Montelukast Therapy is Associated with Reduced Rates of Manipulation Under Anesthesia Following TKA

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INTRODUCTION:
Arthrofibrosis remains one of the most common complications following total knee arthroplasty (TKA). No routine chemical prophylaxis is given to avoid arthrofibrosis; recommended treatment for symptomatic decreased range of motion is typically manipulation under anesthesia (MUA) within 3 months of index surgery. Montelukast, a well-tolerated leukotriene antagonist, is used to treat asthma and other bronchoinflammatory conditions. Montelukast has been demonstrated in a rat model to decrease rates of post-traumatic arthrofibrosis and in the plastic surgery literature to reduce rates of breast capsule contraction following mammary implant placement. The purpose of this study was to determine the effect of montelukast on reducing MUA rates in patients undergoing primary TKA.
METHODS:
We conducted a retrospective cohort study of patients undergoing primary TKA using the TriNetX Research Network. Montelukast use was recorded within three months of surgery. Rates of MUA using Common Procedural Terminology codes within 3 months were collected. 1:1 propensity score matching based on known arthrofibrosis risk factors and pulmonary status was used. T-tests and Kaplan-Meier Log-Rank and Hazard Ratio tests were used. An alpha value of 0.05 was used to demonstrate significance.
RESULTS:
358,901 patients undergoing primary TKA were enrolled. After matching, 15,848 patients using montelukast and 15,848 controls were included. Montelukast use was associated a decreased risk of MUA within 3 months (risk ratio 0.73, $p<0.0001$), which was recapitulated using Time to event analysis (hazard ratio 0.73, $p<0.0001$). 132 patients need to be given prophylaxis with montelukast to prevent one MUA.
DISCUSSION AND CONCLUSION:
While montelukast has been explored in rat models as a treatment for arthrofibrosis, this is the first large claims study to our knowledge that explores its efficacy in preventing clinically relevant stiffness following TKA, with potential to reduce additional operations. A prospective, randomized controlled trial should follow this study prior to adoption in clinical practice.