

Original Research

To study the complications in Fracture neck of Femur in elderly patients treated by Cemented Bipolar prosthesis

¹Dr. Mohd Shoeb Arif, ²Dr. Sanjay Gupta

¹Assistant Professor, Sri Ram Murti Medical College, Bareilly, Uttar Pradesh, India

²Professor, Sri Ram Murti Medical College, Bareilly, Uttar Pradesh, India

Corresponding Author

Dr. Mohd Shoeb Arif

Assistant Professor, Sri Ram Murti Medical College, Bareilly, Uttar Pradesh,

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ABSTRACT

Introduction – Fracture of femur neck is the most common fracture among elderly patients. There are various methods of fracture fixation with different complications. The aim of present study is to assess the complications in Fracture neck of Femur in elderly patients treated by Cemented Bipolar prosthesis.

Material and methods- The present retrospective study was conducted at department of orthopaedics of Sri Ram Murti Medical College, Bareilly among 100 elderly patients who had undergone repairment surgery of fracture neck of femur bone by cemented bipolar prosthesis during the past one year. Demographic and surgical data was gathered and analyzed using SPSS version 25.0.

Results – The maximum patients (67%) were from the age group of 60 to 70 years. Female (68%) were more in number as compared to male (32%). According to gardens classification 57% had type III injury and 43% had type IV. 67% patients were operated in the first 48 hours itself. 24% patients were operated within the 1st week. Average injury surgery interval was 2.99 days. Majority of the surgeries (55%) performed were completed within 40-50 minutes. The general complications in our study were bed sore, pulmonary embolism, superficial infection, DVT and deep infection whereas the specific complications were posterior dislocation, acetabular erosion, intra op fracture and loosening.

Conclusion – For femur neck fractures, cemented bipolar hemiarthroplasty provides a fair rate of complications along with increased mobility, pain alleviation, and a quicker return to independent operation.

Keywords- bipolar, cemented, elder, femur, fracture, prosthesis

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INTRODUCTION

Elderly people who suffer femoral neck fractures have a significant rate of morbidity and mortality. [1] The best course of action is still up for debate.[2] Trauma with minimal energy may be the source of the fractures. The popular surgical treatment used to treat elderly individuals with femoral neck fractures is Hemiarthroplasty employing modular head partial prostheses. [3]

Therefore, bipolar hemiarthroplasty seems to be the optimum treatment for an acute spine fracture in the elderly. On the other hand, there is no information known regarding its long-term effects. Its efficacy has also been questioned by certain academics who have doubted the extent of internal motion during prolonged use [4]. Since most elderly patients have a high proximal

medullar canal diameter and their bone density is declining, cemented prostheses have been utilised on a regular basis. Therefore, bone cement would enable maximum weight-bearing and instantly cohere bone and prosthesis [5]. The use of cemented bipolar hemiarthroplasty provides more benefits than uncemented bipolar hemiarthroplasty, including more solid fixation, which promotes early mobilisation and reduces the risk of thigh pain, especially in elderly (osteoporotic) patients [6].

Non-union and avascular necrosis of the femoral head are the two main complications of this fracture [7,8]. The primary cause of this is the special vascular supply of the femoral head, where most blood arteries pass through the femur's neck on their way to the head. Nonunion is a challenging issue to deal with, although

the surgeon may have some measure of control over it. Avascular necrosis still occurs despite all attempts to anticipate or manage it. The creation of several fixation tools to address these issues has raised hopes that one day the unresolved issues surrounding this fracture may be resolved [9].

Although the introduction of prosthetic replacements to address femur fractures and vitallium intramedullary prostheses was enthusiastically welcomed, patients continue to experience some difficulties. Hence the aim of present study is to assess the complications in Fracture neck of Femur in elderly patients treated by Cemented Bipolar prosthesis.

MATERIAL AND METHODS

The present retrospective study was conducted at department of orthopaedics of Sri Ram Murti Medical College, Barielly among patients who had undergone replaced surgery of fracture neck of femur bone by cemented bipolar prosthesis during the past one year. The ethical clearance was taken by institutional ethical committee before the commencement of study.

Total 100 patients who underwent surgery of age above 60 years were selected through consecutive sampling with the following inclusion and exclusion criteria-

Inclusion criteria

1. Patients with fracture neck of femur with displacement (GARDEN type (III, IV)).
2. Patients with age >60 years.
3. Patients who had given informed consent for operative care.
4. Patients with minimum follow up of 1 year

Exclusion criteria

1. Patients with age < 60 years.
2. Patients medically unfit for anesthesia.
3. Patients with pathological fracture.
4. Patients with Ipsilateral lower limb fracture which interferes with functional outcome.
5. Bilateral cases.
6. Patients with preexisting inflammatory or degenerative arthritis of the injured hip.
7. Patients who have not given consent for study.

8. Patients who were lost to follow up during the study period.
9. Patients who underwent other modalities of treatment.

Patients underwent surgery while in the lateral decubitus posture, with longitudinal skin incisions done in the lateral position, centred over the greater trochanter. The hip was internally rotated, adducted, and slightly flexed after the femoral head was removed. Reamers with progressively larger diameters were used to reamer the femoral canal. Following the achievement of cortical reaming, each broach was carefully positioned and its fit within the canal evaluated. No movement of the broach inside the canal was allowed, and sufficient axial and rotational stability was guaranteed. After that, the trial femoral stem was implanted and its reactions to extraction and rotational stresses were assessed. Following the implantation of the predetermined (well dimensioned) femoral bipolar head, the hip was lowered and the hip joint's stability was assessed once more.

Demographic information, dates of admission and surgery, fracture types, medical comorbidities, medications taken, hemodynamic status both before and after cement application and during recovery, and the time and cause of death were all documented. The following information was retrieved: patient age, sex, number of concomitant conditions and prefracture ambulatory status. The visual analogue scale was used to measure postoperative pain, and responses ranged from 0 to 10. Complications following surgery were noted.

The data collected was entered and analysed in the MS Excel sheet. The results were expressed in the form of frequency, percentage and Mean (SD). The results were prepared using SPSS version 25.0. The level of significance was kept at $p < 0.05$.

RESULTS

The maximum patients (67%) were from the age group of 60 to 70 years. Female (68%) were more in number as compared to male (32%). Total 56% were got effected on left side by slipping (85%). According to gardens classification 57% had type III injury and 43% had type IV as shown in table 1.

Table: 1 Demographic data of patients

Variable	Percentage	
Age (years)	60-70	67
	70-80	23
	>80	10
Gender	Male	32
	Female	68
Laterality	Right	44
	Left	56

Mode of injury	Slipping	85
	Fall from height	15
Gardens classification	Type III	57
	Type IV	43

67% patients were operated in the first 48 hours itself. 24% patients were operated within the 1st week and 9% patients were operated after 1 week. Average injury surgery interval was 2.99 days. Majority of the surgeries (55%) performed were completed within 40-50 minutes. In our study 56% of the patients had less than 350 ml blood loss. 30% patients had blood loss

between 350-500ml. 14% of patients had more than 500ml blood loss and required blood transfusion. Majority of the patients (80%) were discharged from the hospital on the 4th or 5th post-operative day. The mean postoperative pain score was 2.87 ± 1.3 as shown in table 2.

Table: 2 Surgical characteristics of patients

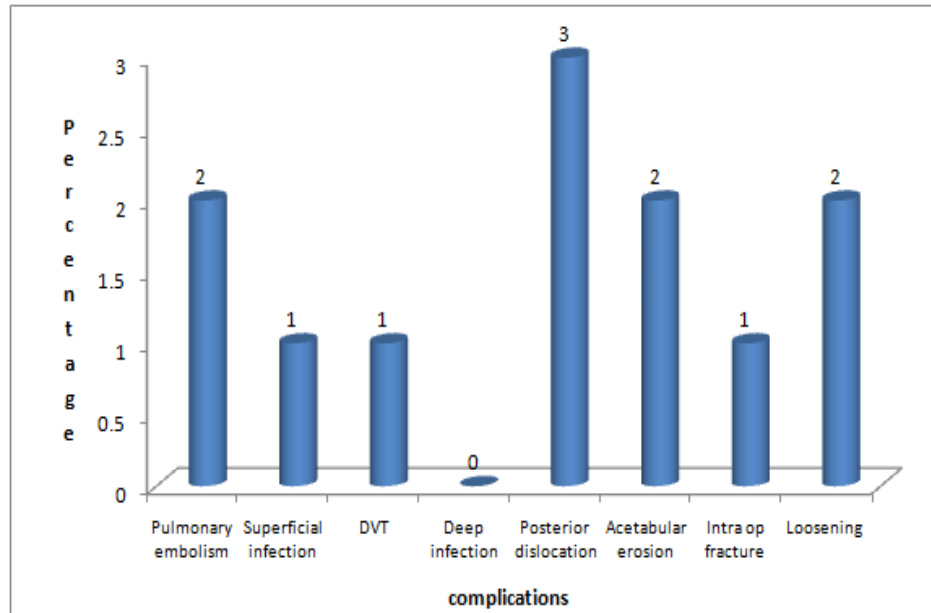
Variable	Percentage	
Injury surgery interval	Surgery within 48 hrs	67
	Surgery between 48 hrs to 1 week	24
	Surgery after 1 week	9
Duration of surgery	30-40 min	5
	40-50 min	55
	50-60 min	38
	>60 min	2
Blood loss	<350 ml	56
	350-500 ml	30
	>500 ml	14
Duration of hospital stay	Upto 5 days	80
	6 to 10 days	16
	>10 days	4
Post operative pain score	2.87 ± 1.3	

In our study there were both general and surgery specific complications like bed sore (3%), pulmonary embolism (2%), superficial infection (1%), DVT (1%),

deep infection (0%), posterior dislocation (3%), acetabular erosion (2%), intra op fracture (1%) and loosening (2%) as shown in table 3, graph 1.

Table: 3: Complications after surgery

Variable	Frequency	
General complication	Bed sore	3
	Pulmonary embolism	2
	Superficial infection	1
	DVT	1
	Deep infection	0
Surgery specific complications	Posterior dislocation	3
	Acetabular erosion	2
	Intra op fracture	1
	Loosening	2



Graph 1: Complications after surgery

DISCUSSION

Proximal femur fractures are prevalent in the elderly. The occurrence of these fractures is exacerbated by osteoporosis, comorbidities, and higher levels of mild trauma. While most of these patients have been treated globally with cemented hemiarthroplasty, and are becoming more and more common.

According to Foss and Kehlet [10], there was little evidence from randomised studies suggesting that cementing the prosthesis could lessen postoperative pain and potentially increase mobility. Despite this there are reports of complications after the surgery. In the present retrospective study on 100 patients to assess the complications in Fracture neck of Femur in elderly patients treated by Cemented Bipolar prosthesis. The patients age in this study were from 60 to 80 years , with a mean age of 70.12 years. Age distribution plays a significant role in managing hip fractures in order to get ready for prosthesis collection and cement application. Similar to previous standard investigations, 68 percent of the female population in this study had a broken femur neck, but only 32 percent of the male population met this criteria. Osteoporosis, a postmenopausal disease, increases the risk of femur neck fractures in elderly women [11]. 85 percent of our study participants suffered injuries from minor traumas like tripping or falling. This is a highly prevalent ailment among the senior population, where visual impairment and impaired neuromuscular function are major issues. Numerous of these events fall under the category of indirect trauma. A decrease in height resulted in injuries for 15 percent of the patients. The majority of patients in our study had a femur neck fracture. 57 percent had a

Type III Garden fracture, while 43 percent had a Type IV Garden fracture. Even H. Krishnan's comparison investigation stated that "29 patients had Garden IV, while 5 patients had a Garden III fracture among the effects of Cemented and Uncemented bipolar prosthesis." [12]. Nevertheless, the results of the fracture and displacement forms do not significantly improve. Within 48 hours after their presentation, the majority of patients underwent surgery. In around 24% of our patients, we observed an increase in the time between injury surgeries, which was primarily caused by delayed presentation. The majority of patients in our study (56%) experienced blood loss of less than 350 millilitres, and there was no difference in the functional outcome dependent on the length of time between surgeries. 14% of patients who experienced blood loss greater than 500 ml needed blood transfusions. Similar to our analysis, 13.63% of cases in the Ragevendra et al. study required blood transfusions [13]. The majority of the procedures took 40 to 50 minutes to complete. When the length of the surgery was compared to the functional outcome, no discernible relationship could be seen. It suggests that this procedure can be completed in a reasonable amount of time without compromising the outcome. The fourth or fifth post-operative day was when the majority of the patients were released from the hospital. After the sutures were removed (post-operative day 10), 16 patients were released. In less than three weeks, the discharge rate was 100%. Intravenous antibiotics and wound dressing were used to treat superficial infections in delayed instances [12].

The general complications in our study were bed sore , pulmonary embolism, superficial infection, DVT and deep infection whereas the specific complications were

posterior dislocation, acetabular erosion, intra op fracture and loosening. Early-stage success stories with cemented bipolar hip replacements are widely available in the literature; mortality rates are low and complications are comparatively rare. Bone cement is beneficial for elderly and/or frail people because it strengthens the osteoporotic proximal femur.[14,15] Elmaraghy et al hypothesised that the development of fat emboli was unaffected by cemented hemiarthroplasty.[16] In a different study, Donaldson et al [17] proposed that in high-risk patients, cementless arthroplasty could reduce morbidity and mortality rates. Although minimal, the chance of dying from cement-related causes is reported to exist.[18,19] Our study's weaknesses are the small number of patients we had and the brief follow-up periods.

CONCLUSION

For femur neck fractures, cemented bipolar hemiarthroplasty provides a fair rate of complications, increased range of motion, pain alleviation, and a quicker return to independent operation. The patient's age and ideal post-operative recovery determine the entire range of functional results. Further research in a wider community over a longer time span is necessary to determine the long-term outcomes of bipolar hemiarthroplasty. When treating older patients with unstable hip fractures, bipolar hemiarthroplasty produces great outcomes with early mobilisation and little sequelae.

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