

Preliminary Results of a Novel Cementless Unicompartamental Knee Arthroplasty System*

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Background

To improve long-term tibial fixation in cementless unicompartamental knee arthroplasty (UKA), a system using a novel blade-based bone anchor has recently been developed.¹ The aim of this study was to report preliminary results of this novel UKA system.

Methods

A retrospective study was conducted to assess preliminary outcomes of patients that received a cementless UKA (Engage Partial Knee System, Orlando, FL, USA) (Fig. 1) as treatment for isolated medial osteoarthritis (OA), between July 2020 and May 2021, in a large specialized hospital for Orthopedic Surgery in New York, USA. Arthroplasty registries of two designer surgeons (EPS and ADP), consisting of prospectively collected data, were screened to identify eligible patients. Patients were included if they had received a cementless Engage UKA as treatment for isolated medial OA and completed patient-reported outcome measures (PROMs) on one or more timepoints. Patients were excluded if they had received a hybrid UKA (i.e., cementless tibial with cemented femur component), completed baseline PROMs only, or had a body mass index (BMI) of ≥ 40 . PROMs included the Oxford Knee Score (OKS), Visual Analogue Scale (VAS) for pain, and University of California, Los Angeles (UCLA) Activity Score. These PROMs were collected at baseline and at 6 weeks, 3 months, 6 months and 12 months postoperatively. Standard descriptive statistics were used to describe patient characteristics and PROMs scores. Association between OKS at 6 months and age and BMI was evaluated with use of Pearson's correlation coefficient.

Results

A total of 52 patients were eligible for inclusion. Following the selection criteria, a total of 7 patients were excluded (completed only baseline PROMs, $n=4$; hybrid UKA, $n=1$; BMI ≥ 40 , $n=2$). Finally, 45 patients (48 knees) were included in this study. Demographics of included

patients are presented in Table 1. One patient was revised to total knee arthroplasty at 8 months for progressive pain due to tibial implant malposition. PROMs scores of patients with UKA in situ are displayed in Table 2. Mean baseline and 6 months postoperative OKS were 27.4 ± 7.3 and 37.1 ± 6.8 , respectively (Fig.2A). Patients reported a mean baseline VAS of 5.8 ± 1.8 and mean 6-months postoperative VAS of 2.3 ± 1.2 (Fig. 2B). Mean UCLA activity score was 5.4 ± 2.0 at baseline and 6.4 ± 1.7 at 6 months postoperatively (Fig. 2C). There was no association found between age and 6-months OKS ($r= 0.0$, $p= 0.998$), or between BMI and 6-months OKS ($r= -0.481$, $p= 0.635$) (Fig. 3).

Conclusions

The preliminary results presented in this study demonstrate a promising trend in early functional outcomes following a novel system for cementless UKA in patients with isolated medial OA. Nonetheless, no hard conclusions can be drawn from these preliminary results until longer-term follow-up is completed.

Table 1. Patient demographics ($n=45$)

Variable	Mean \pm SD or n (%)
Age, y	60.0 ± 6.3
Male	36 (80)
BMI	28.1 ± 4.1
ASA classification	
I	5 (10)
II	42 (88)
III	1 (2)
IV	0
Right knee	26 (54)
Bilateral	3 (6)

Patient demographics are presented as mean \pm standard deviation (SD) or in numbers and frequencies (%). BMI, body mass index; ASA, American Society of Anesthesiologists.

Table 2. Mean patient-reported outcomes after cementless unicompartmental knee arthroplasty

Outcome	<i>n</i>	Baseline	<i>n</i>	6w	<i>n</i>	3m	<i>n</i>	6m	<i>n</i>	12m
OKS	28	27.4 ± 7.3	35	32.5 ± 8.6	37	35.5 ± 7.4	26	37.1 ± 6.8	8	40.5 ± 6.7
VAS	29	5.8 ± 1.8	36	2.9 ± 1.8	37	2.5 ± 1.7	26	2.3 ± 1.2	6	0.8 ± 0.4
UCLA	29	5.4 ± 2.0	36	5.2 ± 1.8	37	5.8 ± 1.7	26	6.4 ± 1.7	7	6.6 ± 1.4

Patient-reported outcomes of patients with a cementless unicompartmental knee arthroplasty in situ are presented as mean ± standard deviation at baseline and at 6 weeks, 3 months, 6 months and 12 months follow-up. OKS, Oxford Knee Score; VAS, Visual Analogue Scale for pain; UCLA, University of California, Los Angeles Activity score.

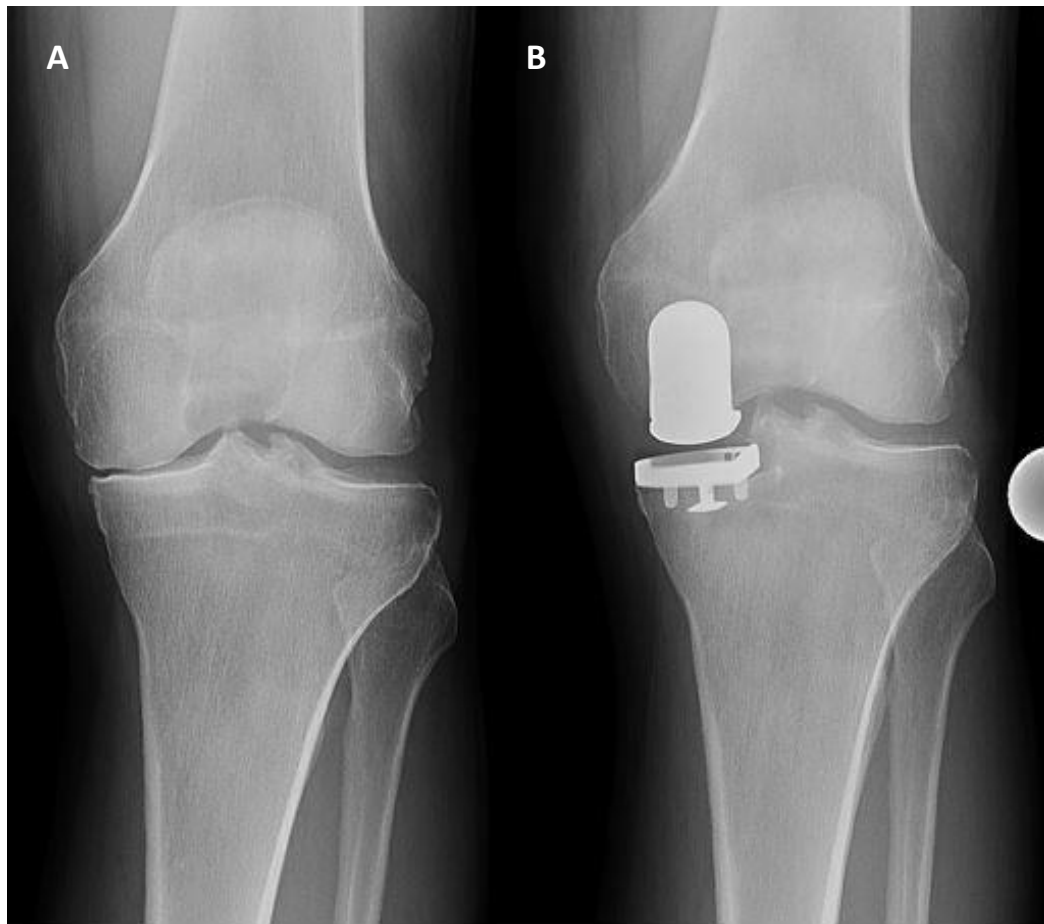
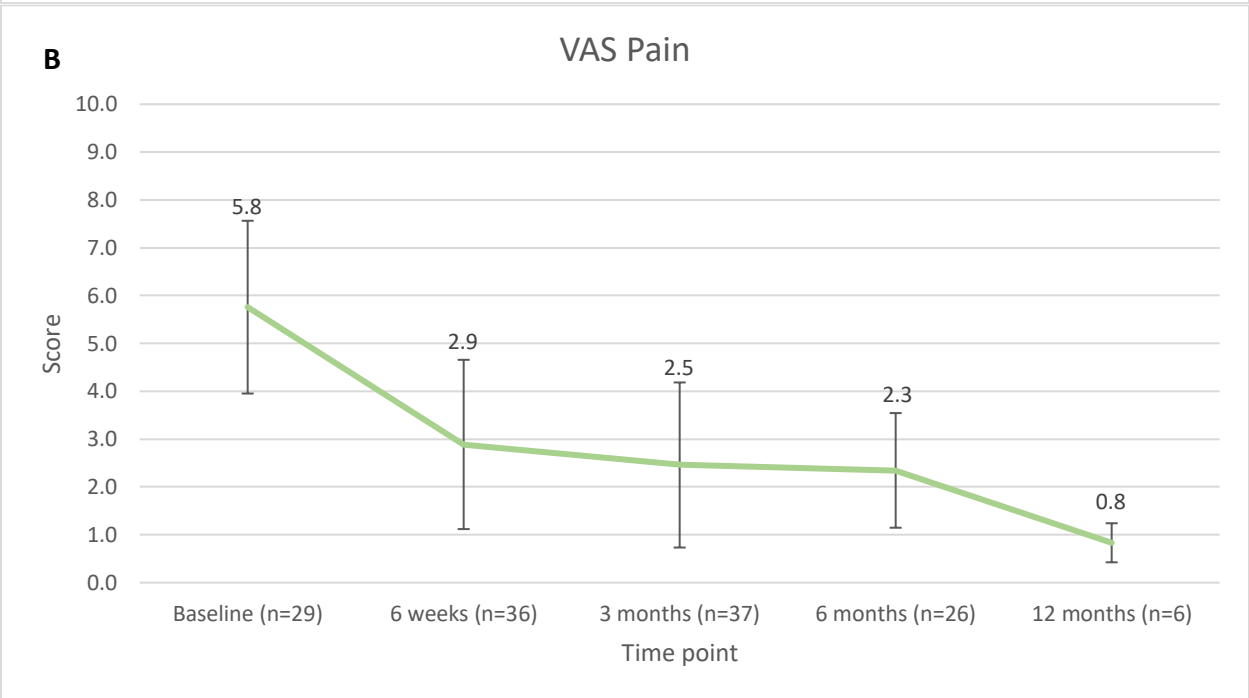
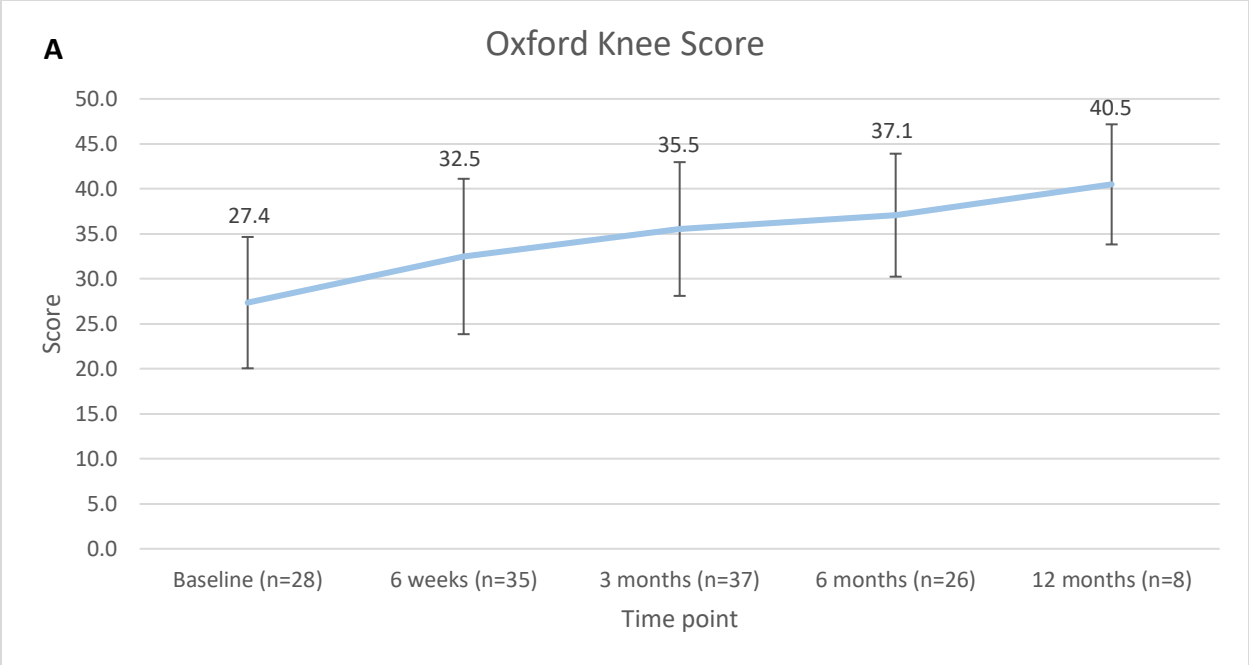


Figure 1. Preoperative radiograph of a left knee with isolated medial osteoarthritis (A). Postoperative radiograph of the same knee 2 months postoperatively following cementless unicompartmental knee arthroplasty (B).



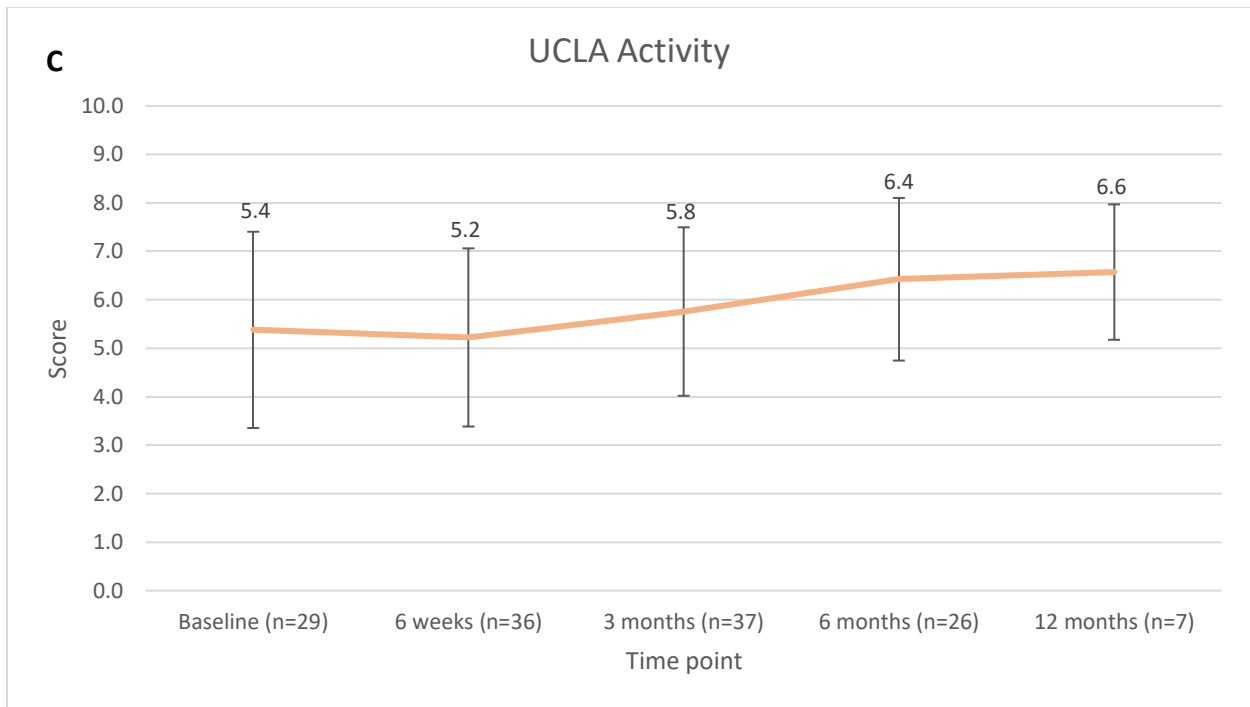
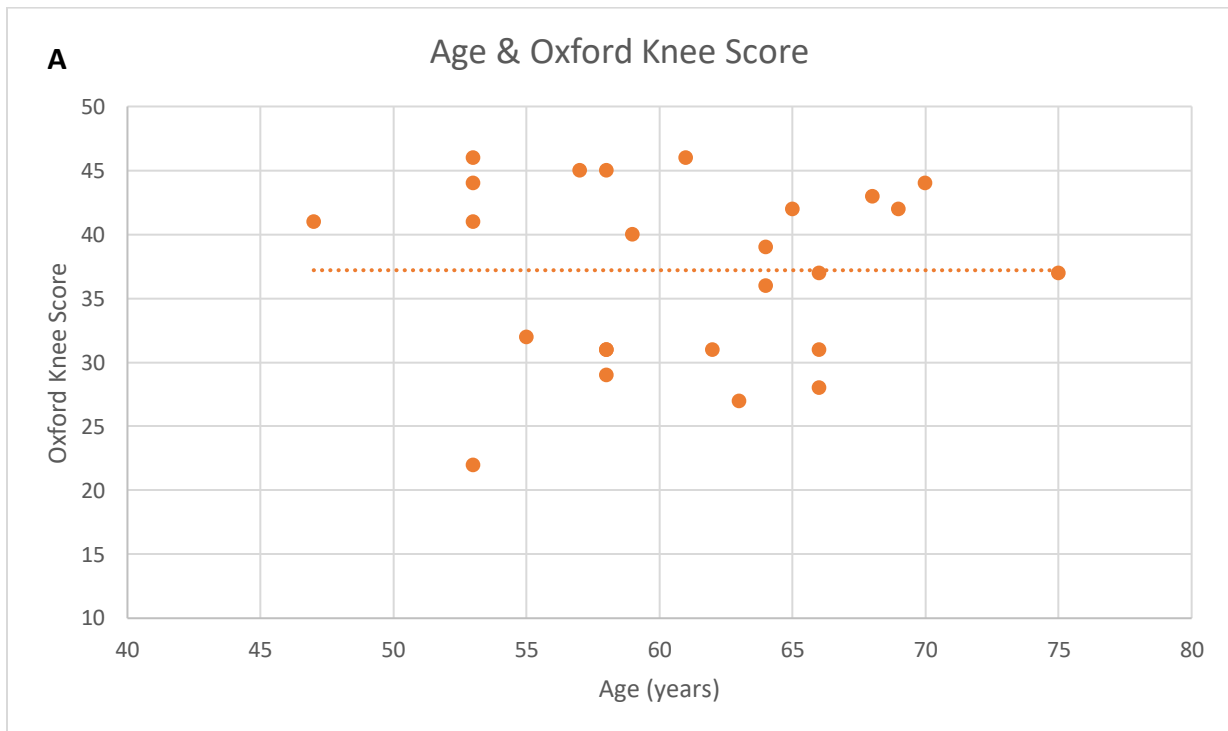


Figure 2. Mean results over time in Oxford Knee Score (A), VAS (B) and UCLA Activity Score (C). VAS, Visual Analogue Scale for pain; UCLA, University of California, Los Angeles.



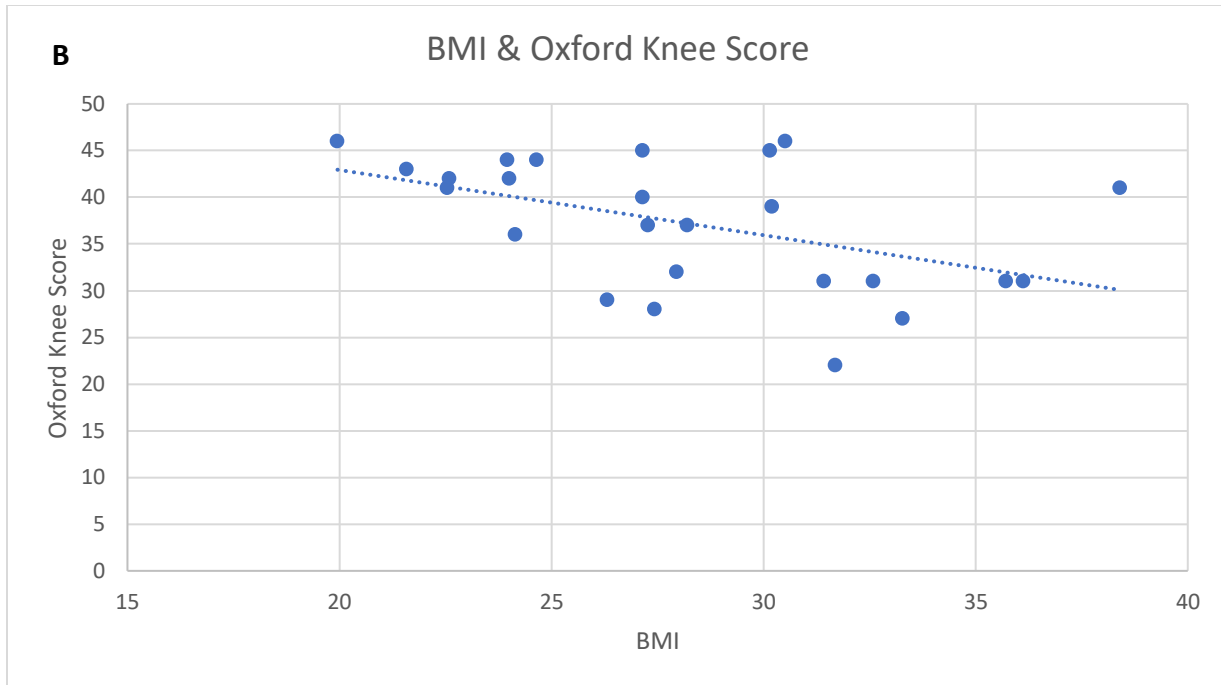


Figure 3. Scatterplot showing no relationship between age and Oxford Knee Score at 6 months (A), and Body Mass Index (BMI) and Oxford Knee Score at 6 months (B)

****Unpublished results***

1. Slater N, Justin D, Su E, Pearle A, Schumacher B. IMPROVED TIBIAL FIXATION IN UNICOMPARTMENTAL KNEE ARTHROPLASTY USING NOVEL BLADE-BASED BONE ANCHOR. *Orthopaedic Proceedings*. Vol 102: J Bone Joint Surg Br; 2020:34-34.