

New Oral Agents for Preventing Blood Clots After Hip and Knee Replacement

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New Oral Agents for Preventing Blood Clots After Hip and Knee Replacement



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Total hip arthroplasty (THA) and total knee arthroplasty (TKA) are among the most common orthopaedic procedures performed in the US, with almost 300,000 THA and over half a million TKA surgeries performed each year. This number is predicted to rise to over 4 million surgeries by 2030.

THA and TKA procedures improve mobility and quality of life, but patients undergoing these surgeries are at a significantly increased risk of developing post-operative venous thromboembolism (VTE). VTE comprises both deep vein thrombosis (DVT) and pulmonary embolism (PE). In the absence of methods to prevent the formation of clots, clots in the thigh occur in approximately 5–36% of THA and TKA patients. PE occurs in 50% of patients with thigh clots, and proves fatal in approximately 15% of these patients.

VTE is also associated with significant long-term complications such as post-thrombotic syndrome, chronic thromboembolic pulmonary hypertension, and an increased risk of recurrent events. Approximately 10% of patients who experience

VTE following THA or TKA are re-admitted to the hospital within 3 months following discharge.

Three new oral anticoagulants have undergone Phase III clinical studies in THA and TKA patients in the US. Two of these agents, rivaroxaban and apixaban, are Factor Xa inhibitors, while dabigatran is a direct thrombin inhibitor (DTI). The desirable characteristics of these new anticoagulants include fixed dosing due to their predictable biologic behavior, no requirement for blood monitoring, few drug–drug and drug–food interactions, and once- or twice-daily oral administration.

Over the last 20 years the incidence of VTE in patients who undergo THA or TKA has decreased markedly. This decline is explained, in part, by the use of new prophylactic agents such as injectable low molecular weight heparins (LMWH). However, other improvements in patient care (e.g. shorter surgery times, quicker and more-intense rehabilitation programs, and multimodal approaches to pain management) may also have contributed to better patient outcomes. Despite this improvement, prophylaxis remains an issue for patients. It is encouraging that new oral agents have demonstrated superior outcomes compared to LMWH while exhibiting safety profiles similar to established agents, and the simplified management associated with these new agents should encourage compliance with published guidelines for VTE prophylaxis.

With the number of THA and TKA surgeries increasing, safe and effective prophylaxis is essential to mitigate the morbidity and mortality associated with VTE. However, agents such as LMWHs and warfarin are inconvenient in an outpatient

setting, as they require an injection and/or routine blood drawing to monitor coagulation levels. The new oral anticoagulants have the potential to reduce the incidence of VTE after THA and TKA. Additionally, compared with established agents, the new oral anticoagulants may produce significant cost savings through reduced rates of VTE, improved safety, and reduced administration and monitoring costs.

Richard J. Friedman MD, FRCSC is a member of the Medical and Scientific Advisory Board of the National Blood Clot Alliance.

