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A study on clinical and radiological outcome of intracapsular fracture neck of femur in elderly treated with cemented bipolar prosthesis

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Abstract

Background: Hip femoral neck fracture (FNF) accounts for 50% of all geriatric patient's hip fractures. Elderly femoral neck fractures are common with a significant health concern. PPF surgical care can be physically demanding due to severe inflammation, dislocation, and intraoperative fractures, with a high risk of complications. There were some prosthetic designs recorded.

Aim and Objective: The aim of study was to evaluate the clinical and radiological outcome of intracapsular fracture neck of femur in elderly treated with cemented bipolar prosthesis

Methodology: A prospective study to analyze the outcome of management of intracapsular fracture neck of femur in elderly treated with cemented bipolar prosthesis.

Twenty cases of elderly patients with fractured neck of the femur above the age of 56 years with management of intracapsular fracture neck of femur in elderly treated by cemented bipolar prosthesis in the Department of Orthopaedics between September 2018 to April 2020. The short-term functional results were analyzed by using a modified Harris hip scoring system.

Results: The patients considered were in the age group of 56 to 78 years with a mean average age of 65.25. The majority of the fractures were sub capital fractures. Our study recorded all the research participants with prosthesis as Cemented bipolar. However, even after using a Cemented bipolar prosthesis, the majority of the study participants (70%) did not experience any complications after the surgery. The medication of choice for femoral neck fractures in patients older than 60 years is cemented bipolar prosthesis. The minimal utility of bipolar hemiarthroplasty has been shown. The cemented bipolar prosthesis should be carried out in a decent setting with a medium to wide trauma or orthopedic center by a professional surgeon. The utilization of an anterior solution to the hip encourages the patient to use it.

Conclusion: We conclude that management of intracapsular fracture neck of femur is a good option in elderly treated with cemented bipolar prosthesis. No mortality was observed during the study. The morbidity is not high; the operative procedure is simple, complications are less disabling.

Keywords: Harris hip scoring system, intracapsular fracture, neck of femur, cemented bipolar prosthesis, hemiarthroplasty

Introduction

Hip fracture is characterized as a proximal fracture of the femur [1]. The widely used term 'hip fractures' is the word most often used to describe the proximal portion of the femur fractures. While acetabulum and femoral head are also found in the bony areas of the hip, the term is used to describe either a fracture of the femoral spine, a fracture in the trochanteric region, or a fracture in the subtrochanteric section of the femur [2]. The definition includes acetabulum, femoral head and femoral shaft fractures, all of which have more diverse and different symptoms than hip fractures in clinical diagnosis, surgical treatment, and patient recovery. Hip fractures are catastrophic to people and a significant economic burden to society [3].

Of the most severe medical conditions impacting the older generation is the fracturing of the femur spine. This fracture poses a significant burden on healthcare economically. The rate of femur neck fracture significantly improves after age 70. The total number is also raising as the mean age of the population rises. Initially, the effects of hemiarthroplasty are more substantial, but if the patient lives longer, the condition can deteriorate. Hip fractures are commonly categorized as intracapsular and extracapsular fractures and sub-classified further.

Options for recovery include internal closure, unipolar or bipolar hemiarthroplasty, or complete removal of the hip. Very few reports have examined the clinical, functional, and radiological follow-up outcomes of patients undergoing cemented bipolar prosthesis to treat femur's intracapsular fracture collar.

Hip femoral neck fracture (FNF) accounts for 50% of all geriatric patient's hip fractures [4]. Elderly femoral neck fractures are common with a significant health concern. PPF surgical care can be physically demanding due to severe inflammation, dislocation, and intraoperative fractures, with a high risk of complications. There were some prosthetic designs recorded. PJI as explained earlier especially in elderly are related to extended antibiotic therapy, repeated revision surgery, lengthy hospital stays, late aseptic loosening and low patient clinical performance. A trained surgeon should conduct complete hip arthroplasty in a respectable setting. An intertrochanteric hip fracture from the hip joint occurs at 3 to 4 inches. This form of fracture normally does not disrupt the bone's blood flow and can be easier to heal. And subtrochanteric fractures: this is the separation between the lower trochanter and the region about 5 cm below the lower trochanter. Hip fractures are commonly categorized as intracapsular and extracapsular fractures and sub-classified further.

Aims and objectives

Aim

The aim of study was to evaluate the clinical and radiological outcome of intracapsular fracture neck of femur in elderly treated with cemented bipolar prosthesis

Objectives

Following are the objectives of the present clinical study

- To study the outcome of intracapsular fracture neck of femur treated with cemented bipolar prosthesis in elderly
- To study the functional outcome in elderly patients and time period required for it
- To study the achieved range of movements
- To study the associated complications

A prospective study to analyze the outcome of management of intracapsular fracture neck of femur in elderly treated with cemented bipolar prosthesis

Study setting

The present study was conducted in the Department of Orthopaedics, Narayana general hospital attached to Narayana medical college, Nellore.

Study population

The study was done on all patients with age 55 and above included in the study.

Data Collection Forms

The data was maintained on the computer.

Study Design: Prospective study

Study duration: This prospective study was conducted during the period of September 2018 to March 2020

Inclusion Criteria

Patient more than 55 and above

Exclusion Criteria

- Young and patients age below 55 years
- Head of femur fracture
- Patients with muscular dystrophies
- Patients with mental illness not able to cooperate with the post-operative protocols
- Pathological fractures

A minimum of 20 cases were studied and follow-up for a minimum period of 6- months. With each follow-up, a clinical, radiological evaluation was done. All criteria like limb length discrepancies, movements after surgery, complications, time period required to achieve union was studied and documented.

Once the patient was admitted to the hospital, all the essential information was recorded in the proforma prepared for this study. They were observed regularly during their hospital stay till they get discharged. They were asked to come for follow-up regularly to the outpatient department. Those who did not come were contacted via phone. The follow up summary was recorded in the follow up chart of the proforma.

Surgical Procedure

A surgical profile was done for all patients preoperatively and is operated under spinal anesthesia. The surgical approach is developed from prior surgical techniques on the hip and the method is very similar.

The technique probably is one of the most critical and probably the most important variable in the results of hemiarthroplasty. A precise fit of the prosthesis into bone is necessary so that no gaps are left between the bone and the prosthesis. The bone will not bridge a gap 1 mm, or greater, leading to fibrous tissue interposition resulting in an unstable fixation.

Preoperative Management

Patients were admitted to the ward. A detailed history was taken with particular emphasize on the mode of injury and associated medical illness. In-depth, clinical assessment was carried out in each case. In all patients, preoperatively Buck's traction with appropriate weight was applied, to the fractured lower limb, to relieve pain, preventing shortening and immobilize the involved lower limb. Oral or parental NSAIDs were given to ease the pain. Anteroposterior radiographs of the affected hip joint of pelvis with both hips were taken for all patients. Routine blood investigations, blood grouping and typing, urine routine, RBS, serum urea, creatinine, HbsAg, HIV, chest x-ray, ECG were done in all cases. Necessary and adequate treatment was given for those associated with medical problems such as anemia, diabetes, hypertension, IHD, COPD, asthma, etc. were evaluated and treated before taking them to surgery.

Patients and the attenders were explained about the surgery and its risk factors, and written consent for the surgery was taken for all patients. Intravenous antibiotics and tetanus immunization were given an hour before the surgery.

Postoperative Management

In case of spinal anesthesia, foot end elevation was given depending on the patient's postoperative blood pressure (BP). Every half an hour BP, pulse rate, temperature, and respiratory rate was monitored for the first 24 hours. Whenever necessary, postoperative blood transfusion was given. Intramuscular analgesics were given as per patients' compliance, intravenous antibiotics were continued for five

days. Both the lower limbs were kept in abducted position, with a pillow in between both the legs. Drain removal was done after 48 hours. Check radiograph was taken after 48 hours.

Follow-up

Patients were followed up at an interval of 1 month, three months, and six months and functional outcome was analyzed by a modified harris hip scoring system. At each follow-up radiograph of the hip was taken for radiological analysis.

Harris hip scoring system

Total functional outcome was graded as following depending

on the total Harris Poor: Harris hip score less than 70

Fair: Harris hip score between 71-80

Good: Harris hip score between 81-90

Excellent: Harris hip score between 91-100

Statistical Method

Frequencies

The Frequencies procedure provides statistics and graphical displays that are useful for describing many types of variables. The mean of the post-operative Harris hip scoring system of the patients was calculated.

Results

Table 1: Demographic details of the study participants

Sr. no	Age range	No. (%)
Age (years)	50 to 60	5 (25%)
	61 to 70	10 (50%)
	71 to 80	5 (25%)
Gender	Male	13 (65%)
	Female	7 (35%)
		20 (100%)
Mean age of Male study participants (years)		65.38±9.43
Mean age of Female study participants (years)		65.00±8.44
Mean age of study participants (years)		65.25±6.34

It can be seen from Table 1 that there are three age ranges considered in the current study. The age ranges begin from 50 to 60 years, 61 to 70 years, and 71 to 80 years. Our study recorded 5 (25%) patients each in 50 to 60 years and 71 to 80 years age group. Whereas our study recorded 10 (50%) patients in the 61 to 70 years age group. In continuation to the age groups, our study recorded another important variable

named as gender. Our study recorded 13 (65%) male population and 7 (35%) female population. The Mean age of male and female study participants (years) was found to be 65.38±9.43 and 65.00±8.44 years. Whereas the Mean age of study participants (years) irrespective of any gender was 65.25±6.34 years.

Table 2: Baseline (pre-operative) indications of the study participants

Sr.no	Pre-operative indications	Variable	N (%)
1	Side of fracture	Left	10(50%)
		Right	10(50%)
		Total	20(100%)
2	Mechanism of injury (MOI)	Slip and fall	11(55%)
		Road Traffic Accident (RTA)	9(45%)
3	Associated Injury	Abrasions	5(25%)
		Head injury	2(10%)
		Vertebral compression fracture	1(5%)
		No Associated Injury	12 (60%)
4	Associated medical history	Diabetes mellitus	5 (25%)
		Hypertension	2 (10%)
		Diabetes mellitus and Hypertension	3 (15%)
		No medical history	10 (50%)
5	Type of fracture	Subcapital	15 (75%)
		Transcervical	5 (25%)

Table 2 forms the Baseline (pre-operative) indications of the study participants. As per the data recorded in Table 2, it can be observed that the current study recorded five Pre-operative indications. The Pre-operative indications included Side of fracture, Mechanism of injury (MOI), Associated Injury, Associated medical history, and type of fracture. Further variables encountered in the current study include Left and Right for Side of fracture; Slip and fall and Road Traffic accident for Mechanism of injury; Abrasions, Head injury and Vertebral compression fracture for Associated Injury; Diabetes mellitus, Hypertension and combination of Diabetes

mellitus and Hypertension in Associated medical history; and; Subcapital and Transcervical in Type of fracture.

Our study recorded 10 (50%) cases each of Left and right side of the fracture among the study participants. We observed slightly higher instances of slip and fall category of cases 11 (55%) than the Road Traffic accident cases 9(45%) in our study. Both the category of cases defines the mechanism of injury in the study participants. In the current study, a maximum number of study participants 12(60%), did not experience any injury through either Slip and fall or a Road Traffic accidents. Minor nature of the injury was recorded as

abrasion in around one-fourth of the study participants. Head injury and Vertebral compression fracture was recorded in only 2 and 1 cases, respectively. The associated medical history was not recorded in half of the study participants. This was followed by one-fourth of the study participants having diabetes as the associated medical history. Only 2 cases

among the study participants had hypertension as the associated medical history. The majority of the study participants suffered from a sub-capital type of fracture (75%), whereas the remaining 25% of the study participants suffered from a transcervical type of fracture.

Table 3: Index procedure indications of the study participants

Sr.no	Index procedure indications	Variables	N (%)
1	Prosthesis	Cemented bipolar	20 (100%)
2	Complication	Superficial infection	1 (5%)
		Periprosthetic fracture	2 (10%)
		Bedsore	1 (5%)
		Posterior dislocation + bed sore	1 (5%)
		Superficial infection + bed sore	1 (5%)
		No complication	14 (70%)
3	Pre-operation Hospital stay	1 day	6 (30%)
		Two days	9 (45%)
		Three days	3 (15%)
		6 days	1 (5%)
		8 days	1 (5%)
The average length of Pre-operation hospital stay (in days)			2.35
4	Post-operation hospital stay	Two days	1 (5%)
		3 days	1 (5%)
		Four days	2(10%)
		Five days	6 (30%)
		Seven days	2(10%)
		Eight days	2(10%)
		Ten days	4(20%)
The average length of Post-operation hospital stay (in days)			6.75
5	Total length of Post-operation hospital stay (in days)		10.05

Table 3 forms the Index procedure indications of the study participants. As per the data recorded in Table 3, it can be observed that the current study recorded five index procedure indications, which included the Prosthesis, Complications arising after the surgery, the pre-operation Hospital stay, the Post operation hospital stay and the Total length of Post-operation Hospital stay. Further variables encountered in the current study include Cemented bipolar for Prosthesis; Superficial infection, Periprosthetic fracture, Bedsore, Posterior dislocation + bed sore, Superficial infection + bed sore and no complications in Complications arising after the surgery; 1 day, two days, three days, six days, and eight days in Pre-operation Hospital stay; 2 days, three days, four days, five days, seven days, eight days, ten-day and 11 days in Post operation hospital stay. Whereas the last variable was involved in calculating the total length of Post-operation hospital stay in days.

Our study recorded all the research participants with a prosthesis as Cemented bipolar. However, even after using a Cemented bipolar prosthesis, the majority of the study participants (70%) did not experience any complications after the surgery. Only two study participants experienced

Periprosthetic fracture. Whereas, superficial infection, Bedsore, Posterior dislocation + bed sore, and superficial infection + bed sore were recorded in only one case.

A pre-operation Hospital stay of 2 days among the study participants was recorded for the maximum number of 9 (45%) study participants. This was followed by 6(30%) cases requiring one day and 3 (15%) cases requiring three days. One each case, among the study, participants needed six days and eight days of Pre-operation Hospital stay. The average length of pre-operation hospital stay was 2.35 days in our study for the research participants.

A post-operation hospital stay of 5 days among the study participants was recorded for the maximum number of 6 (30%) study participants. This was followed by 4(20%) cases requiring ten days. Four cases among the study participants required four days, seven days, eight days, and 11 days of post-operation hospital stay. The least number of study participants (1 (5%)) required two days and three days of Post-operation Hospital stay for complete recovery. The average length of post-operation hospital stay was 6.75 days in our study for the research participants.

Table 4: Post-Procedure indications of the study participants

Sr.no	Post-Procedure indications	Variables	N (%)
1	Pain	Mild	6 (30%)
		Moderate	10(50%)
		Severe	2(10%)
		Pain at bed	2(10%)
2	Limp	Slight	4(20%)
		Moderate	3(15%)
		Severe	3(15%)
		No limp	10(50%)
3	Use of cane	No use of cane	10(50%)
		Cane for long-distance	3(15%)
		Cane for long walks	1(5%)
		Cane most of the time	1(5%)
		One crutch	2(10%)
		Two crutches	1(5%)
4	Currently walking after the surgery	Unable to walk	2(10%)
		Yes	18(90%)
4	Currently walking after the surgery	No	2(10%)
		Yes	18(90%)
5	Range of Motion	31-60	2(10%)
		61-100	1(5%)
		101-160	6 (30%)
		161-210	8(40%)
		211-300	3(15%)
6	Harris hip scoring	Poor	3(15%)
		Fair	3(15%)
		Good	10(50%)
		Excellent	4(20%)
		Mean Pre-operative (HHS)	32.8
		Mean Post-operative (HHS)	83.3
7	X-ray findings	normal	12(60%)
		periprosthetic fracture	2(10%)
		posterior dislocation + subsidence of prosthesis >5mm	1(5%)
		radiolucent zone >2mm	4(20%)
		subsidence of prosthesis >5mm	1(5%)
8	Outcome	Poor	4(20%)
		Fair	4(20%)
		Good	7 (35%)
		Excellent	5 (25%)

Table 4 forms the post-procedure indications of the study participants. As per the data recorded in table 4, show that the current study recorded eight post-procedure manifestations. The eight post-procedure symptoms include pain, limp, use of a cane, whether the patient is currently walking after the surgery, the range of motion, Harris hip scoring, the X-ray findings, and finally, Table 4 forms the post-procedure indications of the study participants. The eight post-procedure symptoms include pain, limp, use of a cane, whether the patient is currently walking after the surgery, the range of motion, Harris hip scoring, the X-ray findings, and finally, the Outcome of the device in the study participants. The variables recorded in pain indication include mild, moderate, severe and pain at the bed. The variables recorded in limp include slight, moderate, severe and no limp. The variables recorded using cane include no use of a cane, cane for long-distance, cane for long walks, cane most of the time, one crutch, two crutches and unable to walk. The variables recorded in currently walking after the surgery indication include yes and no. The variables recorded in Range of Motion indication include 31-60, 61-100, 101-160, 161-210 and 211-300. The variables recorded in Harris hip scoring indication include poor, fair, good and excellent. The variables recorded in X-ray findings include normal, periprosthetic fracture, posterior dislocation + subsidence of prosthesis >5mm, radiolucent zone >2mm and subsidence of prosthesis >5mm. The variables recorded in outcome include poor, fair, good and excellent.

Pain was recorded in moderate severity for half of the study participants. This was followed by mild pain in 6 (30%) study participants. Two study participants each recorded severe pain and Pain at bed in the current study.

In the present study, half of the study participants did not experience any limp. Whereas, only 4(20%) study participants experience a slight limp. Three study participants each recorded moderate and severe limp in the current study.

In the present study, half of the study participants did not use any cane. This was followed by 3(15%) study participants using a cane for long distances. Each of the two study participants used one crutch and unable to walk in the present study. One study participant used a cane for long walks, a cane most of the time, and two crutches.

Around 18(90%) study participants are currently walking after the surgery. Only the remaining 2(10%) are currently not walking after the surgery.

The range of motion (161-210) was maximum recorded in 8(40%) study participants. This was followed by range of motion (101-160) being recorded in 6 (30%) study participants. This was followed by range of motion (211-300) being recorded in 3(15%) study participants.

This was followed by range of motion (31-60) being recorded in 2(10%) study participants. The least was range of motion (61-100) being recorded in 1(5%) study participant.

In the present study, half of the study participants recorded Good Harris hip scoring. This was followed by 4(20%) study

participants recording Excellent Harris hip scoring. Three of the study participants recorded Poor Harris hip scoring and Fair Harris hip scoring, respectively.

More than half of the study participants, 12(60%), recorded normal X-ray findings. Whereas 4(20%) study participants recorded X-ray findings in the radiolucent zone >2mm. This was followed by X-ray findings as periprosthetic fracture in 2(10%) study participants. The least number of abnormal X-ray findings as subsidence of prosthesis >5mm and posterior dislocation + subsidence of prosthesis>5mm was recorded in 1(5%) case.

The current study recorded Good outcomes in 7 (35%) study participants and excellent outcomes in 5 (25%) study participants. Poor and Fair outcome was recorded each in 4(20%), study participants.

Case Illustrations

Patient with left intracapsular fracture having left side limb length discrepancy and external rotation of the foot with hip in mild flexion . Pre and post-operation X-ray of intracapsular fracture neck of femur. At post-operation, patients had decreased the pain and increased functional outcome of immediate, 4-week, 3-month and 6-month interval of follow-up.

Case 1

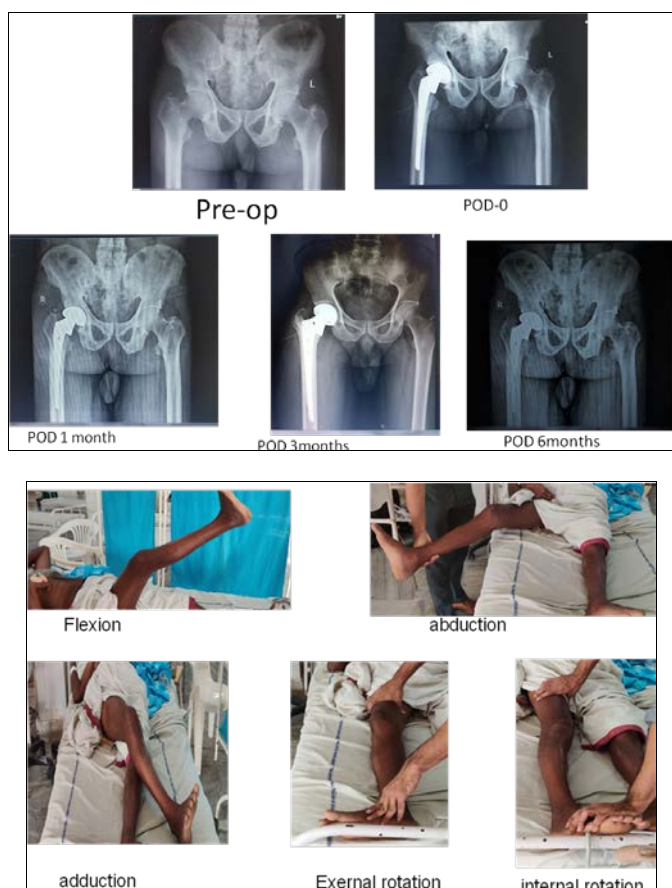


Fig 1: 1 month follow up right hip movements

Patient mobilised from POD-1 after drain removal



Fig 2: Clinical follow-up of study patient

Discussion

For an orthopedic surgeon, the fracturing of the femoral neck is still an unexplained enigma. The outcomes of multiple treatment modalities, including osteosynthesis, Hemi-replacement and complete hip replacement, have differed. Because osteosynthesis is not a very good idea for the elderly population, since the failure of osteosynthesis may entail secondary treatment and the results of second surgery might not be accepted by elderly patients, a prosthetic replacement has become a common alternative for surgeons. Total hip arthroplasty is often not favored as a primary treatment in a developing world like India, as it is physically more demanding and costly. Hemi-replacement, thus, continues to be a preferred alternative.

With this as an idea, we undertook the present study to explore the visual and radiological outcome of a cemented bipolar prosthesis in the patients undergoing treatment for sub-capital and transcervical fracture.

As we are aware that subcapital fracture is the most common type of intracapsular neck of femur fracture. Although there is evidence that trabecular and cortical bone loss with age can vary between men and women, the importance of this is uncertain, but the growing percentage of subcapital fractures in men may indicate greater trabecular bone loss with age in males.

The mean age of patients in the current study was 65.25±6.34 years, which is lower than those reported in Western literature but higher than other Indian series. In contrast with Western patients with hip fractures, it could be attributed to lower life expectancy among the Indian population within the first year of injury, but the mortality rate is equivalent to that of the general population after one year. The sample group appeared to be comparatively old (usually about 70) and usually with severe osteoporosis through selection, as evidenced by the presence of spinal fractures.

Hip fractures are described to be more collective in males and the elderly [5]. In this study, the fracture was seen more commonly in males across all three age groups. This male preponderance was found to be increasing with advancing age. This could perhaps be attributed to the higher male to female ratio in the general population as age increases and lower bone density (BMD) in men compared with women.

In this study, a total of 9 cases of RTAs and 11 cases of Slip and fall were determined, and the majority of the victims were in the 61-70-year-old group (36.5%). This article is consistent with a paper provided by Sonbol *et al.* They documented that among 591 patients, half (50.4%) were in the 51 to <60-year-old group.

The majority of our study patients sustained the injury due to a trivial trauma like tripping or slipping. Falls are a common event, particularly among the elderly. Modest changes in balance function have been described in fit older subjects as a result of normal aging. This report has been further validated by Aloudah [6]. In the age range of 45-60 years (33.9 percent), based on his results, most victims were young, which was compatible with our research result. On the other hand, Nabian *et al.* [7].

Periprosthetic fracture is a serious clinical problem. Jarvi *et al.* documented femoral stem fracture after cemented overall hip arthroplasty in their case [8] key cause causing the fracture, inadequate proximal stability, culminated in cantilever-bending stresses on the middle portion of the femoral stem. Reported often case series, Woolson *et al.* [9] concluded that proximal debonding, combined with a stem well-fixed distally, was a cause of femoral stem fractures following cemented total hip arthroplasty at the cement-prosthesis interface. The femoral stem fracture associated with insufficient proximal support becomes a matter of concern when the patient is physically involved. Some studies have highlighted that it is recommended that active patients with risk factors for implant failure following hip arthroplasty reduce their operation [10].

We found a superficial infection rate of 1%. This is low compared with other studies, which quote infection rates between 1.3% and 3.6% [11]. These low rates may reflect the use of laminar flow theatres for all hip fracture surgery and excellent compliance with appropriate antibiotic prophylaxis. Length of stay, pre-discharge mortality, and cost all increased with infections. Periprosthetic fractures are challenging to treat in the case of infection. Options include implant preservation and fracture fixing to achieve healing or implant removal paired with fracture bracing or fixation. Second-stage reimplantation should then be called in the above case. It can also be called a single-stage revision with fixation.

The length of hospital stay (more than six days) after surgery is elevated. Prolonged hospital preoperative stay was associated with the risk of SSI. The duration of the operation was assessed based on the cut-off point of the NHSN/CDC methodology, where the number of minutes specified was 138 for this form of procedure. While this is a feature classically associated with SSI, the present study did not correlate it with surgical infection. The long duration of a procedure in a polluted atmosphere facilitates surgical contamination and, subsequently, infection growth [12].

Deaths from cemented prostheses are higher than for uncemented prostheses at 24 hours, according to a study based on the National Hip Fracture Database, echoing the findings from the Anaesthetic Sprint Audit of Practice [13].

Standard Harris Hip Score is a validated and the most commonly used tool to measure the functional capacity of an

individual before and after a surgical procedure. It has been used in many studies for evaluating functional outcomes of THRs.

Our study is in accordance with such studies. It is comparable with other standard studies of uncemented hemiarthroplasty with Austin Moore prosthesis [14]. Results of the present study suggest that cementing the stem of the Austin Moore prosthesis gives a better functional, lesser pain, and improved gait function outcome by providing better primary anchorage of the prosthesis.

We observed that 50% had moderate pain, and 30% of patients had mild pain at post-procedure. Two patients with pain at bedtime, and two had severe pain. Pain following hemiarthroplasty is a major concern. Hinchey and Day (1964) in their series of 294 patients, found pain following hemiarthroplasty in 22 patients in the early postoperative period. [15] no definite cause was found.

The variables recorded in Range of Motion indication include 31-60, 61-100, 101-160, 161-210, and 211-300, in which 40% between 161-210. The results of the study agreed to the Lee *et al.* [16].

The Harris hip scoring was 50% of the patients with good scores and 20% patients with excellent scores. The present study was in accordance with Söderman *et al.*, 344 patients evaluated using the Harris hip score [17].

The X-ray showed 60% normal cases, 10% had a periprosthetic fracture, and 20% with radiolucent zone >2mm. These results are comparable with Charissoux *et al.* [18].

The results show 35% of patients with good condition and 25% of patients with excellent conditions. Mazen *et al.* show good outcomes based on relatively small numbers of patients [19].

A large proportion of fractures in the elderly are intracapsular fractures of the proximal femur [20]. Osteoporosis, comorbidities, increased occurrence of trivial trauma increase the incidence and complicate the treatment of these fractures. Weak bones and an increased rate of trivial trauma are responsible for this high incidence.

Limitations of the study

The present investigation has made the following limitations

1. The present study is limited to only two types of fractures on selected patients only.
2. The present investigation is limited to cemented bipolar prosthesis only.
3. In the present study sample size is small (n=20). So, the results obtained from the study do not have statistical power for robust interpretations.
4. The present investigation is limited to a selected hospital/institution, so the results obtained in this investigation cannot be extrapolated or applied to the entire population.
5. The two-dimensional X-ray images were used to determine the outcome of the procedure. In these images, fine structures are sometimes difficult to observe due to the overlying bone cement. For accurate determination of the outcome of the procedure, three-dimensional CT scans will help.
6. The present study used a criterion: posterior dislocation + subsidence of prosthesis >5mm, radiolucent zone >2mm and subsidence of prosthesis >5mm. This criterion is very sensitive, and it is possible that some cases in the recompression group are false positives.
7. Lack of accurate cardiovascular parameters measurement because cardiac output, pulmonary artery pressure, and central venous pressure were not measured.

8. The presence of fat, air, bone marrow, cement, and other emboli was not evaluated in the heart by transesophageal echocardiography.
9. The retrospective nature of this study makes the identification of complications from patient notes less reliable.

Recommendations of the study

We recommend doing a complete set of investigations and a thorough radiographic analysis to find out the causes of failure and to rule out infection, which can affect the decision-making of the type of surgery. Technical challenges are expected, including difficult dissection, excessive blood loss, and difficult implant removal with a possibility of intraoperative fractures at the previous screw holes, difficult cementing procedure. In elderly patients admitted to hip arthroplasty by cemented bipolar prosthesis, such precautions must be followed. This patient must be exposed to comprehensive pre-anesthetic examination, including investigations and co-morbid conditions pre-optimization. The anesthetic approach must be adapted to the particular patient. Further studies with more patients and a long-term follow-up period are needed to provide more robust data.

Conclusion

We conclude that management of intracapsular fracture neck of femur is a good option in elderly treated with cemented bipolar prosthesis. No mortality was observed during the study. The morbidity is not high; the operative procedure is simple, complications are less disabling. Early functional results are satisfactory. The complications are less disabling; weight-bearing is early, early functional results are satisfactory and second operation is less frequently required. As the treatment of hip fracture has been scrutinized with regard to alternative reimbursement mechanisms and merit-based incentive payments, this study of short-term results warrants consideration when determining pathways.

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Conflict of Interest

None

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