

Doctor, I take warfarin for atrial fibrillation but I have to stop it before my upcoming surgical procedure. Do I need to inject myself with needles while I am off of warfarin?

Study highlights

People with atrial fibrillation on warfarin who did not use bridging injections before and after an invasive procedure did not have more strokes, TIAs, or blood clots in arteries compared to people who used bridging injections.

The risk of major bleeding after procedures was higher in the group of people who used bridging injections.

People with atrial fibrillation and a low to moderate risk for stroke (as determined by their doctor) who need to stop taking warfarin before a surgery or invasive procedure do not need to use injections (bridging) before and after surgery. These results do not apply to people who have mechanical heart valves or other conditions that put them at high risk for stroke.



What's the issue?

Understanding the problem

People with atrial fibrillation who are taking warfarin may need an invasive procedure or surgery. Atrial fibrillation increases the risk of blood clots forming within the heart which can then break loose and travel to the blood vessels in the brain to cause a stroke or TIA. These clots can also travel to other arteries in the body, e.g. within the leg. Warfarin reduces this risk by preventing the formation of blood clots.

Surgeries and invasive procedures create a risk for bleeding. This risk is higher when a person is taking an anticoagulant. Doctors will therefore ask patients to stop anticoagulants before these procedures to reduce the risk of bleeding during and after the procedure.

Sometimes doctors recommend replacing warfarin with injectable anticoagulants because they don't stay in the blood as long as warfarin stays in the blood. These injections are used to "bridge" the gap when the protective effect of warfarin is low before or after a procedure (as measured by a blood test called the INR). This strategy has previously been used to reduce the risk of strokes, TIAs, or blood clots in arteries around the time of procedures. However, if the level of the bridging anticoagulants in the blood is too high, bridging will also increase the risk of bleeding during and after invasive procedures.

Researchers wanted to know if people with atrial fibrillation who do not replace warfarin with bridging injections of another anticoagulant will have similar risks of forming blood clots and a lower risk of bleeding around the time of invasive procedures.



The study

Who? The study included 1884 adults (mean age 71.7 years; 73.4% were men) who had atrial fibrillation or atrial flutter. These people were taking warfarin and needed to stop it before elective surgery or an invasive procedure. They also had at least one or more medical conditions that increased their risk for stroke (heart failure, high blood pressure, age 75 years old or older, diabetes, and history of stroke or TIA). People were not included in the study if they had a mechanical valve, kidney failure, recent bleeding event, or recent strokes, TIAs, or blood clots in arteries.

What? The study compared people who received bridging injections (dalteparin) with people who received placebo injections

Bridging injections	vs	Placebo injections
<p><u>Warfarin</u> stopped 5 days before the procedure</p> <p>Dalteparin injections once a day for several days before and after the procedure</p> <p><u>Warfarin</u> restarted after the procedure and injections stopped once INR within the protective range</p>		<p><u>Warfarin</u> stopped 5 days before the procedure</p> <p><u>Placebo</u> injections for several days before and after the procedure</p> <p><u>Warfarin</u> restarted after the procedure and injections stopped once INR within the protective range</p>



Summary of findings

Bridging injections (dalteparin) vs placebo injections before and after an invasive procedure

Outcomes at 30 days	Rate of events with bridging injections	Rate of events with placebo injections	Results
<u>Stroke</u> , <u>TIA</u> or peripheral <u>artery</u> clot	1 out of 100 people	1 out of 100 people	No difference
<u>Major bleeding</u>	3 out of 100 people	1 out of 100 people	About 2 more people had a major bleed if they used bridging injections

This Evidence Summary is based on the following article:
 Douketis JD, Spyropoulos AC, Kaatz S, et al. **Perioperative Bridging Anticoagulation in Patients with Atrial Fibrillation**. *N Engl J Med*. 2015 Aug 27;373(9):823-33.
 doi: 10.1056/NEJMoa1501035. Epub 2015 Jun 22. PubMed (<https://pubmed.ncbi.nlm.nih.gov/26095867>)

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