FUNCTIONAL EVALUATION OF HEMIARTHROPLASTY IN NEGLECTED FRACTURE NECK OF FEMUR IN YOUNG ADULTS

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ABSTRACT

INTRODUCTION
Femoral neck fractures occur most commonly in elderly females. The incidence of fracture neck femur occurs in two different patient populations. Very small groups (3% to 5%) are young patients subjected to high energy trauma. The reminder occurs in elderly population and approximately 90% of these injuries are the result of simple fall from standing position.

OBJECTIVE
To assess the functional outcome of uncemented hemiarthroplasty (AMP and Bipolar) in patients under 55 years of age with intracapsular neck of femur fracture.

PATIENTS AND METHODS
16 patients under 55 years of age with the mean age of 35.5 years (range 16-55 years) with intracapsular fracture neck of femur operated between September 2010- September 2012 were undertaken for the study. The functional follow-up was done for a minimum period of 6 months. The results were assessed using Harris hip evaluation.

RESULTS
Out of 16 patients, 10 were female and 6 were male with an average age of 35.5 years. After one year of follow up 5 patients had Excellent, 8 had a good result, 1 had a fair result and 2 had a poor result. In our study all our patient had satisfactory functional result.

CONCLUSION
Patients who lead mainly a sedentary life with limited daily activities are suitable candidates for hemiarthroplasty.

KEYWORDS
HHS-HARRIS HIP SCORE.

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INTRODUCTION: Fracture neck of femur has been recognized since the time of Hippocrates and commonly affects the frail and elderly population with devastating consequences for the individuals and places high demands over the health care system and society in general.

The life time risk of sustaining a hip fracture is 9 % for a female of the age of 50, but this rises to 12% by the age of 70 and 18% by the age of 90 years. The figures for the men are 2%, 4% and 8% respectively.

The treatment goals for femoral neck fractures are early return to a satisfactory functional status along with the minimization of mortality, mortality and the need of re operation.

The surgical options for the femoral neck fractures include: internal fixation with cancellous screws), hemiarthroplasty and total hip replacement. Internal fixation has a high rate of non-union and is with inferior results compared to hemiarthroplasty.

Earlier hemireplacement involves using vitallium or stainless steel was popular, practiced By Austin Moore's produced fairly good results. But has limitations in loosening and reactions at acetabulum pre se. James, Ennis, Bateman and Gilberty in 1974 Introduced bipolar arthroplasty which is a self-articulating prosthesis.

The study was to evaluate the functional outcome of hemiarthroplasty in young adults with old fracture neck of femur.

MATERIALS AND METHODS: 16 Patients under 50 years of age with old fracture neck of femur were operated with Bipolar hemiarthroplasty from September 2010-September

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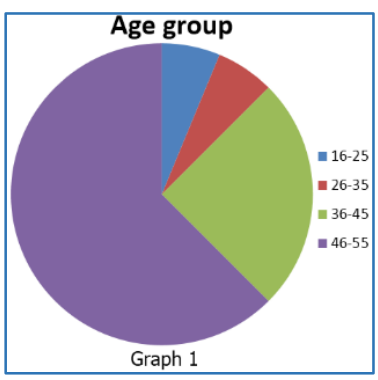
2012 with a minimum follow Up of 6 months. All patients were operated through Modified Gibson's approach.

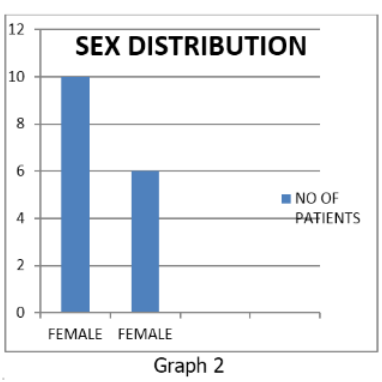
Limb was immobilized in Thomas splint, and antibiotic inj. cefaperazone+sulbactum 1gm twice daily was continued for 5 days following the day of surgery. Patients were started with static quadriceps from the 1st post-operative day, knee exercises from 3rd post op day and hip exercises from 5th under supervision and guidance of physiotherapist and guarded weight bearing from the 5th post-operative day. Full weight bearing from 10 days following the day of surgery. The outcome of the patients was assessed and tabulated and the mean of the harris hip score will depict the results.

RESULTS: In the present study, 18 cases of fracture neck femur treated with hemiarthroplasty between September 2010 to September 2012. All the prosthesis was uncemented.

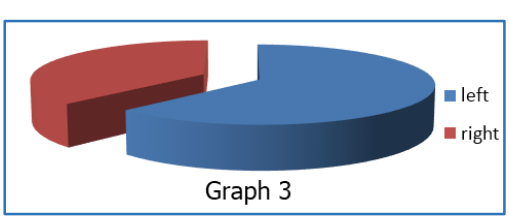
Of these, two cases we lost in the follow up, 16 cases were available for follow up. The follow up period ranged from 1 month to 12 months.



Graph 1



Graph 2



Graph 3

Excellent	90-100	5	31.25
Good	80-89	8	50
Fair	70-79	1	6.25
Poor	<70	2	12.50
Total		**16**	**100**

Table 1: Harris Hip score

In our study of 16 patients with old fracture neck of femur, the average age of Age of the patients was 35.5 years and the male to female ratio was 1.6:1, with right to left ratio of 1.6:1.

81.25% of the patients had an excellent to good Harris Hip score while 6.25% of the patient had a fair result and 12.50% had a poor result. Range of motion is determined by using modified Harris hip scoring system in which 10(62.5%) patients had a score of 4 indicating good range of motion, while 6 (37.5%) had a score of 3. There was no fixed deformities in our study, 3 patients had lengthening of 1.5 cms and 2 patients had shortening of 1cm.

All patients were discharged after rehabilitated walking with walker support, Partial to full weight bearing was permitted only at 6 weeks. All of these patients achieved preinjury ambulatory status at 3 months. We had no instances of infection or dislocation in the immediate or late postoperative period.

We had a minimum follow up of 6 months in all the 16 patients. All were ambulatory and had painless hips. At the follow up 5 patients had excellent results, 8 had good, 1 had fair and 2 had poor result.

There was no incidence of stem subsidence, acetabular erosion, acetabular protrusion or heterotopic ossification in any of the patients during the follow-up period.

Case Illustrations:

Case 1:


2 months old fracture neck femur

Austin Moore prosthesis

Clinical Photos:

Case 2: 12 Months Following Austin Moore Hemiarthroplasty of left side 3 months old fracture neck of Femur.

Good range of flexion with mild pain

Good range of extension

Good range of external rotation

Walking stairs without banister

Good range of abduction in flexion

Good range of abduction

Case 3: 6 months following Thompson prosthesis of left side of 9 months old fracture neck of femur.

Healed scar mark

Good range of flexion without pain

DISCUSSION: We under took the present study of 16 cases of old intracapsular fracture neck of femur treated with hemiarthroplasty (Austin/Thompson) in patients aged between 16-55 years in both the sex. The observations were made and results were analyzed. The study was also compared with the studies of other authors. Various aspects of the results have been observed and discussed in detail keeping in view the living condition of an average Indian.

AGE INCIDENCE: In the present study, the average age 35.5 for intracapsular fracture neck of femur which was more than 3 weeks old were ranging from 16-55 years.

The average age incidences reported by other series are as follows:

Table showing mean age of patients in Indian Literature who underwent Prosthetic replacement.

Series	Year	Average age (yr)
Bahador [9]	1998	45
Gurvinder singh[10]	2005	33
Basant[11]	2009	32.9
Present study	2012	35.5
Table 2		

Table showing mean age of patients in western Literature who underwent Prosthetic replacement.

Series	Year	Mean Age
Moore[21]	1957	60-70
Stinchfield and Cooperman[22]	1957	72
Sarmiento	1963	77
Anderson & Neilson[23]	1972	70
Wai-Hee Lo et al[24]	1994	72.5
John E. Kenzora et al[25]	1998	76
Table 3		

In the present study, 62 % of patients are in the age group between 46-55 years, which indicates that our sample is less in comparison to western studies. This indicates that, the average sample correlates with Indian studies.

SEX: In the present study, 10 patients (62.5%) were females and 6 patients were males. The Female preponderance, he sex incidence reported in other series are as follows:

Series	Year	Female	Male
A K Singh[12]	1972	12	18
Richard[13]	1984	102	18
C Rogmark[14]	1997	324	85
Cecilia[15]	1998	46	17
A Upadhyay[7]	2000	16	76
Essoh[17]	2002	70	14
Gurvinder singh[18]	2005	6	16
Dutta[19]	2009	21	10
Narendra[4]	2009	27	21
Present study		10	6
Table 4			

The sex incidence in Present series is similar to the reported series, we feel probably it in the hormonal imbalance post-menopausal and senile osteoporosis in elderly females.

Side of Fracture: The left hip was fractured in 10 patients of present series. This has been a subject of limited studies of fracture in left hip of their patients.

Table Reported incidence of side of fracture following Hemiarthroplasty.

Investigator	Year	Left	Right
Boyd and Salvatore[28]	1964	30	27
D' Acry and Devas[27]	1976	47	40
Basant[11]	2009	22	26
Narender magu[4]	2009	27	21
Table 5			

It is observed that the left side s more commonly involved, which is correlating with the literature, but side predominance is yet to be evaluated.

Various criteria were used to assess the functional results. Following hemiarthroplasty. How best the patient could be returned to the prefracture state has been the main criteria. The final results at 6 months after hemiarthroplasty in present series was analyzed by modified Harris Hip scoring system. The results are compared with the available western and Indian series. The details are in the below mentioned table.

Table Percentage of functional results following hemiarthroplasty for the fracture neck of femur.

Investigator	No. of patients	Excellent (%)	Good (%)	Fair (%)	Poor (%)
R Kumar[01] (1979)	25	28	36	20	16
Mukhejee and puri[28] (1986)	55	29	49	18	4
Bavadekar and Manelkar[8] (1987)	328	60		30	10
BG Dubani[6] (2001)	123	38.2	34.1	17.8	9
Essoh[31] (2002)					
PS Maini[5] (2003)	271	54.2	21	10.7	3.7
Present series	16	31.25	50	6.25	12.5
Table 6					

The difference between excellent and good results is minimal and they can be grouped together as satisfactory (good) results. In present series 81.25% of the hip hemiarthroplasty cases were classified as having a good to excellent results or satisfactory results. The other literature has reported: -R Kumar[1] (1979) 68%, Mukherjee and puri[28] (1987) 78%, BG Dubani[30] (2001) 72.3%. Saxena and Saraf[2] 90.9%. our results are comparable with other series.

R kumar[1] (1979) observed that the poor results (16%) were due to pre-existing medical conditions and pain following arthroplasty. Saraf and Saxena[2] (1978), Bavadekar and manelkaris[29] (1987) and Arwade[3] (1987) attributed the poor results to complications during or following surgery. We have reported 12.5% as poor in present series and observed that the poor results are found in most of the cases who had moderate to marked pain following hemiarthroplasty.

CONCLUSION: In our study all the patients had satisfactory functional outcome and all patients resumed to their normal daily activity. There were 31.84% excellent results and 50% good results. These 81.25% are comparable to the other series. The poor results in present series were due to pain in the hip or thigh after hemiarthroplasty. The success of the hemiarthroplasty in old fracture neck of femur depends on pre-operative planning an proper attention to surgical details to achieve the optimum biomechanical conditions. Patients who lead mainly a sedentary life with limited daily activities are suitable candidates for hemiarthroplasty. With good preoperative planning and preparation, using neat meticulous technical sound procedures, early good results can be obtained.

Hence in a country like India and in rural areas it has been recognized that after injury, patients should be mobilized and weight bearing commenced as soon as the wound is healed to avoid complications of prolonged recumbency and immobility and to return to activity, to restore the patients to the fullest physical, mental and social capabilities. This could be achieved by hemi replacement arthroplasty and should be considered as one of the primary treatments for the old fracture neck of femur, where other procedure is also indicated.

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