

When the capsule matters

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Hip arthroscopy can be considered an emerging technique that has been developed and is still developing rapidly. In recent years, the exponential increase in the number of arthroscopic hip surgery and continued development of technical variations push us to think about what and how, about the indications and techniques in addressing the hip pathology in young adults. Past difficulties to access and view the joint have given way to an increasingly advanced surgical refinement. In this new path, common sense should guide our steps, and the scientific evidence secures them.

Since before the explosion of hip arthroscopy, the anatomical and functional description of the hip joint and surrounding structures was performed exhaustively (1). However, the first steps in hip preservation surgery focused their efforts solely on the correction of bone deformities. Probably the technical difficulties were responsible for the initial capsulectomies that were performed to optimize the joint vision; in the same way, labral debridement was conducted to treat labral tears (2). Technology improvements and increased anatomical and functional knowledge of the labrum brought a change in the attitude of treatment; thus, more conservative measures have been imposed, improving functional outcomes of patients (3,4).

This is the same path that has been undertaken in more recent years to approach hip capsule: the way of preservation. In recent years it has increased the anatomical and functional knowledge of the capsule (5). We have to understand the joint as a whole organ, in which each of its parts plays a major role in joint function. One of the most relevant functions of capsule is to stabilize the joint that is accomplished through a multiple ligament complex (1); every part of it provides stability in the different planes of motion (6,7) being the most important the iliofemoral ligament. Moreover, this complex is the door of the joint

vascularization and supports the synovium (8), which produces synovial fluid in order to maintain the cartilage homeostasis (9).

One of the problem emerged at the beginning of hip arthroscopy is that the capsule stood between the surgeon and the injury area, and correct vision was needed for proper correction of bone deformities, especially in CAM lesions. The easiest way to solve this obstacle was the partial excision of capsular tissue in the area of work or performed extensive capsulotomies. Frequently, bone deformities are often located in the anterolateral area, which corresponds to the capsular iliofemoral ligament, main hip stabilizer in extension. Consequently, this ligament was injured by the capsular defects created in this zone. Soon the results of such poor decisions were revealed. Several cases of macro-instability (10) and countless cases of micro-instability (11) (often underdiagnosed) roused the alarm. In addition, a complete view of the joint to achieve full correction of deformities was necessary. Therefore, the way was well defined: the view should be complete and the capsule preserved at maximum.

This premise has led to the current evolution of hip arthroscopic technique with two main trends in capsular handling: interportal capsulotomy and “T” capsulotomy. The former is little aggressive, but it is difficult to visualise extensive CAM-type deformities; hip flexion and rotation might help to improve the view in the peripheral compartment. However, in very large CAM deformities some degree of capsular debridement is needed, even if it is only performed in its deepest part and does not involve the full thickness. “T” capsulotomy provides an excellent view of the peripheral compartment but capsular repair, at least partially, needs to be performed to avoid iatrogenic instability (12,13). Nowadays most authors tend to repair

the interportal capsulotomy (14) and as more patients are treated and analysed in studies, it seems obvious that full capsule repair offers the best clinical results (15).

In spite of this, residual deformity remains the most common cause of revision hip arthroscopy, suggesting that the problem of correct deformity visualisation is not completely resolved (16). Novel developed conservative techniques tend to preserve the capsule at maximum (17). Understanding the capsular-ligamentous complex beyond a purely mechanical structure, these techniques promote a “no capsulotomy” intervention with maximum respect to the mechanical and biological functions of the capsule. They involve an enormous surgical effort for the experienced surgeon, but clinical results are promising.

Maintaining complete capsular integrity during surgery preserves the periarticular tissues from iatrogenic injuries as well as minimizes fluid leakage, diminishing postoperative pain. Postoperative mobilization is not restricted as capsule repair with sutures is not needed; postoperative adhesions and fibrosis, a natural tissue repair process, are reduced. Evidence is still scarce but medical intuition is strong: we must preserve the joint as much as possible and protect the most anatomical structures.

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