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A clinical study on intracapsular fracture neck of femur in elderly treated by hemiarthroplasty

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Abstract
Background: Hip fractures are devastating injuries that commonly affect the elderly and have a tremendous impact on the health care system and society in general. This further handicaps the treatment of these fractures and the healing process is always in doubt. A successful operation at the hip joint should provide painless, stable hip with wide range of movements. Earlier hemireplacement arthroplasty is the treatment of choice for displaced femoral neck fractures in the elderly.
Materials and Methods: A total of 50 cases of intracapsular fracture neck of femur in elderly patients above the age of 50 years irrespective of sex treated by hemiarthroplasty using unipolar (Austin Moore's / Thompson's) or bipolar endoprosthesis, in the Department of Orthopaedics at Father Muller Medical College and Hospital, Mangalore between August 2015 to January 2017, were included in the study.
Results: In our study most of the patients were in the age group of 50 to 70 years with mean average age of 65.33 years for males and 64.73 years for females. Majority of the fractures were subcapital radiologically. Sixty-three percent of the patients had comminution of the posterior cortex of the neck. We used Moore's posterior approach for all the patients and appropriate sized prosthesis were selected depending on the size of the femoral head. Patients were ambulated early. Most of the patients were discharged within two weeks of surgery. Outcomes at 6 weeks, 3 months and 6 months were analysed by modified Harris hip scoring system6 and by radiographs taken during follow up.
Conclusion: Hemiarthroplasty by using either unipolar or bipolar prosthesis is a good option in elderly patients with displaced fracture neck of femur. The operative procedure is simple, mortality and morbidity associated with it is less. The complications are less disabling, weight bearing is early, early functional results are satisfactory and second operation is less frequently required.

Keywords: Fractures, hemiarthroplasty, elderly, outcome

Introduction
Hip fractures are devastating injuries that commonly affect the elderly and have a tremendous impact on the health care system and society in general. The blood supply to the neck and head of the femur is extensive, intricate and complicated [1]. This further handicaps the treatment of these fractures and the healing process is always in doubt. A successful operation at the hip joint should provide painless, stable hip with wide range of movements. Earlier hemireplacement arthroplasty by using Austin Moore's produced fairly good results [2, 3]. But it had its limitations in loosening and reactions at acetabulum etc. Many of the shortcomings of this procedure were overcome by bipolar prosthesis, and results are encouraging [4, 5]. This clinical study presents the short term results of prospective randomised trial of hemiarthroplasty for the treatment of displaced femoral neck fractures in the elderly. Outcomes at 6 weeks, 3 months and 6 months were analysed by modified Harris hip scoring system [6] and by radiographs taken during follow up.

Objectives
- To study the age and sex incidence of fracture neck of femur
- To study the quality of life after hemiarthroplasty
- To study the morbidity and mortality rate associated with the procedure
- To study the radiographic changes after hemiarthroplasty.

Methodology

The present study includes 50 cases of intracapsular fracture neck of femur in elderly patients above the age of 50 years irrespective of sex treated by hemiarthroplasty using unipolar (Austin Moore's / Thompson's) or bipolar endoprosthesis, in the Department of Orthopaedics at Father Muller Medical College and Hospital, Mangalore between August 2015 to January 2017.

Exclusion criteria included: 1). Patients with dementia 2). Patients who were nonambulatory 3) Patients with pathologic femoral neck fracture and 4) Patients with additional acute lower extremity fractures in addition to the femoral neck fracture.

They were followed up for 6 months. Two patients died and 3 patients lost for follow up. The functional results after hemiarthroplasty are therefore analysed for the remaining 45 patients.

Preoperative Management

Detailed history on mode of injury and associated medical illness was taken. Buck's traction with appropriate weight was applied, to the fractured lower limb. Oral or parental NSAIDs were given to relieve the pain. Anteroposterior radiographs of the affected hip joint of pelvis with bone hips keeping the fractured limb in 15^0 internal rotation were taken for all patients. Routine blood investigations, were done and necessary and adequate treatment was given for those associated with medical problems before taking them to surgery following written consent. Intravenous antibiotics was given an hour before the surgery and limb prepared from nipple to knee including perineum and back.

Surgical Procedure

All surgeries were performed on an elective basis using standard aseptic precautions under spinal or general anaesthesia with patient in lateral position on the unaffected side. Skin over hip scrubbed with povidone-iodine. The lower extremity from the groin to the toes was drapped in sterile towels. Posterolateral approach (Moore's Approach) was used in our series. In case of cemented procedure, the stem was cemented in place using standard cementing techniques.

Postoperative Management

Every half an hour vitals were monitored for the first 24 hours. Intramuscular analgesics were given as per patients compliance, intravenous antibiotics were continued for 5 days. Buck's skin traction was continued for 24 hours. Check radiograph was taken after 48 hours. Patients were made to sit up on the second day, standup with support (walker), on the third day, and were allowed to full weight bear and walk with the help of a walker on the fourth postoperative day. Sitting cross-legged and squatting were not allowed. Suture removal was done on the ninth or eleventh postoperative day. Patients were followed up at an interval of 6 weeks, 3 months, and 6 months and functional outcome was analysed by modified Harris hip scoring system for pain, limp, the use of support, walking distance, ability to climb stairs, ability to put on shoes and socks, sitting on chair, ability to enter public transportation, deformities, leg length discrepancy and movements.

Observations and Results

Age and Sex Incidence

In our study the maximum age was 90 years in case of males and 82 years in case of females. Most of the patients were in the age group of 50 - 70 years with the mean age of 65.33 years for males and 64.73years for females. In our series there were 26 female patients and 24 male patients this shows preponderance of females over males.

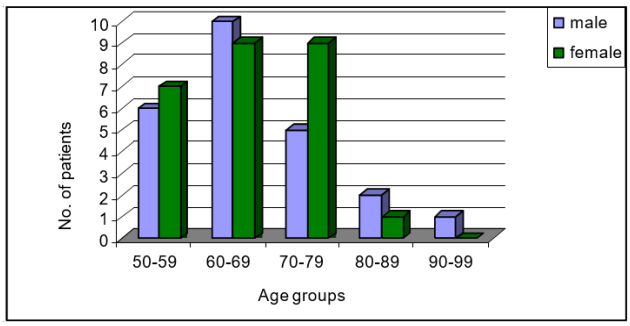

Fig 1: Distribution of sample by age and sex

Assessment of Functional Results

The functional outcome was graded as excellent, good and fair after adding the scores given for each criteria for assessment of hip. In our series total Harris hip score at the end of six months ranged from 24 to 100. Fifteen (33.3%) hemiarthroplasties had hip scores from 91 to 100 (excellent). Fifteen(33.3%) had hip scores 81 to 90 (good). Nine hips(20%) were rated 71 to 80 (satisfactory) and six (13.3%)were rated 24 to 69 (poor). Thus 86.7% of the hips were classified as having a satisfactory to excellent result and 13.3% of the patients had a poor result.

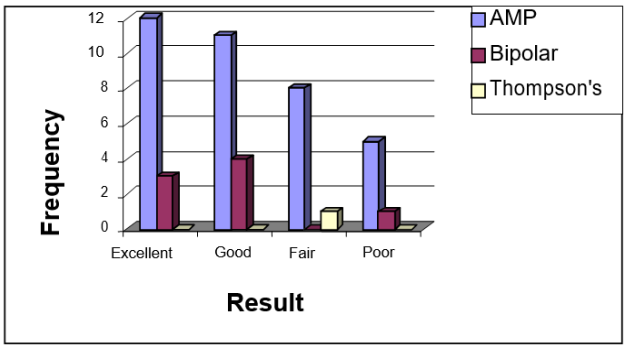

Fig 2: Distribution of cases by functional results at the end of 6 months and prosthesis

Radiographic Results

In our series there were four cases with radiolucent zone more than 2 mm around the stem of the prosthesis. Subsidence of the prosthesis was found in two cases.

Discussion

Most of the patients were in the age group of 50 to 70 years with mean average age of 65.33 years for males and 64.73 years for females. Similar age distribution is reported by other authors. Saxena & Saraf [7] (1978) had age distribution 45-90 years (Mean 66 years); Mukherjee & Puri [8] (1986) 65 years. Arwade [9] (1987) 54-86 years with incidence between 70-80 years (average 72 years). Bavadekar and Manelkar [10] (1987) had mean age group in fresh fractures was 75 years whereas in old cases it was 62 years. In our series there were 26 female patients and 24 male patients this shows preponderance of females over males due to osteoporosis (Choudhari & Mohite [11] 1987)

Majority of the fractures were subcapital radiologically. Sixty-three percent of the patients had comminution of the posterior cortex of the neck.

We used Moore's posterior approach for all the patients and appropriate sized prosthesis were selected depending on the size of the femoral head. Patients were ambulated early. Most of the patients were discharged within two weeks of surgery.

There were 28.9% excellent results and 46.7% good results. These 75.6% satisfactory results are comparable to other series. All of the patients who had received bipolar prosthesis showed satisfactory results. One patient with Thompson prosthesis also had satisfactory result. We did not compare the results of unipolar and bipolar prosthesis as the data was not enough to reach a statistical siginificance.

The poor results in our series were due to moderate to marked pain in the hip or thigh after hemiarthroplasty and was found in patients who had radiological signs of loosening or distal migration of the prosthesis. This tallied with studies by Hinchey and Day [12]. The success of hemiarthroplasty no doubt depends on preoperative planning and proper attention to surgical details to achieve the optimum biomechanical conditions.

Conclusion

Hemiarthroplasty by using either unipolar or bipolar prosthesis is a good option in elderly patients with displaced fracture neck of femur. The operative procedure is simple, mortality and morbidity associated with it is less. The complications are less disabling, weight bearing is early, early functional results are satisfactory and second operation is less frequently required.

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