Rehabilitation for Hip Arthroscopy
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Arthroscopy continues to be a more accepted treatment option for individuals with nonarthritic hip pain. Current postoperative rehabilitation protocols are determined by basic science and clinical experience. The primary injury of interest is acetabular labral tears. Associated diagnoses include femoroacetabular impingement, capsular laxity, and focal chondral lesions. The population of patients undergoing arthroscopy of the hip is relatively active, resulting in specific challenges during rehabilitation. The goals of postoperative rehabilitation are restoring range of motion, strength, endurance, and functional capacity while avoiding clinical complications. In addition to surgically addressing labral tears, osteoplasty, tissue release, capsular modification, and microfracture procedures may also be performed. Specific rehabilitation concerns exist for each procedure. Functional progression should be determined by the appropriate progression through each successive phase of rehabilitation. Although rare, clinical complications may be encountered during the rehabilitation process. Complications include tendinitis, range of motion difficulties, and prolonged complaints of paresthesia. As the practice of hip arthroscopy evolves, postoperative rehabilitation protocols must adapt to reflect changes in clinical experience and the available evidence.

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The relatively recent application of arthroscopic surgical techniques to treat individuals with nonarthritic hip pathology resulted in an increased scope of treatment options for individuals with hip pain. Conditions that may be addressed include acetabular labrum injuries, capsular conditions, femoroacetabular impingement, and focal chondral injuries. Although numerous pathologic conditions may be addressed through the common application of arthroscopy, the principles used during postoperative rehabilitation may vary significantly between cases undergoing different procedures.

Surgical advancements in hip arthroscopy necessitate the evolution of postoperative rehabilitation protocols. Most previous postoperative rehabilitation protocols for the hip joint are intended for the total hip arthroplasty population. These protocols have minimal utility for individuals commonly undergoing arthroscopic procedures for the hip joint. On average, individuals undergoing hip arthroscopy are younger and more physically active. Arthroplasty procedures involve surgical dislocation of the hip joint. Prevention of recurrent dislocation of the prosthetic components must be prioritized during the rehabilitation process for individuals undergoing arthroplasty procedures. Because postoperative dislocation is not a concern for the arthroscopy population, most protective precautions contained in hip arthroplasty protocols are not necessary. Postoperative protocols for arthroscopic procedures to debride or repair acetabular labral tears are described in the literature.1,2 Rehabilitation principles regarding other concurrent procedures are also described. Such procedures include osteoplasty to address femoroacetabular impingement, capsular modification, microfracture techniques for focal chondral lesions, and tendon (iliopas or iliobibial band) release procedures. To date, there are no studies in which the outcomes of different rehabilitation protocols after hip arthroscopy are compared.

This text describes current concepts used in the postoperative rehabilitation of patients undergoing arthroscopic procedures of the hip joint. Preoperative, immediate postoperative, and procedure-specific rehabilitation principles and concerns are discussed. Recommendations are based upon the known healing properties of surgically affected tissues, activity demands, and the authors’ clinical experience. Additional topics include functional progression of individuals
undergoing hip arthroscopy and common clinical complications experienced during the rehabilitation process.

Preoperative Counseling

Preoperative consultation with a physical therapist proves beneficial for many patients. In most cases, one session is sufficient to provide the patient appropriate information and training to optimize the initial postoperative experience. The patient should understand the demands and time investment involved in postoperative rehabilitation. During this session, the postoperative protocol and expectations are reviewed with the patient, and questions or discrepancies in patient and clinician goals are addressed. Individuals who will not be compliant with the prescribed therapeutic protocol are identified at this time because these individuals are less likely to progress well following surgery. Assistive device training (typically crutches) is used as necessary. If a delay in the initiation of immediate postoperative physical therapy is expected, then the initial home program exercises are also reviewed. If unaware, the individual is informed of any hardware requirements, such as range-of-motion (ROM) bracing and the night immobilization system for rotation precautions. Preoperative consultation helps the patient become less apprehensive, as well as making the initial rehabilitation experience more efficient.

Postoperative Treatment

Immediate postoperative treatment is a crucial factor in successful rehabilitation after hip arthroscopy. Goals for this initial phase of rehabilitation include minimizing postoperative tissue inflammation, pain control, joint protection, and providing activities that allow the healing process to occur with optimal efficiency. Inflammation and pain control are addressed through several methods. Nonsteroidal anti-inflammatory drugs are commonly prescribed by the surgeon. Regular use of ice and/or compression is encouraged. A pressurized ice compression system is typically prescribed for several weeks after surgery. To avoid excessive external rotation and tensile stress on the anterior capsular structures, an immobilizer system (KAF positioning kit; Bledsoe, Grand Prairie, TX) is used to keep the patient’s hips in a neutral position while they are sleeping. This system is particularly applicable to those individuals undergoing a modification or repair procedures. The partial weight-bearing status allows protection of the joint components while providing an optimal healing environment. More involved resection procedures may require a prolonged period of partial weight-bearing. In cases involving microfracture or osteoplasty procedures, a partial weight-bearing status may be assigned for up to 4 weeks. Suggestions for microfracture procedures are modified recommendations based upon available data for patients undergoing such procedures for the knee joint. After the protective time, the patient may begin a graded progression off crutches. One or two weeks is usually a sufficient weaning period. Signs or symptoms indicating increased inflammation are noted and the aggressiveness of weight-bearing activities adjusted accordingly. Patient response and clinician judgment are the ultimate factors in determining the rate of progression.

Use of an aquatic therapy program is often a beneficial component of the rehabilitation process. Aquatic ambulatory activities may provide an easier transition from partial to full weight-bearing activity. The patient can also focus on executing appropriate gait mechanics in a safe environment. Activities are initiated at a chest-high-water level, and then gradually progress to a lower level. Athletes can also begin early de-weighted jogging and treading to aid in maintaining their aerobic endurance. The aquatic environment also provides a more comfortable environment to perform active ROM, balance, and functional movement activities.

Range of Motion

ROM guidelines are based upon the healing rates of the involved tissue. Potential tissue considerations include bone,
labral tissue, capsuloligamentous tissues, and cartilage. The primary goal is optimizing the pliability potential of tissues while minimizing the risk of damage. Limited, progressive passive ROM starts immediately in the rehabilitation process. The authors recommend avoiding excessive flexion, abduction, or internal rotation, which may lead to increased joint inflammation or prolonged discomfort. Excessive motion is indicated by the patient’s pain response. Individuals undergoing isolated labral debridement or repair procedures can progress at a relatively fast rate. If significant pain is absent, full ROM can be initiated 2-3 weeks after surgery. For capsular modification procedures, caution must be exercised to avoid excessive and premature tension to the capsuloligamentous structures affected by the surgery. For anterior capsular modification, the following passive ROM limitations are recommended for the first 4 weeks: gentle external rotation with no extension beyond 10°. After the 4-week protective period, ROM progresses as tolerated. The need for protected ROM after modification of the anterior capsule of the hip is similar to the postoperative situation after reconstruction of the anterior capsule of the shoulder. Flexion is often better tolerated if the patient achieves the motion through a quadruped rocking motion from the hand-knee position. Passive flexion may be performed more comfortably if a gentle caudal glide mobilization is applied simultaneously. Caution should be exercised if considering this maneuver on a patient who received a capsular modification. For osteoplasty procedures, forced internal rotation of the hip in the flexed position should be avoided. This position potentially places increased torque through the femoral neck as well as engaging the femoral head-neck junction region with the acetabulum. This may increase inflammation of the healing bony tissue and increase discomfort in the early stages of rehabilitation.

**Strength**

A comprehensive strengthening program for the hip, lumbopelvic, and other lower extremity muscle groups is emphasized as part of the rehabilitation protocol after hip arthroscopy. As previously mentioned, gentle strengthening exercises are initiated the day after surgery. Nonweight-bearing exercises progress as per patient tolerance and protocol limitations. Additional limitations are applied for individuals undergoing concomitant tendon release procedures. These recommendations assist in avoiding excessive irritation of the healing musculotendinous structures. For iliopectineus tendon release, supine straight leg raises should be held for at least 4 weeks. Examples of more appropriate hip flexion activities include sitting short-lever hip flexion or supine heel-slide activities. Patients undergoing iliotibial band release procedures should avoid side-lying abduction straight leg raises for 4 weeks. An appropriate substitution is a side-lying leg-raise with the knees slightly bent and the feet remaining together (“clamshell” exercise).

Weight-bearing activities are introduced in conjunction with ambulatory progression. An example of weight-bearing exercises progressing from least demanding to most advanced is weight shifting for muscle activation, gentle closed chain terminal knee extension, double leg press, and single leg press. As with most hip conservative and surgical hip injuries, the gluteus medius muscle group is a significant concern. This muscle is the primary source of frontal plane stabilization of the hip during the stance phase of ambulation as well as any single leg activity. Progressive strengthening in all planes of motion with a functional emphasis is emphasized.

Lumbopelvic strengthening is an integral component of the rehabilitation protocol after hip arthroscopy. The importance of trunk stability in the athletic population with hip and groin injuries is noted. Potential exercises that may be used to address lumbopelvic strength concerns include isometric abdominal contraction, bridging, and movement of the extremities with proximal trunk stabilization.

**Functional Progression**

To be complete, the protocol for rehabilitation after arthroscopy of the hip must include the appropriate functional progression. The often high activity level and expectations of individuals who undergo such procedures necessitate a protocol addressing these demands. Before the patient progresses to greater activity levels, they must satisfactorily achieve the clinical criteria for ROM, strength, and exercise tolerance. Other factors affecting the rate of progression include individual morphologic characteristics, patient confidence, and other existing health conditions. Balance exercises and activities replicating components of the patient’s typical endeavors are crucial to providing complete and appropriate care. Consultation with the patient regarding their specific goals and activity demands should occur.

Low-impact aerobic activities may often be initiated 8 weeks after surgery. Such activities include the elliptic and stepper machines. At the surgeon’s discretion, the initiation of such activities may be delayed for significant labral repair, microfracture, or osteoplasty procedures. Careful attention should be paid to any signs of increasing joint inflammation.

The time for returning to running and other high-impact activities varies significantly by procedure and patient characteristics. In minimally complicated cases (isolated, small labral resection), jogging may be initiated as early as 8 weeks. For osteoplasty, microfracture, or multiple procedures being performed, this time frame may be extended significantly. When appropriate, plyometric activities are gradually initiated after the patient demonstrates satisfactory tolerance to basic running.

Return to manual labor or athletic activities is contingent upon the patient meeting several criteria. Basic clinical limitations in ROM, strength, flexibility, and endurance should be minimal. All rehabilitation activities reflecting the demands of the patient’s desired activity should be performed with no residual pain or signs of joint inflammation. The patient should report being confident in their ability to return to activity. In addition, the patient should achieve a satisfactory score on any applicable functional tests or outcome measures. The recently developed Hip Outcome Score is an in-
instrument that demonstrates evidence of validity, reliability, and responsiveness in the hip arthroscopy population. General estimation for return to work for manual labor is 12-24 weeks. Athletes often return to sport in 12-32 weeks, depending on the complexity of surgical procedure. In rare cases, an individual may return to activity earlier than the guidelines provided. However, the return to activity cannot supersede the required time for tissue healing.

Common Clinical Complications in Rehabilitation

Anecdotally, the most common clinical complication experienced during the rehabilitation process is tendinitis. Of particular concern are the hip flexors (iliopsoas, tensor fasciae latae, and rectus femoris) and iliotibial band structures. The previously mentioned precautions in regard to strength activities are intended to decrease the chance of developing tendinitis. Despite clinicians’ best efforts, tendinitis may occur. An immediate decrease of rehabilitation activities, particularly aggressive strengthening, is warranted. Attempting to continue strengthening through notable pain and signs of inflammation will only prolong or worsen the condition. Along with decreasing the overall workload, modalities to decrease inflammation may be used. Gentle aquatic activities may be preferable to dry-land exercising. Once the baseline level of pain and inflammation decreases a carefully graded progression of exercise should be initiated.

Postoperative paresthesia may be noted in a proportion of hip arthroscopy patients. Pudendal, sciatic, and femoral neuropraxias are reported in the literature. Most cases are transient in nature and should not significantly affect the course of rehabilitation. The time frame for this finding is highly variable between patients. Any concern for prolonged paresthesia or signs of motor control being affected should be communicated to the surgeon.

An additional, less-common complication is an inability to increase joint ROM. Identifying the cause of the limitation is the key factor in addressing this issue. Flexibility tests should be performed to determine if muscle tightness is involved. Mobility testing of the joint can be used to determine if the cause is capsular in nature. Both flexibility and joint mobility deficits should typically respond well to specific manual treatment. After the initial postoperative phase of rehabilitation, intense pain associated with no barrier during ROM assessment should be a finding of concern. In such cases, the surgeon should be informed. Septic conditions, though rare, may be a particular concern.

Conclusions

Hip arthroscopy continues to gain acceptance as a treatment for intra-articular pathology in the nonarthritic population. As the procedure continues to evolve, the treatment protocols used for postoperative rehabilitation must adapt to meet the demands of a relatively highly functioning population of patients. Rehabilitation protocols should be determined by the healing properties of affected tissue, patient characteristics, and the physical demands of desired activities. Current protocols are based primarily on basic science and clinical experience. Future guidelines should be based upon the continually growing body of evidence.

References