

CLINICAL ARTICLE

Do patients prefer a unicompartmental to a total knee replacement?

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Abstract

Background: Very few direct comparative studies evaluating the results after unicompartmental knee replacement (UKA) and total knee replacement (TKA) are available. Only three previous studies have reported the results of UKA and TKA performed in the same patient. We report our results of simultaneous UKA and TKA in the same patient, performed under the same anaesthetic, at same the time, by the same surgeon. This is the first study to assess the results of UKA and TKA in the same patient, where all the patients had the procedures performed under the same anaesthetic at the same time.

Materials and methods: Twenty-one patients who had simultaneous primary UKA in one knee and primary TKA in the other knee were evaluated prospectively by means of the SANE (Single Assessment Numerical Evaluation) rating. In addition each patient was asked the simple question: "Which is your preferred knee?"

Results: The follow-up period was a mean of 26 months (range 12-58 months). We found a statistically significant improvement in the SANE in both the UKAs and TKAs. Eleven patients had no preference between the UKA and the TKA (52.4%), seven patients preferred the TKA (33.3%) while three patients stated that the UKA was their preferred knee (14.3%). The trend for patients to prefer the TKA was not statistically significant ($p=0.27$).

Conclusions: UKAs have been shown to be kinematically superior and the preservation of the cruciate ligaments affords better proprioception than a TKA. However, the findings of this study suggest that this does not translate to a better patient preference. In view of this finding, and considering the documented inferior survival rates of UKAs, we propose that the role of UKA in the treatment of gonarthrosis be reassessed.

Introduction

The proposed advantages of a unicompartmental knee arthroplasty (UKA) in the treatment of unilateral gonarthrosis are well documented. It has been suggested that the preservation of the cruciate ligaments results in a more physiologically functioning knee that feels more normal than a total knee arthroplasty (TKA).¹ However, there are only a limited number of studies that have examined the results of UKA and TKA performed in the same patient.^{2,3,4}

The current study reports the results of simultaneous UKA and TKA in the same patient, performed under the same anaesthetic, at the same time, by the same surgeon (senior author).

It has been suggested that the preservation of the cruciate ligaments results in a more physiologically functioning knee that feels more normal than a TKA

Materials and methods

During the period November 2000 and December 2004, 31 patients had simultaneous primary UKA in one knee and primary TKA in the other knee. Except for the degeneration in the knee joints there was no other functional impairment in the lower extremities. There were very strict indications for a UKA namely: natural alignment within 3 degrees of neutral on stress views, opposite compartment arthroscopic Outerbridge grade 1 degeneration or less and intact cruciate ligaments. The indications for a TKA were: opposite compartment arthroscopic Outerbridge grade 2 or more degeneration and or deficient cruciate ligaments; the natural alignment was similar to that of the UKR side. Twenty-one patients were available for follow-up and agreed to take part in the study.

Of the 21 UKAs there were 18 medial UKAs (12 mobile-bearing and six fixed-bearing) and three lateral UKAs (all fixed-bearing). All the TKAs were posterior stabilised designs. There were 10 with mobile-bearings and 11 with fixed-bearings.

Patients were evaluated prospectively by means of the SANE (Single Assessment Numerical Evaluation) rating. This evaluation method has been found to correlate well with the Lysholm score.⁵ In addition each patient was also asked the simple question: "Which is your preferred knee?". The results were analysed by standard statistical means.

Results

The mean age of the patients was 65 years (range, 47 to 80 years). The follow-up period ranged from 12 to 58 months with a mean of 26 months. The mean pre-operative SANE for the entire study group was 35 (range 20-65). This improved to a mean of 72 (range, 50-100) at follow-up. This was a statistically significant improvement. The SANE at follow-up was a mean of 77 (range 70-90) for the UKAs and 85 (range 50-100) for the TKAs (Figure 1). The difference between the UKAs and TKAs was not statistically significant ($p= 0.27$).

Eleven patients had no preference between the UKA and the TKA (52.4%), seven patients preferred the TKA (33.3%) while three patients stated that the UKA was their preferred knee (14.3%) (Figure 2). The trend for patients to prefer the TKA was not statistically significant ($p= 0.27$).

Discussion

Perhaps because the indications for UKR and TKR differ in terms of the degree of involvement of the affected knee, very few direct comparative studies evaluating the results after UKA and TKA are available. Only three previous studies have reported the results of UKA and TKA performed in the same patient.^{2,3,4} Cameron² found no difference in patient preference at one year follow-up of 20 such patients. Cobb *et al*³ followed-up 52 patients at a mean of 6.5 years.

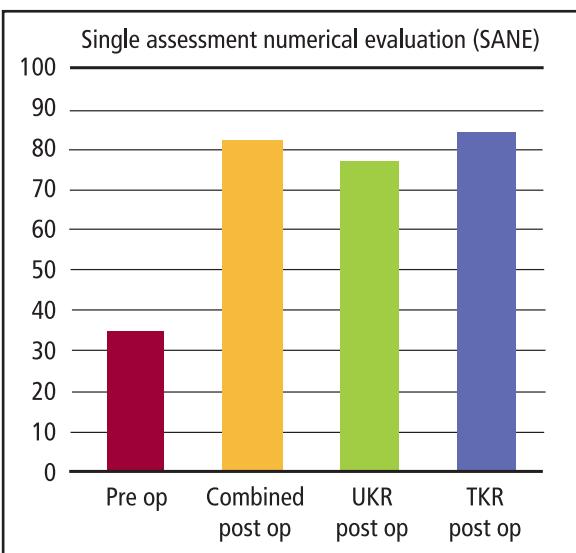


Figure 1: Results of SANE rating

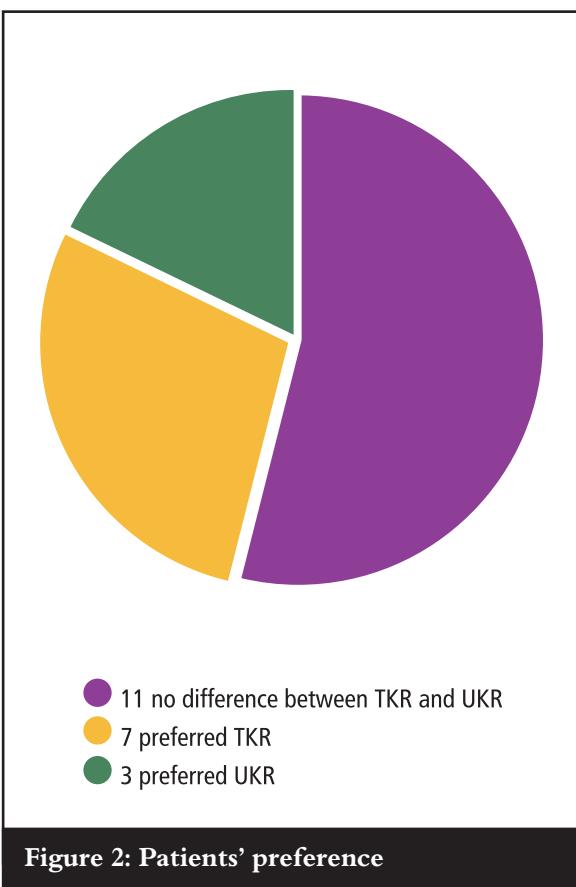


Figure 2: Patients' preference

They found that 50% of patients considered their UKA to be the better knee, 21% thought their TKA was their better knee and 29% had no preference. The patients in the aforementioned studies had their knee arthroplasties performed during two separate hospitalisations.

Laurencin *et al*⁴ followed-up 23 patients at a mean period of 82 months. They found 44% stated that their UKA was the better knee, 12% stated that their TKA was the better knee and 44% had no preference. Only 9% of their cases had the procedures performed under the same anaesthesia and the remainder were performed during the same hospitalisation period.

The role of UKA in the treatment of gonarthrosis is therefore limited

This is the first study, we are aware of, to assess the results of UKA and TKA in the same patient, where all the patients had the procedures performed under the same anaesthetic, at the same time, by the same surgeon.

It can be assumed that before any injury or degeneration to the specific knees their natural alignment, morphology and kinematics were similar. In the reported group of patients, whether they had a UKA or TKA, their natural alignment was within 3 degrees of neutral. Excessive varus or valgus was interarticular and not the result of abnormal bony morphology. Except for damage to the knee, which differed according to whether a UKA or TKA was performed, there were no other differences in the lower extremities. The indications for performing a UKA were very strict especially considering that the non-replaced compartment was arthroscopically examined and had to show grade 1 or less degeneration. Taking all this into account it would be reasonable to accept that the difference in the knees, according to the patient's perspective reflected the function of this specific knee and was not influenced by any other extra-articular factors.

Despite the fact that the UKR was performed on the knee that was affected to a lesser degree there was a trend for patients to prefer the TKA, but this was however not statistically significant.

UKAs have been shown to be kinematically superior¹ and the preservation of the cruciate ligaments affords better proprioception than a TKA. However, the findings of this study suggest that this does not translate to a better patient preference.

In view of this finding, and considering the documented inferior survival rates of UKAs, we propose that the role of UKA in the treatment of gonarthrosis be reassessed.

UKA might well be indicated in the appropriate older patient with medical co-morbidities, considering the lower postoperative morbidity rate compared to TKA. Its role in the treatment of the younger patient with unicompartmental arthritis remains controversial. It is theoretically easier to revise a UKA to a TKA in comparison to revising a TKA,⁶ however there is still not agreement regarding the complexity of the revision procedure following failed UKA. The role of UKA in the treatment of gonarthrosis is therefore limited.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article. This research was not submitted to an ethical committee. This article is free of plagiarism.

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Note from the Editor-in-Chief

I want to urge all subscribers to our Journal to let us have interesting and instructive case reports. I have noted that a case report, substantiated by reasonable references to the literature, is very valuable and good teaching material for many who read it.

Prof RP Gräbe
Editor-in-Chief
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