Effect of center edge angle on clinical and quality-of-life outcomes after arthroscopic acetabular labral debridement

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Introduction

- Labral lesion is a common hip intra-articular problems and surgical indications for hip arthroscopy

- Hip dysplasia is also a common problem not only resulting in labral lesion but also hip osteoarthritis.

Introduction

- Hip arthroscopy achieved satisfactory clinical outcomes for treatment of hip labral lesions

- However, it remains unclear if labral lesions concomitant with acecabular dysplasia could achieve great clinical efficacy when treated with hip arthroscopic labral debridement.

Purpose

- Compare clinical and quality-of-life outcomes following arthroscopic acetabular labral debridement between patients with different center edge (CE) angle

Materials and Methods

- January 2007 ----September 2011,79 patients
- Indications:
  - persistent groin pain with failed nonoperative treatment, such as the use of anti-inflammatory medications, physical therapy, or activity modification for more than 6 months.
  - all patients had evidence of a labral tear on magnetic resonance imaging (MRI).
- Exclusion criteria
  - severe dysplasia (CE <17°)
  - radiographic evidence of arthritis (Tonnis Grade 2 or greater)
  - Legg-Calve-Perthes disease
  - previous hip surgery,
  - hips with avascular necrosis

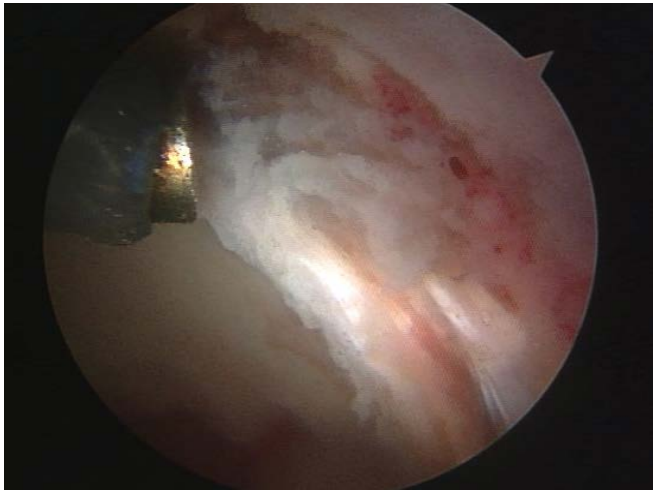
Materials and Methods

TABLE 1.

Participant Demographic Data of the Study Groups

Variable	normal group (n = 68)	dysplasia group (n =11)	P Value
Age at surgery, y	42.1±8.9	39.5±9.2	>0.05
Sex, n			>0.05
Male	25	4	
Female	43	7	
Body mass index, kg/m2	23.1±1.9	22.7±2.4	>0.05
Operative side, n			>0.05
left	17	3	
right	51	8	
Follow-up time, mo	29.1±6.5	25.3±6.2	>0.05

Surgical Technique



Rehabilitation

- Postoperatively, the same protocol was performed.
- Partial weightbearing was permitted with crutches during the first 2 weeks, with progression to full weightbearing during the second 2 weeks postoperatively.
- During first ten days postoperatively, flexion of hip was not allowed to be more than 90°.
- Patients were restricted from passive hip external rotation for 3 weeks postoperatively.

Clinical Evaluation

- The modified Harris Hip Score (mHHS)
- Hip Outcome Score (HOS) for activities of daily living (ADL) and sports
- 12-Item Short Form Health Survey [SF-12]
  - mental component scores (MCS)
  - physical component scores (PCS)

Statistical Analysis

- Data analysis was performed using Stata 10.0 software (StataCorp, College Station, Texas)
- The paired t test was used to compare preoperative and final follow-up clinical outcomes for each group.
- The independent samples test was performed to analyze the changes in clinical evaluations between groups.
- Statistical significance was set at $P<0.05$.

RESULTS

TABLE 2

Additional Procedures Performed for Patients

Procedures	normal group	vdysplasia group
Ligamentum teres debridement	31	5
Femoral Osteoplasty	61	0
Acetabular Chondroplasty	54	6
Microfracture	0	0

Results

TABLE 3

Hip Clinical Outcome Scores for both groups

Outcome Score	normal group		P value	dysplasia group		P value
	Preoperative	Final visit		Preoperative	Final visit	
mHHS	60.42±9.2	87.3±5.3	<0.05	59.3±5.5	70.9±5.7	<0.05
HOS-ADL	65.4±10.1	88.9±5.2	<0.05	62.7±7.2	74.5±5.6	<0.05
HOS-sports	50.3±8.9	87.5±7.7	<0.05	44.8±7.1	50.5±7.4	>0.05
SF-12 PCS	42.8±4.7	53.5±4.6	<0.05	38.5±3.8	45.2±5.4	<0.05
SF-12 MCS	44.5±3.9	56.4±4.0	<0.05	42.5±4.0	45.2±3.4	>0.05

Results

TABLE 4

Comparison of Change in hip clinical outcome scores between two groups

	Change				
	mHHS	HOS-ADL	HOS-sports	SF-12 PCS	SF-12 MCS
Normal group	26.9±9.0	23.5±11.2	37.2±5.7	10.7±5.3	11.9±4.5
Dysplasia group	11.6±5.6	11.8±6.3	5.6±6.8	6.7±3.8	2.7±3.2
P value	<0.05	<0.05	<0.05	<0.05	<0.05

Results

- Postoperatively, there were 5 patients in normal group needing revision arthroscopy for hip persistent pain, 2 patients in dysplasia group converted to THA or periacetabular osteotomy. None of the patients in this current study developed infections, nerve lesions, or other complications.

Discussion

- The principal findings of our study
  - improved clinical outcomes in mHHS, HOS ADL and SF-12 PCS
  - poor outcomes in HOS Sports and SF-12 MCS.
- However, these outcomes in mHHS, HOS ADL and SF-12 PCS were inferior to those in normal group.

Discussion

- Labral lesions are proved to be sources of hip pain
- Byrd et al advocated that the clinical efficacy of arthroscopic debridement is mainly dependent on the type of pathology being addressed and not the existence of hip acetabular.He further confirmed that hip dysplasia is not a contraindication for hip arthroscopy and is also not a harbinger of poor results.
- Ross et al yielded good clinical outcomes after precise management of intraarticular diseases with usage of hip arthroscopy and periacetabular osteotomy simultaneously.
- Periacetabular osteotomy could not heal the intra-articular pathologic findings

Discussion

- Substantially more load supported by the labrum in dysplastic hip than that of the normal hip for all simulated activities.
- These might explain unfavorable outcomes in HOS sports and mental components of SF-12 in dysplasia group and poorer clinical evaluation compared with normal hips.

Discussion

- There were several limitations in our study.
- First, there were the small number of patients, especially patients with hip dysplasia and the short-term follow-up, which limits our ability to verify the effect of hip dysplasia on arthroscopic labral debridement. After all, the number of patients suffering from hip dysplasia and undergoing hip arthroscopy is small.
- Lastly, a longer follow-up is necessary to determine whether arthroscopic labral debridement for hip dysplasia may persist in symptomatic relief, whether symptom would recur due to the presence of hip dysplsia
- Second, although AP radiographs and lateral CE angle are generally used to evaluate the presence of hip dysplasia, they are just kinds of two-dimensional assessment. In future, there is a need to use three-dimensional assessments for accurate measurement

Conclusion

- Arthroscopic acetabular labral debridement resulted in significantly greater clinical and quality-of-life outcomes in patients with CE angle >25° compared with patients with CE angle < 20°.

THANK YOU