

Original article

Comparison of two modality of fixation in unstable trochantric fractures in elderly patients

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Abstract

Introduction: Treatment of unstable trochantric fractures in elderly and medically compromised patients are challenging to the orthopaedic surgeons . the purpose of this study is to study the results of fixation of trochantric fractures by the reconstruction of posteromedial defect by graft taken from femoral head of the patient (calcar reconstruction) in cemented bipolar hemiarthroplasty and compare with dynamic hip screw fixation .

Method: Thirty patients, 65 years or older with unstable osteoporotic intertrochanteric neck femur fractures were treated with either dynamic hip screw fixation or cemented bipolar hemiarthroplasty and the reconstruction of posteromedial defect by graft taken from femoral head of the patient (calcar reconstruction) . Results were evaluated by Harris Hip Score.

Key words: bipolar , hemiarthroplasty , trochanter

Introduction

Unstable osteoporotic intertrochanteric neck femur fractures of elderly patients are associated with high rates of morbidity and mortality due to the need for prolonged immobilization, although results are improved with use of recent modalities of internal fixation. In these patients due to combination of osteoporosis and instability, early resumption to full weight bearing is difficult. Because of prolonged immobilization, complications like deep vein thrombosis, hypostatic pneumonia, pressure sores, dehydration, atelectasis, metabolic disturbances, etc are likely. So they have increased the morbidity and mortality threshold. The comminuted intertrochanteric fractures being in cancellous area, fixation of all fragments is difficult. The posteromedial void is generally present which makes the fracture very unstable. Recently popular modality is Dynamic hip screw fixation But even with these implants

immobilization is required for few days. Management of such cases with primary hemiarthroplasty with the reconstruction of posteromedial defect by graft taken from femoral head of the patient (calcar reconstruction) permits early mobilization, thus avoiding most of the complications of recumbence.

The patient is mobilized early giving good rehabilitation and better options for dependence free living. There is extensive literature published on results obtained with both modalities of treatment. However, there are relatively few studies which have compared the results of both methods. So we have hereby tried to compare between two methods in terms of results obtained. Comparative study between DHS and cemented bipolar hemiarthroplasty with the reconstruction of posteromedial defect by graft taken from femoral head of the patient (calcar reconstruction)

Material and methods

- ◆ This study is being conducted in the Department of Orthopaedics & Traumatology in my college from June 2013 and is still underway
- ◆ Till now 30 cases have been registered in our study out of which 15cases are of intertrochanteric fractures which were admitted in the Orthopaedic wards and treated by Dynamic hip screw fixation & 15 cases are of intertrochanteric fracture treated by cemented bipolar hemiarthroplasty with Posteromedial bone graft support.
- **Cases are divided in two groups-**
 1. **Group A** – It consists of all elderly patients with intertrochantric fracture treated by dynamic hip screw fixation
 2. **Group C** – It consists of all elderly patient with intertrochanteric fracture

treated by cemented bipolar hemiarthroplasty wih posteromedial bone graft support.

Study Population:

Inclusion Criteria

- ◆ Patients aged>65 yrs who are medically compromised.
- ◆ Closed intertrochanteric femur fracture Evans type 4 and 5.

Exclusion Criteria

- ◆ Patients with such morbid illness which may prevent him from mobilization.
- ◆ Patients with any other injury to the same or opposite Lower limb , Head injury or the vertebral column as they act as confounding factors.
- ◆ Pathological intertrochanteric fractures were excluded.

Result compared by harris hip scoring

Results and observations

Table no.1:- Functional Results at 3 months:

Results	Group A (No. Of Patients)	Group B (No. Of Patients)	Total
Excellent (HHS 90-100)	3	5	8
Good (HHS 80-89)	4	5	9
Fair (HHS 70-79)	5	4	9
Poor (HHS 60-69)	2	1	3
Failed (HHS below 60)	1	0	1
Total	15	15	30

Table no. 2:- Functional Results at 6 months:

Results	Group A (No. Of Patients)	Group B (No. Of Patients)	Total
Excellent (HHS 90-100)	4	6	10
Good (HHS 80-89)	5	6	11
Fair (HHS 70-79)	3	2	5
Poor (HHS 60-69)	2	1	3
Failed (HHS below 60)	1	0	1
Total	15	15	30

Table no. 3:- Functional Results at 1 Year:

Results	Group A (No. Of Patients)	Group B (No. Of Patients)	total
Excellent (HHS 90-100)	5	7	12
Good (HHS 80-89)	5	6	11
Fair (HHS 70-79)	4	2	6
Poor (HHS 60-69)	1	0	1
Failed (HHS below 60)	0	0	0
Total	15	15	30

Table no. 4:- Functional Results at 1 and ½ Year:

Results	Group A (No. Of Patients)	Group B (No. Of Patients)	total
Excellent (HHS 90-100)	8	9	17
Good (HHS 80-89)	6	5	11
Fair (HHS 70-79)	1	1	2
Poor (HHS 60-69)	0	0	0
Failed (HHS below 60)	0	0	0
Total	15	15	30

Average age of patients for DHS and hemiarthroplasty was 76.53 ± 5.57 years and 77.07 ± 7.16 years respectively. Average trauma surgery interval for DHS and hemiarthroplasty was 5.7 days and 6.56 days respectively. Average surgery time for DHS and hemiarthroplasty was 70.33 minutes and 80.33 minutes respectively. Average stay in the hospital for DHS and hemiarthroplasty group was 10.23 days and 9.77 days respectively. In DHS group fourteen fractures were A2.2 type and in hemiarthroplasty group thirteen fractures

were A2.2 and rests were A2.3 in both groups. The average blood loss for DHS and hemiarthroplasty was 125.5 millilitres and 250 millilitres respectively. Full weight bearing was achieved in DHS and hemiarthroplasty group after 47.33 ± 5.47 days and 5.6 ± 1.45 days respectively. Functional results using Harris hip score at three months, six months, and one year are better in hemiarthroplasty group but almost similar at one and half year.



Discussion

Advantages of primary bipolar hemiarthroplasty in trochantric fractures

- ◆ The rehabilitation of patient is faster and easier. Early weight bearing and mobilization and rapid return of patients to their pre-fracture status, especially for elderly and medically compromised patients in whom prolonged bed rest leads to many complications, constitutes a logical basis for consideration of this option.
- ◆ Hence, should be used where early ambulation is required.
- ◆ Stability of cemented prosthesis is greater than other modalities.
- ◆ Other advantages include fewer reoperations and decreased hospitalization time.
- ◆ In failed fixation, prosthesis is a good choice in elderly patients, with osteoporosis, poor remaining bone stock, however in young with good bone stock and bone density repeat fixation can be considered.
- ◆ **Hence, extremely elderly (in need of early mobilization), osteoporotic bone and ,unstable fractures and painful preexisting arthritic patient are good choice for prosthesis.**

Disadvantages/complication associated with prosthesis

- ◆ Operative time and blood loss is increased.

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- ◆ There is loss of bone stock.
- ◆ Loosening of prosthesis.

Advantages of internal fixation of trochantric fractures

- ◆ Technically easier and cheaper with fairly good results.
- ◆ Decreased operative time and blood loss.
- ◆ Useful in young patients where bone density and bone stock is good

Disadvantages/complications associated with internal fixation

- ◆ Rehabilitation is delayed, mobilization is late hence complications associated with prolonged bed rest increases like pulmonary infection, embolism ,atelectasis, pressure sores.
- ◆ Implant failure like plate breaking and screw cut out, common in osteoporotic bone. Weak and osteoporotic bone does not provide firm purchase of screws.

Conclusion

Primary hemiarthroplasty with the reconstruction of posteromedial defect by graft taken from femoral head of the patient (calcar reconstruction) provides a relatively stable pain free mobile joint and is a better modality of treatment in osteoporotic elderly people who sustained unstable intertrochanteric fractures. Early mobilization is possible as the technique bypasses of fracture healing and provides immediate stability and mobility thereby avoiding the problems of recumbence. However long term functional outcomes are almost similar for two groups.

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