Acetabular Debridement Demonstrates Similar Outcomes and Survival to Microfracture in Hip Arthroscopy: A Multi-Center Analysis

Mario Hevesi MD1, Erick Marigi MD1, Christopher Bernard BS1, David E. Hartigan MD2, Bruce A. Levy MD1, Benjamin G. Domb MD3, Aaron J. Krych MD1

1Mayo Clinic, Rochester, MN, USA 2Mayo Clinic, Phoenix, AZ; 3American Hip Institute, Westmont, IL

Introduction

- Hip pain and arthritis have been associated with structural abnormalities including femoroacetabular impingement (FAI) and labral tears.
- Open techniques have experienced a rapid shift to arthroscopic methods.
- Management of high-grade acetabular cartilage pathology remains controversial.
- Questions raised regarding utility of microfracture (MFX) as compared to debridement/abrasion.
- MFX historically popular, with satisfactory defect fill and outcomes in uncontrolled series.
- MFX also requires specialized awls, protected weight bearing, CPM use.
- Prospective knee literature failed to demonstrate benefit of MFX over chondroplasty/debridement.

Study Aims:

- To describe patient reported outcomes of debridement/abrasion and MFX of high-grade unipolar acetabular defects at the time of labral repair.
- To determine whether lesion treatment modality was predictive of outcomes and revision rates.

We Hypothesized:

- Patients would demonstrate clinically significant improvements in patient reported outcomes for both debridement/abrasion and MFX.
- Treatment would not predict outcome or revision rates.

Method

Inclusion Criteria:

- Primary arthroscopic labral repair 2008 to 2016.
- Age < 55 years.
- Isolated acetabular chondral damage: ALAD Grade 3 – 4.
- Performed at two large centers (MN, USA; IL, USA).

Exclusion Criteria:

- Less than 2 years of clinical follow-up.
- Bipolar cartilage lesions with Grade 3 – 4 femoral changes.
- Lateral Center Edge Angle < 20°.

Outcomes Collected:

- Patient-reported outcome measures:
  - Visual Analog Scale (VAS).
  - Modified Harris Hip Score (mHHS).
  - Hip Outcome Score, Sports Specific Subscale (HOS-SSS).
  - Reoperation rate.

Debridement /Abrasion (A) and MFX (B)

Results

Demographics:

- 113 hips in 110 patients (66 M, 44 F, mean age 34.5 ± 1.1 years).
- n = 82 Debridement/abrasion; n = 31 MFX.
- Mean Follow-up: 4.9 years.
- Lesion size statistically similar between groups (p = 0.47).
- Debridement: 1.3 ± 1.0 cm²; MFX: 1.4 ± 1.0 cm².

Patient Reported Outcomes:

- Debridement patients demonstrated:
  - 3.6 point improvement in VAS (p < 0.01).
  - 21.2 point improvement in mHHS (p < 0.01).
  - 25.4 point improvement in HOS-SSS (p < 0.01).
- VAS, mHHS, and HOS-SSS statistically similar to MFX patients (p ≥ 0.20).

Revision-Free Survival:

- 5-year revision-free survival 84% for debridement, 85% for MFX (p = 0.78).
- Cartilage treatment technique not predictive of revision risk:
  - Univariate analysis: HR = 1.01, p = 0.98.
  - Multivariable analysis: HR = 0.93, p = 0.90.
  - Accounting for age, lesion grade and acetabular coverage.

Survival Free of Revision Surgery

Discussion

- Debridement/abrasion and MFX populations demonstrated similar postoperative subjective outcomes and revision rates, both when compared on a populational and on an adjusted multivariate basis.
- Findings significant in that they support the use of either debridement/abrasion or MFX in the treatment of grade 3 and 4 acetabular defects.
- Benefits supporting the use of preferential debridement/abrasion include the avoidance of prolonged weight bearing restrictions, need for costly CPM machines, and extended recovery course associated with MFX.
- Observed outcomes supported by previous analysis examining the return to play rates of 39 elite athletes undergoing hip arthroscopy with MFX and 94 controls without MFX and demonstrating no significant difference in return to play rates.
- Important to note this study does not advocate for abandonment of MFX nor does it justify decreasing coverage for MFX by health systems considering that similar outcomes were achieved with both techniques when employed at the discretion of the treating physician.

Conclusions

- Patients undergoing debridement/abrasion of high-grade unipolar acetabular cartilage lesions demonstrate similar outcome scores and revision rates compared to patients undergoing MFX.
- Outcomes support the consideration of preferential debridement/abrasion at the discretion of the treating surgeon in order to optimize recovery while maintaining established positive outcomes following hip arthroscopy.

References


Conflicts of Interest:

- MFX historically popular, with satisfactory defect fill and outcomes in uncontrolled series.
- Questions raised regarding utility of microfracture (MFX) remains controversial.
- Revision-Free Survival:
  - 5-year revision-free survival 84% for debridement, 85% for MFX (p = 0.78).
  - Cartilage treatment technique not predictive of revision risk with:
    - Univariate analysis: HR = 1.01, p = 0.98.
    - Multivariable analysis: HR = 0.93, p = 0.90.
    - Accounting for age, lesion grade and acetabular coverage.

Survival Free of Revision Surgery

Follow-Up (Years)