



The Capsule Controversy: Why Routine Closure after Hip Arthroscopy Has Become the Standard

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In the timeline of innovations of hip arthroscopy, there have been few issues that have sparked as much discussion as the management of the joint capsule. Historically, surgeons often performed a capsulotomy—cutting through the fibrous envelope of the hip to access the joint—without repairing it at the end of the procedure. This approach stemmed from several assumptions: that the hip's inherent osseous architecture provided sufficient stability, that arthroscopic suturing was technically prohibitive in a constrained space, and that the capsule would heal adequately on its own [1]. Over the past decade, however, these assumptions have been challenged. With advances in the understanding of hip biomechanics and the accumulation of high-level evidence, modern techniques have shifted. The prevailing consensus now holds that capsular repair is not a minor technical detail, but rather an essential step for achieving durable outcomes, preserving stability, and minimizing long-term complications.

The previous rationale for leaving the capsule open failed to recognize its central biomechanical role. Far from being a passive barrier, the capsule is composed of strong ligaments, most notably the iliofemoral ligament—the so-called “Y” ligament of Bigelow—considered the strongest ligament in the human body [1]. This structure is the primary restraint to extension and external rotation, critical movements for hip stability [2,3].

Arthroscopic capsulotomy, whether interportal or T-shaped, invariably disrupts this ligament [1]. Laboratory investigations have consistently shown the impact: unrepaired capsulotomies lower the distraction force required to separate the joint, permit abnormal anterior translation of the femoral head, and alter rotational mechanics [2]. These changes translate clinically into microinstability, which may manifest as persistent pain, and, in rare cases, gross dislocation [4]. By contrast, anatomic closure of the capsule restores resistance to distraction and normal rotational behavior, essentially reversing the instability introduced by the capsulotomy itself [2].

What began as a biomechanical concern has been substantiated by clinical trials and long-term follow-up studies [1]. A 2024 meta-analysis of randomized controlled trials demonstrated significantly higher modified Harris Hip Scores (mHHS) at two years, along with improved Hip Outcome Score–Activities of Daily Living (HOS-ADL) and Sport Specific Subscale (HOS-SSS) at both six months and two years, in patients who underwent repair [5]. A separate 2023 meta-analysis confirmed superior functional scores when the capsule was closed, particularly with complete repair [1].

Long-term durability provides perhaps the strongest argument. That same 2023 analysis found capsular repair was associated with lower revision rates and reduced conversion to total hip arthroplasty (THA) [1]. In a multicenter series with at least 10 years of follow-up, THA-free survival was markedly higher in the repair cohort (97% vs. 79%) [6]. Patients who underwent both labral repair and capsular closure had a conversion rate to THA of only 3%, compared with 31% among those treated with labral debridement and unrepaired capsule [6]. These findings strongly suggest that unrepaired defects may predispose to microinstability and accelerate degenerative change.

Objections continue to be raised, though the evidence increasingly undermines these concerns.

Risk of stiffness: Fear of postoperative stiffness has been the main counterargument [7]. While adhesions remain a cause of failed hip arthroscopy, this complication appears tied more to surgical technique and rehabilitation strategy than to the act of repair [8]. Non-anatomic or over-tightened repairs can indeed over-constrain the joint, but careful, tension-appropriate closure combined with protocols that encourage early controlled motion minimizes this risk [8]. Comparative studies have not shown meaningful differences in range of motion between repair and non-repair groups [1].

Operative time and difficulty: Closure does lengthen procedures and requires technical expertise [1]. However, as arthroscopic techniques and instruments have improved, high-volume surgeons routinely perform capsular repair efficiently. The modest increase in surgical time is outweighed by the demonstrated gains in function and joint preservation.

Spontaneous healing: The belief that the capsule will heal unaided has not been borne out. Scar tissue that forms within unrepaired defects does not replicate the organized structure or mechanical properties of the native ligament [9]. Imaging studies in symptomatic patients confirm persistent defects, correlating with instability symptoms [4].

The progression of capsular management reflects the broader maturation of hip arthroscopy itself, moving from debridement to anatomic restoration. While robust capsular repair has long been recognized as essential in patients with borderline dysplasia or generalized laxity, recent data

demonstrate its value even in patients without overt instability [10,11].

Taken together, biomechanical and clinical evidence now point in one direction: routine capsular closure improves functional outcomes, enhances patient satisfaction rates, lowers revision rates, and reduces conversion rates to THA. The prior technical objections that once justified leaving the capsule open have largely been addressed by surgical advances and rehabilitation refinements. In light of this, what was once controversial has now become more clear. Restoring the capsule is much less a matter of debate—it is an evidence-based standard of care.

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