

# Perineal Post Padding Technique to Improve Hip Distraction in Tall Patients



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**Abstract:** Hip distraction is necessary for safe arthroscopic entry into the hip joint. Achieving sufficient distraction is difficult in exceedingly tall patients (>190.5 cm) because of size limitations of currently available hip distraction systems. Inadequate distraction can delay the surgical procedure and potentially lead to complications. By repurposing a foam head-positioning block, we report a safe and inexpensive positioning technique for extending the traction distance for tall patients by 2 inches.

**H**ip distraction is an important maneuver when positioning the patient in preparation for hip arthroscopy. Although hip distraction is necessary, traction-related injuries are among the most common postoperative complications, and it is recommended to limit traction force to under 22.7 kg and to limit traction time to under 2 hours.<sup>1</sup> Inadequate distraction increases the difficulty of entry into the hip joint and leads to decreased visualization of the central compartment. In addition, it can increase the likelihood of iatrogenic complications such as labral and chondral damage.<sup>1,2</sup>

Many surgeons use a standard traction table with an attached perineal post and hip distraction system. One limitation inherent to this setup is the absolute height constraint of the distracting device measured as the distance between the perineal post and the traction boot. In our experience, patients taller than 190.5 cm had legs that were too long for the hip distraction system, and these patients could not undergo surgery at our ambulatory surgical center. Our patients taller than

190.5 cm could only be treated in the hospital with a hip fracture table available, and the operating room staff had to switch tables during the course of the day, which would lead to confusion and inefficiencies. We report an inexpensive and safe method for increasing the effective traction distance between the patient's hip joint and the end of the attached hip traction system.

## Surgical Technique

The key points of the surgical setup are summarized in [Table 1](#), and the technique is demonstrated in [Video 1](#). The technique is indicated for patients taller than 188 cm but can safely be used for anyone taller than 183 cm ([Table 2](#)). The patient is transferred in the supine position to a traction table with the attached hip traction system (Advanced Supine Hip Positioning System; Smith & Nephew, Andover, MA). Padded boots (Bledsoe Philippon KAF Positioning Kit; Bledsoe Brace Systems, Pinewood, TX) are applied to the patient's feet. The end of the traction table is removed and replaced with the perineal post holder so that the perineal post slot is slightly off-center toward the operative leg. A well-padded radiolucent perineal post is placed into the post holder, and Webril (Covidien, Dublin, Ireland) is wrapped around it. A foam head-positioning cushion ([Fig 1A](#))

### Table 1. Key Points

Adequate hip distraction is critical for safe and successful arthroscopic procedures.  
Distraction can be difficult in tall patients because of the physical constraints of the table and distraction system.  
The foam traction extension pad prevents the need to switch tables or rooms when a patient is too tall for the standard operative setup.

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**Table 2.** Indications and Contraindications

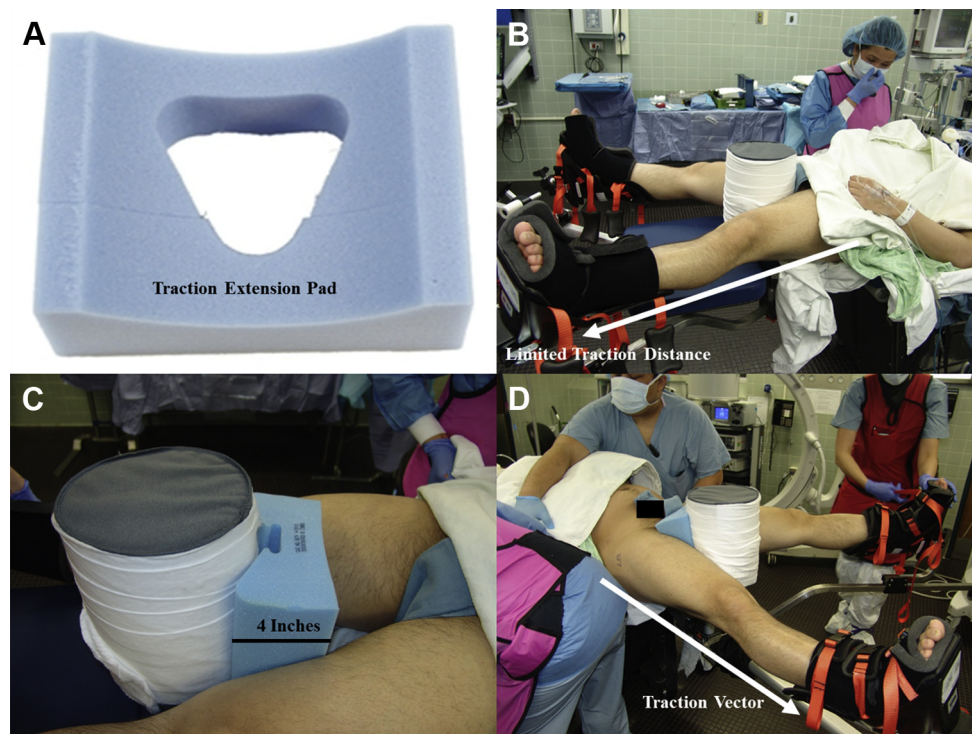
Indications	
Patient height	$\geq 188$ cm
Preoperative perineal irritation	
Contraindications	
Patient height	$< 183$ cm
Patient refusal to incur extra cost in situations in which it is directly conferred to patient	

(Adult Head Positioner; Universal Medical, Norwood, MA) is placed with the concave side of the cushion adjacent to the perineal post (Fig 1C). In some cases, more than 1 foam head-positioning cushion can be used to increase the distance between the perineum and the perineal post. The patient is then moved inferiorly along the operating table so that the cushion is between the patient's groin and the post (Fig 1C and D, Video 1). The genitalia is placed in the recessed gap in the positioning cushion and checked to ensure that repositioning is not necessary to avoid excessive pressure on any one area. The patient's feet are then secured in the Active Heel Traction Boot (Smith & Nephew) attached to the distraction system. Traction is applied to the operative side with the hip in  $20^\circ$  of flexion and  $20^\circ$  of abduction to

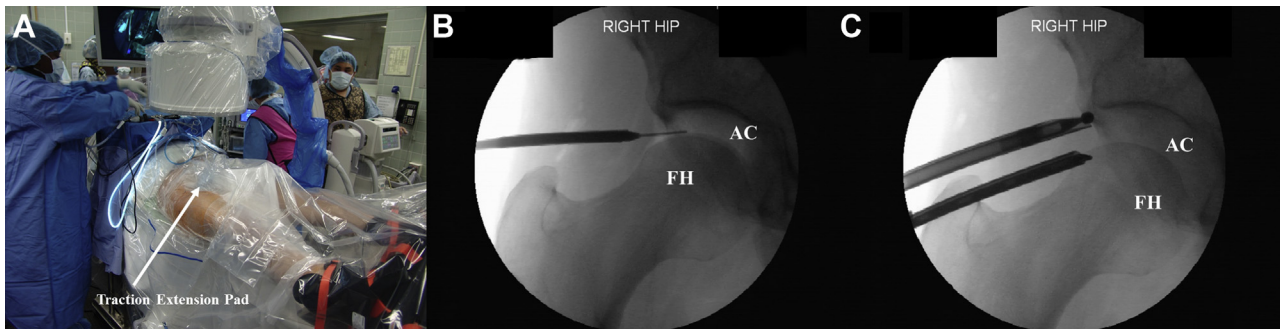
distract the hip, followed by positioning of the hip in  $0^\circ$  of extension and  $0^\circ$  of adduction. Adequate distraction is confirmed with fluoroscopy, followed by placing the foot in  $45^\circ$  of internal rotation to optimize the femoral neck length. The patient is then draped, and the operative field is sterilized with chlorhexidine before beginning the case (Fig 2A). Adequate distraction is then confirmed by fluoroscopy (Fig 2B and C). It is important to ensure that the pad does not slip out of position when the patient is being positioned. Other pearls and pitfalls of this technique are summarized in Table 3.

## Discussion

Preoperative hip distraction is critical during hip arthroscopy to ensure safe portal entry and adequate visualization during hip arthroscopy. The distance over which the hip can be distracted is constrained by the mechanics of the hip joint traction system (Fig 1B). Although this distance allows for excellent traction in most patients, gaining sufficient traction can be difficult in exceedingly tall patients, particularly those with disproportionately longer legs. In our experience the hip distraction system limits distraction for patients taller than 190.5 cm. If sufficient traction is not



**Fig 1.** (A) Universal Medical head positioner pad repurposed to extend the traction distance for hip arthroscopy in the supine position. (B) Preparation for right hip arthroscopy in a tall patient in the supine position on the hip distraction system without the padding extension. The traction distance is limited by the length constraint of the distraction system, Active Heel Traction Boot, and hip distraction system. (C) Foam extension pad placement for a patient undergoing hip arthroscopy in the supine position. The pad's concave side is adjacent to the curvature of the perineal post. The pad is 10 cm wide when uncompressed and 2 inches when compressed by the patient. (D) The supine patient is positioned against the extension pad along the perineal post. This will extend the traction distance by 5 cm as the right hip is being distracted.



**Fig 2.** (A) Sterile setup for right hip arthroscopy in the supine position with the padding extension and C-arm in place. (B) Fluoroscopic image of right hip joint showing the position of the guidewire within the hip joint and the cannula about to enter the joint, avoiding the femoral head because of proper distraction. The hip of a tall patient that is adequately distracted for arthroscopy in the supine position with the extension pad is shown. (C) Fluoroscopic image showing the 5.5-mm burr and 70° arthroscope in position to begin acetabular rim trimming in the right hip of a patient in the supine position. The arthroscope is in the anterior portal, and the burr is in the anterolateral portal. As shown, proper distraction is maintained during arthroscopic procedures with the extension pad. (AC, acetabulum; FH, femoral head center.)

attainable with the hip distraction system, the patient may require an alternative traction apparatus, which can complicate the case for the surgeon because the operating room staff may be unfamiliar with the setup. The advantages of our technique are summarized in Table 4.

With total numbers of hip arthroscopy procedures increasing, there will be a greater absolute number of taller patients requiring surgery.<sup>1,3</sup> In a cross-sectional survey of 5,647 participants in the National Health and Nutrition Examination Survey, the average height of men older than 20 years was 176 cm, with 5% being taller than 188 cm.<sup>4</sup> In a survey of patients recently treated at our institution, we found that 20 of 462 patients (4.3%) had a height of 190.5 cm or taller. The foam traction extender used in this report adds 5 cm to the traction distance; however, an additional pad can be used to increase the distance for even taller patients. Thus the pad extends the traction distance, thereby allowing adequate distraction to be applied to prevent iatrogenic damage to the femoral cartilage or labrum.

Although complications from hip arthroscopy are rare, distraction-related injuries are among the most commonly reported.<sup>1,2,5</sup> Pudendal neurapraxia, although generally transient, results from compression of the patient's groin against the perineal post.<sup>6</sup> Affecting 3% of patients, this complication can present as genital hypoesthesia, pain along the distribution of the

pudendal nerve, pain with defecation, and erectile dysfunction, and it is believed to be under-reported.<sup>3,6</sup> One recent retrospective study found pudendal neuralgia in 3 of 150 patients; the average height of patients with the complication was 175 cm, whereas patients without pudendal neuralgia had an average height of 167.5 cm ( $P = .16$ ).<sup>6</sup> In addition to extending the traction distance, the genitalia can be placed in the recessed gap in the positioning cushion so that there is no direct pressure of the perineum against the padding, thereby decreasing the postoperative pudendal nerve complications. Moreover, insufficient traction can result in iatrogenic complications such as labral puncture, femoral head scuffing, and chondral damage.<sup>7,8</sup> To prevent this, one recent review article recommended a distraction distance of at least 10 mm before proceeding with the case.<sup>1</sup>

There have been several recent techniques described to facilitate distraction in hip arthroscopy. In a 2014 report, Doron et al.<sup>9</sup> described an extracapsular approach to the central compartment in which the hip is distracted after capsulotomy and anterolateral rim acetabuloplasty. This “outside-in” technique is indicated

**Table 3.** Pearls and Pitfalls

Pearls
Proper placement of traction extension pad as described
Use of appropriate indications as described
Verification of pad placement after distraction to ensure it has not moved or slipped
Safe placement of genitalia within recess of extension pad
Pitfalls
Movement or slippage of extension pad as patient is moved down to perineal post

**Table 4.** Advantages and Disadvantages

Advantages
Improved distraction
Cost and time savings (from performing arthroscopy in standard setting <i>v</i> needing specialized traction device)
Patient comfort
Potentially decreased likelihood of iatrogenic cartilage injury in tall patients
Potentially decreased postoperative pain and neurapraxia
Disadvantages
Pad can potentially be misplaced or moved during surgery (which has not occurred in our experience)
Potential decrease in traction distance (1-2 mm) as foam pad decreases in size with prolonged surgery (which is irrelevant after capsulotomy and labral repair)
Cost of foam pad (if directly conferred to patient)

primarily for patients in whom there is restricted joint access because of complex anatomy or large pincer lesions, and care must be taken to avoid damaging the iliotibial band and reflected head of the rectus femoris. Another recent report described a “femoral head drop” technique in which the application of intra-articular saline solution produces inferior migration of the femoral head, thus allowing for easier entry into the hip joint.<sup>10</sup> Our technique complements these other techniques and is best used for tall patients in whom gaining sufficient traction is difficult or impossible on traditional hip traction systems.

The described technique is a cost-effective technique designed to increase the traction distance between the hip joint and the end of the hip traction system. We adapted the Universal Medical foam head positioner, available commercially for \$75.00 for 12 cushions (\$6.25 per cushion), to act as a buffer between the patient and the perineal post, adding approximately 5 cm to the traction distance. This positioning technique facilitates hip distraction in tall patients before hip arthroscopy is started.

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