

An Evaluation Of The Interportal Capsulotomy Made With The Modified Anterior Portal: Comparable Utility With Decreased Capsule Morbidity

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Background

- Capsulotomy is required during hip arthroscopy in order to visualize and navigate arthroscopic instruments for the treatment of the underlying hip pathology. The size, location and type of capsulotomies utilized are subjective as they depend on the surgeon's preferences.¹
- The standard anterior portal (SAP) may create an interportal capsulotomy that is much larger than appreciated. The modified anterior portal (MAP) minimizes the length of the interportal capsulotomy to a smaller and more reproducible distance from the anterolateral portal.
- Inadequate capsular management or over resection of the acetabular rim may result in iatrogenic instability. Iatrogenic instability is an unfortunate postoperative complication of hip arthroscopy for the treatment of femoroacetabular impingement.^{2,3} The prevalence of iatrogenic instability in patients presenting for revision arthroscopy is estimated to be 35%.³

Purpose

The purpose of this study is to compare the cross sectional area of hip interportal capsulotomies made with the standard anterior portal as compared to the modified anterior portal.

Methods

- 10 cadaveric hemipelvis specimens were mounted in the wet lab to simulate hip arthroscopic position.
- Axial traction was applied to achieve 1 (cm) of distraction to the cadaveric specimen to simulate the intraoperative traction.
- SAP was created at 1 cm anterior and 1 cm proximal to the tip of the greater trochanter, the arthroscope was inserted into the hip joint central compartment. Hips were then randomized to SAP (n=5) or MAP (n=5).

Methods

- Under direct arthroscopic visualization a spinal needle was used to localize the SAP or MAP position. The spinal needles were placed at the center of the anterior triangle and directly adjacent to the anterolateral portal for the SAP and MAP respectively.
- The arthroscopic knife was used to create the interportal capsulotomies. Once the capsulotomy was completed the arthroscopic equipment was removed from the hip joint and a Smith-Petersen open approach to the hip joint was performed to the level of the IFL.
- The length and width of each capsulotomy was measured using digital calipers. Iliofemoral ligament dimensions were recorded. The CSA of each capsulotomy was calculated, as was the length of the capsulotomy as a percentage of total IFL side-to-side width.

Results

- Average cadaveric age and weight were no different between the SAP and MAP groups (73.4 ± 2.6 years vs. 73.8 ± 4.6 years ($p=0.87$) and 148 ± 35 pounds vs. 137 ± 14 pounds ($p=0.53$)).
- No difference between groups with respect to IFL width at the level of the capsulotomy (SAP 3.71 ± 0.61 cm vs. MAP 3.74 ± 0.19 cm, $p=0.92$) or maximum IFL width (SAP 5.22 ± 0.71 cm vs. MAP 4.97 ± 0.30 cm, $p=0.50$).
- SAP group had significantly larger capsulotomy CSA (SAP 3.23 ± 0.92 cm² vs. MAP 0.78 ± 0.11 cm², $p=0.004$). In addition, the SAP group had significantly longer capsulotomy length as a percentage of total IFL width (SAP $74.2 \pm 14.1\%$ vs. MAP $32.4 \pm 3.7\%$, $p=0.0002$).

Conclusions

The interportal capsulotomy created between an anterolateral portal and the MAP is significantly smaller in CSA than the corresponding interportal capsulotomy created with the SAP. In addition, the percentage of total IFL violated is significantly smaller when the MAP is used compared to the SAP. Surgeons should be aware of the amount of the IFL that is incised while performing an interportal capsulotomy as this has many implications one of which is iatrogenic instability.

References

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