

Three years follow up after arthroscopic acetabular labral partial debridement in a cohort of Egyptian population

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ABSTRACT

Background: The acetabular labrum is a fibrocartilagenous structure attached to the acetabular rim, it plays an important role in providing a seal enhancing the hip stability. Labral tears are the major cause of the hip joint pain and the leading indication for performing hip arthroscopy with many options of treatment such as debridement, repair and reconstruction. To the researchers' knowledge, there have been no published studies in Egypt regarding the arthroscopic labral management. The aim of this study was to evaluate the functional outcomes after two years of following arthroscopic labral debridement in a cohort of adult Egyptian population with labral tears using the modified Harris hip scoring system. **Materials & Methods:** A prospective case series study from October 2014 till March 2018 including Egyptian adult population with labral tears, and routine hip joint arthroscopy was done and the partial labral debridement was performed. The modified Harris hip score was used to assess the functional outcomes both at the preoperative and the postoperative follow-ups after six months and three years. **Results:** The study included 25 patients with partial labral debridement. The commonest location of labral tear was antrosuperior (64%) and cam type femoroacetabular impingement was associated with labral tears in 22 patients. There was a statistically significant improvement in the patients' functional outcome in three years postoperative with the P value of 0.000. **Conclusions:** This study has suggested that the arthroscopic unrepairable labral tear management with the partial labral debridement showed a significant improvement in the patients' functional score. This management option was safe with the reasonable rate of complications.

Keywords: Hip pain, arthroscopy, labrum, labral tear, labral debridement and hip arthroscopy.

Introduction

The acetabular labrum is a fibrocartilagenous structure surrounding the acetabular periphery ^[1], providing a seal mechanism and a shock absorber.^[2, 3]

Labral damage leads to the accelerated cartilage wear and the increased stresses in the joint.^[3,4]

Arthroscopic or open treatment options can be performed including labral repair, debridement or reconstruction.^[5]

To the researchers' knowledge, there have been no studies done in Egypt on the arthroscopic labral debridement of the

labral tears.

This study aimed to assess the functional outcomes after six months and three years of arthroscopic partial labral debridement of the torn labrum in a cohort of adult Egyptian population using the modified Harris hip score.

Materials and Methods

A prospective case series study was conducted from October 2014 till March 2018 in Kasr Al-Ainy hospital, Cairo University and Fayoum University hospital involving 25 patients.

Inclusion criteria:

Egyptian patients, with unrepairable labral tears either with cam type femoroacetabular impingement (FAI) or normal hip joint bony anatomy were included in this study.

Exclusion criteria:

Non Egyptian patients, patients below 15 years old, adult patients older than 50 years old, repairable labral tears, cases with labral debridement up to bone needing labral reconstruction, patients with pincer type FAI, arthritic hip

Access this article online

Website: www.japer.in

E-ISSN: 2249-3379

How to cite this article: Ahmed RF, Ahmed HA, Mahmoud MA, Ibrahim MM, Kamal MS, Ashraf AA. Three years follow up after arthroscopic acetabular labral partial debridement in a cohort of Egyptian population. *J Adv Pharm Edu Res* 2018;8(1):79-82.
Source of Support: Nil, Conflict of Interest: None declared.

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joint (joint space less than two mm), and stiff hip joint were excluded.

Detailed history was taken and a thorough clinical examination of the affected hip joints and the contralateral ones were done. This study used the modified Harris hip score [6, 7] for the assessment of the patients' functional status preoperatively, and after six months and three years postoperatively.

The radiographic examination included anteroposterior (AP) pelvis, AP view of the affected hip joint, the frog lateral views of the affected hip joints, the computed topography (CT) with 3D reconstruction and magnetic resonance (MR) arthrography for the detailed bony, labral and articular cartilage evaluation. An informed consent was obtained from all the patients to be included in the study.

Routine hip arthroscopy in supine position was done starting with the central compartment examination first under the traction. The assessment of the labral condition was done using the clock-face method to describe the localization and the extent of labrum pathology, in which the 6 o'clock position depicts the acetabular notch, 3 o'clock is anterior, 12 o'clock is superior and 9 o'clock is posterior [8] and a partial labral debridement was done by trimming the unstable edges. Cam resection was done in patients with cam type of FAI after the release of traction and through the peripheral compartment.

Postoperative X-rays including AP and frog lateral views were obtained. NSAID (Celecoxib 200 mg once per day orally for three weeks) were used for the pain control and the prevention of the postoperative heterotopic ossifications. The range of motion and weight bearing was according to the arthroscopic procedure that was done; if cam resection was done, the weight bearing would be delayed for three weeks postoperative, then the partial weight bearing would be started and progressed to the full weight bearing as tolerated. If the patient had a normal bony anatomy, the weight bearing would be allowed as tolerated. All the patients were encouraged to use high bicycle training post operatively to allow the hip range of motion and limit the adhesions' formation. A repeated clinical examination in the form of the range of motion, the impingement tests and MHHS were obtained after six months and three years postoperatively.

Mean \pm standard deviation (\pm SD), and range were used to describe the study data. After applying Bonferroni adjustment, Friedman's test with Wilcoxon signed rank test were used to compare the study time points for the paired samples as posthoc multiple 2-group comparisons. Pearson moment correlation equation and Spearman rank correlation equation were used to find the correlation between the various variables. Any results less than 0.05 were considered as statistically significant. The computer program IBM Statistical Package for the Social Science; IBM Corp, Armonk, NY, USA release 22 for Microsoft Windows was used for all the statistical calculations.

Results

The study included 25 patients with labral tear. There were 14 males and 11 females. The mean age of the patients was 32 years old (range 17-47). The history of trauma was positive in eight patients only.

22 patients had only cam type FAI and three patients had normal bony anatomy.

The most common site of labral tears was the antrosuperior position between 1-2 o'clock (64%), other sites were from antrosuperior to postrosuperior between 10-2 o'clock (28%) and the generalised tear affecting the whole labral circumference (8%) (Table 1).

The study included: 22 patients with the degenerative labral tear, and three patients had intersubstance linear tear.

The functional scoring evaluation has been shown in (table2).

The overall improvement between the preoperative MHHS and that after three years postoperative was statistically significant (P value 0.000). The statistical analysis of the study data have been shown in (table 3)

There were five patients with the postoperative minor complications. Four patients had developed neurapraxia and one patient had developed heterotopic ossification. One patient had pudendal nerve neurapraxia in the form of paraesthesia in the perineal region only that improved after one week, one patient had lateral cutaneous nerve of the thigh neurapraxia in the form of paraesthesia in the antrolateral part of the thigh that improved after two months, and two patients had saphenous nerve neurapraxia in the form of paraesthesia in the medial part of the dorsum of the foot with the complete improvement after 3 months postoperatively. One patient developed recurrent hip pain after surgery, and the follow up x-rays showed the heterotopic ossification that was excised surgically after its maturation after eight months post arthroscopy, and then the patient had a painless hip joint range of motion and returned to her previous level of activity.

Discussion

The importance of labral function to a healthy, nonpainful hip joint has been well established, and labral tear has been the most common pathology in patients undergoing hip arthroscopy [9].

The objective of this study was to evaluate the functional outcomes of the arthroscopic partial labral debridement of the torn acetabular labrum after six months and three years postoperatively in a cohort of Egyptian population using the modified Harris hip scoring system.

There was a statistically significant improvement in the patients' functional scores after three years with the partial debridement of their labral tears.

The mean improvement between the preoperative MHHS and that of the final follow up after three years postoperatively was 99.33 (range 30-164) with the standard deviation of 42.642.

The overall improvement was statistically significant with the P value of 0.000.

This study's results in labral debridement were comparable to the other studies that showed patients improvement after the labral debridement (table 4).

Table 1: Locations of the labral tears by arthroscopy.

Site of labral tear	No. of patients
antrosuperior	16
antrosuperior and posterosuperior	7
generalized	2

Table 2: The functional scoring evaluation.

	Preoperative MHHH	six months MHHH	Three years MHHH
mean	49.62	76.62	94.14
Mini.	35	30	84
Max.	74	93	100
Standard deviation	12.172	13.678	5.695

Table 3: The statistical analysis of the study data regarding the improvement in the functional scoring (MHHS).

Number of patients	25
Chi-Square	41.040
df	2
p value	0.000

Table 4: Summary of studies evaluating the arthroscopic treatment of the labral tears

study	Number of patients	Final functional score
Philippon MJ et al ^[10]	25	88.9
Fitzgerald ^[11]	55	>80
Meftah et al ^[12]	50	>80
Byrd and Jones ^[13]	26	>80
Espinoza et al ^[14]	25	>80
Larson CM and Giveans MR ^[15]	44	>80
Krych et al ^[16]	41	83.4 ± 19.7
This study	25	94.14

Robertson et al.^[17] performed a systematic review to determine the patients' satisfaction following the acetabular labral debridement, and concluded that up to 91% of the patients were satisfied with their outcomes after 3.5 years.

A meta-analysis of the partial labrectomy outcomes with an average 2.5-year follow-up showed a 31% to 40% improvement in the modified Harris hip score, the reduction in hip pain in 91% of patients, and the resolution of the mechanical symptoms^[18].

B. Haddad et al.^[19] in their review article reported that the mean rate for good or excellent outcomes was 82% (67% to 100%).

In this study, it was noticed that the improvement occurred in the first 6 months in the patients, the functional scores were more than that occurred after six months and three years postoperatively. It could be suggested that this much improvement occurred maybe due to the removal of the

mechanical impingement. This observation was documented in a study by Dippmann et al.^[20] with no solid conclusion. Perhaps more studies have been needed to clear this issue.

Regarding the complications rate, neurapraxia occurred in 4 patients (16%), although the traction time was limited to two hours maximally and a well-padded perineal post more than 15 mm in diameter was used.

In a review study by Seijas et al.^[21], the overall rate of neurapraxia has been reported between 0.48 and 20%. Dippman et al.^[20] documented that among the patients undergoing hip arthroscopy, 46% had nerve dysfunction during the first six postoperative weeks, and 18% still had symptoms one year later, without a clear relationship with the time of the traction during the surgery.

Among the cases of neurapraxia in this study's series, there were two patients with saphenous nerve neurapraxia in the foot only, and it could not be concluded if this was due to the proximal injury, or due to traction, or the portal placement or due to distal injury at the level of the foot and ankle due to the foot piece used in the traction.

Concerning the heterotopic ossification, the study showed only one patient (4%) who developed heterotopic ossification, and the global rate of heterotopic ossification documented in the literature was 1.6 to 12%^[22, 23].

The limitation in this study was the relatively small total number of the patients, but to the researchers' knowledge, this study can be considered the first study in Egypt concerning the arthroscopic debridement of the labral tears.

In conclusion, this study has suggested that arthroscopic labral tear management with the partial labral debridement showed a significant improvement in the patients' functional score. This management option has been safe with reasonable rate of the complications.

Patient Declaration Statement

The authors would like to certify that they have obtained all the appropriate patient consent forms.

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