

Paper #118

Perineal Pressure During Hip Arthroscopy is Reduced by Routine Introduction of Trendelenburg: A Prospective Study of 50 Consecutive Patients with Randomized Order of Positioning

Ajay C. Lall, MD, MS, UNITED STATES
Ardavan Saadat, MD, UNITED STATES
Muriel Battaglia, BA, UNITED STATES
David R. Maldonado, MD, UNITED STATES
Itay Perets, MD, ISRAEL
Benjamin G. Domb, MD, UNITED STATES

American Hip Institute
Chicago, IL, UNITED STATES

Summary:

Use of the Trendelenburg position during hip arthroscopy allows for significant reduction in pressure exerted on the perineum with or without traction at all positions beyond 0 degrees.

Abstract:

Background

The use of traction during hip arthroscopy has become a standard of care to provide safe joint access and to improve visualization. Traction related complications such as pudendal nerve neuralgia and compression related soft tissue necrosis have been described. In order to minimize such complications, we have introduced Trendelenburg positioning as a routine part of our traction setup, and have hypothesized that this will reduce perineal pressure.

Purpose

To identify the amount of pressure exerted by the perineal post during randomized Trendelenburg positioning in the modified supine position.

Study Design: Cohort Study

Methods

We prospectively analyzed a consecutive cohort of 50 patients treated with hip arthroscopy by a single, high-volume orthopaedic surgeon. Demographic variables and hip pathology were recorded for each patient. In the operating room, patients were placed in the modified supine position on a traction extension table with well-padded perineal post. A standard blood pressure cuff was secured to the post in order to measure pressure exerted on the perineum as traction was applied to distract the hip joint. For each patient, pressure against the perineum was measured at four different positions: 0, 5, 10, and 15 degrees of Trendelenburg. These positions were tested in a randomized order. Mean pressure was compared within subjects under the four period crossover design using a repeated measure (mixed) analysis of variance model. Examination of the residual error quantile plot showed that the pressure data followed a normal distribution, making the use of a parametric model appropriate. Tests were made for period and order effects.

Paper #118

Results

Perineal pressure was reduced by 45.9% (13.1 mmHg) by adding 15 degrees of Trendelenburg during traction ($P < 0.0001$). The crossover design was successful, in that the effect of time period (1,2,3,4) overall and the effect of order (time period within each position-degree condition) was not significant ($P > 0.05$).

Conclusion

Use of the Trendelenburg position during hip arthroscopy allows for significant reduction in pressure exerted on the perineum with or without traction at all positions beyond 0 degrees. The mean decrease in pressure was proportional to the degree of Trendelenburg applied. This technique is intended to harness gravity to exert the majority of counter-traction, while retaining the perineal post as a backup patient stabilizer. Routine introduction of Trendelenburg during hip arthroscopy may therefore decrease complications related to traction and perineal pressure. A subsequent study from our institution will assess the clinical implications of the force changes demonstrated.