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Robotic-Assisted Unicompartmental Knee Arthroplasty Shows Better Short-Term Results Than Conventional Technique. A Comparative Study

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Faculty Disclosure Information

- David Figueroa, MD
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Introduction

Robotic Arm-Assisted Unicompartmental Knee Arthroplasty (UKA)

- Consistent component positioning
- Reliable preoperative planning
- Intraoperative adjustment

Literature: RA-UKA vs Conventional Technique (CT)

- Better alignment, accuracy, component positioning and sizing
- Better short-term functional outcomes
- Increased operative time
- Increased intraoperative bleeding

Objective: Compare our short-term experience on patients with a robotic assisted UKA versus UKA with conventional technique.

Materials and Methods

- Retrospective comparative study.
- Robotic-assisted UKA (MAKO, Stryker Corporation, Mahwah, NJ, USA)

Inclusion criteria	Exclusion criteria
Unicompartmental osteoarthritis	Unicompartmental patellofemoral osteoarthitis
Conventional technique and robotic assisted UKA	Concomitant surgical procedures
Same center: Clínica Alemana de Santiago	Revision surgery
Complete medical records	

- Data Collection: records were reviewed to document demographic data and both intraoperative and postoperative results during hospitalization.
- Statistical analysis: Fisher's test, t-student, logistic regression for significance of 5% ($p<0.05$).

Results

164 patients:

- 44 robotic assisted UKA (RA-UKA)
- 120 conventional technique UKA (CT-UKA).

There were no significant differences in both groups according to age and gender.

	RA-UKA	CT-UKA	p
Number of patients	44	120	-
Age (years)	63.13 (SD 10.75)	65.73 (SD 11.04)	0.90
Gender (male)	50%	55.8%	0.596

Results

	RA-UKA	CT-UKA	p
Tourniquet time (min)	79.33 (SD 16.96)	77.09 (SD 26.06)	0.99
Operative time (min)	104.8 (SD 17.94)	126.82 (SD 36.54)	0.003
Intraoperative bleeding (ml)	111.54 (SD 75.26)	190.63 (SD 91.61)	0.001
Blood cells transfusion	0	0	-

Results

	RA-UKA	CT-UKA	p
Walking same day of surgery (%)	34.09	10.83	0.001
Hospital stay (days)	2.61 (SD 2.19)	3.68 (SD 3.38)	0.0001

Discussion

Goh, et al 2022

- RA-UKA → Longer surgical time; Lower total costs

Kunze, et al 2021

- RA-UKA → Lower complication rate; Longer surgical time

Negrín, et al 2020

- RA-UKA → Better component positioning; Better alignment; Better component sizing; No long-term differences

Negrín, et al 2021

- RA-UKA → Better radiological parameters; Better clinical outcomes and less short-term pain

Discussion

Chin, et al 2020

- RA-UKA → Better component alignment; Longer surgical time; Better short-term clinical outcomes; Improved ROM and lower revision rate (not statistically significant)

Wu, et al 2021

- RA-UKA → Better component positioning and alignment; Longer operative time; Increased intraoperative bleeding

Gaudiani, et al 2022

- RA-UKA → Better outcomes in short and medium term

Conclusion

Robotic-assisted unicompartmental knee arthroplasty proved to be superior to conventional technique with:

1. Decreased operative time
2. Less intraoperative bleeding
3. Shorter time to start walking
4. Earlier discharge

These findings suggest that RA-UKA is a more cost-effective surgery than conventional UKA.

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