Ninety-day mortality after elective total hip replacement

1549 PATIENTS USING ASPIRIN AS A THROMBOPROPHYLACTIC AGENT

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Thromboprophylaxis after elective orthopaedic surgery remains controversial. Recent guidelines from the National Institute for Clinical Excellence (NICE) have suggested that low molecular weight heparin should be given to all patients undergoing total hip replacement. The British Orthopaedic Association is currently debating this guideline with NICE, as it is not clear whether published evidence supports this view. We present the early mortality in our unit after total hip replacement using aspirin as chemical thromboprophylaxis. The 30-day and 90-day mortality after primary total hip arthroplasty was zero. We compare this with that reported previously from our unit without using chemical thromboprophylaxis. With the introduction of routine aspirin thromboprophylaxis, deaths from cardiovascular causes have dropped from 0.75% to zero.

These results demonstrate that there is a strong argument for the routine administration of aspirin after elective total hip replacement.

The role of thromboprophylaxis, both mechanical and chemical, in reducing the mortality from thromboembolism after elective orthopaedic surgery remains controversial. Mechanical thromboprophylaxis prevents venous stagnation in the lower limb by promoting venous outflow, whereas chemical thromboprophylaxis attenuates coagulation with anticoagulant agents such as aspirin, heparin and warfarin.

Although thromboprophylaxis is usually given to prevent post-operative mortality, there is an argument that chemical thromboprophylaxis should be given to prevent morbidity from deep-vein thrombosis (DVT), including the post-phlebitic limb. There is an overwhelming body of evidence demonstrating that such management reduces deep venous thrombosis after joint replacement.1,2

It is unclear whether or not this is of clinical significance. Previous investigation has shown that the majority of patients who experienced a major proximal DVT after hip replacement had abnormal deep venous function on foot volumetry.4 However, two studies published in this Journal have shown no increased incidence of venous ulceration after lower limb arthroplasty, no correlation between proven DVT after surgery and the later development of leg ulcers, and that DVT after arthroplasty did not increase morbidity.5,6

There is no convincing evidence in the literature demonstrating that routine chemical thromboprophylaxis reduces death rates from pulmonary embolism.7 Chemical thromboprophylactic agents are not benign and may themselves increase the rate of morbidity and mortality. A study from France8 found an incidence of 1% of significant post-operative haemorrhage after total joint replacement when using injectable chemical thromboprophylactic agents. It is unclear from the literature which thromboprophylactic agent, if any, should be used. A meta-analysis of the efficacy and safety of low molecular weight heparin, warfarin, aspirin, low-dose heparin and pneumatic compression found that warfarin was the best prophylactic agent.9 However, the overall risk of death after elective total hip replacement (THR) was found to be 0.20% with low molecular weight heparin, 0.29% with aspirin and 0.45% with warfarin.9 Another meta-analysis of the effectiveness of heparin, warfarin, aspirin and dextran found no difference in the rates of fatal pulmonary embolus between the various prophylactic agents.10 However, compared with heparin, aspirin caused a significant reduction in non-pulmonary embolism deaths, thereby reducing the overall death rates after THR. A recent study of over 1700 THRs showed that the majority of early deaths were due to cardiovascular causes other than pulmonary embolism.
The death rate from the latter was extremely low, despite the fact that routine chemical thromboprophylaxis was not used.\textsuperscript{11}

Because there is no consensus on which prophylactic agent to use, the choice has to be made by the surgeon, weighing up the risk of thromboembolism against the risk of bleeding complications due to the prophylaxis. Recent NICE guidelines have recommended that heparin should be routinely administered to patients undergoing THR to prevent thromboembolism, although it is unclear from the evidence whether heparin is the most effective drug. These guidelines continue to be debated by the British Orthopaedic Association.\textsuperscript{12} Research has suggested that aspirin, which is a low-cost prophylactic agent, is effective in preventing DVT and pulmonary embolism after orthopaedic surgery,\textsuperscript{13} when given in addition to any existing medication the patient is taking. The aim of this study was to determine the 90-day mortality rate after THR using aspirin as a prophylactic agent.

Patients and Methods
Between 2003 and 2006, 2286 patients at the Avon Orthopaedic Centre underwent primary THR.

Many but not all, of the surgeons in our unit, have a protocol for chemical thromboprophylaxis consisting of aspirin 75 mg daily for six weeks as well as anti-thromboembolic stockings in all patients. We reviewed the 1549 patients operated on by this group of surgeons during the period of study. Patients who died within 90 days of surgery had their death certificates examined. With regard to death we obtained a follow-up of 100% at 90 days.

Results
There were no deaths within 90 days of surgery.

Discussion
The mortality rate in our investigation compares favourably with that of a previous study with a 30-day mortality rate of 0.29%,\textsuperscript{14} and one from our unit with a rate of mortality at 90 days of 0.98%, using no chemical thromboprophylaxis.\textsuperscript{11}

Compared with the study from our unit, where no routine chemical thromboprophylaxis was used, deaths from pulmonary embolism have fallen from two of 1727 patients (0.12%) to zero, and deaths from all cardiovascular causes have dropped from 13 of 1727 patients (0.75%) to zero.

We concede that there are pitfalls when comparing a current study with historical data, particularly with confounding factors such as advances in anaesthesia, advances in surgery and changes in patient demographics. However, the results are encouraging, and data stratification would not alter this.

It is unrealistic to expect to eradicate post-operative mortality, particularly in an elderly population. With a larger population sample, more deaths would occur. Deaths from non-vascular causes, such as cancer and pneumonia, are unlikely to be prevented by chemical thromboprophylaxis with aspirin. That no such deaths occurred in this study group probably reflects a ‘well patient’ effect. Previous studies have shown that post-operative mortality in patients who have undergone joint replacement is lower than in the age-matched normal population. The daily mortality rate after THR declines from a peak at the first day after operation to a baseline at about 70 days later. At approximately 2.5 days the daily rates of mortality drop below those of an age- and gender-matched normal population.\textsuperscript{13,16}

Although the NICE guidelines suggest the use of heparin thromboprophylaxis, this study found that routine aspirin administration was beneficial in protecting against early death after THR.

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References