Research Paper Medical Science

Results of Proximal Femoral Nail in Intetertrochanteric Fracture in Elderly Patients

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ABSTRACT

Intertrochanteric fracture femur in elderly patients who have associated co – morbidities are big challenge to orthopaedic surgeons because of inherent high complication rate when treated conservatively or operatively.
The goal of treatment of these patients is to achieve pre trauma status with minimum medical or surgical risk.
Over a period of three years, forty eight patients have been operated for minimally invasive close proximal femoral nailing in intertrochanteric fractures femur.
The aim of study was to evaluate results on the basis of ability of patient to cope up medical co- morbidities , ability to achieve pre trauma status , bone union and over all assessment by Harris Hip Scoring system.

KEYWORDS Proximal femoral nail, intertrochanteric fracture

INTRODUCTION – Trochanteric fractures are the most commen injuries around the hip joint in the elderly patients [1]. These fractures are big challenge for the orthopaedic surgeons because of inherent problems of high complication rates, when treated either conservatively or operatively. The conservative treatment of these patients leads to complications like malunion and unwanted side effects of prolong recumbency. On the other hand, the surgical treatment of intertrochanteric fractures in elderly patients not only leads to prolong anaesthetic complications,but other surgical problems also like,long exposure,blood loss,risk of infections and very frequently implant failure [2]. The problems of surgical treatment are further enhanced by the presence of osteoporosis in these elderly patients,since the fixation of proximal fragment depends entirely on cancellous bone present [3]. The goal of treatment of intertrochanteric fracture in elderly patient is to restore the patient to pre trauma status with minimum medical and surgical risk. This could only be possible by internal fixation of intrrtrochanteric fractures in the elderly patients . Various authers have used different implants for internal fixation of intertrochanteric fractures in elderly patients and have reported their advantages and disadvantages [4]. This study has been done to find out the results of proximal femoral nail fixation of intertrochanteric fractures in elderly patients suffering from multiple problems.

Material and methods

The study has been carried out at a tertiary referral centre,where we predominantly get old critically high risk patients with complicated fractures.

The study was conducted on fortyeight elderly patients with intertrochanteric fractures who were referred to us over the period of three years between January 2010 to December 2012. All the patients were diagnosed outside as a case of post traumatic intertrochanteric fracture femur and received the primary care and firstaid. They were referred to us after being found to have associated comorbidity in the form of hypertension,diabetes mellitus, past history of myocardial infarct, bronchial asthma, low cardiac ejection fraction in echocardiography finding , low oxygen saturation level, or even severe osteoporosis.

On admission patients were evaluated by team of physicians

and anaesthesiologists. After taking high risk consent,patients were operated for close reduction of intertrochanteric fractures and internal fixation with proximal femoral nail under GA or spinal anaesthesia at earliest possible, which ever best suited to the patient.

Fractures were classified as per AO classification [5]. Close reduction was done on fracture table and reduction was checked under image intensifier. Guide wire was inserted through the tip of greater trochanter after making approximately 2 cm incision just proximal to it. In most of the patients guide wire could be introduced through trochnteric opening,otherwise entery was made with the help of bone awl. Proximal femoral nail was passed into medullary cavity after adequate reaming. The cervical screws were inserted with the help of zig under guidance of image intensifier. The distal cervical screw was inserted first into inferior portion of the neck followed by proximal cervical screw. By inserting the distal cervical screw first, adequate nail length and place for proximal cervical screw can be easily adjusted [6]. The distal interlocking screws were also inserted with the help of zig. Post operatively patients were mandatorily kept in intensive care unit for twenty four hours and stay was extended depending upon post operative condition of patients. Sitting on bed and quadriceps exercises were started from 2nd post operative day while non weight bearing walking was started from 5-6th day depending on general condition of patients.

Patients were discharged from 12 to 14th day after removal of stitches. Initial follow up was done at the interval of one month for six months and then depending on requirement.

Results were evaluated on the basis of post operative general condition of patients, ability to perform exercises and walk with support, duration of bony union, and overall out come was assessed with the help of Harris Hip scoring system [7] .

Pre Operative Radiographs of 70 yrs female patient 31A2 fracture

Post operative Radiographs after fixation with proximal femoral nail

Observation-

With the time span of three years between Jan 2012 to Dec 2014,total forty eight patients were operated for proximal femoral nailing in intertrochanteric fracture. In the post operative period two patients expired during the hospital stay,two patients expired within one month of surgery, while four patients expired within three months after surgery. Thus in final study forty patients were included.

Average age of patients was 74.4 yrs with minimum age being 65 yrs and maximum being 86 yrs. There were thirty eight(38) female and twelve(12) male patients.

Mechanism of injury was fall on floor at home in thirty six(36) patients and road traffic accident in four (4) patients.

Ten (10) patients were operated within five (5) days of admission , twenty eight (28) patients were operated within ten (10) days of admission after getting management of associated co-morbidities. Two (2) patients took more than fifteen (15) days for management and were operated after that. In all the patients permission from the hospital ethical committee was taken after getting high risk consent from patient's attendants

As per AO classification of intertrochanteric fracture of femur, fifteen (15) were 31A1 type, twenty(20) cases were 31A2 type and rest of five(5) cases were 31A3 type.

In thirty eight (38) cases close reduction of the fracture was achieved. Two(2) cases of 31A3 type required minimal opening of fracture site for achieving the reduction.

Five (5) cases closed reduction required manipulation by Schanz pins inserted into the lateral cortex of both proximal and distal fragments.

Average duration of surgery was seventy four (74) minutes with minimum being fourty five (45) minutes and maximum duration being hundred and thirty (130) minutes. 10 mm x 24 cm proximal femoral nail with cervical screws at 135 degree from standard ISO 9002 certified Indian company was used in all patients.

Results-

Despite associated co-morbidites all the elderly patients in our series were able to sit, hanging the legs by the side of bed and were able to do quadriceps exercises within 2-3 days of surgery.This must have protected them from developing complications of prolong bed ridden condition. Fourteen (14) patients who had Grade 2 bed sore at the time of admission had rapid healing of bed sore and none of rest of the patients developed till last follow up. Early sitting perhaps also helped to improve respiratory as well as cardiac conditions of these patients. This could be attributed to the surgical technique which is minimally invasive and less time consuming. Twenty four (24) patients were able to walk non weight bearing during the hospital stay, while sixteen (16) patients could not do due to their associated co-morbidities. However ten (10) of these patients were able to walk non weight bearing during first follow up after interval of one month. Rest of six (6) patients were able to stand with support or move on wheel chair but were not able to walk due to poor general condition.

Partial weight bearing was allowed during second month follow up in all the patients who were able to walk. All the patients were able to walk with or without support full weight bearing after the radiological evidence of union at fracture site. Radiological evidence of union at fracture site was seen during third month follow up in twenty seven(27) patients and during fourth month follow up remaining thirteen(13) patients. Thus average duration of union was calculated to be 3.3 months.

Full range of movements at knee were present in thirty two (32) patients at four month follow up. Restriction of knee movement in rest of patients were due to associated osteo-

arthritis.

Acceptable range of movement for flexion and abduction were present at hip in all patients at four month follow up.

Complications were seen in seven (7) patients in the form of superficial infection in two (2) patients which responded to I/V and prolonged oral antibiotics, shortening in affected limb more than two centimeter in four (4) patients and one (1) patient developed deep vein thrombosis which was treated by low molecular weight heparin.

Harris hip scoring was done at the fifth and sixth month follow up. On the basis of over all Harris hip scoring, twelve(12) patients had excellent results, twenty four (24) had good result, and two (2) each had fair and poor results.

Discussion –

It has been known for over a century that some fractures are more common in elderly than younger people [8]. Various studies in Scotland, England , Sweden and Singapore have shown that there are increasing trends of intertrochanteric fractures in elderly patients.

The intertrochanteric fracture are themselves a big challenge to manage because of large number of complications. To add upon, these fractures are further complicated when occur in elderly patients because of associated co-morbidities.

Proximal femoral nailing can be one of the solution to decrease these complications as it is minimally invasive, less time consuming thus reducing complications of anaesthesia as well as surgery.

From a biomechanical point of view, a combind intramedullary device inserted via semi closed procedure should be preferred. The additional antirotation cervical screw prevent rotation and collapse of head neck fragment and an specially shaped tip together with a smaller distal shaft diameter results in less stress concentration at the tip. Thus biologically suited implant result in earliest possible mobilization and weight bearing. Thus by using proximal femoral nail for fixation of intertrochanteric fracture in elderly patients , they can be mobilized earlier to prevent complications of prolonged bed ridden condition.

Our study also indicates that minimally invasive and biologically stable fixation of intertrochanteric fracture of femur in elderly patients can help in decreasing mortality and morbidity in these patients.

Though our series is small and needs long follow up but shell it may be suggested that proximal femoral nail is better option for internal fixation of intertrochanteric fractures specilly in elderly patients, also need less invasive maximally stable fixation for earliest rehabilitation.

FRACTUE PATTERN ACCORDING TO AO CLASSIFICATION

FRACTURE TYPE	MALE	FEMALE	TOTAL	%
31A1	5 (12.5%)	10 (12.5%)	15	37.5%
31A2	5 (12.5%)	15 (37.5%)	20	50%
31A3	2 (5%)	3 (7.5%)	5	12.5%
Total	12(30%)	28(70%)	40	100%

According to Null hypothesis (P>0.05)not significant .so sex ratio has no relation with fracture type .

ASSOCIATED CO-MORBIDITIES

CO-MORBIDITY	NUMBER OF PATIENTS	%
DIABETES	15	37.5%
CARDIAC	10	25%
BRONCHIAL ASTHMA	5	12.5%
NORMAL	10	25%

COMPLICATIONS

SUPERFICIAL INFECTION	2	5%
SHORTENING OF LOWER LIMB > 2 cm	4	10%
DEEP VEIN THROMBOSIS	1	2.5%

Results- According to HARRIS hip scoring system

	MALE	FEMALE	TOTAL
EXCELLENT	4 (10%)	8 (20%)	12 (30%)
GOOD	7 (17.5%)	17 (42.5%)	24 (60%)
FAIR	_	2 (5%)	2 (5%)
POOR	1 (2.5%)	1 (2.5%)	2 (5%)
TOTAL	12 (30%)	28 (70%)	40 (100%)

P> 0.05, So there is no significant difference in results in tern of sex .

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