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## Chondral degeneration and therapeutic hip arthroscopy

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**Abstract** Therapeutic hip arthroscopy for the treatment of chondral degeneration remains controversial. A retrospective cohort study examined 70 patients of mean age 47 (range 22–87) years who had undergone hip arthroscopy and assessed them for evidence of chondral degeneration using radiological and arthroscopic means. Clinical outcome was assessed using a modified Farjo and Glick classification. Thirty-nine patients had evidence of chondral degeneration on arthroscopy with or without radiological diagnosis, and 31 had alternative pathology. If patients were found to have chondral degeneration at arthroscopy, they were significantly more likely to have a poor clinical result than if an alternative diagnosis such as a loose body or labral tear was made ( $p < 0.0001$ ). Patients with evidence of degenerative changes on plain hip radiographs were significantly more likely to have a poor clinical result following hip arthroscopy than patients with unremarkable hip radiographs ( $p < 0.0001$ ). Therapeutic hip arthroscopy for osteoarthritis should be used with caution, as a poor clinical result is significantly more likely compared to other pathologies such as a labral tear or loose body.

**Résumé** L'arthroscopie thérapeutique de la Hanche pour le traitement des chondropathies reste controversé. Une étude rétrospective d'une cohorte de 70 malades d'âge moyen 47 ans (22–87) qui avait subi arthroscopie de la hanche a été faite avec étude de la chondropathie à partir des données radiologiques et arthroscopiques. Le résultat clinique a été noté en utilisant une classification modifiée de Farjo et Glick. Thirty-nine malades avaient une chondropathie arthroscopique, avec ou sans diagnostic radiologique, et 31 avaient une pathologie alternative. Si les malades avaient une chondropathie, ils avaient

significativement un plus mauvais résultat clinique que s'ils avaient une autre pathologie, comme un corps étranger ou une déchirure du labrum ( $p < 0.0001$ ). Les patients avec des signes radiologiques dégénératifs avaient un plus mauvais résultat clinique que ceux avec une radiographie normale ( $p < 0.0001$ ). Les arthroscopies thérapeutiques pour arthrose devraient être utilisées avec prudence car le résultat clinique est moins bon que dans les autres pathologies comme les corps étrangers ou les déchirures du labrum.

### Introduction

Hip arthroscopy has gained popularity over the past 20 years as a diagnostic and therapeutic tool in the management of hip pathology. It has been used effectively in the treatment of labral tears and loose bodies in particular, but the role of hip arthroscopy in the osteoarthritic hip remains controversial. This study set out to assess a retrospective cohort of patients following hip arthroscopy paying particular attention to evidence of degenerative chondral changes, both radiological and arthroscopic, and their relationship to clinical outcome.

### Materials and methods

A retrospective cohort study examined all patients who had undergone hip arthroscopy performed by the senior author between 1996 and 2003. Patient data was extracted from an electronic data base using ISYS software (Odyssey Development, Inc., Crows Nest, NSW, Australia). Seventy patients were reviewed (26 men, 44 women) of mean age 47 (range 22–87) years at a minimum of 4 months following surgery. Data was gathered concerning clinical presentation along with radiological and arthroscopic findings. Particular attention was paid to findings consistent with radiological or arthroscopic evidence of chondral degeneration. In view of the lack of reliability in classification of arthroscopic chondral findings, this was

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not attempted [2], but it was noted if bone was exposed on arthroscopic examination of the hip joint.

Clinical outcome was assessed using a modified Farjo and Glick classification system [8], which classifies patient outcomes as good or poor depending on pain, mechanical symptoms, activities of daily living, and ability to work and play sport. All patients who subsequently underwent total hip replacement were considered a poor result.

Statistical analysis was performed using Fisher's exact test for categorical data.

## Results

Thirty-nine patients were found to have evidence of chondral degeneration at arthroscopy with or without evidence on plain radiographs, MRI scan, MRI arthrogram, or CT arthrogram in any combination (Table 1). There were seven cases where degeneration was advanced enough to have bone exposed at arthroscopy. All cases of chondral degeneration were treated with debridement of unstable chondral fragments and hip washout. If copathology such as a labral tear was identified, this was also treated.

Out of the 39 patients, 26 had evidence of degeneration on plain AP pelvic radiographs. Of 13 patients with no plain radiological evidence of degeneration, nine were diagnosed on arthroscopy alone. The other four had evidence of chondral lesions on MRI or MRI arthrography. Of the 39 patients with chondral degeneration, 28 had a poor clinical result of which 17 progressed to hip arthroplasty surgery, including six of the seven patients with exposed bone. Seventy-two percent of patients with a poor clinical result had evidence of degenerative changes on plain radiographs, and 77% of patients with evidence of degenerative changes on plain radiograph had a poor clinical result. Of the 39 patients with chondral degeneration, 11 had a good clinical result. Of these, seven had coexisting labral tears that were resected (one being in the presence of a large impingement lesion), one had a large associated loose body, one had a local psoas bursa that was excised by an open approach, and two had isolated degenerative chondral changes. In 31 patients, there was no evidence of chondral degeneration on any investigation. Of these 31 patients, four had a poor clinical result, all having had labral tears. In 27 patients, the clinical result was good, 22 had labral tears, three had loose bodies associated with synovial osteochondromatosis, and two

were cases of undiagnosed hip pain that resolved following surgery.

Patients were significantly more likely to have a poor clinical result following therapeutic arthroscopy if a diagnosis of chondral degeneration was made when compared to other diagnoses ( $p < 0.0001$ ). Equally, if a patient was diagnosed as having degenerative joint changes on plain X-ray, that patient was significantly more likely to get a poor clinical result than if plain radiographs showed no evidence of degeneration ( $p < 0.0001$ ).

Of the 70 patients who underwent hip arthroscopy, four had complications: One developed a sciatic nerve neuropraxia that resolved after 4 months, one developed neuropraxia of the lateral cutaneous nerve of the thigh lasting 8 weeks, one developed a pudendal nerve palsy lasting 4 weeks, and one developed a stitch abscess.

## Discussion

Arthroscopy of the hip is a more challenging procedure than arthroscopy of the knee or shoulder because of the anatomical constraints of the hip joint [6, 12, 13]. As a result, it is not as widely used as other arthroscopic techniques, although over the past decade, hip arthroscopy has gained considerable interest [13]. Hip arthroscopy has been found to be very effective in the treatment of athletic injuries such as labral tears and loose bodies [13, 15], and this study supports this conclusion. However, the use of arthroscopy in the management of osteoarthritis remains controversial.

Diagnosis of early chondral degeneration is not easy by any modality. Clinical findings can be confusing because of the relatively common incidence of referred pain from the lumbosacral area and the possible presence of other soft-tissue causes of pain, such as bursitis, snapping of iliopsoas, piriformis syndrome, myotendinous strains, and even hernias [11, 18]. Plain radiographs of the hip remain the mainstay of radiological evaluation of hip pain but are a relatively blunt instrument in the diagnosis of early degenerative disease. Nonetheless, the results of this study show that a poor clinical result following therapeutic arthroscopy is more likely than if plain radiographs demonstrate degenerative changes of the hip joint ( $p < 0.0001$ ). This suggests that if degenerative hip disease is advanced enough to be diagnosed on plain radiographs, further investigation, or indeed treatment, with arthroscopy is unlikely to be helpful.

**Table 1** Diagnostic and clinical results in 70 patients

Diagnosis	Total	Diagnosis on plain X-ray	Diagnosis on arthroscopy	Good clinical result	Poor clinical result
Chondral degeneration	39	26	39	11	28
Labral tear	26	0	26	22	4
Loose bodies	3	3	3	3	0
Undiagnosed hip pain	2	0	0	2	0

For patients with normal plain radiographs, further investigation is warranted. The use of MRI, particularly with contrast, in the diagnosis of pathology such as labral tears is broadly accepted. However, the accuracy of MRI in detecting articular surface abnormalities is questionable [7, 10, 16], and diagnostic yield is poor in terms of evaluation of patients with chondral softening, fibrillation, or partial thickness defects of less than 1 cm [7]. MRI arthrography has increased the sensitivity and specificity of diagnosis of labral tears to 95% and 88%, respectively, but it has not had the same effect on the diagnosis of chondral lesions [5]. The future use of cartilage-sensitive MRI scanning may help elucidate chondral pathology [17], but this remains to be seen. Certainly, at present, a reliable, noninvasive method of diagnosing chondral degeneration in the hip is not available.

Arthroscopy may become the final modality of investigation in cases of undiagnosed hip pain, as was the case in nine patients in this series who were found to have chondral degeneration of the hip only at arthroscopy. In the case of undiagnosed hip pain, the use of arthroscopy is broadly advocated in the literature [1, 14] but principally as a diagnostic tool. We would support this view. As a therapeutic procedure, the use of arthroscopy in patients with evidence of osteoarthritic changes does not have much literature support [3, 15], and its role needs to be defined [4, 13]. A direct correlation between advanced chondral degeneration and poor clinical outcome following arthroscopy has been reported [9, 14], but this has not been reported with early degenerative changes. The presence of associated copathology in the degenerate hip, such as labral tears or loose bodies, allows arthroscopic treatment of copathology, which may be causing mechanical symptoms [13]. Reliable and predictable results have been reported following hip arthroscopy in patients with mechanical symptoms and underlying mild-to-moderate osteoarthritis in some series [4], but the presence of mechanical symptoms in degenerative disease is not seen as a favorable prognostic factor in other series [15]. The former view is broadly supported by this study. The majority of osteoarthritic patients who had a good clinical result had treatable copathology, but when compared to the patients with a poor clinical outcome, statistical difference was not found.

It is clear from the current series that if a diagnosis of chondral degeneration is made on plain radiograph or on hip arthroscopy, a patient is much less likely to get a good clinical result than if an alternative diagnosis is made ( $p < 0.0001$ ). If a patient has a diagnosis of degenerative joint disease on plain hip radiographs, arthroscopy may well prove to be fruitless and should perhaps be best avoided. If the diagnosis is not clear on plain radiographs, then further investigation in the form of an MRI, possibly cartilage specific, or with contrast media, would be a prudent step. If pathology such as a labral tear or loose body is identified, then therapeutic arthroscopy has a greater chance of a successful outcome than if a diagnosis of chondral degeneration is subsequently made. If the diagnosis remains unclear after MRI with contrast, arthroscopy is then advocated, but patients should be

appropriately counselled that if chondral degeneration is diagnosed at arthroscopy, then a good clinical result is less likely.

In conclusion, therapeutic arthroscopy of the degenerative hip should be undertaken with caution. A successful clinical outcome following arthroscopy of an osteoarthritic hip is significantly less likely than arthroscopic treatment of alternative hip pathology such as labral tears or loose bodies ( $p < 0.0001$ ). If plain radiographs of the hip show evidence of articular degeneration, the probability of a favorable clinical result following therapeutic hip arthroscopy is also significantly reduced ( $p < 0.0001$ ).

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