Immediate compression could help prevent complications after deep-vein thrombosis

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Dr. Arina ten Cate-Hoek, , Maastricht, Limburg, Netherlands. Credit: Maastricht Universitair Medisch Centrum

People with deep-vein thrombosis (DVT) can substantially cut their risk of potentially debilitating complications by starting adequate compression therapy in the first twenty-four hours of DVT therapy (known as the acute phase of treatment), suggests a study published today in the journal *Blood*.

DVT occurs when a blood clot forms in a deep vein, commonly in the legs. DVT affects as many as 900,000 people in the United States, and the condition carries a high risk of recurrence, death, or chronic debilitating symptoms such as pain and swelling.

The largest study to track outcomes from compression therapy in the acute phase of DVT to date, this research examined if immediate compression therapy could prevent residual vein occlusion and post thrombotic syndrome. Residual vein occlusion—when clots persist in veins with or without symptoms—is thought to be a contributing factor in the development of post thrombotic syndrome, a collection of persistent and often debilitating symptoms that can greatly diminish a person's quality of life, including pain, swelling, and discoloration and scaling in the affected leg.

Researchers prospectively studied nearly 600 DVT patients in the Netherlands who received compression therapy that began within 24 hours of diagnosis compared to patients that started compression therapy at a later point in time. Compression therapy was randomly administered using multilayered bandaging or compression hosiery until edema were reabsorbed, at which time all patients wore fitted compression stockings. In addition to compression, patients also received anticoagulants.

Patients who received immediate compression therapy were 20 percent less likely to develop residual vein occlusion and 8 percent less likely to

suffer post thrombotic syndrome compared with those who did not receive immediate compression.

"We found little reason for those treating DVT not to use compression therapy as a prevention measure against future complications," said senior study author Arina J. ten Cate-Hoek of Maastricht University in the Netherlands.

Compression therapy was not associated with any adverse side effects. Patients with a blood clot lower in the leg appeared to benefit from compression to a greater extent than those with a blood clot higher in the leg, a result that is consistent with previous studies, according to researchers.

Patients with DVT are typically treated with clot-busting medications to dissolve the clot and blood thinners to prevent the formation of new ones.

"Although the use of compression stockings after DVT is routine across much of Europe, it is less common in the United States, where guidelines emphasize compression primarily for patients who complain of ongoing symptoms," said Dr. ten Cate-Hoek.

According to Dr. ten Cate-Hoek, compression therapy is thought to improve blood flow by reducing the diameter of veins so that blood is pushed through them more forcefully, helping to clear clot material.

"I think we can infer from our findings that this improved blood flow certainly helps prevent complications like residual vein occlusion and post thrombotic syndrome after DVT," she said. "Given these outcomes, and that compression stockings are fairly easy to self-administer, relatively inexpensive, and minimally intrusive, compression therapy offers a clear benefit for all patients with DVT."

More information: Elham E. Amin et al, Residual vein occlusion in relation to immediate compression and postthrombotic syndrome in deep vein thrombosis, *Blood* (2018). DOI: 10.1182/blood-2018-03-836783