

Effect of Irrigant Solutions or Intrawound Antibiotic Powder on 90-Day Infection after Revision Total Knee Arthroplasty in a Statewide Registry

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INTRODUCTION: Past studies have shown mixed results for irrigation agents as a means of infection prevention in primary total knee arthroplasty (TKA). An analysis was performed of the association, in revision TKA, between irrigation, antibiotics and post-operative infection.

METHODS: TKA revisions were identified in a statewide registry dataset. The revisions were separated into aseptic, and those with a previous infection. Irrigation type was grouped into: saline only, povidone-iodine (PI), chlorhexidine gluconate (CHG), antibiotic, multiple and other. Using logistic regression, patient factors, group comparisons, and association with 90-day infection were calculated.

RESULTS: The registry contained 12,043 revision knee cases. There were 9,810 that were aseptic and 2,233 cases that had an infection history. The infection group had a 90-day infection rate of 4.30% (95% CI: 3.46,5.14) while the aseptic group had a 90-day infection rate of 1.48% (1.24,1.72) (p-value <.0001). The infection group was more likely to be male (58.9%, $p < 0.0001$), but a had similar age and BMI. There was no association between the choice of irrigation solution and infection for the infected group ($p = 0.1133$). In the aseptic group, normal saline, CHG, and PI had a lower risk than antibiotic or multiple solutions ($p = 0.0071$). Antibiotic powder was associated with a higher risk of infection in infection cases ($p = 0.0041$) but not in aseptic cases ($p = 0.2743$). Patient factors associated with a higher risk of infection after aseptic revision were smoking, male sex, single, pre-op opioid use, and longer OR time.

DISCUSSION AND CONCLUSION: The addition of antibiotic powder to the wound increased the risk 90-day infection after revision TKA in patients with a history of infection. The addition of antibiotics or antiseptics to irrigation solutions was not superior to normal saline for patient with or without a history of infection.