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Research Paper

A Novel Techinique of Positioning on Fracture Table For Subtrochanteric Fracture Fixation in A Controlateral Transfemoral Amputee – A Case Report And Review Of Literature.

Medical Science

KEYWORDS : traction of amputee limb, subtrochantric fracture

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ABSTRACT

Closed reduction of peritrochanteric fractures are achieved with gradual traction on a fracture table, the contralateral limb being placed in a traction boot and counter-traction applied through the second limb of the fracture table. In patients with transfemoral amputations one is unable to apply routine counter-traction in this fashion. We describe a simple technique by which we were able to use successfully to apply the necessary counter-traction to the trans-femoral amputation stump in a patient with a contralateral comminuted subtrochanteric fracture. To the best of our knowledge this technique has not been described in literature for use in counter-traction.

INTRODUCTION

Peritrochanteric fractures in elderly patients are common due to osteoporosis (1). These fractures are traditionally treated by closed reduction and internal fixation with a cephalomedullary, dynamic hip screw or fixed angle device. Closed reduction of these fractures are achieved with gradual traction on a fracture table, the contralateral limb being placed in a traction boot and counter-traction applied through the second limb of the fracture table. In the case we report, we were unable to apply routine counter-traction as the patient was a high trans-femoral amputee on the contralateral side. We describe a simple technique we were able to use successfully to apply the required counter-traction to the trans-femoral amputation stump in a patient with a comminuted subtrochanteric fracture. A review of the existing literature was performed to see whether this or similar techniques have been used in the past. To the best of our knowledge this technique has not been described in literature for use in counter-traction.

Case report

A 75 year old gentleman presented to our outpatient department in a wheelchair 2 weeks following a trivial fall off a chair at home. He had pain and was unable to actively move his left hip. He was a long-standing diabetic and hypertensive who had undergone a high transfemoral amputation of the right lower limb 17 years prior for diabetic foot with gangrene. Plain radiographs showed a comminuted displaced left subtrochanteric fracture (fig 1). Following medical optimization, he was planned for closed reduction and cephalomedullary nailing of the left femur (Medtronic Kanchui Neogen nail, Medtronic corpn.). In the operative technique, closed reduction of these displaced fractures requires significant traction on the fracture table and the effective firm and sustained counter-traction. Since this patient had a high transfemoral amputation with a very short residual stump, positioning was extremely difficult for adequate counter-traction.

Positioning techinique:

The patient was positioned supine on a fracture table with the fractured limb secured in a foot boot. A wide perineal post inserted. The amputation stump was prepared to provide effective counter-traction as follows : A stirrup was fashioned with Elastoplast (Biersdorf, A.G, Germany) adhesive and applied the short stump in two layers and secured in a loop around the vertical post on the limb of the fracture table (Maquet, A.G, Germany) (fig 2a). To secure the stirrup a layer of elastocrepe bandage (Dyna, India) was woven over the stump and then tied to the foot boot (fig 2b). Using sustained counter-traction through the adhesive—stump construct, gradual traction was applied to the fractured limb and the fracture acceptably reduced. The cephalomedullary nail was inserted and locked proximally and distally, the entire procedure proceeding uneventfully. Intra-operative image intensifier (fig 3a,3b) and post-operative radiographs showed a well aligned and stable fixation of the fracture . The post-operative period was uneventful and the patient was ambulated paritial weight bearing with no complications at the fracture site or the stump site.

Discussion

We encountered an unusual scenario in which we found ourselves having to provide sustained counter-traction to a high trans-femoral amputation stump to perform a closed reduction and internal fixation of a displaced comminuted subtrochanteric fracture of the contralateral femur. An exhaustive search of the available literature revealed a few similar case reports but none matching our requirements.

Rethnam et al, describe a technique for bilateral trans-tibial amputees in which they suggest a thigh support for undisplaced fractures and skeletal traction through the stump for a displaced fractures. They do make reference to the complications of pin "cut-out" of the stump due to osteoporosis (2).Al-Harthy et al describe inverting a standard foot boot to accommodate the stump and the knee (3).Berg and Bhatia used a trans-femoral Steinmann pin attached to a metal stirrup which was then connected through a series of clamps aimed at regaining length to the fracture table limb to provide the traction (4). Aqil et al suggest strapping the contralateral limb to a radioluscent thigh support. This techinique would not provide adequate counter-traction for our requirement (5).The technique that we based ours on is the one described by Anjum and McNicholas , the key differences being firstly that in their patient the fracture was on the side of the amputation and secondly the stirrup was attached to the spreader plate of the traction post (6). They do not mention the fracture configuration or displacement and therefore there is no idea as to the amount of traction that was applied to the construct. An almost identical technique has been described by Davarinos et al (7) their case too required only holding the limb in situ as the fracture was undisplaced.

We have shown that this technique can be successfully used in contralateral amputations to provide counter traction for fracture reduction and definitive fixation on a fracture table.

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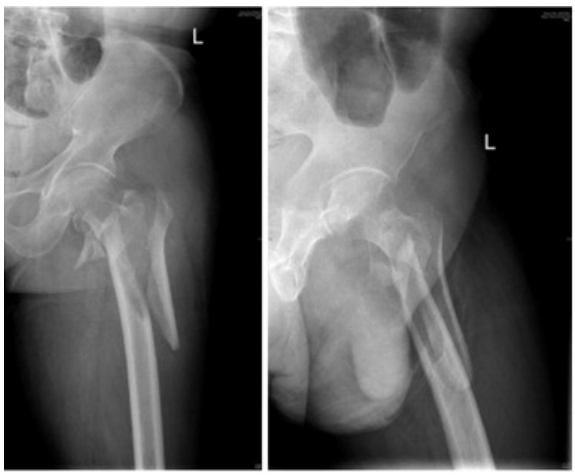


Fig 1. Preoperative radiograph with subtrochanteric fracture of the left lower limb

Fig 2a,2b. Elastocrepe bandage wrapped around the right lower limb stump and wound around the fracture boot. This is overwrapped with crepe bandage

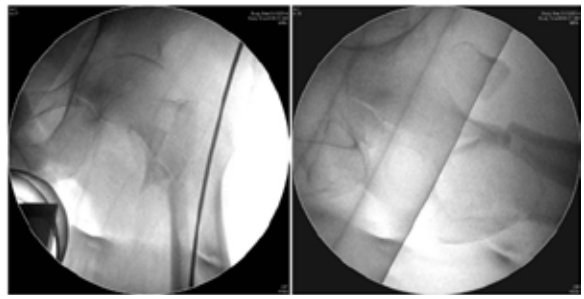
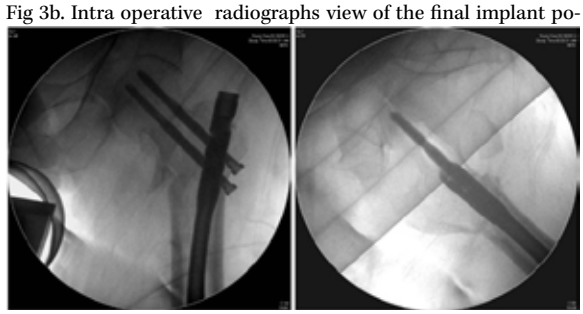


Fig 3a. Intra-operative image intensifier screening picture of the reduced right subtrochanteric fracture

Fig 3b. Intra operative radiographs view of the final implant position in the right lower limb showing reduced and stabilized subtrochanteric fracture.



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