Introduction

Femoro-patellar joint (FPJ) osteoarthritis (OA) osteoarthritis (OA) is a prevalent disease affecting young and elderly individuals and is recognized as a potent source of knee symptoms. Cartilage thinning of the femoral trochlea within the first two years after an ACL tear was reported using quantitative MR imaging but it is not known whether such changes continue over longer periods.

Objective

To study change in cartilage thickness of the FPJ over the first 2 (BL-2YR), and the subsequent 3 yrs (2YR-5YR) after ACL tear and to explore differences in relation to age, gender, BMI, treatment of the ACL and graft types used at reconstruction.

Materials

Participants: 107 of 121 KANON-participants had a complete set of MR images at BL, 2 and 5 year follow up (32 women, 26.0±4.9yrs)

Intervention: Out of 107 participants with acute ACL injury 58 were treated with rehabilitation (rehab) + early ACL reconstruction (ACLR), 25 received rehab + delayed ACLR and 24 were treated with rehab alone. From those who received an ACLR (n=83), 44 had hamstrings- and 39 patellar-lateral-bone autografts.

Cartilage Quantification: Mean cartilage thickness was assessed by manual segmentation of patellar and femoral trochlea cartilage with blinding to time points and treatment groups.

Conclusions

Cartilage loss in the femoral trochlea, but not in the patella, may be an early event occurring within the first 2 years after ACL tear. Older age, but not surgical reconstruction of the injured ACL, seems to increase the risk for such changes.

Results

- Cartilage thickness significantly decreased in the trochlea in older participants (above median age, 25.63yrs, p<0.001) and in participants with a higher BMI (above median, 23.66kg/m², p<0.001, Tbl.1)
- Within the first 2 years older participants (>median age, Tbl.1) lost significantly more cartilage thickness both in the patella (p=0.022) and in the femoral trochlea (p=0.009)
- Between 2-5years, again older participants lost significantly more cartilage thickness (compared to younger participants) in the patella (p=0.004), but not in the trochlea (p=0.17)
- Within the first 2 years (but not 2-5yrs) in participants with a higher BMI (above median) cartilage thickness significantly decreased in the trochlea (p=0.004), but not in the patella (p=0.68)
- No significant differences in cartilage thickness change were found between the treatment groups (p>0.28) (Tbl. 2)
- No significant differences in cartilage thickness change were found between graft types in those who had ACLR (p>0.63) (Tbl. 2)