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OSTEOSYNTHESIS VERSUS HEMIARTHROPLASTY IN OSTEOPOROTIC TROCHANTER FRACTURE FEMUR TREATMENT-PREFERABLE OPTIONS .

Orthopaedics

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ABSTRACT

Trochanter fractures, in elderly osteoporotic persons common in geriatric medical scenario. The degree of osteoporosis may influence fracture type. For these reasons of problems that extend far beyond the orthopedic injury, with involvement of the areas of medicine , rehabilitation, psychiatry, social work, and health care economics the treatment of intertrochanteric fractures is operative. Our propose of the study to compare the result of osteosynthesis by dynamic hip screw fixation and hemiarthroplasty in intertrochanteric fractures of hip in elderly. This study has used Harris Hip Score to compare and evaluate the functional outcome..

KEYWORDS

hemiarthroplasty, trochanteric fracture femur, osteoporosis, dynamic hip screw fixation.

INTRODUCTION:

Hip fractures are oe of the the most common geriatric fracture with osteoprosis. The economic and social impact of these injuries goes far beyond only orthopaedic problem scenerio and extends into the domains of medicine, rehabilitation, psychiatry, social work and medical economics. The challenge in treating geriatric hip fracture is further compounded by their growing members in the face of continually increasing pressures for health care cost containment.. The incidence increases with age, doubling for each decade after 50 years, and is two to three times higher in women than in men. Trochanteric femoral fractures have been estimated to occur in more than 200000 patients each year in the united state with reported mortality rate ranging from 15% to 30%.(2)

The degree of osteoporosis may influence fracture type. Lawton3 et al reported that intertrochanteric hip fractures and that they had lower hemoglobin levels at hospital admission, poorer prefracture ambulatory ability and higher number of associated medical conditions that affected fracture management.

Patients with intertrochanteric fractures are significantly older, more likely to be limited to home ambulation, and more dependant in their activities of daily living , therefore, they tend to have an overall poorer prognosis.

Before the introduction of suitable fixation devices, treatment of intertrochanteric fractures was nonoperative, consisting of prolonged bed rest in traction until fracture healing occurred (usually 10 – 12 weeks), followed by a lengthy programme of ambulation training . In elderly patients, this approach was associated with high complication rates; typical problems included decubitus ulcers, urinary tract infection, Joint contractures, Pneumonia and thromboembolic complications, resulting in a high mortality rate. In addition, fracture healing was generally accompanied by varus deformity and shortening because of the inability of traction to effectively counteracts the deforming muscular forces. By operative management we can hopefully prevent above complication.

For these reasons, the treatment of trochanteric fractures is operative.

Background:
Geriatric population demands early mobilisation in respect of their predominant medical comorbidities.

People of these kinds with trochanter fracture needs fracture stabilization that allows earliest patients mobilization to prevent complication.Keeping these in mind we have this article.

Aims and Objectives:
Osteoporotic trochanter fracture femur pose challange to orthopaedician for introducing proper treatment methodology to patients so that patients can be mobilized earliest to prevent complications to patients and to prevent social and medical and economical burden.

MATERIALS AND METHODS:

Tme periods- Between July 20112 to September 2019 .
Total patients-40 patients .
Place of study- B.S medical college and Iq city medical College.
Age- elderly patients above 60 years of age.
sex -15 patents were male and 25 patients were female.
Procedure- 20 patients were operated by dynamic hip screw fixation and 20 patients by hemiarthroplasty.
Follow up protocol- The patients were follow up at interval of 3 months, 6 months, 12 months and yearly. The patents were evaluated by Harris Hip score.

The mean days of hospitalization –
The bed occupancy was increased mainly due to operative delay while the post operative hospital was relatively shorter. The minimum age of the point in our study was 65 years and maximum up to 101 years with mean age of 76.4 years. People of this age group have osteoporosis and yet they are ambulatory that is why patient of this age group have more case of it. After the age of 84 years most of them are either no ambulatory or assisted ambulatory. So they are less exposed to traumatic event of fall. This explains the decreased rate of it over 84 years. Finding of this study are comparable to the studies done by Haentjens, P reference16 et al whose mean age was 82 years As far as sex distribution is concerned we also find females are more predominant i.e female ratio of 1:1.5. The mean age of female was 76.39. Post menopausal osteoporosis is most likely the cause of higher incident in female.. In Haentjens reference16, P et al study there was 8 males & 29 females with M:F ratio of 1:3:5. . comorbid conditions.

Of 40 patients, 35 patients co- morbidities while 8 patients were free from co-morbid diseases. Cardiovascular diseases were the predominant cause with 25 patients having hypertensive heart disease 7 patients had chronic obstructive pulmonary diseases. One patient had Parkinsonism one had Osteoarthritis of knee, one patient was blind, one had post TB lung fibrosis and one was diabetic and had CRF. All these diseases are common in elderly population of our country and they have a significant impact on post injury functional outcome, hence patient need to be ambulated as early as possible, so as to recover from ensuing complications. Our findings were corroborated by other studies. In Haentjens16, P et al study, 76% of patients had co-morbid diseases

Side -
In our study involvement of the right side (53.3%) was more common than the left side (46.7%).

Fracture configuration-
When grouped in terms of stability half (50%) of the fracture patterns were unstable. This result further emphasizes that 50% of all pertrochanteric fractures are unstable, hence needs a device which provide stability and allow early ambulation. Hemiarthroplasty can provide this opportunity Clinical and radiological follow up was done at 3 months, 6 months, 12 months and yearly.

RESULTS–

40 patients with peritrochanteric fractures were included in this study. Six patients did not met the requirement of 6 monthes follow- up so they were excluded from the final analysis. In the final analysis only 34 patients were entered. The results and observations are as follows25 patients type II, 5 patients type III, 1 patient type IV where are the rest 9 patients type I

When grouped in terms of stability half (60%) of the fracture patterns were unstable. This result further emphasizes that 60% of all peritrochanteric fractures are unstable, hence needs a device which provide stability and allow early ambulation. Hemiarthroplasty can provide this opportunity. Our result are consistent with other studies. In Haentjens16, P et al study all fracture patterns undergoing bipolar hemiarthroplasty were unstable. As far as complications are concerned, out of 34 patients who were followed up for complete 6 months (6 out of 36 dropped out in follow up), . Among the 15 patient, 5 (15%) patients superficial wound infection; two patients had limb length discrepancy more than 2 cm. One patient sustained prosthesis hip dislocation on 7th post operative day after a fall in toilet which was reduced by closed means and managed with traction for three weeks. One patient had per operative fracture of greater trochanter, which had to be fixed with tension band wiring.

DISCUSSION:

Osteoporotic Trochanter fracture in femur pose surgical and decion challange to treating physician and orthopaedician.Geriatric patients with osteoporosis, even if they are in good physical and medical health, cannot usually be mobilized early with proper supported weight bearing on the involved limb. This demands of early weight led to the design of several types of internal fixation device that allow early mobility. No single implant, however, is universally accepted for the operative treatment of these fractures, and new fixation devices are introduced periodically. The dynamic devices- popularized as a sliding screw/side plate, sliding nail, telescoping nail, dynamic hip screw, and sliding hip screw – are currently in wide use as reliable methods of internal fixation and still the gold standard internal fixator, although the operative technique is not always easy and postoperative regimens cannot be standardized universally.

Fracture fixation with a sliding hip- screw device proved to be an improvement compared to fixed angle blade plates and Enders nails and several kinds of cephalomedullary nails of different design.Though modern design nail initially gains huge popularity but bringing several newer complications. However, even with this devices, early full weight bearing mobilization of unstable fracture can result in rotational deformity and leg length shortening due to uncontrolled telescoping and screw Cut outs .Elderly especially debilitated patient in need of early mobilization pose many problems. For these reasons the insertion of an endoprosthesis is elected for patient with osteoporosis complicated by a unstable fracture. With this treatment, immediate postoperative full weight bearing mobilization is allowed.

Some authors argue that by using prosthesis arthroplasty instead of internal fixation in certain unstable intertrochanteric fracture, one potential set of problems associated with prosthesis (dislocation, limb length discrepancy) has merely been trade for another set associated with internal fixation, hardware “cutting out”). However, using as a guide, the fascial fibres between the greater trochanter and upper femoral shaft have overcome the limb-length discrepancy problem. Moreover, preserving the hip capsule using purse-string type closure may enhance hip stability. With these technical considerations in mind, head-neck cemented prosthesis arthroplasty for unstable intertrochanteric fractures in forgetful, elderly patients may be a suitable alternative to internal fixation because the prosthesis provides for early full weight-bearing and rapid rehabilitation.

The post-op complication in Haentjens16, P et al study was 13%,. It was significantly increased when compared to Haentjens, P et al study When compared to I hip dislocation in our study, Haentjens16, P et al study had 2 incidents,. The findining is increased compared to Haentjens, P et al study The mean Harris hip score increased progressively in hemiarthroplasty group during consecutive follow up. The mean score was 48 at third day, which increase to 65 by seven day. At two weeks the score was 76 while at 1st and 3 month. The scores were 80.3 and 86.9 respectively. The final Harris hip screw hip score at last follow up was 88.

Internal fixator group had shown the poor score on third post op day. From third to seventh day 83.3% has poor score, while rest had fair scoring. By two weeks majority had fair scoring. At one month, score was good in more than half of the cases and fair in 40% and poor in the rest. At 3 month, Harris hip score was good in 75% of the cases and excellent in 6.7% while fair in remaining 17.3%. At last follow up score was fair in 15% good in 62% and excellent in remaining 33% of the cases. Thus we see that the score has increased progressively and the difference in score between consecutive two follow-ups is highly significant.

By 6 months 90% of our patients capable of independent ambulation whereas the percentage of independent ambulation at 6 months in Haentjens16, P et al study was 79% (p value 0.34),. The mortality in Haentjens16, P et al study, 35%. In our study there was no mortality till 6 months. We could not trace the patients who dropped out in follow-up. The reason might be that our mean age was less than other study group, shorter follow-up period & strict physiotherapy protocol.

As a matter of fact, internal fixation is the most commonly done operation for intertrochanteric fractures. So, it's imperative that we compare our result with them. Haentjens, P et al had compared the result of bipolar hemiarthroplasty with osteosynthesis, so we compared our result with other available studies. In all the parameters, except follow-up period and mortality rate, our result were comparable with those of Haentjens, P et al study for easy understanding.

Unstable intertrochanteric fractures are histrorically associated with a high rate of complications in many social,economical medical point of view. Immediate partial or full weight-bearing in this patiets group is crucial – though not always possible – after internal fixation with dynamic hip screw or proximal femoral nails. Cutting-out of these hip screw has been reported in 4%-20% of cases. Primary partial hip replacement has been considered a viable option in a select group of previously independent mobile patients and is reported to be associated with significantly lower complication rates. The presence of four or more comorbidities has been shown to increase the risk of death by approximately 78%. Rodop et al published a study on standard hemiarthroplasty for the treatment of displaced intertrochanteric fracture in a small group of 54 elderly patients, they reported good functional result in terms of walking ability of there patients. Similarly Haentjens et al. found better functional outcome and reduced morbidity (pressure sores, pulmonary infection and atelectasis) with arthroplasty, but mortality rates were not reduced significantly. Cemented prostheses have been used routinely and these usually provide immediate stability and permit full weight-bearing. Kim et al compared the 2-years results of long stem cementsless calcar replacement hemiarthroplasty with the results after proximal femoral nail for unstable intertrochanteric fracture in 58 elderly patients. A superior clinical outcome was seen with proximal femoral nails. However there was no advantage in functional outcome compared to arthroplasty group. Dislocation has been a major complication with total hip replacement group after comminuted intertrochanteric fractures and bipolar arthroplasty has been shown to reduced this risk. Primary cemented arthroplasty for intertrochanteric fractures is technically challenging. In severely comminuted fractures restoration of limb rotation and length can be demanding. The debate then shifts to whether cementless hip arthroplasty in the very elderly is successful or not, given the possible complications noted with improper technique. Uniformly good results have been reported with cementless total hip arthroplasty in the very elderly population. Some studies have been shown less operating time and blood loss for the uncemented cohorts with no worse postoperative mortality or complication rates.

In our study,we found better Harris hip sore and better recovery in hemiarthroplasty group than the internal fixation group that may be due to early weight bearing mobilization.Early mobilization also prevents dependence of home attendance and better psychological outcome.

CONCLUSION

Ostoeoporotic trochanter fracture in elderly needs proper patients evalution and needs decision making reagarding bony stabilization surgery that allows frail patients for earliest mobilization to lead socially,economically and medically productive life. Our study shows

properly done hemiarthroplasty with adequate soft tissue bony structure repairallows relatively better functional outcome in comparision to osteosynthesis procedure as hemiarhroplasty allows early independent patient mobility.

post op case with dhs fixation

post op case with hemiarthroplasty

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