

Hip Arthroscopy: Current Concepts

R Mohammed

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Abstract

Arthroscopy of the hip is now a well established tool for establishing an initial diagnoses and also successfully treating a variety of intra-articular problems. It combines the benefits of being a minimal invasive procedure with a short rehabilitation period. Hip arthroscopy allows for opportunities for future surgical interventions without much compromise to the joint. As the role of this procedure continues to evolve, this paper looks at the current concepts of hip arthroscopy and its merits.

INTRODUCTION

Hip arthroscopy was first described by Burman in 1931 in a cadaveric study. Burman had stated: "It is manifestly impossible to insert a needle between the head of the femur and the acetabulum".¹ The ball and socket nature of the joint, its natural intra-articular vacuum and surrounding neurovascular structures make insertion of the arthroscope difficult and fraught with danger. It was only in the 1980's that hip arthroscopy gained recognition as an established means for diagnosing and treating a variety of intra-articular pathology. It offers the benefits of being a minimal invasive procedure with short rehabilitation, minimal complications and allows for opportunities for future surgical interventions.² Better understanding of the arthroscopic anatomy, operative techniques and potential complications combined with proper patient selection have widened the scope for hip arthroscopy.

The aim of this paper is to state the current concepts regarding the common indications, surgical method, complications and the post operative rehabilitation following hip scope.

INDICATIONS AND CONTRAINDICATIONS

It cannot be overemphasized that proper patient selection is the key to a successful outcome. An important consideration is that the source of hip pain should be confined to the causes within the hip joint and that this should be amenable to arthroscopic intervention. Also patient expectations about the outcomes from the procedure should be reasonably addressed.

Indications for hip arthroscopy are expanding every day and include diagnostic arthroscopy, removal of loose bodies,

synovial biopsy, subtotal synovectomy, management of labral tears, synovial chondromatosis, osteochondritis dissecans, chondral lesions, and the treatment of septic arthritis.³

Contraindications are local soft tissue affections, superficial infection and open wounds. Others include dense heterotopic bone formation, significant protrusion and possibly advanced avascular necrosis of the femoral head. Conditions that limit joint distraction like arthrofibrosis or ankylosis and morbid obesity are relative contraindications. Patients aged above fifty five years and those with advanced degenerative arthritis do not respond well to hip arthroscopy and should be best avoided in them.⁴

METHODS

Patients presenting with hip pain need to be thoroughly assessed to exclude other sources of similar symptoms. A diligent clinical examination identifying key clinical signs could localize the problem to within the hip joint and would go a long way in avoiding an unnecessary arthroscopy. Symptoms and signs suggesting intra articular pathology are groin/anterior thigh pain, pain on twisting, clicking, locking, restriction of movements and tenderness on log rolling the limb.

Imaging studies though a useful adduct in surgical planning are not always reliable in revealing the complete picture.

General anesthesia or regional spinal anesthesia is equally effective but adequate muscle relaxation is essential for joint distraction. The procedure is now increasingly being performed as a day case. The patient can be positioned supine or lateral decubitus position, the choice depending on surgeon preference.^{5, 6} Supine approach is preferred for the

simplicity of the patient positioning, avoiding the need for specialized distraction devices, familiar joint orientation and optimal access for all portal placements. Lateral position is particularly useful in obese patients to increase the instrument maneuverability.

Patients can be positioned on a standard fracture table or a specialized hip distractor device. A well padded perineal post functions as a fulcrum to aid in joint distraction. The oblique vector of distraction of the joint is aimed to coincide the axis of the neck of femur. A spinal needle is commonly utilised to break the vacuum under image intensifier. Joint distraction of 5-10mm is obtained through traction on the extremity and confirmed on fluoroscopy.

Three standard portals are the anterior, antero-lateral and postero-lateral. The anterior portal is placed at a point of intersection of lines drawn vertically down the anterior superior iliac spine and horizontally from the tip of greater trochanter. Directed approximately 45° cephalad and approximately 30° toward the midline, the trocar is inserted into the joint. The other two portals are placed at the superior aspect of the greater trochanter along its anterior and posterior borders respectively. The antero-lateral portal is the safest one and is inserted first. The other portals are inserted under direct vision.

The peripheral compartment, which is intracapsular but extra-articular, is assessed by releasing the traction and flexing the hip to 45°. This is useful in locating loose bodies and in some capsular procedures.

At the end of the arthroscopy, a local anaesthetic is instilled into the joint and infiltrated along the portal sites. Patients are taken off the traction table immediately after to prevent any pressure sores in the perineum.

COMPLICATIONS

The reported complication rate in literature is between 0.5 to 5 %.⁷ The commonest are traction neurapraxia, direct trauma to neurovascular structures and pressure sores. But by far the most common, though unreported, would be iatrogenic joint damage. The deep seated nature of the joint with its thick surrounding envelope of soft tissues, including the neurovascular structures makes intra-articular damage more likely as the arthroscope or instrument is introduced. Rarer described complications include myositis ossificans, fluid extravasation, reflex sympathetic dystrophy, trochanteric bursitis, labral injury and instrument failure.

REHABILITATION

Rehabilitation protocols that have been typically used for surgeries such as total hip arthroplasty are often not sufficient for the population of patients undergoing arthroscopic procedures of the hip joint.⁸ Postoperative rehabilitation under the supervision of the physical therapist is a phased approach. The initial phase in the first few weeks aims at restoring the range of movements within tolerable limits and progressing on to full weight bearing. Weight bearing may be limited after some arthroscopic procedures such as labral repair, iliopsoas release, microfracture and capsulorrhaphy. Subsequently the goals are to achieve functional muscle strength, endurance and stability.

RESULTS

Outcome measure studies have shown favourable results from hip arthroscopy in selected indications. O'Leary et al from 86 hips have shown best results in patients with labral injury, late Perthe's disease, loose bodies or focal chondral defects and poor results in avascular necrosis and degenerative arthritis.⁹ They conclude that the presence of mechanical symptoms is a favorable prognostic factor for any diagnosis except degenerative arthritis. Byrd et al in their prospective analysis of 121 cases, have identified that patients with acute or traumatic onset of symptoms with greater improvement than those with insidious onset of symptoms and that longer duration of symptoms especially in male counterparts correlated with less successful outcomes.¹⁰ Greatest symptomatic improvement was noted in arthroscopic removal of loose bodies. The authors opine that hip arthroscopy can be performed for a variety of conditions (except end-stage avascular necrosis) with reasonable expectations of success. Baber et al have showed that arthroscopy revealed an abnormality in 81% of idiopathic painful hips and found a different abnormality in 30% of patients with a preoperative diagnosis.¹¹ They report that arthroscopy aided in management in seventy four percentage of hips either by a change in the primary diagnosis in (53%) or by improvement of symptoms (21%). Their study advocates the role of diagnostic arthroscopy especially with early cartilaginous lesions, labral tears and loose bodies.

CONCLUSION

The role of arthroscopy in the management of hip disorders continues to expand with continued experience and improved instrumentation. Hip arthroscopy is also being used for surgery to the structures surrounding the hip.

Regardless of the methods used, the most critical determinants for a successful outcome are patient selection and surgical expertise. Patients with mechanical symptoms and pathology confined to the hip joint and a reasonable expectation of the outcome are the ideal candidates for hip arthroscopy. Awareness of the potential complications, attention to patient positioning and proper orientation of portal sites are the surgeon factors that dictates good outcome.

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Author Information

Riazuddin Mohammed, M.S. Ortho, MRCS Edin.

Arthroscopy Unit, Royal Orthopaedic Hospital