Woven EndoBridge Shape Modification

After Intracranial aneurysm embolization with the Woven EndoBridge (WEB) device, worsening of aneurysm occlusion or re-opening was reported to be possibly associated with WEB shape modification, it is a frequently observed phenomenon.

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Woven EndoBridge Shape Modification can be partly overcome by use of an appropriate width oversizing strategy that could lead to improved angiographic results $^{\rm 1)}$

Woven EndoBridge shape modification was strongly influenced by the aneurysm shape and ostium size, and it was not independently associated with the angiographic occlusion $^{2)}$

Nawka ete al. from University Medical Center Hamburg tested the hypothesis that WSM is associated with worse aneurysm occlusion on short-term angiographic follow-up images.

Patients with short-term follow-up digital subtraction angiography (DSA) available were included. Baseline patient characteristics, aneurysm morphometrics, and WEB dimensions ("conventional" parameters) and height and width WSM ("WSM" parameters) in the initial and the follow-up examination were analyzed. For ordinal regression analyses, aneurysm occlusion was graded according to the Bicêtre Occlusion Scale Score (BOSS; grades 0, 0', 1, 2, 3, and 1 + 3). Receiver operating characteristic curve analysis was used to distinguish adequately (BOSS 0, 0', and 1) from incompletely (BOSS 2, 3, and 1 + 3) occluded aneurysms.

They included 93 patients with 96 aneurysms. Adequate occlusion was observed in 72 cases (75.0%). In univariate ordinal regression analysis, width WSM in anteroposterior DSA (odds ratio = 0.96, 95% CI: 0.94-0.99, P = .010) and in lateral DSA (odds ratio = 0.98, 95% CI: 0.97-0.99, P = .049) were significantly associated with the BOSS after 6 months. In multivariate regression analysis, WSM was not independently associated with aneurysm occlusion. Based on receiver operating characteristic curve analysis, the area under the curve (AUC) of the "conventional" model (AUC = 0.83, 95% CI 0.74-0.90) was higher than the AUC of the "WSM" model (WSM; AUC = 0.70, 95% CI 0.60-0.79).

WSM was not independently associated with angiographic aneurysm occlusion status after 6 months. However, the "conventional" parameters including sex, rupture state, WEB type, WEB width, aneurysm width, height, and volume were associated with partial aneurysm recanalization in WEB-treated patients at the short-term follow-up ³.

Thirty patients with 32 WEB-treated intracranial aneurysms fulfilled the inclusion criteria of cranial CT at baseline (day of intervention) and a follow-up CT at least >1 months' later (median follow-up time,

11.4 months; interquartile range, 6.5-21.5 months). Adequate occlusion was observed in 84.4%, and aneurysm remnant, in 15.6%. WEB shape modification was quantified by a semiautomated approach on CT scans. Time courses were evaluated graphically and analytically; association analyses were performed by linear mixed-effects regression models.

In 29/32 WEB devices (90.6%), the reduction in height was found to be at least 5%. The decrease in height with time was significantly associated with the time interval in days since the intervention (P < .0001): A stronger decrease in WEB height was associated with a longer time since the intervention (median reduction in 1 year, 19.2%; range, 8.6%-52.3%). No significant association was found with the quality of aneurysm occlusion, device size, rupture status of the aneurysm, aneurysm location, and reintervention rate.

Shape modification was common in WEB-treated intracranial aneurysms with a median height reduction of 19.2% in 1 year. The quality of aneurysm occlusion was not associated with WEB modification ⁴⁾.

All patients with aneurysms treated with the WEB were prospectively included in a data base. Demographics, aneurysm characteristics, adverse events, and anatomic results were retrospectively analyzed. Anatomic results and modification of the WEB shape on the follow-up examinations were independently evaluated by a core laboratory.

Results: Thirty-nine patients were included. We observed few complications: intraoperative rupture in no patients (0.0%) and thromboembolic events in 3 patients (7.7%) with a permanent deficit in 1 (2.6%). At short-term, midterm, and long-term follow-up, adequate occlusion was obtained in 86.8%, 83.3%, and 87.5%, respectively. Retreatment rates were low (5.1%). At 6 months, WEB shape modification (compression/retraction) was observed in 31.6% of patients but was not associated with a lower rate of adequate occlusion.

Conclusions: This prospective, single-center series with WEB devices used in 39 patients during 3.5 years confirms data from previous multicenter studies. Treatment can be accomplished with good safety and efficacy, with a high rate of adequate occlusion. Anatomic results were not worse in case of WEB shape modification ⁵⁾

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