OBJECTIVE:
Fractures of neck of femur are common fractures in the elderly. To keep up an imperative distance from the poor results of internal fixation and early ambulation of patients, hemiarthroplasty is performed. There is a lacking evidence to bolster the choice between unipolar or bipolar hemiarthroplasty, let alone the modularity of modern components. The objective of this study was to assess and look at the consequences of modern unipolar and the modern bipolar prostheses in terms of clinical outcome.

METHODS:
This was an observational study comprising 39 patients above 60 years of age with fracture of the femoral neck. Patients were distributed randomly to surgical treatment by either unipolar or bipolar hemiarthroplasty, using modular components, in the department, between December 2013 and September 2015. Outcome was assessed and analyzed primarily using Harris hip score (HHS) and radiological parameters with a follow-up of 6 months.

RESULTS:
The mean HHS at 6 months in bipolar and unipolar divisions was 75.82±2.37 and 77.00±2.59 points. Range of movement median was 175° and 166° with bipolar and unipolar groups, respectively. Weight bearing mobilization and daily activities were earlier in the bipolar unit. Complications such as prosthesis dislocation were experienced in the modular bipolar unit compared to high-grade infection with the modular unipolar unit.

CONCLUSION:
Both groups of patients were associated with comparative mean HHSs. There were no additional clinical or functional advantages for either prosthesis. The complications were limited in both groups. Our outcomes are in coincidence with previously done studies using cemented prostheses.

KEYWORDS:
Hemiarthroplasty, Modular, Modern, Uncemented, Femur neck, Orthopedic surgery.
A senior consulting orthopedic surgeon determined patient inclusion in the trial after classification of the fracture. Patients qualified for the study on the premise that the patients be at least 18 years old, without contraindications to total hip replacement, and able to give informed consent. Informed consent was obtained from all patients prior to inclusion in the study. The study was approved by the institutional review board of our hospital.

In our study, posterior-Moore's and modified lateral McFarland Osborne approaches were used in both groups. All patients were evaluated for fitness for surgery preoperatively on the premise of clinical presentation, examinations, and radiographs. The decision to proceed with surgery was based on the patient's ability to tolerate the procedure and the potential for clinical improvement. Patients were mobilized to full weight bearing as tolerated from the time of surgery.

The normal span of hospital stay was slightly more for the unipolar group than for bipolar. Early mobilization brought about better clinical results regarding HHS by a mean difference of 4 points.

The most common complication seen was superficial infection, with rates of 6% in the unipolar group and 4% in the bipolar group. There were no cases of deep infection or dislocation in either group. The mean Harris hip score (HHS) at 6 months postoperatively was 77.00±2.59 in the unipolar group and 75.82±2.37 in the bipolar group. There was no significant difference between the groups (p=0.093).

Data were analyzed utilizing chi-square test. The level of significance was set at p=0.05. We utilized SPSS 19.0 for Windows for all examinations. Age, sex, body mass index, number of abnormal lab findings, ambulatory ability, and number of comorbidities exhibited typical distribution, advocating the utilization of values for the examinations.

RESULTS

A total of 39 cases were included in the study, 19 cases were treated with unipolar and 18 were treated with bipolar prostheses. Normal age frequency in our study was comparable in both the groups (67 and 69). No huge contrasts were found between the two groups in the operative time, blood loss, transfused blood units, in-tra-operative complications, hospital stay, death rate, or post-operative complications. About 2 instances of superficial infection were present, 1 in unipolar and 1 in bipolar. 1 instance of deep infection was found in unipolar. All recuperated after antibiotic treatment as indicated by culture and sensitivity. The most common complication seen was superficial disease. 3 patients died amid the post-operative and follow-up stage for the most part credited to systemic complications. One patient had dislocation in the bipolar group. One patient had foot drop in the unipolar group.

The normal span of hospital stay was slightly more for the unipolar group than for bipolar. Early mobilization brought about better clinical results regarding HHS by a mean difference of 4 points.

The mean HHS at 6 weeks for modular unipolar prosthesis was 63.76±3.33 and for modular bipolar prosthesis, it was 64.18±2.50, which is statistically insignificant (p=0.493). The mean HHS at 6 months for modular unipolar prosthesis was 77.00±2.59 and for modular bipolar prosthesis, it was 75.82±2.37, which is statistically insignificant (p=1.000). About 31 patients (79.48%) had no complications, 2 cases had superficial infection, and 1 case had foot drop in unipolar group. 3 patients died in unipolar group and 1 in the bipolar group. One case had dislocation in bipolar group and one patient had a deep infection in unipolar group, both of these cases were lost to follow-up (Table 1).

There was no difference in survivorship between the groups. No patients had dislocation in the unipolar group and one in the bipolar group, the distinction was statistically insignificant. One patient had dislocation that was not reducible by the method for closed reduction, and open reduction was done. There was one deep infection requiring correction surgery in the form of removal of unipolar prostheses. One patient in unipolar group developed foot drop which later recovered.

Three patients died while in hospital, two in unipolar group, and one in bipolar group, all immediately.

Post-operatively, the quantity of general complications barring mortality did not vary between groups. In the unipolar hemiendoprostheses (HE) bunch, there was one foot drop which recovered. In bipolar and unipolar HE groups, there was one cardiac arrest each post-operatively; both the patients had renal comorbid conditions. There was one patient in the unipolar group who had a perioperative fracture.

There was no distinction in mortality between the 2 groups before 6 months. There were no distinctions in mortality in the unipolar and bipolar patients, though the period was short.

About 20 patients after surgery had an unlimited walking distance, of which 9 were in unipolar group and 11 in the bipolar group. 9 patients could walk up to 6 blocks, of which 6 were in unipolar and 3 were in bipolar groups. 1 patient in the bipolar group could walk 2 blocks and 1 patient in unipolar group could stay inside.

About 19 patients did not require any support, of which 11 were from the unipolar group and 8 were from the bipolar group. 12 patients required canes for support, of which 5 were from the unipolar group and 7 were bipolar group. 1 patient from every group required a walker for support.

About 6 patients had a slight limp, of which 5 were from the unipolar group and 1 was from the bipolar group. The rest of the patients had no limp.

Table 1: HHS at 6 weeks and 6 months

<table>
<thead>
<tr>
<th>Prosthesis</th>
<th>Pre-operative</th>
<th>HHS 1</th>
<th>HHS 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modular unipolar</td>
<td>96.47</td>
<td>63.76</td>
<td>77.00</td>
</tr>
<tr>
<td>Modular bipolar</td>
<td>96.33</td>
<td>64.18</td>
<td>75.82</td>
</tr>
</tbody>
</table>

HHS: Harris hip score
Postoperatively, the quantity of general intricacies barring mortality did not contrast between the groups. On general intricacies, one patient had a chest infection, which later recurred. 3 patients died amid the intrahospital period, two in unipolar group and 1 in bipolar. One patient in each group had heart and renal comorbidities. One patient in unipolar group had psychiatric disease.

Cases were followed up after 6 months, no acetabular erosions were observed. There were no sinking or loosening of the prostheses. One patient from the bipolar group had a dislocation of the prosthesis.

**DISCUSSION**

Debate regarding the best surgical management to treat elderly patients with displaced femoral neck fractures has been continuing for a long time. Among elderly patients with displaced femoral neck fracture, larger part of the published data concludes that endoprosthetic replacement is better than internal fixation with osteosynthesis. In any case, if endoprosthetic replacement is chosen, it is not clear if unipolar, bipolar, or total hip prosthesis ought to be picked. Total hip arthroplasty has the best motion and function, yet experiences higher complication, higher revision rate, and a higher economic burden. Modern unipolar or bipolar hemiarthroplasty is broadly utilized as a standard choice, particularly in elderly dislocated hip fracture patients. In our study, both unipolar and bipolar hemiarthroplasty had equivalent functional results. By and large, the outcomes demonstrate that un cemented hemiarthroplasty performed with unipolar or bipolar heads is safe method of treatment of femoral neck fracture in elderly even in the hands of a less experienced surgeon. The goal of this study was to report short term follow-up results in looking at modern uncemented unipolar and modern uncemented bipolar hemiarthroplasty as treatment of femoral neck fracture in elderly in a randomized setting with short term follow-up. Consideration was taken to minimize the internal bias in the study. The groups that we analyzed were fundamentally the same at baseline, and the outcome was assessed with utilization of the reliable HHS [18]. This is one of only a handful few studies that uses same femoral component in both groups and to our knowledge, this is the first study in regard to using uncemented modern prostheses for hemiarthroplasty considering the good results seen in total hip replacements with modern uncemented prostheses. All the patients followed a similar post-operative rehabilitation protocol that consisted of early mobilization with weight bearing as tolerated.

The present study was a short term follow-up and relied on clinical outcome. The inclusion criteria clearly define the population, which resembles the population where it can be generalized. The designated groups were practically identical at the start of the study. A limitation of the study is that radiological assessment was done at short-term follow-up. Thus, acetabular disintegration could not be appreciated in any of the cases. Bipolar hemiarthroplasty was produced to lessen this danger and the need to change to total hip arthroplasty if demonstrated. In one latest report, just 0.6% of the bipolar prosthesis embedded was changed over to total hip arthroplasty because of groin pain [19]. In Australian registry, unipolar had a higher revision rate over bipolar hemiarthroplasty [16]. In our outcomes, we did not have any distinctions in acetabular dislocation between two groups following 6 months. A few planned, randomized studies have been distributed to look at the practical results of patients getting either unipolar or bipolar hemiarthroplasty. Calder et al. distributed a forthcoming, randomized study comparing new obsolete unipolar Thomson prosthesis and the bipolar Monk prosthesis in patients more than 80 years. In a 2-year follow-up, the main statistically significant difference they found was that patients with unipolar prostheses will probably come back to their preinjury functional state than patients with bipolar prostheses [20]. Davison et al. analyzed about unipolar, bipolar hemiarthroplasty, and internal fixation with compression hip screws in patients somewhere around 65 and 79 years. They found no distinction in practical results in the middle of unipolar and bipolar hemiarthroplasties [2]. Cornell et al. distributed a 48-patient series in which same femoral stem was utilized and just distinction was the prosthesis head outline. Patients with bipolar prostheses improved on walk tests and had better range of movements at 6 months; however, the patient-arranged hip scores did not vary at 6 months between the unipolar and bipolar groups, a finding which coincides with our study [14]. Rata et al. analyzed the adequacy of unipolar versus bipolar hemiarthroplasty in elderly patients with displaced femoral neck fractures in terms of quality of life and functional outcomes. They found no contrast between the groups when assessing the blood loss, length of hospital stay, death rate and number of dislocations, post-operative complications, or ambulatory status at 1 year in their 115 patient arrangements [17]. In a later publication, Hedbeck et al. reported short-term results with an advanced Exeter prosthesis consolidated with unipolar or bipolar heads. They discovered equivalent clinical results following 1 year; however, higher acetabular disintegration was noted in the unipolar group [15]. In the present study, the extent of patients fulfilling the independent mobilization was comparable in unipolar and bipolar groups, separately. Notwithstanding, despite the fact that the outcomes did not reach statistical difference, it is noteworthy that more patients achieved the status of more active living, mobility, and range of movements in the bipolar HE group returning to active exercise. This is in understanding with Hedbeck’s results where there was a pattern toward better health-related quality of life at 4 months in the bipolar hemiarthroplasty gathering despite the fact that they seem to lose the benefit with time [15]. Controlling elderly patients with any strategy or questionnaire is testing. The reason we chose the HHS as the major basis is for the simple reasoning that matters to a patient after sustaining a lower limb trauma is ability to walk again, return to daily activity, being independent, and return to work if feasible for which HHS is compliable.

Posterior approach gives a certain risk for dislocations, which in our series was seen in a single case of bipolar hemiarthroplasty. The dislocation rate in the literature varies in the writing somewhere around 0% and 16% and our outcomes did not vary from the results reported [15,21-25].

In our study, we had a single case of periprosthetic fracture. Austin Moore has been reported to have a periprosthetic risk of 2.3-7%. Polished wedge-type stems have also been shown to have an elevated risk of periprosthetic fractures in hip fracture patients, for example, Exeter has a fracture risk of 0.5-3% [26].

The present study shows that uncemented hemiarthroplasty accompanied with unipolar or bipolar heads is a predictable method of treatment of femoral neck fracture in elderly even in inexperienced hands, and both the endoprosthesis are very comparable as far as the hands, and both the endoprosthesis are very comparable as far as the major basis is for the simple reasoning that matters to a patient after sustaining a lower limb trauma is ability to walk again, return to daily activity, being independent, and return to work if feasible for which HHS is compliable.

**CONCLUSION**

In our study, we did not have any periprosthetic fractures. There was no statistical difference in returning home after fracture or in ambulatory ability. Unlike other studies, though non-significant, lower rate of dislocations favors unipolar. A dislocation always leads to an invasive procedure and treatment in the hospital, thus affecting negatively to a fragile patient and should therefore be avoided. Whether unipolar or bipolar prosthesis should be used remains controversial. But, looking at previous studies and including the present study, using fixed bipolar or unipolar prostheses, the ones using modern prostheses, the authors would, as a conclusion, with evidence, like to put forward the belief that both unipolar and bipolar with a modern uncemented femoral component provide elderly patients with the same good results on the basis of variables which matter the most to a patient.

**REFERENCES**


