

Perioperative Angiotensin Receptor Blocker (ARB) Use Shows Decreased Rates of Manipulation Under Anesthesia (MUA) and Revisions After Total Knee Arthroplasty (TKA)



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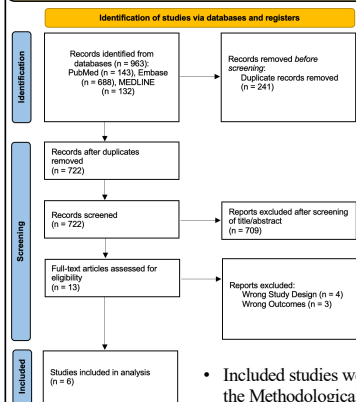
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Background

- The rate of osteoarthritis (OA) is increasing each year, and the knee is among the most affected joints [1].
- The treatment of knee OA refractory to conservative treatment is a total knee arthroplasty (TKA).
- Rates of arthrofibrosis after primary TKA has a prevalence of 1.3-5.3%, with revision rates between 4-18% [2].
- Angiotensin receptor blockers (ARBs) have been shown to decrease fibrosis in various body tissues [3][4].
- The aim of this study was to systematically review the literature to investigate the role of ARB usage perioperatively in reducing manipulation after anesthesia (MUA) and revision after TKA.

Methods



- A systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.
- Inclusion criteria consisted of Level I to IV comparative studies that reported on outcomes, rates of MUA, or rates of revision TKA following TKA with and without perioperative ARB use and a minimum follow-up of 90 days.
- Included studies were evaluated for quality using the Methodological Index for Non-Randomized Studies (MINORS) criteria.

Figure 1. PRISMA Flowchart

Tables/Figures

Author (Year)	LOE	ARB Sample Size, n	Control Sample Size, n	ARB Sex (Male/Female)	Control Sex (Male/Female)	ARB Mean Age ± SD (range)	Control Mean Age ± SD (range)	ARB BMI ± SD (range)	Control BMI ± SD (range)	Minimum Follow Up Time
Albright (2024)	III	82,065	839,013	29,872/52,193	332,057/506,956	70 (64 to 74) ^a	67 (59 to 72) ^a	NR	NR	2 years
Rana (2024)	III	25,786	25,786	9,594/16,192	9,594/16,192	68.5 ± 8.9	68.5 ± 8.9	33.63 ± 6.2	32.9 ± 6.2	1 year
Arraut (2023)	III	79	79	19/60	19/60	66.7 ± 8.68	66.43 ± 8.30	34.66 ± 6.07	34.60 ± 6.09	90 days
Premkumar (2022)	III	7,286	47,931	NR	NR	NR	NR	NR	NR	90 days
Langston (2020)	III	19	87	1/18	23/64	66.4 ± 7.8	61.5 ± 10.0	31.1 ± 6.5	30.4 ± 6.7	180 days
Hernandez (2020)	III	14,639	84,190	4,366/10,273	31,938/52,252	NR	NR	NR	NR	1 year

Table 1. Patient Demographics. LOE: level of evidence, ARB: angiotensin receptor blocker, BMI: body mass index, SD: standard deviation

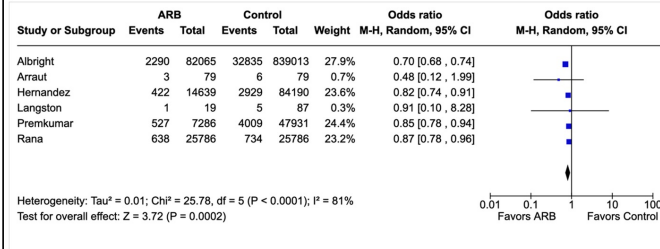


Figure 2. Forest Plot Demonstrating Odds Ratio of MUA. ARB: angiotensin receptor blocker, CI: confidence interval, M-H: Mantel-Haenszel.

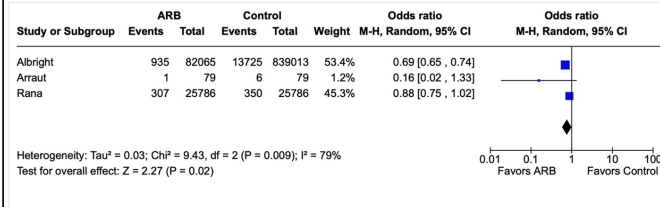


Figure 3. Forest Plot Demonstrating Odds Ratio of Revision TKA. ARB: angiotensin receptor blocker, CI: confidence interval, M-H: Mantel-Haenszel.

Results

- Six studies consisting of 997,086 control patients and 129,874 patients who received perioperative ARB were included.
- The mean patient age of the control patients was 68.5 ± 8.9 and the mean patient age of the ARB patients was 68.5 ± 8.9.
- 58% of the control patients were female while 64% of the ARB patients were female.
- The rate of MUA across control patients ranged from 2.8% - 7.6%. The rate of MUA across patients taking an ARB ranged from 2.5% - 6%.
- The rate of revision TKA across control patients ranged from 1.4% - 7.6% while the rate for patients taking an ARB ranged from 1.14% - 1.3%.

Conclusion

- Perioperative ARB use showed decreased rates of MUA and revisions after TKA.
- There is currently insufficient evidence to recommend prescribing this medication for the sole purpose of preventing arthrofibrosis.
- Further investigation is needed through high level studies to elucidate the risks and benefits of using ARBs in patients undergoing TKA.

References

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