Rapid Joint Space Narrowing After Arthroscopic Resection Of The Intra-Articular Projection Of The Labrum In Patients With Acetabular Dysplasia: Is It A True Labral Tear Or A Normal Variant?

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Labral pathologies in acetabular dysplasia

- Inverted labrum
- Limbus
- Hypertrophied labrum
- Bucket-handle type tear
- Incarceration of torn labrum

Embryology of Acetabular Labrum

Marginal attachment of the anterior labrum to the acetabular cartilage with an intra-articular projection (D)

A, acetabulum
B, femoral head; C, anterior labrum
D, intra-articular projection of the anterior labrum
E, posterior labrum
Purpose of This Study

• To present 7 cases of the dysplastic hip which showed intra-articular projection features of the labrum

• To evaluate the clinical and radiological outcome after hip arthroscopy with special regard to joint space narrowing

Material and Methods

• Btw 2011 & 2013, retrospective review of the patients with dysplastic hip who underwent hip arthroscopy

• Intra-articular projection of the labrum (IPL) in 7 cases
  - At the anterosuperior part of the acetabular rim.
  - All cases were female
  - The mean age: 49 years (range, 19 to 75 years)
Intra-articular Projection of the Labrum (IPL)

Normal Hip Joint

Labrum

Acetabular fossa

Lunate cartilage
Hip Arthroscopy for Acetabular Dysplasia

No resection of IPL

Fibrillated portion of IPL was just trimmed to a stable remnant with the shaver and a RF probe or stabilized with suture anchors in 4 cases.

Resection of IPL

IPL was resected to labrochondral junction with an arthroscopic knife and the shaver in 3 cases.

Limited capsulotomy without connecting two portals in all cases.
Clinical Outcome Assessment

- Modified Harris hip score (mHHS)
- Nonarthritic hip score (NAHS)
- Mean follow-up period: 13 mo (range, 12 to 28 mo)

Radiographic Assessment

- Lateral center-edge angle (CEA)
- Acetabular index (AI)
- Femoral head extrusion index (FHEI)
- Superior joint space width on serial standing AP
- Rapid joint space narrowing (JSN) - > 1 mm decrease in width within 6 weeks

Results

- The mean lateral CEA: 14.6° (12.1 to 20.0°)
- The mean AI: 15.6° (10.0 to 19.9°)
- The mean FHEI: 30.0% (19.5% to 37.0%)
- **Rapid JSN**: 3 cases at POP 6 weeks
  - Treated by resection of IPL
  - No further progression of JSN in 2 cases
  - THA in 1 case with significant JSN & severe pain at 7 months after hip arthroscopy
- **Clinical Outcome** (excluding 1 THA)
  - Significant improvement after hip arthroscopy at the end of F/U in 6 cases
    - mHHS: from 75.5 to 90.4
    - NAHS: from 64.2 to 83.0
Case 1  Debridement & trimming – \textit{JSN (-)}

* IPL

Labrum

JSW 4.87mm  
PreOp

JSW 4.64mm  
POP 1yr

JSW 4.86mm  
POP 6wks
Case 2  Resection of IPL – *JSN (+)*

- **PreOp**: JSW 4.15mm
- **POP 6wks**: JSW 3.05mm
- **POP 3mo**: JSW 2.30mm
- **POP 6mo**: JSW 2.30mm
Discussion – Labral pathologies of dysplastic hip in literatures

- Osteoarthritis caused by an inverted labrum
  Byrd JW et al. *Arthroscopy* 2002

- Arthroscopic partial limbectomy in hip joints with acetabular hypoplasia
  - One case showed lateralization of the femoral head after excision of incarcerated torn labrum
  Yamamoto et al. *Arthroscopy* 2005

- Rapidly progressive osteoarthritis after arthroscopic labral repair in patients with hip dysplasia
  Matsuda et al. *Arthroscopy* 2012

- Catastrophic Failure of Hip Arthroscopy Due to Iatrogenic Instability
  Mei-Dan O, *Arthroscopy*, 2011

- Arthroscopy for labral tears in patients with developmental dysplasia of the hip: a cautionary note
  - Accelerated arthritis and femoral head migration
  - Doubt on the effectiveness of hip arthroscopy in definitively addressing symptoms in patients with DDH
  Parvizi et al. *J Arthroplasty* 2009

Similar case with current study?
Hypothesis for Joint Space Narrowing

• IPL is substantial for stability and maintaining joint space width in the dysplastic hip.

• Joint space narrowing may be caused by resection of IPL.
Conclusion

- Intra-articular projection of the anterosuperior labrum may be not a true labral tear, but the embryological remnant or normal variant.

- This portion is substantial for stability and maintaining joint space width in the dysplastic hip.

- Therefore, arthroscopic resection of this lesion may accelerate the process of osteoarthritis.
References


