Aspirin Allergy in Arthroplasty: Avoiding Aspirin 'To Be Safe' May Not Be Safer

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INTRODUCTION:
Venous thromboembolism (VTE) remains a serious complication following total joint arthroplasty (TJA), with reported rates of deep vein thrombosis and pulmonary embolism of 1.2% and 0.6%, respectively. The American Academy of Orthopaedic Surgeons (AAOS) currently recommends twice-daily aspirin for VTE prophylaxis in patients at low and medium baseline risk. However, patients with self-reported allergies to aspirin or nonsteroidal anti-inflammatory drugs (NSAIDs) are often excluded from aspirin-based regimens due to concerns about hypersensitivity. Prior studies suggest that avoiding aspirin in these patients may lead to increased risk of VTE. This retrospective study aimed to: (1) determine the prevalence of self-reported aspirin or NSAID allergy and assess aspirin use in patients with and without reported allergy; (2) evaluate the incidence of hypersensitivity reactions in patients who received aspirin; and (3) compare VTE rates based on allergy status and prophylaxis regimen.

METHODS:
We retrospectively reviewed all primary and revision total hip and knee arthroplasties performed between 2016 and 2024 at a single high-volume academic center. Patients were stratified by documented allergy to aspirin or a cross-reactant (NSAIDs or salicylates). Primary outcomes included allergy prevalence and aspirin use among patients with reported allergy. Secondary outcomes were symptomatic VTE within 90 days and hypersensitivity reactions within one week of surgery. A multivariable linear regression model adjusted for age, sex, body-mass-index, procedure type, comorbidities, and preoperative VTE risk was used to assess the association between allergy status, anticoagulation, and VTE risk profile ($p<0.05$).

RESULTS:
91,773 patients underwent TJA during the study period; 2,302 (2.5%) had a documented allergy to aspirin, NSAIDs, or salicylates. Among these, 807 (35%) received aspirin chemoprophylaxis, significantly fewer than the 70,268 (78.5%) who received aspirin in the non-allergy cohort ($p<0.001$). No IgE-mediated or severe hypersensitivity reactions occurred in any patient with a documented aspirin allergy. Among non-allergic patients, 24 reactions were recorded, none of which were attributed to aspirin.
Among aspirin-allergy patients, 970 (42.1%) were classified as high risk for VTE. Of those receiving non-aspirin chemoprophylaxis, 61.7% were high risk. Low-risk patients with an aspirin allergy were significantly more likely to receive non-aspirin prophylaxis compared to low-risk patients without an allergy (43.9% vs. 11.5%, $p < 0.001$). Aspirin-allergy patients with non-aspirin chemoprophylaxis experienced a higher rate of VTE than those who received aspirin only (2.34% vs. 0.55%), corresponding to a 3-fold increased risk in the adjusted model (OR 3.38, 95% CI 1.19–9.59, $p=0.022$). Among non-allergic patients, those who received non-aspirin chemoprophylaxis had the highest VTE rate overall (6.43% vs. 0.68% in non-allergy aspirin group, $p<0.001$), with a 6-fold increased risk in the model compared to aspirin-treated allergy patients (OR 6.43, 95% CI 2.12–15.77, $p<0.001$).

DISCUSSION AND CONCLUSION:
This cohort of over 91,000 patients represents the largest study to date comparing aspirin allergy status in TJA patients. The prevalence of self-reported aspirin or cross-reactant allergy was 2.5%. Patients labeled as aspirin-allergic, who did not receive aspirin, experienced significantly higher VTE rates than those who did. There were no documented hypersensitivity reactions among those who received aspirin. Notably, non-allergic patients who received non-aspirin chemoprophylaxis had the highest VTE risk overall, even when controlling for VTE risk. These findings suggest that avoidance of aspirin in patients with reported allergy may unnecessarily increase VTE risk. These data suggests most patients with aspirin or NSAID allergies may safely receive aspirin chemoprophylaxis, potentially reducing the risk of postoperative VTE.