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To assess the postoperative functional outcome in patients treated by cemented bipolar prosthesis for intra capsular fracture neck of femur.

Rajesh Chandra[1] , Naveen Taxak[2], Priyanjal Jakhar[3]
Professor, Department of Orthopaedics, SGT Medical College Hospital and Research Institute , Gurgaon.
Senior Resident, Department of Orthopaedics, SGT Medical College Hospital and Research Institute, Gurgoan.
Assistant Professor, Department of Orthopaedics, SGT Medical College Hospital and Research Institute , Gurgaon.

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ABSTRACT: Neck of femur fracture is one the most common affliction of the hip joint. Fracture neck of femur is commonly seen in old people but also seen in young adults below the age of 50. Fractures of neck of the femur have always presented great challenges to orthopaedic surgeons. Hemiarthroplasty includes replacing head of the femur with implant while retaining innate acetabulum. This current study was conducted on 30 patients having intracapsular fracture neck of femur aged 60 years and above treated with bipolar hemiarthroplasty. Patients with osteonecrosis and pathological fracture neck of femur were excluded from the study. Functional outcome of the patient was assessed using the Harris hip score. The aim of the treatment was to replace the femoral head and neck with prosthesis and provide early rehabilitation to the patient. The harris hip score was assessed at 6 weeks, 3 months and 6 months post operatively. There was a significant increase in harris hip score up to 3 months post operatively.
Keywords : Harris hip score, Hemiarthroplasty.

I. INTRODUCTION :

The most common ailments of the hip joint is fracture neck of femur . The incidence of fracture neck of femur is increasing in the elderly and is the commonest injury causing morbidity and mortality in patients of geriatric age group[1]. Being associated with a lot of co-morbid conditions like hypertension, cardiac problems, diabetes and dementia combined with prolonged immobilization due to fractures leads to increased morbidity and mortality. Hence early mobilization after hemiarthoplasty is necessary in intracapsular neck fractures[1].Undisplaced intracapsular hip fracture is almost invariably treated with internal fixation. However ; most of the fractures are displaced and occur predominately in elderly female patients with osteoporotic bones. Hemiarthroplasty is the most common treatment for displaced fractures of the femoral neck in the elderly and is associated with better functional outcome and fewer reoperations than internl fixation[2].

Number of prosthesis with or without cement have been used. There is some evidence of inferior short-term results, with decreased mobility and more pain when using an uncemented implant and concerns regarding loosening with uncemented stems in osteoporotic bone have been raised[3].The bonding between prosthesis and femur is dependent upon bony ingrowth when uncemented implants are used whereas in cemented prosthesis, cement forms a solid bond between prosthesis and femoral bone.

II. MATERIALS AND METHOD :

This prospective study was conducted in the Department Of Orthopaedics at SGT Medical College, Hospital and Research Institute, Budhera, Gurgaon from May 2018 to March 2020.After informed consent and ethical clearance, 30 patients with intra-capsular fracture neck of femur aged 60 years and above with both sexes were included in the study. Patients below 60 years , Avascular necrosis , pathological fracture neck of femur and medically unfit patients were excluded from the study. Follow up of the patients was done for 6 months.

Operative procedure : Using Southen or moore approach incision started approximately 10 cm distal to the posterior superior iliac spine, and extended distally and laterally parallel with the fibers of the gluteus maximus to the posterior margin of the greater trochanter. Incision directed distally 10 to 13 cm parallel with the femoral shaft and dissected in layers. With flexed thigh and knee at 90 degrees, thigh rotated internally and hip dislocated posteriorly. Using a head extractor and bone levers, head was delivered out of the acetabulum and the acetabulum was cleared of debris. The neck is trimmed leaving 1.5 cm of the

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medial calcar, on which the flare of the prosthesis would eventually sit.

The proximal femur was over-reamed with rasp; for the insertion of bone cement, cement was inserted into the medullary cavity by the method of gun cementing or manually with the finger until it was completely packed firmly in the canal.

The appropriate-sized prosthesis was inserted into the reamed canal taking care to place it in 10-15° of ante version. Adequate seating of the prosthesis on the calcar was visualized directly. The bone cement was allowed to set, following which the hip joint was reduced by gentle traction with external rotation of the hip and simultaneous manipulation of the head of the prosthesis into the acetabulum. The range of movement in all directions was checked by taking the joint through the whole range of movements. Great care was taken to achieve adequate closure of the posterior capsule and anatomical reattachment of the short external rotators. The rest of the wound was closed in layers. Hemostasis was maintained throughout the procedure.

POST-OP

All the operated patients were kept in supine position with the operated lower limb in 20-30° abduction using an abduction pillow. All the patients were advised to sit with backrest from the second postoperative day and was advised deep breathing exercises. Mobilization with a walker was started between third and fifth postoperative day. Patients were initially advised toe-touch down weight bearing with the help of a walker and later full weight-bearing with the aid of a walker as tolerated. Active hip and quadriceps exercises for the knee was advised for a period of 6 weeks. Post-operatively all patients were followed-up regularly at 6 weeks, 3 months and at the end of 6 months.

Figure showing the position and draping of the patient.

III. RESULTS :

The mean age of cases with femoral neck fracture in this study was 66.5 years, ranging from 60 years to 81 years with 53.33 % females and 46.66 were males . Out of 30 cases right side was involved in 17 cases amounting to (56.7%) and the left side was involved in 13 cases amounting into (43.3%) of the cases. The most common mode of injury was trivial trauma due to fall at home in 25(83.3%) of the cases. The most common anatomic fracture site was transcervical in 14(46.7%) of the cases followed by subcapital in 11(36.7%) of the cases and basicervical in 5(16.7%) of the cases. 4 patients has had associated injuries, of which 2 patients with Colle's fracture and 2 patients with a vertebral compression fracture.

At 6 weeks and 3 months post operatively there was a statistically significant improvement in the mean Harris Hip Score . Mean Harris Hip Score was 69.35 with a standard deviation of +6.85 points at 6 weeks. 16 patients were rated fair and 12 patients were rated poor according to the Harris Hip Score.

At 3 months postoperatively the highest mean Harris Hip Score was 84.14 points with a standard deviation of 6.85. Two patients (7%) were rated as excellent, Twenty one patients (75%) were rated as good, Four patients (14%) were rated as fair and One patient (4%) was rated as poor according to the Harris Hip Score.

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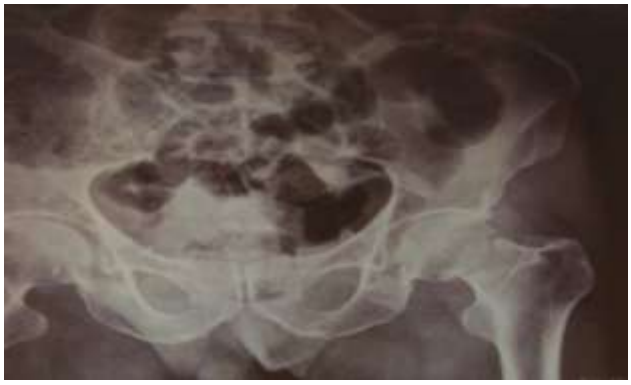
At the final follow up done after six months of surgery, the mean Harris Hip Score was 88.25 points to the standard deviation of 5.23 . Fourteen patients were rated as excellent (50%), Twelve patients were rated as good (42.8%) , one patient was rated as fair (3.6%) and one patient was rated as poor (3.6%) according to the Harris Hip Score on the final follow up. These results are comparable to other studies.

Complications were seen in 3 patients (10 %). 2 patients had superficial infection and 1 had deep sepsis which was managed with debridement and antibiotics. Limb length discrepancy was observed in 8 cases (26.7%) with shortening in 6 cases and lengthening in 2 patients. The mean limb length discrepancy was 0.13cms.

Post op Harris Hip Scores

Harris hip score(100)	Mean	SD	p-value
6 weeks	69.4	6.8	<0.005
3 months	84.14	6.58	<0.005
6 months	88.25	5.25	0.578

PRE OP X RAY



POST OP X RAY

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IV. DISCUSSION :

The study was conducted on 30 patients having fracture neck of femur treated with bipolar hemiarthroplasty. Functional outcome of the patient was assessed using the Harris hip score. The aim of the treatment is to replace the femoral head and neck with prosthesis and provide early rehabilitation to the patient[4,5,3]

The mean age of patients with femoral neck fracture in this study was 66.5 years, ranging from 60 years to 81 years, which was comparable to other studies. Bansal et al[6] in the study found an average age of 65 years in 25 patients with a fracture neck of femur treated with bipolar hemiarthroplasty. Ponraj et al[7] reported an average age of 65 years in their study of 30 patients with fracture neck of femur treated with bipolar hemiarthroplasty. Lausten et al[8] reported an average age of 77 years in 75 patients with fracture neck of femur. Agarwala et al[9] reported an average age of 70.5 years in 105 patients with femoral neck fractures that were treated with bipolar hemiarthroplasty. Tuteja et al[10] reported an average age of 63.5 years. Fractures of the femoral neck are common in the older population due to poor bone stock and osteoporosis[4,3,8.]

Out of 30 patients 16 were females and 14 males amounting to (53.33%) and (46.66%) respectively, which is comparable to other studies done by Ponraj et al[8] in 30 cases .Bansal et al[6] reported 56% of females and 44% males in a study of 25 patients undergoing bipolar hemiarthroplasty fracture neck of femur.

Right side was involved in 17 cases amounting to (56.7%) and the left side was involved in 13 cases amounting into (43.3%) of the cases. Raghavendra et al[11] in their study of 20 patients of intracapsular fracture neck of femur in elderly patients undergoing cemented bipolar hemiarthroplasty reported 50% involvement of both right and left side.

In our study the most common mode of injury was trivial trauma due to fall at home in 25(83.3%) of the cases. These findings correlate with other studies. Raghavendra et al[11]in their study of 20 patients of intracapsular fracture neck of femur in elderly patients undergoing cemented bipolar hemiarthroplasty reported trivial trauma to be the mode of injury in 75 % of the cases. Reddy et al[12] in their study of surgical management of fracture of neck of femur and adults with bipolar hemiarthroplasty reported all 20 cases to be due to trivial trauma.

The most common anatomic fracture pattern was transcervical which was seen in 14(46.7%) of the cases followed by subcapital in 11(36.7%) of the cases and basicervical in 5(16.7%) of the cases. Bansal et al[6] in the study found 84% of patients with transcervical fracture, 12% patients with basicervical fracture and 4% patients with subcapital fracture.

In the present study 4 patients has had associated injuries, which comprised of 2 patients with Colle's fracture and 2 patients with a vertebral compression fracture.

At 6 weeks post operatively the mean Harris Hip Score was 69.35 with a standard deviation of $\pm$6.85SD points. 16 patients were rated fair and 12 patients were rated poor according to Harris Hip score.

At 3 months postoperatively the highest mean Harris Hip Score was 84.14 points with a standard deviation of $\pm$6.58 SD points. Two patients (7%) were rated as excellent, Twenty one patients (75%) were rated as good, Four patients (14%) were rated as fair and One patient (4%) was rated as poor according to the Harris Hip Score. Balan et al[15] reported results at three months follow up with excellent results in 3.3% patients, good in 33.3% patients, fair in 46.7% patients and poor in 16.7% patients.

At the final follow done after six months of surgery, the mean Harris Hip Score was 88.25 with $\pm$5.23SD. Fourteen patients were rated as excellent (50%), Twelve patients were rated as good (42.8%) , one patient was rated as fair (3.6%) and one patient was rated as poor (3.6%) according to the Harris Hip Score on the final follow up. These results are comparable to other studies. Sharoff et al[13] reported 44.7% cases with excellent results. Somashekar et al[14] reported a mean Harris Hip Score of 86.18 with a standard deviation of 12.18 in 20 patients undergoing bipolar hemiarthroplasty for fracture neck of femur, which is comparable to the current study. They reported excellent results in 47% patients, good in 41% patients, which is comparable to the present study. Balan et al[15] in their final follow up reported excellent results in 58.8% patients, good in 35.3% patients and fair in 5.9% patients in their study of 34 patients.

In our study 96% of the patients were able to carry the daily activities of living by themselves and required minimum help at the final follow up. Similar results were reported by Mazen et al[16] reported that 89.2% of the patients returned to the pre injury functional level.

The complications were seen in three patients (10%). Two patients had deep sepsis which was managed by debridement of the wound and antibiotic therapy according to culture and sensitivity report. One patient had superficial infection which was managed by antiseptic dressing only.

Limb length discrepancy was observed in 8 cases (26.7%) with shortening in 6 cases and lengthening in 2 patients. The mean limb length discrepancy was 0.13cms. Similar results were reported by Tuteja et al[10] who reported a mean limb length discrepancy of 0.47cms .Bansal et al[6]reported limb lengthening in two cases out of twenty five patients. Ponraj et al[7] also reported limb lengthening in 2 cases out of 30 patients with maximum lengthening of 1 cm.

V. CONCLUSION :

Our study concluded that cemented bipolar hemiarthroplasty is a good modality for the management of fracture neck of femur with good to excellent functional results with minimal limb length discrepancy and with a low complication rate.

REFERENCES

[1]. Lavelle DG. Fractures and dislocations of the hip. In: Canale ST , Beaty JH(eds). Campbell's operative Orthopaedics, 11th edition Mosby:Penslyvania;2008.p.3271-85.

[2]. Keating J. Femoral neck fractures. In: Bucholz RW, Court-Brown CM, Heckman JD, Tornetta P. Rockwood and Green's Fractures in Adults, 7th edition. Lippincott Williams and Wilkins: Philadelphia; 2010. P.1561-96.

[3]. Parker MI, Pryor G, Gurusamy K. Cemented versus uncemented hemiarthroplasty for intracapsular hip fractures a randomised controlled trial in 400 patients. J Bone & Joint Surgery Br 2010; 92(1):116-22.

[4]. Maruthi CV, Shivanna. Management of fracture neck of femur in elderly by hemiarthroplasty. Ind J Orthop 2016;2(2):170-180.

[5]. Ponraj RK, Arumugam S, Ramabadran P. Functional outcome of bipolar hemiarthroplasty in fracture neck of femur. Sch. J. App. Med. Sci., 2014;2(5D):1785-1790.

[6]. Bansal S, Jain Singhal RP. Management of fracture neck femur with bipolar arthroplasty. Int J Adv Multidiscip Res 2016;3:38-45.

[7]. Saberi S, Arabzadeh A, Khomeisi B, Berehnegard E, Mortazavi SWJ. Early complications following bipolar hemiarthroplasty for femoral neck fracture in the elderly. Acad J Surg 2014;1:45-48.

[8]. Lausten GS, Vedel P , Nielsen PM. Fractures of the femoral neck treated with bipolar hemiarthroplasty. ClinOrthop 1987 ; 218:63-63.

[9]. Agarwala S, Bhagwat A. Charnley-Hasting bipolar modular replacement option for intracapsular fracture neck femur. Inj J Orthop. 2006;40:157-59.

[10]. Tuteja SV, Manusukhani SA, Mukhi SR . Functional outcome with Bipolar Hemiarthroplasty as against total hip replacement in intracapsular fracture neck femur. Int J Med Res Health Sci. 2014;3:945-953.

[11]. Raghvendra TS, Jayakrishana Reddy BS, Jayaram J : Management of Fracture Neck of Femur with Cemented Bipolar Prosthesis. Ind J of Clinical Practice.2014;24(9)867-71.

[12]. Reddy AJ, Gudapati O. Study of functional outcome of fracture neck of femur in the elderly treated with hemiarthroplasty through Hardinge's approach. Int J Contemp Med Res. 2018;3:1950-1953.

[13]. Sharoff L, Nazees M, Krishnan RU. Functional outcomes of cemented bipolar hemireplacement arthroscopy in fracture neck of femur in elderly. A prospective observational study. Int J Med Res Health Sci. 2016 ; 5(2) 70-6.

[14]. Somashekar, Krishna SV, Murthy SJN. Treatment of Femoral neck fracture: Unipolar versus bipolar prosthesis. Malay Orthop j. 2013;7:6-11.

[15]. Balan B, Shetty SK, Shetty A, Chandran R, Mathias LJ. Displaced intracapsular neck femur fractures in the elderly: Austin Moore's prosthesis or cemented modular bipolar prosthesis. Int Arch Integ Med 2016;3:287-296.

[16]. Mazen S, Julien G, Riad F. Retrospective evaluation of bipolar hemiarthroplastyin fracture of proximal femur. North Asm J Med Sci 2010;2:419-425.