common disorders and they are health and significant social problem. Spine surgery due to degenerative diseases associated with prolonged hospital stay. Often, a second operation is required, and there is a risk of developing postoperative complications [1].

For patients with herniated discs, degenerative spondylosis, degenerative stenosis, in which the pain and sensory symptoms are not affected by medication and physiotherapy treatment for at least 4 to 6 weeks, a surgical treatment is indicated. After surgical treatment for about 15-30% of patients still have paresthesia, residual pain, more in the nature of lumbalgia than sciatica. Neurological deficit is influenced, depending on the limitation of the root and severity compression. After surgical treatment of degenerative stenosis, at about 25% of the operated persisted residual lumbalgia, due to the associated degenerative arthritic changes.

Low back pain is second to upper respiratory problems as a symptom-related reason for visits to a physician. There are wide variations in care, a fact that suggests there is professional uncertainty about the optimal approach. Magnetic resonance imaging has come to be widely used, the roles of exercise and bed rest have been clarified, and more information has been gained from clinical trials [2].

There are an abundance of evidences indicating significant impairment of muscle function after spinal surgery, suggesting that postoperative rehabilitation might be routine practice. While the available controlled trials comparing an active rehabilitation programme with standard post-operative care in patients undergoing spinal surgery support this inference, most of these studies were small (a mean of 72 participants, range 12-212) and the measures of outcome

limited, suggesting further work is required to confirm that rehabilitation should indeed be part of routine post-operative care [3].

The most common reasons for lumbar fusion in order of prevalence are spondylolysis or spondylolisthesis, degenerative disc disease and spinal stenosis. Less common indications are fractures, neoplasms, infections and inflammatory diseases, and also intraoperative removal of more than one facet joint that renders the segmental level unstable as in cases of severe foraminal stenosis during lumbar decompression surgery [4]. From a clinical perspective, disc degeneration is believed to be a source of chronic pain, and over 90% of surgical spine procedures are performed because of consequences of the degenerative process. Disc degeneration can lead to secondary clinical problems, including disc herniation, spinal stenosis, and degenerative spondylolisthesis [5].

The first few days after a fusion operation are painful. Additional medications such as muscle relaxers, antibiotics, antidepressants, are also given as needed. Early ambulation is encouraged and Physical/ Occupational Therapy services are frequently recruited to achieve this goal. Post-operative home needs are assessed and medical equipment such as walkers, hospital beds; shower chairs, bedside commodes, etc. are arranged before discharge. Home health visits are also arranged as needed. Patients are discharged home when they can walk on their own or with a walker sufficiently to be able to care for their own small needs. Those who do not meet the above discharge criteria are usually referred to a convalescent facility selected according to their location of residence, insurance plans, and choices.

A fusion requires prolonged recovery time. Patients may need 1 to 1.5 years to reset their lives after such a procedure.

ture. Some return to prior lives with some physical limitations; others more commonly assume a life of partial or full disability. This process is a major life change, and as with all life changes creates issues that potentially affect recovery. Included are: depression, marital or relational stress, financial difficulties, anxiety over unresolved legal issues, sexual dysfunction, chronic pain and narcotic dependence. These problems slow down recovery and lead to increased pain complaints [6].

A substantial rise in pressure in the erector spinae muscle during posterior spinal surgery was observed, and this appeared to be associated with marked changes in the function of the muscles. This could be an important factor in the generation of operative scar tissue and postoperative dysfunction of the spinal muscles, periodic relaxation of the paraspinal muscle retractors during surgery to allow muscle perfusion may help to reduce postoperative back pain and disability. The integrated programme of prehabilitation and early rehabilitation improved the outcome and shortened the hospital stay — without more complications, pain or dissatisfaction [6].

**Purpose** of the research is to evaluate the effect of application of physiotherapy exercises on the quality of life in patients with degenerative spinal diseases in the early postoperative period

#### Material and methods

20 patients (10 men and 9 women, mean age 60,2) treated in Department of neurosurgery of the University Hospital Sofamed - Sofia were studied. Assessment of quality of life was made before surgery and on the 12 day of the operation. A point scale for quality of life (SF-36) was used. All patients performed therapeutic exercises everyday until the day of discharge.

The average duration of every session was 30 min, moderate intensity. Our methodology includes goal-oriented exercises to facilitate the transition from one starting position in another, exercises to improve coordination, training in activities of daily living(ADL), gait training.

#### Exercise after spine surgery in the hospital:

First Day - Training transfers to bed (until the drain is removed), exercises for upper and lower limbs in bed, breathing exercises, abdominal exercises, isometric exercises, motor control.

Second Day - Earlier verticalisation (with or without a belt according to the intervention). The physical therapist help patient to transfer from one position to the next, sit at the side of the bed without rotation (using techniques for convenience). Therapist helps with gait, balance and strengthening of lower and/or upper extremities. Depending on the progress, patient may walk in the hallways and try going up and down stairs.

Third Day - Reinforcement techniques transfers, sit and walking, training in walking, climbing down and up stairs and pick up the object from the floor.

Fourth Day - Patient's education focuses on the acquisition of information and technical skills and transition to self-fulfilling action, which facilitates patients, helping them to make decisions and take appropriate action when changes in their disease or condition.

**We instructed the patients after hospital discharge:**

1. Do not drive a car immediately after discharge from the hospital. Avoid driving at least one week after surgery. While sitting in a car, do the seat back angle greater than 90 degrees.

Avoid bending, especially when you get out of the car.

#### 2. Putting on shoes and socks can be done in several ways;

- lying on the back- slight bend both legs, after that one heel is placed on the other knee.
- standing - tread on the shoe rack, then bend a little to put the shoe.
- tread with one knee on the floor and put the shoe on the other foot

Get a pair of slip-on shoes with closed backs. That way, you won't have to bend to put on your shoes.

3. To get subject without reaching or bending, it has to be on the level between hip and shoulder. When you need to take products from the refrigerator, cabinet, stove, while bending the shoulders, you must slightly outsource back leg back and up, so that the body is not excessive bended.
4. In activities such as washing dishes, brushing teeth, when we lower the upper part of the body, we can carry the pelvis slightly back, with a little step one foot back.

Proper implementation of the ADL and avoiding bending and rotation lead to faster recovery and greater self-confidence and self-esteem.

#### Results

The highest improvement in the quality of life of patients was seen in indicators: Overall Health - with 28.25 points (from 27.25 to 55.75) (fig.2); Emotional health of patients with 21 points (from 32.2 to 53.2) (fig. 2), and Physical health with 17.77 points (from 33.74 to 51.51), (fig.1).

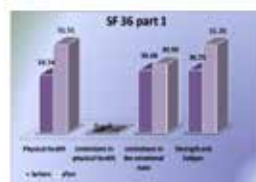


Fig. 1. Changes in the subscales of SF-36 before and after applied physical therapy(part1)

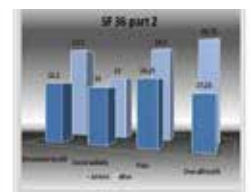


Fig. 2. Changes in the subscales of SF-36 before and after applied physical therapy(part2)

#### Discussion

Resuming normal functional activity is an important goal after spine surgery. Normal functional activity should include exercises, which are important for the healing process, recovery of function, pain management, weight control, health, fitness, and emotional well being. Selecting appropriate exercises after surgery depends on the type of surgery that was performed. Persons who were physically active prior to surgery must consider their movement restrictions and discuss the activity they wish to resume with their surgeon or physical therapist. If the previous activities cannot be resumed immediately, recommendations can be made for safe alternatives or a progression of activity back to the desired level. For individuals who were inactive before surgery, it is highly recommended that a routine of moderate intensity aerobic exercise be established and maintained following surgery.

The significant improvement in the Overall Health is achieved due to improving gait and increasing walking dis-

tance. To achieve this goal we included training in walking, climbing down and upstairs and pick up the object from the floor.

The exercises facilitating the transfers of patients and training in ADL contributed to greater independence in daily living. Patients feel more confident during ADL, which contributes to better Emotional health.

The hospital stay is not long enough to overcome the limitations faced by patients in the working environment, **and patients still need a rest.** To eliminate limitations in physical health patients should do physiotherapy after discharge from the hospital.

Recommendations: To make patient's life easier and their movement safer after surgery, we have to teach them how to perform activities of daily living. Patients must follow the instructions, not only during hospitalization, but also after the discharge. They have to learn to ensure proper execution of each movement, because once they leave the hospital, they are not under the direct supervision of physiotherapists anymore. Therefore self-esteem and self-control are the most important thing that must be learned to improve both physical and emotional health of patients.

### Conclusion

The study shows that early postoperative physiotherapy improves the quality of life of patients, after spinal surgery.

### REFERENCE

1. Mannion A., Denzler R., Dvorak, G., Grob D. A randomised controlled trial of post-operative rehabilitation after surgical decompression of the lumbar spine, *European Spine Journal* August 2007, Volume 16, Issue 8, pp 1101-1117 Date: 26 Jun 2007
2. Richard A. Deyo, and James N. Weinstein. Low back pain *N Engl J Med*, Vol. 344, No. 5 • February 1, 2001 • www.nejm.org 363
3. Mc Gregor A., Dicken, B. and Jamrozik, K. National audit of post-operative management in spinal surgery. *BMC Musculoskeletal Disorders* , Biomed Central ,2006
4. Deyo RA, Gray DT, Kreuter W, Mirza S, Martin BI. United States trends in lumbar fusion surgery for degenerative conditions. *Spine*. 2005; 30:1441-1445
5. An HS, Anderson PA, Houghton VM, et al. Introduction: disc degeneration: summary. *Spine*. 2004;29:2677-2678.
6. Moris Senegor, F. Karl Gregorius. Patient guide to spinal surgery, St. Josephs Medical Center