
Executive summary

Health Council of the Netherlands. Coiling or clipping? Treatment of intracranial aneurysms. The Hague: Health Council of the Netherlands, 2008; publication no. 2008/12.

Until recently the preferred treatment option for patients with intracranial aneurysms was a surgical repair intervention, during which the skull was opened and a clip was placed on the bulge in the threatened artery. This so called ‘clipping operation’ has been shown effective in preventing (recurrent) life threatening ruptures and subarachnoid hemorrhage. However, in the mean time a new treatment modality has been introduced, the so called ‘coiling procedure’, in which a catheter is inserted via an incision in the groin and pushed up into the aneurysm, where a platinum coil is placed in position. A big advantage of this endovascular approach is the avoidance of open surgery of the cranium. However, not yet every type of aneurysm can be effectively treated in this way.

The introduction and application of coiling has had important consequences for the care of patients with intracranial aneurysms. In this report the treatment outcomes of both clipping and coiling procedures, in terms of safety and efficacy in the short as well as the long run, are analyzed and compared. This shows that coiling of intracranial aneurysms is sufficiently safe and associated with important advantages over a clipping operation. In particular patients with subarachnoid hemorrhage from a ruptured aneurysm, show better functional rehabilitation after endovascular coiling, when compared to clipping. Also recurrent bleeding is more effectively prevented. Patients with an unruptured aneurysm also show better outcomes with coiling, as compared to clipping, especially patients at an advanced age and with a poor clinical status.

Two aspects of the care for patients with cerebral aneurysms are worthy of special attention. First, a number of studies demonstrate that for both clipping and coiling procedures there is a strong positive association between the number of interventions carried out by the treating physician, and the quality of that treatment in terms of complications, mortality and outcome. This volume-outcome relationship exists for the individual physician as well as for the hospital as a whole. The lesson to be learned from this is that it should be strongly recommended that the care of patients with intracranial aneurysms (both clipping and coiling procedures) be concentrated in specialized centers with high patient volumes. A second aspect concerns the expertise required to perform coiling procedures safely. Clipping surgery is customarily performed by the neurosurgeon, in close consultation with the neurologist. A coiling procedure however, requires the collaboration of an endovascular therapist, usually an interventional neuroradiologist. Since clipping and coiling are to be regarded as complementary treatment modalities, and one should aim for a careful choice of the most appropriate option for each individual aneurysm patient, a centre should preferably offer both treatments. This requires the availability of a multidisciplinary and dedicated neurovascular team.

The Health Council recommends that the professional medical groups involved will now proceed to establish national guidelines for the minimum volume per treating physician and per centre, needed to guarantee the quality of the treatment and maintain their expertise. This should be the basis for agreement on the number of centers needed for the future. In the Netherlands there are now 11 hospitals, including all university medical centers, where both clipping surgery and coiling procedures are performed. The introduction of coiling has caused a shift in the choice of treatment, resulting in three times more coiling than clipping. In the international scientific literature a ratio clipping:coiling of 1:5 is now usually found. This ratio varies rather widely among Dutch hospitals, reflecting the availability of infrastructure.

Data registries kept up by general practitioners show that in the Netherlands almost 34 000 people yearly are affected by an initial acute stroke. In particular those patients with subarachnoid hemorrhage (bleeding between the cerebral membrane caused by a ruptured aneurysm) are at risk to die shortly. This concerns about 5% of all stroke patients. In the end about 900 patients with subarachnoid hemorrhages every year will be eligible for treatment (coiling or clipping), aiming to prevent – often fatal – recurrent bleeding. This number has remained constant over the past years.

Apart from volume and infrastructure, further agreement is also needed concerning specialist education and specific skills training enabling physicians to

perform coiling procedures in a safe manner. Finally, there is a need for improved outcome registration of coiling procedures, in order to better monitor their quality and further development in indications.