Catastrophic failure after endoscopic shelf acetabuloplasty for moderate acetabular dysplasia

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Disclosure

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I have no financial relationships to disclose.

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I have financial relationships with the following company:
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Endoscopic shelf acetabuloplasty

Uchida S, et al^1 Arthroscopy Techniques 2014

- A fully endoscopic technique that combines labral repair, cam osteochondroplasty, capsular plication and shelf acetabuloplasty for dysplastic hip patients

- Possibly a less invasive procedure compared to previous osteotomies (e.g. PAO, Chiari pelvic osteotomy)

- Promotes possibility of return to sport activities
The endoscopic shelf acetabuloplasty appears promising due to a less invasive approach. So far, there have been neither negative nor positive outcomes.

The aim of this study was to show, as a cautionary note, our catastrophic-failure cases where endoscopic shelf acetabuloplasty was undertaken.
Patients and Methods

Four patients (Three women, one man)

All underwent total hip arthroplasty (THA) within 2 years following endoscopic shelf acetabuloplasty
(From Aug. 2012 to Oct. 2014, we performed endoscopic shelf acetabuloplasty on a total of 11 patients)

The average age at arthroscopic surgery: 43 years (36 to 49 years)

The average center-edge angle of Wiberg: 10° (8 to 11°)

The average period from arthroscopy to THA: 11 months; (9 to 20 months)

Average operative time: 4hs 17mins
Representative case presentation

38 year-old, female
Left hip joint pain

Tönnis grade 1
LCE: 11 degrees
Acetabular roof angle: 17 degrees
1: Inside-out flap of a labrum was seen (asterisk) (F: femoral head, A: acetabular cartilage, L: labrum)

2: Lasso loop suture was performed

3: The inside-out flap was debrided and the remaining labrum was fixed by three anchor sutures

4, 5: At extra-capsular space, optimum visualization was created by a shaver and radiofrequency, subsequently two 2.4mm guidewires were inserted (C: capsule)

6, 7: 20-mm-wide chisel (asterisk) was introduced along the two guidewires

8, 9: A free bone autograft obtained from iliac crest (asterisk) was inserted into the gutter we made (arrow)
Discussion

The shelf operation (not endoscopic) for dysplastic hip patients

119 hips  Mean F/U: 23.8 years

Conversion to total- or hemi- arthroplasty: 11/119 (9%) at a minimum of 9.9 years

\[ \rightarrow \text{No early failure within 2 years after the surgery} \]

Factors for poor results:

- Advanced osteoarthritis
- Age at surgery > 25 years
- Higher shelf height

Nishimatsu et al. JBJS-Br. 2002

Intra-articular treatment brought catastrophic failure of the current study!? 
Recent reports on arthroscopic treatment for acetabular dysplasia

- Two early failure case reports:
  - In a borderline dysplastic hip patient
    Mei-Dan, et al Arthroscopy 2012
  - In two moderate dysplastic hip patients
    Dean K. Matsuda, et al Arthroscopy 2012

- Inferior results and higher failure rates compared to FAI cohort

- Labral repair and capsular plication resulted in better clinical outcomes
  Larson, et al AJSM 2015

- Contraindication for arthroscopic treatment in DDH:
  Patients with a broken Shenton line, femoral neck-shaft angle > 140°, CE angle < 19° or BMI > 23kg/m²
  Uchida, et al AJSM 2015
Possible causes for catastrophic failure

1. Unexpected increase of instability:
   - Due to trimming of the inverted labrum
   - Due to weakened iliofemoral ligament in association with anterior placement of the shelf and/or making holes for arthroscopic instruments

2. Poor patient selection
   - Too severe dysplasia (Average LCE 10°)
   - Relatively older (Average age at surgery 43 years)

3. Technically demanding operation
   - Difficulty to place proper position of the shelf (Tendency of higher and anterior placement)
Conclusion

Hip arthroscopic surgeons should keep in mind that endoscopic shelf acetabuloplasty is a technically demanding procedure and that strict patient selection is crucial for optimum outcomes.

Although this novel procedure is less invasive than previous osteotomies for patients with hip dysplasia, it may fail to provide symptomatic improvement and may also make THA a necessity sooner than expected.
References


