Cartilage Status at Time of Hip Arthroscopy Predicts Failure in Patients with Hip Dysplasia

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Background

- Long-term survivorship following hip arthroscopy has been shown to be dependent upon the presence and severity of chondral damage at the time of surgery\(^1\).

- However, while inadequately addressed bony abnormalities have been identified as a common reason for repeat arthroscopy procedures in patients with hip dysplasia\(^2,3\), it is unknown whether the status of the articular cartilage of the hip joint at the time of arthroscopy can predict failure in these patients.
Study Aim

• The present study was undertaken to examine whether the presence and severity of femoral and acetabular chondral damage at the time of arthroscopy predicted eventual conversion to total hip arthroplasty (THA) in patients with hip dysplasia.
Methods

• Between 1991 and 2013, we identified 228 hips (185 patients) with mild to moderate acetabular dysplasia who underwent arthroscopic evaluation of their hip.
  – 142 females, 43 males
  – Average age: 37.3 ± 11.0 years
Methods

• The articular cartilage of the posterior, superior, and anterior regions of the acetabulum and femoral head were assessed for signs of chondral damage during arthroscopy.

• The degree of damage was classified as
  – Absent
  – Mild (grades I or II)
  – Moderate to severe (grades III or IV)
Methods

- Sixty-five patients went on to receive THA at an average of 3.1 ± 3.1 years after arthroscopy.

- A stepwise multivariable logistic regression analysis was conducted to determine predictors of the eventual need for THA following hip arthroscopy for patients with dysplasia using age, gender, and condition of the articular cartilage for each region of the femoral head and acetabulum at arthroscopy.
Results

• Significant predictors of conversion to THA
  – Increasing age ($p = 0.019$)
  – Presence of mild chondral changes on the posterior femoral head ($p = 0.001$)
  – Presence of moderate to severe chondral changes on the anterior acetabulum ($p = 0.007$)
Results

- Older patients were 1.046 times (95% CI: 1.007, 1.086) more likely to convert to THA.
- Patients with mild arthritic changes (grades 1 and 2) of the posterior femoral head were 9.97 times (95% CI: 2.62, 37.99) more likely to convert to THA.
- Patients with moderate to severe arthritic changes (grades 3 and 4) of the anterior acetabulum were 6.12 times (95% CI: 1.66, 22.58) more likely to convert to THA.
Conclusions

- Our findings show that the presence of chondral damage on the posterior femoral head and anterior acetabulum are strong predictors of ultimate conversion to THA in patients with hip dysplasia.
Conclusions

• Those patients with chondral damage on the posterior femoral head exhibited more global cartilage damage than those patients without damage to this region
  – Average number of regions (femoral head and acetabulum) exhibiting damage
    • Presence of posterior femoral head damage: $5.6 \pm 1.0$
    • Absence of posterior femoral head damage: $1.8 \pm 1.4$
Conclusions

• Knowledge of the status of the articular cartilage surfaces in patients with dysplasia may help guide appropriate treatment strategies.

• For those patients with advanced cartilage damage, specifically on the anterior acetabulum, arthroscopy serves an important diagnostic role to define the stage of the disease and provides validation for future arthroplasty procedures.
References

