

## MEDIAL UNI-COMPARTMENT KNEE ARTHROPLASTY (U.K.A) ASSESSMENT & FOLLOW UP, SYSTEMATIC REVIEW & META- ANALYSIS

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### ABSTRACT:

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**Background:** Osteoarthritis (OA) can affect all three compartments of the knee, but epidemiological studies have shown that the predominant pattern is disease localized to the medial side of the knee, although a lot of studies had been done to compare different modalities of treatment, the gold standard treatment for AMOA is not yet well known and the decision of which procedure is best suited to an individual, or whether an individual would be prepared to undergo one type of surgery, but not another is a complex issue.

**Aim of the work:** This study is a systematic review and meta-analysis of studies that include patients underwent medial UKA for treating isolated medial knee osteoarthritis, and to provide cumulative data about the efficacy and safety of Uni-compartmental knee arthroplasty (UKA) in treating isolated medial compartment knee osteoarthritis

**Patients and Methods:** This review was done using standard methodology outlined in the Cochrane Handbook and reported the findings in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement guidelines, (PubMed, Cochrane library and Google Scholar) were searched for relative studies which studied the outcome of Pre-operative status versus Post-operative sequel of medial compartment knee osteoarthritis patients by estimating Mean, Standard deviation ( $\pm$  SD) and range for parametric numerical data, while Median, Geometric Mean and Inter-quartile range (IQR) for non-parametric numerical data, Frequency and percentage of non-numerical data and their 95% confidence intervals for each study.

**Results:** 10 studies studied the outcome of Pre-operative status versus Post-operative sequel of medial compartment knee osteoarthritis were obtained for final research, in these studies 2304 knees underwent UKA, we qualitatively assessed 1ry efficacy outcome by assessing prevalence of moderate to severe pain and functional knee score (ROM – range of motion) and qualitatively assessed 2ry safety outcome by measuring complications rate, revision surgery (Failure) rate and survival probability %.

**Conclusions:** UKA is a solution that is adapted to the treatment of unicompartmental osteoarthritis AMOA in old patients more than 60 years of age, this intervention provides the patient with excellent quality of life and satisfaction in more than 90% of the cases.

**Keywords:** Medial compartment knee osteoarthritis, antero-medial osteoarthritis (AMOA), unicompartmental knee arthroplasty (UKA), unicompartmental knee replacement (UKR).

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## INTRODUCTION:

Unicompartmental knee Arthroplasty (UKA) is an effective treatment for end-stage, symptomatic osteoarthritis (OA) of the knee that is limited to a single compartment<sup>(1)</sup>.

Medial unicompartmental knee arthroplasty (UKA) is an attractive alternative to total knee arthroplasty (TKA) for patients with isolated medial knee osteoarthritis. Also, biomechanics of UKA more closely resembles native knee function with improved dynamic proprioception and postural control compared with that of (TKA)<sup>(2)</sup>.

UKA offers several potential advantages over TKA including less-invasive surgical exposure and though less blood loss, preservation of native bone stock, retention of cruciate ligaments, lower peri-operative morbidity, enhanced postoperative recovery and improved patient satisfaction<sup>(2)</sup>.

Over the last decade, the advent of the concept of minimally invasive surgery together with the development and refinement of surgical techniques and implant design, has led to a favorable evolution of clinical results and consequently, renewed interest in UKA<sup>(3)</sup>.

To ensure long-term success of UKA, stringent patient selection criteria should be applied when determining patient's suitability, the decision should be based on clinical assessment using various investigation tools<sup>(4)</sup>.

UKA consists of an intra-articular tibial augmentation plate, which can and should only compensate cartilage wear in the femoro-tibial intra-ligament space but In no case can UKA correct the bone component of a deformity and Therefore, unlike TKA in which one seeks to correct the bone axes, the radiological objective of UKA is to restore the limb's constitutional axis to what it was before wear<sup>(3)</sup>.

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## AIM OF THE WORK:

This study is a systematic review and meta-analysis of 10 studies that include patients underwent medial UKA for treating isolated medial knee osteoarthritis using cemented fixed-bearing prosthesis through a standard medial Para-patellar approach and their postoperative follow-up over years (up to 10 years) involving patient satisfaction, degree of pain relieve, range of motion and also complications that may include revision rate.

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## METHODOLOGY:

The Aim of this work is to provide cumulative data about the efficacy and safety of Unicompartmental knee arthroplasty (UKA) in treating isolated medial compartment knee osteoarthritis.

This review was done using standard methodology outlined in the Cochrane Handbook and reported the findings in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement guidelines<sup>(5)</sup>.

### Identification of studies:

An initial search will be carried out using the PubMed, Cochrane library Ovid, Scopus & Google scholar using the following keywords: medial compartment knee osteoarthritis, unicompartmental knee arthroplasty.

Review articles and bibliographies of each study identified will be searched for additional references that may contain further related studies.

Personal contact with colleagues, collaborators and other trialists working in the field of orthopedic surgery will be made to identify other published relevant studies.

When two or more papers were based on an identical study, the paper will be used that principally investigated the outcome of

Pre-operative status versus Post-operative sequel in medial compartment knee osteoarthritis patients.

We will consider published, full text studies in English only. Moreover, no attempts were made to locate any unpublished studies or non-English studies.

**Criteria of accepted studies:**

**Types of studies:**

The review will be restricted to RCTs, clinical trials, cohort and comparative studies, either prospective or retrospective, which studied the outcome of Pre-operative status versus Post-operative sequel of medial compartment knee osteoarthritis patients.

**Types of participants:**

Participants will be medial compartment knee osteoarthritis patients.

**Types of interventions:**

Uni-compartmental knee arthroplasty (UKA).

**Types of outcome measures:**

At least one of these outcome measures will be considered:

1. Prevalence of moderate to severe pain (1ry efficacy outcome).
2. Functional knee score (ROM – range of motion) (1ry efficacy outcome).
3. Complications rate (2ry safety outcome).
4. Revision surgery (Failure) rate (2ry safety outcome).
5. Survival probability % (2ry safety outcome).

**Inclusion criteria:**

- English literature.
- Journal articles.
- Between 2005 until 2020.

- Describing managements of medial compartment knee osteoarthritis by Unicompartmental knee arthroplasty (UKA).

- Human studies.

**Exclusion criteria:**

- Articles describing lateral compartment knee osteoarthritis.
- Cadaver studies.
- Animal studies.
- Irrelevance to our study.

**Methods of the review:**

**Locating and selecting studies:**

Abstracts of articles identified using the above search strategy will be viewed, and articles that appear of fulfill the inclusion criteria will be retrieved in full, when there is a doubt, a second reviewer will assess the article and consensus will be reached.

**Data extraction:**

Using the following keywords: medial compartment knee osteoarthritis, unicompartmental knee arthroplasty, data will be independently extracted by two reviewers and cross-checked.

**Evidence of publication bias:**

Will be sought using the funnel plot method. A funnel plot is a simple scatter plot of the intervention effect estimates from individual studies against some measure of each study's size or precision.

**Statistical Analysis:**

Data entry, processing and statistical analysis was carried out using MedCalc ver. 18.2 (MedCalc, Ostend, Belgium). A meta-analysis was performed to calculate direct estimates of each treatment technique. According to heterogeneity of treatment effect across trials using the  $I^2$ -statistics; a fixed-effect model ( $P \geq 0.1$ ) or random-effects model ( $P < 0.1$ ) were used. Generally, P-values less than 0.05 (5%) was

considered to be statistically significant:  $P > 0.05$ : Non-significant (NS),  $P < 0.05$ : Significant (S),  $P < 0.01$ : Highly significant (HS).

We found 250 record; 180 were excluded based on title and abstract review; 70 article are searched for eligibility by full text review; 29 articles cannot be accessed or obtain full text; 10 studies were reviews and case reports; 11 were not describing functional outcome; the desired procedure not used in 10 studies leaving 10 studies that met all inclusion criteria.

**RESULTS:**

**Study Selection:**

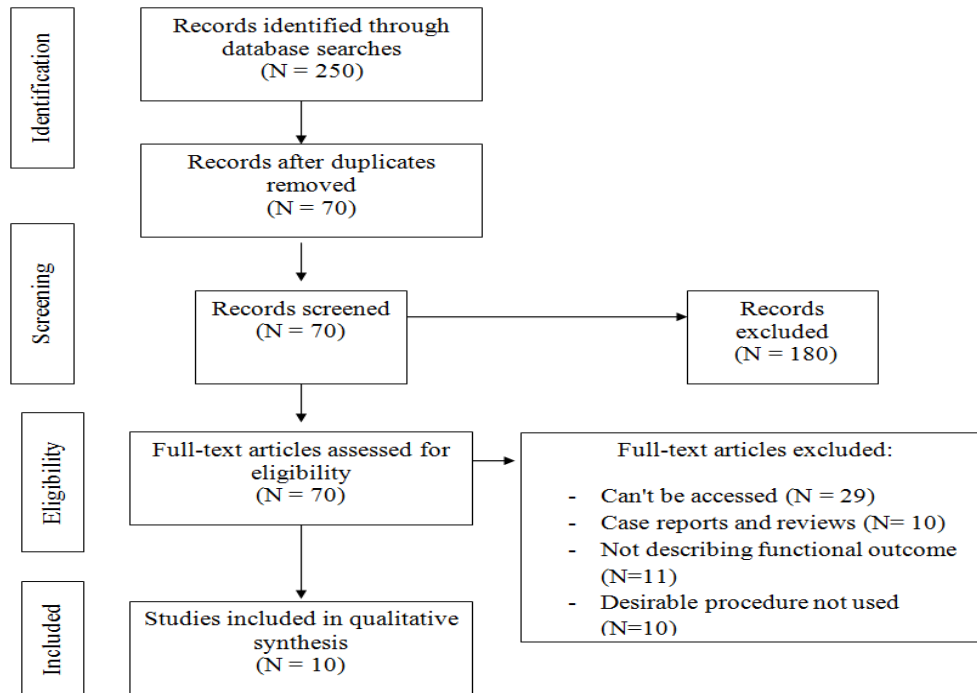


Diagram 1: PRISMA flow chart for study selection.

Table 1: Summary of patients and study characteristics:

N	Author	Number of patients			Age (average years)	Follow up time (average months)
		Total	Males	Females		
1	Berger et al, 2005	51	17	34	68	144
2	Biswal et al, 2010	98	50	48	67.8	68.4
3	Mercier et al, 2010	40	24	16	68.8	126.4
4	Blaney et al, 2017	238	123	115	65	60
5	Pearle et al, 2017	795	443	352	69.1	29.6
6	Ventura et al, 2017	22	---	---	74.1	74.4
7	Scott et al, 2018	97	43	54	68	120
8	Tadros et al, 2018	395	215	180	73.6	92.4
9	Kleebblad et al, 2018	384	224	160	67.3	68.4
10	Bruce et al, 2020	184	99	85	70	144

#Studies were arranged according to publication year.

This table showed that; the included studies published between 2005 and 2020. The total number of patients in all the included studies was 2304 patients; with

1238 male patients representing (53.7%), and 1044 female patients representing (45.3%), with average follow up time was (92.7 ± 39 months).

**Meta-analysis of functional outcomes:**

Table 2: Meta-analysis of (average functional knee score) on Pre-operative status vs Pre-operative status – Mean difference:

N	Study	Pre-op status	Post-op sequel	Total	SMD	SE	95% CI	t	P value	Weight (%)	
										Fixed	Random
1	Berger et al, 2005	51	51	102	-0.53	0.20	-0.933 to -0.140			8.73	12.72
2	Biswal et al, 2010	98	98	196	-0.35	0.14	-0.634 to -0.068			17.00	12.75
3	Mercier et al, 2010	40	40	80	-1.14	0.23	-1.622 to -0.669			6.11	12.69
4	Blaney et al, 2017	238	238	476	-0.78	0.09	-0.966 to -0.593			38.77	12.77
5	Ventura et al, 2017	22	22	44	-1.74	0.35	-2.454 to -1.042			2.86	12.59
6	Scott et al, 2018	97	97	194	-1.68	0.16	-2.012 to -1.355			12.59	12.74
7	Tadros et al, 2018	395	395	790	-44.7	1.12	-46.95 to -42.52			0.27	10.99
8	Bruce et al, 2020	184	184	368	-3.29	0.16	-3.609 to -2.980			13.67	12.74
	Total (fixed effects)	1125	1125	2250	-1.31	0.05	-1.430 to -1.198	-22.2	<0.001**	100	100
	Total (random effects)	1125	1125	2250	-6.13	0.99	-8.089 to -4.172	-6.1	<0.001**	100	100

SMD: standard mean difference, SE: standard error, CI: confidence interval.

Q test for heterogeneity = 1734, degree of freedom (DF) = 7, p < 0.0001\*\*, I2 (inconsistency) = 99.6% and SMD = -6.1.

Regarding 1ry outcome measures, we found 8 studies reported functional knee score with total number of patients (N=1125). I<sup>2</sup> (inconsistency) was 99.6% with highly significant Q test for heterogeneity (p < 0.001), so random-effects model was chosen

to assess efficacy; with overall SMD= -6.1 (95% CI -8.089 to -4.172). The random-effects model of the meta-analysis study showed highly significant increase in mean functional knee score in Post-operative period (p < 0.0001).

Table 3: Meta-analysis of (post-operative pain prevalence) on Pre-operative status vs Post-operative sequel - Odds Ratio:

N	Study	Pre-op status	Post-op sequel	OR	95% CI	Z	P value	Weight (%)	
								Fixed	Random
1	Berger et al, 2005	51/51	2/51	0.0004	0.00002 to 0.010			14.76	14.76
2	Biswal et al, 2010	98/98	20/98	0.0013	0.0000789 to 0.022			17.38	17.38
3	Mercier et al, 2010	40/40	3/40	0.0011	0.000057 to 0.0231			15.40	15.40
4	Blaney et al, 2017	238/238	47/238	0.0005	0.000031 to 0.0084			17.73	17.73
5	Scott et al, 2018	97/97	27/97	0.0020	0.00012 to 0.0333			17.47	17.47
6	Bruce et al, 2020	184/184	13/184	0.0002	0.000012 to 0.0036			17.26	17.26
	Total (fixed effects)	112/708	708/708	0.0007	0.000214 to 0.0026	-11.284	<0.001**	100	100
	Total (random effects)	112/708	708/708	0.0007	0.000229 to 0.0024	-12.006	<0.001**	100	100

Q test for heterogeneity = 1.6, degree of freedom (DF) = 5, p = 0.9012, I2 (inconsistency) = 0% and Odds Ratio (OR) = 0.0007.

We found 6 studies reported post-operative pain prevalence with total number of patients (N=708). I<sup>2</sup> (inconsistency) was 0% with non-significant Q test for heterogeneity (p > 0.05), so fixed-effects model was chosen to assess efficacy;

with overall OR= 0.0007 (95% CI 0.000214 to 0.0026). The fixed-effects model of the meta-analysis study showed highly significant decrease in post-operative pain prevalence (p < 0.0001).

Table 4: Meta-analysis of (complications rate) - Proportion:

N	Study	SD	Proportion (%)	95% CI
1	Berger et al, 2005	51	15.686	7.024 to 28.588
2	Biswal et al, 2010	98	12.245	6.490 to 20.413
3	Mercier et al, 2010	40	87.500	73.197 to 95.814
4	Blaney et al, 2017	238	13.866	9.740 to 18.918
5	Pearle et al, 2017	795	1.384	0.693 to 2.462
6	Ventura et al, 2017	22	9.091	1.121 to 29.161
7	Scott et al, 2018	97	19.588	12.225 to 28.886
8	Tadros et al, 2018	395	7.342	4.972 to 10.374
9	Kleeblad et al, 2018	384	4.427	2.600 to 6.994
10	Bruce et al, 2020	184	42.935	35.677 to 50.424
	Total (fixed effects)	2304	8.191	7.106 to 9.384
	Total (random effects)	2304	18.360	8.607 to 30.756

Q test for heterogeneity = 394, degree of freedom (DF) = 9,  $p < 0.0001^{**}$ , I<sup>2</sup> (inconsistency) = 97.7%.

Meta-analysis table showed that; (complications rate) in fixed and random-effects models were (8.2% and 18.3% respectively). I<sup>2</sup> (inconsistency) was 97.7%; with highly significant Q test for

heterogeneity ( $p < 0.0001$ ); so random-effects model was chosen to assess rate; with overall (complications rate) = 18.3% and a 95% CI ranged from 8.607 to 30.756.

Table 5: Meta-analysis of (failure or revision rate) - Proportion:

N	Study	SD	Proportion (%)	95% CI
1	Berger et al, 2005	51	3.922	0.478 to 13.459
2	Biswal et al, 2010	98	9.184	4.286 to 16.719
3	Mercier et al, 2010	40	27.500	14.601 to 43.888
4	Blaney et al, 2017	238	2.941	1.191 to 5.966
5	Pearle et al, 2017	795	1.384	0.693 to 2.462
6	Ventura et al, 2017	22	0.000	0.000 to 15.437
7	Scott et al, 2018	97	18.557	11.385 to 27.733
8	Tadros et al, 2018	395	5.063	3.120 to 7.712
9	Kleeblad et al, 2018	384	3.385	1.815 to 5.720
10	Bruce et al, 2020	184	13.043	8.539 to 18.783
	Total (fixed effects)	2304	4.288	3.500 to 5.195
	Total (random effects)	2304	7.103	3.797 to 11.338

Q test for heterogeneity = 95, degree of freedom (DF) = 9,  $p < 0.0001^{**}$ , I<sup>2</sup> (inconsistency) = 90.5%.

Meta-analysis table showed that; (failure or revision rate) in fixed and random-effects models were (4.3% and 7.1% respectively). I<sup>2</sup> (inconsistency) was 90.5%; with highly significant Q test for

heterogeneity ( $p < 0.0001$ ); so random-effects model was chosen to assess rate; with overall (failure or revision rate) = 7.1% and a 95% CI ranged from 3.797 to 11.338.

Table 6: Meta-analysis of failure or revision rate vs overall complications rate - Odds Ratio:

N	Study	Failures	Comp.	OR	95% CI	Z	P value	Weight (%)	
								Fixed	Random
1	Berger et al, 2005	2/51	8/51	0.219	0.0442 to 1.090			2.48	6.78
2	Biswal et al, 2010	9/98	12/98	0.725	0.291 to 1.807			7.65	10.55
3	Mercier et al, 2010	11/40	35/40	0.054	0.0169 to 0.174			4.69	9.03
4	Blaney et al, 2017	7/238	33/238	0.188	0.0815 to 0.435			9.11	11.03
5	Pearle et al, 2017	11/795	11/795	1.000	0.431 to 2.320			9.01	11.00
6	Ventura et al, 2017	0/22	2/22	0.182	0.00825 to 4.024			0.67	2.77
7	Scott et al, 2018	18/97	19/97	0.935	0.457 to 1.915			12.43	11.77
8	Tadros et al, 2018	20/395	29/395	0.673	0.374 to 1.211			18.49	12.52
9	Kleebblad et al, 2018	13/384	17/384	0.756	0.362 to 1.580			11.77	11.65
10	Bruce et al, 2020	24/184	79/184	0.199	0.119 to 0.335			23.70	12.90
	Total (fixed effects)	115/2304	245/2304	0.402	0.316 to 0.512	-7.410	<0.001	100	100
	Total (random effects)	115/2304	245/2304	0.395	0.223 to 0.700	-3.177	0.001**	100	100

Q test for heterogeneity = 39.5, degree of freedom (DF) = 9,  $p < 0.0001^{**}$ ,

I<sup>2</sup> (inconsistency) = 77.2% and Odds Ratio (OR) = 0.395.

I<sup>2</sup> (inconsistency) was 77.2% with highly significant Q test for heterogeneity ( $p < 0.0001$ ), so random-effects model was chosen to assess safety; with overall OR= 0.395 (95% CI 0.223 to 0.700). The random-effects model of the meta-analysis study showed highly significant decrease in failure rate “revisions” among overall complicated patients ( $p = 0.001$ ).

## DISCUSSION:

The Aim of this work is to provide cumulative data about the efficacy and safety of Unicompartmental knee arthroplasty (UKA) in treating isolated medial compartment knee osteoarthritis.

The average age of all patients was ( $69.1 \pm 2.8$  years); with youngest mean age of 65 years in *Blaney et al.*<sup>(6)</sup> study; and oldest mean age of 74.1 years in *Ventura et al.*<sup>(7)</sup> study. Which came in agreement with *Zuiderbaan et al.*<sup>(8)</sup>, *Clement et al.*<sup>(9)</sup> and *Niinimäki et al.*<sup>(10)</sup>.

*Clement et al.*<sup>(9)</sup> reported that, Using the model with a case volume of 100 patients and a mean age of 65 years, the overall health gain per patient was 13.59 QALYs after UKA.

*Niinimäki et al.*<sup>(10)</sup> reported that, the mean age at the time of operation was 58 years (range 38–81). The mean follow-up time was 63 months (range 9–125).

Regarding functional knee score, the average pre-operative knee score was ( $45.7$

$\pm 31.9$ ), while the average post-operative knee score (at end of follow up period), was ( $68.8 \pm 39.9$ ), with marked improvement. Which came in agreement with *Felts et al.*<sup>(2010)</sup>, *Parmaksizoglu et al.*<sup>(12)</sup> and *Takeuchi et al.*<sup>(13)</sup>.

*Felts et al.*<sup>(11)</sup> reported that, the mean KOOS at the end of the study was 86 out of 100 (range, 21—100) for the pain items, 83 out of 100 (range, 27—100) for the symptom items.

*Parmaksizoglu et al.*<sup>(12)</sup> reported that, the mean preoperative and postoperative Knee Society clinical scores were 64.6 (range 47 to 80) and 97.5 (range 89 to 100), and the mean functional scores were 59.6 (range 45 to 80) and 92.1 (range 70 to 100), respectively.

The random-effects model of the meta-analysis study showed highly significant increase in mean functional knee score in Post-operative period ( $p < 0.0001$ ). Which came in agreement with *Tinius et al.*<sup>(14)</sup>, *Takeuchi et al.*<sup>(13)</sup>, *Siman et al.*<sup>(15)</sup>, *Parmaksizoglu et al.*<sup>(12)</sup> and *Cao et al.*<sup>(16)</sup>.

*Tinius et al.*<sup>(14)</sup> reported that, KSS improved significantly from  $77 \pm 11.6$  points prior to surgery to  $166 \pm 12.1$  points after surgery ( $P=0.01$ ). Improvement was found in both the knee score and function score. Three patients who presented anterior translation of 5 mm had a mean score of  $155 \pm 17$  points.

*Siman et al.*<sup>(15)</sup> reported that, The KSS at final follow-up did not differ between UKA and TKA, but there was a significantly larger improvement in KSS for those patients undergoing TKA. There were differences in improvement in knee scores and postoperative knee scores between males and females.

*Parmaksizoglu et al.*<sup>(12)</sup> reported that, Improvements in the clinical and functional scores were significant ( $p<0.05$ ). At final controls, all of the patients had an excellent clinical score, while functional scores were excellent in 27 patients (71.1%) and good in 11 patients (28.9%).

The fixed-effects model of the meta-analysis study showed highly significant decrease in post-operative pain prevalence ( $p < 0.0001$ ). Which came in agreement with *Cao et al.*<sup>(16)</sup>, *Clement et al.*<sup>(9)</sup>, *Niinimäki et al.*<sup>(10)</sup>, *Takeuchi et al.*<sup>(13)</sup>.

*Cao et al.*<sup>(16)</sup> reported that, five studies that altogether assessed 394 patients reported complication rates. The primary complications included infection, leg length discrepancy, deep vein thrombosis, peroneal palsy, and pain, among others. Significantly fewer complications occurred in the UKA groups than the HTO group (OR 0.42,  $P = 0.02$ ,  $I^2 = 0\%$ ).

*Niinimäki et al.*<sup>(10)</sup> reported that, patients with knee pain may often have mild OA and this may not be the cause of their pain. If they have UKA their pain will not be cured. Patients with persistent knee pain following UKA are highly likely to have revision surgery. The reason why UKA has a higher failure rate than TKA may therefore

in part be because patients with pain and mild OA are more likely to have UKA than TKA and patients with pain following UKA may be more likely to have a revision than patients with pain following TKA.

*Takeuchi et al.*<sup>(13)</sup> reported that, the purpose of surgery for unicompartmental OA is to reduce pain, restore function and improve quality of life. Both HTO and UKA are less invasive procedures than TKA, both preserve the bone stock, and both subsequently allow for normal kinematics by retaining the anterior and posterior cruciate ligaments.

$I^2$  (inconsistency) was 97.7%; with highly significant Q test for heterogeneity ( $p < 0.0001$ ); so random-effects model was chosen to assess rate; with overall (complications rate) = 18.3% and a 95% CI ranged from 8.607 to 30.756. Which came in agreement with *Siman et al.*<sup>(15)</sup>, *Clement et al.*<sup>(9)</sup> and *Cao et al.*<sup>(16)</sup>.

*Siman et al.*<sup>(15)</sup> reported that, Five-year complication-free survival estimates for UKA and TKA were 90.8% (95% CI, 82.2-96.1) and 87.0% (95% CI, 81.4-92.2), respectively ( $P = .5230$ ). A total of 12 (10.0%) complications occurred in 11 patients in the UKA group, and 25 (13.3%) complications occurred in 23 patients in the TKA group.

*Siman et al.*<sup>(15)</sup> reported that, estimates (free of revision) for UKA and TKA were 98.3% (95% CI, 94.4-100) and 98.8% (95% CI, 96.7-100), respectively.

*Niinimäki et al.*<sup>(10)</sup> reported that, Twenty-two UKA had re-operations so the overall re-operation rate was 19%. Reoperations were performed on an average of 28 months (range 1-96).

The random-effects model of the meta-analysis study showed highly significant decrease in failure rate "revisions" among overall complicated patients ( $p = 0.001$ ). Which came in agreement with *Siman et al.*



<sup>(15)</sup>, *Clement et al.* <sup>(9)</sup>, *Khatri et al.* <sup>(17)</sup> and *Cao et al.* <sup>(16)</sup>.

*Siman et al.* <sup>(15)</sup> reported that, Postoperative radiographs were available for 116 (96.7%) UKA and 188 (100%) TKA. Within the TKA group, there were 4 (2.0%) cases of non-progressive radiolucencies without signs of loosening or change in alignment. One (0.5%) other TKA exhibited signs of loosening and subsequently underwent revision. Within the UKA group, 1 (0.8%) tibial component showed signs of loosening and underwent revision. There was 1 (0.8%) UKA knee with progression of lateral compartmental arthritis but did not require revision at final follow-up.

*Clement et al.* <sup>(9)</sup> reported that, the superior survival of UKA continues into the long term, this would decrease the revision burden, increase functional gain, and therefore decrease the estimated cost per QALY.

*Khatri et al.* <sup>(17)</sup> reported that, although some patients might prefer the longer survival and predictability associated with TKA despite its revision difficulty, other patients might prefer the minimal invasiveness and quicker recovery associated with UKA despite its potentially higher early failure rate.

*Cao et al.* <sup>(16)</sup> reported that, the final sensitivity analysis results showed that the revision rate of the UKA group was less than that of the HTO group (OR 0.52, P = .02, I<sup>2</sup> = 33%).

### **Conclusion:**

UKA is a solution that is adapted to the treatment of unicompartmental osteoarthritis in the old subject more than 60 years of age. This intervention provides the patient with excellent quality of life and satisfaction in more than 90% of the cases. Saving bone stock and the need to retain solutions for the future support, the choice of unicompartmental knee arthroplasty in cases of isolated medial osteoarthritis. Polyethylene wear

remains problematic and research should continue seeking to limit its onset. The use of modern ancillary instrumentation makes surgery more reliable with reproducible results, and minimally invasive approaches contribute more rapid functional recuperation.

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### **REFERENCES:**

1. Campi S, Pandit HG, Dodd CAF, Murray DW (2017): Cementless fixation in medial unicompartmental knee arthroplasty: A systematic review. *Knee Surgery, Sports Traumatology, Arthroscopy*, 25(3): 736–745.
2. Jennings JM, Kleeman-Forsthuber LT, Bolognesi MP (2019): Medial unicompartmental arthroplasty of the knee. *JAAOS-Journal of the American Academy of Orthopaedic Surgeons*, 27(5): 166–176.
3. Michele V, Alexander A, Naeder H (2018): Update on unicompartmental knee arthroplasty Current indications and failure modes (2018) *EFORT Open Rev*;3:442-448.
4. Oliver SS, Norman WS, Giles RS (2010): The practice of unicompartmental knee arthroplasty in the United Kingdom, *Journal of Orthopaedic Surgery*; 18(3):312-9.
5. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JP, Clarke M, Devereaux PJ, Kleijnen J and Moher D (2009): The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *PLoS medicine*, 6(7): e1000100
6. Blaney J, Harty H, Doran E, O'Brien S, Hill J, Dobie I and Beverland D (2017): Five-year clinical and radiological outcomes in 257 consecutive cementless Oxford medial unicompartmental knee arthroplasties. *The bone & joint journal*, 99(5): 623-631.

7. Ventura A, Legnani C, Terzaghi C, Iori S, Borgo E (2017): Medial unicondylar knee arthroplasty combined to anterior cruciate ligament reconstruction. *Knee Surgery, Sports Traumatology, Arthroscopy*, 25(3), 675–680.
8. Zuiderbaan HA, van der List JP, Chawla H, Khamaisy S, Thein R, Pearle AD (2016): Predictors of Subjective Outcome after Medial Unicompartmental Knee Arthroplasty. *The Journal of Arthroplasty*, 31(7): 1453–1458.
9. Clement ND, Deehan DJ, Patton JT (2019): Robot-assisted unicompartmental knee arthroplasty for patients with isolated medial compartment osteoarthritis is cost-effective. *The Bone & Joint Journal*, 101-B(9): 1063–1070.
10. Niinimäki TT, Murray DW, Partanen J, Pajala A, Leppilahti JI (2011): Unicompartmental knee arthroplasties implanted for osteoarthritis with partial loss of joint space have high re-operation rates. *The Knee*, 18(6), 432–435.
11. Felts E, Parratte S, Pauly V, Aubaniac JM, Argenson JN (2010): Function and quality of life following medial unicompartmental knee arthroplasty in patients 60years of age or younger. *Orthopaedics & Traumatology: Surgery & Research*, 96(8): 861–867.
12. Parmaksizoğlu, Yavuz Kabukçuoğlu, Ufuk Özkaya, Fuat Bilgili, Armağan Aslan (2010): Short-term results of the Oxford phase 3 unicompartmental knee arthroplasty for medial arthritis, *Acta Orthop Traumatol Turc*; 44(2):135-142.
13. Takeuchi R, Umemoto Y, Aratake M, Bito H, Saito I, Kumagai K, Saito T (2010): A midterm comparison of open wedge high tibial osteotomy vs unicompartmental knee arthroplasty for medial compartment osteoarthritis of the knee. *Journal of Orthopaedic Surgery and Research*, 5(1), 65.
14. Tinius M, Hepp P, Becker R (2012): Combined unicompartmental knee arthroplasty and anterior cruciate ligament reconstruction, *Knee Surg Sports Traumatol Arthrosc* 20:81–87.
15. Siman H, Kamath AF, Carrillo N, Harmsen WS, Pagnano MW, Sierra RJ (2017): Unicompartmental Knee Arthroplasty vs Total Knee Arthroplasty for Medial Compartment Arthritis in Patients Older Than 75 Years: Comparable Reoperation, Revision, and Complication Rates. *The Journal of Arthroplasty*, 32(6), 1792–1797.
16. Cao Z, Mai X, Wang J, Feng E, Huang Y (2018): Unicompartmental Knee Arthroplasty vs High Tibial Osteotomy for Knee Osteoarthritis: A Systematic Review and Meta-Analysis. *The Journal of Arthroplasty*, 33(3): 952–959.
17. Khatri PJ, O'Connor AM, Dervin GF (2011): Decision support needs of patients choosing between unicompartmental and total knee arthroplasty for advanced medial compartment osteoarthritis of the knee. *The Journal of Arthroplasty*, 26(8): 1343–1349.

مراجعته منهجية وتحليل بعدي لما تم نشره من ابحاث في علاج الالتهاب العظمي المفصلي للحجره الداخليه للركبه  
بواسطة تركيب مفصل ركبه صناعي احادي الجزء (تقييم و متابعه)  
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**المقدمة:** يمكن أن يؤثر مرض خشونة على جميع الأجزاء الثلاثة للركبة ، لكن الدراسات أظهرت أن النمط السائد ان يصيب الحجره الداخليه من الركبه، على الرغم من انه تم إجراء الكثير من الدراسات لمقارنة طرق العلاج المختلفة، ولكن العلاج الفعال والمثالي للخشونة المقصورة علي الحجره الداخليه للركبه فقط ليس معروفًا بعد، والقرار بشأن الإجراء الأنسب للفرد ، أو ما إذا كان الفرد مستعدًا للخضوع لنوع معين من الجراحة، ولكن ليس آخر هو مشكلة معقدة.

**هدف الدراسة:** هذه الدراسة عبارة عن مراجعة منهجية وتحليل لما تم نشره للدراسات التي تشمل المرضى الذين خضعوا لتغيير مفصل ركبه احادي الجزء لعلاج خشونة التي تصيب الحجره الداخليه للركبه، ولتوفير بيانات تراكمية حول فعالية وسلامة مفصل الركبة أحادي الجزئ (UKA) في علاج خشونة التي تصيب الحجره الداخليه للركبه.

**المرضى وطرق العلاج:** تم إجراء هذه المراجعة باستخدام المنهجية القياسية الموضحة في دليل كوكرين وأبلغت عن النتائج وفقًا لإرشادات بيان عناصر التقارير المفضلة للمراجعات المنهجية والتحليلات التلوية (PRISMA) ومكتبة (Google Scholar ،Cochrane ،PubMed) كانت بحثت عن الدراسات النسبية التي درست نتيجة حالة ما قيل الجراحة مقابل حالة ما بعد الجراحة لمرضى خشونة مفاصل الركبة في الحجره الداخليه من خلال تقدير المتوسط والانحراف المعياري ( $\pm SD$ ) لنطاق البيانات العدديه البارامترية ، في حين أن الوسيط والمتوسط الهندسي والربيعي المشترك النطاق (IQR) للبيانات العدديه غير المعيارية والتكرار والنسبة المئوية للبيانات غير العدديه وفترات الثقة ٩٥٪ لكل دراسة.

**النتائج:** ١٠ دراسات درست نتائج حالة ما قيل الجراحة مقابل حالة ما بعد الجراحة للخشونة التي تصيب الحجره الداخليه للركبه، تم الحصول عليها للبحث النهائي ، في هذه الدراسات خضعت ٢٣٠٤ ركبه لـ UKA ، وقمنا بتقييم نوعي لنتائج الفعالية الأولى من خلال تقييم انتشار الألم المعتدل إلى الشديد والنتيجة الوظيفية للركبه - ROM) مدى الحركة) وتقييم نتائج السلامة نوعيًا عن طريق قياس معدل المضاعفات ومعدل جراحة المراجعة (القتل) واحتمالية البقاء .٪

**الاستنتاجات:** تغيير مفصل احادي الجزء للركبه هو حل يتم تكييفه لعلاج الخشونة التي تصيب الحجره الداخليه للركبه في المرضى المسنين الذين تزيد أعمارهم عن ٦٠ عامًا ، وهذا التدخل يوفر للمريض جودة حياة ممتازة ورضا في أكثر من ٩٠٪ من الحالات.

**الكلمات الدالة:** التهاب مفاصل الركبة في الحيز الإنسي، خشونة التي تصيب الحجره الداخليه للركبه، تقويم مفصل الركبة الجزئي أحادي، استبدال الركبة الجزئي الأحادي.