WHICH MEDICATIONS ARE EFFECTIVE IN REDUCING RISK OF ARTHROFIBROSIS AFTER TOTAL KNEE ARTHROPLASTY?

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INTRODUCTION: Arthrofibrosis is a common complication following total knee arthroplasty (TKA). Administration of medications that inhibit inflammation and fibrosis may reduce the risk of stiffness. The purpose of this study was to determine the isolated and combined effects of montelukast, celecoxib, meloxicam, and dexamethasone on rates of arthrofibrosis in patients after primary TKA.

METHODS: A retrospective cohort analysis of the TriNetX database (TriNetX, Cambridge, MA) was performed by querying all patients who underwent primary TKA between 2004 to 2024. The treatment cohort consisted of patients who underwent TKA and were concurrently prescribed either as monotherapy or as a combined (dual or triple therapy): montelukast (10,273), dexamethasone (93,246), and celecoxib (104,388) or meloxicam (38,859). Propensity scoring was used to match the treatment and control cohorts. Outcomes included incidence of manipulation under anesthesia (MUA) and arthroscopic lysis of adhesions (aLOA) over a one-year follow-up period.

RESULTS: The overall rate of arthrofibrosis requiring further operative intervention in patients receiving any pharmacotherapy was 3.07% (7,570 of 246,946) versus 3.30% (8,140 of 246,959) in those who did not. For monotherapy, dexamethasone administered on the day of surgery reduced rates of aLOA (OR 0.56, CI 0.40-0.80), however, rates of MUA were comparable to the control cohort (OR 0.96, CI 0.88-1.05). Patients taking celecoxib monotherapy underwent aLOA less frequently (OR 0.60, CI 0.43-0.83), but not MUAs (OR 1.07, CI 0.98-1.17). Monotherapy of either montelukast or meloxicam was not associated with fewer MUA or aLOA. Dual therapy of dexamethasone/meloxicam was associated with reduced rates of both MUA (OR 0.71, CI 0.60-0.84) and aLOA (OR 0.48, CI 0.26-0.90). However, patients taking combinations of celecoxib/montelukast, meloxicam/montelukast, and dexamethasone/montelukast experienced MUA and aLOA at similar rates to controls. Finally, triple therapy of dexamethasone/meloxicam/montelukast was associated with fewer MUA (OR 0.78, CI 0.67-0.91) and aLOA (OR 0.45, CI 0.25-0.79) events postoperatively. However, patients on triple therapy of dexamethasone/celecoxib/montelukast did not experience reduced rates of MUA or aLOA.

DISCUSSION AND CONCLUSION: We report a significantly lower incidence of MUA and aLOA in patients administered both dexamethasone and meloxicam with or without the addition of montelukast. When celecoxib was substituted for meloxicam in the triple therapy regimen, there was no difference in rates of MUA or aLOA. Dual therapy of dexamethasone/celecoxib and monotherapy with either dexamethasone or celecoxib demonstrated reduced rates of aLOA, but not MUA after TKA.