



OUTCOME OF DISPLACED NECK OF FEMUR FRACTURES IN ELDERLY TREATED BY INTERNAL FIXATION AND PRIMARY ARTHROPLASTY: A COMPARATIVE STUDY.

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ABSTRACT

Surgical management is the gold standard treatment for the femoral neck fractures. The standard treatment for neck of femur fractures in young age group is reduction and internal fixation. However, in elderly people with displaced fractures, the management continues to be a dilemma. The various surgical options available include internal fixation using various fixation devices or arthroplasty. We conducted a prospective study, including 56 patients with femoral neck fractures and divided them into 2 groups. Group A (n=22) included 22 patients which were managed with internal fixation while as group B (n=34) included those managed with arthroplasty. The outcome was compared using Harris hip score. The mean surgical time was significantly lesser among group A ($p < 0.024$), the mean surgical time in group A was 70 minutes while as it was 85 minutes in group B. The mean blood loss was significantly lower in group A ($p < 0.034$). The mean blood units transfused was 1.8 units while as in group B mean units transfused was 2.4. The overall complications rate was 18.18% (04 patients) in group A compared to 26.47% (09 patients) in group B; this was not statistically significant ($p < 0.3$). In group A, delayed union occurred in two patients, non-union in two patients and avascular necrosis of the femoral head in two patients. In group B, acetabular protrusion of 6–10 mm occurred in two patients and severe protrusion of 14 mm in one patient with hip hemiarthroplasty, one case of dislocation was encountered. We recommend primary hip arthroplasty for elderly patients with a displaced femoral neck fractures over internal fixation, in view of the decreased re-operation rate and better functional outcome.

KEYWORDS :

INTRODUCTION

Fractures of the neck of proximal femur are one among the commonest injuries observed among the elderly.¹ It is expected that the incidence of these fractures shall continue to rise, owing to the increased mean age in humans. These fractures have a high propensity to go into non-union and may lead to avascular necrosis of the femoral head. Like other proximal femur fractures, the associated morbidity and mortality is significant. Surgical management is the gold standard treatment for these fractures. The standard treatment for neck of femur fractures in young age group is reduction and internal fixation. However, in elderly people with displaced fractures, the management continues to be a dilemma.^{2,3} The various surgical options available include internal fixation using various fixation devices or arthroplasty. Internal fixation has the advantage of preserving the native hip joint and is a less extensive procedure, however non-union, avascular necrosis and need for revision surgeries are the obvious disadvantages posed.⁴ These disadvantages can be avoided by primary arthroplasty. In our study, we compared the outcome of the femoral neck fractures managed with internal fixation and arthroplasty, in elderly age group.

MATERIALS AND METHODS

The patients selected for this study were taken from among those attending the emergency of Government Medical College Hospital, Jammu from November, 2017 to June, 2020. We conducted a prospective study, including 56 patients with femoral neck fractures and divided them into 2 groups. Group A (n=22) included 22 patients which were managed with internal fixation while as group B (n=34) included those managed with arthroplasty.

Inclusion Criteria

1. Age > 60 years
2. Both sexes
3. Injury < 2 weeks old
4. Displaced fractures (Gardens type III and IV)
5. Independent ambulation prior to injury

Exclusion Criteria

1. Age < 60 years
2. Injury > 2 weeks old
3. Polytrauma patients
4. Neglected fractures
5. Undisplaced fractures (Gardens type I and II)
6. Morbidities contraindicating surgery
7. Pathological fracture

The patients were examined at presentation in emergency to rule out other injuries. Anteroposterior radiograph of pelvis with both hip in 15

degrees of internal rotation was taken to study fracture morphology. The patients were operated within a period of 10 days after optimizing the patient for surgery. Spinal anaesthesia was used in all cases. The group A patients were managed with internal fixation using 6.5 mm cannulated cancellous screws in an inverted triangular configuration. The group B patients were managed with primary hemiarthroplasty using modified Hardinge approach. Post-operative radiographs were taken to check for the adequacy of fixation and prosthesis placement. All patients gave written informed consent to be included in this study. The postoperative mobilization protocol included immediate mobilization starting from the second postoperative day with partial weight bearing as tolerated with the use of crutches or a walker for 6 weeks and then full weight bearing. The arthroplasty patients were instructed for precautions to avoid dislocation of the prosthesis.

Postoperative evaluation was done at regular intervals of 3, 6, 12 months and at the latest examination for the purpose of this study. Functional evaluation was done according to the Harris hip score in both groups.

Statistical analysis was done using paired t test. Significance was set at a p value of <0.05.

RESULTS

This prospective observational study was carried out in the department of Orthopaedics Government Medical College, Jammu and included 56 patients with fracture neck of femur. In the present study, we included 38 females (67.85%) and 18 males (32.14%). The study participants were predominantly females. The age of the patients ranged from 60 to 84 years, with a mean age of 68.54 years. Right side fracture was seen among 30 patients (53.57%) while as 26 patients (46.42%) had left side involvement. The average interval between injury to surgery was 6.76 days. The mean surgical time was significantly lesser among group A ($p < 0.024$), the mean surgical time in group A was 70 minutes while as it was 85 minutes in group B. The mean blood loss was significantly lower in group A ($p < 0.034$). The mean blood units transfused was 1.8 units while as in group B mean units transfused was 2.4. The overall complications rate was 18.18% (04 patients) in group A compared to 26.47% (09 patients) in group B; this was not statistically significant ($p < 0.3$).

In group A, delayed union occurred in two patients, non-union in two patients and avascular necrosis of the femoral head in two patients. In group B, acetabular protrusion of 6–10 mm occurred in two patients and severe protrusion of 14 mm in one patient with hip hemiarthroplasty, one case of dislocation was encountered. A statistically significant difference was found regarding the need for reoperation in group B

compared to group A ($P = 0.016$). 12% of group A patients landed up with nonunion and avascular necrosis of the femoral head and were revised to total hip arthroplasty compared to one group B patient with severe acetabular protrusion also to total hip arthroplasty. The Harris hip score at 3, 6, and 12 months postoperatively was statistically significantly higher in group B compared to group A ($p < 0.028$). However, at 24 months, there was no statistically significant difference ($p < 0.08$) between the two groups.

DISCUSSION

Surgical management is the gold standard treatment for the femoral neck fractures. The standard treatment for neck of femur fractures in young age group is reduction and internal fixation. However, in elderly people with displaced fractures, the management continues to be a dilemma.^{2,3} The various surgical options available include internal fixation using various fixation devices or arthroplasty. Internal fixation has the advantage of preserving the native hip joint and is a less extensive procedure, however non-union, avascular necrosis and need for revision surgeries are the obvious disadvantages posed.⁴ These disadvantages can be avoided by primary arthroplasty. In the present study, we evaluated the treatment of femoral neck fractures in elderly patients using closed reduction and internal fixation with cannulated hip screws compared to hip arthroplasty. Although perioperative blood loss and complications were significantly lower in the internal fixation group of patients, the postoperative functional scores up to the 1 year evaluation and need for re-operation were in favor of the arthroplasty group of patients.

Arthroplasty as a mode of treatment of displaced femoral neck fractures in comparison with internal fixation is associated with a significantly lower risk of revision surgery, at the cost of higher infection, blood loss, and surgical time rates. In the present study, the functional outcome was significantly higher in the arthroplasty group at the 12-month evaluation.

CONCLUSION

We recommend primary hip arthroplasty for elderly patients with a displaced femoral neck fractures over internal fixation, in view of the decreased re-operation rate and better functional outcome.

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