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Original research article

Fracture neck of Femur in elderly patients treated by Cemented Bipolar prosthesis: Complications

[1]Dr. Roshith P V, [2]Dr. Syam Mohan, [3]Dr. Jayaprasad C, [4]Dr. Ajaykumar

[1]Consultant Orthopedic Surgeon, Department of Orthopedics, Mothercare Hospital, Palakkad, Kerala, India

[2]Senior Resident, Department of Orthopedics, Amala Institute of Medical Sciences, Thrissur, Kerala, India

[3]Senior Resident, Department of Orthopedics, Government Medical College, Manjeri, Malappuram, Kerala, India

[4]Senior Consultant, Department of Orthopedics, KIMS Alshifa Hospital, Perinthalmanna, Malappuram, Kerala, India

Corresponding Author:
Dr. Ajaykumar

Abstract

The two principal long term complications of this fracture are non-union and avascular necrosis of the femoral head. The unique vascular supply of the femoral head where the majority of the blood vessels traverses the neck of femur en route to the head is the main reason behind this. Although nonunion is a difficult problem to contend with the surgeon may have some semblance of control over it. This study was conducted at Department of orthopaedics. Patients above the age of 60 years who presented with fracture neck of femur and treated using cemented bipolar prosthesis in the Department of Orthopaedics, were included in the study. After obtaining approval from Hospital Ethics Committee and getting written informed consent from patients. In our study 55% of the patients had less than 350 ml blood loss. 29.5% patients had blood loss between 350-500ml. 15.3% of patients had more than 500ml blood loss of which 7 females and 2 males required blood transfusion. 15 patients (15.3%) were discharged after suture removal (post-operative day 10).All patients were discharged within 2 weeks duration. Delayed cases were those who developed superficial infection which required treatment with IV antibiotics and wound dressing.

Keywords: Fracture neck of femur, cemented bipolar prosthesis, complications

Introduction

The treatment of fracture of the neck of femur has always been a great challenge and is still counted among the unsolved problems of orthopaedics [1]. This injury is one of the commonest fractures seen in the aged and is strongly associated with severe osteoporosis.

Poor reflexes and insufficient muscular tone of the protective hip muscles puts femoral neck at risk from sudden and unusual strains. Added to this these patients are prone to poor vision along with neuromuscular in-coordination making them very prone to falls. The risk of sustaining this injury goes on increasing with advancing age, the fracture rate practically doubling for each decade of life after the fifth decade. Not surprisingly the increasing general life expectancy over the last half a century and an ageing population have ensured that the incidence of fracture of the neck of femur is rising alarmingly. Going by the current trends it is postulated that the number of cases of this fracture may double within the next 20 years [2].

These fractures have substantial morbidity and mortality [3]. The quotation "we come into the world under the brim of pelvis and go out through the neck of femur" represents the defeatist attitude that has long been prevalent, among both medical and lay persons alike, towards this fracture. Inspite of this there has always been an enthusiastic search for a suitable method of treatment. The acceptance of the principle that a shorter life expectancy does not justify the mysteries of an unsolved fracture and a greater demand of a better quality of life among the elderly has ensured that this search has received added impetus [4].

The two principal long term complications of this fracture are non-union and avascular necrosis of the femoral head [1, 2]. The unique vascular supply of the femoral head where the majority of the blood vessels traverses the neck of femur en route to the head is the main reason behind this. Although nonunion is a difficult problem to contend with the surgeon may have some semblance of control over it. The occurrence of avascular necrosis continues to defy all efforts to predict or control it. Development of various fixation devices for tackling these complications have led to increasing optimism, that a day may come when these unsolved problems of this fracture will be solved [5].

50 years ago prosthetic replacement was introduced for solving the problem of fracture neck of femur and vitallium intramedullary prosthesis received a hearty welcome. Faith in the applicability of the

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mechanical principles and establishment of a definite role of the prosthesis in treatment of femoral neck fractures took long enough duration to be achieved. At present hemiarthroplasty of the hip is the treatment of choice for displaced intracapsular fractures of the proximal femur when the patient is physiologically older with low functional demands. The main advantage of this procedure is that it allows early mobilization of the patient preventing the major complications of prolonged recumbency that are very frequently seen in these patients. It also takes away the problems of nonunion and avascular necrosis and saves the patient from repeat surgeries and prolonged hospital stay [6].

Methodology

This study was conducted at Department of orthopaedics. Patients above the age of 60 years who presented with fracture neck of femur and treated using cemented bipolar prosthesis in the Department of Orthopaedics, were included in the study. After obtaining approval from Hospital Ethics Committee and getting written informed consent from patients.

This was a longitudinal study with retrospective data collection and prospective analysis included patients who were treated surgically based on 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.

Method of collection of data

Cases were selected from the elderly patients with displaced fracture neck of femur who required hemiarthropalsty with cemented bipolar prothesis who satisfied the inclusion and exclusion criteria. After taking consent patients were evaluated clinically and radiologically. All patients selected for study were examined according to protocol. The Laboratory investigations were carried out in order to get fitness for surgery.

Results

66 (67.3%) patients were operated in the first 48 hours itself. 25 (25.5%) patients were operated within the 1st week and 7(7.1%) patients were operated after 1 week. Average injury surgery interval was 3.07 days.

Table 1: Distribution based on Injury surgery interval

	n	%
A (surgery within 48 hours)	66	67.3
B (surgery between 48 hrs to 1 week)	25	25.5
C (surgery after 1 week)	7	7.1

The delay in surgery was most often because of delayed presentation in the hospital after injury. Once admitted these patients were operated within a day or 2 once their medical optimization and risk stratification has been completed.

Majority of the surgeries performed were completed within 40-50 minutes.

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Table 2: Distribution based on Duration of surgery

Time	N	%	Mean HHS
30-40 min	4	4.08	84.62
40-50 min	55	56.1	86.53
50-60 min	37	37.7	84.2
> 60 min	2	2.04	83.1

One patient sustained intra operative periprosthetic fracture, which was treated by circlage wiring. He was able to weight bear by 6 week with support. Another patient had cement extrusion from distal part of the proximal femoral stem probably through small defect in the femoral stem. Patient was ambulated on 2nd post-operative day with support.

Table 3: Distribution based on Blood loss

Blood loss	Total	Male	Female
<350 ml	54 (55%)	18	36
350-500ml	29 (29.5%)	8	21
>500 ml	15 (15.3%)	4	11

In our study 55% of the patients had less than 350 ml blood loss. 29.5% patients had blood loss between 350-500ml. 15.3% of patients had more than 500ml blood loss of which 7 females and 2 males required blood transfusion.
Majority of the patients (80.6%) were discharged from the hospital on the 4th or 5th post-operative day.

Table 4: Distribution based on Hospital stay

Period of stay	Total	Male	Female
Upto 5 days	79(80.6%)	22	57
6-10days	15 (15.3%)	7	8
>10days	4 (40.8%)	1	3

15 patients (15.3%) were discharged after suture removal (post-operative day 10). All patients were discharged within 2 weeks duration. Delayed cases were those who developed superficial infection which required treatment with IV antibiotics and wound dressing.
There were both general and surgery specific complications in our patients.

Table 5: Distribution based on complications

Complications	n	%
General complication		
Bed sore	2	2.04
Pulmonary embolism	3	3.06
Superficial infection	2	1.02
DVT	1	1.02
Deep infection	0	0
Surgery specific complication		
Posterior dislocation	2	2.04
Acetabular erosion	2	2.04
Intra op fracture	1	1.02
Loosening	1	1.02

Discussion

Most of the patients were operated within 48 hours of presentation. The increase in injury surgery interval that we saw in about 32% of our patients was most often because of delayed presentation. There was no difference in the functional outcome based on the delay in surgery, Group A-Mean HHS 84.5, Group B-86.5, Group C-83. This implies that taking sometime to optimize the medical condition of these elderly, co morbid patients is not harmful to the final outcome, This also means there probably is no place for zero hour surgery especially when resources such as surgeon, staff, equipments are not optimal.
Our average injury to surgery inteval was less compared to other studies.
Our study showed that about 90% of the prosthesis used were of the size between 39 mm to 43mm. In an Indian study by Reddy GR *et al*. showed similar results, 90% of the prosthesis size were between 39 mm and 43 mm. Patients predominantly of female gender and of asian ethinic origin is self-explanatory for the head diameter being in the lower range [7].
One patient sustained intra operative periprosthetic fracture, which was treated by circlage wiring. He was able to weight bear by 6 weeks with support. Another patient had cement extrusion from distal part of the proximal femoral stem probably through small defect in the femoral stem. Patient was ambulated

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on 2nd post-operative day with support.

In our study majority (55%) of the patients had blood loss less than 350ml. 15.3% had blood loss more than 500 ml of which 9 patients required blood transfusion. In the study by Ragevendra *et al*. 13.63% of cases required blood transfusion which is comparable to our study [7].

Majority of the surgeries performed were completed within 40-50 minutes. Duration of surgery was analyzed with the functional outcome and no significant correlation was obtained. In all the groups Mean Harris hip score was similar. Which imply that reasonable time can be taken for performing this surgery without hampering the results.

Majority of the patients were discharged from the hospital at 4th or 5th post-operative day. 9 patients were discharged after suture removal (Post-operative day 10). The discharge rate under 3 weeks duration was 100%. Delayed cases were those who developed superficial infection which were treated by IV antibiotics and wound dressing [8].

Compared to many other similar studies we were able to discharge the patients much early. General hospital policy is to discharge at the earliest point of fitness.

Conclusion

Out of 98 cases, we had 8(8.1%) General complications and 6(6.1%) surgery specific complications.

- In our study 55% of the patients had less than 350 ml blood loss. 29.5% patients had blood loss between 350-500ml. 15.3% of patients had more than 500ml blood loss of which 7 females and 2 males required blood transfusion.
- Majority of the patients (80.6%) were discharged from the hospital on the 4th or 5th post-operative day.

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