Role of Hip Arthroscopy in the Diagnosis and Treatment of Hip Joint Pathology

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Purpose: Hip arthroscopy is growing in importance and relevance in the detection and treatment of various pathologies affecting the hip joint. There are a number of indications, including diagnosis and treatment of labral tears, extraction of loose bodies, and synovial-based diseases. Reports in the literature cite few complications arising from this minimally invasive procedure in a joint that has been difficult to access. The purpose of our study was to assess the efficacy and role of hip arthroscopy in the management of hip joint pathology. **Type of Study:** Retrospective review of a consecutive series of 22 patients over a 44-month period. **Methods:** The indications for surgery included ongoing hip pain for more than 6 months. Sixteen patients underwent contrast-enhanced magnetic resonance imaging scans, including all patients with mechanical symptoms. The procedure was performed as day surgery and all the patients were available for follow-up. They were assessed for pain, mechanical symptoms, activity levels, and sporting activities. **Results:** All patients were assessed by means of a questionnaire and allocated scores out of a maximum of 100 points. The most significant improvement was seen in the group of patients (n = 10) who had mechanical symptoms with definite labral pathology confirmed and treated arthroscopically. Their scores improved from an average of 64 preoperatively to 90 postoperatively. There were no complications in our series. **Conclusions:** Hip arthroscopy represents an effective tool in treating hip joint pathology with reasonable expectations of success and a minimal complication rate. **Level of Evidence:** Level IV.
Key Words: Hip arthroscopy—Labral tears—Minimally invasive.

The role of hip arthroscopy has continued to evolve over the last 2 decades. Although the first reported use of hip arthroscopy was in 1931, it was not until the advent and refinement of magnetic resonance imaging (MRI) that the indications for hip arthroscopy changed from a diagnostic to a therapeutic tool. The initial concerns about its safety and efficacy stemmed from the fact that the hip joint is the most deeply recessed joint in the body, making it difficult to access arthroscopically. Subsequent work on safe portals and proper positioning has defined this procedure as safe and of definite therapeutic benefit.[1]

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METHODS

The study was carried out over a 3-year period from March 1999 to October 2002. This was a retrospective review of outcomes of a consecutive series of 22 patients. Patients were assessed for pain, mechanical symptoms, activity levels, and sporting activities. There were 17 male and 5 female patients with a mean age of 31 years (range, 14 to 38 years). The follow-up ranged from 12 to 44 months (average, 18 months). All the procedures were performed as day case surgery under general anesthetic. All 22 patients had symptoms of ongoing hip pain for more than 6 months with no response to nonoperative measures. Among the 22, 8 (36%) had impaired exercise tolerance, and 13 (59%) complained of mechanical symptoms of a feeling of catching. There was a definite history of

Table 1. *Comparison of Hip Arthroscopy and MRI Findings*

Sex	Age	MRI	Arthroscopic Findings
1. M	24	LT	LT
2. M	31	LT	LT
3. M	23	LT	LT
4. F	37	Normal	Mild OA
5. M	36	Normal	Mild OA/LT
6. M	34	—	Loose body
7. F	22	Normal	Normal
8. F	28	Normal	Normal
9. M	30	—	OCD
10. M	14	—	Perthes' disease
11. M	33	Normal	LT
12. M	35	Normal	Mild OA
13. M	24	LT	LT
14. F	29	Normal	Synovitis
15. M	33	LT	LT
16. M	38	—	Mild OA
17. M	29	LT	LT
18. F	24	—	Normal
19. M	30	Normal	LT
20. M	36	Normal	Mild OA/LT
21. M	27	LT	LT
22. M	29	—	Synovitis

Abbreviations: LT, labral tear; OA, osteoarthritis; OCD, osteochondrits dissecans.

trauma in only 6 patients (27%, all males in contact sports). Sixteen patients had contrast enhanced MRI scans of their hips before surgery, including all those with mechanical symptoms. MRI was diagnostic in 7 of 11 patients who had labral tears confirmed arthroscopically (Table 1). There were 2 patients with plain radiographic evidence of loose bodies (1 patient had osteochondritis dissecans [Fig 1], the other an acetabular fracture). The youngest patient in our study (age 14 years) had this procedure for assessment of pain following Perthes' disease.

The procedure was performed on a standard fracture table with the patient placed supine, under image-intensifier control.[2] Traction was applied with the help of peroneal post that was adequately cushioned.[3] A spinal needle was inserted into the joint, which was distended with sterile water. We used 30° and 70° arthroscopes for all procedures. The lateral portals were used, 1 cm above the greater trochanter. Our technique involved guiding the trocar under the labrum with the help of the image intensifier into the hip joint. The procedure lasted, on average, 45 minutes (range, 30 to 45 minutes). The patients were reviewed at 2 weeks in the clinic for the removal of sutures and clinical assessment.

Statistical Analysis

For our statistical analysis, we used the paired Student *t* test, with 2-tailed distribution to evaluate our results.

RESULTS

All patients in our study were available for follow-up and were assessed by means of a questionnaire (Table 2). They were allocated scores out of a maximum of 100 points, 25 each for pain, mechanical symptoms, activity levels and sporting activities. The medial score improved from 67.7 to 84 at an average of 44 months' follow-up (Table 3). The pain score improved from an average of 16 to 20 points. The most significant improvement was seen with the group of patients (n = 10) who had mechanical symptoms with definite labral pathology confirmed and treated arthroscopically. The improved scores (64 preoperatively to 90 postoperatively) were statistically significant ($P = .0001$). Regarding activity levels, there was a definite improvement in 17 patients (77%) but 5 continued to have limitations in their daily activities. Eighteen patients (81%) returned to same or similar job, whereas 4 persisted with disability that necessitated changes in lifestyle. There were 14 sportsmen in our study and after surgery 10 (71%) were able to resume their normal sporting activities. All of these 10 patients had labral tears that were arthroscopically debrided. There were no complications in our series.

Table 2. *Questionnaire for Assessment of Patients After Hip Arthroscopy*

	Hip scores
Pain	
None	25
Mild	20
Moderate	15
Severe	10
Mechanical symptoms	
None	25
Mild	20
Moderate	15
Severe	10
Activity levels	
No restriction	25
Mild restriction	20
Moderate restriction	15
Severe restriction	10
Sporting activities	
No restriction	25
Restricts sports	15
Cannot play	10

Table 3. *Results of Hip Arthroscopy With Preoperative and Postoperative Scores of Corresponding Patients in Table 1*

Pain	MS	AL	Sports	Total	Arthroscopic Findings
1. 15/20	15/25	15/20	10/25	55/90	LT
2. 20/25	20/25	20/25	15/25	75/100	LT
3. 15/25	20/25	20/25	15/25	65/100	LT
4. 20/20	25/25	20/20	15/15	80/80	Mild OA
5. 20/20	15/25	15/20	15/15	65/80	Mild OA/LT
6. 15/20	10/25	15/25	15/15	55/85	Loose body
7. 20/20	25/25	15/15	15/15	75/75	Normal
8. 15/20	25/25	20/20	15/15	75/80	Normal
9. 15/25	15/25	20/20	15/25	60/90	OCD
10. 20/20	25/25	15/15	15/15	75/75	Perthes' disease
11. 15/25	15/25	20/25	10/15	60/90	LT
12. 15/20	15/15	15/15	15/15	65/65	Mild OA
13. 15/25	15/25	15/25	15/25	60/100	LT
14. 15/20	25/25	15/15	15/15	70/75	Synovitis
15. 15/20	15/25	15/20	15/25	60/90	LT
16. 15/15	25/25	15/20	15/15	70/75	Mild OA
17. 15/20	20/25	20/20	15/25	75/90	LT
18. 15/15	25/25	20/20	15/15	75/75	Normal
19. 20/25	20/25	15/20	15/25	70/95	LT
20. 15/15	25/25	20/20	15/15	75/75	Mild OA/LT
21. 15/25	15/25	15/25	10/25	55/100	LT
22. 15/15	25/25	15/15	15/15	70/70	Synovitis

Abbreviations: LT, labral tear; OA, osteoarthritis; MS, mechanical symptoms; AL, activity levels; DIS, disease.

DISCUSSION

The anatomic depth of the hip joint has been a limiting factor in the development of arthroscopy of the hip.[4] The availability of improved implants coupled with better understanding of hip joint pathology, and with the help of MRI, has led to improved assessment skills for these often elusive intra-articular disorders, including interpretation of history, examination findings, and imaging studies.[5] The considerable work done by Clark et al.,[6] Byrd,[2] and others regarding portals, positioning, and technique has made this a viable tool in treating hip joint pathology. Arthroscopy of the hip offers a less invasive alternative to arthrotomy for different types of hip pathology such as loose bodies. It offers a superior method of treatment, and in some cases diagnosis, of labral tears.[7]

There are multiple radiologic modalities available for investigating the hip joint, including MRI, ultrasound and computed tomography. The sensitivity of these tests varies, but the use of intra-articular gadolinium has markedly increased the pickup rate of labral pathology.[8] Unfortunately, there is still difficulty in diagnosing small detachment and degeneration of the labrum.

Hip arthroscopy is being carried out increasingly with minimal complications. The largest published series by Clark et al.[6] reported an overall complication rate of 1.4%. These include neuropraxia of femoral and sciatic nerves, portal wound bleeding, portal hematoma, trochanteric bursitis, instrument breakage, and a single case of septic arthritis from a series of 1,054 cases.[6] There is an understandable learning curve in any new procedure, but the rate of complications can be minimized with the use of proper instrumentation and technique. The use of standard fracture table allows easy access and simplicity of patient positioning, familiar joint orientation, and optimal access for all portal placement.

Although hip arthroscopy is now well established as an elective procedure, its usefulness in cases of hip trauma is still not completely defined. The recent study by Yamamoto et al.[9] has shown some benefit in retrieval of loose osteochondral fragments in an acute setting, but its appropriateness as a routine procedure has not been fully evaluated.

CONCLUSIONS

The main benefit of hip arthroscopy in our opinion is in treatment of labral tears and removal of loose bodies from the hip joint with minimal complications. The result confirms the benefit from this minimally

Figure 1. Radiograph obtained before surgery shows loose bodies in the hip. Also note synovial chondromatosis.

invasive, joint-preserving procedure in a joint that was difficult to access. Its role in synovial-based disease is more of diagnostic rather than therapeutic value.[10] Therefore, it is important that there is every effort made to confirm diagnosis before surgery because the key to a successful outcome lies in proper patient selection. Effective and safe performance of this procedure depends on careful attention to every technical aspect of the operation. Although our series is limited to 22 patients, all the procedures were performed consistently in a relatively short period of time with no complications.

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