Clinical Pearl: Aspirin is Effective Chemoprophylaxis Against Clinically Important Venous Thromboembolism Following Total Joint Arthroplasty

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Target Audience:

The information in this pearl was largely taken from:


The incidence of fatal pulmonary embolism (PE) following total joint arthroplasty (TJA) without routine prophylactic anticoagulation in patients without a history of previous venous thromboembolism (VTE) or obesity may be as high as 0.4% [1]. That study reviewed patients from 1980 to 1994 so improvements in perioperative protocols such as regional anesthesia and early mobilization have decreased the incidence of fatal PE. Nevertheless, there is very little controversy among orthopedic surgeons, who almost uniformly agree that patients undergoing TJA require some form of chemoprophylaxis after surgery to prevent VTE and death from PE. The controversy that does exist concerns the question of what is the safest, most effective drug to use. The more potent blood thinners carry a higher risk of wound healing and infection risk [2-6]. The orthopedic surgeon’s enthusiasm to reduce VTE and fatal PE is tempered by the reality and cost (which can be measured in financial terms and also human suffering) of prosthetic joint infections.

In 2012, the American College of Chest Physicians (ACCP) released the “Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines” [7]. The ACCP Clinical Practice Guidelines (CPGs) recommended use of aspirin, as one of the pharmacologic agents, for anti-thrombotic prophylaxis for total hip arthroplasty (THA), total knee
arthroplasty (TKA), and hip fracture surgery (HFS). ACCP’s inclusion of aspirin as a recommendation for anti-thrombotic prophylaxis after THA, TKA, and HFS, brought the ACCP clinical practice guideline into alignment with the AAOS clinical practice guideline [8]. This alignment between AAOS and ACCP resulted in aspirin being included as an acceptable prophylactic option under the Surgical Care Improvement Project (SCIP) Venous Thromboembolism (VTE) quality measure beginning January 1, 2014.

The Pulmonary Embolism Prevention (PEP) trial compared aspirin to placebo for VTE prophylaxis after HFS (13,356 subjects), THA (2,648 subjects), and TKA (1,440 subjects) [9]. This is the largest VTE prophylaxis randomized clinical trial in orthopaedic surgery with over 17,000 subjects. The Pulmonary Embolism Prevention (PEP) trial demonstrated a clear reduction in the incidence of fatal and symptomatic pulmonary embolism and symptomatic deep venous thrombosis in patients with hip fracture and patients undergoing elective total joint arthroplasty who received low-dose aspirin postoperatively. The Cochrane Review for HFS VTE prophylaxis noted “the recent PEP trial ... can be a good example to follow.” [10]

For patients undergoing THA, TKA, or HFS without additional VTE risk factors, aspirin is the most cost-effective VTE prophylaxis option [11]. Potent anticoagulants are associated with a higher all-cause mortality rate after THA and TKA [12]. The most important clinical question facing patients and orthopaedic surgeons is what VTE risk factors increase the risk of a VTE event to a level that the risks of surgical site bleeding and death are outweighed? Several protocols have been described for risk stratifying major orthopaedic surgery patients [13,14].

A recent study demonstrates that low-dose aspirin (81mg BID) is not inferior to high-dose aspirin (325 mg BID) for venous thromboembolism prophylaxis following total joint arthroplasty. [15] The majority of orthopedic surgeons in the AAHKS (members must perform at least 50 total joint arthroplasties per year) now use aspirin as their primary form of VTE prophylaxis.