

Endovascular Aneurysm Coil Comparison

Published date: Jan. 26, 2018

Technology description

Background:

About 30,000 people suffer a brain aneurysm rupture each year in the U.S. alone. These rupture events result in death in about 40% of cases. Of those who survive, about 66% suffer some permanent neurological deficit.

Treatment of aneurysm is most commonly treated by endovascular coiling, a less invasive treatment as compared to clipping, which requires open surgery. However, recurrence of aneurysm rupture after coiling is as high as 40%, necessitating frequent follow up after the procedure in order to monitor the aneurysm.

Follow up is typically performed via catheter angiography, an invasive method that risks clinically significant embolic strokes, hematomas and vascular injury. Catheter angiography is also expensive, requiring serial studies costing thousands of dollars. Alternatives include CT and MR based angiography, but these methods are inaccurate, expensive and not universally available.

Skull X-rays provide a non-invasive, relatively inexpensive way to monitor the patient after coiling. This reduces the need for patients to undergo risky angiography procedures when they are at low risk for aneurysm rupture.

Technology Description:

Clinicians at UTHealth have developed software that is able to help assess a patient's risk for re-rupture by analyzing X-ray images of the skull.

Use of the software is immediately accessible and requires little prior training. At the time of initial treatment, plain anterior-posterior and lateral skull X-rays are obtained. Repeat X-rays are then obtained at scheduled follow up. The operator (an X-ray technologist or radiologist) can then use the software to identify the coil mass in all X-rays and initiate the comparison. The software compares X-ray images from different time points and identifies and tracks changes. The result is a single "coil comparison score" (akin to a t- or z-score) which is reported to the clinician along with a predicted rate of recurrence.

The surgeon can use this information to decide if the patient's aneurysm will require further investigation using CTA/MRA or catheter based angiography.

Institution

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