ORIGINAL RESEARCH PAPER

Orthopaedics

AN ALTERNATE METHOD TO MAINTAIN REDUCTION IN PROXIMAL FEMUR NAILING OF INTERTROCHANTERIC FEMUR FRACTURE : TEMPORARY K WIRE FIXATION

KEY WORDS:
Intertrochanteric fracture, Temporary k wire

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ABSTRACT

Intramedullary implants for fracture intertrochanteric fractures, there is always risk of loss of reduction despite of reduction after percutaneous procedure. Loss of reduction intraoperatively is not uncommon. Temporary k wire fixation is a good alternate to maintain the reduction during procedure. Retrospective analysis of intraoperative C-arm image with x ray proves this method as a reasonable approach for maintaining reduction of intertrochanteric fractures during nailing.

INTRODUCTION

Intramedullary implants has become choice of treatment for intertrochanteric fractures by orthopedic surgeons1.For intertrochanteric fractures AO-OTA31-A2,A3 Intramedullary implants are most preferred now a days[2,3]. Number of implants are now a days are introduced ,achieving and maintaining reduction provides good clinical outcome[4-7] After traction and internal rotation reduction can be achieved in most of cases, some of those cases require additional percutaneous maneuvers for reduction and surgical assistance8-10. Maintaining final alignment until nail insertion is important to achieve favorable results of nailing. For maintenance of reduction an assistant or by any instrument are used, but there is high risk of reduction loss. Apart from these increased radiation exposure and blood loss with additional, labor end up with unacceptable alignment some times6. For all these we use to do temporary K wire placement of 3 mm k wire anteriorly across the main fracture site after reduction as an alternative to the manual maintenance of reduction.

Material and Methods

Patients

A total number of 30 cases of inter trochanteric fracture treated with PFN

Inclusion criteria were:

1) Extracapsular hip fracture classified as AO-OTAtype31 A1 orA2
2) Patient who gave consent for this procedure.
3) Implant PFN
4) Acceptable reduction after percutaneous reduction procedure

Exclusion criteria:

1) Mixed method of reduction
2) Pathological fracture

Surgical technique

After anesthesia induction manual fracture reduction was performed on fracture table before painting and draping. Once an acceptable reduction was achieved with the percutaneous reduction technique 3 mm K wire was inserted. K wire was inserted starting from the lateral femoral wall around 1 centimeter below the trochanteric ridge just beneath the anterior cortex and was advanced superiomedialy into the neck and head to avoid the path of the PFN. There is no standard definition for intraoperative loss of reduction. In our study we considered more than one cortical thickness in any plane during any point in the procedure after an acceptable reduction was achieved was considered an intraoperative loss of reduction. For few patients anteriorly placement of hommans to reduce the proximal fracture required. Radiologic evaluation involved measuring the medial and lateral translation of the proximal fragment and Varus or valgus angulation on the anteroposterior view of the image after closed reduction. Also, anterior and posterior translation of the proximal fragment and ante version on the lateral view of the image after closed reduction were included. During the fluoroscopic examination, the patient was placed on the fracture table with the supine position with the unaffected leg abducted and externally rotated. The anteroposterior image was taken as usual. The lateral image was obtained with the X-ray beam running horizontally. The direction of the beam was controlled between 30_ and 60_ to the long axis of femur11. The quality of reduction from the image after percutaneous reduction was classified on both anteroposterior and lateral views according to our previously described criteria. Intraoperative loss of reduction was determined from the image during nail insertion, and from final image on anteroposterior and lateral views.

Results

We had total 30 cases with provisional k wire fixation with intra operative ,in all the cases there was no intraoperative loss of reduction, without any varus and valgus deformity after the nail insertion and after proximal and distal screw placement.

DISCUSSION

In our study among the patients with AO-OTA 31-A Intertrochanteric fractures we had done percutaneous reduction before intramedullary nailing we have experienced this technique beneficial ho hold the reduction and also decrease manual assistant labor . Number of techniques are describe to maintain the complex intertrochanteric fractures. One of technique is manual reduction technique, the reduction is usually maintained manually by an assistant9,12. In this study we made an effort to maintain anatomical reduction throughout the surgical procedure using our technique of provisional pin fixation Simply, in this new technique, only one additional 3-mm pin is passed anteriorly into the neck and head so that it does not interfere with the installation of the nail and proximal femur nail during fixation. Provisional K wire fixation is technically possible without disturbing the passage of the nail and Proximal Femur Nail and without the need for an assistant after nail insertion. However loss of reduction may can happen

even when k wire is in situ as manipulation can happen during the nail insertion, in that situation multiple attempts of k wire insertion should be avoided. A 3 mm K wire or a guide pin is an easily available instrument that is included in the PFN instrument set. Although this method also reduces the blood loss and also decrease the operative time .

CONCLUSION:

For intraoperative maintenance of reduction the temporary k wire fixation appears to be a good alternative to maintenances of reduction intraoperatively for AO-OTA31 A1 and A2 intertrochanteric fractures, despite of other methods this method requires less assistance.

REFERENCES

1. Anglen JO, Weinstein JN, American Board of Orthopaedic Surgery Research C (2008) Nail or plate fixation of intertrochanteric hip fractures: changing pattern of practice. A review of the American Board of Orthopaedic Surgery Database. J Bone Joint Surg Am 90(4):700–707. doi:10.2106/JBJS.G.00517
2. Gotfried Y (2004) The lateral trochanteric wall: a key element in the reconstruction of unstable pertrochanteric hip fractures. Clin Orthop Relat Res 425:82–86
3. Haidukewych GJ (2009) Intertrochanteric fractures: ten tips to improve results. J Bone Joint Surg Am 91(3):712–719
4. Chang WS, Zuckerman JD, Kummer FJ, Frankel VH (1987) Biomechanical evaluation of anatomic reduction versus medial displacement osteotomy in unstable intertrochanteric fractures. Clin Orthop Relat Res 225:141–146
5. Desjardins AL, Roy A, Paiement G, Newman N, Pedlow F, Desloges D, Turcotte RE (1993) Unstable intertrochanteric fracture of the femur. A prospective randomised study comparing anatomical reduction and medial displacement osteotomy. J Bone Joint Surg Br 75(3):445–447
6. Gundle R, Gargan MF, Simpson AH (1995) How to minimize failures of fixation of unstable intertrochanteric fractures. Injury 26(9):611–614
7. Saudan M, Lubbeke A, Sadowski C, Riand N, Stern R, Hoffmeyer P (2002) Pertrochanteric fractures: is there an advantage to an intramedullary nail?: a randomized, prospective study of 206 patients comparing the dynamic hip screw and proximal femoral nail. J Orthop Trauma 16(6):386–393
8. Carr JB (2007) The anterior and medial reduction of intertrochanteric fractures: a simple method to obtain a stable reduction. J Orthop Trauma 21(7):485–489. doi:10.1097/BOT.0b013e31804797cf
9. Chun YS, Oh H, Cho YJ, Rhyu KH (2011) Technique and early results of percutaneous reduction of sagittally unstable intertrochateric fractures. Clin Orthop Surg 3(3):217–224. doi:10.4055/cios.2011.3.3.217
10. Moehring HD, Nowinski GP, Chapman MW, Voigtlander JP (1997) Irreducible intertrochanteric fractures of the femur. Clin Orthop Relat Res 339:197–199
11. Braten M, Tveit K, Junk S, Aamodt A, Anda S, Terjesen T (2000) The role of fluoroscopy in avoiding rotational deformity of treated femoral shaft fractures: an anatomical and clinical study. Injury 31(5):311–315
12. Takigawa N, Moriuchi H, Abe M, Yasui K, Eshiro H, Kinoshita M (2014) Complications and fixation techniques of trochanteric fractures with the TARGON((R)) PF. Injury 45(Suppl 1):S44–S48. doi:10.1016/j.injury.2013.10.036