

**Maluniting Intertrochanteric Fracture – Whats Your Option?
Our Experience Of 12 Cases With High Subtrochanteric Osteotomy
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Abstract:

Introduction : Malunion of intertrochanteric fractures is common in developing countries as many people rely on indigenous treatment and splintage for fractures. It is not uncommon to see many patients presenting late after the fracture has started to unite when patients notice that the involved limb is short and externally rotated during change of splints (usually done every 15 days). Malunion of intertrochanteric fractures is also common after internal fixation of fractures due to inadequate reduction or failure of fixation.

Material and methods : A total of 12 cases operated from May 2014 to December 2016 by the senior author. Average age of the patient was 64 years and mode of injury was slip and fall in most cases. Patients presented at an average of 3 months after the fracture. High subtrochanteric lateral closing wedge valgus osteotomy and internal fixation with dynamic hip screw was done.

Results : All the 12 patients were followed for a period of 1 year. Union at osteotomy site was achieved in all the patients. There was significant improvement in range of movements due to improvement in neck shaft angle. Limb length discrepancy improved to about 0.5 cms.

Conclusion : Subtrochanteric lateral closing wedge valgus osteotomy and internal fixation with dynamic hip for maluniting intertrochanteric fracture showed good results and it is also an effective alternative for supervised neglect/arthroplasty in providing a painfree mobile joint.

Introduction

Malunion of intertrochanteric fractures is common in developing countries as many people rely on indigenous treatment and splintage for fractures. It is not uncommon to see many patients presenting late after the fracture has started to unite when patients notice that the involved limb is short and externally rotated during change of splints (usually done every 15 days). Malunion of intertrochanteric fractures is also common after internal fixation of fractures due to inadequate reduction or failure of fixation.

Most of the fractures presenting late and beginning to malunion are many times 'skilfully' neglected under supervision even by orthopaedic surgeons as open reduction and internal fixation of maluniting fractures are associated with blood loss and higher risk of complications than treating fresh fractures. It is definitely difficult to recreate the fracture and reduce the fracture to restore the neck shaft angle. What is easier is to accept the malunion and surgically correct the coxa vara with a high subtrochanteric valgus osteotomy and internal fixation of the osteotomy and maluniting fracture. This article reviews the clinical, radiological and functional outcome of maluniting intertrochanteric fractures treated by subtrochanteric valgus osteotomy and internal fixation.

II. Materials And Methods

A total of 12 cases were operated between May 2014 to December 2016 at Sriramachandra Medical University, Chennai by the senior author. Most (8) of the fractures occurred after a slip and fall during house hold activities. A few (4) fractures occurred following road traffic accidents. All the patients was above 55 years. 11 patients after injury were indigenously treated with multiple splints at variable intervals. Patients presented to us at a mean period of 3 months (range - 1.5 to 8 months) after the injury. Most of the patients complained of mildly painful limp except for one patient with inability to walk. The usual clinical findings were supratrochanteric shortening with broadening of trochanteric prominence and external rotation attitude of limb and ipsilateral abductor insufficiency. All had restricted abduction and internal rotation due to coxa-vara. 1

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patient who had undergone dynamic condylar screw fixation for unstable intertrochanteric fracture had a gradual loss of reduction and increasing varus collapse into malunion. This was treated by the same method.

Pre operatively base of wedge was measured using X-rays with magnification markers after calculating degree of correction required. All the patients were given spinal and epidural catheter insertion .All were positioned supine on a fracture table.

The subtrochanteric region of the proximal femur was exposed by the lateral approach after splitting the vastuslateralis. No attempt was made to expose the maluniting fracture site. Dynamic condylar screw with barrel plate needed to be removed in 1 patient. 2.5 mm guide wire was inserted from below the vastuslateralis ridge into the centre of neck and head of femur without using the angle guide. The position of guide wire was checked under image intensifier to be centre/centre in both anteroposterior and lateral views. A slightly inferior and posterior location of the guide wire was sometimes accepted. The guide wire must be exactly parallel to the superior and inferior border of the neck in the anteroposterior view. Some deviation in the lateral view may be acceptable. Triple reaming was done. Appropriate size 12.5 mm Richard's screw was inserted.

135 degrees DHS plate (at least 6 holed) with barrel was inserted over the Richard's screw. As the neck shaft angle was still reduced, the plate would be noted to be away from shaft of the femur. Based on the preoperative templating a laterally based wedge of bone was removed in the subtrochanteric region just distal to the lesser trochanter (the more the osteotomy is closer to the metaphysis, the healing would be better). The distal femur shaft fragment was abducted and brought to the plate to close the wedge and fixed with at least four 4.5 mm cortical screws. This corrects the neck shaft angle. The closed wedge osteotomy is also transverse and therefore the healing would be better. Wedge of bone removed was nibbled and placed medially at the osteotomy site.

Post operatively patients were allowed to walk with a walker without bearing weight on the operated limb for 6 weeks. This was followed by a further 6 to 10 weeks of partial weight bearing. The osteotomy usually heals within 3 to 4 months. Radiographs were taken at 6 weeks, 3 months, 4 months, 6 months and 1 year following the surgery. During each visit, the functional improvement, the range of motion of the hip and the limb length discrepancy was recorded.

III. Results

Out of 12 patients 10 were males and 2 were females .Average surgical time was 120 minutes (100-150 minutes).The average blood loss was 270 ml (230- 330 ml).All the fractures radiologically united at a period of 12 to 16 weeks with no complications . The mean pre operative neck shaft angle was 100 degrees which was corrected to 130 degrees post operatively .There were no incidences of deep infection ,implant loosening/ cut outs. Mean pre operative shortening was 2.5 centimetres which improved to a mean shortening of 0.5 centimetres post-operatively. All patients had an improved gait pattern and were extremely satisfied with the surgery. All the patients were able toperform routine household activities whenquestioned at the end of 6 months which included sitting cross legged and squatting requiring supportwhile getting up. Outdoor activities like walking onroadside and uneven surfaces was carried out with little difficulty and use of walking aid.

Examples :

Case 1:

Male 60 years with 8 weeks old intertrochanteric fracture .



Pre op x ray



Immediate post op X rays



6 months post op X rays



1 year post op X rays

Case 2:

60 year old female – unstable intertrochanteric fracture – Treated initially with DCS follow up 8 months implant failure .Revision valgus osteotomy and DHS fixation was done after implant removal.



Pre op x rays



Immediate post op



3 months post op



8 months post op



Revision implant removal with valgus osteotomy and DHS fixation



3 months post op



6 months post op



1 year post op

IV. Discussion

Maluniting and malunited intertrochanteric fractures is a common problem seen in developing countries because of the prevalence of indigenous methods of treatment. Malunion is also common after internal fixation of fractures when reduction is inadequate or there is a loss of reduction. Even though the patients may not have much pain, they have a significant shortening of about 2.5 cms as seen in our patients. The reduced neck shaft angle- coxa vara causes a functional shortening of the hip abductors as there is proximal migration of the greater trochanter. This leads to a Trendlenburg like gait and fatigue of the hip abductors on prolonged walking which patients commonly complain of even though they have only mild pain. Commonly such maluniting and malunited intertrochanteric fractures are neglected even by orthopaedic surgeons as it is believed to cause not much functional disability. But this is not the fact that is brought out by the study as most of the patients had significant functional improvement following the corrective surgery.

Recreating the fracture site by opening the fracture site and rebreaking/reosteotomizing it is associated with lots of blood loss, difficulties and loss of bone. Many times after recreation of the fracture, once the fracture is reduced it is noted that there is large bone void at the fracture site which needs to be bone grafted with its own complications. Arthroplasty should also not be done for a malunited intertrochanteric fracture. Hence a simple approach would be to accept the malunion and perform a distal valgization osteotomy as is described in this article. The neck shaft angle is restored. The greater trochanter is moved distally. The shortening is reduced. All these points are well brought out by the follow up of our patients. Hence the patients are immensely satisfied as they have significant improvement in gait and length. The well planned and judiciously performed osteotomy also heals well without complications as is seen in this study. Hence this approach can be adopted more often instead of the usual 'supervised neglect' of these malunions.

V. Conclusion

Valgus osteotomy with DHS(Dynamic Hip Screw) fixation for maluniting and malunited intertrochanteric fracture showed good results. It is also an effective alternative for supervised neglect/arthroplasty in this commonly faced problem .

Article

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