Total Versus Unicompartmental Knee Arthroplasties on Osteoarthritis

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Background & Purpose

In 2019, 528 million people worldwide were living with osteoarthritis. This is a 113% increase from 1990.[1] Definitive treatment is a joint replacement surgery, including unicompartmental and total arthroplasties.[2] Choosing between the two is based on radiographic evidence and clinical decision-making. Increasing the number of comparative studies will increase credibility and will ensure the patient's goals are being met.

This study is aimed to investigate the effect of unicompartmental knee arthroplasties (UKA) on pain and function compared with total knee arthroplasties (TKA) within one year in patients with knee osteoarthritis.

PICOT

In patients with knee osteoarthritis, what is the effect of unicompartamental knee arthroplasties on pain and function compared with total knee arthroplasties within one year?

Design & Methods

Keywords:

Full knee arthroplasty versus partial knee arthroplasty, medial knee osteoarthritis treatment, full knee arthroplasty outcomes, partial knee arthroplasty outcomes, and partial versus full knee replacement outcomes

Inclusion:

Publication year between 2018 to 2023, minimum one year follow up, isolated osteoarthritis

Exclusion:

Less than one year follow up, publication year earlier than 2018

Summary of Evidence Search

Database	Yielded	Reviewed	Included
Google Scholar	17200	26	3
PubMed	73	12	0
Summon	8317	22	2
Total:	25590	60	5

Synthesis of Evidence

Primary endpoints were the Knee Society Score, Numerical Pain Rating Scale, UCLA Activity-Level Score, and Oxford Knee Score. Secondary endpoints were revision rate and annual revision rate.

Level of Evidence	Included
Systematic Review	1
Prospective Cohort	3
Retrospective Cohort	1

Results

- Patients undergoing a UKA experienced decreased pain and increased function postoperatively compared to a TKA.[3]
- Patients undergoing a UKA had a faster return to activity and lower pain levels postoperatively than TKA.[4]
- UKA patients had a larger improvement in function than TKA patients, but TKA patients experienced a larger symptomatic improvement postoperatively.[5]
- Revision rates, annual revision rates, and implant survivorship of a TKA were more favorable in comparison to UKA with TKAs having lower revision rates and higher implant survivorship.[6]
- Patients receiving a UKA had higher mean UCLA-activity scores.[7]

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Discussion

Best Practice:

- If the patient is focused on improving pain and function quickly, then a UKA is recommended.
- If the patient is willing to commit to physical therapy, cannot undergo future revisions, and is at a higher risk of rapidly worsening osteoarthritis, then a TKA is preferred.
- Replacing the entire knee may not be necessary if enough healthy cartilage and anatomical structures remain.
- A UKA may be preferable for younger patients due to increased mobility and health of structures, whereas elderly patients may not have the anatomical structures for a UKA.

Limitations/Further study:

Limitations include a small sample size, length of follow-up time, and no limitation on age and demographics. Further research on physical therapy protocols, preoperative education, and the impact of demographics is needed to prevent skewed data.

Conclusion

After a minimum of one year follow-up, unicompartmental knee arthroplasties led to improved patient-reported pain and functional outcomes whereas total knee arthroplasties had improved implant survivorship and decreased revision rates.

To further support these claims, increasing the number of studies and specifying patient demographics is necessary.

References

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