

Temple-led research analyzes impact of case volume on outcomes for DVT treatment

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Patients who have lower extremity proximal deep vein thrombosis (LE-DVT), or a blood clot in their leg, are increasingly undergoing minimally invasive catheter-based blood clot removal - also referred to as catheter-directed thrombolysis (CDT) - rather than solely being treated with traditional blood-thinning medications (anticoagulation alone). This trend is due to recent literature showing reductions in lifestyle-limiting post-thrombotic complications of acute DVT in patients who undergo CDT compared to those that are treated with anticoagulation alone. One of those complications is post thrombotic syndrome, or PTS, a very frequent and disabling complication of DVT which is characterized by pain, swelling, itching, skin discoloration and heaviness in the legs and, in severe cases, skin ulcers.

Despite its benefits, however, nationwide data from the United States has shown CDT to be associated with increased bleeding complications. Riyaz Bashir, MD, Professor of Medicine at Temple University School of Medicine and Director of Vascular and Endovascular Medicine at Temple University Hospital, led a study aimed at determining whether those increased bleeding complications were correlated with the volume of CDT procedures performed at a particular institution.

The study, published online this week by leading cardiology journal *Circulation*, found that a higher volume of CDT cases annually was associated with lower in-hospital mortality rates and lower [intracranial hemorrhage](#) rates.

"These findings have potentially major future implications for the treatment of [deep vein thrombosis](#)," says Dr. Bashir. "For the first time we have shown a significant inverse relationship between the institutional CDT volumes and adverse outcomes like death and intracranial hemorrhage."

Dr. Bashir and his team used the Nationwide Inpatient Sample (NIS) database to identify 90,618 patients admitted to U.S. hospitals with an LE-DVT diagnosis from 2005 to 2010. They further narrowed that group down to 3,649 patients treated with CDT. The researchers then divided the hospitals into two groups: high volume centers, which performed six or more CDT procedures per year, and low volume centers, which performed less than six CDT procedures per year.

Dr. Bashir and his team found that in-hospital mortality in patients treated with CDT was significantly lower at high volume centers (0.6% vs. 1.5%) compared to low volume centers, and that intracranial hemorrhage rates were less than half at high volume centers (0.4% vs. 1.0%) as they were at low volume centers.

"This does not mean that low volume centers should not perform CDT for patients with LE-DVT," says Dr. Bashir. "It means that we should focus on standardizing CDT protocols that include careful patient selection as well as peri-procedural patient monitoring. In addition, establishment of centers of excellence in treating venous thromboembolic disease may provide the necessary framework within which bleeding risk to the patient can be minimized."

Dr. Bashir says the next step should be to focus on lowering these bleeding complication rates at low volume centers by standardizing their CDT protocols. Also, patients with leg DVT - especially young patients - should feel comfortable considering clot removal, particularly at a high volume center, as a viable option to prevent post thrombotic syndrome.

"Our overall goal is to treat these DVT patients early on and prevent post-thrombotic syndrome and its adverse consequences on the quality of life. We feel this research provides more clarity and direction in identifying the best strategies for how to achieve that goal," Dr. Bashir adds.

Provided by Temple University

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