

Arm is safer access point than groin for catheter-based heart procedures

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Patients with acute coronary syndrome undergoing coronary angiogram, a procedure used to assess blockages in the heart's arteries, had a significantly lower risk of major bleeding and death if their interventional cardiologist accessed the heart through an artery in the arm rather than the groin, according to research presented at the American College of Cardiology's 64th Annual Scientific Session. Study authors said the results should prompt a re-evaluation of clinical guidelines and that the arm, currently used in a minority of cases in the United States, should be the preferred approach for most catheter-based heart procedures.

The study did not show a significant reduction in one of its two primary endpoints, a composite rate of death, [heart attack](#) or stroke 30 days after a catheterization procedure. However, the second primary endpoint, which included those events plus [major bleeding](#), showed a significant reduced risk in patients randomized to receive a catheter via the arm, known as the radial approach, rather than the groin, known as the femoral approach. In addition, patients receiving a catheter via the groin faced a significantly higher risk of death, which was driven by increased bleeding complications in these patients, the study authors said.

"I believe the evidence from our study should compel a switch to the radial approach as the preferred method," said Marco Valgimigli, M.D., Ph.D., associate professor of cardiology and senior interventional cardiologist at the Erasmus University Medical Center in the Netherlands and the study's lead author. "I hope that a new generation of

interventional cardiologists will be specifically trained in the radial approach and that more medical centers will build up their expertise in this procedure."

The study is the first large trial to show radial access improves patient outcomes and that it reduces dangerous bleeding beyond the bleeding that can occur near where the catheter is inserted. U.S. interventional cardiologists currently use the arm for catheter-based heart procedures in less than 15 percent of cases. The approach is more common in Europe, where interventional cardiologists use the arm roughly half of the time or more.

"This study shows that interventional cardiologists who are experienced with the radial approach have nothing to lose and everything to gain by using the arm as the access point for these procedures," Valgimigli said. In addition to improving outcomes, the radial approach can also save on medical costs because it typically results in a quicker recovery and shorter hospital stay, Valgimigli said.

During a coronary angiogram—performed in more than 1 million people in the United States each year—an interventional cardiologist examines the heart's arteries using miniscule medical equipment threaded to the heart through a catheter placed in an artery in the groin or arm. If a blockage is found, the surgeon typically uses the same catheter to inflate or expand a small device to push aside plaque and open the artery, a procedure known as angioplasty or stenting.

The study randomized more than 8,400 angiogram patients at 78 hospitals in four European countries to receive angiogram via the arm or the groin. All study participants had [acute coronary syndrome](#), a condition that includes the two types of heart attack—ST-elevation myocardial infarction and non-ST elevation myocardial infarction—or unstable angina, a type of severe chest pain that is due to the buildup of

plaque in the heart's arteries.

Patients receiving radial access suffered major bleeding, death, heart attack or stroke within 30 days in 9.8 percent of cases as compared to 11.7 percent in those receiving femoral access. The difference was largely attributable to major bleeding, which occurred in 1.6 percent of patients receiving radial access and 2.3 percent of patients receiving femoral access, and death, which occurred in 1.6 percent of patients receiving radial access and 2.2 percent of patients receiving femoral access.

Study authors attributed the fact that the study did not meet its other co-primary endpoint to a higher-than-usual bar for statistical significance, a result of the inclusion of two co-primary endpoints in the study rather than only one. The study found no differences with respect to rates of heart attack or stroke.

Interventional cardiologists have typically favored catheter access through the groin because it involves a larger artery that is less prone to spasm, an event that can limit the ability to move medical equipment through the catheter. Although the artery in the arm is closer to the surface and thus easier to access, the artery's smaller size makes the radial approach more technically difficult and requires the use of smaller equipment.

Because the radial approach is more difficult to perform, the study showed the hospital's level of experience with this method had a substantial impact on patient outcomes. To build the level of experience necessary to maximize the benefits of the radial approach, a given surgeon should use the radial approach in at least 80 percent of cases, Valgimigli said. However, the femoral approach is still appropriate for certain types of procedures that require the use of larger equipment, such as transcatheter aortic valve implantation or TAVI.

The study, called the Minimizing Adverse Hemorrhagic Events by Transradial Access Site and Systemic Implementation of AngioX Program (MATRIX), also tested the effects of the anticoagulant drug Bivalirudin. Those results are being reported separately.

The study was funded by the Gruppo Italiano Studi Emodinamica (Italian Society of Interventional Cardiology), which received research grants from the Medicines Company, the maker of Bivalirudin, and the medical device company Terumo. The study was designed and conducted by Valgimigli and co-investigators.

Provided by American College of Cardiology

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