

Unicondylar knee arthroplasty: what's new?

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Unicondylar knee arthroplasty (UKA) has gained increasing interest over the last decade. Unicondylar knee arthroplasty implantation is extremely demanding due to the fact that the prosthesis needs to be integrated in the natural anatomy of the knee in order to preserve the integrity of the other two compartments and all related ligaments. This ensures the integrity of the natural knee kinematic.

Biomechanical studies using robotic technology have shown that knee kinematic does not change significantly after medial UKA as reported in the issue [5]. Similar findings have been published by others using fluoroscopy [1, 3]. Normal AP translation but with less knee rotation has been observed in patients during deep flexion after medial UKA in comparison with the natural knee. Other tasks such as treadmill gait and stair stepping have also been studied. The preservation of both cruciate ligaments contributes to a significant functional advantage. This could explain why patients, following UKA, demonstrate higher positive postoperative clinical outcomes than after total knee arthroplasty [15].

However, the achievement of a perfect component placement, allowing knee kinematics as close as possible to normal, remains a huge challenge.

There is an ongoing discussion about the ideal choice of patient for UKA. Isolated medial or lateral osteoarthritis, a

good range of motion, stability of the collateral and cruciate ligaments, and no significant deformity used to be the primary requirements for UKA. Long-standing weight-bearing X-rays will provide the information about leg alignment and degree of OA. Stress X-rays might be helpful for the assessment of the contralateral compartment.

Two papers of the current issue deal with clinical aspects that might be relevant for patient selection for UKA [6, 14]. One focuses on the impact of patients' pain location on the clinical and functional outcome, whilst the other evaluates the impact of anterior instability on the survival rate following UKA.

A retrospective analysis showed that patellofemoral osteoarthritis does not appear to be a contraindication for UKA [4]. The same group has published a paper in the current issue about the preoperative pain location as a poor predictor of outcome following UKA. Pure medial or anterior knee pain was compared with generalized knee pain. No difference after one and 5 years was observed between the groups [14]. The finding may cause confusion in terms of patient selection for UKA. Unfortunately, the question about the more appropriate indications and predictors for UKA remains unanswered. This study is very interesting because it shows the difficulty of interpretation of pain in osteoarthritis. The suprapatellar pouch, the Hoffa fat pad, the medial and lateral retinacular, and the cruciate ligaments are the most sensitive structures in the knee [8]. No pain sensation was found during palpation of the femoral condyle and the tibia plateau, the area of cartilage degeneration. This might partially explain why it is sometimes difficult to localize the pain in an osteoarthritic knee.

Pain in osteoarthritis also involves numerous interactive pathways including biological, psychological and social factors [13].

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Some studies have shown good correlation between pain, stiffness and the degree of OA according to the Kellgren and Lawrence grading [17]. However, other studies have reported on the dissociation between the radiographic degree of OA and the clinical symptoms [11].

Knee stability used to be another important requirement for UKA. Clinical studies have shown revision rates in ACL-deficient knees of up to 21 % after 2 years [9, 12]. Therefore, ACL reconstruction should be performed in conjunction with UKA in order to restore the knee stability and to treat osteoarthritis of the medial compartment successfully [7, 18, 19].

However, based on the data reported by Boissonneault [6], there seems to be no difference in the survivorship after UKA with or without an intact anterior cruciate ligament. Similar results were reported by other but this finding is in contrast what has been reported by several other authors [10]. The six-year UKA survivorship was 94 % in ACL absent knees and 93 % in ACL intact knees. The patient's lifestyle, sedentary or active, may probably play a role in the difference in outcome.

As patient-related factors, there appears to be other factors that may have an impact on the successful outcome following UKA. An analysis of 23400 medial cemented Oxford UKA was performed based on the English registry. The 5-year survival rate differed significantly between the high volume surgeon (96 %) and the low volume surgeon (90.1 %). High volume centres and surgeons specialized in UKA showed superior outcomes. It has been estimated that the minimum number of UKA's per surgeon should be thirteen per annum [2]. This might explain why, that in some studies or registries, a lower success rate was found after UKA in comparison with total knee arthroplasty (TKA).

Based on the most recent findings, the indication for UKA, specifically in medial osteoarthritis and avascular necrosis, should be reconsidered critically [16]. There now appears to be more patients who are appropriate for UKA. However, it is a surgical demanding procedure and data still show a slightly higher rate of aseptic loosening in comparison with TKA but the patients in general perform higher activity after UKA. Why using total knee replacement when the knee presents cartilage loss only in one compartment?

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