

Doctor, should I take anticoagulants to prevent blood clots after arthroscopic knee surgery or if I have a cast on my leg?

Most people do not need to take anticoagulants after arthroscopic knee surgery or if they have a below-the-knee cast because the risk of developing a blood clot is low.

However, if you have conditions that increase your risk, such as a personal or family history of deep vein thrombosis (DVT) or pulmonary embolism (PE), your risk may be higher and your doctor may recommend anticoagulants for you.

What's the evidence?

Understanding the problem

Surgery is a risk factor for DVT and PE. However, not all surgeries carry the same risk. The type of surgery (which body part is operated on), how long the surgery takes (duration of anesthesia), and how long someone will be off of their feet after surgery (immobility) all contribute to the risk. For example, hip and knee replacement surgeries have a high risk for DVT and PE because they involve bones that are closely linked to large blood vessels, require more than 30 minutes on the operating table, and reduce the ability to walk properly after surgery.

People who have to wear a cast on their leg may also be at increased risk for DVT and PE. They may need the cast because they had surgery on their leg or to treat a broken bone. In both of these instances, the risk for a blood clot is increased. They may also be advised not to walk on the casted leg, which gives them the added risk factor of immobility-- we depend on bending our knee as we walk to pump blood through our leg veins.

Anticoagulants reduce the risk of developing DVT or PE, but they also increase the risk of bleeding. If you have a reason to bleed, such as a new surgical incision, anticoagulants can make the bleeding worse. Doctors should only recommend anticoagulants when there is evidence to show that the risk of forming a DVT or PE when not taking anticoagulants is higher than the risk of bleeding when taking anticoagulants.

The question asked by the researchers for the study described below was "do people who have less invasive surgery, such as arthroscopic knee surgery (a small incision with no removal of bones), and those who need a below-the-knee cast (able to bend their knee) have a risk of DVT and PE that is high enough to justify taking anticoagulants?"

The study

Who? The study included 1451 people who had arthroscopic knee surgery and 1435 people who had a below-the-knee cast.

What? The study compared the risk of DVT, PE and bleeding in people who received low-dose injections of an anticoagulant with those who did not receive any anticoagulants.

Low-dose anticoagulant	vs	No anticoagulants
Injection of low-dose anticoagulant into the skin of the stomach or leg once a day for 8 days after knee arthroscopy OR for the length of time a below-the-knee cast was on leg (minimum of 1 week)		Nothing

What the researchers found

People who took anticoagulants **did not have a lower risk of DVT and PE than people who did not take** anticoagulants.

These results may not apply to people who are at a higher than average risk for clotting (e.g., history of DVT or PE, family history of DVT or PE, active cancer).

Summary of findings

Low-dose anticoagulants vs no anticoagulants in people who had arthroscopic knee surgery or a below-the-knee cast

Outcomes	Rate of DVT or PE with taking an anticoagulant	Rate of DVT or PE without taking an anticoagulant	Result at 3 months

Outcomes	Rate of DVT or PE with taking an anticoagulant	Rate of DVT or PE without taking an anticoagulant	Result at 3 months
DVT or PE in people having arthroscopic knee surgery	1 out of 100 people	1 out of 100 people	No evidence of decrease in rate of DVT or PE in people taking anticoagulants*
DVT or PE in people with a below-the-knee cast	1 out of 100 people	2 out of 100 people	No evidence of decrease in rate of DVT or PE in people taking anticoagulants*
Bleeding in people having knee arthroscopy or with a below-the-knee cast	1 out of 1000 people	1 out of 1000 people	No evidence of increase in rate of bleeding in people taking anticoagulants*

*Although the rates for the 2 groups look different, the differences were not statistically significant—this means that the difference could simply be due to chance rather than due to the different treatments.

This Evidence Summary is based on the following article:

van Adrichem RA, Nemeth B, Algra A, et al. **Thromboprophylaxis after Knee Arthroscopy and Lower-Leg Casting.** *N Engl J Med.* 2017 Feb 9;376(6):515-525. PubMed (<https://www.ncbi.nlm.nih.gov/pubmed/27959702?dopt=Abstract>)

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Glossary

anticoagulant	medications that prevent blood clots from forming or travelling (aka blood thinner)
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DVT	formation of a blood clot within a vein deep within the leg
immobility	completely bedridden or up to bathroom only or continuously sitting in a chair for greater than or equal to 3 days in a row

PE	blood clot(s) that cause obstruction of blood vessels within the lungs (pulmonary artery), after travelling from veins, most commonly within the leg or arm or pelvis
risk factor	characteristics that increase the chance that a person will develop a disease or condition or experience a bad outcome