Joint replacement surgery increases risk of blood clot formation in certain patients

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When tennis star Serena Williams underwent emergency treatment for a pulmonary embolism earlier this year, the world's attention was drawn to this often fatal medical condition which, although surprisingly not uncommon, is unfamiliar to most men and women. A common risk factor associated with clot development is surgery; particularly hip and knee replacement surgery.

Pulmonary emboli, or blood clots in the lungs, occur when a clot that forms within veins elsewhere in the body – often in the lower legs or other limbs – breaks free and travels to the lungs, where it can cause serious complications. Pulmonary emboli can occur in patients of any age and common factors associated with an increased risk of clot development include:

- oral contraceptive use;
- cardiovascular disease;
- prior clot formation;

- clotting disorders;
- family history of clots; or
- advanced age.

A new study focusing on the occurrence of clots in knee replacement patients and published in a recent issue of the *Journal of Bone and Joint Surgery* (JBJS) indicates that despite treatment with blood thinners prior

to and immediately following joint replacement surgery, the risk of clot formation is still relatively high in certain patients.

"The rate of knee replacement has increased substantially worldwide, and continued increases are anticipated in the future," said study author Alma Pedersen, MD, PhD. "The formation of clots, including pulmonary emboli, is a serious complication in patients undergoing knee arthroplasty. Prophylactic measures, such as the use of blood thinners around the time of surgery, are used to reduce the occurrence of clots, but their effectiveness in routine clinical practice following surgery is more uncertain."

Study Details and Findings

The authors evaluated 37,223 knee replacement patients who had surgery between 1997 and 2007, looking for evidence of post-surgical embolism in the 90-day period following surgery.

The authors found 441 patients (1.2 percent) were hospitalized for blood clots during the 90-day period following knee surgery. An in-depth evaluation of these patient records revealed the following risk factors associated with clot development:

- advanced age (older than 80 years of age);
- history of cardiovascular disease;
- history of previous clot; or

- increased number of accompanying medical conditions.

The study also revealed the number of patients admitted to hospitals with clots following knee surgery has increased since 1997, which Dr. Pedersen noted is most likely due to advances in diagnosis which have

enabled physicians to identify clots before they cause serious problems. The study also notes that individuals who have a knee replacement surgery due to rheumatoid arthritis have a lower risk of clots than those with other conditions. However, in all patients, the risk can be diminished slightly by replacing only one knee at a time, rather than both.

Although knee surgery is still a generally safe procedure, which enables thousands of men and women each year to regain mobility lost to injury or illness, patients should be aware of the risk of post-surgical clotting and talk with their physician about the possible use of blood thinners and follow-up evaluations that may help to identify clots which may be treated before they cause problems. Although blood thinners are typically prescribed only during hospitalization, the study suggested that physicians consider extending the duration of blood thinner therapy into the weeks following surgery.

"Despite the use of blood thinners, patients undergoing knee arthroplasty continue to remain susceptible for clot formation for several weeks following surgery," Dr. Pedersen said. "Future studies should focus on the improvement of prophylaxis following hospital discharge, particularly among elderly patients and those with a history of cardiovascular diseases or previous clot formation."

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