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Case report rare greater trochanter fracture

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Abstract

Introduction: The Greater Trochanter fracture is a rare injury. It is of two types, True fracture which occurs only in Adults or as Epiphyseal separation which are found in adolescent population. It is caused by direct hit or fall muscular disruption displacement of trochanteric fracture is secondary to short external rotators with forceful abduction with leg in external rotation.

Case report: In this case report, 26 year male presented with pain over hip with weakness in abduction and limping. On X ray it was greater trochanter fracture which was fixed with cancellous screw, the outcome was good. The patient reverted to his obvious activities with normal range of movement.

Conclusion: The surgical minimally invasive treatment have better outcome with early mobilization, good range of hip movement especially abduction post operative in adult.

Keywords: Greater trochanter, proximal femur, gluteus medius, gluteus minimus, external rotators

Introduction

Greater Trochanter is a bony prominence on the lateral aspect of proximal femur. It serves as site for multiple insertion including Hip abductors Gluteus Medius, Gluteus Minimus and External rotators.

Isolated Trochanter fracture is uncommon, they are classified either True fracture which occur only in adults or as Epiphyseal separation which are found in adolescent population [9, 10].

Armstrong [19] reported that traumatic epiphyseal separations of greater trochanter in adolescents are more often encountered than true fractures in adults.

Mechanism of injury is due to direct hit or fall, muscular disruption, displacement of trochanteric fracture which is secondary to short external rotators with forceful abduction with leg in external rotation [21].

Both Milch 1939 and Merling Nixon 1969 [4, 5] believed that displacement of trochanteric fracture was secondary to short external rotators and not abductors.

Patient presented with pain lateral side of Hip and on abduction with ecchymosis pain, difficulty in weight bearing, tenderness at trochanteric region with externally rotated lower limb and flexion of hip secondary to pain spasm and occasionally limp present.

Investigation of choice is X ray and CT, On X Ray – Isolated Greater Trochanter fracture with fracture angle of more than 45° are unlikely to have Intertrochanteric extension. Those fracture which fulfill the plain radiographic criteria of extension of more than 40% and fracture angle of ante version 20-40° are likely to show I/T Extension so need MRI. Linear vertical band of decreased T1 extending from greater trochanter on MRI suggest isolated GT avulsion rather than Intertrochanteric [15, 17].

There are three modalities of treatment:

1. Wide abduction of limb, to oppose the displaced fragment with its bed. These are kept on skin traction and immobilization either with adhesive strapping or hip spica cast for 6 weeks.
2. Bed rest with or without traction until the acute symptoms subside, followed by active exercises and crutch ambulation beginning with partial weight bearing on affected limb then progress to full weight bearing 4-6 weeks from date of injury.
3. Operative treatment is open reduction internal fixation with CCS Screw. Trochanteric fracture displaced more than 1 cm or soft tissue interposition need fixation.

Case Report

25 yr male presented with pain over left trochanteric region, unable to walk after falling from height. On Physical examination – tenderness over left Greater Trochanter area and weakness on abduction. X ray shows Avulsion with displaced whole Greater Trochanter, after investigation planned for surgery.

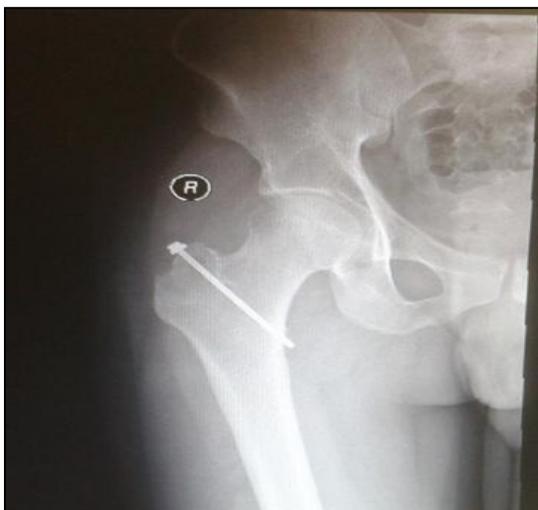
Procedure - Lateral minimal incision was taken over the greater trochanter, splitting gluteus maximus. The greater trochanter fragment appeared to be lying in a neutral lateral position held by the intact attachments of vastus lateralis inferiorly and gluteus medius and minimus superiorly. With full internal rotation of the femur the trochanteric fragment reduced spontaneously on the underlying femur. No direct manipulation of the trochanteric fragment was needed. One AO 6.5 mm partially threaded (32 mm thread) cancellous screws with washer were inserted for internal fixation of the trochanter [11]. The reduction was screened with the image intensifier, which appeared to be good, with no more than 2 mm residual superior displacement of the greater trochanter on the femur.

Following surgery further radiographs were taken to check symmetry of the reduction. The patient made an uneventful recovery. He was mobilized, partial weight bearing with walker on affected lower limb for 6 weeks before full weight bearing without walker later on recovery was satisfactory.

Pre-Operative X Ray



Post-Operative X Ray



Follow Up X Rays After 2 Years



Postoperative Images 2 Years



Discussion

Fractures of the greater trochanter are rare. They may be divided into those involving epiphyseal separation of adolescence and true fractures of adulthood. In adults isolated fractures of the greater trochanter have been treated both conservatively and surgically. Avulsion fractures of the apophyses of the pelvis and proximal femur, rarely affecting the greater trochanter, have been described. These tend to occur in males during the second decade.

Mechanism of injury was likely to be due to forced external rotation of the leg with simultaneous contraction in the gluteus medius and minimus muscles. The apparent neutral position of the avulsed segment would have been maintained by the intact gluteal and vastus lateralis muscle attachments. Since we observed that reduction of the trochanteric apophysis was achieved spontaneously by full internal rotation of the femur, we postulate that a closed reduction could have been accomplished. This would have enabled percutaneous screw fixation of the trochanteric apophysis to be done. Apophyseal fractures of the pelvis tend to have an excellent prognosis. However, fractures of the greater trochanter can have serious consequences, including avascular necrosis of the femoral head leading to severe hip deformity [2, 8]. We recommend a trial of closed reduction and percutaneous fixation, be considered in this apophyseal injury for better post operative mobilization with but also risk of AVN of femoral head remain undesirable.

Conclusion

Greater Trochanter fracture is very rare fracture. The surgical minimally invasive treatment have better outcome with early mobilization, good range of hip movement especially abduction post-operative in adult with good hip Harris score.

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