Supplementary Online Content


eAppendix 2. Inclusion and Exclusion Criteria.
eAppendix 3. Coil Embolization Procedure.

This supplementary material has been provided by the authors to give readers additional information about their work.
eAppendix 1. Korean Stroke Society Guideline for Patients with an Unruptured Aneurysm
(www.stroke.or.kr/CPGstroke.html)
Aneurysm treatment can be considered for patients with a symptomatic unruptured intracranial aneurysm or unruptured intracranial aneurysm at high risk of rupture: (1) aneurysm $\geq 5$ mm, (2) aneurysm located in the posterior circulation, anterior communicating artery, or posterior communicating artery, (3) history of previous subarachnoid hemorrhage or family history of aneurysm, (4) aneurysm increasing in size or changing in morphology during follow-up, (5) patients with ages less than 50 years, hypertension, and multiple aneurysms, (6) aneurysm with a high dome-to-neck ratio, multi-lobule, or bleb.
eAppendix 2. Inclusion and Exclusion Criteria

**Inclusion criteria**
1. Patients with unruptured aneurysm who plan to undergo coil embolization
2. Patient aged 20 – 80 years at the day of enrollment
3. Patient with less than 2 of modified Rankin scale score at the day of enrollment
4. Patient who agrees and writes out a consent form

**Exclusion criteria**
1. Patient with history of hypersensitivity of aspirin, clopidogrel, or cilostazol
2. Patient with a high possibility of active bleeding such as symptomatic intracranial hemorrhage or active gastric ulcer
3. Patient with bleeding tendency or coagulopathy
4. Patient with thrombocytopenia (< 100,000/mm³ of platelet count within three months before enrollment)
5. Patient with liver disease (> 100 of AST or ALT within three months before enrollment)
6. Patient with renal disease (> 2mg/dL of serum creatinine within three months before enrollment)
7. Patient using anticoagulants
8. Patients with congestive heart failure or angina unable to be controlled
9. Patients with malignant tumor requiring treatment
10. Pregnant or breast-feeding woman
11. Patient in whom physician decision is disqualification

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eAppendix 3. Coil Embolization Procedure

All aneurysm coil embolization procedures were performed under general anesthesia using a biplane angiographic unit (Integris Allura; Philips Medical Systems, Best, the Netherlands). Systemic heparinization was administered after placing a femoral introducer sheath. Rotational angiography, followed by three-dimensional image reconstruction by volume rendering, was performed before embolization in all patients, using the Integris 3D-RA software package (release 3.2, Philips Medical Systems). On the basis of the images generated using rotational acquisition, at least two working projections that provided the best achievable view of the aneurysm neck were defined.

A microcatheter (Excelsior SL-10, Stryker Neurovascular, Fremont, CA) was navigated into the parent artery with the target aneurysm using a guidewire (Synchro 14, Stryker Neurovascular). Once the microcatheter was placed stably in the aneurysmal neck, coils were inserted until sufficient occlusion was achieved. In this study, only detachable bare platinum coils, which included the GDC (Stryker Neurovascular), MicroPlex (MicroVention, Aliso Viejo, CA), Orbit Galaxy (Cordis, Miami Lakes, FL), and Axium (Covidien, Irvine, CA) coils were used. During coiling procedure, a coil suitable for safe packing was selected among these coils at every step.

For coil embolization of aneurysms with an unfavorable configuration, multiple microcatheter technique, balloon-, or stent-assisted coiling were employed. In cases treated with multiple microcatheter technique, two or more microcatheters were introduced into a single guiding catheter. More complex coil frame could be made in the aneurysmal sac by adjoining each coil mass inserted through individual microcatheter. When it was expected that the microcatheter and inserted coils were unstable during procedure, balloon-assisted coiling was chosen. The balloons used for this technique were the Hyperform or Hyperglide balloons (Covidien). Stent-assisted coiling was employed for aneurysms with wide neck. The stents used for stent-assisted coiling were the Neuroform (Stryker Neurovascular, Fremont, CA) or Enterprise stents (Cordis, Miami Lakes, FL). Final postembolization angiography was performed in the working projection to evaluate occlusion grade and detect any complications. Frontal and lateral projections were also acquired at the end of the procedure.

All femoral puncture sites were closed using Femoseal (St. Jude Medical, St Paul, MN) and manual compression was applied for an additional 5 minutes.