Paper #3

A T-CAPSULOTOMY PROVIDES INCREASED HIP JOINT VISUALIZATION COMPARED TO AN EXTENDED INTERPORTAL CAPSULOTOMY: IMPLICATIONS FOR IMPROVED CAPSULAR MANAGEMENT

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Summary: We demonstrate significantly increased visualization with a T-capsulotomy compared to an interportal capsulotomy.

Introduction: The standard interportal and T-capsulotomies utilized in hip arthroscopy violate the iliofemoral ligament. The T-limb of the capsulotomy is inline with the fibers of the IFL whereas extension of the interportal capsulotomy cuts perpendicular to additional IFL fibers. Growing biomechanical and clinical evidence suggests that the treating hip arthroscopist must balance creating a capsulotomy large enough to adequately address underlying pathology while not compromising the integrity of the hip capsule, which can potentially lead to iatrogenic instability. The purpose of this study was to compare the cross-sectional area (CSA) of joint visualization between interportal and T-capsulotomies.

Methods: Twelve fresh-frozen cadaveric hips were dissected to their capsuloligamentous complexes and fixed in a custom apparatus in neutral hip position. Eight hips underwent sequential interportal capsulotomies at lengths of 2, 4, 6, and 8 cm. Four hips underwent sequential T-capsulotomies with the first sequence consisting of a 4 cm interportal and a 2 cm T-capsulotomy (Half-T). The second sequence was to expand the T-capsulotomy to 4 cm (Full-T). Following each sequence in both capsulotomy groups, a high-resolution digital photograph was taken from a standardized distance and angle with a calibration marker in place. The joint exposure gained from each capsulotomy was determined by measuring joint cross-sectional area (CSA) with ImageJ software (NIH, Bethesda, MD). Comparisons were made using t-tests and analysis of variance (ANOVA) where appropriate.

Results: There was no significant difference in the age of cadaveric hips in the interportal cohort (65.6 ± 10.83 years) as compared to the T-capsulotomy cohort (63.3 ± 2.5 years), $p = 0.53$. The results of the sequential interportal capsulotomies demonstrated statistically significant increased CSA visualization with each increase in length (2cm: $0.58 \pm 0.21 cm^2$; 4cm: 2.14 ± 0.48 cm^2; 6cm: 3.57 ± 0.96 cm^2; and 8cm: 4.22 ± 1.16 cm^2, $p < 0.001$ for all). For the T-capsulotomy group the average CSA visualization significantly increased from 3.54 ± 0.86 cm^2 for the Half-T to 6.63 ± 0.90 cm^2 for the Full-T ($p = 0.005$). The Half-T CSA visualization was statistically comparable to the 6 cm and 8 cm interportal capsulotomy ($p = 0.09$, $p =$, respectively). The Full-T had significantly superior CSA visualization area as compared to the 6 cm and 8 cm interportal capsulotomies ($p < 0.0001$ for both).

Conclusion: The most common reason for revision hip arthroscopy is due to residual FAI, and therefore, the surgeon should employ a capsular management strategy that will allow optimal visualization and restoration of biomechanical characteristics of the IFL. When improved joint exposure is necessary, T-capsulotomy should be considered given the significantly increased

joint visualization compared to an extensile interportal capsulotomy.