

The Peripheral Compartment First and Periportal Approach to Hip Arthroscopy

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This video demonstrates an evidence-based technique for hip arthroscopy. The video details the historical background of hip arthroscopy, presents multiple peer-reviewed studies, and discusses associated outcomes related to this topic. Hip anatomy and issues related to the practice of hip capsulotomies are reviewed, and the importance of preserving the hip capsule tissue is described. Finally, the experience of the authors of this video is described, and the peripheral compartment first and periportal technique is demonstrated to aid other surgeons in performing hip arthroscopy procedures.

Background

The earliest reports of hip arthroscopy describe starting the procedure by entering the peripheral compartment of the hip joint space. As the field of hip arthroscopy evolved, many surgeons began to start hip arthroscopy procedures in the central compartment. This is partially because of concerns related to limb traction and the tight articular joint space. Capsulotomies became a common practice to improve visualization and instrument access throughout the hip joint. Many studies have identified structural concerns and issues related to performing capsulotomies. Similarly, multiple techniques and devices have been developed to facilitate capsular repair; however, capsular repair has been found to increase surgical time, be more technically demanding, induce more tissue trauma, and increase surgical costs.

Purpose

This video describes and demonstrates an alternative approach to hip arthroscopy that preserves hip capsule anatomy. This is accomplished by using a periportal approach via small punctures in the capsule instead of large capsulotomies. These punctures do not need to be repaired and closed at the end of the surgical procedure. This technique also uses the skills of re-positioning, re-puncture, capsular thinning, and leg manipulation to facilitate access. These skills are demonstrated in the video. Similarly, this technique leverages the anatomic and mechanical properties of the hip capsule to facilitate a ballooning phenomenon that occurs by entering the peripheral compartment at the beginning of the surgical procedure rather than starting in the central compartment. This ballooning effect greatly improves visualization and access to the peripheral and central compartments of the hip. The capsulotomies compromise capsule integrity and allow for arthroscopic fluid egress, and, thereby, capsular collapse. The central compartment first approach does not facilitate this ballooning phenomenon.

Methods

A retrospective review was performed at the authors' institution between 2021 and 2023. A single surgeon's case series of femoroacetabular impingement with labral tears was reviewed. A total of 50 patients were included in the study. The control group included 25 patients (15 female; mean body mass index, $29 \text{ kg/m}^2 \pm 5.0 \text{ kg/m}^2$; mean age, $28.4 \text{ years} \pm 3.2 \text{ years}$) treated via central compartment first and capsulotomy techniques. The study group included 25 patients (13 female; mean body mass index, $28 \text{ kg/m}^2 \pm 6.2 \text{ kg/m}^2$; mean age, $29.3 \text{ years} \pm 4.1 \text{ years}$) treated via a peripheral compartment first and periportal approach. Follow-up evaluations were performed at 2 weeks, 6 weeks, and 3 months postoperatively. Instability was assessed at the final visit via the abduction-hyperextension-external rotation test.

Results

No considerable differences were identified in preoperative measurements or the demographics of age, sex, body mass index, side affected, alpha angle, lateral center edge angle, or labral tear size. The surgical time and traction time were significantly lower in the study group compared with the control group ($P = 0.02$). At each follow-up, the mean visual analog scale pain score was significantly lower in the study group compared with the control group ($P < 0.05$). Similarly, the subjective hip score was lower in the study group preoperatively; however, it improved more than that in the control group at each follow-up visit ($P < 0.05$). The study group had no episodes of instability at final follow-up compared with 5 of the 25 patients (20%) in the control group who had signs of micro-instability ($P = 0.05$). Finally, the control and study groups had considerable improvements in study metrics during the study period compared with that during the preoperative evaluation.

Discussion

This video demonstrates an evidence-based technique for peripheral compartment first and periportal hip arthroscopy. Both approaches can positively affect patient outcomes; however, the peripheral compartment first and periportal approach preserves more native capsule anatomy and improves early patient outcomes in the postoperative period. This approach improves patient postoperative pain, improves hip access, decreases surgical times, decreases surgical costs,

decreases suture implants, and improves patient-reported outcomes in patients undergoing hip arthroscopy. Multiple case studies and examples are included in this video to demonstrate the versatility and applicability of the technique. Similarly, this video is designed to aid surgeons in using and incorporating this approach into their clinical armamentarium.