IS IT POSSIBLE TO OBTAIN CONSENSUS ON THE TACTICS OF EARLY REHABILITATION PERIOD AFTER LUMBAR MICRODISCECTOMY?

N.I. Tursynov, M.A. Grigolashvili, N.I. Sheveleva, Sh.S. Muratbekova
Karaganda Medical University, Karaganda, Kazakhstan

Objective. To analyze distinctions in multidisciplinary approaches with respect to the timing of patients returning to daily physical activity after uncomplicated lumbar microdisectomy and to the readiness of doctors of various specialties to work according consensus guidelines.
Material and Methods. A written questionnaire survey of 60 specialists (20 neurosurgeons, 28 neurologists and 12 rehabilitologists) involved in the management of patients during the first six months after uncomplicated lumbar microdisectomy was conducted. The questionnaire included 12 questions with several answer options on the timing of returning to daily physical activity, and on the need to provide patients with written recommendations on limitations in motion regimen, physical work, sexual activity, and bracing.
Results. Significant dissonance both between doctors of the same specialty and of different specialties was demonstrated in the tactics of postoperative management of patients regarding the recommended terms for returning to daily activity. All respondents found it useful to create unified written recommendations on the motion regime, 90 % of specialists are ready to use the proposed recommendations after some modification. There was a slight increase in the recommended timing for return to daily physical activity compared with the recommendations of doctors in other countries.
Conclusion The demonstrated interdisciplinary differences in the treatment, rehabilitation and timing of physical activity restriction for patients after lumbar microdisectomy require unification of the tactics of postoperative management.
Key Words: back pain, disc herniation, neurosurgery, microdisectomy, rehabilitation.
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In the current population, the number of patients undergoing lumbosacral microdiscectomy is steadily increasing, and the outcome of this procedure is largely dependent on the tactics of postoperative rehabilitation and restoration. High prevalence of the pathology, prolonged illness, and possible disability of patients underlie not only medical but also social aspects of the problem.

Despite a large number of studies on the efficacy of rehabilitation after microdiscectomy, there are significant differences in the content, duration, and intensity of rehabilitation programmes in clinical practice, and the timing of return to normal activity varies depending on the country, hospital, and even attending physician [1, 2]. The literature has discussed the differences in the rehabilitation duration recommended by neurosurgeons [3–6], but there is no comparison of this duration with the recommendations of other experts from a multidisciplinary team (neurologists, rehabilitation physicians).

The objective of this study was to analyze the possibility of developing unified interdisciplinary and intradisciplinary recommendations on the timing of return to everyday motor activity after uncomplicated lumbar microdiscectomy using an example of the Republic of Kazakhstan.

Material and Methods

We surveyed 60 doctors (20 neurosurgeons, 28 neurologists, and 12 rehabilitation physicians) from a city with a population of about 500 thousand people. The survey was conducted in September 2019; the mean time spent by each respondent to fill out a questionnaire was 8–10 min. All respondents were medical practitioners working in state medical institutions (hospitals and/or clinics) and involved in early rehabilitation of patients after lumbar microdiscectomy. Previous work experience of doctors was not taken into account.

The survey used a questionnaire including 12 questions with several answer options regarding the timing of return to everyday motor activity and the need of patients with lumbar microdiscectomy in written recommendations on limiting sitting, lifting, driving, spine twisting, sedentary and physical work, sexual activity, and the need in fixation of the spine. All questions were direct, open-ended or close-ended, and aimed at obtaining direct information.

During the study, questionnaires were analyzed, and the results were interpreted.

Also, respondents were provided with a variant of recommendations developed at the Department of Neurology, Neurosurgery, Psychiatry, and Rehabilitation of the Medical University of Karaganda (Kazakhstan) based on the literature data of 2018–2019 [7].

1. Sitting position. Sitting is not recommended within the first month after surgery. When urinating and/or defecating, it is necessary to sit down, leaning on the toilet with bent arms. Since the second month, sitting is allowed but limited to 5 min a day; this is gradually increased to 60 min 2–3 times a day by the 6th week after surgery. Sitting for more than 8 h a day is recommended no earlier than 2 months after surgery. During long work in a sitting position, it is necessary to watch out for the natural cervical and lumbar lordoses (curves). For this, the chair should follow contours of the back, with rollers being located at the neck and lower back levels. The height of the chair and table is selected individually to preserve the physiological position of the spine and exclude excessive bending and twisting.

2. Standing position. During the first postoperative month, prolonged standing in one place is not recommended.

3. It is recommended that the patient use a safe motor stereotype. When moving, it is necessary to maintain lumbar lordosis (curve) and keep the shoulders and pelvis in the same plane, avoiding bending, extending, and twisting in the lower back.

4. Excessive bending and twisting of the spine are recommended no earlier than 1 month after surgery. If twisting is necessary, rotation of the whole body should be used. If excessive bending is needed, it is necessary to sit down and stand up with support on the legs. When standing up from lying down, transition through a side lying position, avoiding twisting, should be used.

5. Lifting. During the first month after surgery, it is recommended that the patient do not lift weights of more than 3 kg with one arm and more than 6 kg with both arms. When lifting, do not bend but, keeping the back straight, bend at the knees and push up using strength of the legs.

6. Everyday activity. During the first month after surgery, it is recommended avoiding heavy housework (prolonged vacuuming and scrubbing, hand washing laundry, and prolonged dishwashing in a standing position, etc.). Further, daily activity should be gradually expanded depending on well-being. If necessary, give rest to the back by lying on the back or side with bent legs.

7. Sexual activity. It is recommended that the patient avoid intense sexual activity for 1 month after surgery; further, the patient should avoid positions that cause back pain and, if necessary, use pillows under the lower back.

8. Driving a car. Driving is not recommended for 1 month after surgery.

9. Working capacity. Return to work depends on the type of physical activity, and is recommended no earlier than 4–6 weeks after surgery. When working long hours in a sitting position (more than 8 hours a day) – not earlier than after 2 months after surgery.

10. Sports. After 1 month after surgery, it is recommended that the patient start symmetrical aerobic training for at least 30 min a day, 3 times a week (swimming, Nordic walking, skiing, etc.). Avoid heavy and abrupt physical activity (jumping, lifting a barbell or dumbbells with a large weight, etc.) as well as asymmetric activities (tennis, etc.). Exercises for the abdominal muscles and long extensors of the back without excessive flexion and/or twisting in the spine are recommended.

11. Orthopedic corset. The use of a semi-rigid orthopedic corset is recommended during physical activity within 2 months after surgery.

Results

The survey results with the distribution of expert answers are presented in the Table that illustrates significant differences in the answers among specialists on almost all asked questions. In this case, in all practical recommendations on activity of patients, neurosurgeons tend to minimize limitations.

For example, in questions 1–4, most neurosurgeons (90 to 100 %) limit the normal functioning of patients for no more than 2 months. Recommendations of neurologists and rehabilitation physicians are significantly more careful, especially regarding lifting, driving, and twisting loads.

About 80 to 95 % of neurosurgeons consider it possible to return to work (sedentary and physical) by the 4th month after surgery. In turn, more than half of rehabilitation physicians and neurologists believe that it possible to return to sedentary work only 5 months and to physical work 6 months after surgery.

There was a conditional consensus among experts regarding the advantages of semi-rigid orthopedic corsets over rigid ones and the duration of its use. In this matter, rehabilitation physicians were even more active than other experts; most of them believed that 2 months was a sufficient period to use the corset (neurologists and neurosurgeons recommended using the orthosis for 3 months).

Up to 90 % of neurosurgeons recommended returning to sexual activity within 1 month after surgery. Most neurologists (75 %) adhered to the same opinion, and most rehabilitation physicians recommended return to this activity not earlier than after 2 months.

Most experts provided patients with written recommendations on physical activities, but there were neurosurgeons who preferred not to do this.

All respondents considered it useful to develop unified written recommendations on physical activities; in this case, most rehabilitation physicians and neurologists were ready to use the proposed variant in practice, while 60 % of neurosurgeons indicated the need for further revision of the recommendations.

Discussion

At the time of this study, rehabilitation in Kazakhstan was regulated by several regulatory documents (given according to the implementation date): "About approval of the standard of the organization of rendering medical rehabilitation to the population of the Republic of Kazakhstan" (Order of the Minister of Health of the Republic of Kazakhstan No. 759 of December 27, 2013); "About approval of the Rules of rehabilitation treatment and medical rehabilitation, including children's medical rehabilitation" (Order of the Ministry of Health and

Table
Answers of experts to questions on the organization of motion regimen in the early recovery period after microdiscectomy. n (%)

Recommendations	Answer option	Neurosurgeons (n = 20)	Rehabilitation physicians (n = 12)	Neurologists (n = 28)
Duration of sitting restrictions	2 days	12 (60.0)	–	–
	2 weeks	4 (20.0)	–	–
	1 month	4 (20.0)	9 (75.0)	16 (57.1)
	2 months	–	2 (16.7)	8 (28.6)
	3 months	–	1 (8.3)	4 (14.3)
Duration of lifting limitation to 5–10 kg	1 month	8 (40.0)	–	–
	2 months	10 (50.0)	1 (8.3)	–
	3 months	–	1 (8.3)	8 (28.6)
	4 months	2 (10.0)	4 (33.4)	9 (32.1)
	6 months	–	6 (50.0)	11 (39.3)
Duration of driving restriction	2 weeks	4 (20.0)	–	–
	2 months	12 (60.0)	4 (33.3)	2 (7.1)
	3 months	4 (20.0)	2 (16.7)	3 (10.7)
	4 months	–	–	19 (67.9)
	6 months	–	6 (50.0)	3 (10.7)
		–	–	1 (3.6)
Duration of limitation on excessive bending and twisting at the spine	1 month	2 (10.0)	–	2 (7.1)
	2 months	16 (80.0)	–	6 (21.5)
	3 months	2 (10.0)	–	–
	4 months	–	2 (16.7)	5 (17.9)
	6 months	–	8 (66.6)	13 (46.4)
	>6 months	–	2 (16.7)	2 (7.1)
Recommended timing of return to sedentary work	After 2 months	3 (15.0)	–	–
	After 4 months	16 (80.0)	6 (50.0)	10 (35.8)
	After 5 months	–	5 (41.7)	9 (32.1)
	After 6 months	1 (5.0)	1 (8.3)	9 (32.1)
Recommended timing of return to physical activity	After 2 months	2 (10.0)	–	–
	After 4 months	14 (70.0)	2 (16.7)	2 (7.1)
	After 5 months	3 (15.0)	4 (33.3)	7 (25.0)
	>6 months	1 (5.0)	5 (41.7)	18 (64.3)
		–	1 (8.3)	1 (3.6)
Used corset	Semi-rigid	16 (80.0)	11 (92.7)	19 (67.9)
	Rigid	4 (20.0)	1 (8.3)	9 (32.1)
Duration of wearing an orthopedic corset during physical activity	1 month	1 (5.0)	–	1 (3.6)
	2 months	2 (10.0)	10 (83.4)	3 (10.7)
	3 months	17 (85.0)	1 (8.3)	23 (82.1)
	4 months	–	1 (8.3)	–
	6 months	–	–	1 (3.6)
Duration of restriction of sexual activity	1 month	8 (40.0)	2 (16.7)	1 (3.6)
	2 months	10 (50.0)	2 (16.7)	20 (71.4)
	3 months	2 (10.0)	7 (58.3)	4 (14.3)
	4 months	–	1 (8.3)	2 (7.1)
	6 months	–	–	1 (3.6)
Do you provide written recommendations on physical activity?	Always	12 (60.0)	5 (41.7)	17 (60.7)
	Often	6 (30.0)	7 (58.3)	11 (39.3)
	Rarely	2 (10.0)	–	–
Is development of unified written recommendations on physical activity helpful?	Yes	20 (100.0)	12 (100.0)	28 (100.0)
Do you agree with the proposed recommendations and will you use them in practice?	Yes	6 (30.0)	7 (58.3)	19 (67.9)
	Partially	12 (60.0)	4 (33.4)	6 (21.4)
	No	2 (10.0)	1 (8.3)	3 (10.7)

Social Development of the Republic of Kazakhstan No. 98 of February 27, 2015); Clinical Protocols of the 1st, 2nd, and 3rd stages of medical rehabilitation in neurology and neurosurgery (adults) of August 15, 2016. Immediately before the study, the "The standard for organization of medical rehabilitation for the population of the Republic of Kazakhstan" was introduced (Order of the Ministry of Health of the Republic of Kazakhstan No. R DSM-120 of August 29, 2019); Order of the Ministry of Health of the Republic of Kazakhstan KR DSM-9/2020 No. 98 "About approval of the Rules of rehabilitation treatment and medical rehabilitation, including children's medical rehabilitation" was effective as on February 13, 2020. However, all of these documents do not contain specific recommendations on the period for recovery of habitual activity for the considered nosology.

In our opinion, the main positive result of this study is not only identification of differences in the approaches of neurosurgeons, neurologists, and rehabilitation physicians to the management and duration of recovery of patients after microdiscectomy, which fits into the concept of "interdisciplinary differences", but also the willingness of different experts to unification of recommendations on this topic. We drew attention to the fact that the spread of answers among neurosurgeons was less significant than that of other specialists, which may be due to their work in one medical center providing neurosurgical care to the entire city. The largest timing differences in recommendations (up to 6 months) were found among neurologists, which may be due to both the largest sample of respondents and work in different medical institutions. All respondents expressed interest in the study topic and noted the lack of research in this area; their recommendations were mainly based on their own experience and the experience of colleagues.

An analysis of the literature on the efficacy of methods and duration of rehabilitation after lumbar microdiscectomy, including systematic reviews on this topic in 2006 and 2015, also revealed significant differences in both approaches and specific recommendations.

There were no significant differences in assessing the outcomes of rehabilitation treatment related to pain relief and subsequent disability in the absence of motor restrictions or limitation of load for up to one year; there was no consensus on the need, management, and timing of postoperative restrictions [1, 8].

Significant differences were found among neurosurgeons in the UK, Australia, Italy, and Russia who recommended a return of patients to daily motion activity in the range from two days to 3 months [3–6].

Experts from UK centers surveyed in 2012 provided patients with written recommendations that, however, differed from each other because they were developed independently in each institution [9]. Postoperative restrictions were established by doctors on the basis of theoretical considerations, their own practice, and developments existing within a medical center, but not on the basis of existing publications.

There is little evidence of the detrimental effects of excluding any postoperative restrictions as well as the fact that most recommendations on limitation of the timing of return to daily activities slow recovery and return to work: encouraging of mobility and, if possible, the earliest return to full activity after surgery relieve pain and facilitate an early return to work [10, 11].

It is also noted that recommendations on limitation of load and on return of patients to their previous responsibilities with allowance for their individual features may be useful, in particular from a legal point of view [12]. At the same time, it is noted that the dissonance in recommendations severely affects patients who are not sure what activities are permissible to them after surgery [13].

Conclusion

The study demonstrated significant interdisciplinary differences in the management of patients after lumbar microdiscectomy by doctors of various specialties. This dissonance is typical of global trends; in this case, in the surveyed group, we revealed slightly longer periods recommended for return of patients to everyday motion activity compared to the recommendations of doctors from other countries.

The study demonstrated the reasonability of developing interdisciplinary recommendations for rehabilitation and recovery treatment of patients after microdiscectomy, the basis for which may be recommendations proposed by the authors earlier and mainly supported by respondents [7].

To develop a unified approach to postoperative treatment and rehabilitation of patients after lumbar microdiscectomy, further high evidence level studies on recommended duration of limited motion activity are necessary.

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Address correspondence to:
Tursynov Nurtas Isataevich
Karaganda Medical University,
40 Gogol str., Karaganda, M01K6T3, Kazakhstan,
nurtasisataevich@mail.ru

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Nurtas Isataevich Tursynov, DMSci, associate professor of the Department of Neurology, Neurosurgery, Psychiatry and Rehabilitation, Karaganda Medical University, 40 Gogol str., Karaganda, M01K6T3, Kazakhstan, ORCID: 0000-0003-1939-7506, Tursynov@qmu.kz;
Marina Archilovna Grigolashvili, MD, PhD, Head of the Department of Neurology, Neurosurgery, Psychiatry and Rehabilitation, Karaganda Medical University, 40 Gogol str., Karaganda, M01K6T3, Kazakhstan, ORCID: 0000-0001-6722-1762, Grigolashvili@qmu.kz;
Naila Igorevna Sheveleva, DMSci, Professor of the Department of Neurology, Neurosurgery, Psychiatry and Rehabilitation, Karaganda Medical University, 40 Gogol str., Karaganda, M01K6T3, Kazakhstan, ORCID: 0000-0002-6658-7399, n_sheveleva@qmu.kz;
Shynar Sabitovna Muratbekova, teaching assistant of the Department of Neurology, Neurosurgery, Psychiatry and Rehabilitation, Karaganda Medical University, 40 Gogol str., Karaganda, M01K6T3, Kazakhstan, ORCID: 0000-0002-4657-4021, MuratbekovaS@qmu.kz.