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Striking Regional Variation in the Treatment of Cerebral Aneurysms

Clipping or Coiling is Heavily Influenced by Local Practices

Lebanon, N.H. (September 30, 2014) – Surgical treatment for cerebral aneurysms varies widely across the country, and the treatment decision is likely driven by local practice patterns and not by patient preference, according to a new report from the Dartmouth Atlas Project.

The report, called “[Variation in the Care of Surgical Conditions: Cerebral Aneurysms](#),” is the second in a series of six reports from the Dartmouth Atlas of Health Care examining unwarranted variations in the surgical care of Medicare beneficiaries. Like a previous [report](#) on surgical treatment for obesity, it calls for greater patient involvement in decision making when options exist and circumstances permit.

Cerebral aneurysms are common and potentially dangerous, and there are important treatment choices to prevent bleeding and stroke before an aneurysm ruptures, or avert further catastrophic bleeding after an aneurysm ruptures. The options are known as clipping and endovascular coiling. Clipping involves removal of part of the skull through a craniotomy and obstructing the blood flow to the aneurysm with a clip. In the less invasive coiling treatment, the surgeon directs a catheter from the patient’s groin through blood vessels into the aneurysm and fills it with coils of material that clot the aneurysm.

Most aneurysms are amenable to either treatment, but the method used varies widely by region. For example, fewer than four in 10 patients with unruptured aneurysms were treated with coiling in Modesto, California (35.0 percent) and Madison, Wisconsin (36.0 percent), while nearly all of these patients were treated with coiling in Tacoma, Washington (98.6 percent) and Evansville, Indiana (97.4 percent). Similarly, 98.8 percent of patients with ruptured aneurysms received coiling in Fort Lauderdale, Florida, compared to 36.3 percent in Atlanta, Georgia.

Although socioeconomic disparities and patient preferences could factor into this variation, such wide disparities can likely be attributed to physician training — not all surgeons are trained in both techniques — and preferences based on the personal experience of the treating physician.

“What we’re seeing is a vast disparity in the way physicians approach and treat cerebral aneurysms from region to region. While sometimes this can be attributed to the size of the aneurysm or the patient’s general health, the variation we observed is striking. This calls for strengthening of the shared decision-making framework for the patient,” said Kimon Bekelis, M.D, from the section of Neurosurgery at Dartmouth-Hitchcock Medical Center who co-authored the report along with Philip Goodney, M.D., M.S., director of the Center for the Evaluation of Surgical Care at Dartmouth Hitchcock Medical Center, David Goodman, M.D., M.S. principal investigator of the Dartmouth Atlas, and other colleagues.

There is ongoing investigation about whether coiling or clipping is the optimal treatment method. Rapid technological advances are making the head-to-head comparison even more difficult. Coiling is less invasive, and the recovery time is shorter, but some physicians maintain that clipping is more durable. Some neurosurgeons are trained in only one technique and others in both. All these add to patient uncertainty and complicate the decision making process.

The report notes that further research would go a long way to determine whether better outcomes are associated with coiling or clipping, specifically the creation of a complete registry so physicians can share best practices and better inform their patients.

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This report was produced by the Dartmouth Atlas Project, located at the [Dartmouth Institute for Health Policy & Clinical Practice](#). The Dartmouth Atlas Project is principally funded by the Robert Wood Johnson Foundation, with support from a consortium of funders. This report received its major support from the Department of Surgery at Dartmouth-Hitchcock Medical Center. The full report, Variations in the Care of Surgical Conditions: Cerebral Aneurysms, and [complete data tables](#) can be found at www.dartmouthatlas.org.

About the Dartmouth Atlas Project

For more than 20 years, the Dartmouth Atlas Project has documented glaring variations in how medical resources are distributed and used in the United States. The project uses Medicare data to provide information and analysis about national, regional, and local markets, as well as hospitals and their affiliated physicians. This research has helped policymakers, the media, health care analysts and others improve their understanding of our health care system and forms the foundation for many of the ongoing efforts to improve health and health systems across America.

Methodology

Rates of ruptured and unruptured cerebral aneurysms, rates of clipping and coiling procedures, and outcomes following these procedures were measured for Medicare beneficiaries age 65 and over who were enrolled in Medicare Parts A and B on June 30 of each measurement year. Rates were aggregated to the level of the hospital referral region.