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The Medial Unicompartmental Option: Mobile Magic

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The indications for unicompartmental knee arthroplasty (UKA) are widely debated despite a growing body of literature. The current study investigates the minimum 2-year outcomes of Oxford phase III mobile-bearing UKA using a liberal set of indications for the procedure. Two hundred fifty-seven consecutive UKAs in 219 patients with potential for 2 years follow-up were followed. There have been 10 failures for a survivorship of 96.1% at 45 months. Patient factors such as weight, age, pre-existing patellofemoral disease, and anterior knee pain were not related to early failure. Clinical scores were better in the older, lighter-weight patients with isolated medial knee pain. After more than 900 consecutive Oxford UKAs over 4 years, the cumulative survivorship is greater than 98% despite ignoring age, weight, location of preoperative pain, and radiographic signs of patellofemoral disease. The Oxford phase III minimally invasive UKA is truly mobile magic.
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The indications for so-called “partial knee arthroplasty” or unicompartmental knee arthroplasty (UKA) continue to be debated around the world. Rapid recovery modalities have become popular for hip and knee arthroplasty and it is also likely that expanding indications for UKA, and a truly minimally invasive technique, and overall interest in UKA are on the rise.¹ These expanded indications have been shown, both in the short and long terms to have no negative effect on the outcomes of UKA.^{2,3} The basis of the more liberal indications is the pathology and biomechanics of anteromedial arthritis of the knee.²⁻⁵ It is important to understand and identify the patient who appears to be a good candidate for UKA to avoid early failures. Despite encouraging reports, surgeons continue to cite patient variables such as younger age, patellofemoral disease, anterior knee pain, and obesity as contraindications for UKA.⁶

The current study reports the minimum 2-year results of the use of the Oxford phase III device for medial UKA in patients with anteromedial osteoarthritis (Fig. 1).

Methods

All patients who underwent medial compartment UKA in one practice were enrolled. Informed consent and Institutional Review Board approval were obtained. Two hundred fifty-seven medial compartmental Oxford UKAs in 219 patients were performed between July 2004 and March 2006. Patients who have failed traditional conservative medical therapies and who have severe pain and a diagnosis of osteoarthritis are considered candidates for the Oxford UKA. The absence of a functionally normal anterior cruciate ligament (ACL) is a contraindication.⁷⁻⁹ The presence of a correctable deformity and functionally intact ligamentous stabilizers defines the condition anteromedial arthritis, the specific pathological form of arthritis that is the indication for the Oxford UKA.⁹ The pattern and location of pain is usually confined or worst in the medial aspect of the knee but may be present anywhere, especially posterior. Pain is commonly worse with weight bearing and relieved by sitting with a bent leg. In patients who appear to be good candidates for the Oxford UKA, the severity of pain should be no different from that warranting TKA because intraoperative conversion may be necessary. Importantly, while there are very few contraindications, patients with active infection, inflammatory arthropathy, ligamentous instability or medial cruciate ligament contracture, absence of the ACL, and previous high tibial osteotomy are not indicated for this procedure. Obesity, young age, level of activity, patellofemoral disease, or anterior knee pain are not contraindications.⁷⁻¹⁶ Correctability of the varus deformity and maintenance of the lateral joint space

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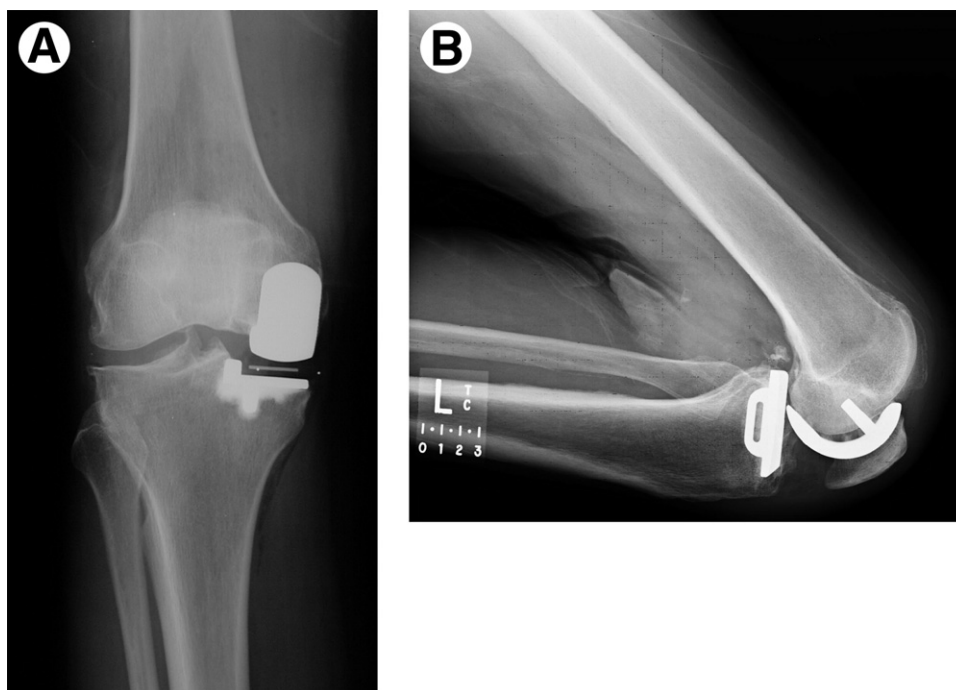


Figure 1 (A) Anterior–posterior and (B) lateral radiographs displaying the Oxford phase III device for a patient with anteromedial osteoarthritis.

are confirmed by valgus stress radiographs, as previously described.^{9,16}

Immediate postoperative anterior–posterior (AP) and lateral radiographs are taken. At routine 6-week follow-up, standing AP and standardized lateral and patellofemoral views are obtained. Clinical evaluation using the Knee Society scoring system is performed at each follow-up. Statistical evaluation was performed using StatsDirect software (Stats Direct Ltd, Cheshire, UK). Parametric analysis was performed using an unpaired Student's *t* test. Multiple groups were analyzed using analysis of variance (ANOVA). Survivorship curves were constructed using the Kaplan–Meier method, and survivorship between groups was compared using log-Rank and Wilcoxon methods. All analyses were performed using 95% confidence intervals, and a *P* value < 0.05 was considered significant. For nonsignificant results, post hoc power analyses were performed at 80%.

Results

There were 10 failures (3.9%) at a follow-up of up to 45 months. Using log-rank and Wilcoxon analyses; body mass index (BMI) greater than 32, 35, or 40 was not associated with an increased risk of failure (*P* = 0.3, 0.5, 0.8).¹⁷ Younger age, greater or less than 50 or 60 years, was not associated with increased risk of failure (*P* = 0.4, 0.8). The presence or absence of isolated medial-sided pain preoperatively was not associated with failure (*P* = 0.9). The presence of anterior knee pain preoperatively was not associated with failure (*P* = 0.8).

While both groups demonstrated good-excellent average knee scores, clinical evaluation demonstrated that BMI less

than 32 was associated with a better Knee Society pain score (43.3 vs 40.3; *P* = 0.03). Patients with isolated medial-sided pain preoperatively also had significantly higher Knee Society pain scores at most-recent follow-up (43 vs 40; *P* = 0.02). Again, both groups averaged good-excellent and the location of preoperative pain did not correlate with the location of any reported postoperative pain. Preoperative anterior knee pain, while not associated with failure, did correlate with lower average Knee Society pain scores than patients without preoperative anterior knee pain (43 vs 38; *P* = 0.004). Anterior knee pain preoperatively did not correlate with the presence or absence of postoperative anterior knee pain. Patients with age less than 50 years had lower scores than those over 50 years (36 vs 43; *P* = 0.003); while age less than or more than 60 years was not significant (42 vs 42; *P* = 0.4).

Discussion

Partial knee replacement or UKA has seen renewed interest likely related to improved outcomes being reported.^{4,5,10,11,18} The results of UKA rival that of total knee arthroplasty (TKA).^{10-14,18} The correct indications and contraindications for UKA are still widely debated.^{6,12,15-19} Herein, we report good early survivorship of better than 96% at up to 4 years, and excellent clinical outcomes using a considerably liberal set of indications. The predominant indication is anteromedial osteoarthritis, a condition initially described by White and coworkers⁹ who described a pathognomonic osteoarthritic condition in which the ACL is functionally intact, the lateral compartment joint space is fully preserved, and the intra-articular varus deformity is fully correctible.

The current authors have previously established BMI

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