



ISSN (P): 2521-3466
ISSN (E): 2521-3474
© Clinical Orthopaedics
www.orthoresearchjournal.com
2018; 2(3): 24-27
Received: 15-05-2018
Accepted: 20-06-2018

Dr. Raghavendra MS
Senior Resident, Department of
Orthopaedics, Karwar Institute
of Medical Sciences, Karwar,
Karnataka, India

**Dr. Bharath Shekharappa
Gadagoli**
Assistant Professor, Department
of Orthopaedics, Karwar
Institute of Medical Sciences,
Karwar, Karnataka, India

Indirect reduction vs anatomical reduction in complex inter trochantric fractures managed with proximal femur locking compression plate

Dr. Raghavendra MS and Dr. Bharath Shekharappa Gadagoli

Abstract

Background: proximal femur fracture is one of the common fracture in elderly. The purpose of this study was to compare the results Indirect reduction vs anatomical reduction in complex inter trochantric fractures managed with proximal femur locking plate.

Materials and methods: The proposed study is a hospital based prospective study. It was done between 2013 and 2016. 40 patients of inter trochantric fracture were included in the study. 20 cases randomly were treated by indirect reduction and rest 20 by anatomic reduction. The union rate, hip function and complication were compared between the 2 groups.

Results: In the Study, 19 (95%) of the fractures united in 16 wk in indirect reduction group where as 80% of direct reduction group had union in 16 wk. There were no cases of intraoperative fracture comminution, or infection in indirect reduction group but anatomical reduction group had 3 cases of infection and 2 intraoperative fracture comminution. 7 patients in indirect reduction group had mal union and 2 had screw breakage but anatomical reduction group had no such complications. Functional results were graded according to the Harris hip score. Overall functional results were excellent in 70% in indirect reduction group compared to 93% in anatomical reduction group of patients.
n=number of cases

Keywords: Intertrochanteric fractures, proximal femur locking compression plating, plate osteosynthesis

Introduction

The proximal femur fractures are devastating injuries that most commonly affect the elderly population. Intertrochanteric fractures are common in the elderly female due to osteoporosis and 90% of fractures result from a simple fall¹. These fractures can be managed by conservative methods, but malunion and complications of prolonged immobilization is the end result. Thus, surgery by internal fixation is the ideal choice. Proximal femur- locking compression plate (PF-LCP) represents a feasible alternative for the treatment of unstable inter-trochanteric fractures. PF-LCP provides the surgeon with the flexibility to achieve plate to bone apposition as well as axial compression or angular stability. In this study we compared the 2 techniques of reduction for fixation that is indirect reduction with traction against open anatomical reduction.

Materials and methods

The proposed study is a hospital based prospective study. It was done between 2013 and 2016. On admission of the patient a careful history was elicited from the patients. The patients were then assessed clinically to evaluate their general condition and the local injury. The general condition of the patient and the vital signs were recorded. Methodical examination was done to rule out fractures at other sides. Local neurologic and vascular deficit was assessed.

Inclusion Criteria

1. Patients with unstable extracapsular proximal femur fractures AO-OTA type 31A2 and 31A3 extending from basicervical region to 5cm below the lesser trochanter.
2. Fractures less than 3weeks old.
3. Skeletally mature patients.
4. Patients willing for treatment and giving consent for operative management.

Correspondence

Dr. Raghavendra MS
Senior Resident, Department of
Orthopaedics, Karwar Institute
of Medical Sciences, Karwar,
Karnataka, India

Exclusion Criteria

1. Open fractures.
2. Patients with multiple trauma.
3. Fractures more than 3weeks old.
4. Patients with neurovascular injuries.
5. Patients with fractures already treated with other modes of ORIF and failed.
6. Patients unfit for surgery with other comorbidities.

Operative technique: After induction of anaesthesia, patient was placed in the supine position, then parts were painted and draped as for the standard hip fracture fixation. The tip of the greater trochanter was located by palpation or occasionally by using image intensifier in obese patients. A 6-8cm longitudinal incision was taken from the tip of trochanter in distal direction

along the shaft of femur. Fascia lata was opened in line with the incision and gluteus medius and vastus lateralis muscles were split in line with the fibers and tip of the trochanter and proximal femur exposed.

Reduction of fracture

Group 1: patient was placed in the supine position on the fracture table with adduction of the affected limb by 10-15 degrees and closed reduction of the fracture was done with traction and rotation.

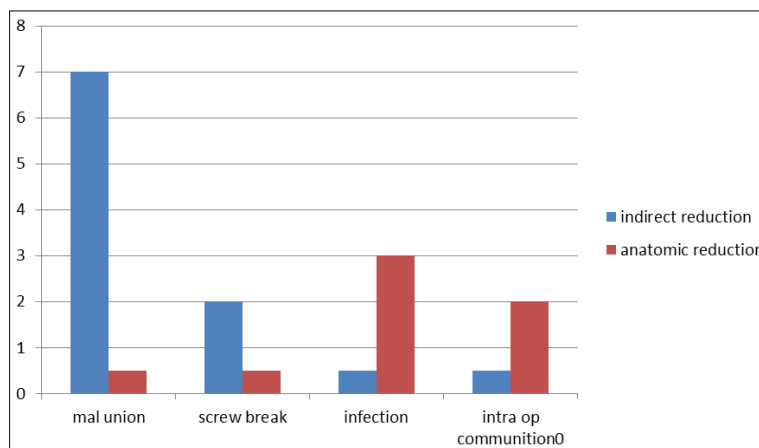
Group 2: fracture table not used, the fracture was reduced anatomically with reduction forceps.

Both group fractures were fixed with proximal femur locking plate. Wound closed in layers

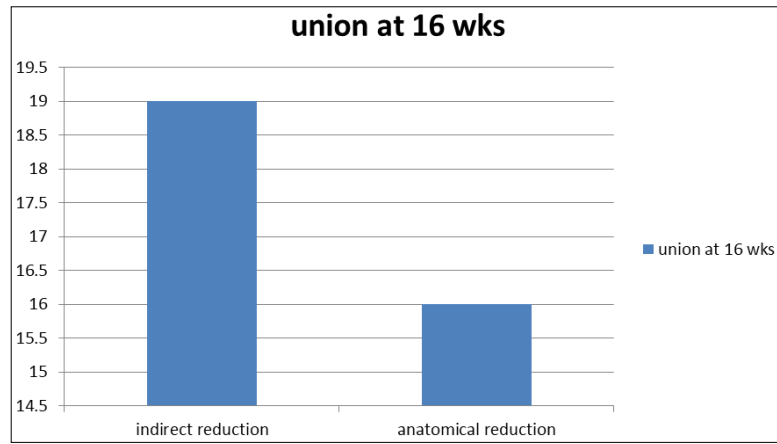


Observation: 40 closed unstable fractures of proximal femur were treated with proximal femoral locking compression plate. These were followed for 2 years. Average age in our study was 49.6years. There was an almost equal distribution of cases in all age groups and most of them were males (75%). Most of these fractures were right sided (62.5%). Most of the cases were result of road traffic accident (43.75%) in the young and self-fall (40.62%) in the elderly. Most of the fracture types were AO type 31 A2 (56.25%). Comminuted intertrochanteric fracture constituted 35 cases. Average OT time for indirect reduction group was 60 mins.it was 100 mins in anatomic reduction group.

Mean duration of hospital stay was 4.5 days. 19 (95%) of the fractures united in 16 wk in indirect reduction group where as 80% of direct reduction group had union in 16 wk. There were no cases of intraoperative fracture comminution, or infection in indirect reduction group but anatomical reduction group had 3 cases of infection and 2 intraoperative fracture comminution. 7 patients in indirect reduction group had mal union and 2 had screw breakage but anatomical reduction group had no such complications. Functional results were graded according to the Harris hip score. Overall functional results were excellent in 70% in indirect reduction group compared to 93% in anatomical reduction group of patients.



Complications comparison



Discussin

Conclusions

1. proximal femoral LCP is a good option for proximal femoral fractures in the elderly patients especially for severe communitated fracture and osteoporosis
2. indirect reduction wit traction decreases the operative time and blood loss but chances of mal union and screw breakage

is more

3. direct anatomical reduction has longer operative time and infection but less mal unions and good hip function in long follow up
4. it is better to achieve anatomical reduction when using proximal femur locking plate for intertrochantric fractures



Screw break



mal union

References

1. Frigg R. Development of the Locking Compression Plate. *Injury*. 2003; 34(2):6-10.
2. Gautier E, Sommer C. Guidelines for the clinical application of the LCP. *Injury*. 2003; 34(2):B63-B76.
3. Sommer C, Gautier E, Muller M, Helfet DL, Wagner M. First clinical results of the Locking Compression Plate (LCP). *Injury*. 2003; 34(2):B43-B54.
4. Wagner M. General principles for the clinical use of the LCP. *Injury*. 2003; 34(2):B31-B42.
5. Egol KA, Kubiak EN, Fulkerson E, Kummer FJ, Koval KJ. Biomechanics of locked plates and screws. *J Orthop Trauma*. 2004; 18:488-493.
6. Hasenboehler EA, Agudelo JF, Morgan SJ, Smith WR, Hak DJ, Stahel PF. Treatment of complex proximal femoral fractures with the proximal femur locking compression plate. *Orthopaedics*. 2007; 30(8):618-23.
7. Wieser K, Babst R. Fixation failure of the LCP proximal femoral plate 4.5/5.0 in patients with missing posteromedial support in unstable per-, inter-, and subtrochanteric fractures of the proximal femur. *Arch Orthop Trauma Surg*. 2010; 130(10):1281-7.
8. Wang Y, Yang YY, Yu ZH, Li CQ, Wu YS, Zheng XX. Comparative study of intertrochanteric fractures treated with proximal femur locking compress plate in aged. *Zhongguo Gu Shang*. 2011; 24(5):370-3.
9. Guo-Chun Zha AB, Ze-Lin Chen B, Xiao-Bo Qi B, Jun-Ying Sun A. Treatment of pertrochanteric fractures with a proximal femur locking compression plate. *Injury, Int. J Care Injured*. 2011; 42:1294-1299.
10. Streubel PN, Moustoukas MJ, Obremskey WT. Mechanical failure after locking plate fixation of unstable intertrochanteric femur fractures. *J Orthop Trauma*. 2013; 27(1):22-8.
11. Laskin RS, Gruber MA, Zimmerman AJ. Intertrochanteric fractures of the hip in the elderly: a retrospective analysis of 236 cases. *Clin Orthop Relat Res*. 1979; (141):188-95.
12. Strauss EJ, Schwarzkopf R, Kummer F, Egol KA. The

- current status of locked plating: the good, the bad and the ugly. *J orthop trauma*. 22:479-486.
13. Parker MJ, Pryor GA. Gamma versus DHS nailing for extracapsular femoral fractures. Meta-analysis of ten randomised trials. *Int Orthop*. 1996; 20(3):163-8.
 14. Streubel PN, Moustoukas MJ, Obremskey WT. Mechanical failure after locking plate fixation of unstable intertrochanteric femur fractures. *J Orthop Trauma*. 2013; 27(1):22-8.
 15. Pavelka T, Kortus J, Linhart M. Osteosynthesis of proximal femoral fractures using short proximal femoral nails. *Acta Chir Orthop Traumatol Cech*. 2003; 70(1):31-8.
 16. Mohsen Mardani-Kivi, Ahmadreza Mirbolook, Sina Khajeh Jahromi, Melina Rouhi Rad. Fixation of intertrochanteric fractures: dynamic hip screw versus locking compression plate. *Trauma Mon*. Sep. 2013; 18(2):67-70.
 17. Saini P, Kumar R, Shekhawat V, Joshi N, Bansal M, Kumar S. Biological fixation of comminuted subtrochanteric fractures with proximal femur locking compression plate. *Injury*. 2013; 44(2):226-3.
 18. Karl Wieser, Reto Babst. Fixation failure of the LCP proximal femoral plate 4.5/5.0 in patients with missing posteromedial support in unstable per-, inter-, and subtrochanteric fractures of the proximal femur. Department of Trauma Surgery, Cantonal Hospital Lucerne, Lucerne 13, Switzerland. *Archives of Orthopaedic and Trauma Surgery (Impact Factor: 1.36)*. 02. 2010; 130(10):1281-7.
 19. Sun-jun Hu, Shi-min Zhang, Guang-rong Yu. Treatment of femoral subtrochanteric fractures with proximal lateral femur locking plate. *Acta Ortop Bras*. 2012; 20(6):329-333.
 20. Chalise PK, Mishra AK, Shah SB, Adhikari V, Singh RP. Outcome of pertrochantric fracture of the femur treated with proximal femoral locking compression plate. *Nepal Med Coll J*. 2012; 14(4):324-327.
 21. Yuming Y, Yong L, Weiping Z. A clinical therapeutic effect analysis of LCP fixation for osteoporotic femoral intertrochanteric fracture with Singh's classification I, II. *Chin J Bone Joint Injury*. 2011; 10:8.