

Reduction Aid in Proximal Femoral Fractures: The Thigh Support

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Abstract

Reducing the Unstable Intertrochanteric Fractures in a closed manner is challenging especially in the old and aged people with co morbidities. We provide a simple reducing aid to achieve the fracture reduction. This will protect your surgical resident's or operating theatre practitioner's back in maintaining the reduction throughout the procedure and continuing with the procedure of cephalomedullary nailing. It will also facilitate in the better rehabilitation of the patient with minimal morbidity and offer a good radiographic view.

Keywords

Hip Fracture, Unstable Intertrochanteric Fractures, Thigh Support, Proximal Femoral Nailing, Reduction Aid

1. Introduction

The Unstable Intertrochanteric Fractures are notorious for instability arising from the varied fracture patterns. The proximal fragment is flexed and there is shortening of the limb. The deformity is exaggerated once excessive traction is applied after the anaesthetized patient is placed on the fracture table. To achieve the acceptable reduction without opening the fracture is desirable.

We have devised a thigh support which can be attached to the leg holder of the fracture table which helps in maintaining the reduction till the completion of the procedure. The thigh support attachment slides along the fracture table to be placed at the exact level where the fracture needs to be reduced.

2. Technique

Informed consent was obtained from the patients to use the pictures used in this study. The thigh support is aimed to bring the femoral shaft in alignment with

the proximal femur. It is aimed to neutralize the deforming forces and get an acceptable reduction before the start of the procedure.

The reduction aid is made of a stainless steel sheet **Figure 1(a)** **Figure 1(b)** which is malleable and can conform to the thigh of the patients. It slides along the base piece of the traction table **Figure 1(c)**. It should be applied in such a way to prevent obstruction to the movement of the C arm. It should not violate the surgical drapings (**Figure 2**).

The preoperative x-ray of the patient (**Figure 3**) was analysed and so was the post reduction image on the C arm (**Figure 4**). The thigh support was attached



(a)



(b)

(c)

Figure 1. (a) showing the fracture table attachment to assist in reduction; (b) with the limb attached and elevated; (c) the attachment compatible with sliding.



(a)



(b)

Figure 2. (a) showing the extremity draped; (b) showing the procedure being carried out with a stein man pin used as an adjunct.

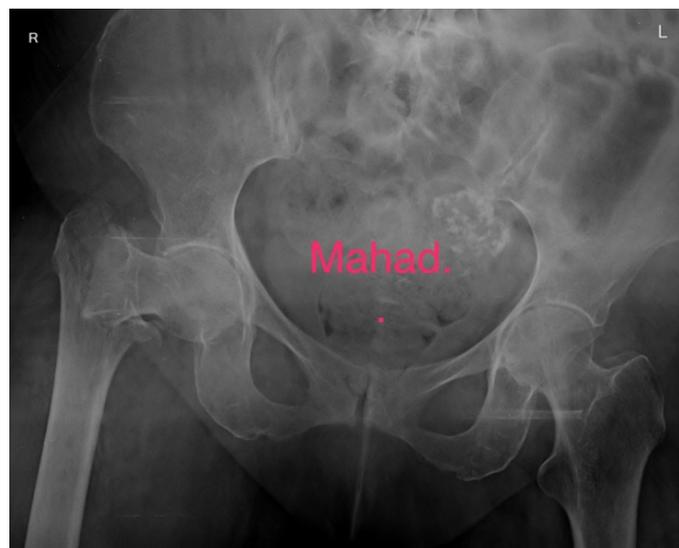


Figure 3. Showing an unstable Intertrochanteric fracture.

to the foot piece of the table and elevated to get a desirable position in the image before the procedure was begun. Once we were satisfied with the reduction the surgery was performed (**Figure 5**).

The thigh support could be elevated or depressed to the desired level to achieve the reduction when checked under the image intensifier and the procedure can be completed without causing morbidity to the patient.



Figure 4. Showing the C arm view of unstable Intertrochanteric fracture.



Figure 5. Final post operative image showing well reduced fracture with implant *in situ*.

3. Discussion

For the procedure of Cephalomedullary nailing to be undertaken the muscular forces which tend to displace the per trochanteric fractures need to be addressed. The iliopsoas muscle inserts on the lesser trochanter and acts to flex and externally rotate the proximal fragment. Attached to the greater trochanter are the abductors and short external rotators. Distally, the adductor muscles will act to pull the distal femur toward the midline and into external rotation. The distal fragment is further pulled proximally by the hip adductors, flexors, and extensors. These muscular forces commonly lead to a femur that is aligned in varus and external rotation through the fracture site. During the procedure to neutralise the forces, the assistant's strength is put to test.

Dissection of periosteum is not always needed, and some minimally invasive techniques can be used to reduce blood loss [1].

Either an inappropriate starting point or a failure to match the chosen implant's lateral entry angle may cause coronal plane deformity after trochanteric entry nailing [2]. The lateral view is the critical view for localization of the proper starting point after a well reduced fracture. Consideration regarding the anterior bowing of the femoral shaft should be determined preoperatively to avoid penetration the anterior femoral cortex [1].

For the right execution of the surgery, getting the trajectory right is fully under the control of the surgeon and should always be attempted in a closed manner whenever possible. If correct neck shaft angle and version are maintained, irrespective of comminution, irrespective of nonanatomical reduction fracture will unite with minimal shortening [3].

The advantages, of this attachment, we feel is that it is inexpensive, robust enough to bear the weight of the thigh and which does not obstruct the movement of the C arm during the procedure.

The attachment can be locally manufactured and this will protect your operating theatre practitioner's back to achieve a surgical procedure of proximal femoral nailing.

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