



UNDERSTANDING THROMBOEMBOLIC (BLOOD CLOT) COMPLICATIONS THAT CAN FOLLOW ARTHROSCOPIC OR RELATED KNEE SURGERY, AND WHAT CAN BE DONE TO HELP PREVENT THEM

Blood clots in the veins of the lower extremities can and do periodically occur following lower extremity injury and/or surgery. Just about anything that slows someone down significantly and restricts both body movement and use of the lower extremities can increase the likelihood of developing a blood clot in the deep leg veins. A few of these clots break free and migrate up to the lung, at which point the condition becomes life-threatening and is referred to as a "pulmonary embolism". On occasion, even just prolonged sitting during a long distance airplane flight is enough to cause a blood clot to form in some people's legs. One of the most common medical emergencies at international airports today is a blood clot in the lung of a trans-oceanic flight passenger. Even though injuries as minor as an ankle sprain have rarely been known to cause death through the formation of a lower extremity blood clot that migrated to the lung, pulmonary embolism is more frequently encountered following more severe injuries and/or surgical procedures.

Every patient who undergoes lower extremity surgery is at some degree of risk for thromboembolic (blood clot) complications. The more involved the surgery, and the older and/or more overweight the patient, the more likely that this complication will be encountered. It has been well established that hip fracture patients and patients who have undergone either total hip or knee replacement surgery are at a high enough risk for thromboembolic complications that prophylactic (preventive) anti-coagulation (blood thinning) treatment is routinely advisable after surgery, despite the risks associated with anti-coagulation. Because the administration of blood-thinning medication shortly following surgery can cause adverse body reactions, excessive bleeding and bleeding-related complications, which can occasionally be extremely serious in and of themselves, prophylactic anti-coagulation has traditionally been employed only after high-risk procedures such as those mentioned above, particularly in elderly patients.

In recent years, however, clinical research studies have determined that even following less involved procedures such as outpatient knee arthroscopy, the incidence of one or more deep vein clots forming in patients' legs is anywhere from 3 to 18% within the first few weeks following surgery. It is also important for patients to know that blood clots do not always manifest themselves by causing symptoms. Approximately 40% of individuals with deep vein blood clots detected on tests showed no outward signs or symptoms that any clots were present. Of even greater concern is that one clinical study has indicated that approximately 9% of knee arthroscopy patients were determined to have evidence of at least one blood clot having migrated to their lung within five weeks following arthroscopic surgery, yet almost all of these patients demonstrated no signs or symptoms. This does not mean that these patients were not "at risk" for lung damage or even death, however.

In the United States, it is not yet the accepted "standard of care" to routinely administer blood-thinning anti-coagulants to all knee arthroscopy patients after surgery. Unless an allergy to aspirin exists, most patients today are just encouraged to take an aspirin a day for a mild blood-thinning effect and/or wear elastic stockings for a few weeks after surgery. Aspirin treatment is inexpensive and rarely associated with any excessive post-operative bleeding complications or serious adverse reactions. However, given the apparent frequency with which blood clots can and do form in the legs of post-arthroscopy patients, with some of those blood clots migrating to the lung, a few surgeons are now recommending routine post-arthroscopy, prophylactic anti-coagulation. We believe that it is important for our patients to understand: A) what can be done to reduce the risk of thromboembolic post-surgical complications through the use of anti-coagulant medication; and B) the risks of anti-coagulation treatment.

A more effective (as compared with aspirin) blood-thinning treatment that only infrequently causes excessive post-operative bleeding complications is the daily administration (usually for one to two weeks) of a prescription blood-thinning medication (referred to as a "low molecular weight heparin") by way of self-administered, subcutaneous (beneath the skin) injection. Prophylaxis with such medication is relatively but not completely safe, and has been shown to significantly reduce (usually by at least one half) the risk of post operative blood clots forming in the lower extremities. The risks posed by post-operative anti-coagulation treatment include infrequent excess bleeding at the operative site, bleeding at other sites such as a G.I. ulcer or epidural/spinal anesthetic puncture sites (which can cause permanent lower body paralysis) and adverse medication reactions including a dangerously low blood platelet count. Spontaneous epidural bleeding has even been known to occur (rarely), with dire consequences. The use of anti-coagulant medication will also temporarily disallow the use of many common anti-inflammatory medications (Advil Ibuprofen, Aleve, etc.) due to their platelet inhibiting effects.

Patients who meet the following criteria should generally not receive anti-coagulation treatment:

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| *Any bleeding disorder | *History of ulcerative G.I. disease | *Prosthetic heart valve in place | *History of reduced platelet count in response to heparin |
| *Allergy to pork or heparin | *Taking platelet inhibitor medications | *Abnormally low platelet count | |
| *History of hemorrhagic stroke | *Proliferative retinopathy | | |

While it is often difficult to say which is the greater overall risk (post-operative blood clots in the leg veins versus excessive bleeding and/or other potential complications due to the administration of prophylactic blood thinners) in any given patient, in the case of knee arthroscopy we believe that the greatest life-threatening risk is that associated with a blood clot that migrates to your lung. At the present time we tend to favor the use of injectable blood thinners following arthroscopic knee surgery, unless there is a specific medical reason to avoid it. If you do not meet any of the above criteria for avoiding anti-coagulation treatment and wish to take the precaution of giving yourself blood-thinning medication injections after surgery, we will be glad to either supply you with the medication and teach you how to administer it or provide you with a prescription for the medication and a teaching kit. To help you decide, it may be useful to know that healthy patients under age 35, with no history of blood clotting problems and who do not smoke or take birth control pills, who are not overweight and who are not undergoing lengthy surgical procedures such as ACL reconstruction, ligament repairs, cartilage grafting or synovectomy, are generally considered to be a "low" risk category for blood clot complications. Most other patients can be considered in a "medium" risk category, unless they have one or more specific positive risk factors for blood clot formation such as : age over 50, a prior personal or family history for blood clot problems, use of birth control pills, smoking, obesity, and estrogen replacement therapy, among others. Such factors will usually place someone in the "high" risk category, depending upon individual circumstances. (Consultation with a hematologist is recommended for complex cases.)

Because prophylactic anti-coagulation treatment is not yet considered "standard care" following a routine surgical knee arthroscopy, (except in patients who have an established history of excessive blood clotting and related complications), your medical insurance carrier may not cover the cost, which is considerable (as high as five hundred dollars). Your pharmacy plan may or may not cover the dispensation of such an expensive medication for prophylactic use following routine knee arthroscopy. If insurance coverage is not available, you must decide for yourself whether or not you believe it will be worth the personal expense of undergoing prophylactic treatment following knee arthroscopy, when you are not at the same degree of risk for serious blood clot related problems as are hip fracture and total joint replacement patients. We all take risks on a regular basis in our daily lives, and are sometimes called upon to make considered decisions concerning those risks. This is one of those times. The purpose of this narrative is to educate you about the risks that exist both with and without anti-coagulation treatment and give you the opportunity to decide for yourself what action you wish to take concerning those risks. We do not believe that it is appropriate for you to be kept in the dark about these risks and have us decide what chances you will and will not take with your health and well being. Our current "bottom line" opinion is that you will be at lower risk for life-threatening complications with the injectable blood thinner treatment than without it, which is why we recommend that you consider it.

Thank you for your attention and in any case, we hope that your surgery and post-operative course go smoothly and uneventfully.

I have read the above, and have received and read the UOC patient information sheet entitled "Deep Vein Thrombosis."

Signature: _____ Date: _____