What is the prevalence of imaging defined intra-articular hip pathologies in individuals with and without symptoms?

A systematic review and meta-analysis

(currently under review at BJSM)

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Acknowledgments
Hip and groin related pain is a common cause of loss of function in young and middle-aged adults\textsuperscript{1,2}

Intra-articular hip conditions are associated with hip and groin related pain\textsuperscript{3}

Imaging can assist in the diagnosis of intra and extra-articular hip pathology\textsuperscript{3,4}
Hip pathology identified on imaging, in addition to symptoms/clinical findings, is often the catalyst for surgery\textsuperscript{7,8}

Surgical rates for intra-articular hip conditions have increased dramatically\textsuperscript{9}

Pathology on imaging is present in people with and without symptoms\textsuperscript{10,11}

No systematic review has investigated the prevalence of intra-articular hip pathologies in people with and with symptoms
Aim: To determine the prevalence of intra-articular hip pathologies in symptomatic and asymptomatic individuals
Methods

Seven electronic health databases were searched in February 2016 with the search repeated in February 2017.

Inclusion criteria

• MRI, MRA or CT with or without contrast was used to investigate the presence of intra-articular hip pathology

Exclusion criteria

• Used other forms of imaging to determine the prevalence of intra-articular pathologies
• Determined prevalence by arthroscopy or open surgery
Methods

Risk of bias determines how confident we can be in the results of included studies.

**Low risk of bias** (score 0 to 3) = high confidence

**Moderate risk of bias** (score 4 to 5) = moderate confidence

**High risk of bias** (score 6) = low confidence
Methods

Prevalence = \frac{\text{Number of individuals with intra-articular hip pathology}}{\text{Number of individuals in the study population}}
Methods

Prevalence of intra-articular pathologies was reported as per person or per hip.

Pathology was reported as either present or absent, due to the variability in reporting methods.

For cartilage defects, only studies that reported femoral and acetabular defects together were used in primary analysis.
Methods

Meta-analysis (data pooling) was undertaken with low and moderate risk of bias studies, using a random effects model.

Studies that couldn’t be pooled, were synthesized with qualitative analyses.

Strength of evidence was assigned to the pooled results using methods developed by Van Tulder^{11}
Results

Identification: 343
Screening: 124
Eligibility: 56 + 4
Included: 29

68 → 31
Results (demographics)

Asymptomatic

- 71% mean age less than 40
- 1068 patients
- 2705 hips

Symptomatic

- 88% mean age less than 40
- 1504 patients
- 1748 hips
15/29 included active or athletic populations

2/29 included individuals with radiographic hip OA
Results (labral tears)

Rakhra et al 2011
Results (labral tears)

In symptomatic individuals
Limited evidence of a labral tear prevalence of 62% per person in studies using MRA

In asymptomatic individuals
Moderate evidence of a labral tear prevalence of 54% per person in studies using MRI
Results (labral tears)

In symptomatic individuals
Limited evidence of a labral tear prevalence of 92% per hip in studies using MRA
Moderate evidence of a labral tear prevalence of 32% per hip in studies using MRI

In asymptomatic individuals
Moderate evidence of a labral tear prevalence of 46% per hip in studies using MRI
Results (cartilage defects)

Lee et al 2015
Neumann et al 2007
Results (cartilage defects)

In symptomatic individuals
Limited evidence of a cartilage defect prevalence of 64% per person in studies using MRA

In asymptomatic individuals
Limited evidence of a cartilage defect prevalence of 12% per person in studies using MRI

Q=10.533 (P=0.032); I²= 62.024
Ligamentum teres tears and bone marrow lesions were observed more often in individuals with symptoms.

Paralabral cysts were identified at similar frequencies in those with and without symptoms.

Herniation pits prevalence was variable in those with and without symptoms.
Limitations

No study included community based populations, which limits the generalisability of our findings.

MRA is superior to MRI to identify labral tears, with high likelihood of false positive findings with MRI\textsuperscript{12}

MRI and MRA have poor sensitivity to identify cartilage defects, increasing the risk of false negative results\textsuperscript{13}
Conclusions

Labral tear prevalence is high in those **with** and **without** symptoms.

Cartilage defects are seen more often in those **with** symptoms.

Bone marrow lesions and ligamentum teres tears appear to be more common in those individuals **with** symptoms.
Clinical implications

Clinicians and patients need to be told about the high prevalence of imaging defined hip pathologies in individuals without symptoms.

So apparently I have a labral tear on MRI, do you think I’ll live?

HOW ARE YOU STILL ALIVE? Would you like to use this?
Clinical implications

Maybe we need to "think outside of the labral tear" as a cause of hip and groin related pain

• Bone marrow lesions
• Synovitis

Develop evidence based intervention directed towards correcting or slowing the development of cartilage defects
Thank you