



Postoperative, traction MR arthrography for pain after arthroscopy for FAI: High prevalence of osseous deformities and intra-articular lesions due to under-/overcorrection

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Purpose

Numbers of hip arthroscopies for FAI correction have risen exponentially, leading to an increase of patients with persistent pain who undergo postoperative MR imaging. However to date the spectrum of imaging findings comparing pre- and postoperative imaging has to date not been comprehensively studied. Thus, we aimed to assess the prevalence of new/residual (1) osseous deformities, (2) intra-articular lesions and (3) progression of osteoarthritis in symptomatic patients undergoing pre- and postoperative MR imaging after hip arthroscopy.

Methods and Materials

IRB-approved, retrospective study. Between 2010-17, 806 patients underwent arthroscopic FAI correction and/or labrum surgery. Database was reviewed for symptomatic patients with complete radiographs and traction MR arthrography (MRA) of the hip (1.5 T) obtained before and after hip arthroscopy according to the routine protocol. 49 patients were included: mean age 29 ± 10 years, 67% female. Traction was applied using a MR-compatible traction device with weight-adaption [Fig. 1](#) on page 4 . One reader assessed pre- and postoperative images. (1) Acetabular coverage ($LCE < 25^\circ =$ dysplasia, $LCE > 39^\circ =$ pincer deformity) and Tönnis osteoarthritis (OA) grade were assessed on AP pelvic views. Cam deformity was defined ($\# > 60^\circ$) on radial MR images. Femoral torsion measurements were only available for postoperative MRI (low/high torsion: $< 5^\circ / > 30^\circ$). (2) Presence of residual tears-, retears of the labrum, capsular adhesions/defects was assessed on traction MRA. (3) OA progression on traction MRA was defined as new acetabular/femoral cartilage lesions and osteophytes formation.

Images for this section:



Fig. 1: Fig. 1 MR-compatible traction device is shown which includes supporting plate for the contralateral leg and enables application of weight-adapted traction loads.

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Results

1. Preoperatively 42 (86%) hips showed deformities: 2 (4%) dysplastic-, 11 (22%) pincer- and 39 (80%) cam deformities. Postoperatively 39 (80%) hips showed deformities; 9 (18%) dysplastic-, 8 (16%) pincer-, 20 (41%) cam deformity, 4 (8%) hips with torsion $<5^{\circ}$, 10 (20%) hips with torsion $>30^{\circ}$ [Fig. 2](#) on page 6 .
2. Postoperatively 14 (29%) cases with residual-, 12 (24%) cases with labrum rears were observed. 6 (12%) hips had capsular adhesions, 22 (45%) had capsular defects [Fig. 2](#) on page 6 .
3. Radiographic OA progression was observed in 5 (10%) hips, in 14 (30%) hips on traction MRA [Fig. 2](#) on page 6 .

Images for this section:

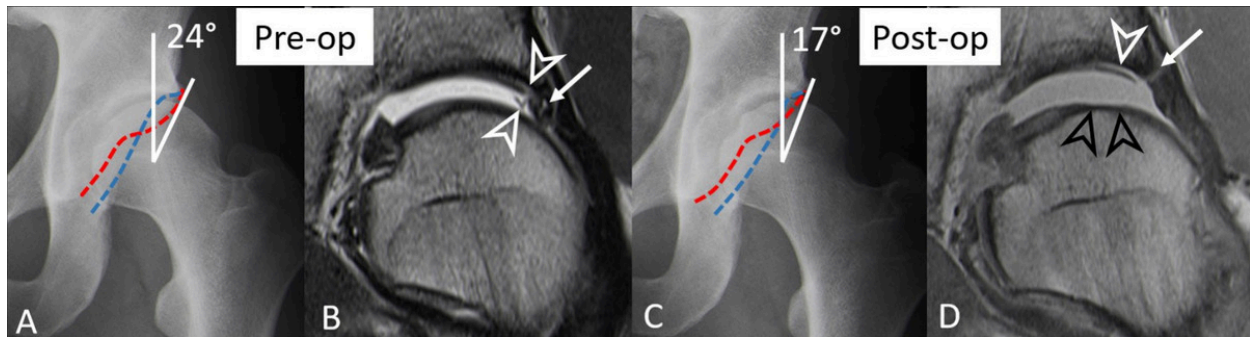


Fig. 2: Fig. 2 26 year-old man with persisting pain 14 months after arthroscopic cam resection, acetabular rim trimming and labrum refixation. (A) Preoperative AP pelvis view shows borderline dysplasia (LCE=24°) with a cross-over sign and a cam deformity. (B) Preoperative, coronal T1-w TSE traction MR arthrogram shows intra-substance labrum lesion (arrow) with adjacent acetabular cartilage delamination (arrowheads). (C) Postoperative AP pelvis view shows iatrogenic hip dysplasia (LCE: 17°). Residual cam deformity was present on radial MR images (not shown). (D) Postoperative, coronal PD-w TSE traction MR arthrogram shows labrum retear (arrow), more extensive acetabular cartilage delamination (white arrowhead) and a newly developed, large femoral cartilage defect (black arrowheads) indicating MR osteoarthritis progression.

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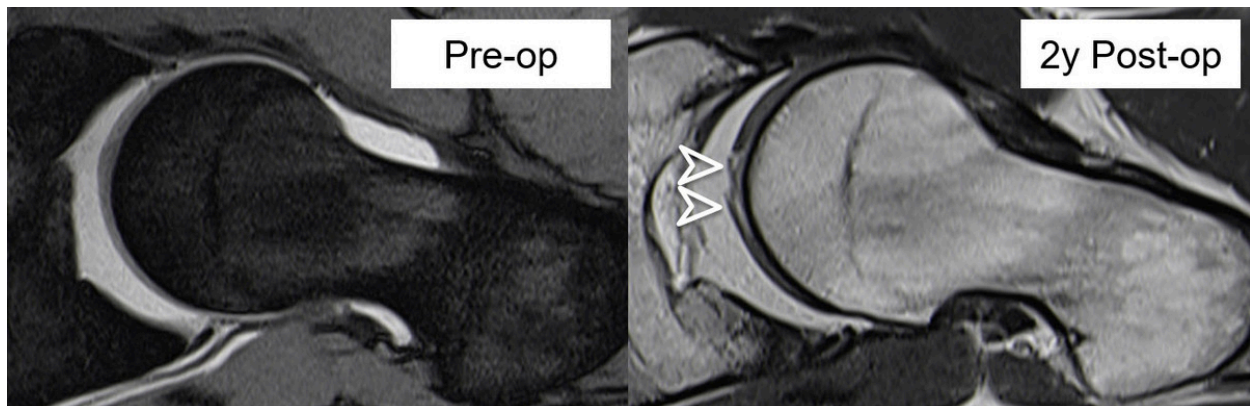


Fig. 3: Fig. 3 28 year-old man with persistent pain following arthroscopic correction of mixed FAI. Two years after surgery a new femoral cartilage delamination can be seen.

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Conclusion

Prevalence of osseous deformities due to over- or undercorrection and intra-articular lesions is high after failed hip arthroscopy. Traction MRA was useful for detection of OA progression. Identification of osseous over-/undercorrection after failed hip arthroscopy is essential because open surgical approaches must be considered for correction of dysplasia and abnormal femoral torsion.