

DEEP VEIN THROMBOSIS

One of the major risks facing patients who undergo surgery in the lower extremities is a complication called deep vein thrombosis (DVT). DVT is one of the most common complications of total hip (THA) and total knee arthroplasty (TKA). DVT refers to the formation of a thrombus (blood clot) within a deep vein, commonly in the thigh or calf.

Contributing factors

Although a DVT can develop after any major surgery, people who have surgery on the lower extremities are especially vulnerable. Three factors contribute to formation of clots in veins:

- 1. Stasis** or stagnant blood flow through veins. This increases the contact time between blood and vein wall irregularities. It also prevents naturally occurring anticoagulants from mixing in the blood. Prolonged bed rest or immobility promotes stasis.
- 2. Coagulation** is encouraged by the presence of tissue debris, collagen or fats in the veins. Orthopaedic surgery often releases these materials into the blood system.
- 3. Damage** to the vein walls. This can occur during surgery as the physician retracts soft tissues as part of the procedure. This can also break intercellular bridges and release substances that promote blood clotting.

Other factors that may contribute to the formation of thrombi in the veins include:

- Age
- Previous history of DVT or PE
- Metastatic malignancy
- Vein disease (such as varicose veins)
- Smoking
- Estrogen usage or current pregnancy
- Obesity
- Genetic factors

Consequences

The formation of blood clots can have two serious consequences:

- 1.** If the thrombus partially or completely blocks the flow of blood through the vein, blood begins to pool and build-up below the site. Chronic swelling and pain may develop. The valves in the blood vessels may be damaged, leading to venous hypertension.
- 2.** If the thrombus breaks free and travels through the veins it can reach the lungs, where it is called a pulmonary embolism (PE). A pulmonary embolism is a potentially fatal condition that can kill within hours.

Prevention

Both DVT and PE may be asymptomatic and difficult to detect. Thus, physicians focus on preventing their development by using mechanical or drug therapies.

Prevention is a three-pronged approach designed to address the issues of stasis and coagulation. Usually, several therapies are used in combination. For example, a patient may be fitted with graded compression elastic stockings and an external compression device upon admittance to the hospital; movement and rehabilitation begin the first day after surgery and continue for several months; anticoagulant medication therapy may begin the night before surgery and continue after the patient is discharged.

Early Movement and Rehabilitation

Early movement after arthroplasty on the lower extremity is imperative as well as beneficial. Physical therapy, including joint range of motion, gait training and isotonic/isometric exercises, usually begins on the first day after the operation.

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