



Fracture Neck of Femur Treated with Hemiarthroplasty and its Functional Out Come.

Author

P.Karthikeyan

MPT

Guide: Dr V.K. Mohandoss kurup . Professor. Division of PM&R

Analysis: Dr.A.Jhon willium Felix professor Bio statistics, community medicine.

Abstract

Objective; To document the functional outcome of fracture neck of femur treated with hemiarthroplasty using HHS,KATZ-ADL,TUG-Test and Gait speed. Methodology; Patients with neck of femur fracture admitted in the RMMC&H between 2010 to 2012 for surgical management [hemiarthroplasty] were included in this study. Patient who had elective hemiarthroplasty and admitted for post operative management were included in this study. Based on the selection criteria 58 Patients were recruited from the wards of orthopaedics.50 Patients completed the evaluation [HHS, KATZ-ADL, TUG-Test and Gait speed]. Results; while comparing the findings on third post operative day, at the time of discharge and at four months statistical analysis showed that there was significant improvement in all 4 outcome measures. Conclusion; Based on the results we concluded that hemiarthroplasty is a effective procedure in improving functional outcome in treating for the fracture neck of femur.

INTRODUCTION

As Human Is a quadripedal animal became as a bipedal animal during evolution hip takes more stress & strain which was previously shared by the shoulders.Hip fracture is an established health problem in the West and is increasingly

recognized as a growing problem in Asia as per the Asian Audit Report, 2009.¹ With rising life expectancy throughout the globe, the number of elderly individuals is increasing in every geographical region, and it is estimated that the incidence of hip fracture will rise from 1.66

million in 1990 to 6.26 million by 2050. Hip fracture rates are available from many countries across Asia, including from Singapore, Taiwan, Japan, Malaysia, China, and the Middle East. Unfortunately, only projected figures are available from India, which is second most populous country in the world.² The residual lifetime risk of hip fracture at 50 years of age was estimated to be 5.6% for men and 20% for women.¹ Although we have remarkable number of cases there is a need for a functional outcome studies for expected results with recent tools. With the above mentioned tools we can also predict the risk of fall.

Methodology;

Approval for the study was obtained from the hospital ethical committee. Subjects inclusion criteria

Patients with neck of femur fracture admitted in the RMMC&H between 2010 to 2012 for surgical management [hemiarthroplasty] were included in this study. Patients were recruited from the wards of RMMC&H on the third post operative day of their admission. Age group between 50 & above were included. Patients who are conscious, oriented and co operative were included in this study. Patient who had elective hemiarthroplasty and admitted for post operative management will be included in this study.

Patients were excluded if they had

- Pathological fractures
- Multiple trauma
- Previous surgery on the fractured hip
- If they require intensive care

{HHS=Harris hip score, KATZ-ADL=KATZ activities of daily living, TUG-Test=time up and go test}

There are several classifications of femoral neck fractures, the Pauwels, AO and Garden classifications, and the most widely used system is the Garden classification (Garden 1964, Müller et al. 1990, Bartonicek 2001). Orthopedic surgeon specifies the diagnosis. Patient who had surgical treatment and admitted for post operative management were included in this study. Patients were recruited from the wards of RMMC&H on the second day after hemiarthroplasty. 58 patients recruited & 50 patients completed 3rd post operative day assessment, at the time of discharge and 4 months. 8 patients were drawn from the study. Each patient was assessed with Harris hip score. Although Zukerman score is specifically created for hemiarthroplasty, HHS is the most reliable and valid scoring system. And functional Outcome was assessed by using KATZ ADL Scale. Then based on the physician's choice, patients were randomly allocated into intensive physiotherapy or half an hour physiotherapy was given up to discharge. After that home programme including physiotherapy was given. Subjective data were obtained from the patient's case record including co morbidities and ASA score given by the anesthetist. Decision regarding mobilizing the patient out of bed and weight bearing will be taken after discussing with the orthopedic surgeon. During acute care period the patients were seen by physical therapist thirty minutes daily. Patients receive early post operative

therapy equally in the first 3 post operative periods patients permitted for early weight bearing patients starts as the surgeon permits. Physical therapy includes gait training range of motion exercises, strengthening exercises, stair climbing, transfers and instruction in activities of daily living. At the time of discharge patients will be evaluated for ADL & achievement of functional mile stones

The short term goal was become less independent in activities of daily living, and the long term goal was to become independent in ADL without assistive devices. Decision regarding discharge the patient was made by the orthopedic surgeon and was based on the patient's achievement of short term goals. At the time of discharge patients will be evaluated for ADL & achievement of functional mile stones.²

At the time of discharge patients are evaluated for gait speed, TUG – test along with Harris hip score and KATZ ADL index .Length of stay and complications were noted at the time of discharge .patients were instructed to continue the physical therapy exercises as home program. All patients were contacted by the physiotherapist to obtain follow up information at four months post operatively. patients were contacted in the ortho

outpatient service at four months. Or if they had complications require re hospitalization. At the end of four months all the above mentioned outcome measures are repeated and the results were compared.

RESULTS

58 patients recruited & 50 patients completed 3rd post operative day assessment, at the time of discharge and 4 months. 8 patients with drawn from the study. Harris hip score was used as a outcome measure although it was prescribed for evaluation of total hip replacement.

Multivariate repeated measures analysis is used for comparing evaluation at 3rd post operative day, at the time of discharge and at four months. The significant p-value showed that HHS was improved well. Mean difference between three levels was around 22 between 1&2, 2&3 and it was 46.32 between first and final assessment

PAIRED T- TEST

Paired t- .test was used for the analysis of KATZ-ADL, TUG-test, Gait speed. Evaluation at four months in KATZ-ADL was 7 for all patients which means independent. So we used paired t-test for evaluating the significance.

serialno	HHS	Mean	Standard deviation	t-value	p-value
1--- 1.1	HHS1	40.68	17.024	112.55	<0.000
1----1.2	HHS2	65.00	10.054		
1----1.3	HHS3	87.00	9.840		

Multivariate repeated measures analysis

Serial no	Mean difference Between levels		Mean difference	P-value
1--- 1.1	1	2	-24.320	<0.000
1----1.2	1	3	-46.320	
1----1.3	2	3	-22.00	

PAIRED T- TEST

Serial no		Evaluation tools	mean	Standard deviation	T-value	P-value
2-	2.1	KADL1	3.44	1.083	-8.354	<0.000
2-	2.2	KADL2	5.560	1.083		
2-	2.3	KADL3	7.00	0.00		
3-	3.1	TUG-T1	104.64	43.474	9.060	<0.000
3-	3.2	TUG-T2	36.32	24.186		
4-	4.1	GAIT.S.-1	0.224	0.116	-4.762	<0.000
4-	4.2	GAIT.S.2	0.348	0.104		

Serial no	Mean difference Between levels		Mean difference	P-value
	2.1	2.2		
2	2.1	2.2	-24.320	<0.000
3	3.1	3.2	-46.320	
4	4.1	4.2	-22.00	

(3)

The significant p-value has been obtained on the outcome measures, Harris hip score, KATZ ADL, Gait speed and TUG-Test for the three or two evaluations.

DISCUSSION

A. Yalçın TABAKI, Deniz ÇANKAYA³ evaluated weather Cement less Hemiarthroplasty is a Reliable Treatment Choice for Femoral Neck Fractures in the Elderly. In their observations Functional outcome and mortality rates of the patients are equal in Harris hip score{82.6 (69-96) & 84.1 (68-95) (at 12 months)} and mortality rate was double in cemented group compared with cementless group [14/32and7/35]

William Macaulay, MD(2008)⁴ Compared Total Hip Arthroplasty with Hemiarthroplasty in Treatment of Displaced Femoral Neck Fracture.Functional outcomes in patients* after hip fracture according to allocated treatment. In their observations the Hemiarthroplasty HHS ranging from67.5 and 72.6 between 4months and 24 months.

Frede Frihagen⁵ Conducted a randomised controlled trial to compare Hemiarthroplasty or internal fixation for intracapsular displaced femoral neck fractures.in that study at one year mean HHS with S.D in Hemiarthroplasty was 77.1(12.0)

Two years outcome of cemented Austin Moore hemiarthroplasty for fracture neck femur was evaluated by Dr. Anshu Shekhar⁷ in 2013

HHS

Grade	No. of patients in %						
	Dr. Anshu Shekhar	Jensen	Moore	Dhar	Noor	Rahul M. Somashekar ⁸	
Excellent	43.5%	65%	31.6%	80.2%	38%	18.0%	6(33.3)
Good	38.4%	21.6%	43.3%		21%	50.0%	2(11.1)
Fair	11.3%	43.3%	16.6%	19.8%	24%	24.0%	5(27.8)
Poor	6.8%	5%	8.3%	17%	35%	8.0%	1(5.6)

Unipolar hemiarthroplasty versus bipolar hemiarthroplasty in the most elderly patients with displaced femoral neck fractures was studied by Carl Johan in 2010⁹

Measurement Follow-up at 4 months .HHS showed 73.8 Mean & (44–98)S.D in that Pain 39.5 & (20–44), Function 25.6 (5–45), Absence of deformity 4.0 & (4), and Range of motion was 4.7 & (3–5)

George Mouzopoulos & Michalis Stamatakos (2008)¹¹ compared the four-year functional result

Harris hip score	CEMENTED	UNCEMENTED	Mean difference	p Value
Baseline HHS	82.4 (16.3) (n = 112)	84.6 (15.1) (n = 108)	2.26_ (-1.9–6.4)	0.29
At 3 months	70.9 (18.5) (n = 99)	72.1 (19.7) (n = 90)	1.18_ (-4.3–6.7)	0.67
At 12 months	78.9 (15.7) (n = 90)	79.8 (17.6) (n = 77)	0.89_ (-4.2–6.0)	0.73

In my observations HHS elided the similar results with above mentioned data's. to what extent the patients were restored back to their functioning measured by Lars-Eric Olsson using activities of daily living (ADL) (Katz et al. 1963). In KATZ – ADL the following scores were obtained - A (n = 34), B (n = 8), C (n = 6), D (n = 2) & F (n = 6).

Laflamme GY in 2012 concluded after a observational study that

-The Timed Up and Go test was an early clinical indicator of future physical function in patients with a hip fracture treated with hemiarthroplasty. Innovative clinical approaches to anticipate future function will contribute to increasing the efficiency of overall management of this growing set of patients.

after a displaced subcapital hip fracture treated with three different surgical options. They did Comparison among three groups THR, & Hemiarthroplasty & Internal Fixation. in that mean HHS was 58.3±6.2 At discharge & in 1 year 81±9.6 at one and four years after discharge

Functional outcomes in patients according to allocated cemented and un cemented hemiarthroplasty treatment was documented by Nelson F. Soo Hoo, MD¹²,

Outcome measure

Dawn E. Alley, PhD in 2011 estimated meaningful improvements in gait speed observed during recovery from hip fracture and to evaluate the sensitivity and specificity of gait speed changes in detecting change in self-reported mobility. in their result mean gait speed at three months was 0.36±0.17. Analysis suggest that greater improvements in gait speed may be required for substantial perceived mobility improvement in hip fracture patients.

From my observations Fracture neck of femur treated with Hemiarthroplasty improved in gait speed and time up and go test. these showed that patient has significant improvement in ADL, mobility & reduced risk of fall.

CONCLUSION

Based on the results we concluded that hemiarthroplasty is a effective procedure in improving functional outcome in treating for the fracture neck of femur. Functional outcomes including Harris hip score, KATZ-ADL, TUG-test and Gait speed. Mean HHS was poor at the time of third post operative day and at the time of discharge/.And it was good at four months. Evaluation at four months in KATZ-ADL was 7 for all patients which means independent. KATZ ADL at 3rd post operative day showed that patients were dependent in bathing self care and toileting and transfers. KATZ ADL at the time of discharge showed that patients were dependent in bathing and self care.

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