Effect of Immediate Verses Standard Physiotherapy Treatment in Post Micro-Discectomy

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Abstract. There is different type of literature available about the rehabilitation after lumbar micro-discectomy, but there is little mention about early physical therapy intervention. The aim of the current study is to explore the effects of immediate physical therapy intervention compared to standard physical therapy intervention in post lumbar micro-discectomy patients. Research objective was to determine immediate physical therapy intervention makes patient to become functionally mobile more independently after lumbar micro-discectomy. A randomized, single blind, control trial was conducted on 30 post discectomy patients, recruited from Inpatient Department of Neuro-surgery, Shifa International Hospital. The sample was randomly allocated to intervention and control groups. The intervention group was made to do exercises and mobilization after 6 hours' post-surgery, and the control group was made to do exercises and mobilization on the first postoperative day. The functional outcomes of both groups were assessed by Oswestry Disability Index post operatively. The data was analyzed through SPSS version 20. Total thirty patients with post micro-discectomy were included in this study and placed randomly into two groups. Range of oswestry disability scale was 14 -74%. Mean ± SD of oswestry disability scale of immediate mobilization group was 28.40 ± 5.99 while mean ± SD of oswestry disability scale of standard mobilization group was 42.80 ± 14.20. The difference was statistically significant; p-value was 0.001. It was concluded that immediate physical therapy intervention following lumbar micro-discectomy enables patients to become functionally mobile more independently and return to work earlier.

Key words: lumbar discectomy, immediate physical therapy intervention.

Introduction

Vertebrae are thirty-three bones that are stacked on each other, separated by cushion like structure, known as intervertebral disc. The disc is absorber of shock and stress, during weight bearing activities. Spinal disc herniation is condition, in which annulus fibrosus allows the soft nucleus pulposus to bulge out. It causes pressure on spinal nerves, which results into intense pain numbness, tingling, paresthesia, motor changes such as muscular weakness, paralysis and affection of reflexes. Lumbar disc herniation occurs in lower back, and it is most common between the fourth and fifth lumbar vertebral bodies or between fifth lumbar and sacrum. Non-operative recommended treatment is specific for each patient. A longer period of treatment is practical for those patients who are not in severe pain and well functional. Surgery to decompress nerve is a reasonable option, if the patient does not get well with non-operative treatment for lumbar disc herniation. Emergency surgery is under consideration if the patient has cauda equina syndrome.

Low back pain is most commonly caused by lumbar intervertebral disc herniation (Poppert and Kulig, 2013: 591-596). About 80% people are suffering from low back pain in their lifetime (Hebert et al., 2010: 402-412). The first surgical procedure to remove herniated lumbar disc was described by MIxter and Barr in 1934, which was developed by Semmes, who described hemilaminectomy and retraction of the dural sac to approach the herniated disc. This procedure became famous as the "classical discectomy technique" (Oosterhuis et al., 2013: 124). During the latter half of the 19th century, more techniques were advanced to remove the herniated disc with minimum invasion.

Lumbar surgery is very common in practice with the success rate varies from 60 to 90%. The primary surgical treatment for lumbar intervertebral disc herniation is micro discectomy (Nagpal et al., 2014: 359-364). Lumbar discectomy is commonly done surgical operation; but its clinical outcomes are very less defined (Hebert et al., 2013). Following discectomy, there are many studies demonstrating benefits of post-operative rehabilitation programme (McGregor et al., 2010: 17). One study comprises of specific or general trunk exercises programs and its effects on clinical outcomes. Some studies show positive effects of active rehabilitation starting 4-6 weeks after discectomy (Oestergaard et al., 2013: 1884). Some studies show differences between two groups, with and without rehabilitation, after surgery (Bina et al., 2013: 12-17). Others show a considerable variation in the use, intensity and type of rehabilitation after surgery (Morris et al., 2011: 1807). Some patients have recurrent back pain or nerve root pain. This is partially due to improper rehabilitation (McGregor, 2007: 339-346). One of the studies showed the results of non-aggravating six-month gym-based exercise rehabilitation program with fewer days off from work in the following post-operative year (Donaldson, 2006: 357-363). One of the study showed that if rehabilitation program is started 4-6 weeks after surgery, it will improve short term outcome but also reveals that activities should not restricted following surgery (Ostelo et al., 2003: 209-218). The review also revealed that patient will return to work earlier if post-operative restrictions are removed (Ostelo et al., 2003: 209-218). One of the study established that neglect the evidence of rehabilitation that is started immediately after surgery, due to lack of good studies on this perspective (Carragee, 1996: 1893-1897).

Our study is based on nerve damage, which may occur during procedure, results into muscle weakness or a loss of sensation. Most patients leave the hospital on first post-operative day, once his condition become stable medically. The patient is instructed to drive two weeks after surgery. Lifting and bending activities are restricted for four to six weeks. Patients generally come back to normal light work in two to four weeks and can do heavier work in about three months. Patients who have to do strenuous labor work are instructed to avoid heavy work, till their condition gets stable.

In this research we will relate the efficacy of immediate physical therapy intervention along with standard physical therapy intervention in post lumbar micro-discectomy patients.

Material and Methods

The study was conducted at the Department of Neuro-surgery, Shifa International Hospital, Islamabad. Samples were collected by randomized control trial, single blind. The duration of the study was six months, from July 2013 to Dec 2013. Sample was collected by non-probability convenience sampling.

Total subjects were thirty. The subjects were divided into two groups.

Group 1: Immediate physical therapy intervention group (n=15)

Group 2: Standard physical therapy intervention group (n=15)

Samples (20-60 years) with both gender, were selected as; patient has first time single level lumbar micro-discectomy. All lower lumbar L4/L5 or lumbo-sacral L5/S1 post-discectomy patients were included in the study. Patient was excluded as they have any previous discectomy. All other lumbar and sacral spinal levels patients will be excluded in the study.

Immediate physical therapy intervention as same exercises as standard physical therapy intervention group session but assisted to ambulate out after 6 and 24 hours respectively. The functional outcomes of both groups were assessed by Oswestry Disability Index post operatively, which was measured by spinal ward physical therapist.

Results

A total of thirty patients were divided into two groups, each group contains fifteen (50.0%) subjects. Age range of subjects was twenty-one years to sixty years. Mean age of subjects was 41.10 ± 11.27. Normal distribution curve is shown in Figure 1.

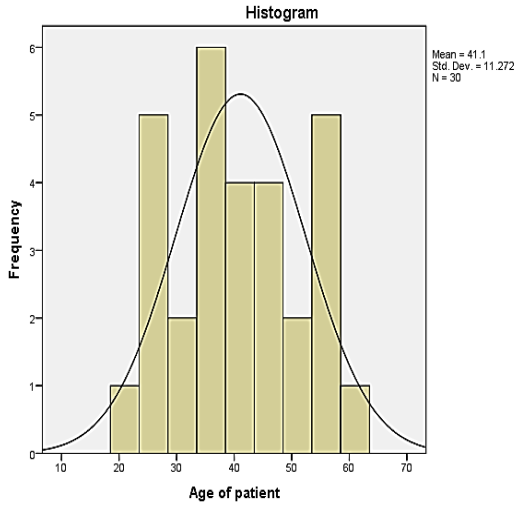

Fig.1. Graphical representation of ages of discectomy patients

Frequency and percentages against gender, marital status and occupation were given in Table 1.

Table 1. Frequency and percentages according to their gender marital status and occupation

	Frequency (n)	Percentage (%)
Gender:		
Male	15	50
Female	15	50
Marital status:		
Married	23	76.7
Un-married	07	23.3
Occupation:		
Office work	11	36.7
Labor work	11	36.7
House work	8	26.6

Range of oswestry disability scale was 14 -74%. Mean ± SD. Oswestry disability scale of immediate mobilization group was 28.40 ± 5.99, while mean ± SD of oswestry disability scale of standard mobilization group was 42.80 ± 14.20. The difference was statistically significant; *p*-value was shown in table 2. Mean difference in between both groups lie in between the lower and upper limit of Confidence Interval ($\bar{x}$=14.40, CI: 6.24-22.55)

Discussion

The research was concluded that there are functionally better effects of immediate independent mobilization as compare to the standard independent mobilization. The difference was shown statistically significant between the two groups of early and standard mobilization. In United Kingdom, same results were seen. According to that study, immediate commencement of exercises following first time single-level lumbar micro discectomy enabled patients to become independently mobile more rapidly as compared to standard independent mobilization Our results also expressed that immediate mobilization of micro discectomy patients may enable to be discharged earlier (Newsome et al., 2009: 273-279).

Benefits of post-operative rehabilitation intervention in most programs, however this study reflects that exercises and mobilization can commence earlier than previously shown studies. Previous studies start exercises and mobilization on first post-operative day, with most studies commencing exercises days or month after surgery, with less studies suggesting commencement of exercises and mobilization on the day of surgery.

The immediate intervention group became functionally mobile significantly more rapidly than the standard intervention group. Furthermore, this group returned to work more rapidly.

Conclusion

This study inspected the effects of doing exercises and mobilization on the day of surgery, speeding up the functional independency and fitness for discharge. Despite the small sample size, the patients in immediate intervention group become functionally independent more rapidly than patient in the standard group. Patients undergoing single level micro discectomy should start exercises and mobilization after 6 hours of surgery and become independent mobile on the same day.

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