Introduction:
Treatment options for isolated symptomatic medial compartment OA and pre-existing ACL deficiency in young patients are limited. Implant longevity and activity levels preclude use of total knee arthroplasty (TKA), whilst high tibial osteotomy (HTO) and mobile bearing UKA are unreliable due to ligamentous instability. When the Oxford UKA was used in ACL deficient (ACLD) knees it had an unacceptably high failure rate, so ACLD was deemed to be a contra-indication to mobile bearing UKA. The majority of failures, however, were for tibial loosening, which tended to occur early. In the only series which reports the outcome of the medial Oxford UKA in ACL deficient knees, a 21% revision rate due to tibial loosening was observed by 2 years. It was proposed that tibial loosening may have been the result of eccentric or increased loading caused by posterior femoral subluxation or instability. Therefore, if the posterior subluxation and instability can be prevented by ACL reconstruction, it may also reduce the incidence of tibial loosening.

It follows that combined UKA and ACL reconstruction is a logical option. This study presents clinical, radiological and in-vivo sagittal plane kinematic data of a group of patients with combined ACL reconstruction and Oxford UKA (ACLR group), and compares it with a matched group of patients with Oxford UKA with intact ACL (ACLI group).

Method:
Fifteen patients with combined ACL reconstruction and Oxford UKA (ACLR group), were matched (age, gender and follow-up period) with 15 patients with Oxford UKA with intact ACL (ACLI group). Prospectively collected clinical (Oxford Knee Score [OKS], American Knee Society Score – Objective [AKSS-O] and American Knee Society Score – Functional [AKSS-F]) and x-ray data from the last follow-up (minimum 3 years, range: 3 – 5 years) were compared.

Ten patients from each group also underwent in-vivo kinematic assessment using an established fluoroscopic technique which involved recording patella tendon angle (PTA) against knee flexion and anterior-posterior bearing translation through full range of flexion. The PTA is the angle between the long axis of the tibia and the patella tendon. This was further compared with the normal knee kinematics (n = 10). In addition the anterior-posterior movement of the femur relative to the knee was determined in the sagittal plane.

Results:
At the last follow-up, the clinical and radiological outcome for the two groups were similar (ACLR: OKS 46, AKSS (O): 99, ACLI: OKS 43, KSS (objective): 94). One ACLR patient needed revision due to infection. Radiological assessment did not show any significant difference between relative component positions and none of the patients had pathological radioluencies suggestive of component loosening. Kinematic assessment showed posterior placement of the femur on tibia in extension for the ACLR group, which corrected with further flexion (Figure 1). The movement of the femur in relation to the knee flexion angle (KFA), indicated by bearing movement, was similar for both ACLD and ACLI groups (Figure 2).

Conclusions:
The short-term clinical results of combined ACL reconstruction and UKA are excellent. Lack of pathological radioluencies and near normal knee kinematics suggests that early tibial loosening owing to eccentric loading is unlikely. Similarly, wear is unlikely to be a problem because of the increased wear resistance of mobile bearing devices.