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Physical Therapy For Neck Of Femur Fracture And Its Functional Outcome Candidate

Author

P.Karthikeyan

(MPT)

Guide

Dr V.K. Mohandoss kurup.

Professor, Division of PM&R.

Email: karthikeyanphd@rediffmail.com

Abstract

Background; Acute care rehabilitation and intensive physical therapy after hemiarthroplasty in neck of femur fracture was need to be studied in Asian population

Objective; to compare the effectiveness of intensive physical therapy and regular physical therapy in acute post operative rehabilitation of NOF# treated with hemiarthroplasty.

Methodology; Fresh cases of neck of femur fracture admitted between March 2009to march2012 were included in this study.50 patients were recruited from the wards of RMMC&H based on the selection criteria.

Patients were randomly divided in to experimental and control groups. Intensive physical therapy group [experimental] treated twice a day in each 30 minutes of physical therapy. Control group treated with regular physical therapy 30minutes per day. Harris hip score, KATZ ADL, gait speed and TUG Test are used as outcome measures patients in both groups were assessed 3rd post

operative day, at discharge and at four months. On analysis p-value for HHS was 0.238, tug- test was 0.824 and gait speed was 0.672.In conclusion physical therapy for both experimental and control groups were significantly effective in all scores but comparatively there is no significant difference on both groups

Introduction

The incidence of hip fractures reached its alarming rates. It is estimated that at 2050 approximately 6.5million hip fractures [50%neck of femur ,50%intertchantric]will occur all over the world. As science advances elderly population and their life span is also increasing, and human effort is reduced in full filling the basic needs. Poor health in elderly patient is due to their aging process, poor dietary habits, poverty and ignorance. And this fracture is common in women than men because of the wider pelvis with a tendency to coxa vara and develop osteoporosis earlier.[1] Because non union & AVN develop most frequently after internal fixation for NOF# many surgeons recommend primary prosthetic replacement. It allows early weight bearing reduces the risk factors for mortality. Lauridson in 2002 stated that in practice standard physiotherapy is not a fixed one. the main issue is physiotherapy comprising 30 minutes was beyond the capacity of some patients. Intensive physical therapy would be expected to accelerate the rehabilitation. Research with in recent years supports this assumption. So this study hypothesized that intensive physical therapy leads to better recovery than regular physiotherapy.

Objective

To compare the effective ness of post operative intensive physical therapy and regular physical therapy for patients with fracture neck of femur

Methodology

Approval for the study was obtained from the hospital ethical committee. Patients with fresh

neck of femur fracture admitted in the RMMC&H between 1st march 2010 to 30th march2012 for surgical [hemiarthroplasty] management included in this study. Orthopedic surgeon specifies the diagnosis. Patients admitted for elective hemiarthroplasty were eligible for inclusion. Patients aged above 50 years were included. Patients who gave informed consent were eligible for the study. Patients were recruited from the wards of RMMC&H on the second day after hemiarthroplasty Patients were excluded if they had Pathological fractures ,Multiple trauma, Previous surgery on the fractured hip, If they require intensive care,If they had systolic blood pressure more than 200,If they had diastolic blood pressure more than 100.

A total of 58 cases included in this study. Age ranging from50-82 years.in 50 patients 28were male and22 were female.

Gardens classification was used in evaluation of fractures.

Out of 50 patients

28patients-garden classification 3

12 patients-garden classification 2

10 patients-garden classification 4

15patients had comorbidities including hypertension and NIDDM&COPD. 12 patients had osteoporosis and five of them had balance impairment.

Out of 50 patients treated with hemiarthroplasty cemented Thompson prosthesis was used in 30and in 20 patients Austin moore prosthesis was used.all these details were collected from case record .

.Before being included to the rehabilitation program all patients were evaluated by a staff physiatrist who decides whether they would benefit from intensive rehabilitation and was capable of participation fully in the rehabilitation programme.

Patients were randomly[alternatively] allotted to experimental and control groups .

Experimental Group –[1] receives intensive physical therapy

Control Group –[2]receives regular physical therapy

Once they were enrolled in the study rehabilitation programme patients in Group -1 were treated with one hour of physical therapy twice a day and seven days in a week. Patients in Group -2 were treated with thirty minutes daily.

After placing the patient in a specific group therapist approaches the patient and explains about the physical therapy .Patient is assessed with Harris hip score Functional Outcome was assessed by using KATZ ADL Scale. Decision regarding mobilizing the patient out of bed and weight bearing will be taken after discussing with the orthopedic surgeon.The short-term goal was to become less dependent in activities of daily living and walking, and the ultimate long-term goal was to achieve independence in activities of daily living and walking without assistive devices.[3]

Intervention protocol

Intensive physiotherapy group of patients received one hour of physical therapy (half an hour in the morning and half an hour in the evening)seven days a week.

Exercises were initially performed in supine position included ankle dorsiflexion and plantar flexion, static quadriceps ,and inner range quadriceps, gluteal contractions, hip and knee flexion, hip abduction. And also includes mobilization exercises, and transfer practice. However in this study bed exercises used as a component of deep vein thrombosis prophylaxis and assisting with mobility. Practice of bed mobility and transfers were a focus until independence was achieved. patients were mobilized progressively mobilized by using appropriate aid and level of assistance ensuring an optimal gait pattern at each stage. This was further enhanced by addition of standing exercises included toe raising, quarter squats, hip flexion abduction and extension on the operated side final preparation for discharge included patient education regarding precautions and the use of stairs.

The acute-care service for an average of 16days. Standard rehabilitation protocol involves 30 minutes of physical therapy seven days a week.

Qualitative protocols for both training are same. But the quantity differs insensitive physiotherapy includes all essential exercises and more repetition, aggressive training according to the

Patient's condition. During acute care 9 patients developed pressure sores and 4 patients had postural hypotension. Decision regarding discharge the patient was made by the physiatrist and were based on the patients achievement of short term goals. At the time of discharge patients were evaluated by using the following -KATZ ADL index, Harris hip score, TUG Test, Gait speed.

Average length of stay was 21.56 with the standard deviation of 5.399 days. Patients were instructed to

continue the physical therapy exercises as home programme. They continuously used walker in their home. hip FFD and difficulty in prone lying was seen in 6 patients. All patients were contacted by the physiotherapist to obtain follow up information at four months post operatively. At the end of four months all the above mentioned outcome measures are repeated and the results are compared.

Results

Outcome measures	Experimental group	Controle group	ANOVA	with	Repeated measures
Statistical measures	mean	S.D	mean	S.D	P-value
HHS1	40.68	17.04	36	12.426	0.238
HHS2	65.1	10.05	60.2	9.005	<0.001
HHS3	87	9.84	88.4	5.62	0.192
KADL1	3.44	1.083	3.48	0.918	
KADL2	5.56	1.083	5.12	0.971	
KADL3	7	0	7	0	
TUG-T1	104.64	43.474	100.84	36.108	0.824
TUG-T2	36.32	24.18	33.44	22.164	<0.001
G.SPEED1	0.224	0.116	0.219	0.15	0.672
G.SPEED2	0.348	0.104	0.33	0.088	<0.001

The non significant p-value has been obtained on the outcome measures, HHS, KATZ ADL, Gait speed and TUG-Test for the two groups. Further with in groups comparison infers two groups are

effective in improving HHS, KATZ-ADL, and gait speed and in reducing the time in TUG-Test

Discussion

KALUS HAUER ETAL, IN2002 Assessed the feasibility, safety and efficacy of intensive, progress physical training in rehabilitation after

hip surgery baseline measures were performed before randomization after surgery ,at the end of the training period[t1] .and after additional 3 months follow up[t3]

TUG TEST	TUG TEST 1	TUG TEST 2	TUG TEST 3
Intervention	27.07±12.3	18.8±4.5	26.12
control	28.3±9.3	34.3±14.4	26.9±9.8

Walking velocity	1	2	3
Intervention	0.54±2.1	0.73±0.21	0.72±0.28
control	0.44±0.20	0.49±0.5	0.49±0.15

In our study mean value of tug test in intensive physical therapy group at discharge was 104.64 with the standard deviation of 43.474 at four months it is 36.32with the standard deviation of 24.18.Where as in the control group tug test at discharge was 100.84 with the standard deviation of 36.108.at four months it was33.44 with the standard deviation of 22.164.These findings are not similar with the kalus Hauer et al in2002.[4]

Effect of multiple physiotherapy sessions on functional out come in the initial post operative period after primary THR was studied by kelli et al in 2009.57 patients with primary THR were randomly assigned to twice daily [no;30] and once daily[no;27].In that patients who received twice daily physiotherapy attained earlier achievement of functional mile stones than patients who received once daily physiotherapy . There was no significance difference between the groups in lova level of assistance score [5]

Outcome of traumatic intra capsular neck of femur fracture in patients aged 60years treated by hemiarthroplasty was assessed using Zukerman functional outcome score. 39.4%-good[80-100],39.4% - fair[60-80], and 33.3%[below 60]

poor at nine months. a RCT by husskae et al found that intensive rehabilitation at three months is effective but not 1 year compared with standard care[6]

Koval et al in1998 described the outcome of prolonged intensive rehabilitation in 104 patients in comparison with non randomized as well as historical control group .Intervention consisted of two hours of physical therapy daily versus 30minutes daily. Prolonged hospitalization was demonstrated in the intervention group31.4days versus 20.0days in the control group, and there is no change in functional capacity[7]

Intensive physical therapy after hip fracture was evaluated by Laauridson UB et al in 2002 .In their results, 24 patients with draw and 13 patients1 with draw from the control group. Due to considerable dropout rate in the intervention group intensive training does not seem to be effective way to reduce the duration of rehabilitation [3]

M.N Nikitovic in 2013 did a rapid review of literatures to assess if increasing the intensity of same types of rehabilitation after hip fracture improves patient functional recovery. He

concluded that no systemic reviews, meta-analysis, health technology assessments, or randomized control trials were identified that directly evaluated the evidence for increased intensity of rehabilitation on activities of daily living after hip fracture.[8]

Comparison of various studies are often difficult as their study design and inclusion criteria differs. A quantitative evaluation of physical rehabilitation programs requires a distinction between cumulative amount and intensity of the physical therapy variations among the qualitative contents are also of importance.

As we do not have studies analyzing effect of intensive physical therapy in acute care after hemiarthroplasty, we compared our results with studies done on hip fractures and THR.

Conclusion

In conclusion, both intensive physical therapy and conventional physical therapy has been effective measured by the HHS, KATZ –ADL, TUG-TEST ,gait speed and there is no significance difference between two groups.

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