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## Osteoarthritis and Cartilage

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# Quantitative 3D MRI reveals limited intra-lesional bony overgrowth at 1 year after microfracture-based cartilage repair (Article) ([Open Access](#))

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## Abstract


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**Objective:** Intra-lesional bony overgrowth (BO) identified during or following cartilage repair treatment is being frequently described through subjective reports focusing primarily on incidence. Our objective was to quantify the exact volume of intra-lesional BO at 12 months post-cartilage repair treatment, to determine if a correlation exists between the extent of BO and clinical outcomes, and to visualize and characterize the BO. **Design:** MRI scans were systematically obtained during a randomized clinical trial for cartilage repair (Stanish et al., 2013) that compared two microfracture-based treatments in 78 patients. Semi-automated morphological segmentation of pre-treatment, 1 and 12 months post-treatment scans utilizing a programmed anatomical atlas for all knee bone and cartilage structures permitted three-dimensional reconstruction, quantitative analysis, as well as qualitative characterization and artistic visualization of BO. **Results:** Limited intra-lesional BO representing only  $5.8 \pm 5.7\%$  of the original debrided cartilage lesion volume was found in 78 patients with available MRIs at 12 months. The majority (80%) of patients had very little BO (<10%). Most occurrences of BO carried either spotty (56.4%) or planar (6.4%) morphological features, and the remaining balance (37.2%) was qualitatively unobservable by eye. Pre-existing BO recurred at 12 months in the same intra-lesional location in 36% of patients. No statistical correlations were found between BO and clinical outcomes. **Conclusions:** Intra-lesional BO following microfracture-based treatments may not be as severe as previously believed, its incidence is partly explained by pre-existing conditions, and no relationship to clinical outcomes exists at 12 months. Morphologically, observable BO was categorized as comprising either spotty or planar bone. © 2014 Osteoarthritis Research Society International.

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## SciVal Topic Prominence

Topic: [Cartilage](#) | [Chondrocytes](#) | [implantation ACI](#)

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## Author keywords

Bony overgrowth

Cartilage repair

Intra-lesional osteophyte

Microfracture

Quantitative MRI

Subchondral bone

## Indexed keywords

EMTREE medical terms:

adult

article

bone disease

cartilage

clinical feature

correlation analysis

disease classification

fracture treatment

human

image reconstruction

intralesional bony overgrowth

microfracture based cartilage repair

multicenter study (topic)

nuclear magnetic resonance imaging

priority journal

quantitative analysis

randomized controlled trial (topic)

recurrent disease

three dimensional imaging

adolescent

articular cartilage

callus

chondroplasty

clinical trial

comparative study

controlled study

evaluation study

female

follow up

Knee Injuries

male

middle aged

multicenter study

nuclear magnetic resonance imaging

procedures

randomized controlled trial

risk assessment

time

treatment outcome

young adult

MeSH:

Adolescent

Adult

Arthroplasty, Subchondral

Bony Callus

Cartilage, Articular

Evaluation Studies as Topic

Female

Follow-Up Studies

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Imaging, Three-Dimensional

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Magnetic Resonance Imaging

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