CLINICAL VIGNETTE

A novel non-invasive hip traction technique for hip arthroscopy in the below-knee amputation (BKA) patient

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Submitted 6 April 2017; revised version accepted 24 April 2017

ABSTRACT

Prolonged sitting and mobilizing from a seated position are known to exacerbate the symptoms in patients with hip pathology. For patients who lack mobility and require extended periods of time in seated positions, such as amputees, the symptoms of femoroacetabular impingement can be debilitating and limit their ability to operate a wheelchair, use a prosthetic limb or complete activities of daily living. Hip arthroscopy surgery offers a minimally invasive technique to treat hip pathology but requires hip distraction to facilitate instrument maneuverability. Invasive methods of hip distraction have been previously described for use in amputees for hip arthroscopy. We herein describe a novel non-invasive surgical technique for hip distraction in the below-knee amputation patient.

INTRODUCTION

The symptoms of femoroacetabular impingement (FAI) can be debilitating for amputees who lack mobility and remain seated for extended periods [1]. In prosthetic users, hip pathology may compromise hip motion and impair balanced ambulation. Hip arthroscopy surgery has proven effective in the management of many pathologic hip conditions [2] and may offer relief and the restoration of self-efficacy to below-knee amputation (BKA) patients. To facilitate instrument maneuverability and adequate exposure of the hip during arthroscopy, traction must be applied to the joint. This poses a problem in BKA patients, as a hip distractor boot cannot be used. Invasive forms of hip traction have been used in amputees [1]. These techniques have unfavorable associated complications [3]. The purpose of this paper is to present a novel non-invasive hip traction technique for hip arthroscopy in the BKA patient.

SURGICAL TECHNIQUE

Patient positioning
The patient is positioned supine on an Advanced Supine Hip Positioning System table (Smith & Nephew, Andover, MA, USA). The non-operative leg and both arms are dressed in a manner similar to that of any hip arthroscopy procedure and a well-padded perineal post is placed between the two limbs.

Limb preparation
Using two 7.5 cm, adult size skin traction kits, the leg is dressed. Bony prominences are well padded. The first bandage is placed on the medial and lateral aspects of the limb (Fig. 1A), and the non-operative leg is overlapped with an elastic bandage. The second 7.5 cm bandage is placed on the anterior and posterior aspects of the limb (Fig. 1B), and the construct is overlapped using two elastic bandages (Fig. 1C and D). The four traction cords are tied together into a single unit. The
Hip distraction

Gentle and gradual traction is applied to the limb without making an attempt to distract the joint fully. Using fluoroscopic guidance, an 18 gauge long spinal needle is inserted into the peripheral compartment from a proximal anterior lateral point of entry, perpendicular to the femoral neck (Dienst Portal) [4, 5]. A 20 ml syringe with normal saline is loaded onto the spinal needle. While observing hip distraction fluoroscopically, normal saline is injected into the joint to break the capsular suction seal (Fig. 1G). Additional longitudinal traction can be applied gradually under fluoroscopic guidance to achieve the desired distraction.

CONCLUSION

Non-invasive skin traction facilitates adequate distraction to perform hip arthroscopy in BKA patients.

CONFLICT OF INTEREST STATEMENT

None declared.

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