Subchondral bone changes in a murine model for osteoarthritis

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Osteoarthritis is a degenerative joint disease in which the cartilage of joints is damaged, but also bone changes take place such as the formation of osteophytes and thickening of the subchondral bone plate. Since the prevalence of osteoarthritis OA is higher in postmenopausal than in premenopausal women, and cartilage damage is increased after ovariectomy in several animal models, it is believed that estrogen depletion plays a role in the onset or progression of OA. However, it is unclear whether this effect is mediated via bone changes or via cartilage. To study this we used a murine model for osteoarthritis, in which one group received bisphosphonates, to block the effect of estrogen depletion on bone. Using in vivo micro-CT it is possible to follow bone remodeling over time in 3D and we applied this technique to study the changes in subchondral bone. We will present the changes in subchondral plate and subchondral trabecular bone, and relate these to the cartilage damage, based on histology.